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(54) 발명의 명칭 **GPCR 결합 단백질 및 이의 합성 방법**

(57) 요 약

G 단백질-커플링된 수용체(GPCR) 결합 도메인을 포함하는 스캐폴드를 코딩하는 핵산을 갖는 GPCR 라이브러리와 관련된 방법 및 조성물이 본원에서 제공된다. 본원에서 설명되는 라이브러리는 적어도 하나의 미리 결정된 참조 핵산 서열의 미리 결정된 변이체를 각각 코딩하는 핵산을 포함하는 다양한 라이브러리를 포함한다. 핵산 라이브러리가 번역시 생성된 단백질 라이브러리가 본원에서 추가로 설명된다. 본원에서 설명되는 다양한 핵산 라이브러리를 발현하는 세포 라이브러리가 본원에서 추가로 설명된다.

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명 세 서

청구범위

청구항 1

항체로서, 서열 번호 2420 내지 2436 중 어느 하나의 서열을 포함한 CDR-H3을 포함하는 항체.

청구항 2

항체로서, 서열 번호 2420 내지 2436 중 어느 하나의 서열을 포함한 CDR-H3을 포함하고, 모노클로날 항체, 폴노클로날 항체, 이중 특이적 항체, 다중 특이적 항체, 그라프팅된 항체, 인간 항체, 인간화 항체, 합성 항체, 키메라 항체, 낙타화 항체, 단일쇄 Fvs(scFv), 단일쇄 항체, Fab 단편, F(ab')2 단편, Fd 단편, Fv 단편, 단일 도메인 항체, 단리된 상보성 결정 영역(CDR), 디아바디, 단일 단량체 가변 도메인만을 포함하는 단편, 디술파이드 연결된 Fvs(sdFv), 인트라바디, 항-이디오타입(항-Id) 항체, 또는 이의 ab 항원 결합 단편인 항체.

청구항 3

제1항 또는 제2항의 항체를 투여하는 단계를 포함하는, GLP1R 활성을 억제하는 방법.

청구항 4

대사 장애를 치료하는 방법으로서, 제1항 또는 제2항의 항체를 그러한 치료를 필요로 하는 대상체에게 투여하는 단계를 포함하는 방법.

청구항 5

제4항에 있어서, 대사 장애가 II형 당뇨병 또는 비만인 방법.

청구항 6

복수의 핵산을 포함하는 핵산 라이브러리로서, 각각의 핵산이, 번역시 면역글로불린 스캐폴드를 코딩하는 서열을 코딩하고, 여기서 면역글로불린 스캐폴드가 GPCR 결합 도메인을 포함한 CDR-H3 루프를 포함하고, 각각의 핵산이 GPCR 결합 도메인의 서열 변이체를 코딩하는 서열을 포함하는 것인 핵산 라이브러리.

청구항 7

제6항에 있어서, CDR-H3 루프의 길이가 약 20 내지 약 80개의 아미노산인 핵산 라이브러리.

청구항 8

제6항에 있어서, CDR-H3 루프의 길이가 약 80 내지 약 230개의 염기쌍인 핵산 라이브러리.

청구항 9

제6항에 있어서, 면역글로불린 스캐폴드가 경쇄 가변 도메인(VL), 중쇄 가변 도메인(VH), 경쇄 불변 도메인(CL), 및 중쇄 불변 도메인(CH)으로부터 선택된 하나 이상의 도메인을 추가로 포함하는 것인 핵산 라이브러리.

청구항 10

제9항에 있어서, VH 도메인이 IGHV1-18, IGHV1-69, IGHV1-8, IGHV3-21, IGHV3-23, IGHV3-30/33rn, IGHV3-28, IGHV3-74, IGHV4-39 또는 IGHV4-59/61인 핵산 라이브러리.

청구항 11

제9항에 있어서, VL 도메인이 IGKV1-39, IGKV1-9, IGKV2-28, IGKV3-11, IGKV3-15, IGKV3-20, IGKV4-1, IGLV1-51 또는 IGLV2-14인 핵산 라이브러리.

청구항 12

제9항에 있어서, VH 도메인의 길이가 약 90 내지 약 100개의 아미노산인 핵산 라이브러리.

청구항 13

제9항에 있어서, VL 도메인의 길이가 약 90 내지 약 120개의 아미노산인 핵산 라이브러리.

청구항 14

제9항에 있어서, VH 도메인의 길이가 약 280 내지 약 300개의 염기쌍인 핵산 라이브러리.

청구항 15

제9항에 있어서, VL 도메인의 길이가 약 300 내지 약 350개의 염기쌍인 핵산 라이브러리.

청구항 16

제6항에 있어서, 라이브러리가 적어도 10^5개의 동일하지 않은 핵산을 포함하는 것인 핵산 라이브러리.

청구항 17

제6항에 있어서, 면역글로불린 스캐폴드가 단일 면역글로불린 도메인을 포함하는 것인 핵산 라이브러리.

청구항 18

제6항에 있어서, 면역글로불린 스캐폴드가 최대 100개의 아미노산의 펩티드를 포함하는 것인 핵산 라이브러리.

청구항 19

제6항에 있어서, GPCR 결합 도메인이 펩티드 모방체 또는 소분자 모방체를 포함하는 것인 핵산 라이브러리.

청구항 20

복수의 단백질을 포함하는 단백질 라이브러리로서, 복수의 단백질의 각각의 단백질이 면역글로불린 스캐폴드를 포함하고, 여기서 면역글로불린 스캐폴드가 GPCR 결합 도메인의 서열 변이체를 포함한 CDR-H3 루프를 포함하는 것인 단백질 라이브러리.

청구항 21

제20항에 있어서, CDR-H3 루프의 길이가 약 20 내지 약 80개의 아미노산인 단백질 라이브러리.

청구항 22

제20항에 있어서, 면역글로불린 스캐폴드가 경쇄 가변 도메인(VL), 중쇄 가변 도메인(VH), 경쇄 불변 도메인(CL), 및 중쇄 불변 도메인(CH)으로부터 선택된 하나 이상의 도메인을 추가로 포함하는 것인 단백질 라이브러리.

청구항 23

제20항에 있어서, VH 도메인이 IGHV1-18, IGHV1-69, IGHV1-8, IGHV3-21, IGHV3-23, IGHV3-30/33rn, IGHV3-28, IGHV3-74, IGHV4-39 또는 IGHV4-59/61인 단백질 라이브러리.

청구항 24

제20항에 있어서, VL 도메인이 IGKV1-39, IGKV1-9, IGKV2-28, IGKV3-11, IGKV3-15, IGKV3-20, IGKV4-1, IGLV1-51 또는 IGLV2-14인 단백질 라이브러리.

청구항 25

제20항에 있어서, VH 도메인의 길이가 약 90 내지 약 100개의 아미노산인 단백질 라이브러리.

청구항 26

제20항에 있어서, VL 도메인의 길이가 약 90 내지 약 120개의 아미노산인 단백질 라이브러리.

청구항 27

제20항에 있어서, 복수의 단백질이 펩티드 모방체 라이브러리를 생성하기 위해 사용되는 것인 단백질 라이브러리.

청구항 28

제20항에 있어서, 단백질 라이브러리가 항체를 포함하는 것인 단백질 라이브러리.

청구항 29

복수의 단백질을 포함하는 단백질 라이브러리로서, 복수의 단백질이 상이한 GPCR 결합 도메인을 코딩하는 서열을 포함하고, 각각의 GPCR 결합 도메인의 길이가 약 20 내지 약 80개의 아미노산인 단백질 라이브러리.

청구항 30

제29항에 있어서, 단백질 라이브러리가 펩티드를 포함하는 것인 단백질 라이브러리.

청구항 31

제29항에 있어서, 단백질 라이브러리가 면역글로불린을 포함하는 것인 단백질 라이브러리.

청구항 32

제29항에 있어서, 단백질 라이브러리가 항체를 포함하는 것인 단백질 라이브러리.

청구항 33

제29항에 있어서, 복수의 단백질이 펩티드 모방체를 생성하기 위해 사용되는 것인 단백질 라이브러리.

청구항 34

제6항 내지 제19항 중 어느 한 항의 핵산 라이브러리를 포함하는 벡터 라이브러리.

청구항 35

제6항 내지 제19항 중 어느 한 항의 핵산 라이브러리를 포함하는 세포 라이브러리.

청구항 36

제20항 내지 제33항 중 어느 한 항의 단백질 라이브러리를 포함하는 세포 라이브러리.

발명의 설명

기 술 분 야

[0001] **상호 참조**

[0002] 본 출원은 2017년 9월 11일에 출원된 미국 특허 가출원 제62/556,863호의 이점을 주장하고, 상기 출원은 그 전문이 본원에 참조로 포함된다.

배 경 기 술

[0003] G 단백질-커플링된 수용체(GPCR)는 광범위한 질병에 연루되어 있다. GPCR은 종종 세포에서 낮은 수준으로 발현되고 정제시 매우 불안정하기 때문에, GPCR에 대한 항체의 생성은 적합한 항원을 얻을 때의 문제로 인해 어려웠다. 따라서, GPCR을 표적으로 하는 치료적 개입을 위한 개선된 작용제가 필요하다.

[0004] **참조에 의한 통합**

[0005] 본원에서 언급되는 모든 간행물, 특허 및 특허 출원은 각각의 개별 간행물, 특허 또는 특허 출원이 참조로 포함되는 것으로 구체적이고 개별적으로 표시되는 것과 동일한 정도로 본원에 참조로 포함된다.

발명의 내용

[0006] 서열 번호 2420 내지 2436 중 어느 하나의 서열을 포함한 CDR-H3을 포함하는 항체가 본원에서 제공된다. 서열 번호 2420 내지 2436 중 어느 하나의 서열을 포함한 CDR-H3을 포함하는 항체가 본원에서 제공되고, 여기서 항체는 모노클로날 항체, 폴노클로날 항체, 이중 특이적 항체, 다중 특이적 항체, 그라프팅된(grafted) 항체, 인간 항체, 인간화 항체, 합성 항체, 키메라 항체, 낙타화(camelized) 항체, 단일쇄 Fvs(scFv), 단일쇄 항체, Fab 단편, F(ab')2 단편, Fd 단편, Fv 단편, 단일 도메인 항체, 단리된 상보성 결정 영역(CDR), 디아바디(diabody), 단일 단량체 가변 도메인만을 포함하는 단편, 디술파이드 연결된 Fvs(sdFv), 인트라바디(intrabody), 항-이디오타입(항-Id; anti-idiotypic) 항체, 또는 이의 ab 항원 결합 단편이다. VH 도메인이 IGHV1-18, IGHV1-69, IGHV1-8, IGHV3-21, IGHV3-23, IGHV3-30/33rn, IGHV3-28, IGHV3-74, IGHV4-39, 또는 IGHV4-59/61인 항체가 본원에서 제공된다. VL 도메인이 IGKV1-39, IGKV1-9, IGKV2-28, IGKV3-11, IGKV3-15, IGKV3-20, IGKV4-1, IGLV1-51, 또는 IGLV2-14인 항체가 본원에서 제공된다. 본원에서 설명되는 바와 같은 항체를 투여하는 것을 포함하는, GLP1R 활성을 억제하는 방법이 본원에서 제공된다. 본원에서 설명되는 바와 같은 항체를, 대사 장애의 치료를 필요로 하는 대상체에게 투여하는 것을 포함하는, 그러한 대사 장애를 치료하는 방법이 본원에서 제공된다. 일부 경우에서, 항체는 서열 번호 2420 내지 2436 중 어느 하나의 서열을 포함한 CDR-H3을 포함한다. 대사 장애의 치료 방법이 본원에서 제공되고, 여기서 대사 장애는 II형 당뇨병, 또는 비만이다. 서열 번호 2420 내지 2436 중 어느 하나의 서열을 포함한 단백질을 코딩하는 핵산이 본원에서 제공된다.

[0007] 복수의 핵산을 포함하는 핵산 라이브러리가 본원에서 제공되며, 여기서 각각의 핵산은, 번역시 면역글로불린 스캐폴드를 코딩하는 서열을 코딩하며, 여기서 면역글로불린 스캐폴드는 GPCR 결합 도메인을 포함한 CDR-H3 루프를 포함하고, 각각의 핵산은 GPCR 결합 도메인의 서열 변이체를 코딩하는 서열을 포함한다. CDR-H3 루프의 길이가 약 20 내지 약 80개의 아미노산인 핵산 라이브러리가 본원에서 제공된다. CDR-H3 루프의 길이가 약 80 내지 약 230개의 염기쌍인 핵산 라이브러리가 본원에서 제공된다. 면역글로불린 스캐폴드가 경쇄 가변 도메인(VL), 중쇄 가변 도메인(VH), 경쇄 불변 도메인(CL) 및 중쇄 불변 도메인(CH)으로부터 선택된 하나 이상의 도메인을 추가로 포함하는 핵산 라이브러리가 본원에서 제공된다. VH 도메인이 IGHV1-18, IGHV1-69, IGHV1-8, IGHV3-21, IGHV3-23, IGHV3-30/33rn, IGHV3-28, IGHV3-74, IGHV4-39, 또는 IGHV4-59/61인 핵산 라이브러리가 본원에서 제공된다. VL 도메인이 IGKV1-39, IGKV1-9, IGKV2-28, IGKV3-11, IGKV3-15, IGKV3-20, IGKV4-1, IGLV1-51, 또는 IGLV2-14인 핵산 라이브러리가 본원에서 제공된다. VH 도메인의 길이가 약 90 내지 약 100개의 아미노산인 핵산 라이브러리가 본원에서 제공된다. VL 도메인의 길이가 약 90 내지 약 120개의 아미노산인 핵산 라이브러리가 본원에서 제공된다. VH 도메인의 길이가 약 280 내지 약 300개의 염기쌍인 핵산 라이브러리가 본원에서 제공된다. VL 도메인의 길이가 약 300 내지 약 350개의 염기쌍인 핵산 라이브러리가 본원에서 제공된다. 라이브러리가 적어도 105개의 동일하지 않은 핵산을 포함하는 핵산 라이브러리가 본원에서 제공된다. 면역글로불린 스캐폴드가 단일 면역글로불린 도메인을 포함하는 핵산 라이브러리가 본원에서 제공된다. 면역글로불린 스캐폴드가 최대 100개의 아미노산의 펩티드를 포함하는 핵산 라이브러리가 본원에서 제공된다. 본원에서 설명되는 바와 같은 핵산 라이브러리를 포함하는 벡터 라이브러리가 본원에서 제공된다. 본원에서 설명되는 바와 같은 핵산 라이브러리를 포함하는 세포 라이브러리가 본원에서 제공된다.

[0008] 복수의 핵산을 포함하는 핵산 라이브러리가 본원에서 제공되고, 여기서 각각의 핵산은, 번역시 GPCR 결합 도메인을 코딩하는 서열을 코딩하고, 각각의 핵산은 약 20 내지 약 80개 아미노산의 상이한 GPCR 결합 도메인을 코딩하는 서열을 포함한다. GPCR 결합 도메인의 길이가 약 80 내지 약 230개의 염기쌍인 핵산 라이브러리가 본원에서 제공된다. GPCR 결합 도메인이 입체형태적 리간드 상호작용, 펩티드 리간드 상호작용, 소분자 리간드 상호작용, GPCR의 세포외 도메인, 또는 GPCR을 표적으로 하는 항체를 기초로 하여 설계된 핵산 라이브러리가 본원에서 제공된다. 본원에서 설명되는 바와 같은 핵산 라이브러리를 포함하는 벡터 라이브러리가 본원에서 제공된다. 본원에서 설명되는 바와 같은 핵산 라이브러리를 포함하는 세포 라이브러리가 본원에서 제공된다.

[0009] 복수의 단백질을 포함하는 단백질 라이브러리가 본원에서 제공되고, 여기서 복수의 단백질의 각각의 단백질은 면역글로불린 스캐폴드를 포함하고, 상기 면역글로불린 스캐폴드는 GPCR 결합 도메인의 서열 변이체를 포함한 CDR-H3 루프를 포함한다. CDR-H3 루프의 길이가 약 20 내지 약 80개의 아미노산인 단백질 라이브러리가 본원에서 제공된다. 면역글로불린 스캐폴드가 경쇄 가변 도메인(VL), 중쇄 가변 도메인(VH), 경쇄 불변 도메인(CL) 및 중쇄 불변 도메인(CH)으로부터 선택되는 하나 이상의 도메인을 추가로 포함하는 단백질 라이브러리가 본원에서 제공된다. VH 도메인이 IGHV1-18, IGHV1-69, IGHV1-8, IGHV3-21, IGHV3-23, IGHV3-30/33rn, IGHV3-28, IGHV3-74, IGHV4-39, 또는 IGHV4-59/61인 단백질 라이브러리가 본원에서 제공된다. VL 도메인이 IGKV1-39, IGKV1-9, IGKV2-28, IGKV3-11, IGKV3-15, IGKV3-20, IGKV4-1, IGLV1-51, 또는 IGLV2-14인 단백질 라이브러리가 본원에서

제공된다. VH 도메인의 길이가 약 90 내지 약 100개의 아미노산인 단백질 라이브러리가 본원에서 제공된다. VL 도메인의 길이가 약 90 내지 약 120개의 아미노산인 단백질 라이브러리가 본원에서 제공된다. 복수의 단백질이 펩티드 모방체(peptidomimetic) 라이브러리를 생성하는데 사용되는 단백질 라이브러리가 본원에서 제공된다. 펩티드를 포함하는 단백질 라이브러리가 본원에서 제공된다. 면역글로불린을 포함하는 단백질 라이브러리가 본원에서 제공된다. 항체를 포함하는 단백질 라이브러리가 본원에서 제공된다. 본원에서 설명되는 바와 같은 단백질 라이브러리를 포함하는 세포 라이브러리가 본원에서 제공된다.

[0010] 복수의 단백질을 포함하는 단백질 라이브러리가 본원에서 제공되고, 여기서 복수의 단백질은 상이한 GPCR 결합 도메인을 코딩하는 서열을 포함하고, 각각의 GPCR 결합 도메인의 길이는 약 20 내지 약 80개의 아미노산이다. 펩티드를 포함하는 단백질 라이브러리가 본원에서 제공된다. 면역글로불린을 포함하는 단백질 라이브러리가 본원에서 제공된다. 항체를 포함하는 단백질 라이브러리가 본원에서 제공된다. 복수의 단백질이 펩티드 모방체 라이브러리를 생성하는데 사용되는 단백질 라이브러리가 본원에서 제공된다. 본원에서 설명되는 바와 같은 단백질 라이브러리를 포함하는 세포 라이브러리가 본원에서 제공된다.

[0011] 본원에서 설명되는 핵산 라이브러리를 포함하는 벡터 라이브러리가 본원에서 제공된다. 본원에서 설명되는 핵산 라이브러리를 포함하는 세포 라이브러리가 본원에서 제공된다. 본원에서 설명되는 단백질 라이브러리를 포함하는 세포 라이브러리가 본원에서 제공된다.

도면의 간단한 설명

[0012] 도 1은 G 단백질-커플링된 수용체(GPCR) 리간드 상호작용 표면의 개략도를 도시한 것이다.

도 2a는 면역글로불린 스캐폴드의 제 1 개략도를 도시한 것이다.

도 2b는 면역글로불린 스캐폴드의 제 2 개략도를 도시한 것이다.

도 3은 스캐폴드에 배치하기 위한 모티프의 개략도를 도시한 것이다.

도 4는 GPCR의 개략도를 도시한 것이다.

도 5는 클론 단편 및 비-클론 단편의 조립을 위한 세그먼트의 개략도를 도시한 것이다.

도 6은 클론 단편 및 비-클론 단편의 조립을 위한 세그먼트의 개략도를 도시한 것이다.

도 7은 본원에서 개시되는 바와 같은 유전자 합성을 위한 예시적인 공정의 작업 흐름을 나타내는 단계들의 다이어그램을 제공한다.

도 8은 컴퓨터 시스템의 예를 도시한 것이다.

도 9는 컴퓨터 시스템의 아키텍처를 나타내는 블록도이다.

도 10은 복수의 컴퓨터 시스템, 복수의 휴대 전화기 및 개인 휴대용 정보 단말기(personal data assistant) 및 NAS(Network Attached Storage)를 포함하도록 구성된 네트워크를 설명하는 다이어그램이다.

도 11은 공유 가상 어드레스 메모리 공간을 사용하는 멀티프로세서 컴퓨터 시스템의 블록도이다.

도 12a-12c는 면역글로불린 스캐폴드의 서열을 도시한 것이다.

도 13은 G 단백질-커플링된 수용체 스캐폴드의 서열을 도시한 것이다.

도 14는 중쇄 가변 도메인의 라이브러리에 대한 정규화된 리드(read)의 그래프이다.

도 15는 경쇄 가변 도메인의 라이브러리에 대한 정규화된 리드의 그래프이다.

도 16은 중쇄 상보성 결정 영역 3의 라이브러리에 대한 정규화된 리드의 그래프이다.

도 17a는 폴딩에 대해 검정된 경쇄 프레임워크의 도표이다.

도 17b는 열 안정성에 대해 검정된 경쇄 프레임워크의 도표이다.

도 17c는 FLAG 태그를 사용하여 모티프 디스플레이에 대해 검정된 경쇄 프레임워크의 도표이다.

도 17d는 His 태그를 사용하여 모티프 디스플레이에 대해 검정된 경쇄 프레임워크의 도표이다.

도 18a는 폴딩에 대해 검정된 중쇄 프레임워크의 도표이다.

도 18b는 안정성에 대해 검정된 중쇄 프레임워크의 도표이다.

도 18c는 FLAG 태그를 사용하여 모티프 디스플레이에 대해 검정된 중쇄 프레임워크의 도표이다.

도 18d는 His 태그를 사용하여 모티프 디스플레이에 대해 검정된 중쇄 프레임워크의 도표이다.

도 18e는 발현에 대해 검정된 중쇄 프레임워크의 도표이다.

도 18f는 선택 특이성에 대해 검정된 중쇄 프레임워크의 도표이다.

도 19a-19c는 형광 항체에 의해 가시화된 G 단백질-커플링된 수용체의 이미지를 도시한 것이다.

도 20a 내지 20c는 자가 형광 단백질에 의해 가시화된 G 단백질-커플링된 수용체의 이미지를 도시한 것이다.

도 21a는 링커를 사용하여 VL 도메인에 부착된 VH 도메인을 포함하는 면역글로불린 스캐폴드의 개략도를 도시한 것이다.

도 21b는 링커, 리더 서열 및 pIII 서열을 사용하여 VL 도메인에 부착된 VH 도메인을 포함하는 면역글로불린 스캐폴드의 전체 도메인 아키텍처의 개략도를 도시한 것이다.

도 21c는 VL 또는 VH 도메인에 대한 4개의 프레임워크 요소(FW1, FW2, FW3, FW4) 및 가변 3 CDR(L1, L2, L3) 요소의 개략도를 도시한 것이다.

발명을 실시하기 위한 구체적인 내용

[0013] 본 개시내용은 달리 지시되지 않는 한, 관련 기술 분야의 통상의 기술에 속하는 통상적인 분자 생물학 기술을 사용한다. 달리 정의되지 않는 한, 본원에서 사용되는 모든 기술 및 과학 용어는 관련 기술 분야의 통상의 기술자에게 일반적으로 이해되는 것과 동일한 의미를 갖는다.

[0014] **정의**

[0015] 본 개시내용 전반에 걸쳐, 다양한 실시양태가 범위 형식으로 제시된다. 범위 형식의 설명은 단지 편의 및 간결성을 위한 것이며, 임의의 실시양태의 영역에 대한 융통성 없는 제한으로 해석되지 않아야 한다는 것을 이해해야 한다. 따라서, 범위의 설명은 문맥상 명백하게 다르게 지시하지 않는 한, 가능한 모든 하위 범위 및 그 범위 내의 개별 수치값을 하한 단위의 10분의 1까지 구체적으로 개시한 것으로 간주되어야 한다. 예를 들어, 1 내지 6과 같은 범위의 설명은 1 내지 3, 1 내지 4, 1 내지 5, 2 내지 4, 2 내지 6, 3 내지 6등과 같은 하위 범위, 및 그 범위 내의 개별 값, 예를 들어 1.1, 2, 2.3, 5 및 5.9를 구체적으로 개시한 것으로 간주되어야 한다. 이것은 범위의 폭에 관계없이 적용된다. 상기 사이에 존재하는 범위의 상한 및 하한은 독립적으로 더 작은 범위에 포함될 수 있고, 이 또한 언급된 범위 내의 임의의 구체적으로 제외된 한계에 따라 본 개시내용 내에 포함된다. 언급된 범위가 한계 중 하나 또는 둘 모두를 포함하는 경우, 문맥이 달리 명확하게 지시하지 않는 한, 포함된 한계 중 하나 또는 둘 모두를 제외한 범위가 또한 본 개시내용에 포함된다.

[0016] 본원에서 사용되는 용어는 단지 특정 실시양태를 설명하기 위한 것이며, 임의의 실시양태로 제한하려는 것이 아니다. 본원에서 사용되는 바와 같이, 단수 형태("a" "an" 및 "the")는 문맥상 명백하게 다르게 나타내지 않는 한, 복수 형태를 포함하는 것으로 의도된다. 본 명세서에서 사용될 때 용어 "포함하다" 및/또는 "포함하는"은 언급된 특징, 정수, 단계, 작동, 요소 및/또는 성분의 존재를 명시하지만, 하나 이상의 다른 특징, 정수, 단계, 작동, 요소, 성분 및/또는 이들의 군의 존재 또는 추가를 배제하지는 않는다. 본원에서 사용되는 바와 같이, 용어 "및/또는"은 하나 이상의 나열된 관련 항목의 임의의 및 모든 조합을 포함한다.

[0017] 구체적으로 언급되거나 문맥상 명백하지 않은 한, 본원에서 사용되는 바와 같이, 수치 또는 수치 범위와 관련하여 "약"이라는 용어는 언급된 수치 및 이의 ± 10%, 또는 범위에 대해 나열된 값의 나열된 하한의 10% 미만 및 나열된 상한의 10% 초과를 의미하는 것으로 이해된다.

[0018] 구체적으로 언급되지 않는 한, 본원에서 사용되는 용어 "핵산"은 단일 가닥 분자뿐만 아니라 이중 가닥 또는 삼중 가닥 핵산도 포함한다. 이중 또는 삼중 가닥 핵산에서, 핵산 가닥은 동시에 연장될 필요는 없다(즉, 이중 가닥 핵산은 두 가닥의 전체 길이를 따라 이중 가닥일 필요는 없다). 제공된 경우, 핵산 서열은 달리 언급되지 않는 한, 5'에서 3' 방향으로 나열된다. 본원에서 설명되는 방법은 단리된 핵산의 생성을 제공한다. 본원에서 설명되는 방법은 단리 및 정제된 핵산의 생성을 추가로 제공한다. 본원에서 언급되는 바와 같이, "핵산"은 적어도 5, 10, 20, 30, 40, 50, 60, 70, 80, 90, 100, 125, 150, 175, 200, 225, 250, 275, 300, 325, 350, 375, 400, 425, 450, 475, 500, 600, 700, 800, 900, 1000, 1100, 1200, 1300, 1400, 1500, 1600, 1700, 1800,

1900, 2000개 또는 그 초과의 염기 길이를 포함할 수 있다. 더욱이, 임의의 수의 폴리펩티드 세그먼트 코딩 뉴클레오티드 서열, 예를 들어 비-리보솜 펩티드(NRP)를 코딩하는 서열, 비-리보솜 펩티드 합성효소(NRPS) 모듈 및 합성 변이체, 다른 모듈 단백질, 예를 들어 항체의 폴리펩티드 세그먼트, 다른 단백질 패밀리로부터의 폴리펩티드 세그먼트를 코딩하는 서열, 예를 들어, 비-코딩 DNA 또는 RNA, 예를 들어 조절 서열, 예를 들어 프로모터, 전사 인자, 인핸서, siRNA, shRNA, RNAi, miRNA, 마이크로RNA로부터 유래된 작은 핵소체 RNA, 또는 임의의 관심있는 기능적 또는 구조적 DNA 또는 RNA 단위의 합성 방법이 본원에서 제공된다. 다음은 폴리뉴클레오티드의 비제한적인 예이다: 유전자 또는 유전자 단편의 코딩 또는 비코딩 영역, 유전자 사이의 DNA, 연결 분석으로부터 정의된 유전자좌, 엑손, 인트론, 메신저 RNA(mRNA), 전달 RNA, 리보솜 RNA, 짧은 간섭 RNA(siRNA), 짧은 헤어핀 RNA(shRNA), 마이크로-RNA(miRNA), 작은 핵소체 RNA, 리보자임, 일반적으로 메신저 RNA(mRNA)의 역전사에 의해 또는 증폭에 의해 수득되는 mRNA의 DNA 표시인 상보성 DNA(cDNA); 합성에 의해 또는 증폭에 의해 생산되는 DNA 분자, 게놈 DNA, 재조합 폴리뉴클레오티드, 분지형 폴리뉴클레오티드, 플라스미드, 벡터, 임의의 서열의 단리된 DNA, 임의의 서열의 단리된 RNA, 핵산 프로브, 및 프라이머. 본원에서 언급되는 유전자 또는 유전자 단편을 코딩하는 cDNA는 게놈 등가 서열에 개재하는 인트론 서열이 없는 엑손 서열을 코딩하는 적어도 하나의 영역을 포함할 수 있다.

[0019] **GPCR 라이브러리**

[0020] G 단백질-커플링된 수용체(GPCR) 결합 도메인을 포함하는 스캐폴드를 코딩하는 핵산을 포함하는 GPCR 결합 라이브러리와 관련된 방법 및 조성물이 본원에서 제공된다. 본원에서 설명되는 스캐폴드는 GPCR 결합 도메인을 안정적으로 지원할 수 있다. GPCR 결합 도메인은 GPCR 리간드 및 GPCR의 표면 상호작용에 기초하여 설계될 수 있다. 본원에서 설명되는 라이브러리는 적어도 이상의 미리 결정된 참조 핵산 서열의 미리 결정된 변이체를 각각 코딩하는 핵산을 포함하는 변이체 라이브러리를 제공하도록 추가로 변이될 수 있다. 핵산 라이브러리가 번역시 생성될 수 있는 단백질 라이브러리가 본원에서 추가로 설명된다. 일부 경우에, 본원에서 설명되는 핵산 라이브러리는 세포 라이브러리를 생성되도록 세포 내로 전달된다. 또한, 본원에서 설명되는 방법을 사용하여 합성되는 라이브러리에 하류 적용이 본원에서 제공된다. 하류 적용은 개선된 생물학적 관련 기능, 예를 들어 개선된 안정성, 친화도, 결합, 기능적 활성을 갖는, 및 GPCR 신호전달과 관련된 질환 상태의 치료 또는 예방을 위한 변이체 핵산 또는 단백질 서열의 확인을 포함한다.

[0021] *스캐폴드 라이브러리*

[0022] 스캐폴드를 코딩하는 핵산을 포함하는 라이브러리가 본원에서 제공되며, 여기서 GPCR 결합 도메인에 대한 서열이 스캐폴드에 배치된다. 본원에서 설명되는 스캐폴드는 비변형 스캐폴드에 비해, 스캐폴드에 삽입될 때 다양한 GPCR 결합 도메인 코딩 서열에 대한 개선된 안정성을 허용한다. 예시적인 스캐폴드는 단백질, 펩티드, 면역글로불린, 이들의 유도체, 또는 이들의 조합물을 포함하지만, 이로 제한되지 않는다. 일부 경우에, 스캐폴드는 면역글로불린이다. 본원에서 설명되는 스캐폴드는 개선된 기능적 활성, 구조적 안정성, 발현, 특이성 또는 이들의 조합을 포함한다. 일부 경우에, 스캐폴드는 GPCR 결합 도메인을 지원하기 위한 긴 영역을 포함한다.

[0023] 스캐폴드를 코딩하는 핵산을 포함하는 라이브러리가 본원에서 제공되며, 여기서 스캐폴드는 면역글로불린이다. 일부 경우에, 면역글로불린은 항체이다. 본원에서 사용되는 바와 같이, 용어 "항체"는 전형적인 항체 분자의 특징적인 2개의 아암이 존재하는 Y자 형태를 갖는 단백질 및 항원에 특이적으로 결합하는 능력을 보유하는 항체의 하나 이상의 단편을 포함하는 것으로 이해될 것이다. 예시적인 항체는 모노클로날 항체, 폴리클로날 항체, 이중특이적 항체, 다중 특이적 항체, 그라프팅된 항체, 인간 항체, 인간화 항체, 합성 항체, 키메라 항체, 낙타화 항체, 단일쇄 Fvs(scFv)(단일쇄 Fab 및 scFab를 포함하는 1가 분자를 형성하도록 VL 및 VH 영역이 쌍을 이루는 단일 단백질 사슬로서 VL 및 VH가 만들어지도록 할 수 있는 합성 또는 천연 링커에 의해 재조합 방법을 사용하여 VL 및 VH가 연결합 단편 포함), 단일쇄 항체, Fab 단편(VL, VH, CL 및 CH1 도메인을 포함하는 1가 단편 포함), F(ab')2 단편(힌지 영역에서 디술파이드 다리에 의해 연결된 2개의 Fab 단편을 포함하는 2가 단편 포함), Fd 단편(VH 및 CH1 단편을 포함하는 단편 포함), Fv 단편(항체의 단일 아암의 VL 및 VH 도메인을 포함하는 단편 포함), 단일 도메인 항체(dAb 또는 sdAb)(VH 도메인을 포함하는 단편 포함), 단리된 상보성 결정 영역(CDR), 디아바디(서로 결합된 2가 이량체, 예를 들어 2개의 VL 및 VH 도메인을 포함하고 2개의 상이한 항원을 인식하는 단편 포함), 단일 단량체 가변 도메인만을 포함하는 단편, 디술파이드 연결된 Fvs(sdFv), 인트라바디, 항-이디오타입(항-Id) 항체, 또는 이들의 ab 항원 결합 단편을 포함하지만, 이로 제한되지 않는다. 일부 경우에, 본원에서 개시되는 라이브러리는 스캐폴드를 코딩하는 핵산을 포함하고, 여기서 스캐폴드는 완전한 항원 인식 및 항원 결합 부위를 함유하는 최소 항체 단편으로 이루어진 Fv 항체를 포함하는 Fv 항체이다. 일부 실시양태에서, Fv 항체는 단단한 비공유 회합에서 하나의 중쇄 및 하나의 경쇄 가변 도메인의 이량체로 이루어지

고, 각각의 가변 도메인의 3개의 초가변 영역은 VH-VL 이량체의 표면 상에 항원 결합 부위를 규정하기 위해 상호작용한다. 일부 실시양태에서, 6개의 초가변 영역은 항체에게 항원 결합 특이성을 부여한다. 일부 실시양태에서, 단일 가변 도메인(또는 VHH 항체 또는 나노바디와 같이 하나의 중쇄 가변 도메인을 포함하는 낙타류 동물로부터 단리된 단일 도메인 항체를 비롯하여 항원에 특이적인 3개의 초가변 영역만을 포함하는 Fv의 절반)은 항원을 인식하고 결합하는 능력을 갖는다. 일부 경우에, 본원에서 개시되는 라이브러리는 스캐폴드를 코딩하는 핵산을 포함하고, 여기서 스캐폴드는 VH, VL, 또는 VH과 VL 도메인 둘 모두를 포함하는 항체 단편을 포함하는 단일쇄 Fv 또는 scFv이고, 여기서 두 도메인은 모두 단일 폴리펩티드 사슬에 존재한다. 일부 실시양태에서, Fv 폴리펩티드는 scFv가 항원 결합을 위해 요구되는 구조를 형성하도록 하는, VH와 VL 도메인 사이의 폴리펩티드 링커를 추가로 포함한다. 일부 경우에, scFv는 Fc 단편에 연결되거나 또는 VHH는 Fc 단편(미니바디 포함)에 연결된다. 일부 경우에, 항체는 면역글로불린 분자 및 면역글로불린 분자의 면역학적 활성 단편, 예를 들어 항원 결합 부위를 함유하는 분자를 포함한다. 면역글로불린 분자는 임의의 유형(예를 들어, IgG, IgE, IgM, IgD, IgA 및 IgY), 클래스(예를 들어, IgG 1, IgG 2, IgG 3, IgG 4, IgA 1 및 IgA 2) 또는 서브클래스이다.

[0024] 면역글로불린인 스캐폴드를 코딩하는 핵산을 포함하는 본원에서 설명되는 라이브러리는 면역글로불린의 적어도 하나의 영역에서의 변이를 포함한다. 변이를 위한 항체의 예시적인 영역은 상보성 결정 영역(CDR), 가변 도메인 또는 불변 도메인을 포함하지만, 이로 제한되지 않는다. 일부 경우에, CDR은 CDR1, CDR2 또는 CDR3이다. 일부 경우에, CDR은 CDR-H1, CDR-H2 및 CDR-H3을 포함하지만 이로 제한되지 않는 중쇄 도메인이다. 일부 경우에, CDR은 CDR-L1, CDR-L2 및 CDR-L3을 포함하지만 이로 제한되지 않는 경쇄 도메인이다. 일부 경우에, 가변 도메인은 경쇄 가변 도메인(VL) 또는 중쇄 가변 도메인(VH)이다. 일부 경우에, VL 도메인은 카파 또는 람다 사슬을 포함한다. 일부 경우에, 불변 도메인은 경쇄 불변 도메인(CL) 또는 중쇄 불변 도메인(CH)이다.

[0025] 본원에서 설명되는 방법은 스캐폴드를 코딩하는 핵산을 포함하는 라이브러리의 합성을 제공하며, 여기서 각각의 핵산은 적어도 하나의 미리 결정된 참조 핵산 서열의 미리 결정된 변이체를 코딩한다. 일부 경우에, 미리 결정된 참조 서열은 단백질을 코딩하는 핵산 서열이고, 변이체 라이브러리는 합성된 핵산에 의해 코딩되는 후속 단백질에서 단일 잔기의 복수의 상이한 변이체가 표준 번역 과정에 의해 생성되도록 하기 위해 적어도 하나의 단일 코돈의 변이를 코딩하는 서열을 포함한다. 일부 경우에, 스캐폴드 라이브러리는 다수의 위치에서 변이를 집합적으로 코딩하는 변이된 핵산을 포함한다. 일부 경우에, 변이체 라이브러리는 CDR-H1, CDR-H2, CDR-H3, CDR-L1, CDR-L2, CDR-L3, VL 또는 VH 도메인의 적어도 단일 코돈의 변이를 코딩하는 서열을 포함한다. 일부 경우에, 변이체 라이브러리는 CDR-H1, CDR-H2, CDR-H3, CDR-L1, CDR-L2, CDR-L3, VL 또는 VH 도메인의 다중 코돈의 변이를 코딩하는 서열을 포함한다. 일부 경우에, 변이체 라이브러리는 프레임워크 요소 1(FW1), 프레임워크 요소 2(FW2), 프레임워크 요소 3(FW3) 또는 프레임워크 요소 4(FW4)의 다중 코돈의 변이를 코딩하는 서열을 포함한다. 변이를 위한 예시적인 코돈의 수는 적어도 또는 약 1, 5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60, 65, 70, 75, 80, 85, 90, 95, 100, 125, 150, 175, 225, 250, 275, 300개의 코돈, 또는 300개 초과의 코돈을 포함하지만, 이로 제한되지 않는다.

[0026] 일부 경우에, 변이를 위한 면역글로불린의 적어도 하나의 영역은 중쇄 V-유전자 패밀리, 중쇄 D-유전자 패밀리, 중쇄 J-유전자 패밀리, 경쇄 V-유전자 패밀리 또는 경쇄 J-유전자 패밀리로부터 유래된다. 일부 경우에, 경쇄 V-유전자 패밀리는 면역글로불린 카파(IGK) 유전자 또는 면역글로불린 람다(IGL)를 포함한다. 예시적인 유전자는 IGHV1-18, IGHV1-69, IGHV1-8, IGHV3-21, IGHV3-23, IGHV3-30/33rn, IGHV3-28, IGHV1-69, IGHV3-74, IGHV4-39, IGHV4-59/61, IGKV1-39, IGKV1-9, IGKV2-28, IGKV3-11, IGKV3-15, IGKV3-20, IGKV4-1, IGLV1-51, 및 IGLV2-14를 포함하지만, 이로 제한되지 않는다.

[0027] 면역글로불린 스캐폴드를 코딩하는 핵산을 포함하는 라이브러리가 제공되며, 여기서 라이브러리는 다양한 수의 단편으로 합성된다. 일부 경우에, 단편은 CDR-H1, CDR-H2, CDR-H3, CDR-L1, CDR-L2, CDR-L3, VL 또는 VH 도메인을 포함한다. 일부 경우에, 단편은 프레임워크 요소 1(FW1), 프레임워크 요소 2(FW2), 프레임워크 요소 3(FW3) 또는 프레임워크 요소 4(FW4)를 포함한다. 일부 경우에, 스캐폴드 라이브러리는 적어도 또는 약 2개의 단편, 3개의 단편, 4개의 단편, 5개의 단편 또는 5개 초과의 단편으로 합성된다. 각각의 핵산 단편의 길이 또는 합성된 핵산의 평균 길이는 적어도 또는 약 50, 75, 100, 125, 150, 175, 200, 225, 250, 275, 300, 325, 350, 375, 400, 425, 450, 475, 500, 525, 550, 575, 600개, 또는 600개 초과의 염기쌍일 수 있다. 일부 경우에, 길이는 약 50 내지 600, 75 내지 575, 100 내지 550, 125 내지 525, 150 내지 500, 175 내지 475, 200 내지 450, 225 내지 425, 250 내지 400, 275 내지 375 또는 300 내지 350개의 염기쌍이다.

[0028] 본원에서 설명되는 면역글로불린 스캐폴드를 코딩하는 핵산을 포함하는 라이브러리는 번역시 다양한 길이의 아미노산을 포함한다. 일부 경우에, 합성된 각각의 아미노산 단편의 길이 또는 아미노산의 평균 길이는 적어도 또

는 약 15, 20, 25, 30, 35, 40, 45, 50, 55, 60, 65, 70, 75, 80, 85, 90, 95, 100, 105, 110, 115, 120, 125, 130, 135, 140, 145, 150개 또는 150개 초과의 아미노산일 수 있다. 일부 경우에, 아미노산의 길이는 약 15 내지 150, 20 내지 145, 25 내지 140, 30 내지 135, 35 내지 130, 40 내지 125, 45 내지 120, 50 내지 115, 55 내지 110, 60 내지 110, 65 내지 105, 70 내지 100 또는 75 내지 95개의 아미노산이다. 일부 경우에, 아미노산의 길이는 약 22개의 아미노산 내지 약 75개의 아미노산이다. 일부 경우에서, 면역글로불린 스캐폴드는 적어도 또는 약 100, 200, 300, 400, 500, 600, 700, 800, 900, 1000, 2000, 3000, 4000, 5000개 또는 5000개 초과의 아미노산을 포함한다.

[0029] 변이를 위한 면역글로불린의 적어도 하나의 영역에 대한 다수의 변이체 서열은 본원에서 설명되는 바와 같은 방법을 사용하여 디 노보(de novo) 합성된다. 일부 경우에, 다수의 변이체 서열은 CDR-H1, CDR-H2, CDR-H3, CDR-L1, CDR-L2, CDR-L3, VL, VH 또는 이들의 조합에 대해 디 노보 합성된다. 일부 경우에, 프레임워크 요소 1(FW1), 프레임워크 요소 2(FW2), 프레임워크 요소 3(FW3) 또는 프레임워크 요소 4(FW4)에 대해 다수의 변이체 서열이 디 노보 합성된다. 변이체 서열의 수는 적어도 또는 약 5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60, 65, 70, 75, 80, 85, 90, 95, 100, 125, 150, 175, 200, 225, 250, 275, 300, 325, 350, 375, 400, 425, 450, 475, 500개 또는 500개 초과의 서열일 수 있다. 일부 경우에, 변이체 서열의 수는 적어도 또는 약 500, 600, 700, 800, 900, 1000, 2000, 3000, 4000, 5000, 6000, 7000, 8000개 또는 8000개 초과의 서열이다. 일부 경우에, 변이체 서열의 수는 약 10 내지 500, 25 내지 475, 50 내지 450, 75 내지 425, 100 내지 400, 125 내지 375, 150 내지 350, 175 내지 325, 200 내지 300, 225 내지 375, 250 내지 350, 또는 275 내지 325개의 서열이다.

[0030] 일부 경우에, 면역글로불린의 적어도 하나의 영역에 대한 변이체 서열은 길이 또는 서열이 다양하다. 일부 경우에, 디 노보 합성되는 적어도 하나의 영역은 CDR-H1, CDR-H2, CDR-H3, CDR-L1, CDR-L2, CDR-L3, VL, VH 또는 이들의 조합에 대한 것이다. 일부 경우에, 디 노보 합성되는 적어도 하나의 영역은 프레임워크 요소 1(FW1), 프레임워크 요소 2(FW2), 프레임워크 요소 3(FW3) 또는 프레임워크 요소 4(FW4)에 대한 것이다. 일부 경우에, 변이체 서열은 야생형과 비교하여 적어도 또는 약 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 15, 20, 25, 30, 35, 40, 45, 50개 또는 50개 초과의 변이체 뉴클레오티드 또는 아미노산을 포함한다. 일부 경우에, 변이체 서열은 야생형과 비교하여 적어도 또는 약 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 15, 20, 25, 30, 35, 40, 45, 또는 50개의 추가의 뉴클레오티드 또는 아미노산을 포함한다. 일부 경우에, 변이체 서열은 야생형과 비교하여 적어도 또는 약 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 15, 20, 25, 30, 35, 40, 45 또는 50개 더 적은 뉴클레오티드 또는 아미노산을 포함한다. 일부 경우에, 라이브러리는 적어도 또는 약 10^1, 10^2, 10^3, 10^4, 10^5, 10^6, 10^7, 10^8, 10^9, 10^{10}개 또는 10^{10}개 초과의 변이체를 포함한다.

[0031] 스캐폴드 라이브러리의 합성 후, 스캐폴드 라이브러리는 스크리닝 및 분석을 위해 사용될 수 있다. 예를 들어, 스캐폴드 라이브러리는 라이브러리 디스플레이 가능성 및 패닝에 대해 분석된다. 일부 경우에, 선택 가능한 태그를 사용하여 디스플레이 가능성이 분석된다. 예시적인 태그는 방사성 표지, 형광 표지, 효소, 화학발광 태그, 비색 태그, 친화도 태그 또는 관련 기술 분야에 공지된 다른 표지 또는 태그를 포함하지만, 이로 제한되지 않는다. 일부 경우에, 태그는 히스티딘, 폴리히스티딘, myc, 헤마글루티닌(HA) 또는 FLAG이다. 일부 경우에, 스캐폴드 라이브러리는 단일 분자 실시간(SMRT) 시퀀싱, 폴로니(Polony) 시퀀싱, 라이게이션에 의한 시퀀싱, 가역적 종결인자 시퀀싱, 양성자 검출 시퀀싱, 이온 반도체 시퀀싱, 나노포어 시퀀싱, 전자 시퀀싱, 파이로시퀀싱, 막삼-길버트(Maxam-Gilbert) 시퀀싱, 사슬 종결(예를 들어, 생거(Sanger)) 시퀀싱, +S 시퀀싱 또는 합성에 의한 시퀀싱을 포함하지만 이로 제한되지 않는 다양한 방법을 사용한 시퀀싱에 의해 분석된다.

[0032] 일부 경우에, 스캐폴드 라이브러리는 기능적 활성, 구조적 안정성(예를 들어, 열 안정성 또는 pH 안정성), 발현, 특이성 또는 이들의 조합에 대해 검정된다. 일부 경우에, 스캐폴드 라이브러리는 폴딩할 수 있는 스캐폴드에 대해 검정된다. 일부 경우에, 항체의 영역은 기능적 활성, 구조적 안정성, 발현, 특이성, 폴딩 또는 이들의 조합에 대해 검정된다. 예를 들어, VH 영역 또는 VL 영역은 기능적 활성, 구조적 안정성, 발현, 특이성, 폴딩 또는 이들의 조합에 대해 검정된다.

[0033] *GPCR 라이브러리*

[0034] G 단백질-커플링된 수용체(GPCR) 결합 도메인을 포함하는 스캐폴드를 코딩하는 핵산을 포함하는 GPCR 결합 라이브러리가 본원에서 제공된다. 일부 경우에, 스캐폴드는 면역글로불린이다. 일부 경우에, GPCR 결합 도메인에 대한 서열을 포함하는 스캐폴드는 GPCR 결합 도메인과 GPCR 사이의 상호작용에 의해 결정된다.

[0035] GPCR 결합 도메인을 포함하는 스캐폴드를 코딩하는 핵산을 포함하는 라이브러리가 본원에서 제공되며, 여기서

GPCR 결합 도메인은 GPCR 상의 표면 상호작용에 기초하여 설계된다. 예시적인 GPCR이 표 1에 제시되어 있다. 일부 경우에, GPCR 결합 도메인은 GPCR의 아미노- 또는 카르복시-말단과 상호작용한다. 일부 경우에, GPCR 결합 도메인은 경막 도메인 1(TM1), 경막 도메인 2(TM2), 경막 도메인 3(TM3), 경막 도메인 4(TM4), 경막 도메인 5(TM5), 경막 도메인 6(TM6) 및 경막 도메인 7(TM7)을 포함하지만 이로 제한되지 않는 적어도 하나의 경막 도메인과 상호작용한다. 일부 경우에, GPCR 결합 도메인은 GPCR의 세포내 표면과 상호작용한다. 예를 들어, GPCR 결합 도메인은 세포내 루프 1(ICL1), 세포내 루프 2(ICL2) 및 세포내 루프 3(ICL3)을 포함하지만 이로 제한되지 않는 적어도 하나의 세포내 루프와 상호작용한다. 일부 경우에, GPCR 결합 도메인은 GPCR의 세포외 표면과 상호작용한다. 도 1을 참조한다. 예를 들어, GPCR 결합 도메인은 GPCR의 적어도 하나의 세포외 도메인(ECD) 또는 세포외 루프(ECL)와 상호작용한다. 세포외 루프는 세포외 루프 1(ECL1), 세포외 루프 2(ECL2) 및 세포외 루프 3(ECL3)을 포함하지만 이로 제한되지 않는다.

[0036] 표 1. GPCR 목록

GPCR	유전자 명칭	수탁 번호
5-히드록시트립타민 수용체 1A	HTR1A	P08908
5-히드록시트립타민 수용체 1B	HTR1B	P28222
5-히드록시트립타민 수용체 1D	HTR1D	P28221
5-히드록시트립타민 수용체 1E	HTR1E	P28566
5-히드록시트립타민 수용체 1F	HTR1F	P30939
5-히드록시트립타민 수용체 2A	HTR2A	P28223
5-히드록시트립타민 수용체 2B	HTR2B	P41595
5-히드록시트립타민 수용체 2C	HTR2C	P28335
5-히드록시트립타민 수용체 4	HTR4	Q13639
5-히드록시트립타민 수용체 5A	HTR5A	P47898
5-히드록시트립타민 수용체 6	HTR6	P50406
5-히드록시트립타민 수용체	HTR7	P34969
아데노신 수용체 A1	ADORA1	P30542
아데노신 수용체 A2a	ADORA2A	P29274
아데노신 수용체 A2b	ADORA2B	P29275
아데노신 A3 수용체	ADORA3	P33765
무스카린성 아세틸콜린 수용체 M1	CHRM1	P11229
무스카린성 아세틸콜린 수용체 M2	CHRM2	P08172
무스카린성 아세틸콜린 수용체 M3	CHRM3	P20309
무스카린성 아세틸콜린 수용체 M4	CHRM4	P08173
무스카린성 아세틸콜린 수용체 M5	CHRM5	P08912
부신피질자극 호르몬 수용체	MC2R	Q01718
α-1A 아드레날린성 수용체	ADRA1A	P35348
α-1B 아드레날린성 수용체	ADRA1B	P35368
α-1D 아드레날린성 수용체	ADRA1D	P25100
α-2A 아드레날린성 수용체	ADRA2A	P08913
α-2B 아드레날린성 수용체	ADRA2B	P18089
α-2C 아드레날린성 수용체	ADRA2C	P18825
β-1 아드레날린성 수용체	ADRB1	P08588
β-2 아드레날린성 수용체	ADRB2	P07550
β-3 아드레날린성 수용체	ADRB3	P13945
타입-1 안지오텐신 II 수용체	AGTR1	P30556
더피(Duffy) 항원/케모카인 수용체	DARC	Q16570
엔도텔린-1 수용체	EDNRA	P25101
엔도텔린 B 수용체	EDNRB	P24530
N-포르밀 펩티드 수용체 2	FPR2	P25090
난포 자극 호르몬 수용체	FSHR	P23945
갈라닌 수용체 타입 1	GALR1	P47211
갈라닌 수용체 타입 2	GALR2	O43603
갈라닌 수용체 타입 3	GALR3	O60755
가스트린/콜레시스토키닌 타입 B 수용체	CCKBR	P32239
고나도트로핀 방출 호르몬 수용체	GNRHR	P30968
추정 고나도트로핀 방출 호르몬 II 수용체	GNRHR2	Q96P88

[0037]

G-단백질 커플링된 에스트로겐 수용체 1	GPER	Q99527
우라실 뉴클레오티드/시스테이닐 류코트리엔 수용체	GPR17	Q13304
추정 G-단백질 커플링된 수용체 44	GPR44	Q9Y5Y4
G-단백질 커플링된 수용체 55	GPR55	Q9Y2T6
가스트린-방출 펩티드 수용체	GRPR	P30550
히스타민 H1 수용체	HRH1	P35367
히스타민 H2 수용체	HRH2	P25021
히스타민 H3 수용체	HRH3	Q9Y5N1
히스타민 H4 수용체	HRH4	Q9H3N8
KiSS-1 수용체	KISS1R	Q969F8
리소포스파티드산 수용체 1	LPAR1	Q92633
리소포스파티드산 수용체 2	LPAR2	Q9HBW0
리소포스파티드산 수용체 3	LPAR3	Q9UBY5
리소포스파티드산 수용체 4	LPAR4	Q99677
리소포스파티드산 수용체 6	LPAR6	P43657
루트로핀-융모성 성선 자극 호르몬 수용체	LHCGR	P22888
류코트리엔 B4 수용체 1	LTB4R	Q15722
류코트리엔 B4 수용체 2	LTB4R2	Q9NPC1
멜라노코르틴 수용체 3	MC3R	P41968
멜라노코르틴 수용체 4	MC4R	P32245
멜라노코르틴 수용체 5	MC5R	P33032
후각 수용체 10G9	OR10G9	Q8NGN4
후각 수용체 10H1	OR10H1	Q9Y4A9
후각 수용체 10H2	OR10H2	O60403
후각 수용체 10H3	OR10H3	O60404
후각 수용체 10H4	OR10H4	Q8NGA5
후각 수용체 10H5	OR10H5	Q8NGA6
후각 수용체 10J1	OR10J1	P30954
후각 수용체 10J3	OR10J3	Q5JRS4
후각 수용체 10J5	OR10J5	Q8NHC4
후각 수용체 10K1	OR10K1	Q8NGX5
후각 수용체 10K2	OR10K2	Q6IF99
후각 수용체 10P1	OR10P1	Q8NGE3
후각 수용체 10Q1	OR10Q1	Q8NGQ4
후각 수용체 10R2	OR10R2	Q8NGX6
후각 수용체 10S1	OR10S1	Q8NGN2
후각 수용체 10T2	OR10T2	Q8NGX3
후각 수용체 10V1	OR10V1	Q8NGI7
후각 수용체 10W1	OR10W1	Q8NGF6
후각 수용체 14A2	OR14A2	Q96R54
후각 수용체 14C36	OR14C36	Q8NHC7
후각 수용체 14I1	OR14I1	A6ND48
후각 수용체 14J1	OR14J1	Q9UGF5
후각 수용체 14K1	OR14K1	Q8NGZ2
후각 수용체 2A12	OR2A12	Q8NGT7

[0038]

[0039]

후각 수용체 2A14	OR2A14	Q96R47
후각 수용체 2A25	OR2A25	A4D2G3
후각 수용체 2AG1	OR2AG1	Q9H205
후각 수용체 2AG2	OR2AG2	A6NM03
후각 수용체 2AJ1	OR2AJ1	Q8NGZ0
후각 수용체 2AK2	OR2AK2	Q8NG84
후각 수용체 2AP1	OR2AP1	Q8NGE2
후각 수용체 2AT4	OR2AT4	A6NND4
후각 수용체 51I2	OR51I2	Q9H344
후각 수용체 51J1	OR51J1	Q9H342
후각 수용체 51L1	OR51L1	Q8NGJ5
후각 수용체 51M1	OR51M1	Q9H341
후각 수용체 51Q1	OR51Q1	Q8NH59
후각 수용체 51S1	OR51S1	Q8NGJ8
후각 수용체 51T1	OR51T1	Q8NGJ9
후각 수용체 51V1	OR51V1	Q9H2C8
후각 수용체 52A1	OR52A1	Q9UKL2
후각 수용체 52A5	OR52A5	Q9H2C5
후각 수용체 52B2	OR52B2	Q96RD2
후각 수용체 52B4	OR52B4	Q8NGK2
후각 수용체 52B6	OR52B6	Q8NGF0
후각 수용체 52D1	OR52D1	Q9H346
후각 수용체 52E2	OR52E2	Q8NGJ4
후각 수용체 52E4	OR52E4	Q8NGH9
후각 수용체 52E5	OR52E5	Q8NH55
후각 수용체 52E6	OR52E6	Q96RD3
후각 수용체 52E8	OR52E8	Q6IFG1
후각 수용체 52H1	OR52H1	Q8NGJ2
후각 수용체 52I1	OR52I1	Q8NGK6
후각 수용체 52I2	OR52I2	Q8NH67
후각 수용체 52K1	OR52K1	Q8NGK4
후각 수용체 52K2	OR52K2	Q8NGK3
후각 수용체 52L1	OR52L1	Q8NGH7
후각 수용체 52M1	OR52M1	Q8NGK5
후각 수용체 52N1	OR52N1	Q8NH53
후각 수용체 52N2	OR52N2	Q8NGI0
후각 수용체 52N4	OR52N4	Q8NGI2
후각 수용체 52N5	OR52N5	Q8NH56
후각 수용체 52R1	OR52R1	Q8NGF1
후각 수용체 52W1	OR52W1	Q6IF63
적색 민감성 옵신	OPN1LW	P04000
시각 색소-유사 수용체 페롭신	RRH	O14718
후각 수용체 1A1	OR1A1	Q9P1Q5
후각 수용체 1A2	OR1A2	Q9Y585
후각 수용체 1B1	OR1B1	Q8NGR6
후각 수용체 1C1	OR1C1	Q15619

[0040]

후각 수용체 1D2	OR1D2	P34982
후각 수용체 1F1	OR1F1	O43749
후각 수용체 1F12	OR1F12	Q8NHA8
후각 수용체 1G1	OR1G1	P47890
후각 수용체 1I1	OR1I1	O60431
후각 수용체 1J1	OR1J1	Q8NGS3
후각 수용체 1J2	OR1J2	Q8NGS2
후각 수용체 1J4	OR1J4	Q8NGS1
후각 수용체 1K1	OR1K1	Q8NGR3
후각 수용체 1L1	OR1L1	Q8NH94
후각 수용체 1L3	OR1L3	Q8NH93
후각 수용체 1L4	OR1L4	Q8NGR5
후각 수용체 1L6	OR1L6	Q8NGR2
후각 수용체 1L8	OR1L8	Q8NGR8
후각 수용체 1M1	OR1M1	Q8NGA1
후각 수용체 1N1	OR1N1	Q8NGS0
후각 수용체 1N2	OR1N2	Q8NGR9
후각 수용체 1Q1	OR1Q1	Q15612
후각 수용체 1S1	OR1S1	Q8NH92
후각 수용체 1S2	OR1S2	Q8NGQ3
후각 수용체 2A2	OR2A2	Q6IF42
후각 수용체 2A4	OR2A4	O95047
후각 수용체 2B2	OR2B2	Q9GZK3
추정 후각 수용체 2B3	OR2B3	O76000
후각 수용체 2B6	OR2B6	P58173
추정 후각 수용체 2B8	OR2B8P	P59922
후각 수용체 2T5	OR2T5	Q6IEZ7
후각 수용체 2T6	OR2T6	Q8NHC8
후각 수용체 2T8	OR2T8	A6NH00
후각 수용체 2V1	OR2V1	Q8NHB1
후각 수용체 2V2	OR2V2	Q96R30
후각 수용체 2W1	OR2W1	Q9Y3N9
후각 수용체 2W3	OR2W3	Q7Z3T1
후각 수용체 2Y1	OR2Y1	Q8NGV0
후각 수용체 2Z1	OR2Z1	Q8NG97
후각 수용체 3A1	OR3A1	P47881
후각 수용체 3A2	OR3A2	P47893
후각 수용체 3A3	OR3A3	P47888
후각 수용체 3A4	OR3A4	P47883
추정 후각 수용체 4A4	OR4A4P	Q8NGN8
후각 수용체 4A5	OR4A5	Q8NH83
후각 수용체 4A8	OR4A8P	P0C604
후각 수용체 4B1	OR4B1	Q8NGF8
후각 수용체 4C3	OR4C3	Q8NH37
후각 수용체 4C5	OR4C5	Q8NGB2
후각 수용체 4C6	OR4C6	Q8NH72

[0041]

후각 수용체 4C11	OR4C11	Q6IEV9
후각 수용체 4C12	OR4C12	Q96R67
후각 수용체 4C13	OR4C13	Q8NGP0
후각 수용체 4C15	OR4C15	Q8NGM1
후각 수용체 4C16	OR4C16	Q8NGL9
후각 수용체 4D1	OR4D1	Q15615
후각 수용체 4D2	OR4D2	P58180
후각 수용체 4D5	OR4D5	Q8NGN0
후각 수용체 4D6	OR4D6	Q8NGJ1
후각 수용체 4D9	OR4D9	Q8NGE8
후각 수용체 4D10	OR4D10	Q8NGI6
후각 수용체 4D11	OR4D11	Q8NGI4
후각 수용체 5B17	OR5B17	Q8NGF7
후각 수용체 5B21	OR5B21	A6NL26
후각 수용체 5C1	OR5C1	Q8NGR4
후각 수용체 5D13	OR5D13	Q8NGL4
후각 수용체 5D14	OR5D14	Q8NGL3
후각 수용체 5D16	OR5D16	Q8NGK9
후각 수용체 5D18	OR5D18	Q8NGL1
후각 수용체 5F1	OR5F1	O95221
후각 수용체 5H1	OR5H1	A6NKK0
후각 수용체 5H2	OR5H2	Q8NGV7
후각 수용체 5H6	OR5H6	Q8NGV6
후각 수용체 5I1	OR5I1	Q13606
후각 수용체 5J2	OR5J2	Q8NH18
후각 수용체 5K1	OR5K1	Q8NHB7
후각 수용체 5K2	OR5K2	Q8NHB8
후각 수용체 5K3	OR5K3	A6NET4
후각 수용체 5K4	OR5K4	A6NMS3
후각 수용체 5L1	OR5L1	Q8NGL2
후각 수용체 5L2	OR5L2	Q8NGL0
후각 수용체 5M1	OR5M1	Q8NGP8
후각 수용체 5M3	OR5M3	Q8NGP4
후각 수용체 5M8	OR5M8	Q8NGP6
후각 수용체 5M9	OR5M9	Q8NGP3
후각 수용체 5M10	OR5M10	Q6IEU7
후각 수용체 5M11	OR5M11	Q96RB7
후각 수용체 5P2	OR5P2	Q8WZ92
후각 수용체 5P3	OR5P3	Q8WZ94
후각 수용체 5R1	OR5R1	Q8NH85
후각 수용체 5T1	OR5T1	Q8NG75
후각 수용체 5T2	OR5T2	Q8NGG2
후각 수용체 5T3	OR5T3	Q8NGG3
후각 수용체 5W2	OR5W2	Q8NH69
후각 수용체 7G3	OR7G3	Q8NG95
후각 수용체 8A1	OR8A1	Q8NGG7

[0042]

후각 수용체 8B3	OR8B3	Q8NGG8
후각 수용체 8B4	OR8B4	Q96RC9
후각 수용체 8B8	OR8B8	Q15620
후각 수용체 8B12	OR8B12	Q8NGG6
후각 수용체 8D1	OR8D1	Q8WZ84
후각 수용체 8D2	OR8D2	Q9GZM6
후각 수용체 8D4	OR8D4	Q8NGM9
오렉신 수용체 타입 1	HCRTR1	O43613
오렉신 수용체 타입 2	HCRTR2	O43614
옥소에이코사노이드 수용체 1	OXER1	Q8TDS5
옥시토신 수용체	OXTR	P30559
P2Y 퓨린수용체 1	P2RY1	P47900
P2Y 퓨린수용체 2	P2RY2	P41231
P2Y 퓨린수용체 4	P2RY4	P51582
P2Y 퓨린수용체 6	P2RY6	Q15077
P2Y 퓨린수용체 8	P2RY8	Q86VZ1
추정 P2Y 퓨린수용체 10	P2RY10	O00398
P2Y 퓨린수용체 11	P2RY11	Q96G91
P2Y 퓨린수용체 12	P2RY12	Q9H244
P2Y 퓨린수용체 13	P2RY13	Q9BPV8
P2Y 퓨린수용체 14	P2RY14	Q15391
프로테이나제-활성화된 수용체 1	F2R	P25116
프로테이나제-활성화된 수용체 2	F2RL1	P55085
프로테이나제-활성화된 수용체 3	F2RL2	O00254
프로테이나제-활성화된 수용체 4	F2RL3	Q96RI0
프로스타글란딘 D2 수용체	PTGDR	Q13258
프로스타글란딘 E2 수용체 EP1 아형	PTGER1	P34995
프로스타글란딘 E2 수용체 EP2 아형	PTGER2	P43116
프로스타글란딘 E2 수용체 EP3 아형	PTGER3	P43115
프로스타글란딘 E2 수용체 EP4 아형	PTGER4	P35408
타입-2 안지오텐신 II 수용체 (AT2)	AGTR2	P50052
아펠린 수용체	APLNR	P35414
B1 브라디키닌 수용체	BDKRB1	P46663
B2 브라디키닌 수용체	BDKRB2	P30411
C5a 아나필라톡신 화학주성 수용체	C5AR1	P21730
콜레시스토키닌 수용체 타입 A	CCKAR	P32238
C-C 케모카인 수용체 타입 10	CCR10	P46092
C-C 케모카인 수용체 타입 1	CCR1	P32246
C-C 케모카인 수용체 타입 2	CCR2	P41597
C-C 케모카인 수용체 타입 3	CCR3	P51677
C-C 케모카인 수용체 타입 4	CCR4	P51679
C-C 케모카인 수용체 타입 5	CCR5	P51681
C-C 케모카인 수용체 타입 6	CCR6	P51684
C-C 케모카인 수용체 타입 7	CCR7	P32248
C-C 케모카인 수용체 타입 8	CCR8	P51685
C-C 케모카인 수용체 타입 9	CCR9	P51686

시스테이닐 류코트리엔 수용체 1	CYSLTR1	Q9Y271
시스테이닐 류코트리엔 수용체 2	CYSLTR2	Q9NS75
칸나비노이드 수용체 1	CNR1	P21554
칸나비노이드 수용체 2	CNR2	P34972
CX3C 케모카인 수용체 1	CX3CR1	P49238
고친화도 인터류킨-8 수용체 A	IL8RA	P25024
고친화도 인터류킨-8 수용체 B	IL8RB	P25025
C-X-C 케모카인 수용체 타입 3	CXCR3	P49682
C-X-C 케모카인 수용체 타입 4	CXCR4	P61073
C-X-C 케모카인 수용체 타입 6	CXCR6	O00574
C-X-C 케모카인 수용체 타입 7	CXCR7	P25106
D(1A) 도파민 수용체	DRD1	P21728
D(2) 도파민 수용체	DRD2	P14416
D(3) 도파민 수용체	DRD3	P35462
D(4) 도파민 수용체	DRD4	P21917
D(1B) 도파민 수용체	DRD5	P21918
멜라닌세포-자극 호르몬 수용체	MC1R	Q01726
멜라토닌 수용체 타입 1A	MTNR1A	P48039
멜라토닌 수용체 타입 1B	MTNR1B	P49286
물질-P 수용체	TACR1	P25103
물질-K 수용체	TACR2	P21452
뉴로메딘-K 수용체	TACR3	P29371
뉴로메딘-B 수용체	NMBR	P28336
신경펩티드 B/W 수용체 타입 1	NPBWR1	P48145
신경펩티드 B/W 수용체 타입 2	NPBWR2	P48146
신경펩티드 FF 수용체 1	NPFFR1	Q9GZQ6
신경펩티드 FF 수용체 2	NPFFR2	Q9Y5X5
신경펩티드 Y 수용체 타입 1	NPY1R	P25929
신경펩티드 Y 수용체 타입 2	NPY2R	P49146
신경펩티드 Y 수용체 타입 4	PPYR1	P50391
신경펩티드 Y 수용체 타입 5	NPY5R	Q15761
뉴로텐신 수용체 타입 1	NTSR1	P30989
뉴로텐신 수용체 타입 2	NTSR2	O95665
후각 수용체 10A2	OR10A2	Q9H208
후각 수용체 10A3	OR10A3	P58181
후각 수용체 10A4	OR10A4	Q9H209
후각 수용체 10A5	OR10A5	Q9H207
후각 수용체 10A6	OR10A6	Q8NH74
후각 수용체 10A7	OR10A7	Q8NGE5
후각 수용체 10AD1	OR10AD1	Q8NGE0
후각 수용체 10AG1	OR10AG1	Q8NH19
후각 수용체 10C1	OR10C1	Q96KK4
후각 수용체 10G2	OR10G2	Q8NGC3
후각 수용체 10G3	OR10G3	Q8NGC4
후각 수용체 10G4	OR10G4	Q8NGN3
후각 수용체 10G6	OR10G6	Q8NH81

[0043]

[0044]

후각 수용체 10G7	OR10G7	Q8NGN6
후각 수용체 10G8	OR10G8	Q8NGN5
후각 수용체 2T10	OR2T10	Q8NGZ9
후각 수용체 2T11	OR2T11	Q8NH01
후각 수용체 2T12	OR2T12	Q8NG77
후각 수용체 2T27	OR2T27	Q8NH04
후각 수용체 2T29	OR2T29	Q8NH02
후각 수용체 2T33	OR2T33	Q8NG76
후각 수용체 2T34	OR2T34	Q8NGX1
후각 수용체 2T35	OR2T35	Q8NGX2
후각 수용체 4A15	OR4A15	Q8NGL6
후각 수용체 4A16	OR4A16	Q8NH70
후각 수용체 4A47	OR4A47	Q6IF82
후각 수용체 4C45	OR4C45	A6NMZ5
후각 수용체 4C46	OR4C46	A6NHA9
후각 수용체 4F15	OR4F15	Q8NGB8
후각 수용체 4F17	OR4F17	Q8NGA8
후각 수용체 4F21	OR4F21	O95013
후각 수용체 51A2	OR51A2	Q8NGJ7
후각 수용체 51A4	OR51A4	Q8NGJ6
후각 수용체 51A7	OR51A7	Q8NH64
후각 수용체 51B2	OR51B2	Q9Y5P1
후각 수용체 51B4	OR51B4	Q9Y5P0
후각 수용체 51B5	OR51B5	Q9H339
후각 수용체 51B5	OR51B6	Q9H340
후각 수용체 51D1	OR51D1	Q8NGF3
후각 수용체 51E1	OR51E1	Q8TCB6
후각 수용체 51E2	OR51E2	Q9H255
후각 수용체 51F1	OR51F1	A6NGY5
후각 수용체 51F2	OR51F2	Q8NH61
후각 수용체 51G1	OR51G1	Q8NGK1
후각 수용체 51G2	OR51G2	Q8NGK0
추정 후각 수용체 51H1	OR51H1P	Q8NH63
후각 수용체 51I1	OR51I1	Q9H343
후각 수용체 56A1	OR56A1	Q8NGH5
후각 수용체 56A3	OR56A3	Q8NH54
후각 수용체 56A4	OR56A4	Q8NGH8
후각 수용체 56A5	OR56A5	P0C7T3
후각 수용체 56B1	OR56B1	Q8NGI3
후각 수용체 56B4	OR56B4	Q8NH76
후각 수용체 5AC2	OR5AC2	Q9NZP5
후각 수용체 5AK2	OR5AK2	Q8NH90
후각 수용체 5AN1	OR5AN1	Q8NGI8
후각 수용체 5AP2	OR5AP2	Q8NGF4
후각 수용체 5AR1	OR5AR1	Q8NGP9
후각 수용체 5AS1	OR5AS1	Q8N127

[0045]

후각 수용체 5AU1	OR5AU1	Q8NGC0
후각 수용체 5H14	OR5H14	A6NHG9
후각 수용체 5H15	OR5H15	A6NDH6
후각 수용체 6C65	OR6C65	A6NJZ3
후각 수용체 6C68	OR6C68	A6NDL8
후각 수용체 6C70	OR6C70	A6NIJ9
후각 수용체 6C74	OR6C74	A6NCV1
후각 수용체 6C75	OR6C75	A6NL08
후각 수용체 6C76	OR6C76	A6NM76
후각 수용체 7E24	OR7E24	Q6IFN5
옵신-3	OPN3	Q9H1Y3
멜라놉신	OPN4	Q9UHM6
옵신-5	OPN5	Q6U736
δ-타입 오피오이드 수용체	OPRD1	P41143
κ-타입 오피오이드 수용체	OPRK1	P41145
μ-타입 오피오이드 수용체	OPRM1	P35372
노시셉틴 수용체	OPRL1	P41146
청색-민감성 옵신	OPN1SW	P03999
로돕신	RHO	P08100
녹색-민감성 옵신	OPN1MW	P04001
후각 수용체 2B11	OR2B11	Q5JQS5
후각 수용체 2C1	OR2C1	O95371
후각 수용체 2C3	OR2C3	Q8N628
후각 수용체 2D2	OR2D2	Q9H210
후각 수용체 2D3	OR2D3	Q8NGH3
후각 수용체 2F1	OR2F1	Q13607
후각 수용체 2F2	OR2F2	O95006
후각 수용체 2G2	OR2G2	Q8NGZ5
후각 수용체 2G3	OR2G3	Q8NGZ4
후각 수용체 2G6	OR2G6	Q5TZ20
후각 수용체 2H1	OR2H1	Q9GZK4
후각 수용체 2H2	OR2H2	O95918
추정 후각 수용체 2I1	OR2I1P	Q8NGU4
후각 수용체 2J1	OR2J1	Q9GZK6
후각 수용체 2J2	OR2J2	O76002
후각 수용체 2J3	OR2J3	O76001
후각 수용체 2K2	OR2K2	Q8NGT1
후각 수용체 2L2	OR2L2	Q8NH16
후각 수용체 2L3	OR2L3	Q8NG85
후각 수용체 2L5	OR2L5	Q8NG80
후각 수용체 2L8	OR2L8	Q8NGY9
후각 수용체 2L13	OR2L13	Q8N349
후각 수용체 2M2	OR2M2	Q96R28
후각 수용체 2M3	OR2M3	Q8NG83
후각 수용체 2M4	OR2M4	Q96R27
후각 수용체 2M5	OR2M5	A3KFT3

후각 수용체 2M7	OR2M7	Q8NG81
후각 수용체 2S2	OR2S2	Q9NQN1
후각 수용체 2T1	OR2T1	O43869
후각 수용체 2T2	OR2T2	Q6IF00
후각 수용체 2T3	OR2T3	Q8NH03
후각 수용체 2T4	OR2T4	Q8NH00
후각 수용체 4E1	OR4E1	P0C645
후각 수용체 4E2	OR4E2	Q8NGC2
후각 수용체 4F3/4F16/4F29	OR4F3	Q6IEY1
후각 수용체 4F4	OR4F4	Q96R69
후각 수용체 4F5	OR4F5	Q8NH21
후각 수용체 4F6	OR4F6	Q8NGB9
후각 수용체 4K1	OR4K1	Q8NGD4
후각 수용체 4K2	OR4K2	Q8NGD2
후각 수용체 4K3	OR4K3	Q96R72
후각 수용체 4K5	OR4K5	Q8NGD3
후각 수용체 4K13	OR4K13	Q8NH42
후각 수용체 4K14	OR4K14	Q8NGD5
후각 수용체 4K15	OR4K15	Q8NH41
후각 수용체 4K17	OR4K17	Q8NGC6
후각 수용체 4L1	OR4L1	Q8NH43
후각 수용체 4M1	OR4M1	Q8NGD0
후각 수용체 4M2	OR4M2	Q8NGB6
후각 수용체 4N2	OR4N2	Q8NGD1
후각 수용체 4N4	OR4N4	Q8N0Y3
후각 수용체 4N5	OR4N5	Q8IXE1
후각 수용체 4P4	OR4P4	Q8NGL7
후각 수용체 4Q2	OR4Q2	P0C623
후각 수용체 4Q3	OR4Q3	Q8NH05
후각 수용체 4S1	OR4S1	Q8NGB4
후각 수용체 4S2	OR4S2	Q8NH73
후각 수용체 4X1	OR4X1	Q8NH49
후각 수용체 4X2	OR4X2	Q8NGF9
후각 수용체 5A1	OR5A1	Q8NGJ0
후각 수용체 5A2	OR5A2	Q8NGI9
후각 수용체 5B2	OR5B2	Q96R09
후각 수용체 5B3	OR5B3	Q8NH48
후각 수용체 5B12	OR5B12	Q96R08
후각 수용체 6A2	OR6A2	O95222
후각 수용체 6B1	OR6B1	O95007
후각 수용체 6B2	OR6B2	Q6IFH4
후각 수용체 6B3	OR6B3	Q8NGW1
후각 수용체 6C1	OR6C1	Q96RD1
후각 수용체 6C2	OR6C2	Q9NZP2
후각 수용체 6C3	OR6C3	Q9NZP0
후각 수용체 6C4	OR6C4	Q8NGE1

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후각 수용체 6C6	OR6C6	A6NF89
후각 수용체 6F1	OR6F1	Q8NGZ6
후각 수용체 6J1	OR6J1	Q8NGC5
후각 수용체 6K2	OR6K2	Q8NGY2
후각 수용체 6K3	OR6K3	Q8NGY3
후각 수용체 6K6	OR6K6	Q8NGW6
후각 수용체 6M1	OR6M1	Q8NGM8
후각 수용체 6N1	OR6N1	Q8NGY5
후각 수용체 6N2	OR6N2	Q8NGY6
후각 수용체 6P1	OR6P1	Q8NGX9
후각 수용체 6Q1	OR6Q1	Q8NGQ2
후각 수용체 6S1	OR6S1	Q8NH40
후각 수용체 6T1	OR6T1	Q8NGN1
후각 수용체 6V1	OR6V1	Q8N148
후각 수용체 6X1	OR6X1	Q8NH79
후각 수용체 6Y1	OR6Y1	Q8NGX8
후각 수용체 7A5	OR7A5	Q15622
후각 수용체 7A10	OR7A10	O76100
후각 수용체 7A17	OR7A17	O14581
후각 수용체 7C1	OR7C1	O76099
후각 수용체 7C2	OR7C2	O60412
후각 수용체 7D4	OR7D4	Q8NG98
후각 수용체 7G1	OR7G1	Q8NGA0
후각 수용체 7G2	OR7G2	Q8NG99
프로스타글란딘 F2-α 수용체	PTGFR	P43088
프로스타사이클린 수용체	PTGIR	P43119
프로락틴-방출 펩티드 수용체	PRLHR	P49683
혈소판-활성화 인자 수용체	PTAFR	P25105
피로글루타밀화 RF 아미드 펩티드 수용체	QRFPR	Q96P65
RPE-레티날 G 단백질-커플링된 수용체	RGR	P47804
스핑고신 1-포스페이트 수용체 1	S1PR1	P21453
스핑고신 1-포스페이트 수용체 2	S1PR2	O95136
스핑고신 1-포스페이트 수용체 3	S1PR3	Q99500
스핑고신 1-포스페이트 수용체 4	S1PR4	O95977
스핑고신 1-포스페이트 수용체 5	S1PR5	Q9H228
소마토스타틴 수용체 타입 1	SSTR1	P30872
소마토스타틴 수용체 타입 2	SSTR2	P30874
소마토스타틴 수용체 타입 3	SSTR3	P32745
소마토스타틴 수용체 타입 4	SSTR4	P31391
소마토스타틴 수용체 타입 5	SSTR5	P35346
트롬복산 A2 수용체	TBXA2R	P21731
미량 아민 관련 수용체 1	TAAR1	Q96RJ0
미량 아민 관련 수용체 2	TAAR2	Q9P1P5
추정 미량 아민 관련 수용체 3	TAAR3	Q9P1P4
미량 아민 관련 수용체 5	TAAR5	O14804
미량 아민 관련 수용체 6	TAAR6	Q96RI8

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미량 아민 관련 수용체 8	TAAR8	Q969N4
미량 아민 관련 수용체 9	TAAR9	Q96RI9
티로트로핀 수용체	TSHR	P16473
바소프레신 V1a 수용체	AVPR1A	P37288
바소프레신 V1b 수용체	AVPR1B	P47901
바소프레신 V2 수용체	AVPR2	P30518
케모카인 XC 수용체 1	XCR1	P46094
뇌 특이적 혈관 신생 억제제 1	BAI1	O14514
뇌 특이적 혈관 신생 억제제 2	BAI2	O60241
뇌 특이적 혈관 신생 억제제 3	BAI3	O60242
칼시토닌 수용체	CALCR	P30988
칼시토닌 유전자 관련 펩티드 타입 1 수용체	CALCRL	Q16602
코르티코트로핀-방출 인자 수용체 1	CRHR1	P34998
코르티코트로핀-방출 인자 수용체 2	CRHR2	Q13324
성장 호르몬-방출 호르몬 수용체	GHRHR	Q02643
위 억제 폴리펩티드 수용체	GIPR	P48546
글루카곤-유사 펩티드 1 수용체	GLP1R	P43220
글루카곤-유사 펩티드 2 수용체	GLP2R	O95838
글루카곤 수용체	GCGR	P47871
뇌하수체 아데닐레이트 시클라제-활성화 폴리펩티드 타입 I 수용체	ADCYAP1R1	P41586
미각 수용체 1 멤버 2	TAS1R2	Q8TE23
부갑상선 호르몬 수용체 1	PTH1R	Q03431
부갑상선 호르몬 2 수용체	PTH2R	P49190
세크레틴 수용체	SCTR	P47872
혈관활성 장내 폴리펩티드 수용체 1	VIPR1	P32241
혈관활성 장내 폴리펩티드 수용체 2	VIPR2	P41587
프리즐드(Frizzled)-10	FZD10	Q9ULW2
프리즐드-1	FZD1	Q9UP38
프리즐드-2	FZD2	Q14332
프리즐드-3	FZD3	Q9NPG1
프리즐드-4	FZD4	Q9ULV1
프리즐드-5	FZD5	Q13467
프리즐드-6	FZD6	O60353
프리즐드-7	FZD7	O75084
프리즐드-8	FZD8	Q9H461
프리즐드-9	FZD9 (FZD3)	O00144
스무든드(Smoothened) 상동체	SMO (SMOH)	Q99835
세포외 칼슘 감지 수용체	CASR	P41180
GABA 타입 B 수용체 1 서브유닛 1	GABBR1	Q9UBS5
GABA 타입 B 수용체 서브유닛 2	GABBR2	O75899
GPCR 패밀리 C 그룹 6 멤버 A	GPRC6A	Q5T6X5
대사성 글루타메이트 수용체 1	GRM1	Q13255
대사성 글루타메이트 수용체 2	GRM2	Q14416
대사성 글루타메이트 수용체 3	GRM3	Q14832
대사성 글루타메이트 수용체 4	GRM4	Q14833

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대사성 글루타메이트 수용체 5	GRM5	P41594
대사성 글루타메이트 수용체 6	GRM6	O15303
대사성 글루타메이트 수용체 7	GRM7	Q14831
대사성 글루타메이트 수용체 8	GRM8	O00222
미각 수용체 1 멤버 1	TAS1R1	Q7RTX1
미각 수용체 1 멤버 2	TAS1R2	Q8TE23
미각 수용체 1 멤버 3	TAS1R3	Q7RTX0

[0050] GPCR 결합 도메인이 본원에서 설명되며, 여기서 GPCR 결합 도메인은 GPCR 리간드와 GPCR 사이의 표면 상호작용에 기초하여 설계된다. 일부 경우에, 리간드는 아원자 입자(예를 들어, 광자), 이온, 유기 분자, 펩티드 및 단백질이다. GPCR에 의해 결합될 수 있는 리간드의 비제한적 예는 다음을 포함한다: (-)-아드레날린,(-)-노르아드레날린, (리소)인지질 매개체, [des-Arg10]칼리딘, [des-Arg9]브라디키닌, [des-Gln14]그렐린, [Hyp3]브라디키닌, [Leu]엔케팔린, [Met]엔케팔린, 12-히드록시헵타데카트리에노산, 12R-HETE, 12S-HETE, 12S-HPETE, 15S-HETE, 17β-에스트라디올, 20-히드록시-LTB4, 2-아라키도노일글리세롤, 2-올레오일-LPA, 3-히드록시옥탄산, 5-히드록시트립타민, 5-옥소-15-HETE, 5-옥소-ETE, 5-옥소-ETrE, 5-옥소-ODE, 5S-HETE, 5S-HPETE, 7α,25-디히드록시콜레스테롤, 아세틸콜린, ACTH, 아데노신 디포스페이트, 아데노신, 아드레노메둘린 2/인테르메딘, 아드레노메둘린, 아밀린, 아난다미드, 안지오텐신 II, 안지오텐신 III, 액넥신 I, 아펠린 수용체 초기 내인성 리간드, 아펠린-13, 아펠린-17, 아펠린-36, 아스피린 촉발(triggered) 리폭신 A4, 아스피린-촉발 레솔빈 D1, ATP, 베타

-데펜신 4A, 큰 디노르핀, 소 부신 수질 펩티드 8-22, 브라디키닌, C3a, C5a, Ca2+, 칼시토닌 유전자 관련 펩티드, 칼시토닌, 카텝신 G, CCK-33, CCK-4, CCK-8, CCL1, CCL11, CCL13, CCL14, CCL15, CCL16, CCL17, CCL19, CCL2, CCL20, CCL21, CCL22, CCL23, CCL24, CCL25, CCL26, CCL27, CCL28, CCL3, CCL4, CCL5, CCL7, CCL8, 케메린, 케노데옥시콜산, 콜산, 코르티코트로핀 방출 호르몬, CST-17, CX3CL1, CXCL1, CXCL10, CXCL11, CXCL12α, CXCL12β, CXCL13, CXCL16, CXCL2, CXCL3, CXCL5, CXCL6, CXCL7, CXCL8, CXCL9, 시스테이닐-류코트리엔(CysLT), 우라실 뉴클레오티드,데옥시콜산, 디히드로스핑고신-1-포스페이트, 디올레오일포스파티드산, 도파민, 디노르핀 A, 디노르핀 A-(1-13), 디노르핀 A-(1-8), 디노르핀 B, 엔도모르핀-1, 엔도텔린-1, 엔도 텔린-2, 엔도텔린-3, F2L, 유리 지방산, FSH, GABA, 갈라닌, 갈라닌-유사 펩티드, 위 억제 폴리펩티드, 가스트린-17, 가스트린 방출 펩티드, 그렐린, GHRH, 글루카곤, 글루카곤-유사 펩티드 1-(7-36) 아미드, 글루카곤-유사 펩티드 1-(7-37), 글루카곤-유사 펩티드 2, 글루카곤-유사 펩티드 2-(3-33), GnRH I, GnRH II, GRP-(18-27), hCG, 히스타민, 휴마닌, INSL3, INSL5, 칼리딘, 키스펩틴-10, 키스펩틴-13, 키스펩틴-14, 키스펩틴-54, 키누렌산, 큰 뉴로메딘 N, 큰 뉴로텐신, L-글루탐산, LH, 리토콜산, L-락트산, 장쇄 카르복실산, LPA, LTB4, LTC4, LTD4, LTE4, LXA4, Lys-[Hyp3]-브라디키닌, 리소포스파티딜이노시톨, 리소포스파티딜세린, 중간 사슬 길이 지방산, 멜라닌 농축 호르몬, 멜라토닌, 메틸카르바밀 PAF, Mg2+, 모틸린, N-아라키도노일글리신, 뉴로키닌 A, 뉴로키닌 B, 뉴로메딘 B, 뉴로메딘 N, 뉴로메딘 S-33, 뉴로메딘 U-25, 뉴로노스타틴, 신경펩티드 AF, 신경펩티드 B-23, 신경펩티드 B-29, 신경펩티드 FF, 신경펩티드 S, 신경펩티드 SF, 신경펩티드 W-23, 신경펩티드 W-30, 신경펩티드 Y, 신경펩티드 Y-(3-36), 뉴로텐신, 노시셉틴/오르파닌 FQ, N-올레오일에탄올아미드, 오베스타틴, 옥토파민, 오렉신-A, 오렉신-B, 옥시스테롤, 옥시토신, PACAP-27, PACAP-38, PAF, 췌장 폴리펩티드, 펩티드 YY, PGD2, PGE2, PGF2α, PGI2, PGJ2, PHM, 포스파티딜세린, PHV, 프로키네티신-1, 프로키네티신-2, 프로키네티신-2β, 프로사포신, PrRP-20, PrRP-31, PTH, PTHrP, PTHrP-(1-36), QRFP43, 릴렉신, 릴렉신-1, 릴렉신-3, 레솔빈 D1, 레솔빈 E1, RFRP-1, RFRP-3, R-스폰딘, 세크레틴, 세린 프로테아제, 스핑고신 1-포스페이트, 스핑고실포스포릴콜린, SRIF-14, SRIF-28, 물질 P, 숙신산, 트롬빈, 트롬복산 A2, TIP39, T-키닌, TRH, TSH, 티라민, UDP-글루코스, 우리딘 디포스페이트, 유로코르틴 1, 유로코르틴 2, 유로코르틴 3, 유로텐신 II 관련 펩티드, 유로텐신-II, 바소프레신, VIP, Wnt, Wnt-1, Wnt-10a, Wnt-10b, Wnt-11, Wnt-16, Wnt-2, Wnt-2b, Wnt-3, Wnt-3a, Wnt-4, Wnt-5a, Wnt-5b, Wnt-6, Wnt-7a, Wnt-7b, Wnt-8a, Wnt-8b, Wnt-9a, Wnt-9b, XCL1, XCL2, Zn2+, α-CGRP, α-케토글루타르산, α-MSH, α-네오엔도르핀, β-알라닌, β-CGPR, β-D-히드록시부티르산, β-엔도르핀, β-MSH, β-네오엔도르핀, β-페닐에틸아민 및 γ-MSH.

[0051] GPCR 리간드와 GPCR 사이의 표면 상호작용에 기초한 GPCR 결합 도메인의 서열은 다양한 방법을 사용하여 분석된다. 예를 들어, 다종 컴퓨터 분석(multispecies computational analysis)이 수행된다. 일부 경우에, 구조 분석이 수행된다. 일부 경우에, 서열 분석이 수행된다. 서열 분석은 관련 기술 분야에 공지된 데이터베이스를 사용하여 수행될 수 있다. 데이터베이스의 비제한적 예는 NCBI BLAST (blast.ncbi.nlm.nih.gov/Blast.cgi), UCSC 게놈 브라우저(Genome Browser) (genome.ucsc.edu/), UniProt(www.uniprot.org/) 및 IUPHAR/BPS Guide to PHARMACOLOGY(guidetopharmacology.org/)를 포함하지만, 이로 제한되지 않는다.

[0052] 다양한 유기체 중에서 서열 분석에 기초하여 설계된 GPCR 결합 도메인이 본원에서 설명된다. 예를 들어, 상이한 유기체에서 상동성 서열을 확인하기 위해 서열 분석이 수행된다. 예시적인 유기체는 마우스, 래트, 말, 양, 소, 영장류(예를 들어, 침팬지, 개코원숭이, 고릴라, 오랑우탄, 원숭이), 개, 고양이, 돼지, 당나귀, 토끼, 물고기, 파리 및 인간을 포함하지만, 이로 제한되지 않는다.

[0053] GPCR 결합 도메인의 확인 후, GPCR 결합 도메인을 코딩하는 핵산을 포함하는 라이브러리가 생성될 수 있다. 일부 경우에, GPCR 결합 도메인의 라이브러리는 입체형태적 리간드 상호작용, 펩티드 리간드 상호작용, 소분자 리간드 상호작용, GPCR의 세포외 도메인, 또는 GPCR을 표적으로 하는 항체에 기초하여 설계된 GPCR 결합 도메인의 서열을 포함한다. GPCR 결합 도메인의 라이브러리는 단백질 라이브러리를 생성하도록 번역될 수 있다. 일부 경우에, GPCR 결합 도메인의 라이브러리는 펩티드 라이브러리, 면역글로불린 라이브러리, 이의 유도체 또는 이들의 조합물을 생성하도록 번역된다. 일부 경우에, GPCR 결합 도메인의 라이브러리는 펩티드모방체 라이브러리를 생성하도록 추가로 변형된 단백질 라이브러리를 생성하도록 번역된다. 일부 경우에, GPCR 결합 도메인의 라이브러리는 소분자를 생성하기 위해 사용되는 단백질 라이브러리를 생성하도록 번역된다.

[0054] 본원에서 설명되는 방법은 적어도 하나의 미리 결정된 참조 핵산 서열의 미리 결정된 변이체를 각각 코딩하는 핵산을 포함하는 GPCR 결합 도메인의 라이브러리의 합성을 제공한다. 일부 경우에, 미리 결정된 참조 서열은 단백질을 코딩하는 핵산 서열이고, 변이체 라이브러리는 합성된 핵산에 의해 코딩되는 후속 단백질에서 단일 잔기의 복수의 상이한 변이체가 표준 번역 과정에 의해 생성되도록 하기 위해 적어도 하나의 단일 코돈의 변이를 코

딩하는 서열을 포함한다. 일부 경우에, GPCR 결합 도메인의 라이브러리는 다수의 위치에서 변이를 집합적으로 코딩하는 변이된 핵산을 포함한다. 일부 경우에, 변이체 라이브러리는 GPCR 결합 도메인에서 적어도 하나의 단일 코돈의 변이를 코딩하는 서열을 포함한다. 일부 경우에, 변이체 라이브러리는 GPCR 결합 도메인에서 다중 코돈의 변이를 코딩하는 서열을 포함한다. 변이를 위한 예시적인 코돈의 수는 적어도 또는 약 1, 5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60, 65, 70, 75, 80, 85, 90, 95, 100, 125, 150, 175, 225, 250, 275, 300개 또는 300개 초과의 코돈을 포함하지만, 이로 제한되지 않는다.

[0055] 본원에서 설명되는 방법은 GPCR 결합 도메인을 코딩하는 핵산을 포함하는 라이브러리의 합성을 제공하며, 여기서 라이브러리는 GPCR 결합 도메인 길이의 변이를 코딩하는 서열을 포함한다. 일부 경우에, 라이브러리는 미리 결정된 참조 서열과 비교하여 적어도 또는 약 1, 5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60, 65, 70, 75, 80, 85, 90, 95, 100, 125, 150, 175, 225, 250, 275, 300개, 또는 300개 초과의 코돈이 더 적은 길이 변이를 코딩하는 서열을 포함한다. 일부 경우에, 라이브러리는 미리 결정된 참조 서열과 비교하여 적어도 또는 약 1, 5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60, 65, 70, 75, 80, 85, 90, 95, 100, 125, 150, 175, 225, 250, 275, 300개, 또는 300개 초과의 코돈이 더 많은 길이 변이를 코딩하는 서열을 포함한다.

[0056] GPCR 결합 도메인의 확인 후, GPCR 결합 도메인은 본원에서 설명되는 바와 같이 스캐폴드에 배치될 수 있다. 일부 경우에, 스캐폴드는 면역글로불린이다. 일부 경우에, GPCR 결합 도메인은 CDR-H3 영역에 배치된다. 스캐폴드에 배치될 수 있는 GPCR 결합 도메인은 또한 모티프로 지칭될 수 있다. GPCR 결합 도메인을 포함하는 스캐폴드는 결합, 특이성, 안정성, 발현, 폴딩 또는 하류 활성에 기초하여 설계될 수 있다. 일부 경우에, GPCR 결합 도메인을 포함하는 스캐폴드는 GPCR과의 접촉을 가능하게 한다. 일부 경우에, GPCR 결합 도메인을 포함하는 스캐폴드는 GPCR과의 고친화도 결합을 가능하게 한다. GPCR 결합 도메인의 예시적인 아미노산 서열은 표 2에 제시되어 있다.

[0057] 표 2. GPCR 아미노산 서열

[0058]

서열 번호	GPCR	아미노산 서열
1	CXCR4	MEGISIYTSDNYTEEMGSGDYDSMKEPCFREENANFNKIFLPTIYSIIF LTGIVGNGLVILVMGYQKKLRSMTDKYRLHLSVADLLFVITLPFWA VDAVANWYFGNFLCKAVHVIYTVNLYSSVLILAFISLDRYLAIVHA TNSQRPRKLLAEKVVYVGVWIPALLLTIPDFIFANVSEADDRYICDR FYPNDLWVVVFQFQHIMVGLILPGIVILSCYCIIISKLSHSKGHQKRK

		ALKTTVILILAFFACWLPYYIGISIDSFILLEIIKQGCEFENTVHKWISIT EALAFFHCCLNPILYAFLGAKFKTSAQHALTSVSRGSSLKILSKGKR GGHSSVSTESESSSFHSS
2	CCR4	MNPTDIADTTLDESIYSNYYLYESIPKPCTKEGIKAFGELFLPPLYSL VFVFGLLGNSVVVLVLFKYKRLRSMTDVYLLNLAISDLLFVFSLPF WGYYAADQWVFGLGLCKMISWMYLVGFYSGIFFVMLMSIDRYLAI VHAVFSLRARTLTYGVITSLATWSVAVFASLPGFLFSTCYTERNHTY CKTKYSLNSTTWKVLSSLEINILGLVIPLGIMLFCYSMIIRTLQHCKN EKKNKAVKMIFAVVVLFLGFWTPYNIVLFLETLVELEVLQDCTFER YLDYAIQATETLAFVHCCLNPIIYFFLGEKFRKYILQLFKTCRGLFVL CQYCGLLQIYSADTPSSSYTQSTMDHDLHDAL
3	GCGR	MPPCQPQRPLLLLLLLLACQPQVPSAQVMDFLFEKWKLYGDQCHH NLSLLPPPTELVCNRTFDKYSCWPDTPANTTANISCPWYLPWHHKV QHRFVFKRCGPDGQWVRGPRGQPWRDASQCQMDGEEIEVQKEVA KMYSSFQVMYTVGYSLSLGALLLALAILGGLSKLHCTRNAIHANLF ASFVLKASSVLVIDGLLRTRYSQKIGDDLSVSTWLSDGAVAGCRVA AVFMQYGIVANYCWLLVEGLYLHNLLGLATLPERSFFSLYLGIGWG APMLFVVPWAVVKCLFENVQCWTSNDNMGFWWILRFPVFLAILIN FFIFVRIVQLLVAKLRARQMHHTDYKFRLAKSTLTLIPLLGVHEVVF AFVTDEHAQGTLRSAKLFFDLFLSSFQGLLVAVLYCFLNKEVQSEL RRRWHRWRLGKVLWEERNTSNHRASSSPGHGPPSKELQFGRGGGS QDSSAETPLAGGLPRLAESPF
4	mGluR5	MVLLLILSVLLLKEDVRGSAQSSERRVVAHMPGDIIIGALFSVHHQP TVDKVHERKCGAVREQYGIQRVEAMLHTLERINSDPTLLPNITLGC EIRDSCWHSAVALEQSIEFIRDSLISSEEEEGLVRCVDGSSSSFRSKKP IVGVIGPGSSSVAIQVQNLLQLFNIPQIAYSATSMDLSDKTLFKYFMR VVPSDAQQARAMVDIVKRYNWTYVSAVHTEGNYGESGMEAFKD MSAKEGICIAHSYKIYSNAGEQSFDKLLKKLTSHLPKARVVACFCEG MTVRGLLMAMRRLGLAGEFLLLGSDGWADRYDVTDGYQREAVG GITIKLQSPDVKWFDDYYLKLRPETNHRNPWFQEFWQHRFQCRLEG FPQENSKYNKTCNSSLTLKTHHVQDSKMGFVINAIYSMAYGLHNM QMSLCPGYAGLCDAMKPIDGRKLLESLMKTNFTGVSGDTILFDENG DSPGRYEIMNFKEMGKDYFDYINVGSWDNGELKMDDDEVWSKKS NIIRSVCSEPCEKGQIKVIRKGEVSCCWTCTPCKENEYVFDEYTCKA CQLGSWPTDDLTGCDLIPVQYLRWGDPEPIAAVVFACLGLLATLFV TVVFIIYRDTPVVKSSSRELCYIILAGICLGYLCTFCLIAKPKQIYCYL QRIGIGLSPAMSYSALVTKTNRIARILAGSKKKICTKKPRFMSACAQ LVIAFILICIQLGIIVALFIMEPPDIMHDYPSIREVYLICNTTNLGVVTP LGYNGLLILSCTFYAFKTRNVPANFNEAKYIAFTMYTTCIIWLAFVPI YFGSNYKIITMCFSVSLSATVALGCMFVPKVYIILAKPERNVRSAFTT STVVRMHVGDGKSSSAASRSSSLVNLWKRRGSSGETLRYKDRRLA QHKSEIECFTPKGSMGNGGRATMSSSNGKSVTWAQNEKSSRGQHL WQRLSIHINKKENPNQTAVIKPFPKSTESRGLGAGAGAGGSAGGVG ATGGAGCAGAGPGGPESPDAGPKALYDVAEAEEHFPAPARPRSPSP ISTLSHRAGSASRTDDDVPSLHSEPVARSSSSQGSLMEQISSVVTRFT ANISELNSMMLSTAAPSPGVGAPLCSSYLIPKEIQLPTTMTTFAEIQP LPAIEVTGGAQPAAGAQAAGDAARESPAAGPEAAAAKPDLEELVA LTPPSPFRDSVDSGSTTPNSPVSESALCIPSSPKYDTLIIRDYTQSSSSL
5	GLP-1R	RPQGATVSLWETVQKWREYRRQCQRSLTEDPPPATDLFCNRTFDE YACWPDGEPGSFVNVSCPWYLPWASSVPQGHVYRFCTAEGLWLQ KDNSSLPWRDLSECEESKRGERSSPEEQLLFLYIIYTVGYALSFSALV

[0059]

		IASAILLGFRHLHCTRNYIHLNLFASFILRALSVFIKDAALKWMYSTA AQQHQWDGLLSYQDSLSCRLVFLLMQYCVAANYYWLLVEGVYLY TLLAFSVLSEQWIFRLYVSIGWGVPLLFVVPWGIVKYLYEDEGCWT RNSNMNYWLIIRLPILFAIGVNFLIFVRVICIVVSKLKANLMCKTDIK CRLAKSTLTLIPLLGTHEVIFAFVMDEHARGTLRFIKLFTELSFTSFQ GLMVAILYCFVNNEVQLEFRKSWERWRLEHLHIQRDSSMKPLKCPT SSLSSGATAGSSMYTATCQASCS
6	GABAB	MLLLLLLAPLFLRPPGAGGAQTPNATSEGCQIIHPPWEGGIRYRGLT RDQVKAINFLPVDYEIEYVCRGEREVVGPKVRKCLANGSWTDMDT PSRCVRICSKSYLTLENGKVFLTGGDLPALDGARVDFRCDPDFHLV GSSRSICSQGQWSTPKPHCQVNRTPHSERRAVYIGALFPMSGGWPG GQACQPAVEMALEDVNSRRDILPDYELKLIHHDSKCDPGQATKYL YELLYNDPIKIILMPGCSSVSTLVAEAARMWNLIVLSYGSSSPALSN RQRFPTFFRTHPSATLHNPTRVKLFEKWGWKKIATIQQTTEVFTSTL DDLEERVKEAGIEITFRQSFFSDPAVPVKNLKRQDARIIVGLFYETEA RKVFCEVYKERLFGKKYVWFLIGWYADNWFKIYDPSINCTVDEMT EAVEGHITTEIVMLNPANTRSISNMTSQEFVEKLTKRLKRHPEETGG FQEAPLAYDAIWALALALNKTSGGGGRSGVRLEDFNYNNQTITDQI YRAMNSSSFEGVSGHVVFDASGSRMAWTLIEQLQGGSYKKIGYYD STKDDLSWSKTDKWIGGSPPADQTLVIKTFRFLSQKLFISVSVLSSLG IVLAVVCLSFNIYNSHVRYIQNSQPNLNNLTAVGCSLALAAVFPLGL DGYHIGRNQFPFVCQARLWLLGLGFSLGYGSMFTKIWWVHTVFTK KEEKKEWRKTLEPWKLYATVGLLVGMDVLTLAIWQIVDPLHRTIE TFAKEEPKEDIDVSILPQLEHCSSRKMNTWLGIFYGYKGLLLLLGIFL AYETKSVSTEKINDHRAVGMAIYNVAVLCLITAPVTMILSSQQDAA FAFASLAIVFSSYITLVVLFVPKMRRLITRGEWQSEAQDTMKTGSST NNNEEEKSRLLEKENRELEKIIAEKEERVSELRHQLQSRQQLRSRRH PPTPPEPSGGLPRGPPEPPDRLSCDGSRVHLLYK
7	OPRM1	MDSSAAPTNASNCTDALAYSSCSPAPSPGSWVNLSHLDGNLSDPCG PNRTDLGGRDSLCPPTGSPSMITAITIMALYSIVCVVGLFGNFLVMY VIVRYTKMKTATNIYIFNLALADALATSTLPFQSVNYLMGTWPFGTI LCKIVISIDYYNMFTSIFTLCTMSVDRYIAVCHPVKALDFRTPRNAKI INVCNWILSSAIGLPVMFMATTKYRQGSIDCTLTFSHPTWYWENLL KICVFIFAFIMPVLIITVCYGLMILRLKSVRMLSGSKEKDRNLRRITR MVLVVVAVFIVCWTPIHIYVIIKALVTIPETTFQTVSWHFCIALGYTN SCLNPVLYAFLDENFKRCFREFCIPTSSNIEQQNSTRIRQNTRDHPST ANTVDRTNHQLENLEAETAPLP
8	OPRK1	MDSPIQIFRGEPGPTCAPSACLPPNSSAWFPGWAEPDSNGSAGSEDA QLEPAHISPAIPVIITAVYSVVFVVGLVGNSLVMFVIIRYTKMKTATN IYIFNLALADALVTTTMPFQSTVYLMNSWPFGDVLCKIVISIDYYNM FTSIFTLTMMSVDRYIAVCHPVKALDFRTPLKAKIINICIWLLSSSVGI SAIVLGGTKVREDVDVIECSLQFPDDDYSWWDLFMKICVFIFAFVIP VLIIIVCYTLMILRLKSVRLLSGSREKDRNLRRITRLVLVVVAVFVVC WTPIHIFILVEALGSTSHSTAALSSYYFCIALGYTNSSLNPILYAFLDE NFKRCFRDFCFPLKMRMERQSTSRVRNTVQDPAYLRDIDGMNKPV
9	C5aR	MDSFNYTTPDYGHYDDKDTLDLNTPVDKTSNTLRVPDILALVIFAV VFLVGVLGNALVVWVTAFEAKRTINAIWFLNLAVADFLSCLALPIL FTSIVQHHHWPFGGAACSILPSLILLNMYASILLLATISADRFLLVFKP IWCQNFRGAGLAWIACAVAWGLALLLTIPSFLYRVVREEYFPPKVL CGVDYSHDKRRERAVAIVRLVLGFLWPLLTLTICYTFILLRTWSRRA TRSTKTLKVVVAVVASFFIFWLPYQVTGIMMSFLEPSSPTFLLLKKL

[0060]

		DSLCVSFAYINCCINPIIYVVAGQGFQGRLRKSLPSLLRNVLTEESVV RESKSFTRSTVDTMAQKTQAV
10	CGRP	ELEESPEDSIQLGVTRNKIMTAQYECYQKIMQDPIQQAEGVYCNRT WDGWLCWNDVAAGTESMQLCPDYFQDFDPSEKVTKICDQDGNWF RHPASNRTWTNYTQCNVNTHEKVKTALNLFYLTIIGHGLSIASLLIS LGIFFYFKSLSCQRITLHKNLFFSFVCNSVVTIIHLTAVANNQALVAT NPVSCKVSQFIHLYLMGCNYFWMLCEGIYLHTLIVVAVFAEKQHL MWYYFLGWGFPLIPACIHAIARSLYYNDNCWISSDTHLLYIIHGPIC AALLVNLFFLLNIVRVLITKLKVTHQAESNLYMKAVRATLILVPLLG IEFVLIPWRPEGKIAEEVYDYIMHILMHFQGLLVSTIFCFFNGEVQAI LRRNWNQYKIQFGNSFSNSEALRSASYTVSTISDGPGYSHDCPSEHL NGKSIHDIENVLLKPENLYN
11	M1 무스카린 성	MNTSAPPAVSPNITVLAPGKGPWQVAFIGITTGLLSLATVTGNLLVL ISFKVNTELKTVNNYFLLSLACADLIIGTFSMNLYTTYLLMGHWAL GTLACDLWLALDYVASNASVMNLLLISFDRYFSVTRPLSYRAKRTP RRAALMIGLAWLVSFVLWAPAILFWQYLVGERTVLAGQCYIQFLS QPIITFGTAMAAFYLPVTVMCTLYWRIYRETENRARELAALQGSETP GKGGGSSSSSERSQPGAEGSPETPPGRCCRCCRAPRLLQAYSWKEEE EEDEGSMESLTSSEGEEPGSEVVIKMPMVDPEAQAPTKQPPRSSPNT VKRPTKKGRDRAGKGQKPRGKEQLAKRKTFSLVKEKKAARTLSAI LLAFILTWTPYNIMVLVSTFCKDCVPETLWELGYWLCYVNSTINPM CYALCNKAFRDTFRLLLLCRWDKRRWRKIPKRPGSVHRTPSRQC
12	M4 무스카린 성	MANFTPVNGSSGNQSVRLVTSSSHNRYETVEMVFIATVTGSLSLVT VVGNILVMLSIKVNRQLQTVNNYFLFSLACADLIIGAFSMNLYTVYI IKGYWPLGAVVCDLWLALDYVVSNASVMNLLIISFDRYFCVTKPLT YPARRTTKMAGLMIAAAWVLSFVLWAPAILFWQFVVGKRTVPDN QCFIQFLSNPAVTFGTAIAAFYLPVVIMTVLYIHISLASRSRVHKHRP EGPKEKKAKTLAFLKSPLMKQSVKKPPPGEAAREELRNGKLEEAPP PALPPPPRPVADKDTSNESSSGSATQNTKERPATELSTTEATTPAMP APPLQPRALNPASRWSKIQIVTKQTGNECVTAIEIVPATPAGMRPAA NVARKFASIARNQVRKKRQMAARERKVTRTIFAILLAFILTWTPYN VMVLVNTFCQSCIPDTVWSIGYWLCYVNSTINPACYALCNATFKKT FRHLLLCQYRNIGTAR
13	CCR2	MLSTSRSRFIRNTNESGEEVTTFFDYDYGAPCHKFDVKQIGAQLLPP LYSLVFIFGFVGNMLVVLILINCKKLKCLTDIYLLNLAISDLLFLITLP LWAHSAANEWVFGNAMCKLFTGLYHIGYFGGIFFIILLTIDRYLAIV HAVFALKARTVTFGVVTSVITWLVAVFASVPGIIFTKCQKEDSVYV CGPYFPRGWNNFHTIMRNILGLVLPLLIMVICYSGILKTLLRCRNEK KRHRAVRVIFTIMIVYFLFWTPYNIVILLNTFQEFFGLSNCESTSQLD QATQVTETLGMTHCCINPIIYAFVGEKFRSLFHIALGCRIAPLQKPVC GGPGVRPGKNVKVTTQGLLDGRGKGKSIGRAPEASLQDKEGA
14	CCR9	MTPTDFTSPIPNMADDYGSESTSSMEDYVNFNFTDFYCEKNNVRQF ASHFLPPLYWLVFIVGALGNSLVILVYWYCTRVKTMTDMFLLNLAI ADLLFLVTLPFWAIAAADQWKFQTFMCKVVNSMYKMNFYSCVLLI MCISVDRYIAIAQAMRAHTWREKRLLYSKMVCFTIWVLAAALCIPE ILYSQIKEESGIAICTMVYPSDESTKLKSAVLTLKVILGFFLPFVVMA CCYTIIIHTLIQAKKSSKHKALKVTITVLTVFVLSQFPYNCILLVQTID AYAMFISNCAVSTNIDICFQVTQTIAFFHSCLNPVLYVFVGERFRRDL VKTLKNLGCISQAQWVSFTRREGSLKLSSMLLETTSGALSL
15	GPR174	MPANYTCTRPDGDNTDFRYFIYAVTYTVILVPGLIGNILALWVFYG YMKETKRAVIFMINLAIADLLQVLSLPLRIFYYLNHDWPFGPGLCMF

[0061]

[0062]

		CFYLKYVNMYASIYFLVCISVRRFWFLMYPFRFHDCKQKYDLYISIA GWLIICLACVLFPLLRTSDDTSGNRTKCFVDLPTRNVNLAQSVVMM TIGELIGFVTPLLIVLYCTWKTVLSLQDKYPMAQDLGEKQKALKMI LTCAGVFLICFAPYHFSFPLDFLVKSNEIKSCLARRVILIFHSVALCLA SLNSCLDPVIYYFSTNEFRRRLSRQDLHDSIQLHAKSFVSNHTASTM TPELC
16	MASP-2	TPLGPKWPEPVFGRLASPGFPGEYANDQERRWTLTAPPGYRLRLYF THFDLELSHLCEYDFVKLSSGAKVLATLCGQESTDTERAPGKDTFY SLGSSLDITFRSDYSNEKPFTGFEAFYAAEDIDECQVAPGEAPTCDH HCHNHLGGFYCSCRAGYVLHRNKRTCSALCSGQVFTQRSGELSSPE YPRPYPKLSSCTYSISLEEGFSVILDFVESFDVETHPETLCPYDFLKIQ TDREEHGPFCGKTLPHRIETKSNTVTITFVTDESGDHTGWKIHYTST AQPCPYPMAPPNGHVSPVQAKYILKDSFSIFCETGYELLQGHLPLKS FTAVCQKDGSWDRPMPACSIVDCGPPDDLPSGRVEYITGPGVTTYK AVIQYSCEETFYTMKVNDGKYVCEADGFWTSSKGEKSLPVCEPVC GLSARTTGGRIYGGQKAKPGDFPWQVLILGGTTAAGALLYDNWVL TAAHAVYEQKHDASALDIRMGTLKRLSPHYTQAWSEAVFIHEGYT HDAGFDNDIALIKLNNKVVINSNITPICLPRKEAESFMRTDDIGTASG WGLTQRGFLARNLMYVDIPIVDHQKCTAAYEKPPYPRGSVTANML CAGLESGGKDSCRGDSGGALVFLDSETERWFVGGIVSWGSMNCGE AGQYGVYTKVINYIPWIENIISDF
17	CCR5	MDYQVSSPIYDINYYTSEPCQKINVKQIAARLLPPLYSLVFIFGFVGN MLVILILINCKRLKSMTDIYLLNLAISDLFFLLTVPFWAHYAAAQWD FGNTMCQLLTGLYFIGFFSGIFFIILLTIDRYLAVVHAVFALKARTVT FGVVTSVITWVVAVFASLPGIIFTRSQKEGLHYTCSSHFPYSQYQFW KNFQTLKIVILGLVLPLLVMVICYSGILKTLLRCRNEKKRHRAVRLIF TIMIVYFLFWAPYNIVLLLNTFQEFFGLNNCSSSNRLDQAMQVTETL GMTHCCINPIIYAFVGEKFRNYLLVFFQKHIAKRFCKCCSIFQQEAPE RASSVYTRSTGEQEISVGL
18	FSHR	CHHRICHCSNRVFLCQESKVTEIPSDLPRNAIELRFVLTKLRVIQKGA FSGFGDLEKIEISQNDVLEVIEADVFSNLPKLHEIRIEKANNLLYINPE AFQNLPNLQYLLISNTGIKHLPDVHKIHSLQKVLLDIQDNINIHTIER NSFVGLSFESVILWLNKNGIQEIHNCAFNGTQLDELNLSDNNNLEEL PNDVFHGASGPVILDISRTRIHSLPSYGLENLKKLRARSTYNLKKLPT LEKLVALMEASLTYPSHCCAFANWRRQISELHPICNKSILRQEVDY MTQARGQRSSLAEDNESSYSRGFDMTYTEFDYDLCNEVVDVTCSP KPDAFNPCEDIMGYNILRVLIWFISILAITGNIIVLVILTTSQYKLTVPR FLMCNLAFADLCIGIYLLLIASVDIHTKSQYHNYAIDWQTGAGCDA AGFFTVFASELSVYTLTAITLERWHTITHAMQLDCKVQLRHAASVM VMGWIFAFAAALFPIFGISSYMKVSICLPMDIDSPLSQLYVMSLLVL NVLAFVVICGCYIHIYLTVRNPNIVSSSSDTRIAKRMAMLIFTDFLCM APISFFAISASLKVPLITVSKAKILLVLFHPINSCANPFLYAIFTKNFRR DFFILLSKCGCYEMQAQIYRTETSSTVHNTHPRNGHCSSAPRVTNGS TYILVPLSHLAQN
19	mGluR2 PAM	EGPAKKVLTLEGDLVLGGLFPVHQKGGPAEDCGPVNEHRGIQRLEA MLFALDRINRDPHLLPGVRLGAHILDSCSKDTHALEQALDFVRASLS RGADGSRHICPDGSYATHGDAPTAITGVIGGSYSDVSIQVANLLRLF QIPQISYASTSAKLSDKSRYDYFARTVPPDFFQAKAMAEILRFFNWT YVSTVASEGDYGETGIEAFELEARARNICVATSEKVGRAMSRAAFE GVVRALLQKPSARVAVLFTRSEDARELLAASQRLNASFTWVASDG WGALESVVAGSEGAAEGAITIELASYPISDFASYFQSLDPWNNSRNP

		WFREFWEQRFRCSFRQRDCAAHSLRAVPFEQESKIMFVVNAVYAM AHALHNMHRALCPNTTRLCDAMRPVNGRRLYKDFVLNVKFDAPF RPADTHNEVRFDRFGDGIGRYNIFTYLRAGSGRYRYQKVGYWAEG LTLDTSLIPWASPSAGPLPASRCSEPCLQNEVKSVQPGEVCCWLCIP CQPYEYRLDEFTCADCGLGYWPNASLTGCFELPQEYIRWGDAWAV GPVTIACLGALATLFVLGVFVRHNATPVVKASGRELCYILLGGVFL CYCMTFIFIAKPSTAVCTLRRLGLGTAFSVCYSALLTKTNRIARIFGG AREGAQRPRFISPASQVAICLALISGQLLIVVAWLVVEAPGTGKETA PERREVVTLRCNHRDASMLGSLAYNVLLIALCTLYAFKTRKCPENF NEAKFIGFTMYTTCIIWLAFLPIFYVTSSDYRVQTTTMCVSVSLSGSV VLGCLFAPKLHIILFQPQKNVVSHRAPTSRFGSAAARASSSLGQGSG SQFVPTVCNGREVVDSTTSSL
20	mGluR3	LGDHNFLRREIKIEGDLVLGGLFPINEKGTGTEECGRINEDRGIQRLE AMLFAIDEINKDDYLLPGVKLGVHILDTCSRDTYALEQSLEFVRASL TKVDEAEYMCPDGSYAIQENIPLLIAGVIGGSYSSVSIQVANLLRLFQ IPQISYASTSAKLSDKSRYDYFARTVPPDFYQAKAMAEILRFFNWTY VSTVASEGDYGETGIEAFEQEARLRNICIATAEKVGRSNIRKSYDSVI RELLQKPNARVVVLFMRSDDSRELIAAASRANASFTWVASDGWGA QESIIKGSEHVAYGAITLELASQPVRQFDRYFQSLNPYNNHRNPWFR DFWEQKFQCSLQNKRNHRRVCDKHLAIDSSNYEQESKIMFVVNAV YAMAHALHKMQRTLCPNTTKLCDAMKILDGKKLYKDYLLKINFTA PFNPNKDADSIVKFDTFGDGMGRYNVFNFQNVGGKYSYLKVGHW AETLSLDVNSIHWSRNSVPTSQCSDPCAPNEMKNMQPGDVCCWICI PCEPYEYLADEFTCMDCGSGQWPTADLTGCYDLPEDYIRWEDAWA IGPVTIACLGFMCTCMVVTVFIKHNNTPLVKASGRELCYILLFGVGL SYCMTFFFIAKPSPVICALRRLGLGSSFAICYSALLTKTNCIARIFDGV KNGAQRPKFISPSSQVFICLGLILVQIVMVSVWLILEAPGTRRYTLAE KRETVILKCNVKDSSMLISLTYDVILVILCTVYAFKTRKCPENFNEA KFIGFTMYTTCIIWLAFLPIFYVTSSDYRVQTTTMCISVSLSGFVVLG CLFAPKVHIILFQPQKNVVTHRLHLNRFSVSGTGTTYSQSSASTYVP TVCNGREVLDSTTSSL
21	mGluR4	KPKGHPHMNSIRIDGDITLGGLFPVHGRGSEGKPCGELKKEKGIHRL EAMLFALDRINNDPDLLPNITLGARILDTCSRDTHALEQSLTFVQALI EKDGTEVRCGSGGPPIITKPERVVGVIGASGSSVSIMVANILRLFKIP QISYASTAPDLSDNSRYDFFSRVVPSDTYQAQAMVDIVRALKWNY VSTVASEGSYGESGVEAFIQKSREDGGVCIAQSVKIPREPKAGEFDKI IRRLLETSNARAVIIFANEDDIRRVLEAARRANQTGHFFWMGSDSW GSKIAPVLHLEEVAEGAVTILPKRMSVRGFDRYFSSRTLDNNRRNIW FAEFWEDNFHCKLSRHALKKGSHVKKCTNRERIGQDSAYEQEGKV QFVIDAVYAMGHALHAMHRDLCPGRVGLCPRMDPVDGTQLLKYI RNVNFSGIAGNPVTFNENGDAPGRYDIYQYQLRNDSAEYKVIGSWT DHLHLRIERMHWPGSGQQLPRSICSLPCQPGERKKTVKGMPCCWH CEPCTGYQYQVDRYTCKTCPYDMRPTENRTGCRPIPIIKLEWGSPW AVLPLFLAVVGIAATLFVVITFVRYNDTPIVKASGRELSYVLLAGIFL CYATTFLMIAEPDLGTCSLRRIFLGLGMSISYAALLTKTNRIYRIFEQ GKRSVSAPRFISPASQLAITFSLISLQLLGICVWFVVDPSHSVVDFQD QRTLDPRFARGVLKCDISDLSLICLLGYSMLLMVTCTVYAIKTRGVP ETFNEAKPIGFTMYTTCIVWLAFIPIFFGTSQSADKLYIQTTTLTVSVS LSASVSLGMLYMPKVYIILFHPEQNVPKRKRSLKAVVTAATMSNKF TQKGNFRPNGEAKSELCENLEAPALATKQTYVTYTNHAI
22	mGluR7	QEMYAPHSIRIEGDVTLGGLFPVHAKGPSGVPCGDIKRENGIHRLEA

[0063]

[0064]

		MLYALDQINSDPNLLPNVTLGARILDTCSRDTYALEQSLTFVQALIQ KDTSDVRCTNGEPPVFVKPEKVVGVIGASGSSVSIMVANILRLFQIP QISYASTAPELSDDRRYDFFSRVVPPDSFQAQAMVDIVKALGWNYV STLASEGSYGEKGVESFTQISKEAGGLCIAQSVRIPQERKDRTIDFDR IIKQLLDTPNSRAVVIFANDEDIKQILAAAKRADQVGHFLWVGSDS WGSKINPLHQHEDIAEGAITIQPKRATVEGFDAYFTSRTLENNRRNV WFAEYWEENFNCKLTISGSKKEDTDRKCTGQERIGKDSNYEQEGK VQFVIDAVYAMAHALHHMNKDLCADYRGVCPEMEQAGGKKLLK YIRNVNFNGSAGTPVMFNKNGDAPGRYDIFQYQTTNTSNPGYRLIG QWTDELQLNIEDMQWGKGVREIPASVCTLPCKPGQRKKTQKGTPC CWTCEPCDGYQYQFDEMTCQHCPYDQRPNENRTGCQDIPIIKLEWH SPWAVIPVFLAMLGIIATIFVMATFIRYNDTPIVRASGRELSYVLLTGI FLCYIITFLMIAKPDVAVCSFRRVFLGLGMCISYAALLTKTNRIYRIF EQGKKSVTAPRLISPTSQLAITSSLISVQLLGVFIWFGVDPPNIIIDYDE HKTMNPEQARGVLKCDITDLQIICSLGYSILLMVTCTVYAIKTRGVP ENFNEAKPIGFTMYTTCIVWLAFIPIFFGTAQSAEKLYIQTTTLTISMN LSASVALGMLYMPKVYIIIFHPELNVQKRKRSFKAVVTAATMSSRL SHKPSDRPNGEAKTELCENVDPNSPAAKKKYVSYNNLVI
23	CXCR3	MVLEVSDHQVLNDAEVAALLENFSSSYDYGENESDSCCTSPPCPQD FSLNFDRAFLPALYSLLFLLGLLGNGAVAAVLLSRRTALSSTDTFLL HLAVADTLLVLTLPLWAVDAAVQWVFGSGLCKVAGALFNINFYA GALLLACISFDRYLNIVHATQLYRRGPPARVTLTCLAVWGLCLLFA LPDFIFLSAHHDERLNATHCQYNFPQVGRTALRVLQLVAGFLLPLL VMAYCYAHILAVLLVSRGQRRLRAMRLVVVVVVAFALCWTPYHL VVLVDILMDLGALARNCGRESRVDVAKSVTSGLGYMHCCLNPLLY AFVGVKFRERMWMLLLRLGCPNQRGLQRQPSSSRRDSSWSETSEA SYSGL
24	CCR8	MDYTLDLSVTTVTDYYYPDIFSSPCDAELIQTNGKLLLAVFYCLLFV FSLLGNSLVILVLVVCKKLRSITDVYLLNLALSDLLFVFSFPFQTYYL LDQWVFGTVMCKVVSGFYYIGFYSSMFFITLMSVDRYLAVVHAVY ALKVRTIRMGTTLCLAVWLTAIMATIPLLVFYQVASEDGVLQCYSF YNQQTLKWKIFTNFKMNILGLLIPFTIFMFCYIKILHQLKRCQNHNK TKAIRLVLIVVIASLLFWVPFNVVLFLTSLHSMHILDGCSISQQLTYA THVTEIISFTHCCVNPVIYAFVGEKFKKHLSEIFQKSCSQIFNYLGRQ MPRESCEKSSSCQQHSSRSSSVDYIL
25	아데노신 A2a	MPIMGSSVYITVELAIAVLAILGNVLVCWAVWLNSNLQNVTNYFV VSLAAADIAVGVLAIPFAITISTGFCAACHGCLFIACFVLVLTQSSIFS LLAIAIDRYIAIRIPLRYNGLVTGTRAKGIIAICWVLSFAIGLTPMLGW NNCGQPKEGKNHSQGCGEGQVACLFEDVVPMNYMVYFNFFACVL VPLLLMLGVYLRIFLAARRQLKQMESQPLPGERARSTLQKEVHAAK SLAIIVGLFALCWLPLHIINCFTFFCPDCSHAPLWLMYLAIVLSHTNS VVNPFIYAYRIREFRQTFRKIIRSHVLRQQEPFKAAGTSARVLAAHG SDGEQVSLRLNGHPPGVWANGSAPHPERRPNGYALGLVSGGSAQE SQGNTGLPDVELLSHELKGVCPEPPGLDDPLAQDGAGVS
26	오렉신 OX1	MEPSATPGAQMGVPPGSREPSPVPPDYEDEFLRYLWRDYLYPKQYE WVLIAAYVAVFVVALVGNTLVCLAVWRNHHMRTVTNYFIVNLSL ADVLVTAICLPASLLVDITESWLFGHALCKVIPYLQAVSVSVAVLTL SFIALDRWYAICHPLLFKSTARRARGSILGIWAVSLAIMVPQAAVME CSSVLPELANRTRLFSVCDERWADDLYPKIYHSCFFIVTYLAPLGLM AMAYFQIFRKLWGRQIPGTTSALVRNWKRPSDQLGDLEQGLSGEPQ PRARAFLAEVKQMRARRKTAKMLMVVLLVFALCYLPISVLNVLKR

[0065]

		VFGMFRQASDREAVYACFTFSHWLVYANSAANPIIYNFLSGKFREQ FKAAFSCCLPGLGPCGSLKAPSPRSSASHKSLSLQSRCSISKISEHVVL TSVTTVLP
27	오렉신 OX2	MSGTKLEDSPPCRNWSSASELNETQEPFLNPTDYDDEEFLRYLWRE YLHPKEYEWVLIAGYIIVFVVALIGNVLVCVAVWKNHHMRTVTNY FIVNLSLADVLVTITCLPATLVVDITETWFFGQSLCKVIPYLQTVSVS VSVLTLSCIALDRWYAICHPLMFKSTAKRARNSIVIIWIVSCIIMIPQA IVMECSTVFPGLANKTTLFTVCDERWGGEIYPKMYHICFFLVTYMA PLCLMVLAYLQIFRKLWCRQIPGTSSVVQRKWKPLQPVSQPRGPGQ PTKSRMSAVAAEIKQIRARRKTARMLMIVLLVFAICYLPISILNVLKR VFGMFAHTEDRETVYAWFTFSHWLVYANSAANPIIYNFLSGKFREE FKAAFSCCCLGVHHRQEDRLTRGRTSTESRKSLTTQISNFDNISKLSE QVVLTSISTLPAANGAGPLQNW
28	PAR-2	IQGTNRSSKGRSLIGKVDGTSHVTGKGVTVETVFSVDEFSASVLTGK LTTVFLPIVYTIVFVVGLPSNGMALWVFLFRTKKKHPAVIYMANLA LADLLSVIWFPLKIAYHIHGNNWIYGEALCNVLIGFFYGNMYCSILF MTCLSVQRYWVIVNPMGHSRKKANIAIGISLAIWLLILLVTIPLYVV KQTIFIPALNITTCHDVLPEQLLVGDMFNYFLSLAIGVFLFPAFLTAS AYVLMIRMLRSSAMDENSEKKRKRAIKLIVTVLAMYLICFTPSNLLL VVHYFLIKSQGQSHVYALYIVALCLSTLNSCIDPFVYYFVSHDFRDH AKNALLCRSVRTVKQMQVSLTSKKHSRKSSSYSSSSTTVKTSY
29	C3aR	MASFSAETNSTDLLSQPWNEPPVILSMVILSLTFLLGLPGNGLVLWV AGLKMQRTVNTIWFLHLTLADLLCCLSLPFSLAHLALQGQWPYGRF LCKLIPSIIVLNMFASVFLLTAISLDRCLVVFKPIWCQNHRNVGMAC SICGCIWVVAFVMCIPVFVYREIFTTDNHNRCGYKFGLSSSLDYPDF YGDPLENRSLENIVQPPGEMNDRLDPSSFQTNDHPWTVPTVFQPQT FQRPSADSLPRGSARLTSQNLYSNVFKPADVVSPKIPSGFPIEDHETS PLDNSDAFLSTHLKLFPSASSNSFYESELPQGFQDYYNLGQFTDDDQ VPTPLVAITITRLVVGFLLPSVIMIACYSFIVFRMQRGRFAKSQSKTF RVAVVVVAVFLVCWTPYHIFGVLSLLTDPETPLGKTLMSWDHVCIA LASANSCFNPFLYALLGKDFRKKARQSIQGILEAAFSEELTRSTHCPS NNVISERNSTTV
30	LGR5	GSSPRSGVLLRGCPTHCHCEPDGRMLLRVDCSDLGLSELPSNLSVFT SYLDLSMNNISQLLPNPLPSLRFLEELRLAGNALTYIPKGAFTGLYSL KVLMLQNNQLRHVPTEALQNLRSLQSLRLDANHISYVPPSCFSGLH SLRHLWLDDNALTEIPVQAFRSLSALQAMTLALNKIHHIPDYAFGN LSSLVVLHLHNNRIHSLGKKCFDGLHSLETLDLNYNNLDEFPTAIRT LSNLKELGFHSNNIRSIPEKAFVGNPSLITIHFYDNPIQFVGRSAFQHL PELRTLTLNGASQITEFPDLTGTANLESLTLTGAQISSLPQTVCNQLP NLQVLDLSYNLLEDLPSFSVCQKLQKIDLRHNEIYEIKVDTFQQLLS LRSLNLAWNKIAIIHPNAFSTLPSLIKLDLSSNLLSSFPITGLHGLTHL KLTGNHALQSLISSENFPELKVIEMPYAYQCCAFGVCENAYKISNQ WNKGDNSSMDDLHKKDAGMFQAQDERDLEDFLLDFEEDLKALHS VQCSPSPGPFKPCEHLLDGWLIRIGVWTIAVLALTCNALVTSTVFRS PLYISPIKLLIGVIAAVNMLTGVSSAVLAGVDAFTFGSFARHGAWW ENGVGCHVIGFLSIFASESSVFLLTLAALERGFSVKYSAKFETKAPFS SLKVIILLCALLALTMAAVPLLGGSKYGASPLCLPLPFGEPSTMGYM VALILLNSLCFLMMTIAYTKLYCNLDKGDLENIWDCSMVKHIALLL FTNCILNCPVAFLSFSSLINLTFISPEVIKFILLVVVPLPACLNPLLYILF NPHFKEDLVSLRKQTYVWTRSKHPSLMSINSDDVEKQSCDSTQALV TFTSSSITYDLPPSSVPSPAYPVTESCHLSSVAFVPCL

[0066]

31	GPR101	MTSTCTNSTRESNSSHTCMPLSKMPISLAHGIIRSTVLVIFLAASFVG NIVLALVLQRKPQLLQVTNRFIFNLLVTDLLQISLVAPWVVATSVPL FWPLNSHFCTALVSLTHLFAFASVNTIVVVSVDRYLSIIHPLSYPSKM TQRRGYLLLYGTWIVAILQSTPPLYGWGQAAFDERNALCSMIWGA SPSYTILSVVSFIVIPLIVMIACYSVVFCAARRQHALLYNVKRHSLEV RVKDCVENEDEEGAEKKEEFQDESEFRRQHEGEVKAKEGRMEAKD GSLKAKEGSTGTSESSVEARGSEEVRESSTVASDGSMEGKEGSTKV EENSMKADKGRTEVNQCSIDLGEDDMEFGEDDINFSEDDVEAVNIP ESLPPSRRNSNSNPPLPRCYQCKAAKVIFIIIFSYVLSLGPYCFLAVLA VWVDVETQVPQWVITIIIWLFFLQCCIHPYVYGYMHKTIKKEIQDM LKKFFCKEKPPKEDSHPDLPGTEGGTEGKIVPSYDSATFP
32	GPR151	MLAAAFADSNSSSMNVSFAHLHFAGGYLPSDSQDWRTIIPALLVAV CLVGFVGNLCVIGILLHNAWKGKPSMIHSLILNLSLADLSLLLFSAPI RATAYSKSVWDLGWFVCKSSDWFIHTCMAAKSLTIVVVAKVCFM YASDPAKQVSIHNYTIWSVLVAIWTVASLLPLPEWFFSTIRHHEGVE MCLVDVPAVAEEFMSMFGKLYPLLAFGLPLFFASFYFWRAYDQCK KRGTKTQNLRNQIRSKQVTVMLLSIAIISALLWLPEWVAWLWVWH LKAAGPAPPQGFIALSQVLMFSISSANPLIFLVMSEEFREGLKGVWK WMITKKPPTVSESQETPAGNSEGLPDKVPSPESPASIPEKEKPSSPSS GKGKTEKAEIPILPDVEQFWHERDTVPSVQDNDPIPWEHEDQETGE GVK
33	GPR161	MSLNSSLSCRKELSNLTEEEGGEGGVIITQFIAIIVITIFVCLGNLVIVV TLYKKSYLLTLSNKFVFSLTLSNFLLSVLVLPFVVTSSIRREWIFGVV WCNFSALLYLLISSASMLTLGVIAIDRYYAVLYPMVYPMKITGNRA VMALVYIWLHSLIGCLPPLFGWSSVEFDEFKWMCVAAWHREPGYT AFWQIWCALFPFLVMLVCYGFIFRVARVKARKVHCGTVVIVEEDA QRTGRKNSSTSTSSSGSRRNAFQGVVYSANQCKALITILVVLGAFM VTWGPYMVVIASEALWGKSSVSPSLETWATWLSFASAVCHPLIYGL WNKTVRKELLGMCFGDRYYREPFVQRQRTSRLFSISNRITDLGLSPH LTALMAGGQPLGHSSSTGDTGFSCSQDSGTDMMLLEDYTSDDNPPS HCTCPPKRRSSVTFEDEVEQIKEAAKNSILHVKAEVHKSLDSYAASL AKAIEAEAKINLFGEEALPGVLVTARTVPGGGFGGRRGSRTLVSQR LQLQSIEEGDVLAAEQR
34	GPR17	MSKRSWWAGSRKPPREMLKLSGSDSSQSMNGLEVAPPGLITNFSLA TAEQCGQETPLENMLFASFYLLDFILALVGNTLALWLFIRDHKSGTP ANVFLMHLAVADLSCVLVLPTRLVYHFSGNHWPFGEIACRLTGFLF YLNMYASIYFLTCISADRFLAIVHPVKSLKLRRPLYAHLACAFLWV VVAVAMAPLLVSPQTVQTNHTVVCLQLYREKASHHALVSLAVAFT FPFITTVTCYLLIIRSLRQGLRVEKRLKTKAVRMIAIVLAIFLVCFVPY HVNRSVYVLHYRSHGASCATQRILALANRITSCLTSLNGALDPIMYF FVAEKFRHALCNLLCGKRLKGPPPSFEGKTNESSLSAKSEL
35	GPR183	MDIQMANNFTPPSATPQGNDCDLYAHHSTARIVMPLHYSLVFIIGLV GNLLALVVIVQNRKKINSTTLYSTNLVISDILFTTALPTRIAYYAMGF DWRIGDALCRITALVFYINTYAGVNFMTCLSIDRFIAVVHPLRYNKI KRIEHAKGVCIFVWILVFAQTLPLLINPMSKQEAERITCMEYPNFEET KSLPWILLGACFIGYVLPLIIILICYSQICCKLFRTAKQNPLTEKSGVN KKALNTIILIIVVFVLCFTPYHVAIIQHMIKKLRFSNFLECSQRHSFQIS LHFTVCLMNFNCCMDPFIYFFACKGYKRKVMRMLKRQVSVSISSA VKSAPEENSREMTETQMMIHSKSSNGK
36	CRTH2	MSANATLKPLCPILEQMSRLQSHSNTSIRYIDHAAVLLHGLASLLGL VENGVILFVVGCRMRQTVVTTWVLHLALSDLLASASLPFFTYFLAV

		GHSWELGTTFCKLHSSIFFLNMFASGFLLSAISLDRCLQVVRPVWAQ NHRTVAAAHKVCLVLWALAVLNTVPYFVFRDTISRLDGRIMCYYN VLLLNPGPDRDATCNSRQVALAVSKFLLAFLVPLAIIASSHAAVSLR LQHRGRRRPGRFVRLVAAVVAAFALCWGPYHVFSLLEARAHANPG LRPLVWRGLPFVTSLAFFNSVANPVLYVLTCPDMLRKLRRSLRTVL ESVLVDDSELGGAGSSRRRRTSSTARSASPLALCSRPEEPRGPARLL GWLLGSCAASPQTGPLNRALSSTSS
37	5-HT4	MDKLDANVSSEEGFGSVEKVVLLTFLSTVILMAILGNLLVMVAVC WDRQLRKIKTNYFIVSLAFADLLVSVLVMPFGAIELVQDIWIYGEVF CLVRTSLDVLLTTASIFHLCCISLDRYYAICCQPLVYRNKMTPLRIAL MLGGCWVIPTFISFLPIMQGWNNIGIIDLIEKRKFNQNSNSTYCVFM VNKPYAITCSVVAFYIPFLLMVLAYYRIYVTAKEHAHQIQMLQRAG ASSESRPQSADQHSTHRMRTETKAAKTLCIIMGCFCLCWAPFFVTNI VDPFIDYTVPGQVWTAFLWLGYINSGLNPFLYAFLNKSFRRAFLIIL CCDDERYRRPSILGQTVPCSTTTINGSTHVLRDAVECGGQWESQCH PPATSPLVAAQPSDT
38	5-HT6	MVPEPGPTANSTPAWGAGPPSAPGGSGWVAAALCVVIALTAAANS LLIALICTQPALRNTSNFFLVSLFTSDLMVGLVVMPPAMLNALYGR WVLARGLCLLWTAFDVMCCSASILNLCLISLDRYLLILSPLRYKLR MTPLRALALVLGAWSLAALASFLPLLLGWHELGHARPPVPGQCRL LASLPFVLVASGLTFFLPSGAICFTYCRILLAARKQAVQVASLTTGM ASQASETLQVPRTPRPGVESADSRRLATKHSRKALKASLTLGILLGM FFVTWLPFFVANIVQAVCDCISPGLFDVLTWLGYCNSTMNPIIYPLF MRDFKRALGRFLPCPRCPRERQASLASPSLRTSHSGPRPGLSLQQVL PLPLPPDSDSDSDAGSGGSSGLRLTAQLLLPGEATQDPPLPTRAAAA VNFFNIDPAEPELRPHPLGIPTN
39	CB2	MEECWVTEIANGSKDGLDSNPMKDYMILSGPQKTAVAVLCTLLGL LSALENVAVLYLILSSHQLRRKPSYLFIGSLAGADFLASVVFACSFV NFHVFHGVDSKAVFLLKIGSVTMTFTASVGSLLLTAIDRYLCLRYPP SYKALLTRGRALVTLGIMWVLSALVSYLPLMGWTCCPRPCSELFPL IPNDYLLSWLLFIAFLFSGIIYTYGHVLWKAHQHVASLSGHQDRQVP GMARMRLDVRLAKTLGLVLAVLLICWFPVLALMAHSLATTLSDQV KKAFAFCSMLCLINSMVNPVIYALRSGEIRSSAHHCLAHWKKCVRG LGSEAKEEAPRSSVTETEADGKITPWPDSRDLDLSDC
40	히스타민-3	MERAPPDGPLNASGALAGEAAAAGGARGFSAAWTAVLAALMALL IVATVLGNALVMLAFVADSSLRTQNNFFLLNLAISDFLVGAFCIPLY VPYVLTGRWTFGRGLCKLWLVVDYLLCTSSAFNIVLISYDRFLSVT RAVSYRAQQGDTRRAVRKMLLVWVLAFLLYGPAILSWEYLSGGSS IPEGHCYAEFFYNWYFLITASTLEFFTPFLSVTFFNLSIYLNIQRRTRL RLDGAREAAGPEPPPEAQPSPPPPPGCWGCWQKGHGEAMPLHRYG VGEAAVGAEAGEATLGGGGGGGSVASPTSSSGSSSRGTERPRSLKR GSKPSASSASLEKRMKMVSQSFTQRFRLSRDRKVAKSLAVIVSIFGL CWAPYTLLMIIRAACHGHCVPDYWYETSFWLLWANSAVNPVLYPL CHHSFRRAFTKLLCPQKLKIQPHSSLEHCWK
41	VPAC-1 또는 VIPR1	ARLQEECDYVQMIEVQHKQCLEEAQLENETIGCSKMWDNLTCWPA TPRGQVVVLACPLIFKLFSSIQGRNVSRSCTDEGWTHLEPGPYPIAC GLDDKAASLDEQQTMFYGSVKTGYTIGYGLSLATLLVATAILSLFR KLHCTRNYIHMHLFISFILRAAAVFIKDLALFDSGESDQCSEGSVGC KAAMVFFQYCVMANFFWLLVEGLYLYTLLAVSFFSERKYFWGYILI GWGVPSTFTMVWTIARIHFEDYGCWDTINSSLWWIIKGPILTSILVN FILFICIIRILLQKLRPPDIRKSDSSPYSRLARSTLLLIPLFGVHYIMFAF

[0067]

		FPDNFKPEVKMVFELVVGSFQGFVVAILYCFLNGEVQAELRRKWR RWHLQGVLGWNPKYRHPSGGSNGATCSTQVSMLTRVSPGARRSSS FQAEVSLV
42	GIPR	RAETGSKGQTAGELYQRWERYRRECQETLAAAEPPSGLACNGSFD MYVCWDYAAPNATARASCPWYLPWHHHVAAGFVLRQCGSDGQW GLWRDHTQCENPEKNEAFLDQRLILERLQVMYTVGYSLSLATLLLA LLILSLFRRLHCTRNYIHINLFTSFMLRAAAILSRDRLLPRPGPYLGD QALALWNQALAACRTAQIVTQYCVGANYTWLLVEGVYLHSLLVL VGGSEEGHFRYYLLLGWGAPALFVIPWVIVRYLYENTQCWERNEV KAIWWIIRTPILMTILINFLIFIRILGILLSKLRTRQMRCRDYRLRLARS TLTLVPLLGVHEVVFAPVTEEQARGALRFAKLGFEIFLSSFQGFLVS VLYCFINKEVQSEIRRGWHHCRLRRSLGEEQRQLPERAFRALPSGSG PGEVPTSRGLSSGTLPGPGNEASRELESYC
43	5-HT1B GPCR	MEEPGAQCAPPPPAGSETWVPQANLSSAPSQNCSAKDYIYQDSISLP WKVLLVMLLALITLATTLSNAFVIATVYRTRKLHTPANYLIASLAVT DLLVSILVMPISTMYTVTGRWTLGQVVCDFWLSSDITCCTASILHLC VIALDRYWAITDAVEYSAKRTPKRAAVMIALVWVFSISISLPPFFWR QAKAEEEVSECVVNTDHILYTVYSTVGAFYFPTLLLIALYGRIYVEA RSRILKQTPNRTGKRLTRAQLITDSPGSTSSVTSINSRVPDVPSESGSP VYVNQVKVRVSDALLEKKKLMAARERKATKTLGIILGAFIVCWLPF FIISLVMPICKDACWFHLAIFDFFTWLGYLNSLINPIIYTMSNEDFKQ AFHKLIRFKCTS
44	CCR7	QDEVTDDYIGDNTTVDYTLFESLCSKKDVRNFKAWFLPIMYSIICFV GLLGNGLVVLTYIYFKRLKTMTDTYLLNLAVADILFLLTLPFWAYS AAKSWVFGVHFCKLIFAIYKMSFFSGMLLLLCISIDRYVAIVQAVSA HRHRARVLLISKLSCVGIWILATVLSIPELLYSDLQRSSSEQAMRCSL ITEHVEAFITIQVAQMVIGFLVPLLAMSFCYLVIIRTLLQARNFERNK AIKVIIAVVVVFIVFQLPYNGVVLAQTVANFNITSSTCELSKQLNIAY DVTYSLACVRCCVNPFLYAFIGVKFRNDLFKLFKDLGCLSQEQLRQ WSSCRHIRRSSMSVEAETTTTFSP
45	CXCR5	MNYPLTLEMDLENLEDLFWELDRLDNYNDTSLVENHLCPATEGPL MASFKAVFVPVAYSLIFLLGVIGNVLVLVILERHRQTRSSTETFLFHL AVADLLLVFILPFAVAEGSVGWVLGTFLCKTVIALHKVNFYCSSLLL ACIAVDRYLAIVHAVHAYRHRRLLSIHITCGTIWLVGFLLALPEILFA KVSQGHHNNSLPRCTFSQENQAETHAWFTSRFLYHVAGFLLPMLV MGWCYVGVVHRLRQAQRRPQRQKAVRVAILVTSIFFLCWSPYHIVI FLDTLARLKAVDNTCKLNGSLPVAITMCEFLGLAHCCLNPMLYTFA GVKFRSDLSRLLTKLGCTGPASLCQLFPSWRRSSLSESENATSLTTF
46	GPR119	MESSFSFGVILAVLASLIIATNTLVAVAVLLLIHKNDGVSLCFTLNLA VADTLIGVAISGLLTDQLSSPSRPTQKTLCSLRMAFVTSSAAASVLT VMLITFDRYLAIKQPFRYLKIMSGFVAGACIAGLWLVSYLIGFLPLGI PMFQQTAYKGQCSFFAVFHPHFVLTLSCVGFFPAMLLFVFFYCDML KIASMHSQQIRKMEHAGAMAGGYRSPRTPSDFKALRTVSVLIGSFA LSWTPFLITGIVQVACQECHLYLVLERYLWLLGVGNSLLNPLIYAY WQKEVRLQLYHMALGVKKVLTSFLLFLSARNCGPERPRESSCHIVT ISSSEFDG
47	GPR55	MSQQNTSGDCLFDGVNELMKTLQFAVHIPTFVLGLLLNLLAIHGFS TFLKNRWPDYAATSIYMINLAVFDLLLVLSLPFKMVLSQVQSPFPSL CTLVECLYFVSMYGSVFTICFISMDRFLAIRYPLLVSHLRSPRKIFGIC CTIWVLVWTGSIPIYSFHGKVEKYMCFHNMSDDTWSAKVFFPLEVF GFLLPMGIMGFCCSRSIHILLGRRDHTQDWVQQKACIYSIAASLAVF

[0068]

		VVSFLPVHLGFFLQFLVRNSFIVECRAKQSISFFLQLSMCFSNVNCCL DVFCYYFVIKEFRMNIRAHRPSRVQLVLQDTTISRG

[0069]

[0070] GPCR 결합 도메인을 포함하는 스캐폴드가 본원에서 제공되며, 여기서 GPCR 결합 도메인의 서열은 적어도 하나의 GPCR과의 상호작용을 지원한다. 서열은 GPCR 리간드의 서열에 대해 상동성이거나 동일할 수 있다. 일부 경우에, GPCR 결합 도메인 서열은 서열 번호 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 또는 47에 대해 적어도 또는 약 70%, 80%, 85%, 90%, 91%, 92%, 93%, 94%, 95%, 96%, 97%, 98%, 99%, 또는 100%의 서열 동일성을 포함한다. 일부 경우에, GPCR 결합 도메인 서열은 서열 번호 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 또는 47에 대해 적어도 또는 약 95%의 상동성을 포함한다. 일부 경우에, GPCR 결합 도메인 서열은 서열 번호 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 또는 47에 대해 적어도 또는 약 97%의 상동성을 포함한다. 일부 경우에, GPCR 결합 도메인 서열은 서열 번호 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 또는 47에 대해 적어도 또는 약 99%의 상동성을 포함한다. 일부 경우에, GPCR 결합 도메인 서열은 서열 번호 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29,

30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 또는 47에 대해 적어도 또는 약 100%의 상동성을 포함한다. 일부 경우에, GPCR 결합 도메인 서열은 서열 번호 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 또는 47의 적어도 또는 약 10, 20, 30, 40, 50, 60, 70, 80, 90, 100, 110, 120, 130, 140, 150, 160, 170, 180, 190, 200, 210, 220, 230, 240, 250, 260, 270, 280, 290, 300, 310, 320, 330, 340, 350, 360, 370, 380, 390, 400개, 또는 400개 초과의 아미노산을 갖는 적어도 일부를 포함한다.

[0071] GPCR 결합 도메인을 포함하는 스캐폴드를 코딩하는 핵산을 포함하는 라이브러리는 하나 이상의 GPCR에 결합할 수 있다. 일부 경우에, GPCR 결합 도메인을 포함하는 스캐폴드는 단일 GPCR에 결합한다. 일부 경우에, GPCR 결합 도메인을 포함하는 스캐폴드는 동일한 패밀리 또는 클래스 내의 GPCR에 결합한다. 일부 경우에, GPCR 결합 도메인을 포함하는 스캐폴드는 다수의 GPCR에 결합한다. 예를 들어, 스캐폴드는 다량체이고, 적어도 2개의 스캐폴드를 포함한다. 일부 경우에, 다량체 스캐폴드는 적어도 또는 약 3, 4, 5, 6, 7, 8개 또는 8개 초과의 스캐폴드를 포함한다. 일부 경우에, 다량체 스캐폴드는 예를 들어 이량체화 도메인, 아미노산 링커, 디술파이드 결합, 화학적 가교결합 또는 관련 기술 분야에 공지된 임의의 다른 링커에 의해 연결된 적어도 2개의 스캐폴드를 포함한다. 일부 경우에, 다량체 스캐폴드는 동일한 GPCR 또는 상이한 GPCR에 결합한다.

[0072] GPCR 결합 도메인을 포함하는 스캐폴드를 코딩하는 핵산을 포함하는 GPCR 결합 라이브러리가 본원에서 제공되고, 여기서 라이브러리는 도메인 유형, 도메인 길이의 변이, 또는 잔기 변이를 포함한다. 일부 경우에, 도메인은 GPCR 결합 도메인을 포함하는 스캐폴드 내의 영역이다. 예를 들어, 영역은 VH, CDR-H3 또는 VL 도메인이다. 일부 경우에, 도메인은 GPCR 결합 도메인이다.

[0073] 본원에서 설명되는 방법은 적어도 하나의 미리 결정된 참조 핵산 서열의 미리 결정된 변이체를 각각 코딩하는 핵산의 GPCR 결합 라이브러리의 합성을 제공한다. 일부 경우에, 미리 결정된 참조 서열은 단백질을 코딩하는 핵산 서열이고, 변이체 라이브러리는 합성된 핵산에 의해 코딩되는 후속 단백질에서 단일 잔기의 복수의 상이한 변이체가 표준 번역 과정에 의해 생성되도록 하기 위해 적어도 하나의 단일 코돈의 변이를 코딩하는 서열을 포함한다. 일부 경우에, GPCR 결합 라이브러리는 다수의 위치에서 변이를 집합적으로 코딩하는 변이된 핵산을 포함한다. 일부 경우에, 변이체 라이브러리는 VH, CDR-H3 또는 VL 도메인의 적어도 하나의 단일 코돈의 변이를 코딩하는 서열을 포함한다. 일부 경우에, 변이체 라이브러리는 GPCR 결합 도메인에서 적어도 하나의 단일 코돈의 변이를 코딩하는 서열을 포함한다. 예를 들어, 표 2에 열거된 GPCR 결합 도메인의 적어도 하나의 단일 코돈이 변이된다. 일부 경우에, 변이체 라이브러리는 VH, CDR-H3 또는 VL 도메인의 다중 코돈의 변이를 코딩하는 서열을 포함한다. 일부 경우에, 변이체 라이브러리는 GPCR 결합 도메인에서 다중 코돈의 변이를 코딩하는 서열을 포함한다. 변이를 위한 예시적인 코돈의 수는 적어도 또는 약 1, 5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60, 65, 70, 75, 80, 85, 90, 95, 100, 125, 150, 175, 225, 250, 275, 300개 또는 300개 초과의 코돈을 포함하지만, 이로 제한되지 않는다.

[0074] 본원에서 설명되는 방법은 적어도 하나의 미리 결정된 참조 핵산 서열의 미리 결정된 변이체를 각각 코딩하는 핵산의 GPCR 결합 라이브러리의 합성을 제공하며, 여기서 GPCR 결합 라이브러리는 도메인의 길이의 변이를 코딩하는 서열을 포함한다. 일부 경우에, 도메인은 VH, CDR-H3 또는 VL 도메인이다. 일부 경우에, 도메인은 GPCR 결합 도메인이다. 일부 경우에, 라이브러리는 미리 결정된 참조 서열과 비교하여 적어도 또는 약 1, 5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60, 65, 70, 75, 80, 85, 90, 95, 100, 125, 150, 175, 225, 250, 275, 300개, 또는 300개 초과의 코돈이 더 적은 길이 변이를 코딩하는 서열을 포함한다. 일부 경우에, 라이브러리는 미리 결정된 참조 서열과 비교하여 적어도 또는 약 1, 5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60, 65, 70, 75, 80, 85, 90, 95, 100, 125, 150, 175, 225, 250, 275, 300개, 또는 300개 초과의 코돈이 더 많은 길이 변이를 코딩하는 서열을 포함한다.

[0075] GPCR 결합 도메인을 포함하는 스캐폴드를 코딩하는 핵산을 포함하는 GPCR 결합 라이브러리가 본원에서 제공되며, 여기서 GPCR 결합 라이브러리는 다양한 수의 단편으로 합성된다. 일부 경우에, 단편은 VH, CDR-H3 또는 VL 도메인을 포함한다. 일부 경우에, GPCR 결합 라이브러리는 적어도 또는 약 2개의 단편, 3개의 단편, 4개의 단편, 5개의 단편 또는 5개 초과의 단편으로 합성된다. 각각의 핵산 단편의 길이 또는 합성된 핵산의 평균 길이는 적어도 또는 약 50, 75, 100, 125, 150, 175, 200, 225, 250, 275, 300, 325, 350, 375, 400, 425, 450, 475, 500, 525, 550, 575, 600개 또는 600개 초과의 염기쌍일 수 있다. 일부 경우에, 길이는 약 50 내지 600, 75 내지 575, 100 내지 550, 125 내지 525, 150 내지 500, 175 내지 475, 200 내지 450, 225 내지 425,

250 내지 400, 275 내지 375 또는 300 내지 350개의 염기쌍이다.

[0076] 본원에서 설명되는 GPCR 결합 도메인을 포함하는 스캐폴드를 코딩하는 핵산을 포함하는 GPCR 결합 라이브러리는 번역시 다양한 길이의 아미노산을 포함한다. 일부 경우에, 합성된 각각의 아미노산 단편의 길이 또는 아미노산의 평균 길이는 적어도 또는 약 15, 20, 25, 30, 35, 40, 45, 50, 55, 60, 65, 70, 75, 80, 85, 90, 95, 100, 105, 110, 115, 120, 125, 130, 135, 140, 145, 150개 또는 150개 초과의 아미노산일 수 있다. 일부 경우에, 아미노산의 길이는 약 15 내지 150, 20 내지 145, 25 내지 140, 30 내지 135, 35 내지 130, 40 내지 125, 45 내지 120, 50 내지 115, 55 내지 110, 60 내지 110, 65 내지 105, 70 내지 100 또는 75 내지 95개의 아미노산이다. 일부 경우에, 아미노산의 길이는 약 22개 내지 약 75개의 아미노산이다.

[0077] GPCR 결합 도메인을 포함하는 스캐폴드를 코딩하는 디 노보 합성된 변이체 서열을 포함하는 GPCR 결합 라이브러리는 다수의 변이체 서열을 포함한다. 일부 경우에, 다수의 변이체 서열은 CDR-H1, CDR-H2, CDR-H3, CDR-L1, CDR-L2, CDR-L3, VL, VH 또는 이들의 조합에 대해 디 노보 합성된다. 일부 경우에, 프레임워크 요소 1(FW1), 프레임워크 요소 2(FW2), 프레임워크 요소 3(FW3) 또는 프레임워크 요소 4(FW4)에 대해 다수의 변이체 서열이 디 노보 합성된다. 일부 경우에, GPCR 결합 도메인에 대해 다수의 변이체 서열이 디 노보 합성된다. 예를 들어, 변이체 서열의 수는 VH 도메인에 대해 약 1 내지 약 10개의 서열, GPCR 결합 도메인에 대해 약 10^8개의 서열, 및 VK 도메인에 대해 약 1 내지 약 44개의 서열이다. 도 2를 참조한다. 변이체 서열의 수는 적어도 또는 약 5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60, 65, 70, 75, 80, 85, 90, 95, 100, 125, 150, 175, 200, 225, 250, 275, 300, 325, 350, 375, 400, 425, 450, 475, 500개 또는 500개 초과의 서열일 수 있다. 일부 경우에, 변이체 서열의 수는 약 10 내지 300, 25 내지 275, 50 내지 250, 75 내지 225, 100 내지 200 또는 125 내지 150개의 서열이다.

[0078] GPCR 결합 도메인을 포함하는 스캐폴드를 코딩하는 디 노보 합성된 변이체 서열을 포함하는 GPCR 결합 라이브러리는 개선된 다양성을 포함한다. 예를 들어, 변이체는 GPCR 결합 도메인 변이체를 N-말단 CDR-H3 변이 및 C-말단 CDR-H3 변이를 포함하는 면역글로불린 스캐폴드 변이체에 배치함으로써 생성된다. 일부 경우에, 변이체는 친화도 성숙 변이체를 포함한다. 대안적으로 또는 조합하여, 변이체는 CDR-H1, CDR-H2, CDR-L1, CDR-L2 및 CDR-L3을 포함하지만 이로 제한되지 않는 면역글로불린의 다른 영역에서의 변이체를 포함한다. 일부 경우에, GPCR 결합 라이브러리의 변이체의 수는 적어도 또는 약 10^4, 10^5, 10^6, 10^7, 10^8, 10^9, 10^{10}개, 또는 10^{10}개 초과의 동일하지 않은 서열이다. 예를 들어, VH 영역에 대한 약 10개의 변이체 서열, CDR-H3 영역에 대한 약 237개의 변이체 서열, 및 VL 및 CDR-L3 영역에 대한 약 43개의 변이체 서열을 포함하는 라이브러리는 10^5개의 동일하지 않은 서열(10 x 237 x 43)을 포함한다. 도 4a-4b를 참조한다.

[0079] GPCR 결합 도메인을 포함하는 스캐폴드를 코딩하는 핵산을 포함하는 GPCR 결합 라이브러리의 합성 후, 라이브러리는 스크리닝 및 분석에 사용될 수 있다. 예를 들어, 라이브러리는 라이브러리 디스플레이 가능성 및 패닝에 대해 검정된다. 일부 경우에, 선택 가능한 태그를 사용하여 디스플레이 가능성이 검정된다. 예시적인 태그는 방사성 표지, 형광 표지, 효소, 화학발광 태그, 비색 태그, 친화도 태그 또는 관련 기술 분야에 공지된 다른 표지 또는 태그를 포함하지만, 이로 제한되지 않는다. 일부 경우에, 태그는 히스티딘, 폴리히스티딘, myc, 헤마글루티닌(HA) 또는 FLAG이다. 예를 들어, 도 3에 도시된 바와 같이, GPCR 결합 라이브러리는 다수의 태그, 예를 들어 GFP, FLAG 및 Lucy, 및 DNA 바코드를 갖는 GPCR 결합 도메인을 포함하는 스캐폴드를 코딩하는 핵산을 포함한다. 일부 경우에, 라이브러리는 단일 분자 실시간(SMRT) 시퀀싱, 폴로니 시퀀싱, 라이게이션에 의한 시퀀싱, 가역적 종결인자 시퀀싱, 양성자 검출 시퀀싱, 이온 반도체 시퀀싱, 나노포어 시퀀싱, 전자 시퀀싱, 파이로시퀀싱, 막삼-길버트 시퀀싱, 사슬 종결(예를 들어, 생거) 시퀀싱, +S 시퀀싱 또는 합성에 의한 시퀀싱을 포함하지만 이로 제한되지 않는 다양한 방법을 사용한 시퀀싱에 의해 검정된다.

[0080] *발현 시스템*

[0081] GPCR 결합 도메인을 포함하는 스캐폴드를 코딩하는 핵산을 포함하는 라이브러리가 본원에서 제공되며, 여기서 라이브러리는 개선된 특이성, 안정성, 발현, 폴딩 또는 하류 활성을 갖는다. 일부 경우에, 본원에서 설명되는 라이브러리는 스크리닝 및 분석에 사용된다.

[0082] GPCR 결합 도메인을 포함하는 스캐폴드를 코딩하는 핵산을 포함하는 라이브러리가 본원에서 제공되며, 여기서 핵산 라이브러리는 스크리닝 및 분석에 사용된다. 일부 경우에, 스크리닝 및 분석은 시험관내, 생체내 또는 생체외 검정을 포함한다. 스크리닝을 위한 세포는 살아있는 대상체 또는 세포주로부터 채취한 1차 세포를 포함한다. 세포는 원핵 생물(예를 들어, 박테리아 및 진균) 또는 진핵 생물(예를 들어, 동물 및 식물)로부터 유래될

수 있다. 예시적인 동물 세포는 마우스, 토끼, 영장류 및 곤충으로부터의 세포를 비제한적으로 포함한다. 일부 경우에, 스크리닝을 위한 세포는 차이니즈 햄스터 난소(CHO: Chinese Hamster Ovary) 세포주, 인간 배아 신장(HEK: human embryonic kidney) 세포주 또는 베이비 햄스터 신장(BHK: baby hamster kidney) 세포주를 포함하지만 이로 제한되지 않는 세포주를 포함한다. 일부 경우에, 본원에서 설명되는 핵산 라이브러리는 또한 다세포 유기체로 전달될 수 있다. 예시적인 다세포 유기체는 식물, 마우스, 토끼, 영장류 및 곤충을 비제한적으로 포함한다.

[0083] 본원에서 설명되는 핵산 라이브러리는 다양한 약리학적 또는 약동학적 특성에 대해 스크리닝될 수 있다. 일부 경우에, 라이브러리는 시험관내 검정, 생체내 검정 또는 생체외 검정을 사용하여 스크리닝된다. 예를 들어, 스크리닝되는 시험관내 약리학적 또는 약동학적 특성은 결합 친화도, 결합 특이성 및 결합력을 포함하지만 이로 제한되지 않는다. 스크리닝되는 본원에서 설명되는 라이브러리의 예시적인 생체내 약리학적 또는 약동학적 특성은 치료 효능, 활성, 전임상 독성 특성, 임상 효능 특성, 임상 독성 특성, 면역원성, 효능 및 임상 안전성 특성을 포함하지만, 이로 제한되지 않는다.

[0084] 벡터에서 발현될 수 있는 핵산 라이브러리가 본원에서 제공된다. 본원에서 개시되는 핵산 라이브러리를 삽입하기 위한 발현 벡터는 진핵 또는 원핵 발현 벡터를 포함할 수 있다. 예시적인 발현 벡터는 다음을 비제한적으로 포함한다: 포유동물 발현 벡터 pSF-CMV-NEO-NH2-PPT-3XFLAG, pSF-CMV-NEO-COOH-3XFLAG, pSF-CMV-PURO-NH2-GST-TEV, pSF-OXB20-COOH-TEV-FLAG(R)-6His, pCEP4 pDEST27, pSF-CMV-Ub-KrYFP, pSF-CMV-FMDV-daGFP, pEF1a-mCherry-N1 벡터, pEF1a-tdTomato 벡터, pSF-CMV-FMDV-Hygro, pSF-CMV-PGK-Puro, pMCP-tag(m), 및 pSF-CMV-PURO-NH2-CMYC; 박테리아 발현 벡터 pSF-OXB20-BetaGal, pSF-OXB20-Fluc, pSF-OXB20, 및 pSF-Tac; 식물 발현 벡터 pRI 101-AN DNA 및 pCambia2301; 및 효모 발현 벡터 pTYB21 및 pKLAC2, 및 곤충 벡터 pAc5.1/V5-His A 및 pDEST8. 일부 경우에, 벡터는 pcDNA3 또는 pcDNA3.1이다.

[0085] GPCR 결합 도메인의 서열을 포함하는 스캐폴드를 포함하는 구축물을 생성하기 위해 벡터에서 발현되는 핵산 라이브러리가 본원에서 설명된다. 일부 경우에, 구축물(construct)의 크기가 상이하다. 일부 경우에, 구축물은 적어도 또는 약 500, 600, 700, 800, 900, 1000, 1100, 1300, 1400, 1500, 1600, 1700, 1800, 2000, 2400, 2600, 2800, 3000, 3200, 3400, 3600, 3800, 4000, 4200, 4400, 4600, 4800, 5000, 6000, 7000, 8000, 9000, 10000개, 또는 10000개 초과의 염기를 포함한다. 일부 경우에, 구축물은 약 300 내지 1,000, 300 내지 2,000, 300 내지 3,000, 300 내지 4,000, 300 내지 5,000, 300 내지 6,000, 300 내지 7,000, 300 내지 8,000, 300 내지 9,000, 300 내지 10,000, 1,000 내지 2,000, 1,000 내지 3,000, 1,000 내지 4,000, 1,000 내지 5,000, 1,000 내지 6,000, 1,000 내지 7,000, 1,000 내지 8,000, 1,000 내지 9,000, 1,000 내지 10,000, 2,000 내지 3,000, 2,000 내지 4,000, 2,000 내지 5,000, 2,000 내지 6,000, 2,000 내지 7,000, 2,000 내지 8,000, 2,000 내지 9,000, 2,000 내지 10,000, 3,000 내지 4,000, 3,000 내지 5,000, 3,000 내지 6,000, 3,000 내지 7,000, 3,000 내지 8,000, 3,000 내지 9,000, 3,000 내지 10,000, 4,000 내지 5,000, 4,000 내지 6,000, 4,000 내지 7,000, 4,000 내지 8,000, 4,000 내지 9,000, 4,000 내지 10,000, 5,000 내지 6,000, 5,000 내지 7,000, 5,000 내지 8,000, 5,000 내지 9,000, 5,000 내지 10,000, 6,000 내지 7,000, 6,000 내지 8,000, 6,000 내지 9,000, 6,000 내지 10,000, 7,000 내지 8,000, 7,000 내지 9,000, 7,000 내지 10,000, 8,000 내지 9,000, 8,000 내지 10,000, 또는 9,000 내지 10,000개의 염기를 포함한다.

[0086] GPCR 결합 도메인을 포함하는 스캐폴드를 코딩하는 핵산을 포함하는 라이브러리가 본원에서 제공되며, 여기서 핵산 라이브러리는 세포에서 발현된다. 일부 경우에, 라이브러리는 리포터 유전자를 발현하도록 합성된다. 예시적인 리포터 유전자는 다음을 포함하지만, 이로 제한되지 않는다: 아세토히드록시산 신타제(AHAS), 알칼리성 포스파타제(AP), 베타 갈락토시다제(LacZ), 베타 글루코로니다제(GUS), 클로람페니콜 아세틸트랜스퍼라제(CAT), 녹색 형광 단백질(GFP), 적색 형광 단백질(RFP), 황색 형광 단백질(YFP), 시안 형광 단백질(CFP), 진청색 형광 단백질, 담황색 형광 단백질, 주황색 형광 단백질, 선홍색 형광 단백질, 청록색(turquoise) 형광 단백질, 청색 형광 단백질, 양고추냉이 퍼옥시다제(HRP), 루시퍼라제(Luc), 노팔린 신타제(NOS), 옥토핀 신타제(OCS), 루시퍼라제 및 이들의 유도체. 리포터 유전자의 조절을 결정하는 방법은 관련 기술 분야에 널리 공지되어 있으며, 형광 측정 방법(예를 들어, 형광 분광법, 형광 활성화 세포 분류(FACS), 형광 현미경) 및 항생제 내성 결정을 포함하지만 이로 제한되지 않는다.

[0087] **질환 및 장애**

[0088] 치료 효과를 가질 수 있는 GPCR 결합 도메인을 포함하는 스캐폴드를 코딩하는 핵산을 포함하는 GPCR 결합 라이브러리가 본원에서 제공된다. 일부 경우에, GPCR 결합 라이브러리는 번역시 질환 또는 장애를 치료하는데 사용

되는 단백질을 생성한다. 일부 경우에, 단백질은 면역글로불린이다. 일부 경우에, 단백질은 펩티드 모방체이다. 예시적인 질환은 암, 염증성 질환 또는 장애, 대사성 질환 또는 장애, 심혈관 질환 또는 장애, 호흡기 질환 또는 장애, 통증, 소화계 질환 또는 장애, 생식계 질환 또는 장애, 내분비계 질환 또는 장애, 또는 신경계 질환 또는 장애를 포함하지만, 이로 제한되지 않는다. 일부 경우에, 암은 고형암 또는 혈액암이다. 일부 경우에, 본원에서 설명되는 GPCR 글루카곤 유사 펩티드 1 수용체(GLP1R)의 억제제는 대사 장애의 치료를 위해 사용된다. 일부 경우에, 본원에서 설명되는 GPCR GLP1R의 억제제는 체중 증가의 치료(또는 체중 감소의 유도), 비만의 치료 또는 II형 당뇨병의 치료를 위해 사용된다. 일부 경우에, 대상체는 포유동물이다. 일부 경우에, 대상체는 마우스, 토끼, 개 또는 인간이다. 본원에서 설명되는 방법에 의해 치료되는 대상체는 유아, 성인 또는 어린이일 수 있다. 본원에서 설명되는 바와 같은 항체 또는 항체 단편을 포함하는 약제학적 조성물은 정맥 내로 또는 피하 투여될 수 있다. 일부 경우에, 약제학적 조성물은 서열 번호 2420 내지 2436 중 어느 하나의 서열을 포함한 CDR-H3을 포함하는, 본원에서 설명되는 항체 또는 항체 단편을 포함한다. 추가의 경우에, 약제학적 조성물은 대사 장애의 치료를 위해 사용된다.

[0089] **변이체 라이브러리**

[0090] *코돈 변이*

[0091] 본원에서 설명되는 변이체 핵산 라이브러리는 복수의 핵산을 포함할 수 있으며, 각각의 핵산은 참조 핵산 서열과 비교하여 변이체 코돈 서열을 코딩한다. 일부 경우에, 제1 핵산 집단의 각각의 핵산은 단일 변이체 부위에 변이체를 함유한다. 일부 경우에, 제1 핵산 집단은 제1 핵산 집단이 동일한 변이체 부위에 하나 초과의 변이체를 함유하도록 단일 변이체 부위에 복수의 변이체를 함유한다. 제1 핵산 집단은 동일한 변이체 부위에 다중 코돈 변이체를 집합적으로 코딩하는 핵산을 포함할 수 있다. 제1 핵산 집단은 동일한 위치에 19개 또는 그 초과의 코돈까지 집합적으로 코딩하는 핵산을 포함할 수 있다. 제1 핵산 집단은 동일한 위치에 60개까지의 변이체 삼중체를 집합적으로 코딩하는 핵산을 포함할 수 있거나, 또는 제1 핵산 집단은 동일한 위치에 61개까지의 상이한 코돈 삼중체를 집합적으로 코딩하는 핵산을 포함할 수 있다. 각각의 변이체는 번역 동안 상이한 아미노산을 생성하는 코돈을 코딩할 수 있다. 표 3는 변이체 부위에 대해 가능한 각각의 코돈(및 대표적인 아미노산)의 목록을 제공한다.

[0092] 표 3. 코돈 및 아미노산의 목록

아미노산	1 문자 코드	3 문자 코드	코돈					
알라닌	A	Ala	GCA	GCC	GCG	GCT		
시스테인	C	Cys	TGC	TGT				
아스파르트산	D	Asp	GAC	GAT				
글루탐산	E	Glu	GAA	GAG				
페닐알라닌	F	Phe	TTC	TTT				
글리신	G	Gly	GGA	GGC	GGG	GGT		
히스티딘	H	His	CAC	CAT				
이소류신	I	Iso	ATA	ATC	ATT			
라이신	K	Lys	AAA	AAG				
류신	L	Leu	TTA	TTG	CTA	CTC	CTG	CTT
메티오닌	M	Met	ATG					
아스파라긴	N	Asn	AAC	AAT				
프롤린	P	Pro	CCA	CCC	CCG	CCT		
글루타민	Q	Gln	CAA	CAG				
아르기닌	R	Arg	AGA	AGG	CGA	CGC	CGG	CGT
세린	S	Ser	AGC	AGT	TCA	TCC	TCG	TCT
트레오닌	T	Thr	ACA	ACC	ACG	ACT		
발린	V	Val	GTA	GTC	GTG	GTT		
트립토판	W	Trp	TGG					
티로신	Y	Tyr	TAC	TAT				

[0093]

[0094] 핵산 집단은 다중 위치에서 20개 이하의 코돈 변이를 집합적으로 코딩하는 변이된 핵산을 포함할 수 있다. 이러한 경우, 집단 내의 각각의 핵산은 동일한 핵산 내의 하나 초과의 위치에서 코돈에 대한 변이를 포함한다. 일부 경우에, 집단 내의 각각의 핵산은 단일 핵산 내의 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20개 또는 그 초과의 코돈에서 코돈에 대한 변이를 포함한다. 일부 경우에, 각각의 변이체의 긴 핵산은 하나의 긴 핵산 내의 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30개 또는 그 초과의 코돈에서 코돈에 대한 변이를 포함한다. 일부 경우에, 변이체 핵산 집단은 단일 핵산 내의 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30개 또는 그 초과의 코돈에서 코돈에 대한 변이를 포함한다. 일부 경우에, 변이체 핵산 집단은 하나의 긴 핵산 내의 적어도 약 10, 20, 30, 40, 50, 60, 70, 80, 90, 100개 또는 그 초과의 코돈에서 코돈에 대한 변이를 포함한다.

[0095] **고도로 병렬화된 핵산 합성**

[0096] 본원에서 혁신적인 합성 플랫폼을 생성하기 위해 뉴클레오티드 합성으로부터 실리콘 상의 나노웰 내에서의 유전자 조립까지의 종단간(end-to-end) 과정의 소형화, 병렬화(parallelization) 및 수직 통합을 이용하는 플랫폼 접근법이 제공된다. 본원에서 설명되는 장치는 96웰 플레이트와 동일한 풋프린트를 제공하며, 실리콘 합성 플랫폼은 전통적인 합성 방법과 비교하여 최대 1,000개 또는 그 초과의 수준으로 처리량을 증가시킬 수 있고, 최대 약 1,000,000개 또는 그 초과의 뉴클레오티드, 또는 10,000개 또는 그 초과의 유전자를 하나의 고도로 병렬화된 실행으로 생성할 수 있다.

[0097] 차세대 시퀀싱의 출현으로, 고해상도 게놈 데이터는 정상적인 생물학 및 질환 발병 기전 둘 모두에서 다양한 유전자의 생물학적 역할을 탐구하는 연구에 중요한 요소가 되었다. 이 연구의 핵심은 분자 생물학의 중심 원리 및 "순차적 정보의 잔기별 이동(residue-by-residue transfer of sequential information)" 개념이다. DNA에 코딩된 게놈 정보는 메시지로 전사된 후, 주어진 생물학적 경로 내에서 활성 생성물인 단백질로 번역된다.

[0098] 또 다른 흥미로운 연구 영역은 고특이적 세포 표적에 초점을 맞춘 치료 분자의 발견, 개발 및 제조에 관한 것이다. 높은 다양성의 DNA 서열 라이브러리는 표적 치료제 개발을 위한 파이프라인의 핵심이다. 유전자 돌연변이체는 그의 치료 표적에 대한 높은 친화도를 갖는 단백질의 높은 발현을 위해 최적화된 유전자에서 이상적으로 최고조에 달하는 단백질 조작 사이클을 설계, 구축 및 시험할 때 단백질을 발현하기 위해 사용된다. 예를 들어, 수용체의 결합 포켓을 고려한다. 결합 포켓 내의 모든 잔기의 모든 서열 순열(permutation)을 동시에 시험할 수 있는 능력은 철저한 조사를 가능하게 하여 성공 가능성을 증가시킨다. 연구자가 수용체 내의 특정 부위에서 가능한 모든 돌연변이를 생성하려고 시도하는 포화 돌연변이 유발이 상기 개발 시도에 대한 하나의 접근 방식을 나타낸다. 이것은 비싸고 시간도 많이 걸리고 노동 집약적이기는 하지만, 각각의 변이체를 각각의 위치에 도입할 수 있다. 이와 대조적으로, DNA의 몇몇의 선택된 위치 또는 짧은 스트레치가 광범위하게 변형될 수 있는 조합 돌연변이 유발은 편향된 제시를 갖는 변이체의 불완전한 레퍼토리를 생성한다.

[0099] 약물 개발 파이프 라인을 가속화하기 위해, 시험을 위해 이용 가능한 올바른 위치에서 의도된 빈도로 이용 가능한 원하는 변이체를 갖는 라이브러리, 즉 정밀 라이브러리는 스크리닝을 위한 소요 시간뿐만 아니라 비용 감소를 가능하게 한다. 원하는 빈도로 각각의 의도된 변이체의 정확한 도입을 제공하는 핵산 합성 변이체 라이브러리를 합성하는 방법이 본원에서 제공된다. 최종 사용자에게, 이것은 서열 공간을 철저히 샘플링할 수 있을 뿐만 아니라, 효율적인 방법으로 이러한 가설을 검사하여 비용 및 스크리닝 시간을 감소시킬 수 있는 능력으로 제시된다. 게놈 차원의 편집에 의해, 중요한 경로, 각각의 변이체 및 서열 순열을 최적의 기능성에 대해 시험할 수 있는 라이브러리, 및 약물 발견을 위한 생물 시스템을 재조작하기 위한 전체 경로 및 게놈을 재구축하기 위해 사용될 수 있는 수천 개의 유전자를 규명할 수 있다.

[0100] 제1 예에서, 약물 자체는 본원에서 설명되는 방법을 사용하여 최적화될 수 있다. 예를 들어, 항체의 특정 기능을 개선하기 위해, 항체의 일부를 코딩하는 변이체 뉴클레오티드 라이브러리가 설계되고, 합성된다. 이어서, 항체에 대한 변이체 핵산 라이브러리는 본원에서 설명되는 공정(예를 들어, PCR 돌연변이 유발, 이어서 벡터 내로의 삽입)에 의해 생성될 수 있다. 이어서 항체를 생산 세포주에서 발현시키고, 향상된 활성에 대해 스크리닝한다. 예시적인 스크리닝은 항원에 대한 결합 친화도, 안정성, 또는 이펙터 기능(예를 들어, ADCC, 보체 또는 아폽토시스)의 조절을 조사하는 것을 포함한다. 항체를 최적화하기 위한 예시적인 영역은 비제한적으로 Fc 영역, Fab 영역, Fab 영역의 가변 영역, Fab 영역의 불변 영역, 중쇄 또는 경쇄의 가변 도메인(V_H 또는 V_L) 및 V_H 또는 V_L의 특정 상보성 결정 영역(CDR)을 포함한다.

[0101] 본원에서 설명되는 방법에 의해 합성된 핵산 라이브러리는 질환 상태와 관련된 다양한 세포에서 발현될 수 있다. 질환 상태와 관련된 세포에는 세포주, 조직 샘플, 대상체의 1차 세포, 대상체에서 확장된 배양 세포, 또는 모델 시스템의 세포가 포함된다. 예시적인 모델 시스템은 비제한적으로 질환 상태의 식물 및 동물 모델을 포함한다.

[0102] 질환 상태의 예방, 감소 또는 치료와 관련된 변이체 분자를 확인하기 위해, 본원에서 설명되는 변이체 핵산 라이브러리는 질환 상태와 관련된 세포에서 발현되거나, 질환 상태가 유도될 수 있는 세포에서 발현된다. 일부 경우에, 세포에서 질환 상태를 유도하기 위해 작용제가 사용된다. 질환 상태 유도를 위한 예시적인 도구는 비제한적으로 Cre/Lox 재조합 시스템, LPS 염증 유도 및 저혈당을 유도하는 스트렙토조토신을 포함한다. 질환 상태와 관련된 세포는 특정 질환 상태를 갖는 대상체로부터의 세포뿐만 아니라, 모델 시스템 또는 배양된 세포로부터의 세포일 수 있다. 예시적인 질환 상태는 박테리아성, 진균성, 바이러스성, 자가면역 또는 증식성 장애(예를 들어, 암)를 포함한다. 일부 경우에, 변이체 핵산 라이브러리는 모델 시스템, 세포주, 또는 대상체로부터 유래된 1차 세포에서 발현되고, 적어도 하나의 세포 활성의 변화에 대해 스크리닝된다. 예시적인 세포 활성은 비제

한적으로 증식, 주기 진행, 세포 사멸, 부착, 이동, 재생, 세포 신호전달, 에너지 생성, 산소 이용, 대사 활성 및 노화, 자유 라디칼 손상에 대한 반응, 또는 이들의 임의의 조합을 포함한다.

[0103] **기판**

[0104] 폴리뉴클레오티드 합성을 위한 표면으로서 사용되는 장치는 균질한 어레이 표면, 패턴화된 어레이 표면, 채널, 비드, 겔 등을 포함하지만 이로 제한되지 않는 기판의 형태일 수 있다. 각각의 클러스터가 폴리뉴클레오티드의 부착 및 합성을 지원하는 복수의 로커스(locus)를 포함하는 것인 복수의 클러스터를 포함하는 기판이 본원에서 제공된다. 일부 경우에, 기판은 균질한 어레이 표면을 포함한다. 예를 들어, 균질한 어레이 표면은 균질한 플레이트이다. 본원에서 사용되는 바와 같이, "로커스"라는 용어는 미리 결정된 단일 서열을 코딩하는 폴리뉴클레오티드가 표면으로부터 연장되는 것을 지원하는 구조 상의 별개의 영역을 지칭한다. 일부 경우에, 로커스는 2차원 표면, 예컨대, 실질적으로 평평한 표면 상에 위치한다. 일부 경우에, 로커스는 3차원 표면, 예를 들어 웰, 마이크로웰, 채널, 또는 포스트 상에 위치한다. 일부 경우에, 로커스의 표면은 폴리뉴클레오티드 합성을 위해 적어도 하나의 뉴클레오티드에, 또는 바람직하게, 폴리뉴클레오티드 집단의 합성을 위해 동일한 뉴클레오티드로 이루어진 집단에 부착되도록 능동적으로 작용화된 물질을 포함한다. 일부 경우에, 폴리뉴클레오티드는 동일한 핵산 서열을 코딩하는 폴리뉴클레오티드 집단을 지칭한다. 일부 경우에, 기판의 표면은 기판의 하나의 표면 또는 복수의 표면을 포함한다. 제공된 시스템 및 방법을 사용하여 본원에서 설명되는 라이브러리 내에서 합성된 폴리뉴클레오티드에 대한 평균 오류율은 종종 오류 보정이 없이, 종종 1000개 중 1개 미만, 2000개 중 약 1개 미만, 3000개 중 약 1개 미만이거나 이보다 적다.

[0105] 통상의 지지체 상의 주소 지정 가능한 위치에 상이한 미리 결정된 서열을 갖는, 복수의 폴리뉴클레오티드의 병렬 합성을 지원하는 표면이 본원에서 제공된다. 일부 경우에, 기판은 50, 100, 200, 400, 600, 800, 1000, 1200, 1400, 1600, 1800, 2,000; 5,000; 10,000; 20,000; 50,000; 100,000; 200,000; 300,000; 400,000; 500,000; 600,000; 700,000; 800,000; 900,000; 1,000,000; 1,200,000; 1,400,000; 1,600,000; 1,800,000; 2,000,000; 2,500,000; 3,000,000; 3,500,000; 4,000,000; 4,500,000; 5,000,000; 10,000,000개 초과, 또는 이보다 많은 동일하지 않은 폴리뉴클레오티드의 합성을 지원한다. 일부 경우에, 표면은 상이한 서열을 코딩하는, 50, 100, 200, 400, 600, 800, 1000, 1200, 1400, 1600, 1800, 2,000; 5,000; 10,000; 20,000; 50,000; 100,000; 200,000; 300,000; 400,000; 500,000; 600,000; 700,000; 800,000; 900,000; 1,000,000; 1,200,000; 1,400,000; 1,600,000; 1,800,000; 2,000,000; 2,500,000; 3,000,000; 3,500,000; 4,000,000; 4,500,000; 5,000,000; 10,000,000개 초과, 또는 이보다 많은 폴리뉴클레오티드의 합성을 지원한다. 일부 경우에, 폴리뉴클레오티드 중 적어도 일부는 동일한 서열을 갖거나, 또는 동일한 서열로 합성되도록 구성된다. 일부 경우에, 기판은 적어도 80, 90, 100, 120, 150, 175, 200, 225, 250, 275, 300, 325, 350, 375, 400, 425, 450, 475, 500개 또는 그 초과의 염기를 갖는 폴리뉴클레오티드의 성장을 위한 표면 환경을 제공한다.

[0106] 기판의 별개의 로커스에서 폴리뉴클레오티드를 합성하는 방법이 본원에서 제공되며, 여기서 각각의 로커스는 폴리뉴클레오티드 집단의 합성을 지원한다. 일부 경우에, 각각의 로커스는 또 다른 로커스에서 성장한 폴리뉴클레오티드 집단과 상이한 서열을 갖는 폴리뉴클레오티드 집단의 합성을 지원한다. 일부 경우에, 각각의 폴리뉴클레오티드 서열은 폴리뉴클레오티드 합성을 위한 표면 상의 로커스의 동일한 클러스터 내의 상이한 로커스에 걸쳐 1, 2, 3, 4, 5, 6, 7, 8, 9개 또는 그 초과의 중복도로 합성된다. 일부 경우에, 기판의 로커스는 복수의 클러스터 내에 위치한다. 일부 경우에, 기판은 적어도 10, 500, 1000, 2000, 3000, 4000, 5000, 6000, 7000, 8000, 9000, 10000, 11000, 12000, 13000, 14000, 15000, 20000, 30000, 40000, 50000개, 또는 그 초과의 클러스터를 포함한다. 일부 경우에, 기판은 2,000; 5,000; 10,000; 100,000; 200,000; 300,000; 400,000; 500,000; 600,000; 700,000; 800,000; 900,000; 1,000,000; 1,100,000; 1,200,000; 1,300,000; 1,400,000; 1,500,000; 1,600,000; 1,700,000; 1,800,000; 1,900,000; 2,000,000; 300,000; 400,000; 500,000; 600,000; 700,000; 800,000; 900,000; 1,000,000; 1,200,000; 1,400,000; 1,600,000; 1,800,000; 2,000,000; 2,500,000; 3,000,000; 3,500,000; 4,000,000; 4,500,000; 5,000,000; 또는 10,000,000개 초과, 또는 이보다 많은 별개의 로커스를 포함한다. 일부 경우에, 기판은 약 10,000개의 별개의 로커스를 포함한다. 단일 클러스터 내의 로커스의 양은 상이한 경우마다 다르다. 일부 경우에, 각각의 클러스터는 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 20, 30, 40, 50, 60, 70, 80, 90, 100, 120, 130, 15, 200, 300, 400, 500개 또는 그 초과의 로커스를 포함한다. 일부 경우에, 각각의 클러스터는 약 50-500개의 로커스를 포함한다. 일부 경우에, 각각의 클러스터는 약 100-200개의 로커스를 포함한다. 일부 경우에, 각각의 클러스터는 약 100-150개의 로커스를 포함한다. 일부 경우에, 각각의 클러스터는 약 109, 121, 130 또는 137개의 로커스를 포함한다. 일부 경우에, 각각의 클러스터는 약 19, 20, 61, 64개 또는 그 초과의 로커스를 포함한다. 대안적으로 또는 조합하여, 폴리뉴클레오티드 합성은 균질한 어레

이 표면에서 발생한다.

[0107] 일부 경우에, 기판 상에서 합성된 별개의 폴리뉴클레오티드의 수는 기판에서 이용 가능한 별개의 로커스의 수에 의존한다. 일부 경우에, 기판의 클러스터 또는 표면 내의 로커스의 밀도는 mm^2당 적어도 또는 약 1, 10, 25, 50, 65, 75, 100, 130, 150, 175, 200, 300, 400, 500, 1,000개 또는 그 초과의 로커스이다. 일부 경우에, 기판은 10-500, 25-400, 50-500, 100-500, 150-500, 10-250, 50-250, 10-200 또는 50-200 mm^2를 포함한다. 일부 경우에, 클러스터 또는 표면 내에서 2개의 인접한 로커스의 중심 사이의 거리는 약 10-500, 약 10-200 또는 약 10-100 ㎛이다. 일부 경우에, 인접한 로커스의 두 중심 사이의 거리는 약 10, 20, 30, 40, 50, 60, 70, 80, 90 또는 100 ㎛ 초과이다. 일부 경우에, 2개의 인접한 로커스의 중심 사이의 거리는 약 200, 150, 100, 80, 70, 60, 50, 40, 30, 20 또는 10 ㎛ 미만이다. 일부 경우에, 각각의 로커스는 약 0.5, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 20, 30, 40, 50, 60, 70, 80, 90 또는 100 ㎛의 폭을 갖는다. 일부 경우에, 각각의 로커스는 약 0.5-100, 0.5-50, 10-75 또는 0.5-50 ㎛의 폭을 갖는다.

[0108] 일부 경우에, 기판 내의 클러스터 밀도는 적어도 또는 약 100 mm^2당 1개의 클러스터, 10 mm^2당 1개의 클러스터, 5 mm^2당 1개의 클러스터, 4 mm^2당 1개의 클러스터, 3 mm^2당 1개의 클러스터, 2 mm^2당 1개의 클러스터, 1 mm^2당 1개의 클러스터, 1 mm^2당 2개의 클러스터, 1 mm^2당 3개의 클러스터, 1 mm^2당 4개의 클러스터, 1 mm^2당 5개의 클러스터, 1 mm^2당 10개의 클러스터, 1 mm^2당 50개의 클러스터 또는 그 초과이다. 일부 경우에, 기판은 10 mm^2당 약 1개의 클러스터 내지 1 mm^2당 약 10개의 클러스터를 포함한다. 일부 경우에, 2개의 인접한 클러스터의 중심 사이의 거리는 적어도 또는 약 50, 100, 200, 500, 1000, 2000 또는 5000 ㎛이다. 일부 경우에, 2개의 인접한 클러스터의 중심 사이의 거리는 약 50-100, 50-200, 50-300, 50-500 및 100-2000 ㎛이다. 일부 경우에, 2개의 인접한 클러스터의 중심 사이의 거리는 약 0.05-50, 0.05-10, 0.05-5, 0.05-4, 0.05-3, 0.05-2, 0.1-10, 0.2-10, 0.3-10, 0.4-10, 0.5-10, 0.5-5 또는 0.5-2 mm이다. 일부 경우에, 각각의 클러스터는 약 0.5 내지 약 2, 약 0.5 내지 약 1, 또는 약 1 내지 약 2 mm의 단면을 갖는다. 일부 경우에, 각각의 클러스터는 약 0.5, 0.6, 0.7, 0.8, 0.9, 1, 1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 1.7, 1.8, 1.9 또는 2 mm의 단면을 갖는다. 일부 경우에, 각각의 클러스터는 약 0.5, 0.6, 0.7, 0.8, 0.9, 1, 1.1, 1.15, 1.2, 1.3, 1.4, 1.5, 1.6, 1.7, 1.8, 1.9 또는 2 mm의 내부 단면을 갖는다.

[0109] 일부 경우에, 기판은 대략 표준 96웰 플레이트의 크기, 예를 들어 약 100 내지 약 200 mm, 약 50 내지 약 150 mm이다. 일부 경우에, 기판은 약 1000, 500, 450, 400, 300, 250, 200, 150, 100 또는 50 mm 이하의 직경을 갖는다. 일부 경우에, 기판의 직경은 약 25-1000, 25-800, 25-600, 25-500, 25-400, 25-300 또는 25-200 mm이다. 일부 경우에, 기판은 적어도 약 100; 200; 500; 1,000; 2,000; 5,000; 10,000; 12,000; 15,000; 20,000; 30,000; 40,000; 50,000 mm^2 또는 그 초과의 평면 표면적을 갖는다. 일부 경우에, 기판의 두께는 약 50-2000, 50-1000, 100-1000, 200-1000, 또는 250-1000 mm이다.

[0110] *표면 재료*

[0111] 본원에서 제공되는 기판, 장치 및 반응기는 본원에서 설명되는 방법, 조성물 및 시스템에 적합한 임의의 다양한 재료로 제조된다. 특정 경우에, 기판 재료는 낮은 수준의 뉴클레오티드 결합을 나타내도록 제조된다. 일부 경우에, 기판 재료는 높은 수준의 뉴클레오티드 결합을 나타내는 별개의 표면을 생성하도록 변형된다. 일부 경우에, 기판 재료는 가시광 및/또는 UV 광에 대해 투과성이다. 일부 경우에, 기판 재료는 충분히 전도성이며, 예를 들어 기판의 전체 또는 일부에 걸쳐 균일한 전기장을 형성할 수 있다. 일부 경우에, 전도성 재료는 전기 접지에 연결된다. 일부 경우에, 기판은 열 전도성이거나 절연된다. 일부 경우에, 상기 재료는 화학적 또는 생화학적 반응물, 예를 들어 폴리뉴클레오티드 합성 반응 공정을 지원하기 위해 내화학성 및 내열성이다. 일부 경우에, 기판은 가요성 재료를 포함한다. 가요성 재료의 경우, 재료는 비제한적으로, 나일론, 개질 및 비개질 니트로셀룰로오스, 폴리프로필렌 등을 포함할 수 있다. 일부 경우에, 기판은 경질 재료를 포함한다. 경질 재료의 경우, 재료는 비제한적으로 유리; 퓨즈 실리카; 실리콘, 플라스틱(예를 들어, 폴리테트라플루오로에틸렌, 폴리프로필렌, 폴리스티렌, 폴리카르보네이트 및 이들의 블렌드 등); 금속(예를 들어, 금, 백금 등)을 포함할 수 있다. 기판, 고체 지지체 또는 반응기는 실리콘, 폴리스티렌, 아가로스, 덱스트란, 셀룰로오스 중합체, 폴리아크릴아미드, 폴리디메틸실록산(PDMS) 및 유리로 이루어지는 군으로부터 선택되는 재료로 제조될 수 있다. 기판/고체 지지체 또는 미세 구조체, 반응기는 본원에서 열거되는 재료의 조합물 또는 관련 기술 분야에 공지된 임의의 다른 적합한 재료로 제조될 수 있다.

[0112] **표면 아키텍처**

[0113] 본원에서 설명되는 방법, 조성물 및 시스템에 대한 기판이 제공되며, 여기서 기판은 본원에서 설명되는 방법, 조성물 및 시스템에 적합한 표면 아키텍처를 갖는다. 일부 경우에, 기판은 상승 및/또는 하강된 특징부를 포함한다. 이러한 특징부를 갖는 것의 하나의 이점은 폴리뉴클레오티드 합성을 지원하기 위한 표면적의 증가이다. 일부 경우에, 상승 및/또는 하강된 특징부를 갖는 기판은 3차원 기판으로 지칭된다. 일부 경우에, 3차원 기판은 하나 이상의 채널을 포함한다. 일부 경우에, 하나 이상의 로커스는 채널을 포함한다. 일부 경우에, 채널은 물질 침착 장치와 같은 침착 장치를 통해 시약 침착에 접근할 수 있다. 일부 경우에, 시약 및/또는 유체는 하나 이상의 채널과 유체 연통하여 더 큰 웰에 수집된다. 예를 들어, 기판은 클러스터와 복수의 로커스에 대응하는 복수의 채널을 포함하고, 복수의 채널은 클러스터의 하나의 웰과 유체 연통된다. 일부 방법에서, 폴리뉴클레오티드의 라이브러리는 클러스터의 복수의 로커스에서 합성된다.

[0114] 본원에서 설명되는 방법, 조성물 및 시스템에 대한 기판이 제공되며, 여기서 기판은 폴리뉴클레오티드 합성을 위해 구성된다. 일부 경우에, 구조는 표면에서의 폴리뉴클레오티드 합성을 위한 제어된 유동 및 물질 전달 경로를 허용하도록 구성된다. 일부 경우에, 기판의 구성은 폴리뉴클레오티드 합성 동안 물질 전달 경로, 화학 물질 노출 시간 및/또는 세척 효능의 제어된 균일한 분포를 허용한다. 일부 경우에, 기판의 구성은 예를 들어 성장하는 폴리뉴클레오티드에 의해 배제되는 부피가, 폴리뉴클레오티드 성장을 위해 이용 가능하거나 또는 적합한 초기 이용 가능 부피의 50, 45, 40, 35, 30, 25, 20, 15, 14, 13, 12, 11, 10, 9, 8, 7, 6, 5, 4, 3, 2, 1%를 초과하여, 또는 이보다 작은 값을 초과하여 차지하지 않도록 성장하는 폴리뉴클레오티드에 충분한 부피를 제공함으로써 증가된 스윕 효율을 허용한다. 일부 경우에, 3차원 구조는 화학 물질 노출의 신속한 교환을 허용하기 위해 유체의 관리된 유동을 허용한다.

[0115] 본원에서 설명되는 방법, 조성물 및 시스템에 대한 기판이 본원에서 제공되며, 여기서 기판은 본원에서 설명되는 방법, 조성물 및 시스템에 적합한 구조를 포함한다. 일부 경우에, 물리적 구조에 의해 분리가 이루어진다. 일부 경우에, 분리는 폴리뉴클레오티드 합성을 위한 표면 생성 능동 및 수동 영역의 차등 작용화에 의해 달성된다. 일부 경우에, 기판 표면을 가로질러 소수성을 교대시킴으로써 차등 작용화가 달성되고, 이에 의해 침착된 시약의 비딩(beading) 또는 습윤을 야기하는 물 접촉각 효과가 생성된다. 더 큰 구조를 사용하면, 인접한 스팟의 시약을 사용한 별개의 폴리뉴클레오티드 합성 위치의 스플래싱 및 교차 오염을 줄일 수 있다. 일부 경우에, 물질 침착 장치와 같은 장치가 시약을 별개의 폴리뉴클레오티드 합성 위치에 침착시키기 위해 사용된다. 3차원 특징부을 갖는 기판은 낮은 오류율(예를 들어, 약 1:500, 1:1000, 1:1500, 1:2,000, 1:3,000, 1:5,000 또는 1:10,000 미만)로 매우 많은 폴리뉴클레오티드(예를 들어, 약 10,000개 초과)의 합성을 허용하는 방식으로 구성된다. 일부 경우에, 기판은 mm^2당 약 1, 5, 10, 20, 30, 40, 50, 60, 70, 80, 100, 110, 120, 130, 140, 150, 160, 170, 180, 190, 200, 300, 400 또는 500개의 특징부의 밀도 또는 이를 초과하는 밀도로 특징부를 포함한다.

[0116] 기판의 웰은 기판의 또 다른 웰과 동일하거나 상이한 폭, 높이 및/또는 부피를 가질 수 있다. 기판의 채널은 기판의 또 다른 채널과 동일하거나 상이한 폭, 높이 및/또는 부피를 가질 수 있다. 일부 경우에, 클러스터의 직경 또는 클러스터를 이루는 웰의 직경, 또는 둘 모두는 약 0.05-50, 0.05-10, 0.05-5, 0.05-4, 0.05-3, 0.05-2, 0.05-1, 0.05-0.5, 0.05-0.1, 0.1-10, 0.2-10, 0.3-10, 0.4-10, 0.5-10, 0.5-5 또는 0.5-2 ㎜이다. 일부 경우에, 클러스터 또는 웰 또는 둘 모두의 직경은 약 5, 4, 3, 2, 1, 0.5, 0.1, 0.09, 0.08, 0.07, 0.06 또는 0.05 ㎜이거나 이보다 작다. 일부 경우에, 클러스터 또는 웰 또는 둘 모두의 직경은 약 1.0 내지 1.3 ㎜이다. 일부 경우에, 클러스터 또는 웰 또는 둘 모두의 직경은 약 1.150 ㎜이다. 일부 경우에, 클러스터 또는 웰, 또는 둘 모두의 직경은 약 0.08 ㎜이다. 클러스터의 직경은 2차원 또는 3차원 기판 내의 클러스터를 지칭한다.

[0117] 일부 경우에, 웰의 높이는 약 20-1000, 50-1000, 100-1000, 200-1000, 300-1000, 400-1000 또는 500-1000 ㎛이다. 일부 경우에, 웰의 높이는 약 1000, 900, 800, 700 또는 600 ㎛ 미만이다.

[0118] 일부 경우에, 기판은 클러스터 내에서 복수의 로커스에 대응하는 복수의 채널을 포함하고, 여기서 채널의 높이 또는 깊이는 5-500, 5-400, 5-300, 5-200, 5-100, 5-50 또는 10-50 ㎛이다. 일부 경우에, 채널 높이는 100, 80, 60, 40 또는 20 ㎛ 미만이다.

[0119] 일부 경우에, 채널, 로커스(예를 들어, 실질적으로 평면인 기판에서) 또는 채널과 로커스 둘 모두(예를 들어, 로커스가 채널에 대응하는 3차원 기판에서)의 직경은 약 1-1000, 1-500, 1-200, 1-100, 5-100 또는 10-100 ㎛, 예를 들어 약 90, 80, 70, 60, 50, 40, 30, 20 또는 10 ㎛이다. 일부 경우에, 채널, 로커스, 또는 채널과 궤적

둘 모두의 직경은 약 100, 90, 80, 70, 60, 50, 40, 30, 20 또는 10 ㎛ 미만이다. 일부 경우에, 2개의 인접 채널, 로커스, 또는 채널과 로커스의 중심 사이의 거리는 약 1-500, 1-200, 1-100, 5-200, 5-100, 5-50 또는 5-30, 예를 들어 약 20 ㎛이다.

[0120] **표면 변형**

[0121] 표면에서의 폴리뉴클레오티드 합성 방법이 본원에서 제공되며, 여기서 표면은 다양한 표면 변형을 포함한다. 일부 경우에, 표면 변형은 기판 표면 또는 기판 표면의 선택된 부위 또는 영역의 하나 이상의 화학적 및/또는 물리적 특성을 변화시키기 위한 부가 또는 공제 공정에 의한 표면의 화학적 및/또는 물리적 변경을 위해 사용된다. 예를 들어, 표면 변형은 비제한적으로, (1) 표면의 습윤성 변화, (2) 표면의 작용화, 즉 표면 작용기의 제공, 변형 또는 치환, (3) 표면의 탈작용화, 즉 표면 작용기의 제거, (4) 예를 들어 에칭을 통한 표면의 화학적 조성의 변경, (5) 표면 거칠기의 증가 또는 감소, (6) 표면에 코팅, 예를 들어 표면의 습윤 특성과 상이한 습윤 특성을 보이는 코팅의 제공, 및/또는 (7) 표면 상의 입자의 침착을 포함한다.

[0122] 일부 경우에, 표면의 상부에 화학물질층(접착 증진제로 언급됨)을 부가하는 것은 기판의 표면 상에 로커스의 구조화된 패턴화를 용이하게 한다. 접착 촉진의 적용을 위한 예시적인 표면은 비제한적으로, 유리, 실리콘, 이산화규소 및 질화규소를 포함한다. 일부 예에서, 접착 증진제는 높은 표면 에너지를 갖는 화학물질이다. 일부 경우에, 제2 화학물질층이 기판의 표면 상에 침착된다. 일부 경우에, 제2 화학물질층은 낮은 표면 에너지를 갖는다. 일부 경우에, 표면 상에 코팅된 화학물질층의 표면 에너지가 표면 상의 소적의 국재화를 지지한다. 선택된 패턴화 배열에 따라, 로커스의 근접 및/또는 로커스에서의 유체 접촉 영역이 변경될 수 있다.

[0123] 일부 경우에, 핵산 또는 다른 모이어티가 예를 들어 뉴클레오티드 합성을 위해 그 위에 침착되는 기판 표면 또는 분해된(resolved) 로커스는 평탄하거나 실질적으로 평면(예를 들어, 2차원)이거나 또는 불규칙성, 예를 들어 상승 또는 하강된 특징부(예를 들어, 3차원 특징부)를 갖는다. 일부 경우에, 기판 표면은 화합물의 하나 이상의 상이한 층으로 변형된다. 이러한 관심 있는 변형 층은 비제한적으로 무기 및 유기 층, 예를 들어 금속, 금속 산화물, 중합체, 유기 소분자 등을 포함한다.

[0124] 일부 경우에, 기판의 분해된 로커스는 표면 에너지를 증가 및/또는 감소시키는 하나 이상의 모이어티로 작용화된다. 일부 경우에, 모이어티는 화학적으로 비활성이다. 일부 경우에, 모이어티는 원하는 화학 반응, 예를 들어 뉴클레오티드 합성 반응에서 하나 이상의 공정을 지지하도록 구성된다. 표면의 표면 에너지 또는 소수성은 뉴클레오티드가 표면에 부착하는 친화도를 결정하는 요소이다. 일부 경우에, 기판 작용화를 위한 방법은 (a) 이산화규소를 포함하는 표면을 갖는 기판을 제공하는 단계; 및 (b) 본원에서 설명되거나 관련 기술 분야에 공지된 적합한 실란화제, 예를 들어 유기 작용성 알콕시실란 분자를 사용하여 표면을 실란화하는 단계를 포함한다. 방법 및 작용화제는 그 전체가 본원에 참고로 포함된 미국 특허 제5474796호에 기술되어 있다.

[0125] 일부 경우에, 기판 표면은 실란을 기판 표면에 커플링하는데 효과적인 반응 조건 하에, 전형적으로 기판 표면 상에 존재하는 반응성 친수성 모이어티를 통해 실란 혼합물을 함유하는 유도체화 조성물과의 접촉에 의해 작용화된다. 실란화는 일반적으로 유기 작용성 알콕시실란 분자를 사용한 자가 조립을 통해 표면을 덮는다. 다양한 실록산 작용화 시약이 예를 들어 표면 에너지를 낮추거나 증가시키기 위해 관련 기술 분야에 현재 알려진 바와 같이 추가로 사용될 수 있다. 유기 작용성 알콕시 실란은 그들의 유기 작용기에 따라 분류된다.

[0126] **폴리뉴클레오티드 합성**

[0127] 폴리뉴클레오티드 합성에 대한 본 개시내용의 방법은 포스포르아미다이트 화학을 포함하는 공정을 포함할 수 있다. 일부 경우에, 폴리뉴클레오티드 합성은 염기를 포스포르아미다이트와 커플링시키는 것을 포함한다. 폴리뉴클레오티드 합성은 커플링 조건 하에서 포스포르아미다이트의 침착에 의해 염기를 커플링하는 것을 포함할 수 있으며, 여기서 동일한 염기는 선택적으로 포스포르아미다이트로 1회 초과로 침착, 즉 이중 커플링된다. 폴리뉴클레오티드 합성은 미반응 부위의 캐핑(capping)을 포함할 수 있다. 일부 경우에, 캐핑은 선택적이다. 폴리뉴클레오티드 합성은 또한 산화 또는 산화 단계 또는 산화 단계들을 포함할 수 있다. 폴리뉴클레오티드 합성은 차단 해제(deblocking), 탈트리틸화(detritylation) 및 황화를 포함할 수 있다. 일부 경우에, 폴리뉴클레오티드 합성은 산화 또는 황화를 포함한다. 일부 경우에, 폴리뉴클레오티드 합성 반응 동안 하나 또는 각각의 단계 사이에서, 예를 들어 테트라졸 또는 아세토니트릴을 사용하여 장치를 세척한다. 포스포르아미다이트 합성 방법에서 임의의 한 단계에 대한 시간 프레임은 약 2분, 1분, 50초, 40초, 30초, 20초 및 10초 미만일 수 있다.

[0128] 포스포르아미다이트 방법을 사용하는 폴리뉴클레오티드 합성은 포스파이트 트리에스테르 연결의 형성을 위해 성장하는 폴리뉴클레오티드 사슬에 포스포르아미다이트 빌딩 블록(예를 들어, 뉴클레오시드 포스포르아미다이트)

의 후속적인 부가를 포함할 수 있다. 포스포르아미다이트 폴리뉴클레오티드 합성은 3'에서 5' 방향으로 진행된다. 포스포르아미다이트 폴리뉴클레오티드 합성은 합성 사이클당 성장하는 핵산 사슬에 대한 하나의 뉴클레오티드의 제어된 부가를 허용한다. 일부 경우에, 각각의 합성 사이클은 커플링 단계를 포함한다. 포스포르아미다이트 커플링은 활성화된 뉴클레오시드 포스포르아미다이트와, 예를 들어 링커를 통해 기판에 결합된 뉴클레오시드 사이에 포스파이트 트리에스테르 연결을 형성하는 것을 포함한다. 일부 경우에, 뉴클레오시드 포스포르아미다이트가 활성화된 장치에 제공된다. 일부 경우에, 뉴클레오시드 포스포르아미다이트가 활성제와 함께 장치에 제공된다. 일부 경우에, 뉴클레오시드 포스포르아미다이트는 기판에 결합된 뉴클레오시드보다 1.5, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 25, 30, 35, 40, 50, 60, 70, 80, 90, 100배 과량 또는 그 초과의 양으로 장치에 제공된다. 일부 경우에, 뉴클레오시드 포스포르아미다이트의 부가는 무수 환경, 예를 들어 무수 아세토니트릴에서 수행된다. 뉴클레오시드 포스포르아미다이트를 부가한 후, 장치를 선택적으로 세척한다. 일부 경우에, 커플링 단계는 선택적으로 기판에 대한 뉴클레오시드 포스포르아미다이트의 부가 사이의 세척 단계와 함께, 1회 이상 추가로 반복된다. 일부 경우에, 본원에서 사용되는 폴리뉴클레오티드 합성 방법은 1, 2, 3개 또는 그 초과의 순차적 커플링 단계를 포함한다. 커플링 전에, 많은 경우에, 장치에 결합된 뉴클레오시드는 보호기의 제거에 의해 탈보호되고, 여기서 보호기는 중합을 방지하도록 기능한다. 일반적인 보호기는 4,4'-디메톡시트리틸(DMT)이다.

[0129] 커플링 후, 포스포르아미다이트 폴리뉴클레오티드 합성 방법은 선택적으로 캐핑 단계를 포함한다. 캐핑 단계에서, 성장하는 폴리뉴클레오티드는 캐핑제로 처리된다. 캐핑 단계는 추가의 사슬 연장으로부터 커플링 후 미반응 기판 결합 5'-OH 기를 차단하여 내부 염기가 결실된 폴리뉴클레오티드의 형성을 방지하는데 유용하다. 또한, 1H-테트라졸로 활성화된 포스포르아미다이트는 구아노신의 O6 위치와 작은 정도로 반응할 수 있다. 이론에 제한되지 않으면서, I_2/물을 사용한 산화시에, 상기 부산물은 아마도 O6-N7 이동을 통해 탈퓨린화를 거칠 수 있다. 탈퓨린 부위는 폴리뉴클레오티드의 최종 탈보호 과정에서 결국 절단되어 전장 생성물의 수율을 감소시킬 수 있다. I_2/물을 사용한 산화 전에 캐핑 시약으로 처리함으로써 O6 변형은 제거될 수 있다. 일부 경우에, 폴리뉴클레오티드 합성 동안 캐핑 단계를 포함시키면, 캐핑이 없는 합성에 비해 오류율이 감소한다. 예로서, 캐핑 단계는 기판 결합 폴리뉴클레오티드를 무수 아세트산과 1-메틸이미다졸의 혼합물로 처리하는 단계를 포함한다. 캐핑 단계 후에, 장치는 선택적으로 세척된다.

[0130] 일부 경우에, 뉴클레오시드 포스포르아미다이트의 부가 후, 및 선택적으로 캐핑 및 1회 이상의 세척 단계 후에, 장치 결합된 성장하는 핵산이 산화된다. 산화 단계는 포스파이트 트리에스테르를 4배위 결합된 포스파이트 트리에스테르, 즉 자연 발생 포스페이트 디에스테르 뉴클레오시드간 연결의 보호된 전구체로 산화시키는 것을 포함한다. 일부 경우에, 성장하는 폴리뉴클레오티드의 산화는 선택적으로 약 염기(예를 들어, 피리딘, 루티딘, 콜리딘)의 존재 하에 요오드 및 물로 처리함으로써 달성된다. 산화는 예를 들어 tert-부틸 히드로퍼옥사이드 또는 (1S)-(+)-(10-캄포르술포닐)-옥사지리딘(CSO)을 사용하여 무수 조건 하에서 수행될 수 있다. 일부 방법에서, 캐핑 단계는 산화 후에 수행된다. 계속 존재할 수 있는, 산화로부터 잔류하는 물이 후속 커플링을 억제할 수 있기 때문에, 제2 캐핑 단계는 장치의 건조를 허용한다. 산화 후에, 장치 및 성장하는 폴리뉴클레오티드는 선택적으로 세척된다. 일부 경우에, 산화 단계는 황화 단계로 대체되어 폴리뉴클레오티드 포스포로티오에이트를 수득하고, 여기서 임의의 캐핑 단계는 황화 후에 수행될 수 있다. 3-(디메틸아미노메틸리덴)아미노)-3H-1,2,4-디티아졸-3-티온, DDTT, 보카주(Beaucage) 시약으로도 알려진 3H-1,2-벤조디티올-3-온 1,1-디옥사이드, 및 N,N,N'N'-테트라에틸티우람 디술파이드(TETD)를 포함하고 이로 제한되지 않는 많은 시약이 효율적인 황 전달을 수행할 수 있다.

[0131] 커플링을 통해 뉴클레오시드 혼입의 후속 사이클을 수행하기 위해, 1차 히드록실 기가 다음 뉴클레오시드 포스포르아미다이트와 반응성이 되도록 장치 결합된 성장하는 폴리뉴클레오티드의 보호된 5' 말단을 제거한다. 일부 경우에, 보호기는 DMT이고, 디클로로메탄 중 트리클로로아세트산에 의해 차단 해제가 일어난다. 연장된 시간 동안 또는 권장된 것보다 더 강한 산 용액을 사용하여 탈트리틸화를 수행하면, 고체 지지체 결합 폴리뉴클레오티드의 탈퓨린화가 증가될 수 있고, 따라서 원하는 전장 생성물의 수율이 감소될 수 있다. 본원에서 설명되는 개시내용의 방법 및 조성물은 바람직하지 않은 탈퓨린화 반응을 제한하는 제어된 차단 해제 조건을 제공한다. 일부 경우에, 장치 결합된 폴리뉴클레오티드는 차단 해제 후에 세척된다. 일부 경우에, 차단 해제 후의 효율적인 세척은 합성된 폴리뉴클레오티드의 낮은 오류율에 기여한다.

[0132] 폴리뉴클레오티드의 합성 방법은 전형적으로 다음 단계의 반복하는 순서를 포함한다: 활성화된 표면, 링커 또는 이전에 탈보호된 단량체와 연결하기 위해 능동적으로 작용화된 표면(예를 들어, 로커스)에 보호된 단량체를 적용하는 단계; 적용된 단량체를 탈보호하여 후속적으로 적용되는 보호된 단량체와 반응성이 되도록 하는 단계;

및 연결을 위한 또 다른 보호된 단량체를 적용하는 단계. 하나 이상의 중간 단계는 산화 또는 황화를 포함한다. 일부 경우에, 하나 이상의 세척 단계가 단계 중의 하나 또는 전부에 선행하거나 후행한다.

[0133] 포스포르아미다이트 기반 폴리뉴클레오티드 합성 방법은 일련의 화학적 단계를 포함한다. 일부 경우에, 합성 방법의 하나 이상의 단계는 시약 순환을 포함하며, 이 방법의 하나 이상의 단계는 단계에 유용한 시약을 장치에 적용하는 것을 포함한다. 예를 들어, 시약은 일련의 액체 침착 및 진공 건조 단계에 의해 순환된다. 웰, 마이크로웰, 채널 등과 같은 3차원 특징부를 포함하는 기판에 대해, 시약은 웰 및/또는 채널을 통해 장치의 하나 이상의 영역을 선택적으로 통과한다.

[0134] 본원에서 설명되는 방법 및 시스템은 폴리뉴클레오티드의 합성을 위한 폴리뉴클레오티드 합성 장치에 관한 것이다. 합성은 동시에 수행될 수 있다. 예를 들어, 적어도 또는 적어도 약 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 30, 35, 40, 45, 50, 100, 150, 200, 250, 300, 350, 400, 450, 500, 550, 600, 650, 700, 750, 800, 850, 900, 1000, 10000, 50000, 75000, 100000개 또는 그 초과의 폴리뉴클레오티드를 동시에 합성할 수 있다. 동시에 합성될 수 있는 폴리뉴클레오티드의 총수는 2-100000, 3-50000, 4-10000, 5-1000, 6-900, 7-850, 8-800, 9-750, 10-700, 11-650, 12-600, 13-550, 14-500, 15-450, 16-400, 17-350, 18-300, 19-250, 20-200, 21-150, 22-100, 23-50, 24-45, 25-40, 30-35개일 수 있다. 관련 기술 분야의 통상의 기술자는 동시에 합성된 폴리뉴클레오티드의 총수가 이들 값 중 임의의 값에 의해 규정된 범위 내, 예를 들어 25-100에 있을 수 있음을 인식할 것이다. 동시에 합성된 폴리뉴클레오티드의 총수는 범위의 종점으로 사용되는 임의의 값에 의해 정의된 임의의 범위 내에 있을 수 있다. 장치 내에서 합성된 폴리뉴클레오티드의 총 몰 질량 또는 각각의 폴리뉴클레오티드의 몰 질량은 적어도 또는 적어도 약 10, 20, 30, 40, 50, 100, 250, 500, 750, 1000, 2000, 3000, 4000, 5000, 6000, 7000, 8000, 9000, 10000, 25000, 50000, 75000, 100000 피코몰, 또는 그 초과일 수 있다. 장치 내의 각각의 폴리뉴클레오티드의 길이 또는 폴리뉴클레오티드의 평균 길이는 적어도 또는 적어도 약 10, 15, 20, 25, 30, 35, 40, 45, 50, 100, 150, 200, 300, 400, 500개 뉴클레오티드 또는 그 초과일 수 있다. 장치 내의 각각의 폴리뉴클레오티드의 길이 또는 폴리뉴클레오티드의 평균 길이는 최대 또는 최대 약 500, 400, 300, 200, 150, 100, 50, 45, 35, 30, 25, 20, 19, 18, 17, 16, 15, 14, 13, 12, 11, 10개 뉴클레오티드 또는 그 미만일 수 있다. 장치 내의 각각의 폴리뉴클레오티드의 길이 또는 폴리뉴클레오티드의 평균 길이는 10-500, 9-400, 11-300, 12-200, 13-150, 14-100, 15-50, 16-45, 17-40, 18-35, 19-25개일 수 있다. 관련 기술 분야의 통상의 기술자는 장치 내의 각각의 폴리뉴클레오티드의 길이 또는 폴리뉴클레오티드의 평균 길이가 이들 값 중 임의의 값에 의해 규정된 임의의 범위 내, 예를 들어 100-300일 수 있음을 인식할 것이다. 장치 내의 각각의 폴리뉴클레오티드의 길이 또는 폴리뉴클레오티드의 평균 길이는 범위의 종점으로 사용되는 임의의 값에 의해 정의된 임의의 범위 내에 있을 수 있다.

[0135] 본원에서 제공되는 표면 상의 폴리뉴클레오티드 합성 방법은 빠른 속도의 합성을 가능하게 한다. 예로서, 시간당 적어도 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 35, 40, 45, 50, 55, 60, 70, 80, 90, 100, 125, 150, 175, 200개 또는 그 초과의 뉴클레오티드가 합성된다. 뉴클레오티드는 아데닌, 구아닌, 티민, 시토신, 우리딘 빌딩 블록 또는 그의 유사체/변형된 버전을 포함한다. 일부 경우에, 폴리뉴클레오티드의 라이브러리는 기판 상에서 동시에 합성된다. 예를 들어, 약 또는 적어도 약 100; 1,000; 10,000; 30,000; 75,000; 100,000; 1,000,000; 2,000,000; 3,000,000; 4,000,000; 또는 5,000,000개의 분해된 로커스를 포함하는 장치는 적어도 동일한 수의 별개의 폴리뉴클레오티드의 합성을 지지할 수 있고, 여기서 별개의 서열을 코딩하는 폴리뉴클레오티드는 분해된 로커스 상에서 합성된다. 일부 경우에, 폴리뉴클레오티드의 라이브러리는 약 3개월, 2개월, 1개월, 3주, 15, 14, 13, 12, 11, 10, 9, 8, 7, 6, 5, 4, 3, 2일, 24시간 미만 또는 이보다 짧은 시간 미만에 본원에서 설명되는 낮은 오류율로 장치 상에서 합성된다. 일부 경우에, 본원에서 설명되는 기판 및 방법을 사용하여 낮은 오류율로 합성된 폴리뉴클레오티드 라이브러리로부터 조립된 보다 큰 폴리뉴클레오티드는 약 3개월, 2개월, 1개월, 3주, 15, 14, 13, 12, 11, 10, 9, 8, 7, 6, 5, 4, 3, 2일, 24시간 미만 또는 이보다 짧은 시간 미만에 제조된다.

[0136] 일부 경우에, 본원에서 설명되는 방법은 다수의 코돈 부위가 상이한 변이체 핵산을 포함하는 핵산의 라이브러리 생성을 제공한다. 일부 경우에, 핵산은 1개의 부위, 2개의 부위, 3개의 부위, 4개의 부위, 5개의 부위, 6개의 부위, 7개의 부위, 8개의 부위, 9개의 부위, 10개의 부위, 11개의 부위, 12개의 부위, 13개의 부위, 14개의 부위, 15개의 부위, 16개의 부위, 17개의 부위, 18개의 부위, 19개의 부위, 20개의 부위, 30개의 부위, 40개의 부위, 50개의 부위, 또는 그 초과의 변이체 코돈 부위를 가질 수 있다.

[0137] 일부 경우에, 변이체 코돈 부위의 하나 이상의 부위는 인접할 수 있다. 일부 경우에, 변이체 코돈 부위의 하나 이상의 부위는 인접하지 않을 수 있고, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10개 또는 그 초과의 코돈으로 분리될 수

있다.

[0138] 일부 경우에, 핵산은 변이체 코돈 부위의 다수의 부위를 포함할 수 있으며, 모든 변이체 코돈 부위는 서로 인접하여 변이체 코돈 부위의 스트레치를 형성한다. 일부 경우에, 핵산은 변이체 코돈 부위의 다수의 부위를 포함할 수 있으며, 변이체 코돈 부위는 서로 인접하지 않는다. 일부 경우에, 핵산은 변이체 코돈 부위의 다수의 부위를 포함할 수 있으며, 일부 변이체 코돈 부위는 서로 인접하여 변이체 코돈 부위의 스트레치를 형성하고, 변이체 코돈 부위의 일부는 서로 인접하지 않는다.

[0139] 도면을 참조하면, 도 7은 보다 짧은 핵산으로부터 핵산(예를 들어, 유전자)의 합성을 위한 예시적인 공정 작업 흐름을 도시한 것이다. 작업 흐름은 일반적으로 다음 단계로 분리된다: (1) 단일 가닥 핵산 라이브러리의 디 노보 합성, (2) 보다 큰 단편을 형성하기 위한 핵산의 결합, (3) 오류 정정, (4) 품질 관리, 및 (5) 발송. 신규 합성 전에, 의도된 핵산 서열 또는 핵산 서열의 군이 미리 선택된다. 예를 들어, 유전자의 군이 생성을 위해 미리 선택된다.

[0140] 생성을 위한 큰 핵산이 선택되면, 핵산의 미리 결정된 라이브러리가 디 노보 합성을 위해 설계된다. 고밀도 폴리뉴클레오티드 어레이를 생성하기 위한 다양한 적합한 방법이 공지되어 있다. 작업 흐름의 예에서, 장치 표면층이 제공된다. 이 예에서, 폴리뉴클레오티드 합성 과정을 개선하기 위해 표면의 화학적 성질이 변경된다. 표면 에너지가 낮은 영역은 액체를 밀어내기 위해 생성되며, 표면 에너지가 높은 영역은 액체를 끌어당기도록 생성된다. 표면 그 자체는 평면인 표면의 형태일 수 있거나 또는 표면적을 증가시키는 돌출부 또는 마이크로웰과 같은 형태의 변형을 포함한다. 작업 흐름의 예에서, 선택된 고 표면 에너지 분자는 본원에서 그 전부가 참고 포함된 국제 특허 출원 공개 WO/2015/021080에 개시된 바와 같이 DNA 화학을 지지하는 이중 기능을 제공한다.

[0141] 폴리뉴클레오티드 어레이의 계내(in situ) 제조는 고체 지지체 상에 생성되고, 단일 뉴클레오티드 연장 공정을 이용하여 다수의 올리고머를 동시에 연장한다. 물질 침착 장치와 같은 침착 장치는 다수의 폴리뉴클레오티드가 미리 결정된 핵산 서열을 갖는 올리고머를 생성하기 위해 한 번에 하나의 잔기를 동시에 연장하는 단계적 방식으로 시약을 방출하도록 설계된다(702). 일부 경우에, 핵산은 이 단계에서 표면으로부터 절단된다. 절단은 예를 들어 암모니아 또는 메틸아민을 사용한 기체 절단을 포함한다.

[0142] 생성된 폴리뉴클레오티드 라이브러리는 반응 챔버에 배치된다. 이 예시적인 작업 흐름에서, 반응 챔버("나노 반응기"로도 지칭됨)는 PCR 시약을 함유하고 폴리뉴클레오티드 라이브러리 상으로 내려간 규소 코팅된 웰이다(703). 폴리뉴클레오티드의 밀봉(704) 전 또는 후에, 시약은 기판으로부터 폴리뉴클레오티드를 방출하기 위해 첨가된다. 예시적인 작업 흐름에서, 폴리뉴클레오티드는 나노 반응기의 밀봉 후에 방출된다(705). 일단 방출되면, 단일 가닥 폴리뉴클레오티드의 단편은 DNA의 전체 길이 범위의 서열에 걸치기 위해 혼성화된다. 부분적 혼성화(705)는 각각의 합성된 폴리뉴클레오티드가 풀 내의 적어도 하나의 다른 폴리뉴클레오티드와 중첩되는 작은 부분을 갖도록 설계되기 때문에 가능하다.

[0143] 혼성화 후, PCA 반응이 개시된다. 폴리머라제 사이클 동안, 폴리뉴클레오티드는 상보성 단편에 어닐링되고, 갭은 폴리머라제에 의해 채워진다. 각각의 사이클은 어느 폴리뉴클레오티드들이 서로를 발견하는지에 따라 다양한 단편의 길이를 무작위로 증가시킨다. 단편 사이의 상보성은 이중 가닥 DNA의 완전한 큰 스팬을 형성하게 한다(706).

[0144] PCA가 완료된 후, 나노 반응기는 장치로부터 분리되고(707), PCR을 위한 프라이머를 갖는 장치와의 상호작용을 위해 배치된다(708). 밀봉 후, 나노 반응기는 PCR에 적용되고(709), 보다 큰 핵산이 증폭된다. PCR 후에(710), 나노 챔버가 개방되고(711), 오류 정정 시약이 첨가되고(712), 챔버가 밀봉되고(713), 오류 정정 반응이 발생하여 이중 가닥 PCR 증폭 산물로부터 불량한 상보성을 갖는 미스매치된 염기쌍 및/또는 가닥을 제거한다(714). 나노 반응기는 개방되고, 분리된다(715). 오류 정정된 생성물은 다음에 PCR 및 분자 바코딩과 같은 추가의 처리 단계를 거친 후, 발송(723)을 위해 포장된다(722).

[0145] 일부 경우에, 품질 관리 조치가 취해진다. 오류 정정 후에, 품질 제어 단계는 예를 들어 오류 정정된 생성물의 증폭(716)을 위한 시퀀싱 프라이머를 갖는 웨이퍼와의 상호작용, 오류 정정된 증폭 생성물을 포함하는 챔버로의 웨이퍼의 밀봉(717) 및 추가의 증폭 라운드의 수행(718)을 포함한다. 나노 반응기가 개방되고(719), 생성물은 수집되고(720), 시퀀싱된다(721). 허용 가능한 품질 관리 결정이 내려지면, 포장된 생성물(722)은 발송(723)을 위해 승인된다.

[0146] 일부 경우에, 도 7에서와 같이 작업 흐름에 의해 생성되는 핵산은 본원에서 개시되는 중첩 프라이머를 사용한 돌연변이 유발에 적용된다. 일부 경우에, 프라이머의 라이브러리는 고체 지지체 상의 계내 제조에 의해 생성되

고, 단일 올리고뉴클레오티드 연장 공정을 이용하여 다수의 올리고머를 동시에 연장한다. 물질 침착 장치와 같은 침착 장치는 다수의 폴리뉴클레오티드가 미리 결정된 핵산 서열을 갖는 올리고머를 생성하기 위해 한 번에 하나의 잔기를 동시에 연장하는 단계적 방식으로 시약을 방출하도록 설계된다(702).

[0147] **컴퓨터 시스템**

[0148] 본원에서 설명되는 임의의 시스템은 컴퓨터에 작동 가능하게 연결될 수 있으며, 컴퓨터를 통해 근거리에서 또는 원격으로 자동화될 수 있다. 다양한 경우에 있어서, 본 개시내용의 방법 및 시스템은 컴퓨터 시스템 상의 소프트웨어 프로그램 및 그의 사용을 추가로 포함할 수 있다. 따라서, 물질 침착 장치 이동, 분배 동작 및 진공 작동을 조율하고 동기화하는 것과 같은 분배/진공/리필 기능의 동기화를 위한 컴퓨터 제어는 본 개시내용의 범위 내에 있다. 컴퓨터 시스템은 기판의 특정 영역에 정확한 시약을 전달하기 위해 사용자 지정 염기 서열과 물질 침착 장치의 위치 사이를 인터페이스로 연결하도록 프로그래밍될 수 있다.

[0149] 도 8에 도시된 컴퓨터 시스템(800)은 고정 매체(812)를 갖는 서버(809)에 선택적으로 접속될 수 있는 매체(811) 및/또는 네트워크 포트(805)로부터의 명령을 판독할 수 있는 논리 장치로서 이해될 수 있다. 도 8에 도시된 것과 같은 시스템은 CPU(801), 디스크 드라이브(803), 선택적인 입력 장치, 예컨대 키보드(815) 및/또는 마우스(816) 및 선택적인 모니터(807)를 포함할 수 있다. 데이터 통신은 근거리 또는 원격 위치의 서버에 대한 표시된 통신 매체를 통해 달성될 수 있다. 통신 매체는 데이터를 전송신 및/또는 수신하는 임의의 수단을 포함할 수 있다. 예를 들어, 통신 매체는 네트워크 접속, 무선 접속 또는 인터넷 접속일 수 있다. 이러한 접속은 월드 와이드 웹(World Wide Web)을 통한 통신을 제공할 수 있다. 본 개시내용과 관련된 데이터는 도 8에 도시된 바와 같은 파티(822)에 의한 수신 및/또는 검토를 위해 이러한 네트워크 또는 접속을 통해 전송될 수 있다는 것이 예상된다.

[0150] 도 14는 본 개시내용의 예시적인 실시예와 관련하여 사용될 수 있는 컴퓨터 시스템(1400)의 예시적인 제1 아키텍처를 보여주는 블록도이다. 도 14에 도시된 바와 같이, 예시적인 컴퓨터 시스템은 명령을 처리하기 위한 프로세서(1402)를 포함할 수 있다. 프로세서의 비제한적인 예는 다음을 포함한다: 인텔(Intel) 제온(Xeon)™ 프로세서, AMD 옵테론(Opteron)™ 프로세서, 삼성(Samsung) 32-비트 RISC ARM 1176JZ(F)-S v1.0™ 프로세서, ARM 코텍스(Cortex)-A8 삼성 S5PC100™ 프로세서, ARM 코텍스-A8 애플(Apple) A4™ 프로세서, 마벨(Marvell) PXA 930™ 프로세서, 또는 기능적으로 동등한 프로세서. 다수의 실행 쓰레드(thread of execution)가 병렬식 프로세싱을 위해 사용될 수 있다. 일부 실시양태에서, 다수의 프로세서, 또는 다수의 코어를 가진 프로세서가 또한, 단일 컴퓨터 시스템에서, 클러스터에서, 또는 다수의 컴퓨터, 휴대전화 및/또는 개인 휴대용 정보 단말기를 포함하는 네트워크 상에 걸쳐 분산된 시스템에서 사용될 수 있다.

[0151] 도 9에 도시된 바와 같이, 고속 캐시(cache)(904)를 프로세서(902)에 연결하거나 도입하여, 프로세서(902)에 의해 최근에 사용되었거나 빈번하게 사용되는 명령 또는 데이터를 위한 고속 메모리를 제공할 수 있다. 프로세서(902)는 프로세서 버스(908)에 의해 노스 브리지(north bridge)(906)에 연결된다. 노스 브리지(906)는 메모리 버스(912)에 의해 랜덤 접근 메모리(RAM)에 연결되고, 프로세서(902)에 의해 RAM(910)으로의 접근을 관리한다. 노스 브리지(906)는 칩셋 버스(916)에 의해 사우스 브리지(south bridge)(914)에도 연결된다. 이어서, 사우스 브리지(914)는 주변 버스(918)에 연결된다. 주변 버스는 예를 들어 PCI, PCI-X, PCI 익스프레스(Express) 또는 다른 주변 버스일 수 있다. 노스 브리지 및 사우스 브리지는 종종 프로세서 칩셋으로서 지칭되고, 프로세서, RAM, 및 주변 버스(918) 상의 주변 구성요소 사이의 데이터 전달을 관리한다. 일부 대안적 구성에서, 별개의 노스 브리지 칩을 사용하는 대신에 노스 브리지의 기능을 프로세서 내로 도입할 수 있다. 일부 예에서, 시스템(900)은 주변 버스(918)에 부착된 가속기 카드(922)를 포함할 수 있다. 가속기는 필드 프로그래밍 가능 게이트 어레이(FPGA: field programmable gate array), 또는 특정 프로세싱을 가속화하기 위한 다른 하드웨어를 포함할 수 있다. 예를 들어, 가속기는 적응 데이터 재구조화를 위해, 또는 연장된 세트 프로세싱에서 사용된 대수적 표현의 평가를 위해 사용될 수 있다.

[0152] 소프트웨어 및 데이터는 외부 저장장치(924)에 저장되고, 프로세서에 의한 사용을 위해 RAM(910) 및/또는 캐시(904)에 로딩될 수 있다. 시스템(900)은 시스템 자원을 관리하기 위한 운영 체계를 포함하고; 운영 체계의 비제한적인 예는 본 개시내용의 예시적인 실시양태에 따라 데이터 저장 및 최적화를 관리하기 위한 운영 체계의 상부 상에서 실행되는 응용 소프트웨어뿐만 아니라, 리눅스(Linux), 윈도우™, 마코스(MACOS)™, 블랙베리(BlackBerry) OS™, iOS™ 및 다른 기능적으로 동등한 운영 체계도 포함한다. 이 예에서, 시스템(900)은 또한 외부 저장 장치, 예컨대, 네트워크 부착된 저장 장치(NAS)에 대한 네트워크 인터페이스를 제공하기 위해 주변 버스에 연결된 네트워크 인터페이스 카드(NIC)(920 및 921), 및 분산된 병렬식 프로세싱을 위해 사용될 수 있는

다른 컴퓨터 시스템도 포함한다.

[0153] 도 10은 다수의 컴퓨터 시스템(1002a 및 1002b), 다수의 휴대전화 및 개인 휴대용 정보 단말기(1002c) 및 네트워크 부착된 저장 장치(NAS)(1004a 및 1004b)를 갖는 네트워크(1000)를 보여주는 다이어그램이다. 예시적 실시양태에서, 시스템(1002a, 1002b 및 1002c)은 데이터 저장을 관리할 수 있고, 네트워크 부착된 저장 장치(NAS)(1004a 및 1004b)에 저장된 데이터에 대한 데이터 접근을 최적화할 수 있다. 데이터를 위해 수학적 모델을 이용할 수 있고, 컴퓨터 시스템(1002a 및 1002b), 및 휴대전화 및 개인 휴대용 정보 단말기 시스템(1002c)에 걸쳐 분산된 병렬식 프로세싱을 이용하여 이러한 모델을 평가할 수 있다. 컴퓨터 시스템(1002a 및 1002b), 및 휴대전화 및 개인 휴대용 정보 단말기 시스템(1002c)도 네트워크 부착된 저장 장치(NAS)(1004a 및 1004b)에 저장된 데이터의 적응 데이터 재구조화를 위한 병렬식 프로세싱을 제공할 수 있다. 도 10은 단지 한 예만을 보여주지만, 매우 다양한 다른 컴퓨터 아키텍쳐 및 시스템이 본 개시내용의 다양한 예와 함께 이용될 수 있다. 예를 들면, 블레이드(blade) 서버를 이용하여 병렬식 프로세싱을 제공할 수 있다. 후평면(back plane)을 통해 프로세서 블레이드를 연결하여 병렬식 프로세싱을 제공할 수 있다. 저장 장치도 후평면에 연결될 수 있거나 또는 별개의 네트워크 인터페이스를 통해 네트워크 부착된 저장 장치(NAS)로서 연결될 수 있다. 일부 예시적인 실시양태에서, 프로세서는 별개의 메모리 공간을 유지할 수 있고, 다른 프로세서에 의한 병렬식 프로세싱을 위해 네트워크 인터페이스, 후평면 또는 다른 연결기를 통해 데이터를 전송할 수 있다. 다른 예에서, 프로세서의 일부 또는 전부가 공유된 가상 주소 메모리 공간을 이용할 수 있다.

[0154] 도 11은 예시적인 실시양태에 따라 공유된 가상 주소 메모리 공간을 이용하는 멀티프로세서 컴퓨터 시스템(1100)의 블록 다이어그램이다. 상기 시스템은 공유된 메모리 서브시스템(1104)에 접근할 수 있는 다수의 프로세서(1102a-f)를 포함한다. 상기 시스템은 다수의 프로그래밍 가능한 하드웨어 메모리 알고리즘 프로세서(MAP)(1106a-1106f)을 메모리 서브시스템(1104) 내로 도입한다. 각각의 MAP(1106a-f)는 메모리(1108a-f) 및 하나 이상의 필드 프로그래밍 가능한 게이트 어레이(FPGA)(1110a-f)를 포함할 수 있다. MAP는 구성 가능한 기능적 유닛을 제공하고, 특정 알고리즘 또는 알고리즘의 일부는 각각의 프로세서와 긴밀히 협력된 프로세싱을 위해 FPGA(1110a-f)에게 제공될 수 있다. 예를 들면, 예시적인 실시양태에서 MAP를 이용하여 데이터 모델에 대한 대수적 표현을 평가하고 적응 데이터 재구조화를 수행할 수 있다. 이 예에서, 각각의 MAP는 상기 목적을 위해 모든 프로세서들에 의해 전체적으로 접근될 수 있다. 한 구성에서, 각각의 MAP는 직접 메모리 접근(DMA)을 이용하여 관련된 메모리(1108a-f)에 접근함으로써, 상기 메모리가 각각의 마이크로프로세서(1102a-f)로부터 독립적으로 및 비동기적으로 과제를 실행할 수 있다. 이 구성에서, MAP는 알고리즘의 파이프라이닝(pipelining) 및 병렬식 실행을 위해 결과를 또 다른 MAP에게 직접 공급할 수 있다.

[0155] 상기 컴퓨터 아키텍쳐 및 시스템은 단지 예일 뿐이고, 일반적인 프로세서, 보조 프로세서, FPGA 및 다른 프로그래밍 가능한 논리 디바이스의 임의의 조합을 이용하는 시스템, 칩 상 시스템(SOC), 특정 용도 집적 회로(ASIC), 및 다른 프로세싱 및 논리 요소를 비롯한 매우 다양한 다른 컴퓨터, 휴대전화 및 개인 휴대용 정보 단말기 아키텍쳐 및 시스템이 예시적 실시양태와 관련하여 사용될 수 있다. 일부 예에서, 컴퓨터 시스템의 전부 또는 일부가 소프트웨어 또는 하드웨어에서 실행될 수 있다. 랜덤 접근 메모리, 하드 드라이브, 플래시 메모리, 테이프 드라이브, 디스크 어레이, 네트워크 부착된 저장 장치(NAS), 및 다른 근거리 또는 분산된 데이터 저장 디바이스 및 시스템을 비롯한 임의의 다양한 데이터 저장 매체가 예시적 실시양태와 관련하여 사용될 수 있다.

[0156] 예시적 실시양태에서, 상기 또는 다른 컴퓨터 아키텍쳐 및 시스템 중 임의의 것에서 실행되는 소프트웨어 모듈을 이용하여 컴퓨터 시스템을 실행할 수 있다. 다른 예에서, 펌웨어(firmware), 프로그래밍 가능한 논리 디바이스, 예컨대, 도 9에서 언급된 필드 프로그래밍 가능한 게이트 어레이(FPGA), 칩 상 시스템(SOC), 특정 용도 집적 회로(ASIC), 또는 다른 프로세싱 및 논리 요소에서 시스템의 기능을 부분적으로 또는 완전히 실행할 수 있다. 예를 들어, 하드웨어 가속기 카드, 예컨대, 도 9에 제시된 가속기 카드(822)의 사용을 통한 하드웨어 가속으로 세트 프로세서 및 옵티마이저(Optimizer)를 실행할 수 있다.

[0157] 하기 실시예는 관련 기술 분야의 통상의 기술자에게 본원에 개시된 실시양태의 원리 및 실시를 보다 명확하게 예시하기 위해 제시되는 것으로, 임의의 청구된 실시양태의 범위를 제한하는 것으로 해석되지 않아야 한다. 달리 언급하지 않는 한, 모든 부 및 백분율은 중량 기준이다.

[0158] **실시예**

[0159] 하기 실시예는 본 개시내용의 다양한 실시양태를 설명하기 위해 제공되는 것이며, 어떠한 방식으로든 본 개시내용을 제한하려는 것이 아니다. 본원에서 설명되는 방법과 함께, 본 실시예는 현재 바람직한 실시양태를 나타내고 있으며, 예시적이고, 본 개시내용의 범위를 제한하는 것으로 의도되지 않는다. 청구항의 범위에 의해 정의되

는 본 개시내용의 사상 내에 포함되는 변경 및 다른 용도는 관련 기술 분야의 통상의 기술자에게 자명할 것이다.

[0160] **실시예 1: 장치 표면의 작용화**

[0161] 장치는 핵산의 라이브러리의 부착 및 합성을 지지하도록 작용화되었다. 장치 표면을 먼저 90% H_2SO_4 및 10% H_2O_2를 포함하는 피라냐(piranha) 용액을 사용하여 20분 동안 습식 세정하였다. 장치를 탈이온수로 여러 비이커에서 헹구고, 5분 동안 탈이온수 거위목형 꼭지 아래에 놓고, N_2로 건조시켰다. 이어서, 장치를 5분 동안 NH_4OH(1:100; 3 mL:300 mL)에 침지하고, 핸드건을 사용하여 탈이온수로 헹구고, 탈이온수가 있는 3개의 연속적인 비이커에 각각 1분 동안 침지한 후, 핸드건을 사용하여 탈이온수로 다시 헹구었다. 이어서, 장치 표면을 O_2에 노출시켜 장치를 플라스마로 세정하였다. SAMCO PC-300 기기를 사용하여 하류 모드에서 1분 동안 250 와트에서 O_2 플라즈마 에칭을 수행하였다.

[0162] 세정된 장치 표면을 다음 파라미터를 갖는 YES-1224P 기상 증착 오븐 시스템을 사용하여 N-(3-트리에톡시실릴프로필)-4-히드록시부티르아미드를 포함하는 용액으로 능동적으로 작용화하였다: 0.5 내지 1 torr, 60분, 70℃, 135℃ 기화기. 장치 표면은 브루어 사이언스(Brewer Science) 200X 스핀 코터를 사용하여 레지스트 코팅하였다. SPR™ 3612 포토레지스트를 2500 rpm에서 40초 동안 장치에 스핀 코팅하였다. 이 장치는 브루어 고온 플레이트에서 90℃에서 30분 동안 예비 베이킹하였다. 장치를 칼 수스(Karl Suss) MA6 마스크 정렬 장치를 사용하여 리소그래피에 적용하였다. 장치를 2.2초 동안 노출시키고, MSF 26A에서 1분 동안 현상시켰다. 남아있는 현상액을 핸드건으로 헹구고, 장치를 5분 동안 물에 침지하였다. 장치는 오븐에서 100℃에서 30분 동안 베이킹한 후, 니콘(Nikon) L200을 사용하여 리소그래피 결함을 육안으로 검사하였다. 250 와트에서 1분 동안 O_2 플라즈마 에칭을 수행하는 SAMCO PC-300 장비를 사용하여 잔류 레지스트를 제거하기 위해 데스 컴(descum) 공정을 사용하였다.

[0163] 장치 표면을 10 ㎕의 부드러운 광물유와 혼합된 퍼플루오로옥틸트리클로로실란의 용액 100 ㎕로 수동적으로 작용화하였다. 장치를 챔버에 넣고, 10분 동안 펌핑한 다음, 펌프로 가는 밸브를 닫고 10분 동안 방치하였다. 챔버로부터 공기를 배출하였다. 장치는 최대 출력(크레스트 시스템(Crest system)에서 9)의 초음파 처리와 함께 70℃에서 500 mL NMP에서 5분 동안 2회의 침지를 수행하여 레지스트를 제거하였다. 이어서, 장치를 최대 출력의 초음파 처리와 함께 실온에서 500 mL의 이소프로판올에 5분 동안 침지하였다. 장치를 300 mL의 200 프루프(proof) 에탄올에 담그고, N_2를 송풍하여 건조하였다. 작용화된 표면은 핵산 합성을 위한 지지체 역할을 하도록 활성화되었다.

[0164] **실시예 2: 올리고뉴클레오티드 합성 장치 상의 50-mer 서열의 합성**

[0165] 2차원 올리고뉴클레오티드 합성 장치를 유동셀(어플라이드 바이오시스템스(Applied Biosystems)(ABI394 DNA 합성기))에 연결된 유동셀로 조립하였다. 2차원 올리고뉴클레오티드 합성 장치를 N-(3-트리에톡시실릴프로필)-4-히드록시부티르아미드(Gelest)로 균일하게 작용화하고, 이를 이용하여 본원에서 설명되는 폴리뉴클레오티드 합성 방법을 이용하여 50 bp의 예시적인 폴리뉴클레오티드("50-mer 폴리뉴클레오티드")를 합성하였다.

[0166] 50-mer의 서열은 다음 서열 번호 48에 기재된 바와 같았다:

[0167] 5'AGACAATCAACCATTTGGGGTGGACAGCCTTGACCTCTAGACTTCGGCAT##TTTTTTTTTT3'(서열 번호 48).

[0168] 상기 서열에서, #은 탈보호 동안 표면으로부터 올리고머를 방출할 수 있게 하는 절단 가능한 링커인 티미딘-숙시닐 헥사마이드 CED 포스포르아미다이트(켐진스(ChemGenes)로부터의 CLP-2244)를 나타낸다.

[0169] 표 4의 프로토콜에 따른 표준 DNA 합성 화학 반응(커플링, 캐핑, 산화 및 차단 해제) 및 ABI 합성기를 이용하여 합성을 수행하였다.

[0170] 표 4. 합성 프로토콜

표 4		
일반적인 DNA 합성 공정 명칭	공정 단계	시간 (sec)
세척 (아세토니트릴 세척 유동)	아세토니트릴 시스템 플러싱	4
	아세토니트릴의 유동셀로의 공급	23
	N2 시스템 플러싱	4
	아세토니트릴 시스템 플러싱	4
DNA 염기 부가 (포스포르아미다이트 + 활성제 유동)	활성제 다기관 플러싱	2
	활성제의 유동셀로의 공급	6
	활성제+포스포르아미다이트의 유동셀로의 공급	6
	활성제의 유동셀로의 공급	0.5
	활성제+포스포르아미다이트의 유동셀로의 공급	5
	활성제의 유동셀로의 공급	0.5
	활성제+포스포르아미다이트의 유동셀로의 공급	5
	활성제의 유동셀로의 공급	0.5
	활성제+포스포르아미다이트의 유동셀로의 공급	5
	25sec 동안 인큐베이팅	25
세척 (아세토니트릴 세척 유동)	아세토니트릴 시스템 플러싱	4
	아세토니트릴의 유동셀로의 공급	15
	N2 시스템 플러싱	4
	아세토니트릴 시스템 플러싱	4
DNA 염기 부가 (포스포르아미다이트 + 활성제 유동)	활성제 다기관 플러싱	2
	활성제의 유동셀로의 공급	5
	활성제+포스포르아미다이트의 유동셀로의 공급	18
	25sec 동안 인큐베이팅	25
세척 (아세토니트릴 세척 유동)	아세토니트릴 시스템 플러싱	4
	아세토니트릴의 유동셀로의 공급	15
	N2 시스템 플러싱	4
	아세토니트릴 시스템 플러싱	4
캐핑 (CapA+B, 1:1, 유동)	CapA+B 의 유동셀로의 공급	15
세척 (아세토니트릴 세척 유동)	아세토니트릴 시스템 플러싱	4
	아세토니트릴의 유동셀로의 공급	15
	아세토니트릴 시스템 플러싱	4
산화 (산화제 유동)	산화제의 유동셀로의 공급	18

[0171]

표 4

일반적인 DNA 합성 공정 명칭	공정 단계	시간 (sec)
세척 (아세토니트릴 세척 유동)	아세토니트릴 시스템 플러싱	4
	N2 시스템 플러싱	4
	아세토니트릴 시스템 플러싱	4
	아세토니트릴의 유동셀로의 공급	15
	아세토니트릴 시스템 플러싱	4
	아세토니트릴의 유동셀로의 공급	15
	N2 시스템 플러싱	4
	아세토니트릴 시스템 플러싱	4
	아세토니트릴의 유동셀로의 공급	23
	N2 시스템 플러싱	4
	아세토니트릴 시스템 플러싱	4
차단 해제 (차단 해제 유동)	차단 해제의 유동셀로의 공급	36
세척 (아세토니트릴 세척 유동)	아세토니트릴 시스템 플러싱	4
	N2 시스템 플러싱	4
	아세토니트릴 시스템 플러싱	4
	아세토니트릴의 유동셀로의 공급	18
	N2 시스템 플러싱	4.13
	아세토니트릴 시스템 플러싱	4.13
	아세토니트릴의 유동셀로의 공급	15

[0172]

[0173] 포스포르아미다이트/활성제 조합물을 유동셀을 통한 벌크 시약의 전달과 유사하게 전달하였다. 환경이 전체 시간 동안 시약에 의해 "습한" 상태로 유지되기 때문에 건조 단계를 수행하지 않았다.

[0174] 유동 제한제를 ABI 394 합성기로부터 제거하여, 보다 빠른 유동을 가능하게 하였다. 유동 제한제를 이용하지 않았을 때, 아미다이트(ACN 중의 0.1 M), 활성제(ACN 중의 0.25 M 벤조일티오테트라졸("BTT"; 글렌리서치(GlenResearch)로부터의 30-3070-xx) 및 Ox(20% 피리딘, 10% 물 및 70% THF 중의 0.02 M I2)에 대한 유속은 대략 ~100 ㎕/초이었고, 아세토니트릴("ACN") 및 캐핑 시약(CapA와 CapB의 1:1 혼합물, 여기서 CapA는 THF/피리딘 중의 아세트산 무수물이고, CapB는 THF 중의 16% 1-메틸이미디졸임)에 대한 유속은 대략 ~200 ㎕/초이었고, 차단 해제제(톨루엔 중의 3% 디클로로아세트산)에 대한 유속은 대략 ~300 ㎕/초이었다(유속 제한제를 사용하였을 때 모든 시약에 대한 ~50 ㎕/초의 유속과 비교됨). 산화제를 완전히 밀어내기 위한 시간을 관찰하였고, 이에 따라 화학적 유동 시간에 대한 타이밍을 조절하였고, 여분의 ACN 세척을 상이한 화합물들 사이에 수행하였다. 폴리뉴클레오티드 합성 후, 칩을 75 psi에서 암모니아 기체로 밤새 탈보호하였다. 5개의 물방울을 표면에 적용하여 폴리뉴클레오티드를 회수하였다. 이어서, 회수된 폴리뉴클레오티드를 바이오애널라이저 작은 RNA 칩 상에서 분석하였다(데이터는 표시되지 않음).

[0175] **실시예 3: 올리고뉴클레오티드 합성 장치 상의 100-mer 서열의 합성**

[0176] 50-mer 서열의 합성을 위해 실시예 2에서 설명된 공정과 동일한 공정을, 2개의 상이한 실리콘 칩(N-(3-트리에톡시실릴프로필)-4-히드록시부티르아미드로 균일하게 작용화된 제1 칩, 및 11-아세톡시운데실트리에톡시실란 및 n-데실트리에톡시실란의 5/95 혼합물로 작용화된 제2 칩) 상에서 다음과 같은 100-mer 폴리뉴클레오티드("100-mer 폴리뉴클레오티드"; 서열 번호 49)의 합성을 위해 사용하였고, 표면으로부터 추출된 폴리뉴클레오티드를 바이오애널라이저 기기 상에서 분석하였다.

[0177] 5'CGGGATCCTTATCGTCATCGTCGTACAGATCCCGACCCATTTGCTGTCCACCAGTCA

[0178] TGCTAGCCATACCATGATGATGATGATGATGAGAACCCCGCAT##TTTTTTTTTT3'

[0179] 여기서, #은 티미딘-숙시닐 헥사마이드 CED 포스포르아미다이트(켐진스로부터의 CLP-2244)를 나타낸다.

[0180] 50 ㎕ PCR 혼합물(25 ㎕ NEB Q5 마스터믹스, 2.5 ㎕ 10 μM 정방향 프라이머, 2.5 ㎕ 10 μM 역방향 프라이머, 표면으로부터 추출된 1 ㎕ 핵산, 및 50 ㎕까지 채우는 물) 중의 정방향 프라이머(5'ATGCGGGGTTCTCATCATC3'; 서열번호 50) 및 역방향 프라이머(5'CGGGATCCTTATCGTCATCG3'; 서열번호 51)를 사용하고 하기 열순환 프로그램을 이용하여 상기 2개의 칩으로부터의 10개의 모든 샘플을 PCR에 의해 추가로 증폭하였다:

[0181] 98℃, 30초,

[0182] 98℃, 10초; 63℃, 10초; 72℃, 10초; 12 사이클 반복,

[0183] 72℃, 2분.

[0184] 또한, PCR 생성물을 바이오애널라이저 상에서 분석하였고, 100-mer 위치에서 날카로운 피크를 제시하였다. 이어서, PCR에 의해 증폭된 샘플을 클로닝하고, 생거 시퀀싱을 수행하였다. 표 5는 칩 1로부터의 스팟 1 내지 5로부터 채취된 샘플 및 칩 2로부터의 스팟 6 내지 10으로부터 채취된 샘플에 대한 생거 시퀀싱으로부터의 결과를 요약한 것이다.

[0185] 표 5. 시퀀싱 결과

스팟	오류율	사이클 효율
1	1/763 bp	99.87%
2	1/824 bp	99.88%
3	1/780 bp	99.87%
4	1/429 bp	99.77%
5	1/1525 bp	99.93%
6	1/1615 bp	99.94%
7	1/531 bp	99.81%
8	1/1769 bp	99.94%
9	1/854 bp	99.88%
10	1/1451 bp	99.93%

[0186]

[0187] 따라서, 합성된 폴리뉴클레오티드의 고품질 및 균일성은 상이한 표면 화학을 갖는 2개의 칩 상에서 반복되었다. 종합적으로, 시퀀싱된 262개의 100-mer 중 233개에 상응하는 89%가 오류가 없는 완벽한 서열이었다.

[0188] 표 6은 스팟 1-10으로부터의 폴리뉴클레오티드 샘플로부터 수득된 서열에 대한 오류 특징을 요약한 것이다.

[0189] 표 6. 오류 특징

샘플 ID/스팟 no.	OSA_0046/1	OSA_0047/2	OSA_0048/3	OSA_0049/4	OSA_0050/5	OSA_0051/6	OSA_0052/7	OSA_0053/8	OSA_0054/9	OSA_0055/10
총 서열	32	32	32	32	32	32	32	32	32	32
시퀀싱 품질	28 중 25	27 중 27	30 중 26	23 중 21	26 중 25	30 중 29	31 중 27	31 중 29	29 중 28	28 중 25
올리고 품질	25 중 23	27 중 25	26 중 22	21 중 18	25 중 24	29 중 25	27 중 22	29 중 28	28 중 26	25 중 20
ROI 일치 수	2500	2698	2561	2122	2499	2666	2625	2899	2798	2348
ROI 돌연변이	2	2	1	3	1	0	2	1	2	1
ROI 다중 염기 결실	0	0	0	0	0	0	0	0	0	0
ROI 작은 삽입	1	0	0	0	0	0	0	0	0	0
ROI 단일 염기 결실	0	0	0	0	0	0	0	0	0	0
거대 결실 수	0	0	1	0	0	1	1	0	0	0
돌연변이: G>A	2	2	1	2	1	0	2	1	2	1
돌연변이: T>C	0	0	0	1	0	0	0	0	0	0
ROI 오류 수	3	2	2	3	1	1	3	1	2	1
ROI 오류율	Err: 834 중 ~1	Err: 1350 중 ~1	Err: 1282 중 ~1	Err: 708 중 ~1	Err: 2500 중 ~1	Err: 2667 중 ~1	Err: 876 중 ~1	Err: 2900 중 ~1	Err: 1400 중 ~1	Err: 2349 중 ~1
ROI 마이너스 프라이머 오류율	MP Err: 763 중 ~1	MP Err: 824 중 ~1	MP Err: 780 중 ~1	MP Err: 429 중 ~1	MP Err: 1525 중 ~1	MP Err: 1615 중 ~1	MP Err: 531 중 ~1	MP Err: 1769 중 ~1	MP Err: 854 중 ~1	MP Err: 1451 중 ~1

[0190]

[0191] **실시예 4: 입체형태 리간드 상호작용에 기초한 G 단백질-커플링된 수용체 결합 도메인의 설계**

[0192] G 단백질-커플링된 수용체(GPCR)와 상호작용하는 입체형태 리간드 사이의 상호작용 표면을 사용하여 GPCR 결합 도메인을 설계하였다. 케모카인 및 사이토카인과 GPCR 사이의 상호작용 표면의 분석은 제1 입체형태 시스테인 이전의 N-말단 펩티드가 활성화 펩티드를 나타내고, 코어 나선형 및 베타-턴(turn)-베타 토폴로지가 GPCR의 세포외 도메인(ECD)과의 상호작용을 매개함을 보여주었다.

[0193] Uniprot 및 IUPHAR 데이터베이스의 교차 검색에 기초하여 추가의 254개의 GPCR 리간드를 설계하였다. 리간드는 112명의 인간, 71마리의 래트, 4마리의 돼지, 1마리의 양 및 1마리의 소에서 유래한 상호작용 클래스를 나타내었다. 이어서, 리간드를 다음 101개의 종간 리간드 명칭으로 분류하였다: ADM, ADM2, 아구티 관련 단백질, 안지오텐시노겐, 애넥신 A1, 아펠린, 아펠린 수용체 조기, 식욕 조절 호르몬, 베타-데펜신 4A, C-C 모티프 케모카인, C-X-C 모티프 케모카인, 칼시토닌, 칼시토닌 유전자 관련 펩티드, 카텝신 G, 카텝신 G(단편), 콜레시스토키닌, 보체 C3, 보체 C5, 보체 C5(단편), 코르티콜리베린, 코르티스타틴, 사이토카인 SCM-1 베타, 엔토텔린-2, 엔토텔린-3, 에오탁신, 프락탈카인, 갈라닌 펩티드, 갈라닌 유사 펩티드, 위 억제 폴리펩티드, 가스트린, 가스트린 방출 펩티드, 글루카곤, 성장 관련 알파 단백질, 헴 결합 단백질 1, 휴마닌, 인슐린 유사 3, 인슐린 유사 펩티드 INSL5, 인터류킨-8, 섬 아밀로이드 폴리펩티드, 키니노겐-1, 림포탁틴, 전이 억제제 KiSS-1, 뉴로키닌-B, 뉴로메딘-B, 뉴로메딘-S, 뉴로메딘-U, 신경펩티드 B, 신경펩티드 S, 신경펩티드 W, 뉴로텐신/뉴로메딘 N, 식욕 유발 신경펩티드 QRFP, 오렉신, 옥시토신-뉴로피신 1, 췌장 프로호르몬, 부갑상선 호르몬, 부갑상성 호르몬 관련 단백질, 단백질 YY, 뇌하수체 아데닐레이트 시클라제 활성화, 혈소판 염기성 단백질, 혈소판 인자 4, 프레프로노시셉틴, 프로-FMR파마이드 관련 신경펩티드 FF, 프로-FMR파마이드 관련 신경펩티드 VF, 프로-MCH, 프로-신경펩티드 Y, 프로-오피오멜라노코르틴, 프로-티로트로핀 방출 호르몬, 프로엔케팔린-A, 프로엔케팔린-B, 프로고나도리베린-1, 프로고나도리베린-2, 프로키네티신-1, 프로키네티신-2, 프로락틴 방출 펩티드, 프로모틸린, 프로타키키닌-1, 단백질 Wnt-2, 단백질 Wnt-3a, 단백질 Wnt-4, 단백질 Wnt-5a, 단백질 Wnt-7b, 프

로트롬빈, 원종양유전자 Wnt-1, 원종양유전자 Wnt-3, 추정 비특성화 단백질, RCG55748, 레티노산 수용체, 세크레틴, 소마토리베린, 소마토스타틴, 기질 세포 유래 인자, T-키니노겐 2, 결절누두(Tuberoinfundibular peptide) 펩티드, 우로코르틴, 우로코르틴-2, 우로코르틴-3, 우로텐신-2, 우로텐신-2B, VEGF 공동 조절 케모카인, VIP 펩티드 및 바소프레신-뉴로피신 2-코펩틴.

[0194] 리간드의 구조적 분석이 수행되었고, 이들의 대부분은 약 11개 아미노산의 N-말단 활성화 펩티드를 포함하는 것으로 나타났다. 이어서 N-말단 활성화 펩티드를 트리밍함으로써 모티프 변이체를 생성하였다. 표 7에서 볼 수 있는 바와 같이, 기질 유래 인자-1에 대한 N-말단 활성화 펩티드에 기초하여 예시적인 변이체 세트가 생성되었다. 모티프 변이체는 또한 CDR-H3 내의 다수의 위치에 조합하여 배치되었다. CDR-H3에 배치하기 위해 총 1016개의 모티프를 추출하였다. 또한, 모티프 변이체에는 가변 경계 배치 및 CDR-H3에 배치된 5-20개의 서브스트링(substring) 변이체를 제공하였다.

[0195] 표 7. 기질 유래 인자-1에 대한 변이체 아미노산 서열

[0196]

서열 번호	변이체	아미노산 서열
53	1	ggggSDYKPVSLSYR
54	2	ggggDYKPVSLSYR
55	3	ggggYKPVSLSYR
56	4	ggggKPVSLSYR
57	5	ggggPVSLSYR

[0197] 표 8에 도시된 바와 같이, 인터류킨-8에 대한 예시적인 변이체 세트는 다음 서열에 기초하여 생성되었다:

[0198] **MTSKLAVALLAAFLISAAL**CEGAVLPRSAKELRCQCIKTYSKPFHPKFIKELRVIESGPH

[0199] CANTEIIVKLSDGRELCLDPKENWVQRVVEKFLKRAENS (서열 번호 52).

[0200] 표 8. 인터류킨-8에 대한 변이체 아미노산 서열

[0201]

서열 번호	변이체	아미노산 서열
58	1	ggggSAALCEGAVLPRSA
59	2	ggggAALCEGAVLPRSA
60	3	ggggALCEGAVLPRSA
61	4	ggggLCEGAVLPRSA
62	5	ggggCEGAVLPRSA
63	6	ggggSAALCEGAVLPRSAKE
64	7	ggggAALCEGAVLPRSAKE
65	8	ggggALCEGAVLPRSAKE
66	9	ggggLCEGAVLPRSAKE
67	10	ggggCEGAVLPRSAKE
68	11	ggggSAALCEGAVLPRSAKELR
69	12	ggggAALCEGAVLPRSAKELR
70	13	ggggALCEGAVLPRSAKELR
71	14	ggggLCEGAVLPRSAKELR
72	15	ggggCEGAVLPRSAKELR

[0202] **실시예 5: 펩티드 리간드 상호작용에 기초한 G 단백질-커플링된 수용체 결합 도메인의 설계**

[0203] GPCR 결합 도메인은 클래스 B GPCR과 상호작용하는 펩티드 리간드 사이의 상호작용 표면에 기초하여 설계되었다. 약 66개의 상이한 리간드가 사용되었으며, 다음과 같은 리간드 서열 명칭을 포함한다: 아드레노메둘린, 아밀린, 안지오텐신 I, 안지오텐신 II, 안지오텐신 III, 아펠린, 압스타틴, 큰 엔도텔린, 큰 가스트린, 브라디키닌, 카에룰레인, 칼시토닌, 칼시토닌 유전자 관련 펩티드, CGRP, 콜레시스토키닌, 엔도텔린, 엔도텔린 1, 엔도텔린 2, 엔도텔린 3, GIP, GIPs, GLP, 갈라닌, 가스트린, 그렐린, 글루카곤, IAPP, 키스펩틴, Mca, 메타스티, 뉴로메딘, 뉴로메딘, 신경펩티드, 신경펩티드 F, 신경펩티드 Y, 뉴로텐신, 노시셉틴, 오렉신, 오렉신 A, 오르파닌, 옥시토신, 옥시토신 갈라닌, PACAP, PACAPs, PAR(프로테아제 활성화된 수용체: Protease Activated Receptor) 펩티드, PAR-1 작용제, 프람린타이드, 실리오리닌(Scyliorhinin) I, 세크레틴, 센크타이드, 소마토스타틴, 소마토스타틴 14, 소마토스타틴 28, 물질 P, 유로텐신 II, VIP, VIPs, 바소프레신, 제닌, 신나모일, 푸로일, 가스트린, 홀시스토키닌, 콜레시스토키닌, α-교배 인자 페로몬. 펩티드는 GPCR 세포외 도메인

(ECD)과 안정화된 상호작용을 형성하는 것으로 관찰되었다.

[0204] ECD 및 N-말단 GPCR 리간드 상호작용 표면과의 펩티드의 상호작용 표면에 기초하여 모티프 변이체가 생성되었다. 이것은 구조 모델링을 사용하여 수행되었다. 예시적인 모티프 변이체는 표 9에 나타낸 바와 같이 글루카곤 유사 펩티드의 GPCR과의 상호작용에 기초하여 생성되었다. 모티프 변이체 서열은 글루카곤 유사 펩티드로부터의 하기 서열을 사용하여 생성되었다:

[0205] HAEGTFTSDVSSYLEGQAAKEFIAWLVKGRG(서열 번호 73).

[0206] 표 9. 글루카곤 유사 펩티드에 대한 변이체 아미노산 서열

[0207]

서열 번호	변이체	아미노산 서열
74	1	sggggsggggsggggHAEGTFTSDVSSYLEGQAAKEFIAWLV
75	2	sggggsggggsggggAEGTFTSDVSSYLEGQAAKEFIAWLV
76	3	sggggsggggsggggEGTFTSDVSSYLEGQAAKEFIAWLV
77	4	sggggsggggsggggGTFTSDVSSYLEGQAAKEFIAWLV
78	5	sggggsggggsggggTFTSDVSSYLEGQAAKEFIAWLV
79	6	sggggsggggsggggFTSDVSSYLEGQAAKEFIAWLV
80	7	sggggsggggsggggTSDVSSYLEGQAAKEFIAWLV
81	8	sggggsggggsggggSDVSSYLEGQAAKEFIAWLV
82	9	sggggsggggsggggDVSSYLEGQAAKEFIAWLV

[0208] **실시예 6: 소분자 상호작용에 기초한 G 단백질-커플링된 수용체 결합 도메인의 설계**

[0209] GPCR 결합 도메인은 GPCR과 상호작용하는 소분자 리간드 사이의 상호작용 표면에 기초하여 설계되었다. 다수의 GPCR 리간드를 분석함으로써, Tyr, Pro, Phe, His 및 Gly의 아미노산 라이브러리는 이들 리간드의 많은 구조적 접촉을 재현할 수 있도록 설계되었다. 이러한 관찰에 기초하여 생성된 예시적인 모티프 변이체는 다음 서열을 포함한다:

[0210] sggggg(F,G,H,P,Y)(F,G,H,P,Y)(F,G,H,P,Y)(F,G,H,P,Y)(F,G,H,P,Y)(F,G,H,P,Y)(F,G,H,P,Y)(F,G,H,P,Y) (서열 번호 83).

[0211] **실시예 7: 세포외 도메인 상호작용에 기초한 G 단백질-커플링된 결합 도메인의 설계**

[0212] GPCR 결합 도메인은 GPCR의 세포외 도메인(ECD) 및 세포외 루프(ECL)상의 상호작용 표면에 기초하여 설계되었다. 인간(356), 마우스(369), 래트(259), 소(102), 돼지(60), 영장류, 어류, 파리 및 기타 200종 초과의 유기체로부터 약 2,257개의 GPCR이 분석되었으며, ECD가 15개 아미노산 길이의 GPCR의 다른 루프 및 나선에 대한 다수의 상보적 접촉을 제공하는 것으로 관찰되었다. 약 2,257개의 GPCR 및 GPCR의 모든 해결된 구조로부터의 ECL에 대한 추가의 분석은 N-말단 ECD1 및 ECL2가 더 긴 세포외 서열을 포함하고 GPCR 세포외 접촉을 제공한다는 것을 입증하였다.

[0213] 이어서, 이들 서열에 기초하여 모티프 변이체가 생성되었다. 레티노산 유도 단백질 3(GPRC5A)으로부터 다음 서열에 기초한 예시적인 변이체가 생성되었다: EYIVLTMNRTNVNVFSELSAPRRNED(서열 번호 84). 표 10을 참조한다.

[0214] 표 10. 아미노산 서열

[0215]

서열 번호	변이체	아미노산 서열
85	1	YIVLTMNRTNVNVFSELSAPRRNE
86	2	IVLTMNRTNVNVFSELSAPRRN
87	3	VLTMNRTNVNVFSELSAPRR

[0216] **실시예 8: 항체 스캐폴드의 설계**

[0217] 스캐폴드를 생성하기 위해, 구조 분석, 중쇄의 레퍼토리 시퀀싱 분석 및 이종이량체 고속 시퀀싱 데이터세트에 대한 특정 분석을 수행하였다. 각각의 중쇄는 각각의 경쇄 스캐폴드와 관련되었다. 각각의 중쇄 스캐폴드에는 5개의 상이한 긴 CDR-H3 루프 옵션이 할당되었다. 각각의 경쇄 스캐폴드에는 5개의 상이한 L3 스캐폴드가 할당되었다. 중쇄 CDR-H3 줄기는 개체 및 V-유전자 세그먼트 둘 모두에 걸쳐서 발견되는 빈번하게 관찰된 긴 H3 루프 줄기(N-말단 및 C-말단의 10개의 아미노산)로부터 선택되었다. 경쇄 스캐폴드 L3은 긴 H3을 포함하는 이종이량체로부터 선택되었다. CDR H1, H2, L1, L2, L3 및 CDR-H3 줄기가 고정된, 단백질 데이터 뱅크(PDB) 및 딥 시퀀싱 데이터세트로부터의 정보에 기초한 직접적인 이종이량체가 사용되었다. 이어서, 다양한 스캐폴드는 발현을

평가하도록 페이지 상의 디스플레이를 위해 포맷하였다.

[0218] *구조 분석*

[0219] 그로부터 적어도 25개 아미노산 길이의 긴 CDR-H3을 갖는 22개의 구조가 관찰된 약 2,017개의 항체 구조를 분석하였다. 중쇄는 다음을 포함하였다: IGHV1-69, IGHV3-30, IGHV4-49 및 IGHV3-21. 확인된 경쇄는 다음을 포함하였다: IGLV3-21, IGKV3-11, IGKV2-28, IGKV1-5, IGLV1-51, IGLV1-44 및 IGKV1-13. 분석에서, IGHV4-59/61-IGLV3-21, IGHV3-21-IGKV2-28, IGHV1-69-IGKV3-11 및 IGHV1-69-IGKV1-5를 포함하는 4개의 이종이량체 조합물이 여러 번 관찰되었다. 서열 및 구조에 대한 분석을 통해, 긴 H3 안정성에 대한 지지를 제공하는 줄기에 부피가 큰 측쇄, 예를 들어 티로신을 채움으로써 몇몇 구조에서 CDR-H3 내 디술파이드 결합을 확인하였다. 베타-턴-베타 시트 및 "해머헤드" 서브도메인을 포함하는 2차 구조가 또한 관찰되었다.

[0220] *레퍼토리 분석*

[0221] 레퍼토리 분석은 1,083,875개의 IgM+/CD27-나이브 B 세포 수용체(BCR) 서열 및 12명의 건강한 대조군으로부터 비편향된(unbiased) 5' RACE에 의해 수득된 1,433,011개의 CD27+ 서열에 대해 수행되었다. 12명의 건강한 대조군은 같은 수의 남성과 여성으로 구성되었으며, 4명의 백인, 4명의 아시아인 및 4명의 히스패닉계 개인으로 구성되었다. 레퍼토리 분석은 인간 레퍼토리의 1% 미만이 21개 아미노산보다 더 긴 CDR-H3을 갖는 BCR을 포함함을 입증하였다. IGHV1-69, IGHV4-34, IGHV1-18 및 IGHV1-8을 갖는 긴 CDR3 서브레퍼토리에서 V-유전자 편향이 관찰되었는데, 이는 긴 H3 루프를 갖는 BCR에서의 우선적인 농축을 나타낸다. 긴 루프에 대한 편향은 IGHV3-23, IGHV4-59/61, IGHV5-51, IGHV3-48, IGHV3-53/66, IGHV3-15, IGHV3-74, IGHV3-73, IGHV3-72, 및 IGHV2-70에서 관찰되었다. IGHV4-34 스캐폴드는 자가 반응성이고 짧은 반감기를 갖는 것으로 입증되었다.

[0222] 긴 루프에 대한 생존 가능한 N-말단 및 C-말단 CDR-H3 스캐폴드 변이가 또한 5' RACE 기준물 레퍼토리에 기초하여 설계되었다. 길이가 22개 아미노산 이상인 약 81,065개의 CDR-H3이 관찰되었다. V-유전자 스캐폴드를 비교함으로써, 스캐폴드 다양성이 다수의 스캐폴드 기준물 내에 클로닝될 수 있도록 하는 스캐폴드 특이적 H3 줄기 변이가 회피되었다.

[0223] *이종이량체 분석*

[0224] 이형이량체 분석은 도 12a-12c에 나타낸 서열을 갖는 스캐폴드에 대해 수행되었다. 스캐폴드의 변이체 서열 및 길이를 분석하였다.

[0225] *구조 분석*

[0226] 변이체 서열의 GPCR 스캐폴드를 사용하여 구조 분석을 수행하고, 길이를 검정하였다. 도 13을 참조한다.

[0227] **실시예 9: GPCR 항체 라이브러리의 생성**

[0228] GPCR-리간드 상호작용 표면 및 스캐폴드 배열에 기초하여, 라이브러리를 설계하고 디 노보 합성하였다. 실시예 4-8을 참조한다. 도 5를 참조하면, 10개의 변이체 서열은 중쇄 가변 도메인(503)에 대해 설계되었고, 237개의 변이체 서열은 중쇄 상보성 결정 영역 3(507)에 대해 설계되었고 44개의 변이체 서열은 경쇄 가변 도메인(513)에 대해 설계되었다. 단편은 실시예 1-3에서 설명된 바와 유사한 방법에 따라 도 6에 도시된 바와 같이 3개의 단편으로서 합성되었다.

[0229] 디 노보 합성 후, 중쇄 가변 도메인(602)에 대해 10개의 변이체 서열이 생성되었고, 중쇄 상보성 결정 영역 3(604)에 대해 236개의 변이체 서열이 생성되었고, 경쇄 가변 도메인(606) 및 CDR-L3을 포함하는 영역에 대해 43개의 변이체 서열이 설계되었고, 이 중 경쇄 가변 도메인에 대한 9개의 변이체가 설계되었다. 이에 의해, 약 10^5 다양성(10 x 236 x 43)의 라이브러리가 생성되었다. 이것은 1600만개의 리드(read)와 차세대 시퀀싱(NGS)을 사용하여 확인되었다. 도 14에 도시된 바와 같이, 중쇄 가변 도메인에 대한 10개의 변이체 각각에 대한 정규화된 시퀀싱 리드는 약 1이었다. 도 15에 도시된 바와 같이, 경쇄 가변 도메인에 대한 43개의 변이체 각각에 대한 정규화된 시퀀싱 리드는 약 1이었다. 도 16에 도시된 바와 같이, 중쇄 상보성 결정 영역 3에 대한 236개의 변이체 서열에 대한 정규화된 시퀀싱 리드는 약 1이었다.

[0230] 이어서, 다양한 경쇄 및 중쇄를 발현 및 단백질 폴딩에 대해 시험하였다. 도 17a-17d를 참조하면, 중쇄 가변 도메인에 대한 10개의 변이체 서열은 다음을 포함하였다: IGHV1-18, IGHV1-69, IGHV1-8, IGHV3-21, IGHV3-23, IGHV3-30/33rn, IGHV3-28, IGHV3-74, IGHV4-39, 및 IGHV4-59/61. 10개의 변이체 서열 중에서, IGHV1-18, IGHV1-69 및 IGHV3-30/33rn은 개선된 열 안정성과 같은 개선된 특성을 나타냈다. 도 18a-18f를 참조하면, 경쇄

가변 도메인에 대한 9개의 변이체 서열은 다음을 포함하였다: IGKV1-39, IGKV1-9, IGKV2-28, IGKV3-11, IGKV3-15, IGKV3-20, IGKV4-1, IGLV1-51, 및 IGLV2-14. 9개의 변이체 서열 중에서, IGKV1-39, IGKV3-15, IGLV1-51 및 IGLV2-14는 개선된 열 안정성과 같은 개선된 특성을 나타냈다.

[0231] **실시예 10: HEK293 세포에서 GPCR 항체 라이브러리의 발현**

[0232] 실시예 13에서와 같은 GPCR 항체 라이브러리의 생성 후, 약 47개의 GPCR이 스크리닝을 위해 선택되었다. 약 1.8 kb 내지 약 4.5 kb 크기의 GPCR 구축물을 pCDNA3.1 벡터에 설계하였다. 이어서, GPCR 구축물은 계층적 조립(hierarchal assembly)을 포함하는 실시예 2-4에 설명된 바와 유사한 방법에 따라 합성되었다. 47개의 GPCR 구축물 중에서, 46개의 GPCR 구축물이 합성되었다.

[0233] 합성된 GPCR 구축물을 HEK293에서 형질감염시키고, 면역 형광을 사용하여 발현에 대해 검정하였다. 도 19a-19c를 참조하면, HEK293 세포를 N-말단에 헤마글루티닌(HA) 태그가 부착된 인간 Y_1 수용체를 포함하는 GPCR 구축물로 형질감염시켰다. 형질감염 24-48시간 후, 세포를 포스페이트 완충 염수(PBS)로 세척하고, 4% 파라포름알데히드로 고정하였다. 핵을 청색으로 가시화하기 위해 형광단 및 DAPI를 포함하는 HA 태그 또는 2차 항체를 향해 유도되는 형광 1차 항체를 사용하여 세포를 염색하였다. 도 19a-19c를 참조하면, 인간 Y_1 수용체는 투과되지 않은 세포의 세포 표면에서 및 투과된 세포의 세포 표면에서 및 세포 내에서 가시화되었다.

[0234] 자가 형광 단백질을 포함하는 GPCR 구축물을 설계함으로써 GPCR 구축물을 또한 가시화하였다. 도 20a-20c를 참조하면, 인간 Y_1 수용체는 그의 C-말단에 융합된 EYFP를 포함하고, 인간 Y_5 수용체는 그의 C-말단에 융합된 ECFP를 포함하였다. HEK293 세포는 인간 Y_1 수용체로 형질감염되거나 또는 인간 Y_1 수용체 및 인간 Y_5 수용체와 함께 공동 형질감염되었다. 형질감염 후에, 세포를 세척하고, 4% 파라포름알데히드로 고정하였다. 세포를 DAPI로 염색하였다. 인간 Y_1 수용체 및 인간 Y_5 수용체의 위치는 형광 현미경에 의해 가시화되었다.

[0235] **실시예 11: 면역글로불린 라이브러리의 설계**

[0236] 면역글로불린 스캐폴드 라이브러리는 GPCR 결합 도메인의 배치 및 다양한 GPCR 결합 도메인 코딩 서열에 대한 안정성을 향상시키도록 설계되었다. 면역글로불린 스캐폴드는 링커에 의해 VL 도메인에 부착된 VH 도메인을 포함하였다. VH 도메인 및 VL 도메인의 프레임워크 요소 및 CDR 요소에 대한 변이체 핵산 서열이 생성되었다. 설계된 구조는 도 21a에 도시되어 있다. 전체 도메인 아키텍쳐는 도 21b에 도시되어 있다. 리더, 링커 및 pIII의 서열이 표 11에 나열되어 있다.

[0237] 표 11. 뉴클레오티드 서열

[0238]

서열 번호	도메인	서열
88	리더	GCAGCCGCTGGCTTGCTGCTGCTGGCAGCTCAGCCGGCCATGGCC
89	링커	GCTAGCGGTGGAGGCGGTTCAGGCGGAGGTGGCTCTGGCGGTGGC GGATCGCATGCATCC
90	pIII	CGCGCGGCCGCTGGAAGCGGCTCCCACCATCACCATCACCAT

[0239] 설계된 VL 도메인은 IGKV1-39, IGKV3-15, IGLV1-51 및 IGLV2-14를 포함한다. 4개의 VL 도메인 각각은 그 각각의 4개의 불변 프레임워크 요소(FW1, FW2, FW3, FW4) 및 가변적인 3개의 CDR(L1, L2, L3) 요소로 조립되었다. IGKV1-39의 경우, L1에 대해 설계된 490개의 변이체가 존재하고 L2에 대해 설계된 420개의 변이체가 존재하고 L3에 대해 설계된 824개의 변이체가 존재하여, 1.7×10^8(490 * 420 * 824)의 다양성이 유도되었다. IGKV3-15의 경우, L1에 대해 설계된 490개의 변이체가 존재하고 L2에 대해 설계된 265개의 변이체가 존재하고 L3에 대해 설계된 907개의 변이체가 존재하여, 1.2×10^8(490 * 265 * 907)의 다양성이 유도되었다. IGLV1-51의 경우, L1에 대해 설계된 184개의 변이체가 존재하고 L2에 대해 설계된 151개의 변이체가 존재하고 L3에 대해 설계된 824개의 변이체가 존재하여, 2.3×10^7(184 * 151 * 824)의 다양성이 유도되었다. IGLV2-14의 경우, L1에 대해 설계된 967개의 변이체가 존재하고, L2에 대해 설계된 535개의 변이체가 존재하고 L3에 대해 922개의 변이체가 존재하여, 4.8×10^8(967 * 535 * 922)의 다양성이 유도되었다. 표 12는 IGLV1-51에 대한 4개의 프레임워크 요소(FW1, FW2, FW3, FW4)에 대한 아미노산 서열 및 뉴클레오티드 서열을 제시한다. 표 13은 IGLV1-51에 대한 가변적인 3개의 CDR(L1, L2, L3) 요소를 제시한다. 4개의 프레임워크 요소(FW1, FW2, FW3, FW4) 및 가변적인 3개의 CDR(L1, L2, L3) 요소에 대한 변이체 아미노산 서열 및 뉴클레오티드 서열이 또한 IGKV1-39, IGKV3-15 및

IGLV2-14를 위해 설계되었다.

[0240] 표 12. IGLV1-51 프레임워크 요소의 서열

요소	서열 번호	아미노산 서열	서열 번호	뉴클레오티드 서열
IGLV1-51				
FW1	91	QSVLTQPPSVSAAPGQKV TISC	92	CAGTCTGTGTTGACGCAGCCGCCC TCAGTGTCTGCGGCCCCAGGACAG AAGGTCACCATCTCCTGC
FW2	93	WYQQLPGTAPKLLIY	94	TGGTATCAGCAGCTCCCAGGAACA GCCCCCAAACTCCTCATTTAT
FW3	95	GIPDRFSGSKSGTSATLGI TGLQTGDEADYY	96	GGGATTCCTGACCGATTCTCTGGC TCCAAGTCTGGCACGTCAGCCACC CTGGGCATCACCGGACTCCAGACT GGGGACGAGGCCGATTATTAC
FW4	97	GGGTKLTVL	98	GGCGGAGGGACCAAGCTGACCGTC CTA

[0241]

[0242] 표 13. IGLV1-51 CDR 요소의 서열

서열 번호	아미노산 서열	서열 번호	뉴클레오티드 서열
IGLV1-51-L1			
99	SGSSSNIGS NHVS	282	TCTGGAAGCAGCTCCAACATTGGGAGTAATCATGT ATCC
100	SGSSSNIGN NYLS	283	TCTGGAAGCAGCTCCAACATTGGGAATAATTATCT ATCC

[0243]

101	SGSSSNIAN NYVS	284	TCTGGAAGCAGCTCCAACATTGCGAATAATTATGT ATCC
102	SGSSPNIGN NYVS	285	TCTGGAAGCAGCCCCAACATTGGGAATAATTATGT ATCG
103	SGSRSNIGS NYVS	286	TCTGGAAGCAGATCCAATATTGGGAGTAATTATGT TTCG
104	SGSSSNVG DNYVS	287	TCTGGAAGCAGCTCCAACGTTGGCGATAATTATGT TTCC
105	SGSSSNIGI QYVS	288	TCTGGAAGCAGCTCCAACATTGGGATTCAATATGT ATCC
106	SGSSSNVG NNFVS	289	TCTGGAAGCAGCTCCAATGTTGGTAACAATTTTGTC TCC
107	SGSASNIGN NYVS	290	TCTGGAAGCGCCTCCAACATTGGGAATAATTATGT ATCC
108	SGSGSNIGN NDVS	291	TCTGGAAGCGGCTCCAATATTGGGAATAATGATGT GTCC
109	SGSISNIGN NYVS	292	TCTGGAAGCATCTCCAACATTGGTAATAATTATGT ATCC
110	SGSISNIGK NYVS	293	TCTGGAAGCATCTCCAACATTGGGAAAAATTATGT GTCG
111	SGSSSNIGH NYVS	294	TCTGGAAGCAGCTCCAACATTGGGCATAATTATGT ATCG
112	PGSSSNIGN NYVS	295	CCTGGAAGCAGCTCCAACATTGGGAATAATTATGT ATCC
113	SGSTSNIGI HYVS	296	TCTGGAAGCACCTCCAACATTGGAATTCATTATGT ATCC
114	SGSSSNIGS HYVS	297	TCTGGAAGCAGCTCCAACATTGGCAGTCATTATGT TTCC
115	SGSSSNIGN EYVS	298	TCCGGAAGCAGCTCCAACATTGGAAATGAATATGT ATCC
116	SGSTSNIGN NYIS	299	TCTGGAAGCACCTCCAACATTGGAAATAATTATAT ATCG
117	SGSSSNIGN HFVS	300	TCTGGAAGCAGCTCCAATATTGGGAATCATTTTGT ATCG
118	SGSSSNIGN NYVA	301	TCTGGAAGCAGCTCCAACATTGGGAATAATTATGT GGCC
119	SGSSSNIGS YYVS	302	TCTGGAAGCAGCTCCAACATTGGAAGTTATTATGT ATCC
120	SGSGFNIGN NYVS	303	TCTGGAAGTGGTTTCAACATTGGGAATAATTATGT CTCT
121	SGSTSNIGN NYVS	304	TCTGGAAGCACCTCCAACATTGGGAATAATTATGT GTCC
122	SGSSSDIGN NYVS	305	TCTGGAAGCAGCTCCGACATTGGCAATAATTATGT ATCC
123	SGSSSNIGN NVVS	306	TCTGGAAGCAGCTCCAACATTGGGAATAATGTTGT ATCC
124	SGSKSNIGK NYVS	307	TCTGGAAGCAAGTCTAACATTGGGAAAAATTATGT ATCC
125	SGSSTNIGN NYVS	308	TCTGGAAGCAGCACCAACATTGGGAATAATTATGT ATCC

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126	SGSISNIGD NYVS	309	TCTGGAAGCATCTCCAACATTGGGGATAATTATGT ATCC
127	SGSSSNIGS KDVS	310	TCTGGAAGCAGCTCCAACATTGGGAGTAAGGATGT ATCA
128	SGSSSNIEN NDVS	311	TCTGGAAGCAGCTCCAACATTGAGAATAATGATGT ATCG
129	SGSSSNIGN HYVS	312	TCTGGAAGCAGCTCCAACATTGGGAATCATTATGT ATCC
130	SGSSSNIGK DFVS	313	TCTGGAAGCAGCTCCAACATTGGGAAGGATTTTGT CTCC
131	SGSTSNIGS NFVS	314	TCTGGCAGTACTTCCAACATCGGAAGTAATTTTGTT TCC
132	SGSTSNIGH NYVS	315	TCTGGAAGCACCTCCAACATTGGGCATAATTATGT ATCC
133	SASSSNIGN NYVS	316	TCTGCAAGCAGCTCCAACATTGGGAATAATTATGT ATCC
134	SGSSSSIGN NYVS	317	TCTGGAAGCAGCTCCAGCATTGGCAATAATTATGT ATCC
135	SGSSSTIGN NYVS	318	TCTGGAAGCAGCTCCACCATTGGGAATAATTATGT ATCC
136	SGSSSNIEN NYVS	319	TCTGGAAGCAGCTCCAACATTGAAAATAATTATGT ATCC
137	SGSSSNIGN QYVS	320	TCTGGAAGCAGCTCCAACATTGGGAATCAGTATGT ATCC
138	SGSSSNIGN NYVF	321	TCTGGAAGCAGCTCCAACATTGGGAATAATTATGT ATTC
139	SGSSSNIGR NYVS	322	TCTGGAAGCAGCTCCAACATTGGGAGGAATTATGT CTCC
140	SGGSSNIGN YYVS	323	TCTGGAGGCAGCTCCAACATTGGAAATTATTATGT ATCG
141	SGSSSNIGD NYVS	324	TCTGGAAGCAGCTCCAACATTGGAGATAATTATGT CTCC
142	SGGSSNIGI NYVS	325	TCTGGAGGCAGCTCCAACATTGGAATTAATTATGT ATCC
143	SGGSSNIGK NYVS	326	TCTGGAGGCAGCTCCAACATTGGGAAGAATTATGT ATCC
144	SGSSSNIGK RSVS	327	TCTGGAAGCAGCTCCAACATTGGGAAGAGATCTGT ATCG
145	SGSRSNIGN NYVS	328	TCTGGAAGCAGATCCAACATTGGGAATAACTATGT ATCC
146	SGSSSNIGN NLVS	329	TCGGGAAGCAGCTCCAACATTGGGAATAATCTTGT TTCC
147	SGSSSNIGI NYVS	330	TCTGGAAGCAGCTCCAACATTGGGATCAATTATGT ATCC
148	SGSSSNIGN NFVS	331	TCTGGAAGCAGCTCCAACATCGGGAATAATTTTGT ATCC
149	SGTSSNIGR NFVS	332	TCTGGAACCAGCTCCAACATTGGCAGAAATTTTGT ATCC
150	SGRRSNIG NNYVS	333	TCTGGAAGGAGGTCCAACATTGGAAATAATTATGT GTCC

151	SGGSFNIGNNYVS	334	TCTGGAGGCAGCTTCAATATTGGGAATAATTATGTATCC
152	SGSTSNIGENYVS	335	TCTGGAAGCACTTCCAACATTGGGGAGAATTATGTGTCC
153	SGSSSNIGSDYVS	336	TCTGGAAGCAGCTCCAATATTGGGAGTGATTATGTATCC
154	SGTSSNIGSNYVS	337	TCTGGAACCAGCTCCAACATTGGGAGTAATTATGTATCC
155	SGSSSNIGTNFVS	338	TCTGGAAGCAGCTCCAACATTGGGACTAATTTTGTATCC
156	SGSSSNFGNNYVS	339	TCTGGAAGCAGCTCCAACTTTGGGAATAATTATGTATCC
157	SGSTSNIGNNHVS	340	TCTGGAAGCACCTCCAACATTGGGAATAATCATGTATCC
158	SGSSSNIGNDFVS	341	TCTGGAAGCAGCTCCAACATTGGGAATGATTTTGTATCC
159	SGSSSDIGDNYVS	342	TCTGGAAGCAGCTCCGACATTGGCGATAATTATGTGTCC
160	SGSSSNIGKYYVS	343	TCTGGAAGCAGCTCCAACATTGGGAAATATTATGTATCC
161	SGSSSNIGGNYVS	344	TCTGGAAGCAGCTCCAACATTGGCGGTAATTATGTATCC
162	SGSSSNTGNNYVS	345	TCTGGAAGCAGCTCCAACACTGGGAATAATTATGTATCC
163	SGSSSNVGNNYVS	346	TCTGGAAGCAGCTCCAACGTTGGGAATAATTATGTGTCT
164	SGSSSNIANNFVS	347	TCTGGAAGCAGCTCCAACATTGCGAATAATTTTGTATCC
165	SGSSSNIGNDYVS	348	TCTGGAAGCAGCTCCAACATTGGGAATGATTATGTATCC
166	SGSTSNIENNYVS	349	TCTGGAAGCACCTCCAATATTGAGAATAATTATGTTTCC
167	SGGSSNIGNNDVS	350	TCTGGAGGCAGCTCCAATATTGGCAATAATGATGTGTCC
168	SGSTSNIGNHYVS	351	TCTGGAAGCACCTCCAACATTGGGAATCATTATGTATCC
169	SGSSSNIGDNDVS	352	TCAGGAAGCAGCTCCAATATTGGGGATAATGATGTATCC
170	SGYSSNIGNNYVS	353	TCTGGATACAGCTCCAACATTGGGAATAATTATGTATCC
171	SGSGSNIGNNFVS	354	TCTGGAAGCGGCTCCAACATTGGAAATAATTTTGTATCC
172	SGSSSNIWNNYVS	355	TCTGGAAGCAGCTCCAACATTTGGAATAATTATGTATCC
173	FGSSSNIGNNYVS	356	TTTGGAAGCAGCTCCAACATTGGGAATAATTATGTATCC
174	SGSSSNIEKNYVS	357	TCTGGAAGCAGCTCCAACATTGAGAAGAATTATGTATCC
175	SGSRSNIGNYYVS	358	TCTGGAAGTAGATCCAATATTGGAAATTATTATGTATCC

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176	SGTKSNIG NNYVS	359	TCTGGAACCAAGTCAAACATTGGGAATAATTATGT ATCT
177	SGSTSNIGN YYVS	360	TCTGGAAGCACCTCCAACATTGGGAATTATTATGT ATCC
178	SGTSSNIGN NYVA	361	TCTGGAACCAGCTCCAACATTGGGAATAATTATGT GGCC
179	PGTSSNIGN NYVS	362	CCTGGAACCAGCTCCAACATTGGGAATAATTATGT ATCC
180	SGSTSNIGI NYVS	363	TCCGGAAGCACCTCCAACATTGGGATTAATTATGT ATCC
181	SGSSSNIGS NLVS	364	TCTGGAAGCAGCTCCAACATTGGGAGTAATCTGGT ATCC
182	SGSSSNIEN NHVS	365	TCTGGAAGCAGCTCCAACATTGAGAATAATCATGT ATCC
183	SGTRSNIGN NYVS	366	TCTGGAACCAGGTCCAACATCGGCAATAATTATGT TTCG
184	SGSTSNIGD NYVS	367	TCTGGAAGCACCTCCAACATTGGGGACAATTATGT TTCC
185	SGGSSNIGK NFVS	368	TCTGGAGGCAGTTCCAACATTGGGAAGAATTTTGT ATCC
186	SGSRSDIGN NYVS	369	TCTGGAAGCAGGTCCGACATTGGGAATAATTATGT ATCC
187	SGTSSNIGN NDVS	370	TCTGGAACTAGCTCCAACATTGGGAATAATGATGT ATCC
188	SGSSSNIGS KYVS	371	TCTGGAAGCAGCTCCAACATTGGGAGTAAATATGT ATCA
189	SGSSFNIGN NYVS	372	TCTGGAAGCAGCTTCAACATTGGGAATAATTATGT ATCC
190	SGSSSNIGN TYVS	373	TCTGGAAGCAGCTCCAACATTGGGAATACTTATGT ATCC
191	SGSSSNIGD NHVS	374	TCTGGAAGCAGCTCCAATATTGGGGATAATCATGT ATCC
192	SGSSSNIGN NHVS	375	TCTGGAAGCAGCTCCAACATTGGCAATAATCATGT TTCC
193	SGSTSNIGN NDVS	376	TCTGGAAGCACCTCCAACATTGGGAATAATGATGT ATCC
194	SGSRSNVG NNYVS	377	TCTGGAAGCAGATCCAACGTTGGCAATAATTATGT TTCA
195	SGGTSNIG KNYVS	378	TCCGGAGGCACCTCCAACATTGGGAAGAATTATGT GTCT
196	SGSSSNIAD NYVS	379	TCTGGAAGCAGCTCCAACATTGCCGATAATTATGT TTCC
197	SGSSSNIGA NYVS	380	TCTGGAAGCAGCTCCAACATTGGCGCCAATTATGT ATCC
198	SGSSSNIGS NYVA	381	TCTGGAAGCAGCTCCAACATTGGGAGTAATTATGT GGCC
199	SGSSSNIGN NFLS	382	TCTGGAAGCAGCTCCAACATTGGGAACAATTTTCT CTCC
200	SGRSSNIGK NYVS	383	TCTGGAAGAAGCTCCAACATTGGGAAGAATTATGT ATCC

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[0248]

201	SGSSPNIGANYVS	384	TCTGGAAGCAGCCCCAACATTGGGGCTAATTATGTATCC
202	SGSSSNIGPNYVS	385	TCCGGAAGCAGCTCCAACATTGGGCCTAATTATGTGTCC
203	SGSSSTIGNNYIS	386	TCTGGAAGCAGCTCCACCATTGGGAATAATTATATATCC
204	SGSSSNIGNYFVS	387	TCTGGAAGCAGCTCCAACATTGGGAATTATTTTGTATCC
205	SGSRSNIGNNFVS	388	TCTGGAAGCCGCTCCAACATTGGTAATAATTTTGTATCC
206	SGGSSNIGSNFVS	389	TCTGGAGGCAGCTCCAACATTGGGAGTAATTTTGTATCC
207	SGSSSNIGYNYVS	390	TCTGGAAGCAGCTCCAACATTGGGTATAATTATGTATCC
208	SGTSSNIENNYVS	391	TCTGGAACCAGCTCGAACATTGAGAACAATTATGTATCC
209	SGSSSNIGNYYVS	392	TCTGGAAGTAGCTCCAACATTGGGAATTATTATGTATCC
210	SGSTSNIGKNYVS	393	TCTGGAAGCACCTCCAACATTGGGAAGAATTATGTATCC
211	SGSSSNIGTYYVS	394	TCTGGAAGCAGTTCCAACATTGGGACTTATTATGTCTCT
212	SGSSSNVGKNYVS	395	TCTGGAAGCAGCTCCAACGTTGGGAAAAATTATGTATCT
213	SGSTSNIGDNFVS	396	TCTGGAAGCACCTCCAACATTGGGGATAATTTTGTATCC
214	SGSTSNIGTNYVS	397	TCTGGAAGCACCTCCAACATTGGAACTAATTATGTTTCC
215	SGGTSNIGNNYVS	398	TCTGGAGGTACTTCCAACATTGGGAATAATTATGTCTCC
216	SGSYSNIGNNYVS	399	TCTGGAAGCTACTCCAATATTGGGAATAATTATGTATCC
217	SGSSSNIEDNYVS	400	TCTGGAAGCAGCTCCAACATTGAAGATAATTATGTATCC
218	SGSSSNIGKHYVS	401	TCTGGAAGCAGCTCCAACATTGGGAAACATTATGTATCC
219	SGSGSNIGSNYVS	402	TCCGGTTCCGGCTCAAACATTGGAAGTAATTATGTCTCC
220	SGSSSNIGNNYIS	403	TCTGGAAGCAGCTCCAACATTGGAAATAATTATATATCA
221	SGASSNIGNNYVS	404	TCTGGAGCCAGTTCCAACATTGGGAATAATTATGTTTCC
222	SGRTSNIGNNYVS	405	TCTGGACGCACCTCCAACATCGGGAACAATTATGTATCC
223	SGGSSNIGSNYVS	406	TCTGGAGGCAGCTCCAATATTGGGAGTAATTACGTATCC
224	SGSGSNIGNNYVS	407	TCTGGAAGCGGCTCCAACATTGGGAATAATTATGTATCC
225	SGSTSNIGSNYVS	408	TCTGGAAGCACCTCCAACATTGGGAGTAATTATGTATCC

226	SGSSSSIGNNYVA	409	TCTGGAAGCAGCTCCAGCATTGGGAATAATTATGTGGCG
227	SGSSSNLGNNYVS	410	TCTGGAAGCAGTTCCAACCTTGGAAATAATTATGTATCC
228	SGTSSNIGKNYVS	411	TCTGGAACCAGCTCCAACATTGGGAAAAATTATGTATCC
229	SGSSSDIGNKYIS	412	TCTGGAAGCAGCTCCGATATTGGGAACAAGTATATATCC
230	SGSSSNIGSNYIS	413	TCTGGAAGCAGCTCCAACATTGGAAGTAATTACATATCC
231	SGSTSNIGANYVS	414	TCTGGAAGCACCTCCAACATTGGGGCTAACTATGTGTCC
232	SGSSSNIGNKYVS	415	TCTGGAAGCAGCTCCAACATTGGGAATAAGTATGTATCC
233	SGSSSNIGNNYGS	416	TCTGGAAGCAGCTCCAACATTGGGAATAATTATGGATCC
234	SGSTSNIANNYVS	417	TCTGGAAGCACCTCCAACATTGCGAATAATTATGTATCC
235	SGSYSNIGSNYVS	418	TCTGGAAGCTACTCCAATATTGGGAGTAATTATGTATCC
236	SGSSSNIGSNFVS	419	TCTGGAAGCAGCTCCAACATTGGGAGTAATTTTGTATCC
237	SGSSSNLENNYVS	420	TCTGGAAGCAGCTCCAATCTTGAGAATAATTATGTATCC
238	SGSISNIGSNYVS	421	TCTGGAAGCATCTCCAATATTGGCAGTAATTATGTATCC
239	SGSSSDIGSNYVS	422	TCTGGAAGCAGCTCCGACATTGGGAGTAATTATGTATCC
240	SGSSSNIGTNYVS	423	TCTGGAAGCAGCTCCAACATTGGGACTAATTATGTATCC
241	SGSSSNIGKNFVS	424	TCTGGAAGCAGCTCCAACATTGGGAAGAATTTTGTATCC
242	SGSSSNIGNNFIS	425	TCTGGAAGCAGCTCCAACATTGGGAATAATTTTATATCC
243	SGGSSNIGNNYVS	426	TCTGGAGGCAGCTCCAACATTGGCAATAATTATGTTTCC
244	SGSSSNIGENYVS	427	TCTGGAAGCAGCTCCAACATTGGGGAGAATTATGTATCC
245	SGSSSNIGNNFVA	428	TCTGGAAGCAGCTCCAATATTGGGAATAATTTTGTGGCC
246	SGGSSNIGNNYVA	429	TCTGGAGGCAGCTCCAACATTGGGAATAATTATGTAGCC
247	SGSSSHIGNNYVS	430	TCTGGAAGCAGCTCCCACATTGGAAATAATTATGTATCC
248	SGSSSNIGSNDVS	431	TCTGGAAGCAGCTCCAATATTGGAAGTAATGATGTATCG
249	SGSSSNIGNNYVT	432	TCTGGAAGCAGCTCCAACATTGGGAATAATTATGTAACC
250	SGSSSNIGNNPVS	433	TCTGGAAGCAGCTCCAACATTGGGAATAATCCTGTATCC

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251	SGGSSNIGNHYVS	434	TCTGGAGGCAGCTCCAATATTGGGAATCATTATGTATCC
252	SGTSSNIGNNYVS	435	TCTGGAACCAGCTCCAACATTGGGAATAATTATGTATCC
253	SGSSSNIGSNYVS	436	TCTGGAAGCAGCTCCAACATTGGAAGTAATTATGTCTCG
254	SGGTSNIGSNYVS	437	TCTGGAGGCACCTCCAACATTGGAAGTAATTATGTATCC
255	SGSKSNIGNNYVS	438	TCTGGAAGCAAGTCCAACATTGGGAATAATTATGTATCC
256	SGRSSNIGNNYVS	439	TCTGGAAGAAGCTCCAACATTGGGAATAATTATGTATCG
257	SGSSSNVGSNYVS	440	TCTGGAAGCAGCTCCAACGTTGGGAGTAATTATGTTTCC
258	SGSTSNIGNNFVS	441	TCTGGAAGCACCTCCAATATTGGGAATAATTTTGTATCC
259	SGSNFNIGNNYVS	442	TCTGGAAGCAACTTCAACATTGGGAATAATTATGTCTCC
260	SGSTSNIGYNYVS	443	TCTGGAAGCACCTCCAATATTGGATATAATTATGTATCC
261	SGSSSNIVSNYVS	444	TCTGGAAGCAGCTCCAATATTGTAAGTAATTATGTATCC
262	SGTSSNIGNNFVS	445	TCTGGAACCAGCTCCAACATTGGGAATAATTTTGTATCC
263	SGSSSNIGRNFVS	446	TCTGGAAGCAGCTCCAACATTGGGAGGAATTTTGTGTCC
264	SGTTSNIGNNYVS	447	TCTGGAACGACCTCCAACATTGGGAATAATTATGTCTCC
265	SGSSSNIGNNDVS	448	TCTGGAAGCAGCTCCAACATTGGGAATAATGATGTATCC
266	SGSSSNIGNHDVS	449	TCTGGAAGCAGCTCCAACATTGGGAATCATGATGTATCC
267	SGSSSNIGSSHVS	450	TCTGGAAGCAGCTCCAACATTGGAAGTAGTCATGTATCC
268	SGSSSNIGIHYVS	451	TCTGGAAGCAGCTCCAACATTGGGATTCATTATGTATCC
269	SGGGSNIGYNYVS	452	TCTGGAGGCGGCTCCAACATTGGCTATAATTATGTCTCC
270	SGSSSNIGDHYVS	453	TCTGGAAGCAGCTCCAACATTGGGGATCATTATGTGTCG
271	SGSSSNLGKNYVS	454	TCTGGAAGCAGCTCCAACCTTGGGAAGAATTATGTATCT
272	SGSSSNIGDNFVS	455	TCTGGAAGCAGCTCCAACATTGGCGATAATTTTGTATCC
273	SGSTSNIEKNYVS	456	TCTGGAAGCACCTCCAACATTGAGAAAAACTATGTATCG
274	SGSSSNIGKDYVS	457	TCTGGAAGCAGCTCCAACATTGGGAAGGATTATGTATCC
275	SGSSSNIGKNYVS	458	TCTGGAAGCAGCTCCAACATTGGGAAGAATTATGTATCC

276	SGSSSNIGN NYVS	459	TCTGGAAGCAGCTCCAACATTGGGAATAATTATGT ATCC
277	SGSSSNIGN NYAS	460	TCTGGAAGCAGCTCCAACATTGGGAATAATTATGC CTCC
278	SGISSNIGN NYVS	461	TCTGGAATCAGCTCCAACATTGGGAATAATTATGT ATCC
279	TGSSSNIGN NYVS	462	ACTGGAAGCAGCTCCAACATTGGGAATAATTATGT ATCC
280	SGTSSNIGN NHVS	463	TCTGGAACCAGCTCCAACATTGGGAATAATCATGT TTCC
281	SGSRSNIGK NYVS	464	TCTGGAAGTCGTTCCAACATTGGGAAAAATTATGT ATCC
IGLV1-51-L2			
465	DNNKRPP	616	GACAATAATAAGCGACCCCCA
466	ENNRRPS	617	GAGAATAATAGGCGACCCTCA
467	DNNKQPS	618	GACAATAATAAGCAACCCTCA
468	DNNKRPL	619	GACAATAACAAGCGACCCTTG
469	DNDKRPA	620	GACAATGATAAGCGACCCGCA
470	DNHERPS	621	GACAATCATGAGCGACCCTCA
471	ENRKRPS	622	GAAAACCGTAAGCGACCCTCA
472	DNDQRPS	623	GACAATGATCAGCGACCCTCA
473	ENYKRPS	624	GAGAATTATAAGCGACCCTCA
474	ENTKRPS	625	GAAAATACTAAGCGACCCTCA
475	DTEKRPS	626	GACACTGAGAAGAGGCCCTCA
476	DNDKRPP	627	GACAATGATAAGCGACCCCCA
477	DHNKRPS	628	GACCATAATAAGCGACCCTCA
478	GNNERPS	629	GGCAATAATGAGCGACCCTCA
479	DTSKRPS	630	GACACTAGTAAGCGACCCTCA
480	EYNKRPS	631	GAATATAATAAGCGCCCCTCA
481	ENIKRPS	632	GAAAATATTAAGCGACCCTCA
482	DNVKRPS	633	GACAATGTTAAGCGACCCTCA
483	ENDKRSS	634	GAAAACGATAAACGATCCTCA
484	ENNKRHS	635	GAAAATAATAAGCGACACTCA
485	GNDQRPS	636	GGAAATGATCAGCGACCCTCA
486	DNDRRPS	637	GACAATGATAGGCGACCCTCA
487	DNHKRPS	638	GACAATCATAAGCGGCCCTCA
488	DNNDRPS	639	GACAATAATGACCGACCCTCA
489	ENNQRPS	640	GAGAATAATCAGCGACCCTCA
490	DNNQRPS	641	GACAATAATCAGCGACCCTCA
491	ENVKRPS	642	GAGAATGTTAAGCGACCCTCA
492	DTYKRPS	643	GACACTTATAAGAGACCCTCA
493	NNNNRPS	644	AACAATAATAACCGACCCTCA
494	GNNNRPS	645	GGCAATAATAATCGACCCTCA
495	ENDQRPS	646	GAAAATGATCAGCGACCCTCA
496	DNNKRAS	647	GACAATAATAAGCGAGCCTCA
497	DNDKRPL	648	GACAATGATAAGCGACCCTTA
498	DTDERPS	649	GACACTGATGAGCGACCTTCA

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499	DNRKRPS	650	GACAATAGGAAGCGACCCTCA
500	DNDARPS	651	GACAATGATGCTCGACCCTCA
501	DNNKRLS	652	GACAATAATAAGCGACTCTCA
502	DNDKRAS	653	GACAATGATAAGCGAGCCTCA
503	DNTERPS	654	GACAATACTGAGCGACCCTCA
504	DNNIRPS	655	GACAATAATATTCGACCCTCA
505	DNKRRPS	656	GACAATAAGAGGCGACCCTCA
506	DDNNRPS	657	GACGATAATAACCGACCCTCA
507	ANNRRPS	658	GCGAATAATCGACGACCCTCA
508	DNDKRLS	659	GACAATGATAAGCGACTGTCA
509	DNNKRPA	660	GACAATAATAAGCGACCCGCA
510	DNYRRPS	661	GACAATTATAGACGTCCCTCA
511	ANDQRPS	662	GCCAATGATCAGCGACCCTCA
512	DNDKRRS	663	GACAATGATAAGCGACGCTCA
513	DKNERPS	664	GACAAGAATGAGCGACCCTCA
514	DNKERPS	665	GACAATAAGGAGCGACCCTCA
515	DNNKGPS	666	GACAATAATAAGGGACCCTCA
516	ENDRRPS	667	GAAAATGATAGACGACCCTCA
517	ENDERPS	668	GAAAATGATGAGCGACCCTCA
518	QNNKRPS	669	CAAAATAATAAGCGACCCTCA
519	DNRERPS	670	GACAATCGTGAGCGACCCTCA
520	DNNRRPS	671	GACAATAATAGACGACCCTCA
521	GNNRRPS	672	GGAAATAATAGGCGACCCTCA
522	DNDNRPS	673	GACAATGATAACCGACCCTCA
523	EDNKRPS	674	GAAGATAATAAGCGACCCTCA
524	DDDERPS	675	GACGATGATGAGCGGCCCTCA
525	ASNKRPS	676	GCAAGTAATAAGCGACCCTCA
526	DNNKRSS	677	GACAATAATAAGCGATCCTCA
527	QNNERPS	678	CAAAATAATGAGCGACCCTCA
528	DDDRRPS	679	GACGATGATAGGCGACCCTCA
529	NNDKRPS	680	AACAATGATAAGCGACCCTCA
530	DNNNRPS	681	GACAATAATAACCGACCCTCA
531	DNNVRPS	682	GACAATAATGTGCGACCCTCA
532	ENNERPS	683	GAAAATAATGAGCGACCCTCA
533	DNNHRPS	684	GACAATAATCACCGACCCTCA
534	DNDERPS	685	GACAATGATGAGCGCCCCTCG
535	DNIRRPS	686	GACAATATCCGGCGACCCTCA
536	DFNKRPS	687	GACTTTAATAAGCGACCCTCA
537	ETNKRPS	688	GAAACTAATAAGCGACCCTCA
538	NDNKRPS	689	AACGATAATAAGCGACCCTCA
539	DDNKRPS	690	GACGATAATAAGCGACCCTCA
540	DNYKRPS	691	GACAATTATAAGCGACCCTCA
541	HNNKRPS	692	CACAATAATAAGCGACCCTCA
542	DNHQRPS	693	GACAATCATCAGCGACCCTCA
543	DNYKRAS	694	GACAATTATAAGCGAGCCTCA
544	DNIKRPS	695	GACAATATTAAGCGACCCTCA

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[0253]

545	DTHKRPS	696	GACACTCATAAGCGACCCTCA
546	DTNRRPS	697	GACACTAATAGGCGACCCTCT
547	DTNQRPS	698	GACACTAATCAGCGACCCTCA
548	ESDKRPS	699	GAAAGTGATAAGCGACCCTCA
549	DNDKRSS	700	GACAATGATAAGCGATCTTCG
550	GSNKRPS	701	GGCAGTAATAAGCGACCCTCA
551	DNNKRVS	702	GACAATAACAAGCGAGTTTCA
552	NNNRRPS	703	AACAATAATAGGCGACCCTCA
553	DNFKRPS	704	GACAATTTTAAGCGACCCTCA
554	ENDKRPS	705	GAAAATGATAAACGACCCTCA
555	ENNKRLS	706	GAAAATAATAAGCGACTCTCA
556	ADNKRPS	707	GCAGATAATAAGCGACCCTCA
557	EDNERPS	708	GAAGATAATGAGCGCCCCTCA
558	DTDQRPS	709	GACACTGATCAGCGACCCTCA
559	DNYQRPS	710	GACAATTATCAGCGACCCTCA
560	DENKRPS	711	GACGAGAATAAGCGACCCTCA
561	DTNKRPS	712	GACACTAATAAGCGACCCTCA
562	DDYRRPS	713	GACGATTATCGGCGACCCTCA
563	DNDKRHS	714	GACAACGATAAGCGGCACTCA
564	ENDNRPS	715	GAAAATGATAATCGACCCTCA
565	DDNERPS	716	GACGATAATGAGCGCCCCTCA
566	DNKKRPS	717	GACAATAAGAAGCGACCCTCA
567	DVDKRPS	718	GACGTTGATAAGCGACCCTCA
568	ENKKRPS	719	GAAAATAAAAAACGACCCTCT
569	VNDKRPS	720	GTCAATGATAAGCGACCCTCA
570	DNDHRPS	721	GACAATGATCACCGACCCTCA
571	DINKRPS	722	GACATTAATAAGCGACCCTCA
572	ANNERPS	723	GCCAATAATGAGCGACCCTCA
573	DNENRPS	724	GACAATGAAAACCGACCGTCA
574	GDDKRPS	725	GGCGATGATAAGCGACCCTCA
575	ANNQRPS	726	GCCAATAATCAGCGACCTTCA
576	DDDKRPS	727	GACGATGATAAGCGACCCTCA
577	YNNKRPS	728	TACAATAATAAGCGGCCCTCA
578	EDDKRPS	729	GAAGATGATAAGCGACCCTCA
579	ENNNRPS	730	GAAAACAATAACCGACCCTCG
580	DNNLRPS	731	GACAATAATCTGCGACCCTCA
581	ESNKRPS	732	GAGAGTAACAAGCGACCCTCA
582	DTDKRPS	733	GACACTGATAAGCGGCCCTCA
583	DDDQRPS	734	GACGATGATCAGCGACCCTCA
584	VNNKRPS	735	GTGAATAATAAGAGACCCTCC
585	DDYKRPS	736	GACGATTATAAGCGACCCTCA
586	DNTKRPS	737	GACAATACTAAGCGACCCTCA
587	DDTERPS	738	GACGATACTGAGCGACCCTCA
588	GNDKRPS	739	GGCAATGATAAGCGACCCTCA
589	DNEKRPS	740	GACAATGAAAAGCGACCCTCA
590	DNDDRPS	741	GACAATGATGACCGACCCTCA

591	DDNRRPS	742	GACGATAATAGGCGTCCCTCA
592	GNNKRPS	743	GGCAATAATAAGCGACCCTCA
593	ANDKRPS	744	GCCAATGATAAGCGACCCTCA
594	DNNKRHS	745	GACAATAATAAGCGACACTCA
595	DDNQRPS	746	GACGACAATCAGCGACCCTCA
596	GNDRRPS	747	GGCAATGATAGGCGACCCTCA
597	DNHNRPS	748	GACAATCATAACCGACCCTCA
598	DNYERPS	749	GACAATTATGAGCGACCCTCA
599	ENNKRSS	750	GAAAATAATAAGCGATCCTCA
600	DDHKRPS	751	GACGATCATAAGCGGCCCTCA
601	DNNKRRS	752	GACAATAATAAACGACGTTCA
602	DNDKRPS	753	GACAATGATAAGCGACCGTCA
603	DKNKRPS	754	GACAAGAATAAGCGACCCTCA
604	DNNKRPS	755	GACAATAATAAGCGACCCTCA
605	DIDKRPS	756	GACATTGATAAGCGACCCTCA
606	DDKKRPS	757	GACGATAAGAAGCGACCCTCA
607	ANNKRPS	758	GCCAATAATAAGCGACCCTCA
608	DNDKGPS	759	GACAATGATAAGGGACCCTCA
609	EDNRRPS	760	GAAGATAATAGGCGACCCTCA
610	ENNKRPS	761	GAGAATAATAAGCGACCCTCA
611	NNNKRPS	762	AACAATAATAAGCGACCCTCA
612	DNNERPS	763	GACAATAATGAGCGACCCTCA
613	DNIQRPS	764	GACAATATTCAGCGACCCTCA
614	DNNYRPS	765	GACAATAATTACCGACCCTCA
615	DNYNRPS	766	GACAATTATAACCGACCCTCA
IGLV1-51-L3			
767	CGTWDTSLSAVVF	1591	TGCGGAACATGGGATACCAGCCTGAGTGCTGTGGTGTTC
768	CGTWDTSLSAGVF	1592	TGCGGAACATGGGATACCAGCCTGAGTGCTGGGGTGTTC
769	CGTWDTSLSAWVF	1593	TGCGGAACATGGGATACCAGCCTGAGTGCTTGGGTGTTC
770	CGTWDRSLSAGVF	1594	TGCGGAACATGGGATAGGAGCCTGAGTGCGGGGGTGTTC
771	CGTWDRSLSAWVF	1595	TGCGGAACATGGGATAGGAGCCTGAGTGCTTGGGTATTT
772	CGTWDTSLSGGVF	1596	TGCGGAACATGGGATACCAGCCTGAGTGGTGGGGTGTTC
773	CGTWDTSLRAGVF	1597	TGCGGAACATGGGATACTAGCCTGCGTGCTGGCGTCTTC
774	CGTWDRSLSVWVF	1598	TGCGGAACATGGGATAGGAGCCTGAGTGTTTGGGTGTTC
775	CGTWDTSLSVVVF	1599	TGCGGAACATGGGATACCAGTCTGAGTGTTGTGGTCTTC
776	CGTWDTSLSAAVF	1600	TGCGGAACGTGGGATACCAGCCTGAGTGCTGCGGTGTTC
777	CGAWDTSLSAGVF	1601	TGCGGAGCATGGGATACCAGCCTGAGTGCTGGAGTGTTC

[0254]

778	CATWDTSL SAVVF	1602	TGCGCAACATGGGATACCAGCCTGAGTGCTGTGGT ATTC
779	CATWDTSL SAGVF	1603	TGCGCAACATGGGATACCAGCCTGAGTGCTGGTGT GTTC
780	CGTWESSL SAWVF	1604	TGTGGAACATGGGAGAGCAGCCTGAGTGCTTGGGT GTTC
781	CGTWDTTL SAGVF	1605	TGCGGAACATGGGATACCACCCTGAGTGCGGGTGT CTTC
782	CGTWDTSL SVWVF	1606	TGCGGAACATGGGATACTAGCCTGAGTGTGTGGGT GTTC
783	CGTWDTSL SVGVF	1607	TGCGGAACATGGGATACTAGCCTGAGTGTTGGGGT GTTC
784	CGTWDTSL STGVF	1608	TGCGGAACATGGGACACCAGTCTGAGCACTGGCGT CTTC
785	CGTWDTSL SGVVF	1609	TGCGGAACATGGGATACCAGCCTGAGTGGTGTGGT CTTC
786	CGTWDTSL SAYVF	1610	TGCGGAACATGGGATACCAGCCTGAGTGCTTATGT CTTC
787	CGTWDTSL SAEVF	1611	TGCGGAACATGGGATACCAGCCTGAGTGCTGAGGT GTTC
788	CGTWDTGL SAGVF	1612	TGCGGAACATGGGATACCGGCCTGAGTGCTGGGGT ATTC
789	CGTWDRSL SAYVF	1613	TGCGGAACGTGGGATAGGAGCCTGAGTGCTTATGT CTTC
790	CGTWDRSL SAVVF	1614	TGCGGAACATGGGATAGGAGCCTCAGTGCCGTGGT ATTC
791	CGTWDNTL SAWVF	1615	TGCGGAACATGGGATAACACCCTGAGTGCGTGGGT GTTC
792	CGTWDNR LSAGVF	1616	TGCGGAACATGGGATAACAGGCTGAGTGCTGGGGT GTTC
793	CGTWDISL SAWVF	1617	TGCGGAACATGGGACATCAGCCTGAGTGCTTGGGT GTTC
794	CGTWHSSL SAGVF	1618	TGCGGAACATGGCATAGCAGCCTGAGTGCTGGGGT ATTC
795	CGTWGSSL SAWVF	1619	TGCGGAACATGGGGTAGCAGTTTGAGTGCTTGGGT GTTC
796	CGTWESSL SGWVF	1620	TGCGGAACATGGGAGAGCAGCCTGAGTGGTTGGGT GTTC
797	CGTWESSL SAVVF	1621	TGCGGAACATGGGAGAGCAGCCTGAGTGCTGTGGT TTTC
798	CGTWDYSL SAVVF	1622	TGCGGAACATGGGATTACAGCCTGAGTGCTGTGGT ATTC
799	CGTWDYSL SAGVF	1623	TGCGGAACATGGGATTACAGCCTGAGTGCTGGGGT ATTC
800	CGTWDVSL SVGVF	1624	TGCGGAACATGGGATGTCAGCCTGAGTGTTGGAGT GTTC
801	CGTWDTTL SAVVF	1625	TGCGGAACATGGGATACCACCCTGAGTGCTGTGGT TTTC
802	CGTWDTTL NIGVF	1626	TGCGGAACATGGGATACCACTCTGAATATTGGGGT GTTC

[0255]

803	CGTWDTSL TAVVF	1627	TGCGGAACATGGGATACCAGCCTGACTGCTGTGGT ATTC
804	CGTWDTSL TAAVF	1628	TGCGGAACCTGGGATACCAGCCTGACTGCTGCTGT GTTC
805	CGTWDTSL SVGLF	1629	TGCGGCACATGGGATACCAGCCTGAGTGTGGGGCT ATTC
806	CGTWDTSL SGRVF	1630	TGCGGAACCTGGGATACCAGCCTGAGTGGTAGGGT GTTC
807	CGTWDTSL SGAVF	1631	TGCGGAACATGGGATACCAGCCTGAGTGGTGCAGT GTTC
808	CGTWDTSL SAGLF	1632	TGCGGAACATGGGATACCAGCCTGAGTGCTGGCCT GTTC
809	CGTWDTSL SAGGVF	1633	TGCGGAACATGGGATACCAGCCTGAGTGCTGGAGG GGTCTTC
810	CGTWDTSL RAYVF	1634	TGCGGAACATGGGATACCAGCCTGCGTGCTTATGT CTTC
811	CGTWDTSL RAWVF	1635	TGCGGAACATGGGATACTAGTTTGCGTGCTTGGGT ATTC
812	CGTWDTSL NTGVF	1636	TGCGGAACATGGGATACCAGCCTGAATACTGGGGT ATTC
813	CGTWDTSL NIWVF	1637	TGCGGAACATGGGATACCAGCCTGAATATTTGGGT GTTC
814	CGTWDTSL NIGVF	1638	TGCGGAACATGGGATACAAGCCTGAATATTGGGGT GTTC
815	CGTWDTSL IAVVF	1639	TGCGGAACATGGGATACCAGCCTGATTGCTGTGGT GTTC
816	CGTWDRSL SGWVF	1640	TGCGGAACGTGGGATAGGAGCCTGAGTGGTTGGGT GTTC
817	CGTWDNR LSGWVF	1641	TGCGGAACATGGGATAACAGGCTGAGTGGTTGGGT GTTC
818	CGTWDKSL SAVVF	1642	TGCGGAACGTGGGATAAGAGCCTGAGTGCTGTGGT CTTC
819	CGTWDKG LSAWVF	1643	TGCGGAACATGGGATAAAGGCCTGAGTGCTTGGGT GTTC
820	CGTWDISL SAGVF	1644	TGCGGAACATGGGATATCAGCCTGAGTGCTGGGGT GTTC
821	CGTWDESL SGGEVVF	1645	TGCGGAACATGGGATGAGAGCCTGAGTGGTGGCG AGGTGGTCTTC
822	CGTWDASL SAWVF	1646	TGCGGAACATGGGATGCCAGCCTGAGTGCCTGGGT GTTC
823	CGTWDAG LSAWVF	1647	TGCGGAACTTGGGATGCCGGCCTGAGTGCTTGGGT GTTC
824	CGAWDTSL SAWVF	1648	TGCGGAGCATGGGATACCAGCCTGAGTGCTTGGGT GTTC
825	CGAWDTSL SAVVF	1649	TGCGGAGCATGGGATACCAGCCTGAGTGCTGTGGT GTTC
826	CGAWDTSL RAGVF	1650	TGCGGAGCATGGGATACCAGCCTGCGTGCTGGGGT TTTC
827	CATWDTSV SAWVF	1651	TGCGCAACATGGGATACCAGCGTGAGTGCTTGGGT GTTC

[0256]

[0257]

828	CATWDTSL SAWVF	1652	TGCGCAACATGGGATACCAGCCTGAGTGCGTGGGT GTTC
829	CATWDNTL SAGVF	1653	TGCGCAACATGGGACAACACCCTGAGTGCTGGGGT GTTC
830	CAAWDRSL SVWVF	1654	TGCGCAGCATGGGATAGGAGCCTGAGTGTTTGGGT GTTC
831	CYTWHSSL RGGVF	1655	TGCTACACATGGCATTCCAGTCTGCGTGGTGGGGT GTTC
832	CVTWTSSP SAWVF	1656	TGCGTAACGTGGACTAGTAGCCCGAGTGCTTGGGT GTTC
833	CVTWRGG LVLF	1657	TGCGTGACATGGCGTGGTGGCCTTGTGTTGTTC
834	CVTWDTSL TSVVL	1658	TGCGTAACATGGGATACCAGCCTGACTTCTGTGGT ACTC
835	CVTWDTSL SVYWVF	1659	TGCGTAACATGGGATACCAGCCTGAGTGTTTATTG GGTGTTC
836	CVTWDTSL SAWVF	1660	TGCGTTACATGGGATACCAGCCTGAGTGCCTGGGT GTTC
837	CVTWDTDL SVALF	1661	TGCGTCACATGGGATACCGACCTCAGCGTTGCGCT CTTC
838	CVTWDRSL SGWVF	1662	TGCGTAACATGGGATAGGAGCCTGAGTGGTTGGGT GTTC
839	CVTWDRSL REVLF	1663	TGCGTAACATGGGATCGCAGCCTGAGAGAGGTGTT ATTC
840	CVTWDRSL RAVVF	1664	TGCGTAACATGGGATCGCAGCCTGAGAGCGGTGGT ATTC
841	CVTWDRSL DAGVF	1665	TGCGTAACATGGGACAGGAGCCTCGATGCTGGGGT TTTC
842	CVTWDNTL SAGVF	1666	TGCGTGACATGGGATAACACCCTGAGTGCTGGGGT CTTC
843	CVTWDNN LFGVVF	1667	TGCGTAACATGGGATAACAACCTGTTTGGTGTGGT CTTC
844	CVSWDTSL SGAVF	1668	TGCGTATCATGGGATACCAGCCTGAGTGGTGCGGT ATTC
845	CVSWDTSL SAGVF	1669	TGCGTCTCATGGGATACCAGCCTGAGTGCTGGGGT ATTC
846	CTTWFRTP SDVVF	1670	TGCACAACATGGTTTAGGACTCCGAGTGATGTGGT CTTC
847	CTTWFRTA SDVVF	1671	TGCACAACATGGTTTAGGACTGCGAGTGATGTGGT CTTC
848	CTTWDYGL SVVF	1672	TGCACAACGTGGGATTACGGTCTGAGTGTCGTCTT C
849	CTARDTSL SPGGVF	1673	TGCACAGCAAGGGATACCAGCCTGAGTCCTGGCGG GGTCTTC
850	CSTWNTRP SDVVF	1674	TGCTCAACATGGAATACGAGGCCGAGTGATGTGGT GTTC
851	CSTWESSL TTVVF	1675	TGTTCAACATGGGAGAGCAGTTTGACTACTGTGGT CTTC
852	CSTWDTSL TNVLF	1676	TGCTCAACATGGGATACCAGCCTCACTAATGTGCT ATTC

853	CSTWDTSL SGVVF	1677	TGCTCAACATGGGATACCAGCCTGAGTGGAGTAGT CTTC
854	CSTWDHSL KAALF	1678	TGCTCAACATGGGATCACAGCCTGAAAGCTGCACT GTTC
855	CSTWDARL SVRVF	1679	TGCTCAACCTGGGATGCGAGGCTGAGTGTCCGGGT GTTC
856	CSSYTSSST WVF	1680	TGCTCCTCATATACAAGCAGCAGCACTTGGGTGTT C
857	CSSYATRG LRVLF	1681	TGCAGCTCATACGCAACCCGCGGCCTTCGTGTGTT GTTC
858	CSSWDATL SVRIF	1682	TGTTCATCATGGGACGCCACCCTGAGTGTTCGCAT ATTC
859	CQVWEGSS DHWVF	1683	TGTCAGGTGTGGGAGGGTAGTAGTGATCATTGGGT GTTC
860	CQTWDNR LSAVVF	1684	TGCCAAACCTGGGATAACAGACTGAGTGCTGTGGT GTTC
861	CQTWDHSL HVGVF	1685	TGTCAAACGTGGGATCACAGCCTGCATGTTGGGGT GTTC
862	CQSYDDIL NVWVL	1686	TGCCAGTCCTATGACGACATCTTGAATGTTTGGGTC CTT
863	CNTWDKSL TSELF	1687	TGCAATACATGGGATAAGAGTTTGACTTCTGAACT CTTC
864	CLTWDRSL NVRVF	1688	TGCTTAACATGGGATCGCAGCCTGAATGTGAGGGT GTTC
865	CLTWDHSL TAYVF	1689	TGCCTAACATGGGACCACAGCCTGACTGCTTATGT CTTC
866	CLTRDTSLS APVF	1690	TGCTTAACAAGGGATACCAGTCTGAGTGCCCCTGT GTTC
867	CKTWESGL NFGHVF	1691	TGCAAAACATGGGAAAGTGGCCTTAATTTTGGCCA CGTCTTC
868	CKTWDTSL SAVVF	1692	TGCAAAACATGGGATACCAGCCTGAGTGCTGTGGT CTTC
869	CGVWDVS LGAGVF	1693	TGCGGAGTCTGGGATGTCAGTCTGGGTGCTGGGGT GTTC
870	CGVWDTTP SAVLF	1694	TGCGGAGTCTGGGATACCACCCCGAGTGCCGTTCT TTTC
871	CGVWDTTL SAVLF	1695	TGCGGAGTCTGGGATACCACCCTGAGTGCCGTTCT TTTC
872	CGVWDTSL GVF	1696	TGCGGAGTATGGGATACCAGCCTGGGGGTCTTC
873	CGVWDTN LGKWVF	1697	TGCGGGGTATGGGATACCAACCTGGGTAAATGGGT TTTC
874	CGVWDTG LDAGWVF	1698	TGTGGAGTTTGGGATACTGGCCTGGATGCTGGTTG GGTGTTC
875	CGVWDNV LEAYVF	1699	TGCGGAGTGTGGGATAACGTCCTGGAGGCCTATGT CTTC
876	CGVWDISL SANWVF	1700	TGCGGAGTCTGGGATATCAGCCTGAGTGCTAATTG GGTGTTC
877	CGVWDHS LGIWAF	1701	TGCGGAGTATGGGATCACAGCCTGGGGATTTGGGC CTTC

[0258]

878	CGVWDDILTAEVF	1702	TGCGGAGTTTGGGATGATATTCTGACTGCTGAAGTGTTC
879	CGVRDTSLGVF	1703	TGCGGAGTTCGGGATACCAGCCTGGGGGTCTTC
880	CGTYDTSLPAWVF	1704	TGCGGAACATACGATACGAGCCTGCCTGCTTGGGTGTTT
881	CGTYDNLVFGYVF	1705	TGCGGAACTTACGATAATCTTGTATTTGGTTATGTCTTC
882	CGTYDDRLREVF	1706	TGCGGAACATACGATGATAGACTCAGAGAGGTGTTC
883	CGTWVTSLSAGVF	1707	TGCGGAACGTGGGTTACCAGCCTGAGTGCTGGGGTGTTC
884	CGTWVSSLTTVVF	1708	TGCGGAACATGGGTTAGCAGCCTGACTACTGTAGTATTC
885	CGTWVSSLNVWVF	1709	TGCGGAACATGGGTTAGCAGCCTGAACGTCTGGGTGTTC
886	CGTWVGRFWVF	1710	TGCGGAACATGGGTTGGCAGGTTTTGGGTATTC
887	CGTWSGGPSGHWLF	1711	TGCGGAACATGGTCTGGCGGCCCGAGTGGCCATTGGTTGTTC
888	CGTWSGGLSGHWLF	1712	TGCGGAACATGGTCTGGCGGCCTGAGTGGCCATTGGTTGTTC
889	CGTWQTGREAVLF	1713	TGCGGAACGTGGCAGACCGGCCGGGAGGCTGTCCTATTT
890	CGTWQSRLRWVF	1714	TGCGGAACGTGGCAGAGCAGGCTGAGGTGGGTGTTC
891	CGTWQSRLGWVF	1715	TGCGGAACGTGGCAGAGCAGGCTGGGGTGGGTGTTC
892	CGTWPRSLSAVWVF	1716	TGCGGAACATGGCCTAGGAGCCTGAGTGCTGTTTGGGTGTTC
893	CGTWNNYLSAGDVVF	1717	TGCGGAACATGGAATAACTACCTGAGTGCTGGCGATGTGGTTTTC
894	CGTWLGSQSPYWVF	1718	TGCGGAACATGGCTTGGCAGCCAGAGTCCTTATTGGGTCTTC
895	CGTWHTGLSAYVF	1719	TGCGGAACATGGCATACCGGCCTGAGTGCTTATGTCTTC
896	CGTWHSTLSAGHWVF	1720	TGCGGAACATGGCATAGTACCCTGAGTGCTGGCCATTGGGTGTTC
897	CGTWHSSLSTWVF	1721	TGCGGAACATGGCATAGTAGCCTGAGTACTTGGGTGTTC
898	CGTWHSSLSAYVF	1722	TGCGGAACATGGCATAGCAGCCTGAGTGCCTATGTCTTC
899	CGTWHSSLSAVVF	1723	TGCGGAACATGGCATAGCAGCCTGAGTGCTGTGGTATTC
900	CGTWHSGLSGWVF	1724	TGCGGAACGTGGCATTCCGGCCTGAGTGGGTGGGTTTTC
901	CGTWHNTLRNVIF	1725	TGCGGAACATGGCATAACACCCTGCGTAATGTGATATTC
902	CGTWHASLTAVF	1726	TGCGGAACATGGCATGCCAGCCTGACTGCTGTGTTC

[0259]

[0260]

903	CGTWGWY GSQRGVVF	1727	TGCGGGACATGGGGATGGTATGGCAGCCAGAGAG GCGTCGTCTTC
904	CGTWGWY GGQRGVVF	1728	TGCGGGACATGGGGATGGTATGGCGGCCAGAGAG GCGTCGTCTTC
905	CGTWGTSL SAWVF	1729	TGCGGAACCTGGGGAACCAGCCTGAGTGCTTGGGT GTTC
906	CGTWGSSL TTGLF	1730	TGCGGAACCTGGGGTAGCAGCCTGACTACTGGCCT GTTC
907	CGTWGSSL TAYVF	1731	TGCGGAACATGGGGTAGCAGCCTGACTGCCTATGT CTTC
908	CGTWGSSL SVVF	1732	TGCGGAACATGGGGTAGCAGCCTGAGTGTTGTGTT C
909	CGTWGSSL SGGVF	1733	TGCGGAACATGGGGTAGCAGCCTGAGTGGTGGGGT GTTC
910	CGTWGSSL SAYWVF	1734	TGCGGAACATGGGGTAGCAGCCTGAGTGCTTATTG GGTGTTC
911	CGTWGSSL SAYVVF	1735	TGCGGAACATGGGGTAGCAGCCTGAGTGCTTATGT GGTGTTC
912	CGTWGSSL SAYVF	1736	TGCGGAACATGGGGTAGCAGCCTGAGTGCTTATGT CTTC
913	CGTWGSSL SAVVF	1737	TGCGGAACGTGGGGTAGTAGCCTGAGTGCTGTGGT GTTC
914	CGTWGSSL SAPYVF	1738	TGCGGAACATGGGGTAGCAGCCTGAGTGCTCCTTA TGTCTTC
915	CGTWGSSL SAPVF	1739	TGCGGAACATGGGGTAGCAGCCTGAGTGCCCCGGT GTTC
916	CGTWGSSL SAGVF	1740	TGCGGAACATGGGGTAGCAGCCTGAGTGCTGGGGT GTTC
917	CGTWGSSL SAGLF	1741	TGCGGAACTTGGGGTAGCAGCCTGAGTGCTGGACT GTTC
918	CGTWGSSL SAGALF	1742	TGCGGAACATGGGGTAGCAGCCTGAGTGCTGGGGC ACTCTTC
919	CGTWGSSL RAWVF	1743	TGCGGAACATGGGGCAGTAGCCTGCGTGCTTGGGT GTTC
920	CGTWFTSL ASGVF	1744	TGCGGAACCTGGTTTACTAGTCTGGCTAGTGGGGT TTTC
921	CGTWETSL SVVVI	1745	TGCGGAACTTGGGAGACCAGTCTGAGTGTCGTGGT CATC
922	CGTWETSL SGVF	1746	TGCGGAACATGGGAGACCAGCCTGAGTGGTGTCTT C
923	CGTWETSL SDWVF	1747	TGCGGAACATGGGAAACCAGCCTGAGTGATTGGGT ATTC
924	CGTWETSL SAGVF	1748	TGCGGAACATGGGAGACCAGCCTGAGTGCTGGGGT ATTC
925	CGTWETSL NYVAF	1749	TGCGGAACATGGGAAACCAGCCTTAATTATGTGGC CTTC
926	CGTWETSL NTWLL	1750	TGCGGAACATGGGAGACCAGCCTGAATACTTGGTT GCTC
927	CGTWETSE SGNYIF	1751	TGCGGAACATGGGAGACCAGCGAGAGTGGTAATT ACATCTTC

928	CGTWETRL GTWVI	1752	TGCGGAACATGGGAAACCAGACTGGGTACTTGGGT GATC
929	CGTWETQL YWVF	1753	TGCGGAACATGGGAGACCCAGTTATATTGGGTGTT C
930	CGTWETGL SAGEVF	1754	TGCGGAACATGGGAGACTGGCCTAAGTGCTGGAGA GGTGTTC
931	CGTWESTL SVFLF	1755	TGCGGAACTTGGGAAAGCACCCTGAGTGTTTTCCT ATTC
932	CGTWESSL TVVVF	1756	TGCGGGACATGGGAAAGTAGCCTGACTGTTGTGGT CTTC
933	CGTWESSL TGVVF	1757	TGCGGAACATGGGAAAGTAGCCTGACTGGAGTGGT ATTC
934	CGTWESSL TGFVF	1758	TGCGGAACATGGGAAAGCAGCCTGACTGGTTTTGT CTTC
935	CGTWESSL SVGVF	1759	TGTGGAACATGGGAGAGCAGCCTGAGTGTTGGGGT GTTC
936	CGTWESSL SEWVF	1760	TGCGGAACCTGGGAAAGTAGCCTCAGTGAATGGGT GTTC
937	CGTWESSL SAVF	1761	TGCGGAACATGGGAGAGCAGCCTGAGTGCTGTATT C
938	CGTWESSL SAGYIF	1762	TGCGGAACATGGGAGAGCAGCCTGAGTGCTGGTTA TATCTTC
939	CGTWESSL SAGVF	1763	TGCGGAACATGGGAGAGCAGCCTGAGTGCTGGAGT GTTC
940	CGTWESSL SAGPVF	1764	TGCGGAACATGGGAAAGCAGCCTGAGCGCTGGCCC GGTGTTC
941	CGTWESSL SAGGQVF	1765	TGCGGAACATGGGAAAGCAGCCTGAGTGCTGGAG GCCAGGTGTTC
942	CGTWESSL SAFGGYVF	1766	TGCGGAACATGGGAGAGCAGCCTGAGTGCCTTCGG CGGTTATGTCTTC
943	CGTWESSL RVWVF	1767	TGCGGAACATGGGAAAGCAGCCTGAGGGTTTGGGT GTTC
944	CGTWESSL FTGPWVF	1768	TGCGGAACATGGGAAAGCAGCCTCTTTACTGGGCC TTGGGTGTTC
945	CGTWESLS ATYVF	1769	TGCGGAACATGGGAGAGCCTGAGTGCCACCTATGT CTTC
946	CGTWESGL SAGVF	1770	TGCGGAACATGGGAGAGCGGCCTGAGTGCTGGTGT CTTC
947	CGTWESDF WVF	1771	TGCGGAACATGGGAAAGCGACTTTTGGGTGTTT
948	CGTWENRL SAVVF	1772	TGCGGTACATGGGAAAACAGACTGAGTGCTGTGGT CTTC
949	CGTWENRL SAGVF	1773	TGCGGAACATGGGAAAACAGACTGAGTGCCGGGG TATTC
950	CGTWEISL TTSVVF	1774	TGCGGAACATGGGAAATCAGCCTGACTACTTCTGT GGTATTC
951	CGTWEISLS TSVVF	1775	TGCGGAACATGGGAAATCAGCCTGAGTACTTCTGT GGTATTC
952	CGTWEGSL SVVF	1776	TGCGGAACATGGGAAGGCAGCCTCAGTGTTGTTTT C

[0261]

[0262]

953	CGTWEGSL RVF	1777	TGCGGAACATGGGAAGGCAGCCTGAGGGTGTTC
954	CGTWEGSL RHVF	1778	TGCGGAACATGGGAGGGCAGCCTGAGGCACGTGTT C
955	CGTWDYSP VRAGVF	1779	TGCGGAACATGGGATTACAGCCCTGTACGTGCTGG GGTGTTC
956	CGTWDYSL SVYLF	1780	TGCGGAACGTGGGATTACAGCCTGAGTGTTTATCT CTTC
957	CGTWDYSL SSGVVF	1781	TGCGGAACATGGGATTACAGCCTGAGTTCTGGCGT GGTATTC
958	CGTWDYSL SAWVF	1782	TGCGGAACATGGGATTACAGCCTGAGTGCCTGGGT GTTC
959	CGTWDYSL SAEVF	1783	TGCGGAACATGGGATTACAGTCTGAGTGCTGAGGT GTTC
960	CGTWDYSL RRAIF	1784	TGCGGAACATGGGATTACAGCCTGCGTCGTGCGAT ATTC
961	CGTWDWS LILQLF	1785	TGCGGAACATGGGATTGGAGCCTCATTCTTCAATT GTTC
962	CGTWDVTL HTGVF	1786	TGCGGAACATGGGATGTCACCTTGCATACTGGGGT GTTC
963	CGTWDVTL HIGVF	1787	TGCGGAACATGGGATGTCACCTTGCATATTGGGGT GTTC
964	CGTWDVTL HAGVF	1788	TGCGGAACATGGGATGTCACCTTGCATGCTGGGGT GTTC
965	CGTWDVSL YSGGVF	1789	TGCGGAACATGGGATGTCAGTTTGTATAGTGGCGG GGTCTTC
966	CGTWDVSL TSFVF	1790	TGTGGAACATGGGATGTCAGCCTGACTTCTTTCGTC TTC
967	CGTWDVSL SVGVL	1791	TGCGGAACATGGGATGTCAGCCTGAGTGTTGGGGT GCTC
968	CGTWDVSL SAGDVVF	1792	TGCGGAACGTGGGATGTCAGCCTGAGTGCTGGCGA TGTAGTTTTC
969	CGTWDVSL NVVVF	1793	TGCGGAACATGGGATGTCAGCCTGAATGTCGTGGT TTTC
970	CGTWDVSL NTQVF	1794	TGCGGAACATGGGATGTCAGCCTGAATACTCAGGT GTTC
971	CGTWDVSL GALF	1795	TGCGGCACATGGGATGTGAGCCTGGGTGCGCTGTT C
972	CGTWDVN LKTVVF	1796	TGCGGAACGTGGGACGTTAATCTGAAAACTGTCGT TTTC
973	CGTWDVIL SAEVF	1797	TGCGGAACATGGGATGTCATCCTGAGTGCTGAGGT ATTC
974	CGTWDTTV SAVVF	1798	TGCGGAACATGGGATACCACCGTGAGTGCTGTGGT TTTC
975	CGTWDTTL TAWVF	1799	TGCGGAACATGGGATACCACCCTGACTGCCTGGGT GTTC
976	CGTWDTTL SVFLF	1800	TGCGGAACATGGGACACCACCTTGAGTGTTTTCCT ATTC
977	CGTWDTSV SAGVF	1801	TGCGGGACTTGGGATACCAGTGTGAGTGCTGGGGT GTTC

978	CGTWDTSVISWVF	1802	TGCGGAACATGGGATACCAGTGTGATTTCTTGGGTTTTC
979	CGTWDTSRSSLYVVF	1803	TGCGGAACATGGGATACCAGTCGGAGTTCTCTCTATGTGGTCTTC
980	CGTWDTSRSAWVF	1804	TGCGGAACATGGGATACCAGCCGGAGTGCTTGGGTATTC
981	CGTWDTSRNPGGIF	1805	TGCGGAACATGGGATACCAGCCGGAATCCTGGAGGAATTTTC
982	CGTWDTSRGHVF	1806	TGCGGAACATGGGACACCAGTCGGGGTCATGTTTTC
983	CGTWDTSPSTGQVLF	1807	TGCGGAACATGGGATACCAGCCCGAGTACTGGCCAGGTGCTTTTC
984	CGTWDTSPSAWVF	1808	TGCGGAACATGGGATACCAGCCCGAGTGCCTGGGTGTTC
985	CGTWDTSLTWVF	1809	TGCGGAACATGGGATACTAGCCTGACCTGGGTGTTC
986	CGTWDTSLTWFAVF	1810	TGCGGAACATGGGATACCAGCCTGACGTGGTTCGCAGTGTTC
987	CGTWDTSLTVVVF	1811	TGCGGAACATGGGATACCAGCCTGACTGTTGTGGTATTC
988	CGTWDTSLTTSWVF	1812	TGCGGAACATGGGATACCAGCCTGACTACTTCTTGGGTGTTC
989	CGTWDTSLTTGPFWVF	1813	TGCGGAACATGGGATACCAGCCTGACCACTGGTCCTTTTTGGGTGTTC
990	CGTWDTSLTPFYVF	1814	TGCGGAACATGGGATACCAGCCTGACTCCTTTTTATGTCTTC
991	CGTWDTSLTAYVF	1815	TGCGGAACATGGGATACCAGCCTGACTGCTTATGTCTTC
992	CGTWDTSLTAWVF	1816	TGCGGAACATGGGATACCAGCCTGACTGCTTGGGTGTTC
993	CGTWDTSLTAWGVF	1817	TGCGGAACATGGGATACCAGCCTGACTGCGTGGGGGGTGTTC
994	CGTWDTSLTAVVL	1818	TGCGGCACATGGGATACCAGCCTGACTGCGGTGGTTCTC
995	CGTWDTSLTARVF	1819	TGCGGAACCTGGGATACCAGCCTGACTGCTCGGGTTTTC
996	CGTWDTSLTAIVF	1820	TGCGGAACATGGGATACCAGCCTGACTGCGATTGTCTTC
997	CGTWDTSLTAGVF	1821	TGCGGAACATGGGATACCAGCCTGACTGCTGGTGTCTTC
998	CGTWDTSLSVYVF	1822	TGCGGAACATGGGATACCAGCCTGAGTGTTTATGTCTTC
999	CGTWDTSLSVVF	1823	TGCGGAACATGGGATACCAGCCTGAGTGTGGTGTTC
1000	CGTWDTSLSVGEF	1824	TGCGGGACATGGGATACCAGCCTGAGTGTTGGGGAATTC
1001	CGTWDTSLSTWVF	1825	TGCGGAACATGGGATACCAGCCTGAGTACTTGGGTGTTC
1002	CGTWDTSLSTVVF	1826	TGCGGAACATGGGATACCAGCCTGAGTACTGTGGTATTC

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1003	CGTWDTSL STGQVLF	1827	TGCGGAACATGGGATACCAGCCTGAGTACTGGCCA GGTGCTTTTC
1004	CGTWDTSL STGPLWVF	1828	TGCGGCACATGGGATACCAGCCTGAGCACTGGTCC TCTTTGGGTGTTC
1005	CGTWDTSL SSYVF	1829	TGCGGAACTTGGGATACCAGCCTGAGTTCTTATGT CTTC
1006	CGTWDTSL SSVVF	1830	TGCGGAACATGGGATACCAGCCTGAGTTCTGTGGT CTTC
1007	CGTWDTSL SSRYIF	1831	TGCGGAACATGGGATACCAGCCTGAGTTCTAGATA CATATTC
1008	CGTWDTSL SSRFIF	1832	TGCGGAACATGGGATACCAGCCTGAGTTCTAGATT CATATTC
1009	CGTWDTSL SSGWVF	1833	TGCGGAACATGGGATACCAGCCTGAGTTCTGGGTG GGTGTTC
1010	CGTWDTSL SRYVF	1834	TGCGGAACATGGGATACCAGCCTGAGTCGGTATGT GTTC
1011	CGTWDTSL SQWLF	1835	TGCGGAACTTGGGATACCAGTCTGAGTCAATGGCT GTTC
1012	CGTWDTSL SPGLWVF	1836	TGCGGAACATGGGATACCAGCCTGAGTCCTGGCCT TTGGGTGTTC
1013	CGTWDTSL SNYVF	1837	TGCGGAACATGGGATACCAGCCTGAGTAATTATGT CTTC
1014	CGTWDTSL SIWVF	1838	TGCGGAACATGGGATACCAGCCTAAGTATTTGGGT GTTC
1015	CGTWDTSL SIGPFWVF	1839	TGCGGCACATGGGATACCAGCCTGAGCATTGGTCC TTTTTGGGTGTTC
1016	CGTWDTSL SGWVF	1840	TGCGGAACATGGGATACCAGCCTGAGTGGTTGGGT GTTC
1017	CGTWDTSL SGTVF	1841	TGCGGAACATGGGATACCAGCCTGAGTGGTACAGT GTTC
1018	CGTWDTSL SGGQVF	1842	TGCGGAACATGGGATACTAGTCTGAGTGGTGGCCA GGTGTTC
1019	CGTWDTSL SGGIF	1843	TGCGGAACATGGGATACCAGCCTGAGTGGTGGGAT ATTC
1020	CGTWDTSL SGEDVVI	1844	TGCGGAACATGGGATACCAGCCTGAGTGGTGAGGA TGTGGTAATC
1021	CGTWDTSL SFLYAF	1845	TGCGGAACATGGGATACCAGCCTGAGTTTCCTTTA TGCTTTC
1022	CGTWDTSL SEVVF	1846	TGCGGAACATGGGATACCAGCCTGAGTGAGGTCGT ATTC
1023	CGTWDTSL SEVF	1847	TGCGGAACATGGGATACCAGCCTGAGTGAAGTGTT C
1024	CGTWDTSL SENWVF	1848	TGCGGAACATGGGATACTAGCCTGAGTGAAAATTG GGTGTTC
1025	CGTWDTSL SAYIF	1849	TGCGGAACATGGGATACCAGCCTGAGTGCCTACAT ATTC
1026	CGTWDTSL SAVVL	1850	TGCGGAACATGGGATACCAGCCTGAGTGCTGTGGT ACTC
1027	CGTWDTSL SAVF	1851	TGCGGAACATGGGATACCAGCCTGAGTGCTGTTTT C

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[0265]

1028	CGTWDTSL SARVF	1852	TGCGGAACATGGGATACCAGCCTGAGTGCCCGGGT GTTC
1029	CGTWDTSL SARQVF	1853	TGCGGCACATGGGATACCAGCCTGAGTGCCCGCCA GGTATTC
1030	CGTWDTSL SALVF	1854	TGCGGAACATGGGATACCAGCCTGAGTGCTTTGGT TTTC
1031	CGTWDTSL SAKVF	1855	TGCGGAACATGGGATACCAGCCTGAGTGCTAAGGT GTTC
1032	CGTWDTSL SAKIF	1856	TGCGGAACATGGGATACCAGCCTGAGTGCGAAAAT CTTC
1033	CGTWDTSL SAKAVF	1857	TGCGGAACATGGGATACCAGCCTGAGTGCCAAGGC GGTATTC
1034	CGTWDTSL SAHAVF	1858	TGCGGAACATGGGATACCAGCCTGAGTGCCCATGC TGTGTTC
1035	CGTWDTSL SAGYVF	1859	TGCGGAACATGGGATACCAGCCTGAGTGCTGGCTA TGTCTTC
1036	CGTWDTSL SAGRWVF	1860	TGCGGAACATGGGACACCAGTCTGAGTGCTGGCCG CTGGGTGTTC
1037	CGTWDTSL SAGIF	1861	TGCGGAACATGGGATACCAGCCTGAGTGCTGGGAT ATTC
1038	CGTWDTSL SAGGFRVF	1862	TGCGGAACATGGGATACCAGCCTGAGTGCTGGTGG GTTCCGGGTCTTC
1039	CGTWDTSL SAGAF	1863	TGCGGAACATGGGATACCAGCCTGAGTGCTGGGGC ATTC
1040	CGTWDTSL SADWFF	1864	TGCGGAACATGGGATACCAGTCTGAGTGCTGATTG GTTTTTC
1041	CGTWDTSL SADEYVF	1865	TGCGGAACATGGGATACCAGCCTGAGTGCTGATGA ATATGTCTTC
1042	CGTWDTSL SAAWVF	1866	TGCGGCACATGGGATACCAGCCTGAGTGCGGCTTG GGTGTTC
1043	CGTWDTSL SAALF	1867	TGCGGAACATGGGATACCAGCCTGAGTGCTGCGCT ATTC
1044	CGTWDTSL SAAGVF	1868	TGCGGAACATGGGATACCAGCCTGAGTGCTGCGGG GGTTTTC
1045	CGTWDTSL RVVVF	1869	TGCGGAACATGGGATACCAGCCTGAGAGTTGTGGT TTTC
1046	CGTWDTSL RTWVF	1870	TGCGGAACATGGGATACCAGCCTGAGAACCTGGGT ATTC
1047	CGTWDTSL RGAVF	1871	TGCGGAACGTGGGATACCAGCCTGAGGGGTGCAGT GTTC
1048	CGTWDTSL RAVVF	1872	TGCGGAACATGGGATACCAGCCTGCGTGCTGTGGT ATTC
1049	CGTWDTSL NVVYVF	1873	TGCGGAACATGGGATACAAGCCTGAATGTAGTTTA TGTCTTC
1050	CGTWDTSL NTYLF	1874	TGCGGAACATGGGATACCAGCCTCAACACCTACCT GTTC
1051	CGTWDTSL NFAWLF	1875	TGCGGAACATGGGATACTAGCCTGAACTTCGCTTG GCTGTTC
1052	CGTWDTSL LVWLF	1876	TGCGGCACATGGGATACCAGCCTTCTTGTGTGGCTT TTC

[0266]

1053	CGTWDTSL KTWVF	1877	TGCGGAACATGGGATACCAGTCTGAAGACGTGGGT GTTC
1054	CGTWDTSL IVWVF	1878	TGCGGAACATGGGATACCAGTCTGATTGTCTGGGT GTTC
1055	CGTWDTSL ITGVF	1879	TGCGGAACATGGGATACCAGCCTAATTACTGGGGT GTTC
1056	CGTWDTSL ISVVF	1880	TGCGGAACATGGGATACCAGCCTGATTAGCGTGGT ATTC
1057	CGTWDTSL IAYVF	1881	TGCGGAACATGGGATACCAGCCTGATTGCTTATGT CTTC
1058	CGTWDTSL HTELF	1882	TGCGGAACATGGGATACCAGCCTGCACACTGAGTT GTTC
1059	CGTWDTSL GSYVF	1883	TGCGGAACTTGGGATACCAGCCTGGGTTCTTATGT CTTC
1060	CGTWDTSL GSLWVF	1884	TGCGGAACATGGGATACCAGCCTGGGTTCTCTTTG GGTGTTC
1061	CGTWDTSL GSGVF	1885	TGCGGTACATGGGATACCAGCCTGGGTTCTGGGGT ATTC
1062	CGTWDTSL GGRGVF	1886	TGCGGAACTTGGGATACCAGTCTGGGTGGTAGAGG GGTCTTC
1063	CGTWDTSL GAWVF	1887	TGCGGAACATGGGATACCAGCCTGGGTGCTTGGGT GTTC
1064	CGTWDTSL GAVVF	1888	TGCGGAACATGGGATACCAGCCTGGGTGCCGTGGT ATTC
1065	CGTWDTSL GAGVF	1889	TGCGGAACATGGGATACCAGCCTGGGTGCTGGGGT ATTC
1066	CGTWDTSL GAGLF	1890	TGCGGAACATGGGATACCAGCCTGGGTGCTGGCCT ATTC
1067	CGTWDTSL DAVVF	1891	TGCGGAACATGGGATACCAGTCTGGATGCTGTGGT TTTC
1068	CGTWDTSL DAVLF	1892	TGCGGGACTTGGGATACCAGCCTGGATGCTGTGCT GTTC
1069	CGTWDTSL AWVF	1893	TGCGGAACATGGGATACCAGCCTGGCTTGGGTGTT C
1070	CGTWDTSL ATGLF	1894	TGCGGAACATGGGATACCAGCCTGGCGACTGGACT GTTC
1071	CGTWDTSL APVVF	1895	TGCGGGACATGGGATACCAGCCTGGCCCCTGTAGT CTTC
1072	CGTWDTRL TIVIF	1896	TGCGGAACATGGGACACCCGCCTGACTATTGTGAT CTTC
1073	CGTWDTRL SVWLF	1897	TGTGGAACATGGGACACCAGGCTGAGTGTTTGGCT GTTC
1074	CGTWDTRL SVGVF	1898	TGCGGAACGTGGGACACCAGACTGAGTGTTGGGGT TTTC
1075	CGTWDTRL STVIF	1899	TGCGGCACATGGGATACCAGACTGAGTACTGTAAT TTTC
1076	CGTWDTRL SSVVF	1900	TGCGGAACATGGGATACCCGCCTGAGTTCTGTGGT CTTC
1077	CGTWDTRL SIVVF	1901	TGCGGAACATGGGATACCCGCCTGAGTATTGTGGT TTTC

1078	CGTWDTRL SAYVVF	1902	TGCGGAACATGGGATACCAGACTGAGTGCCTATGT GGTATTC
1079	CGTWDTRL SAWVF	1903	TGCGGAACCTGGGACACCCGCCTGAGTGCGTGGGT GTTC
1080	CGTWDTRL SAVVF	1904	TGCGGAACATGGGATACCAGACTGAGTGCTGTGGT GTTC
1081	CGTWDTRL SAGLF	1905	TGCGGAACATGGGATACCCGCCTGAGTGCTGGGTT GTTC
1082	CGTWDTRL SAGGVF	1906	TGCGGAACATGGGATACCAGACTGAGTGCTGGTGG GGTGTTC
1083	CGTWDTRL NVWLF	1907	TGCGGAACATGGGATACCAGATTGAATGTGTGGCT ATTC
1084	CGTWDTN REVVLL	1908	TGCGGAACATGGGATACCAACCGGGAAGTTGTGCT CCTC
1085	CGTWDTNL RAHVF	1909	TGCGGAACATGGGATACCAACCTGCGTGCCCATGT CTTC
1086	CGTWDTNL PAVVF	1910	TGCGGAACATGGGATACTAATCTGCCCGCTGTAGT GTTC
1087	CGTWDTNL GGVF	1911	TGCGGAACATGGGACACCAATTTGGGTGGGGTGTT C
1088	CGTWDTIV SIGVF	1912	TGCGGAACATGGGATACCATCGTGAGTATTGGGGT GTTC
1089	CGTWDTIL SAVVF	1913	TGCGGAACATGGGATACCATCCTGAGTGCGGTGGT GTTC
1090	CGTWDTIL SAEVF	1914	TGCGGCACATGGGATACCATCCTGAGTGCTGAGGT GTTC
1091	CGTWDTHL GVVF	1915	TGCGGAACATGGGATACCCACCTGGGTGTGGTTTT C
1092	CGTWDTGP SPHWLF	1916	TGCGGAACATGGGATACCGGCCCGAGCCCTCATTG GCTGTTC
1093	CGTWDTGL TFGGVF	1917	TGCGGAACATGGGATACCGGCCTGACTTTTGGAGG CGTGTTC
1094	CGTWDTGL TAFVF	1918	TGCGGAACATGGGATACCGGCCTGACTGCTTTTGT CTTC
1095	CGTWDTGL SVWVF	1919	TGCGGAACATGGGATACCGGCCTGAGTGTTTGGGT GTTC
1096	CGTWDTGL STGIF	1920	TGCGGAACATGGGATACCGGCCTGAGTACTGGGAT TTTC
1097	CGTWDTGL SSLLF	1921	TGCGGAACATGGGATACCGGCCTGAGTTCCCTGCT CTTC
1098	CGTWDTGL SIVVF	1922	TGCGGAACGTGGGACACCGGCCTGAGTATTGTGGT GTTC
1099	CGTWDTGL SFVVF	1923	TGCGGAACGTGGGACACCGGCCTGAGTTTTGTGGT GTTC
1100	CGTWDTGL SAWVF	1924	TGCGGAACATGGGATACCGGCCTGAGTGCTTGGGT GTTC
1101	CGTWDTGL SAGVVF	1925	TGCGGAACATGGGATACCGGCCTGAGTGCTGGTGT GGTATTC
1102	CGTWDTGL RGWIF	1926	TGCGGAACATGGGATACCGGTCTGAGGGGTTGGAT TTTC

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1103	CGTWDTELSAGVF	1927	TGCGGAACATGGGATACCGAGCTAAGTGCGGGGGTCTTC
1104	CGTWDTALTAGVF	1928	TGCGGAACGTGGGATACCGCCCTGACTGCTGGGGTGTTC
1105	CGTWDTALSLVVF	1929	TGCGGAACATGGGATACTGCCCTGAGTCTTGTGGTCTTC
1106	CGTWDTALSAWLF	1930	TGCGGAACATGGGATACCGCCCTGAGTGCCTGGCTGTTC
1107	CGTWDTALSAGVF	1931	TGCGGCACATGGGATACCGCCCTGAGTGCTGGGGTGTTC
1108	CGTWDTALRGVLF	1932	TGCGGAACATGGGATACCGCCCTGCGTGGCGTGCTGTTC
1109	CGTWDTALKEWLF	1933	TGCGGAACATGGGATACCGCCCTGAAAGAATGGCTGTTC
1110	CGTWDRTLTAGDVLF	1934	TGCGGAACATGGGATAGGACCCTGACTGCTGGCGATGTGCTCTTC
1111	CGTWDRSVTYVF	1935	TGCGGAACATGGGATAGAAGCGTGACTTATGTCTTC
1112	CGTWDRSRNEWVF	1936	TGCGGAACATGGGATCGCAGCCGAAATGAATGGGTGTTC
1113	CGTWDRSLTVWVF	1937	TGCGGAACATGGGATCGCAGTCTGACTGTTTGGGTCTTC
1114	CGTWDRSLTPGWLF	1938	TGCGGAACATGGGATCGCAGCCTGACTCCTGGGTGGTTGTTC
1115	CGTWDRSLTAWVF	1939	TGCGGAACATGGGATAGAAGCCTGACTGCTTGGGTGTTC
1116	CGTWDRSLSVVVF	1940	TGCGGAACATGGGACCGCAGCCTGAGTGTTGTGGTATTC
1117	CGTWDRSLSVVF	1941	TGCGGCACATGGGATCGCAGCCTGAGTGTAGTCTTC
1118	CGTWDRSLSVQLF	1942	TGCGGAACATGGGATAGGAGCCTGAGTGTTCAATTGTTC
1119	CGTWDRSLSVLWVF	1943	TGCGGAACATGGGATCGCAGCCTCAGTGTTCTTTGGGTGTTC
1120	CGTWDRSLSVGLF	1944	TGCGGAACATGGGATCGCAGCCTGAGTGTTGGATTATTC
1121	CGTWDRSLSTWVF	1945	TGCGGAACATGGGATCGCAGCCTGAGTACTTGGGTGTTC
1122	CGTWDRSLSTHWVL	1946	TGCGGAACATGGGATAGAAGCCTGAGTACTCATTGGGTGCTC
1123	CGTWDRSLSTHWVF	1947	TGCGGAACATGGGATAGAAGCCTGAGTACTCATTGGGTGTTC
1124	CGTWDRSLSSAVF	1948	TGCGGAACCTGGGATCGAAGCCTGAGTTCTGCGGTGTTC
1125	CGTWDRSLSPSYVF	1949	TGCGGAACATGGGACAGAAGCCTGAGTCCCTCTTATGTCTTC
1126	CGTWDRSLSGEVF	1950	TGCGGAACATGGGATAGGAGCCTGAGTGGTGAGGTGTTC
1127	CGTWDRSLSGAVF	1951	TGCGGAACATGGGATAGGAGCCTGAGTGGTGCGGTGTTC

[0268]

1128	CGTWDRSL SAVAF	1952	TGCGGAACATGGGATCGCAGCCTGAGTGCTGTGGC ATTC
1129	CGTWDRSL SAGGEF	1953	TGCGGAACATGGGATAGGAGCCTGAGTGCCGGGG GGGAATTC
1130	CGTWDRSL SAFWVF	1954	TGCGGAACATGGGATCGCAGCCTGAGTGCTTTTTG GGTGTTC
1131	CGTWDRSL SAAVF	1955	TGCGGAACATGGGATAGGAGCCTGAGTGCTGCGGT GTTC
1132	CGTWDRSL SAALF	1956	TGCGGAACATGGGATAGGAGCCTGAGTGCTGCACT CTTC
1133	CGTWDRSL RVF	1957	TGCGGAACATGGGATCGCAGCCTGAGAGTGTTC
1134	CGTWDRSL NWVF	1958	TGCGGTACATGGGACAGAAGCCTTAATTGGGTGTT C
1135	CGTWDRSL NVYVF	1959	TGCGGAACATGGGATCGCAGCCTGAATGTTTATGT CTTC
1136	CGTWDRSL NVGVF	1960	TGCGGAACATGGGATAGGAGCCTGAATGTTGGGGT GTTC
1137	CGTWDRSL HVVF	1961	TGCGGAACATGGGATCGGAGCCTGCATGTGGTCTT C
1138	CGTWDRSL GGWVF	1962	TGTGGAACATGGGATCGCAGCCTGGGTGGTTGGGT GTTC
1139	CGTWDRSL GAFWVF	1963	TGCGGAACATGGGATCGCAGCCTGGGTGCTTTTTG GGTGTTC
1140	CGTWDRSL FWVF	1964	TGCGGAACATGGGATAGAAGCCTGTTTTGGGTGTT C
1141	CGTWDRSL AAGVF	1965	TGCGGAACGTGGGATCGCAGCCTGGCTGCTGGGGT GTTC
1142	CGTWDRRL SGVVF	1966	TGCGGAACATGGGATAGGAGGTTGAGTGGTGTCGT ATTC
1143	CGTWDRRL SDVVF	1967	TGCGGAACGTGGGATCGCCGCCTAAGTGATGTGGT ATTC
1144	CGTWDRRL SAVVF	1968	TGCGGAACATGGGATAGGAGGCTGAGTGCTGTGGT ATTC
1145	CGTWDRRL NVAFF	1969	TGCGGAACATGGGATAGACGCCTGAATGTTGCGTT CTTC
1146	CGTWDRRL LAVF	1970	TGTGGAACATGGGATAGGAGGCTGCTTGCTGTTTT C
1147	CGTWDRN LRAVVF	1971	TGCGGAACTTGGGATAGGAACCTGCGCGCCGTGGT CTTC
1148	CGTWDRLS AGVF	1972	TGCGGAACATGGGATAGGCTGAGTGCTGGGGTGTT C
1149	CGTWDRGP NTGVF	1973	TGCGGAACATGGGATAGAGGCCCGAATACTGGGGT ATTC
1150	CGTWDRG LNTVYVF	1974	TGCGGAACATGGGATAGAGGCCTGAATACTGTTTA CGTCTTC
1151	CGTWDNY VSAPWVF	1975	TGCGGAACATGGGATAACTATGTGAGTGCCCCTTG GGTGTTC
1152	CGTWDNY LSAGDVVF	1976	TGCGGAACATGGGATAACTACCTGAGTGCTGGCGA TGTGGTTTTC

[0269]

1153	CGTWDNY LRAGVF	1977	TGCGGAACATGGGATAACTACCTGAGAGCTGGGGT CTTC
1154	CGTWDNY LGAVVF	1978	TGCGGAACATGGGACAATTATCTGGGTGCCGTGGT TTTC
1155	CGTWDNY LGAGVF	1979	TGCGGAACATGGGATAACTACCTGGGTGCGGGGGT GTTC
1156	CGTWDNT VSAPWVF	1980	TGCGGAACATGGGATAACACCGTGAGTGCCCCTTG GGTTTTC
1157	CGTWDNTL SLWVF	1981	TGCGGAACATGGGATAACACCCTGAGTCTTTGGGT GTTC
1158	CGTWDNTL SAGVF	1982	TGCGGAACATGGGATAACACCCTGAGTGCTGGGGT CTTC
1159	CGTWDNTL LTVLF	1983	TGCGGAACATGGGACAACACTCTGCTTACTGTGTT ATTC
1160	CGTWDNR LSSVIF	1984	TGCGGAACATGGGATAACAGACTGAGTAGTGTGAT TTTC
1161	CGTWDNR LSAVVF	1985	TGCGGAACATGGGATAACAGGTTGAGTGCTGTGGT CTTC
1162	CGTWDNR LSAGGIF	1986	TGCGGAACATGGGATAACAGGCTGAGTGCTGGTGG GATATTC
1163	CGTWDNR LSAEVF	1987	TGCGGAACATGGGATAACAGACTGAGTGCTGAGGT GTTC
1164	CGTWDNR LRVGVL	1988	TGTGGAACATGGGATAACAGACTGCGTGTTGGGGT TCTC
1165	CGTWDNR LLENVF	1989	TGCGGAACATGGGATAATCGCCTGCTTGAGAATGT CTTC
1166	CGTWDNN LRAVF	1990	TGCGGAACATGGGATAACAACCTGCGTGCTGTCTT C
1167	CGTWDNN LRAGVF	1991	TGCGGAACTTGGGATAATAACCTGCGTGCTGGAGT GTTC
1168	CGTWDNN LGGGRVF	1992	TGCGGAACATGGGACAACAATTTGGGCGGTGGCCG GGTGTTC
1169	CGTWDNN LGAGVL	1993	TGCGGAACATGGGATAACAACCTGGGTGCTGGCGT CCTC
1170	CGTWDNN LGAGVF	1994	TGCGGAACATGGGATAACAACCTGGGTGCTGGCGT CTTC
1171	CGTWDNIL SAAVF	1995	TGCGGAACTTGGGATAACATCCTGAGCGCTGCGGT GTTC
1172	CGTWDNIL DAGVF	1996	TGCGGAACCTGGGATAACATCTTGGATGCAGGGGT TTTC
1173	CGTWDND LSGWLF	1997	TGCGGAACATGGGATAACGACCTGAGTGGTTGGCT GTTC
1174	CGTWDND LSAWVF	1998	TGCGGAACATGGGATAACGACCTGAGTGCCTGGGT GTTC
1175	CGTWDLTL GGVVF	1999	TGCGGAACATGGGATCTCACCCTGGGTGGTGTGGT GTTC
1176	CGTWDLSL SAGVF	2000	TGCGGAACATGGGATCTCAGCCTGAGTGCTGGGGT ATTC
1177	CGTWDLSL KEWVF	2001	TGCGGAACATGGGATCTCAGCCTGAAAGAATGGGT GTTC

[0270]

1178	CGTWDLSL DAVVF	2002	TGCGGAACGTGGGATCTCAGCCTGGATGCTGTTGT TTTC
1179	CGTWDLK VF	2003	TGCGGAACCTGGGACCTGAAGGTTTTC
1180	CGTWDKTL SVWVF	2004	TGCGGAACATGGGATAAGACTCTGAGTGTTTGGGT GTTC
1181	CGTWDKSL SVWVF	2005	TGCGGAACATGGGATAAGAGCCTGAGTGTTTGGGT GTTC
1182	CGTWDKSL SGVVF	2006	TGCGGAACATGGGATAAGAGCCTGAGTGGTGTGGT ATTT
1183	CGTWDKSL SDWVF	2007	TGCGGAACATGGGATAAGAGCCTGAGTGATTGGGT GTTC
1184	CGTWDKSL SALVF	2008	TGCGGAACATGGGATAAGAGCCTGAGTGCTTTGGT TTTC
1185	CGTWDKSL SAGVF	2009	TGCGGAACATGGGATAAGAGCCTGAGTGCTGGCGT CTTC
1186	CGTWDKSL SADVF	2010	TGCGGAACATGGGATAAGAGCCTGAGTGCCGACGT CTTC
1187	CGTWDKR LTIVVF	2011	TGCGGAACATGGGATAAACGCCTGACTATTGTGGT CTTC
1188	CGTWDKR LSAWVL	2012	TGCGGAACATGGGATAAACGCCTGAGTGCCTGGGT GCTC
1189	CGTWDKN LRAVVF	2013	TGCGGAACATGGGATAAGAACCTGCGTGCTGTGGT CTTC
1190	CGTWDITL SGFVF	2014	TGCGGAACATGGGATATCACCCTGAGTGGGTTTGT CTTC
1191	CGTWDITL HTGVF	2015	TGCGGAACATGGGATATCACCTTGCATACTGGAGT ATTC
1192	CGTWDISV TVVF	2016	TGCGGAACATGGGATATCAGTGTGACTGTGGTGTT C
1193	CGTWDISV RGYAF	2017	TGCGGAACATGGGATATCAGTGTGAGGGGTTATGC CTTC
1194	CGTWDISR WVF	2018	TGCGGAACATGGGATATCAGCCGTTGGGTTTTC
1195	CGTWDISP SAWVF	2019	TGCGGAACATGGGATATCAGCCCGAGTGCTTGGGT GTTC
1196	CGTWDISL SVWVF	2020	TGCGGAACATGGGATATTAGCCTGAGTGTCTGGGT GTTC
1197	CGTWDISL SVVF	2021	TGCGGAACATGGGATATCAGCCTGAGTGTTGTATT C
1198	CGTWDISL SSVVF	2022	TGCGGAACTTGGGATATCAGCCTGAGTTCTGTGGT GTTC
1199	CGTWDISL SHWLF	2023	TGCGGAACATGGGATATCAGCCTGAGTCACTGGTT GTTC
1200	CGTWDISL SGWVF	2024	TGCGGAACATGGGATATCAGTCTGAGTGGTTGGGT GTTC
1201	CGTWDISL SGRVF	2025	TGCGGAACATGGGATATCAGCCTGAGTGGTCGAGT GTTC
1202	CGTWDISL SAWAF	2026	TGCGGAACATGGGACATCAGCCTGAGTGCTTGGGC GTTC

[0271]

[0272]

1203	CGTWDISL SAVVF	2027	TGCGGAACATGGGATATCAGCCTGAGTGCTGTGGT TTTC
1204	CGTWDISL SAVIF	2028	TGCGGGACATGGGACATCAGCCTGAGTGCTGTGAT ATTC
1205	CGTWDISL SAVF	2029	TGCGGAACATGGGATATCAGCCTGAGTGCTGTGTT C
1206	CGTWDISL SARVF	2030	TGCGGAACATGGGATATCAGCCTGAGTGCCCGGGT GTTC
1207	CGTWDISL SALVF	2031	TGCGGAACATGGGATATCAGCCTGAGTGCCCTGGT GTTC
1208	CGTWDISL SAHVF	2032	TGCGGAACATGGGATATTAGCCTGAGTGCCCATGT CTTC
1209	CGTWDISL SAGVVF	2033	TGCGGAACATGGGATATCAGCCTGAGTGCTGGGGT GGTATTC
1210	CGTWDISL SAGPYVF	2034	TGCGGAACATGGGATATCAGCCTGAGTGCCGGCCC TTATGTCTTC
1211	CGTWDISL SAGGVF	2035	TGCGGCACATGGGATATCAGCCTGAGTGCTGGAGG GGTGTTC
1212	CGTWDISL SAEVF	2036	TGCGGAACATGGGATATCAGCCTGAGTGCTGAGGT TTTC
1213	CGTWDISL SAAVF	2037	TGCGGAACATGGGATATCAGCCTGAGTGCTGCTGT GTTC
1214	CGTWDISL RAVF	2038	TGCGGAACATGGGATATCAGCCTGCGTGCTGTGTT C
1215	CGTWDISL NTGVF	2039	TGCGGAACATGGGATATTAGCCTGAATACTGGGGT GTTC
1216	CGTWDISL NNYVF	2040	TGCGGAACATGGGATATCAGCCTAAATAATTATGT CTTC
1217	CGTWDISLI AGVF	2041	TGCGGAACATGGGATATCAGCCTAATTGCTGGGGT ATTC
1218	CGTWDISL HTWLF	2042	TGCGGAACATGGGATATCAGCCTGCATACTTGGCT GTTC
1219	CGTWDIRL TDELLF	2043	TGCGGAACATGGGATATCCGCCTGACCGATGAGCT GTTATTC
1220	CGTWDIRL SGFVF	2044	TGCGGAACATGGGATATCAGACTGAGCGGTTTTGT TTTC
1221	CGTWDINL GAGGLYVF	2045	TGCGGAACATGGGATATCAACCTGGGTGCTGGGGG CCTTTATGTCTTC
1222	CGTWDIILS AEVF	2046	TGCGGAACATGGGATATCATCCTGAGTGCTGAGGT ATTC
1223	CGTWDHTL SAVF	2047	TGCGGAACATGGGATCACACCCTGAGTGCTGTCTT C
1224	CGTWDHTL LTVLF	2048	TGCGGAACATGGGACCACACTCTGCTTACTGTGTT ATTC
1225	CGTWDHSL TAVVF	2049	TGCGGAACATGGGATCACAGCCTGACTGCTGTGGT ATTC
1226	CGTWDHSL TAGIF	2050	TGCGGAACCTGGGATCACAGCCTGACTGCTGGGAT ATTC
1227	CGTWDHSL SVVLF	2051	TGCGGAACATGGGATCACAGCCTGAGTGTTGTATT ATTC

[0273]

1228	CGTWDHSL SLVF	2052	TGCGGAACATGGGATCACAGCCTGAGTTTGGTATT C
1229	CGTWDHSL SIGVF	2053	TGCGGAACATGGGATCACAGCCTGTCTATTGGGGT TTTC
1230	CGTWDHSL SAGVF	2054	TGCGGAACATGGGATCACAGCCTGAGTGCTGGGGT GTTC
1231	CGTWDHSL SAFVF	2055	TGTGGAACTTGGGATCACAGCCTGAGTGCTTTCGT GTTC
1232	CGTWDHSL SAAVF	2056	TGCGGAACATGGGATCACAGTCTGAGTGCTGCTGT TTTC
1233	CGTWDHN LRAVF	2057	TGCGGAACATGGGACCACAATCTGCGTGCTGTCTT C
1234	CGTWDFTL SVGRF	2058	TGCGGGACATGGGATTTCACCCTGAGTGTTGGGCG CTTC
1235	CGTWDFTL SAPVF	2059	TGCGGAACATGGGATTTCACCCTGAGTGCTCCTGT CTTC
1236	CGTWDFSV SAGWVF	2060	TGCGGAACGTGGGATTTCAGCGTGAGTGCTGGGTG GGTGTTC
1237	CGTWDFSL TTWLF	2061	TGCGGAACGTGGGATTTCAGTCTTACTACCTGGTTA TTC
1238	CGTWDFSL SVWVF	2062	TGCGGAACATGGGATTTCAGCCTGAGTGTTTGGGT GTTC
1239	CGTWDFSL STGVF	2063	TGCGGAACATGGGATTTCAGCCTGAGTACTGGGGT TTTC
1240	CGTWDFSL SGVVF	2064	TGCGGCACATGGGATTTCAGCCTGAGTGGTGTGGT ATTC
1241	CGTWDFSL SGFVF	2065	TGCGGAACATGGGATTTCAGCCTGAGTGGTTTCGT GTTC
1242	CGTWDFSL SAGVF	2066	TGCGGAACATGGGATTTCAGCCTGAGTGCTGGGGT GTTC
1243	CGTWDETV RGWVF	2067	TGCGGAACATGGGATGAAACCGTGAGAGGTTGGGT GTTC
1244	CGTWDESL RSWVF	2068	TGCGGAACATGGGATGAAAGTCTGAGAAGCTGGGT GTTC
1245	CGTWDER QTDESYVF	2069	TGCGGAACTTGGGATGAGAGGCAGACTGATGAGTC CTATGTCTTC
1246	CGTWDERL VAGQVF	2070	TGCGGAACATGGGATGAGAGACTCGTTGCTGGCCA GGTCTTC
1247	CGTWDERL SPGAFF	2071	TGCGGAACATGGGATGAGAGACTGAGTCCTGGAGC TTTTTTC
1248	CGTWDEK VF	2072	TGCGGAACATGGGATGAGAAGGTGTTC
1249	CGTWDEG QTTDFFVF	2073	TGCGGAACCTGGGATGAAGGCCAGACTACTGATTT CTTTGTCTTC
1250	CGTWDDTL AGVVF	2074	TGCGGAACATGGGATGACACCCTGGCTGGTGTGGT CTTC
1251	CGTWDDR LTSAVF	2075	TGCGGAACATGGGATGACAGGCTGACTTCTGCGGT CTTC
1252	CGTWDDR LFVVVF	2076	TGCGGAACATGGGATGACAGACTGTTTGTTGTGGT ATTC

[0274]

1253	CGTWDDN LRGWVF	2077	TGCGGAACATGGGATGATAACCTGAGAGGTTGGGT GTTC
1254	CGTWDDN LRGVVF	2078	TGCGGAACATGGGATGACAACCTGCGTGGTGTCGT GTTC
1255	CGTWDDN LNIGRVF	2079	TGCGGAACCTGGGATGACAATTTGAATATTGGAAG GGTGTTC
1256	CGTWDDIL SAVIF	2080	TGCGGAACATGGGATGACATCCTGAGTGCTGTGAT ATTC
1257	CGTWDDIL RGWVF	2081	TGCGGAACATGGGATGATATCCTGAGAGGTTGGGT GTTC
1258	CGTWDATL SPGWLF	2082	TGCGGAACATGGGATGCCACCCTGAGTCCTGGGTG GTTATTC
1259	CGTWDAS VTSWVF	2083	TGCGGAACATGGGATGCCAGCGTGACTTCTTGGGT GTTC
1260	CGTWDASL TSVVF	2084	TGCGGAACATGGGATGCCAGCCTGACTTCTGTGGT CTTC
1261	CGTWDASL SVWVF	2085	TGCGGAACATGGGATGCCAGCCTGAGTGTTTGGGT GTTC
1262	CGTWDASL SVPWVF	2086	TGCGGAACATGGGATGCCAGCCTGAGTGTTCCTTG GGTGTTC
1263	CGTWDASL SVAVF	2087	TGCGGAACATGGGATGCCAGCCTGAGTGTGGCGGT ATTC
1264	CGTWDASL STWVF	2088	TGCGGAACATGGGATGCCAGCCTGAGTACCTGGGT ATTC
1265	CGTWDASL SGVVF	2089	TGCGGAACATGGGATGCCAGCCTGAGTGGTGTGGT ATTC
1266	CGTWDASL SGGGEF	2090	TGCGGAACATGGGATGCCAGCCTGAGTGGTGGGGG AGAATTC
1267	CGTWDASL SAGVF	2091	TGCGGAACATGGGATGCCAGCCTGAGTGCTGGGGT GTTC
1268	CGTWDASL SAGLF	2092	TGCGGAACATGGGATGCCAGCCTGAGTGCTGGGCT TTTC
1269	CGTWDASL SAEVF	2093	TGTGGCACATGGGATGCCAGCCTGAGTGCTGAAGT CTTC
1270	CGTWDASL SADFWVF	2094	TGCGGAACATGGGATGCCAGCCTGAGTGCTGACTT TTGGGTGTTC
1271	CGTWDASL RVFF	2095	TGCGGAACATGGGATGCCAGCCTGAGAGTCTTCTT C
1272	CGTWDASL RAVVL	2096	TGCGGAACATGGGATGCCAGTCTGAGGGCTGTGGT ACTC
1273	CGTWDASL NIWVF	2097	TGCGGAACATGGGATGCCAGCCTGAATATTTGGGT TTTC
1274	CGTWDASL KNLVF	2098	TGCGGGACATGGGATGCCAGCCTGAAGAATCTGGT CTTC
1275	CGTWDASL GAWVF	2099	TGCGGAACATGGGATGCCAGCCTGGGTGCCTGGGT ATTC
1276	CGTWDASL GAVVF	2100	TGCGGAACATGGGATGCCAGCCTGGGTGCTGTGGT CTTC
1277	CGTWDASL GAGVF	2101	TGCGGAACATGGGATGCCAGCCTGGGTGCGGGGGT CTTC

1278	CGTWDARLSGLYVF	2102	TGCGGAACATGGGATGCTAGGCTGAGTGGCCTTTATGTCTTC
1279	CGTWDARLGGAVF	2103	TGTGGAACCTGGGATGCGAGACTGGGTGGTGCAGTCTTC
1280	CGTWDANLRAGVF	2104	TGCGGAACATGGGATGCCAATCTGCGTGCTGGGGTCTTC
1281	CGTWDAIISGWVF	2105	TGCGGAACATGGGATGCTATCATAAGTGGTTGGGTGTTC
1282	CGTWDAGQSVWVF	2106	TGCGGAACATGGGATGCCGGCCAGAGTGTTTGGGTGTTC
1283	CGTWDAGLTGLYVF	2107	TGCGGCACATGGGATGCCGGGCTGACTGGCCTTTATGTCTTC
1284	CGTWDAGLSVYVF	2108	TGCGGAACTTGGGATGCCGGTCTGAGTGTTTATGTCTTC
1285	CGTWDAGLSTGVF	2109	TGCGGGACATGGGATGCCGGCCTGAGTACTGGGGTCTTC
1286	CGTWDAGLSGDVF	2110	TGCGGAACATGGGATGCCGGCCTGAGTGGGGACGTTTTC
1287	CGTWDAGLSAGYVF	2111	TGCGGAACATGGGATGCCGGCCTGAGTGCTGGTTATGTCTTC
1288	CGTWDAGLRVWVF	2112	TGCGGAACATGGGATGCCGGCCTGCGTGTTTGGGTGTTC
1289	CGTWDAGLREIF	2113	TGCGGAACATGGGATGCCGGCCTGAGGGAAATTTTC
1290	CGTWASSLSSWVF	2114	TGCGGAACATGGGCCAGCAGCCTGAGTTCTTGGGTGTTC
1291	CGTWAGSLSGHVF	2115	TGCGGAACATGGGCTGGCAGCCTGAGTGGTCATGTCTTC
1292	CGTWAGSLSAAWVF	2116	TGCGGAACATGGGCTGGCAGCCTGAGTGCCGCTTGGGTGTTC
1293	CGTWAGSLNVYWVF	2117	TGCGGAACATGGGCTGGCAGCCTGAATGTTTATTGGGTGTTC
1294	CGTWAGNLRPNWVF	2118	TGCGGAACATGGGCTGGCAACCTGAGACCTAATTGGGTGTTC
1295	CGTRGSLGGAVF	2119	TGCGGAACAAGGGGTAGCCTGGGTGGTGCGGTGTTC
1296	CGTRDTTLSVPVF	2120	TGCGGAACAAGGGATACCACCCTGAGTGTCCCGGTGTTC
1297	CGTRDTSLNIEIF	2121	TGCGGAACACGGGATACCAGCCTCAATATTGAAATCTTC
1298	CGTRDTSLNDVF	2122	TGTGGAACACGGGATACCAGCCTGAATGATGTCTTC
1299	CGTRDTRLSIVVF	2123	TGCGGAACACGGGATACCCGCCTGAGTATTGTGGTTTTC
1300	CGTRDTILSAEVF	2124	TGCGGCACACGGGATACCATCCTGAGTGCTGAGGTGTTC
1301	CGTRDRSLSGWVF	2125	TGCGGAACACGGGATAGAAGCCTGAGTGGTTGGGTGTTC
1302	CGSWYYNVFLF	2126	TGCGGATCATGGTATTACAATGTCTTCCTTTTC

[0275]

[0276]

1303	CGSWHSSLNLVVF	2127	TGCGGATCTTGGCATAGCAGCCTCAACCTTGTCGTCTTC
1304	CGSWGSGLSAPYVF	2128	TGCGGATCATGGGGTAGTGGCCTGAGTGCCCCTTATGTCTTC
1305	CGSWESGLGAWLF	2129	TGCGGTTCGTGGGAAAGCGGCCTGGGTGCTTGGCTGTTC
1306	CGSWDYGLLLF	2130	TGCGGATCCTGGGATTACGGCCTCCTACTCTTC
1307	CGSWDVSLTAVF	2131	TGCGGTTCATGGGATGTCAGCCTGACTGCTGTTTTC
1308	CGSWDVSLNVGIF	2132	TGCGGATCCTGGGATGTCAGTCTCAATGTTGGCATTTTC
1309	CGSWDTTLRAWVF	2133	TGCGGATCATGGGATACCACCCTGCGTGCTTGGGTGTTC
1310	CGSWDTSPVRAWVF	2134	TGCGGCTCGTGGGATACCAGCCCTGTCCGTGCTTGGGTGTTC
1311	CGSWDTSLSVWVF	2135	TGCGGATCATGGGATACCAGCCTGAGTGTTTGGGTGTTC
1312	CGSWDTSLSAEVF	2136	TGCGGATCATGGGATACCAGCCTGAGTGCTGAGGTGTTC
1313	CGSWDTSLRAWVF	2137	TGCGGCTCGTGGGATACCAGCCTGCGTGCTTGGGTGTTC
1314	CGSWDTSLRAWAF	2138	TGCGGCTCGTGGGATACCAGCCTGCGTGCTTGGGCGTTC
1315	CGSWDTSLDARLF	2139	TGCGGATCATGGGATACCAGCCTGGATGCTAGGCTGTTC
1316	CGSWDTILLVYVF	2140	TGCGGATCATGGGATACCATCCTGCTTGTCTATGTCTTC
1317	CGSWDRWQAAVF	2141	TGCGGATCATGGGATCGCTGGCAGGCTGCTGTCTTC
1318	CGSWDRSLSGYVF	2142	TGCGGATCATGGGATAGGAGCCTGAGTGGGTATGTCTTC
1319	CGSWDRSLSAYVF	2143	TGCGGATCATGGGATAGAAGCCTGAGTGCTTATGTCTTC
1320	CGSWDRSLSAVVF	2144	TGCGGATCATGGGATAGGAGCCTGAGTGCCGTGGTTTTC
1321	CGSWDNTLGVVLF	2145	TGCGGATCATGGGATAACACCTTGGGTGTTGTTCTCTTC
1322	CGSWDNRLSTVIF	2146	TGCGGATCGTGGGATAACAGACTAAGTACTGTCATCTTC
1323	CGSWDNRLNTVIF	2147	TGCGGAAGCTGGGATAATCGATTGAACACTGTGATTTTC
1324	CGSWDLSPVRVLVF	2148	TGCGGTTCATGGGATCTCAGCCCTGTACGTGTCCTTGTGTTC
1325	CGSWDLSLSAVVF	2149	TGCGGATCATGGGATCTCAGCCTGAGTGCTGTCGTTTTC
1326	CGSWDKNLRAVLF	2150	TGCGGATCATGGGATAAAAACCTGCGTGCTGTGCTGTTC
1327	CGSWDISLSAGVF	2151	TGCGGCTCATGGGATATCAGCCTGAGTGCTGGGGTGTTC

1328	CGSWDIRL SAEVF	2152	TGCGGATCATGGGATATCAGACTGAGTGCAGAGGT CTTC
1329	CGSWDIKL NIGVF	2153	TGCGGATCATGGGACATCAAACTGAATATTGGGGT ATTC
1330	CGSWDFSL NYFVF	2154	TGCGGATCATGGGATTTCAGTCTCAATTATTTTGTC TTC
1331	CGSWDASL STEVF	2155	TGCGGATCATGGGATGCCAGCCTGAGTACTGAGGT GTTC
1332	CGSWDAG LRGWVF	2156	TGCGGATCCTGGGATGCCGGCCTGCGTGGCTGGGT TTTC
1333	CGRWESSL GAVVF	2157	TGCGGAAGATGGGAGAGCAGCCTGGGTGCTGTGGT TTTC
1334	CGRWDFSL SAYVF	2158	TGCGGAAGATGGGATTTTAGTCTGAGTGCTTATGT CTTC
1335	CGQWDND LSVWVF	2159	TGCGGACAATGGGATAACGACCTGAGTGTTTGGGT GTTC
1336	CGPWHSSV TSGHVL	2160	TGCGGACCCTGGCATAGCAGCGTGACTAGTGGCCA CGTGCTC
1337	CGLWDASL SAPTWVF	2161	TGCGGATTATGGGATGCCAGCCTGAGTGCTCCTAC TTGGGTGTTC
1338	CGIWHTSL SAWVF	2162	TGTGGAATATGGCACACTAGCCTGAGTGCTTGGGT GTTC
1339	CGIWDYSL DTWVF	2163	TGCGGAATATGGGATTACAGCCTGGATACTTGGGT GTTC
1340	CGIWDTSL SAWVF	2164	TGCGGCATATGGGATACCAGCCTGAGTGCTTGGGT GTTC
1341	CGIWDTRL SVYVF	2165	TGCGGAATTTGGGATACCAGGCTGAGTGTTTATGT CTTC
1342	CGIWDTRL SVYIF	2166	TGCGGAATTTGGGATACCAGGCTGAGTGTTTATAT CTTC
1343	CGIWDTNL GYLF	2167	TGTGGAATATGGGATACGAATCTGGGTTATCTCTTC
1344	CGIWDTGL SAVVF	2168	TGCGGTATATGGGATACCGGCCTGAGTGCTGTGGT ATTC
1345	CGIWDRSL SAWVF	2169	TGCGGAATATGGGATCGCAGCCTGAGTGCTTGGGT GTTT
1346	CGIRDTRLS VYVF	2170	TGCGGAATTCGGGATACCAGGCTGAGTGTTTATGT CTTC
1347	CGGWSSRL GVGPVF	2171	TGCGGAGGATGGAGTAGCAGACTGGGTGTTGGCCC AGTGTTT
1348	CGGWGSG LSAWVF	2172	TGCGGAGGATGGGGTAGCGGCCTGAGTGCTTGGGT GTTC
1349	CGGWDTSL SAWVF	2173	TGCGGAGGATGGGATACCAGCCTGAGTGCTTGGGT GTTC
1350	CGGWDRG LDAWVF	2174	TGCGGAGGATGGGATAGGGGCCTGGATGCTTGGGT TTTC
1351	CGAWRNN VWVF	2175	TGCGGAGCATGGCGTAATAACGTGTGGGTGTTC
1352	CGAWNRR LNPHSHWV	2176	TGCGGAGCATGGAACAGGCGCCTGAATCCTCATTC TCATTGGGTGTTC

[0277]

	F		
1353	CGAWHNK LSAVF	2177	TGCGGAGCCTGGCACAACAAACTGAGCGCGGTCTTC
1354	CGAWGSSL RASVF	2178	TGCGGAGCATGGGGTAGCAGCCTGAGAGCTAGTGTCTTC
1355	CGAWGSG LSAWVF	2179	TGCGGAGCATGGGGTAGCGGCCTGAGTGCTTGGGTGTTC
1356	CGAWESSL SAPYVF	2180	TGCGGAGCATGGGAAAGTAGCCTGAGTGCCCCTTATGTCTTC
1357	CGAWESSL NVGLI	2181	TGCGGAGCATGGGAGAGCAGCCTCAATGTTGGACTGATC
1358	CGAWESGR SAGVVF	2182	TGCGGAGCATGGGAGAGCGGCCGGAGTGCTGGGGTGGTGTTC
1359	CGAWDYS VSGWVF	2183	TGCGGAGCTTGGGATTACAGTGTGAGTGGTTGGGTGTTC
1360	CGAWDYS LTAGVF	2184	TGCGGAGCATGGGATTACAGCCTGACTGCCGGAGTATTC
1361	CGAWDYR LSAVLF	2185	TGCGGAGCCTGGGATTACAGACTGAGTGCCGTGCTATTC
1362	CGAWDVR LDVGVF	2186	TGCGGAGCGTGGGATGTTCGTCTGGATGTTGGGGTGTTC
1363	CGAWDTY SYVF	2187	TGCGGAGCATGGGATACCTACAGTTATGTCTTC
1364	CGAWDTTL SGVVF	2188	TGCGGAGCATGGGATACGACCCTGAGTGGTGTGGTATTC
1365	CGAWDTTL SAVIF	2189	TGCGGAGCGTGGGATACTACCCTGAGTGCTGTGATATTC
1366	CGAWDTS QGASYVF	2190	TGCGGCGCATGGGATACCAGCCAGGGTGCGTCTTATGTCTTT
1367	CGAWDTSP VRAGVF	2191	TGCGGAGCATGGGATACCAGCCCTGTACGTGCTGGGGTGTTC
1368	CGAWDTSL WLF	2192	TGCGGAGCATGGGATACCAGCCTGTGGCTTTTC
1369	CGAWDTSL TVYVF	2193	TGCGGAGCATGGGATACCAGCCTGACTGTTTATGTCTTC
1370	CGAWDTSL TAGVF	2194	TGCGGAGCATGGGACACCAGTCTGACTGCTGGGGTGTTC
1371	CGAWDTSL STVVF	2195	TGCGGAGCTTGGGATACCAGCCTGAGTACTGTGGTTTTC
1372	CGAWDTSL SSRYIF	2196	TGCGGAGCATGGGATACCAGCCTGAGTTCTAGATACATATTC
1373	CGAWDTSL SGYVF	2197	TGCGGAGCATGGGATACCAGCCTGAGTGGTTATGTCTTC
1374	CGAWDTSL SGWVF	2198	TGCGGAGCCTGGGATACCAGCCTGAGTGGCTGGGTGTTC
1375	CGAWDTSL SGVLF	2199	TGCGGAGCATGGGATACCAGTCTGAGTGGTGTGCTATTC
1376	CGAWDTSL SGLVF	2200	TGCGGAGCTTGGGATACCAGCTTGAGTGGTCTTGTTTTC
1377	CGAWDTSL	2201	TGCGGAGCTTGGGATACCAGCTTGAGTGGTTTTGTT

[0278]

	SGFVF		TTC
1378	CGAWDTSL SGEVF	2202	TGCGGAGCATGGGATACCAGCCTGAGTGGTGAGGT CTTT
1379	CGAWDTSL SDFVF	2203	TGCGGAGCTTGGGATACCAGCTTGAGTGATTTTGTT TTC
1380	CGAWDTSL RTAIF	2204	TGCGGAGCATGGGATACCAGCCTGCGAACTGCGAT ATTC
1381	CGAWDTSL RLF	2205	TGCGGAGCATGGGATACCAGCCTGCGGCTTTTC
1382	CGAWDTSL NVHVF	2206	TGCGGAGCATGGGATACCAGCCTGAATGTTCATGT CTTC
1383	CGAWDTSL NKWVF	2207	TGCGGAGCATGGGATACCAGCCTCAATAAATGGGT GTTC
1384	CGAWDTR LSARLF	2208	TGCGGAGCATGGGATACCCGCCTCAGTGCGCGGCT GTTC
1385	CGAWDTR LRGFIF	2209	TGCGGAGCATGGGATACCAGACTGAGGGGTTTTAT TTTC
1386	CGAWDTN LGNVLL	2210	TGCGGAGCATGGGATACTAATTTGGGGAATGTTCT CCTC
1387	CGAWDTN LGKWVF	2211	TGCGGGGCATGGGATACCAACCTGGGTAAATGGGT TTTC
1388	CGAWDTG LEWYVF	2212	TGCGGAGCATGGGATACCGGCCTTGAGTGGTATGT TTTT
1389	CGAWDRTS GLWLF	2213	TGCGGAGCATGGGATAGGACTTCTGGATTGTGGCT TTTC
1390	CGAWDRSL VAGLF	2214	TGCGGAGCGTGGGATCGTAGCCTGGTTGCTGGACT CTTC
1391	CGAWDRSL TVYVF	2215	TGCGGAGCGTGGGATAGAAGCCTGACTGTTTATGT CTTC
1392	CGAWDRSL SGYVF	2216	TGCGGAGCATGGGATAGAAGCCTGAGTGGTTATGT CTTC
1393	CGAWDRSL SAYVF	2217	TGCGGAGCATGGGATAGAAGCCTGAGTGCTTATGT CTTC
1394	CGAWDRSL SAVVF	2218	TGCGGAGCATGGGATAGAAGCCTGAGTGCGGTGGT ATTC
1395	CGAWDRSL SAGVF	2219	TGCGGAGCATGGGATCGCAGCCTGAGTGCTGGGGT TTTC
1396	CGAWDRSL RIVVF	2220	TGCGGAGCGTGGGATCGCAGCCTGCGTATTGTGGT ATTC
1397	CGAWDRSL RAYVF	2221	TGCGGAGCATGGGATAGAAGTCTGAGGGCTTACGT CTTC
1398	CGAWDRSL NVWLF	2222	TGCGGAGCATGGGATAGAAGTCTGAATGTTTGGCT GTTC
1399	CGAWDRG LNVGWLF	2223	TGCGGCGCCTGGGATAGGGGCCTGAATGTCGGTTG GCTTTTC
1400	CGAWDNR LSILAF	2224	TGCGGCGCATGGGATAATAGACTGAGTATTTTGGC CTTC
1401	CGAWDND LTAYVF	2225	TGCGGAGCTTGGGATAATGACCTGACAGCTTATGT CTTC
1402	CGAWDFSL	2226	TGCGGGGCATGGGATTTCAGCCTGACTCCTCTCTTC

[0279]

	TPLF		
1403	CGAWDDY RGVSIYVF	2227	TGCGGAGCCTGGGATGACTATCGGGGTGTGAGTAT TTATGTCTTC
1404	CGAWDDR PSSAVVF	2228	TGTGGAGCATGGGATGACCGGCCTTCGAGTGCCGT GGTTTTC
1405	CGAWDDR LTVVVF	2229	TGCGGAGCATGGGATGACAGACTGACTGTCGTTGT TTTC
1406	CGAWDDR LGAVF	2230	TGCGGAGCGTGGGATGACAGGCTGGGTGCTGTGTT C
1407	CGAWDAS LNPGRAF	2231	TGCGGAGCGTGGGATGCCAGCCTGAATCCTGGCCG GGCATTC
1408	CGAWDAG LREIF	2232	TGCGGAGCATGGGATGCCGGCCTGAGGGAAATTTT C
1409	CGAWAGSP SPWVF	2233	TGCGGAGCTTGGGCTGGCAGTCCGAGTCCTTGGGT TTTC
1410	CGAFDTTL SAGVF	2234	TGCGGAGCATTCGACACCACCCTGAGTGCTGGCGT TTTC
1411	CETWESSL SVGVF	2235	TGCGAAACATGGGAGAGCAGCCTGAGTGTTGGGGT CTTC
1412	CETWESSL RVWVF	2236	TGCGAAACATGGGAAAGCAGCCTGAGGGTTTGGGT GTTC
1413	CETWDTSL SGGVF	2237	TGCGAAACGTGGGATACCAGCCTGAGTGGTGGGGT GTTC
1414	CETWDTSL SDFYVF	2238	TGCGAAACATGGGATACCAGCCTGAGTGACTTTTA TGTCTTC
1415	CETWDTSL SALF	2239	TGCGAAACATGGGATACCAGCCTGAGTGCCCTCTT C
1416	CETWDTSL RAEVF	2240	TGCGAAACATGGGATACCAGCCTGCGTGCTGAAGT CTTC
1417	CETWDTSL NVVVF	2241	TGCGAAACATGGGATACCAGCCTGAATGTTGTGGT ATTC
1418	CETWDTSL GAVVF	2242	TGCGAAACATGGGATACCAGCCTGGGTGCCGTGGT GTTC
1419	CETWDRSL SGVVF	2243	TGCGAAACATGGGATAGAAGCCTGAGTGGTGTGGT ATTC
1420	CETWDRSL SAWVF	2244	TGCGAAACATGGGATAGGAGCCTGAGTGCTTGGGT GTTT
1421	CETWDRSL SAVVF	2245	TGCGAAACATGGGATCGCAGCCTGAGTGCTGTGGT CTTC
1422	CETWDRGL SVVVF	2246	TGCGAGACGTGGGATAGAGGCCTGAGTGTTGTGGT TTTC
1423	CETWDRGL SAVVF	2247	TGCGAAACATGGGATAGGGGCCTGAGTGCAGTGGT ATTC
1424	CETWDHTL SVVIF	2248	TGCGAAACATGGGATCACACCCTGAGTGTTGTGAT ATTC
1425	CETWDASL TVVLF	2249	TGCGAAACATGGGATGCCAGCCTGACTGTTGTGTT ATTC
1426	CETWDASL SAGVF	2250	TGCGAAACATGGGATGCCAGCCTGAGTGCTGGGGT GTTC
1427	CETWDAGL	2251	TGCGAAACGTGGGATGCCGGCCTGAGTGAGGTGGT

[0280]

	SEVVF		GTTC
1428	CETFDTSLS VVVF	2252	TGCGAAACATTTGATACCAGCCTGAGTGTTGTAGT CTTC
1429	CETFDTSL NIVVF	2253	TGCGAAACATTTGATACCAGCCTAAATATTGTAGT CTTT
1430	CESWDRSR IGVVF	2254	TGCGAATCATGGGATAGAAGCCGGATTGGTGTGGT CTTC
1431	CESWDRSL SARVY	2255	TGCGAAAGTTGGGACAGGAGTCTGAGTGCCCGGGT GTAC
1432	CESWDRSL RAVVF	2256	TGCGAATCCTGGGATAGGAGCCTGCGTGCCGTGGT CTTC
1433	CESWDRSL IVVF	2257	TGCGAATCTTGGGATCGTAGTTTGATTGTGGTGTTC
1434	CESWDNNL NEVVF	2258	TGCGAAAGTTGGGATAACAATTTAAATGAGGTGGT TTTC
1435	CEIWESSPS ADDLVF	2259	TGCGAAATATGGGAGAGCAGCCCGAGTGCTGACG ATTTGGTGTTC
1436	CEAWDTSL SGAVF	2260	TGCGAAGCATGGGATACCAGCCTGAGTGGTGCGGT GTTC
1437	CEAWDTSL SAGVF	2261	TGCGAAGCATGGGATACCAGCCTGAGTGCCGGGGT GTTC
1438	CEAWDTSL GGGVF	2262	TGCGAAGCATGGGATACCAGCCTGGGTGGTGGGGT GTTC
1439	CEAWDRSL TGSLF	2263	TGCGAAGCATGGGATCGCAGCCTGACTGGTAGCCT GTTC
1440	CEAWDRG LSAVVF	2264	TGCGAAGCGTGGGATAGGGGCCTGAGTGCAGTGGT ATTC
1441	CEAWDNIL STVVF	2265	TGCGAAGCCTGGGATAACATCCTGAGTACTGTGGT GTTC
1442	CEAWDISL SAGVF	2266	TGCGAAGCATGGGACATCAGCCTGAGTGCTGGGGT GTTC
1443	CEAWDAD LSGAVF	2267	TGCGAAGCATGGGATGCCGACCTGAGTGGTGCGGT GTTC
1444	CATWTGSF RTGHYVF	2268	TGCGCAACATGGACTGGTAGTTTCAGAACTGGCCA TTATGTCTTC
1445	CATWSSSP RGWVF	2269	TGCGCAACATGGAGTAGCAGTCCCAGGGGGTGGGT GTTC
1446	CATWHYSL SAGRVF	2270	TGCGCAACATGGCATTACAGCCTGAGTGCTGGCCG AGTGTTC
1447	CATWHTSL SIVQF	2271	TGCGCAACATGGCATACCAGCCTGAGTATTGTGCA GTTC
1448	CATWHSTL SADVLF	2272	TGCGCAACATGGCATAGCACCCTGAGTGCTGATGT GCTTTTC
1449	CATWHSSL SAGRLF	2273	TGCGCAACATGGCATAGCAGCCTGAGTGCTGGCCG ACTCTTC
1450	CATWHIAR SAWVF	2274	TGCGCAACATGGCATATCGCTCGGAGTGCCTGGGT GTTC
1451	CATWGSSQ SAVVF	2275	TGCGCAACATGGGGTAGTAGTCAGAGTGCCGTGGT ATTC
1452	CATWGSSL	2276	TGCGCAACATGGGGTAGCAGCCTGAGTGCTGGGGG

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	SAGGVF		TGTTTTC
1453	CATWEYSL SVVLF	2277	TGTGCAACATGGGAATACAGCCTGAGTGTTGTGCT GTTC
1454	CATWETTR RASFVF	2278	TGCGCAACATGGGAGACCACCCGACGTGCCTCTTT TGTCTTC
1455	CATWETSL NVYVF	2279	TGCGCAACATGGGAGACCAGCCTGAATGTTTATGT CTTC
1456	CATWETSL NVVVF	2280	TGCGCAACATGGGAAACTAGCCTGAATGTTGTGGT CTTC
1457	CATWETSL NLYVF	2281	TGCGCAACATGGGAGACCAGCCTGAATCTTTATGT CTTC
1458	CATWETGL SAGEVF	2282	TGCGCAACATGGGAGACTGGCCTAAGTGCTGGAGA GGTGTTC
1459	CATWESTL SVVVF	2283	TGCGCGACGTGGGAGAGTACCCTAAGTGTTGTGGT TTTC
1460	CATWESSL SIFVF	2284	TGCGCAACGTGGGAGAGCAGCCTGAGTATTTTTGT CTTC
1461	CATWESSL NTFYVF	2285	TGCGCAACATGGGAAAGCAGCCTCAACACTTTTTA TGTCTTC
1462	CATWESRV DTRGLLF	2286	TGCGCAACATGGGAGAGTAGGGTGGATACTCGAG GGTTGTTATTC
1463	CATWESGL SGAGVF	2287	TGCGCAACATGGGAGAGCGGCCTGAGTGGTGCGG GGGTGTTC
1464	CATWEGSL NTFYVF	2288	TGCGCAACATGGGAAGGCAGCCTCAACACTTTTTA TGTCTTC
1465	CATWDYSL SAVVF	2289	TGCGCAACTTGGGATTATAGCCTGAGTGCTGTGGT GTTC
1466	CATWDYR LSIVVF	2290	TGCGCAACATGGGATTACAGACTGAGTATTGTGGT ATTC
1467	CATWDYN LGAAVF	2291	TGCGCAACATGGGATTATAACCTGGGAGCTGCGGT GTTC
1468	CATWDVTL GVLHF	2292	TGCGCCACATGGGATGTCACCCTGGGTGTCTTGCA TTTC
1469	CATWDTTL SVWVF	2293	TGCGCAACATGGGATACAACACTGAGTGTCTGGGT CTTC
1470	CATWDTTL SVVLF	2294	TGCGCAACATGGGATACCACCCTGAGTGTAGTACT TTTC
1471	CATWDTTL SVEVF	2295	TGCGCAACATGGGATACCACCCTGAGTGTTGAGGT CTTC
1472	CATWDTSP SLSGFWVF	2296	TGCGCAACATGGGATACCAGCCCCAGCCTGAGTGG TTTTTGGGTGTTC
1473	CATWDTSL TGVVF	2297	TGCGCAACATGGGATACCAGCCTGACTGGTGTGGT ATTC
1474	CATWDTSL TGAVF	2298	TGCGCAACATGGGATACCAGCCTGACTGGTGCGGT GTTC
1475	CATWDTSL TAWVF	2299	TGCGCAACATGGGATACCAGCCTGACTGCCTGGGT ATTC
1476	CATWDTSL TAVVF	2300	TGCGCAACATGGGATACCAGCCTGACTGCTGTGGT TTTC
1477	CATWDTSL	2301	TGCGCAACATGGGATACTAGCCTGACTGCTAAGGT

[0282]

	TAKVF		GTTC
1478	CATWDTSL SVVVF	2302	TGCGCAACATGGGACACCAGCCTGAGTGTTGTGGT TTTC
1479	CATWDTSL SVGVF	2303	TGCGCTACTTGGGATACCAGCCTGAGTGTTGGGGT ATTT
1480	CATWDTSL SSWVF	2304	TGCGCAACATGGGATACCAGCCTGAGTTCTTGGGT GTTC
1481	CATWDTSL SGGVL	2305	TGCGCAACATGGGATACCAGCCTGAGTGGTGGGGT ACTC
1482	CATWDTSL SGGVF	2306	TGCGCAACATGGGATACCAGCCTGAGTGGTGGGGT GTTC
1483	CATWDTSL SGGRVF	2307	TGCGCAACATGGGATACCAGCCTGAGTGGTGGCCG AGTGTTC
1484	CATWDTSL SGDRVF	2308	TGCGCAACATGGGATACCAGCCTGAGTGGTGACCG AGTGTTC
1485	CATWDTSL SEGVF	2309	TGCGCAACGTGGGATACTAGCCTGAGTGAAGGGGT GTTC
1486	CATWDTSL SAVVL	2310	TGCGCAACCTGGGATACCAGCCTGAGTGCCGTGGT GCTC
1487	CATWDTSL SAVF	2311	TGCGCAACATGGGATACCAGCCTGAGTGCTGTCTT C
1488	CATWDTSL SARVF	2312	TGCGCGACATGGGATACCAGCCTGAGTGCTCGGGT GTTC
1489	CATWDTSL SALF	2313	TGCGCAACATGGGATACCAGCCTGAGTGCCTTATT C
1490	CATWDTSL SAHVF	2314	TGCGCAACATGGGATACCAGCCTGAGTGCTCATGT CTTC
1491	CATWDTSL SAGRVF	2315	TGCGCAACATGGGATACCAGCCTGAGTGCTGGCCG GGTGTTC
1492	CATWDTSL SAEVF	2316	TGCGCAACATGGGATACCAGCCTGAGTGCGGAGGT CTTC
1493	CATWDTSL SADAGGGV F	2317	TGCGCAACATGGGATACCAGCCTGAGTGCTGATGC TGGTGGGGGGGTCTTC
1494	CATWDTSL RVVVF	2318	TGCGCAACATGGGATACCAGCCTGCGTGTCGTGGT ATTC
1495	CATWDTSL RGVF	2319	TGCGCAACATGGGATACCAGCCTGAGAGGGGTGTT C
1496	CATWDTSL PAWVF	2320	TGCGCAACATGGGATACCAGCCTGCCTGCGTGGGT GTTC
1497	CATWDTSL NVGVF	2321	TGTGCAACATGGGATACCAGCCTGAATGTTGGGGT ATTC
1498	CATWDTSL GIVLF	2322	TGCGCAACATGGGATACCAGCCTGGGTATTGTGTT ATTT
1499	CATWDTSL GARVVF	2323	TGCGCAACATGGGACACCAGCCTGGGTGCGCGTGT GGTCTTC
1500	CATWDTSL GALF	2324	TGTGCAACGTGGGATACCAGTCTAGGTGCCTTGTT C
1501	CATWDTSL ATGLF	2325	TGCGCAACATGGGATACCAGCCTGGCGACTGGACT GTTC

[0283]

1502	CATWDTSLAAWVF	2326	TGCGCAACATGGGATACCAGCCTGGCTGCCTGGGTATTC
1503	CATWDTRLSAVVF	2327	TGCGCAACCTGGGATACCAGGCTGAGTGCTGTGGTCTTC
1504	CATWDTRLSAGVF	2328	TGCGCAACATGGGATACCAGGCTGAGTGCTGGGGTGTTC
1505	CATWDTRLLITVF	2329	TGTGCAACGTGGGACACACGTCTACTTATTACGGTTTTC
1506	CATWDTLLSVELF	2330	TGCGCAACATGGGACACCCTCCTGAGTGTTGAACTCTTC
1507	CATWDTGRNPHVVF	2331	TGCGCAACATGGGATACTGGCCGCAATCCTCATGTGGTCTTC
1508	CATWDTGLSSVLF	2332	TGCGCAACATGGGATACCGGCCTGTCTTCGGTGTTGTTC
1509	CATWDTGLSAVF	2333	TGCGCAACGTGGGATACCGGCCTGAGTGCGGTTTTC
1510	CATWDRTLSIGVF	2334	TGCGCTACGTGGGATAGGACCCTGAGTATTGGAGTCTTC
1511	CATWDRSVTAVLF	2335	TGCGCAACGTGGGATCGCAGTGTGACTGCTGTGCTCTTC
1512	CATWDRSLSGVVF	2336	TGCGCAACCTGGGATAGGAGCCTGAGTGGTGTGGTGTTC
1513	CATWDRSLSAVVF	2337	TGCGCAACATGGGATAGAAGCCTGAGTGCTGTGGTCTTC
1514	CATWDRSLSAVPWVF	2338	TGCGCAACATGGGATAGAAGCCTGAGTGCTGTTCCTTGGGTGTTC
1515	CATWDRSLSAGVF	2339	TGCGCAACATGGGATCGCAGCCTGAGTGCTGGGGTGTTC
1516	CATWDRSLRAGVF	2340	TGCGCAACGTGGGATAGGAGCCTGCGTGCTGGGGTGTTC
1517	CATWDRSLNVYVL	2341	TGCGCAACATGGGATCGCAGTCTGAATGTTTATGTCCTC
1518	CATWDRILSAEVF	2342	TGCGCAACGTGGGATCGCATCCTGAGCGCTGAGGTGTTC
1519	CATWDRGLSTGVF	2343	TGCGCAACGTGGGATAGAGGCCTGAGTACTGGGGTGTTC
1520	CATWDNYLGAAVF	2344	TGCGCAACATGGGATAACTACCTGGGTGCTGCCGTGTTC
1521	CATWDNTPSNIVVF	2345	TGCGCAACATGGGATAACACGCCTTCGAATATTGTGGTATTC
1522	CATWDNTLSVWVF	2346	TGCGCAACATGGGATAATACACTGAGTGTGTGGGTCTTC
1523	CATWDNTLSVNWVF	2347	TGCGCAACATGGGATAACACCCTGAGTGTCAATTGGGTGTTC
1524	CATWDNTLNVFYVF	2348	TGCGCAACCTGGGATAACACACTGAATGTCTTTTATGTTTTC
1525	CATWDNRLSSVVF	2349	TGTGCGACATGGGATAATCGGCTCAGTTCTGTGGTCTTC
1526	CATWDNRLSAGVL	2350	TGCGCAACATGGGATAACCGCCTGAGTGCTGGGGTGCTC

[0284]

1527	CATWDNR LSAGVF	2351	TGCGCAACGTGGGATAACAGGCTGAGTGCTGGGGT GTTC
1528	CATWDNR DWVF	2352	TGCGCAACATGGGATAACAGGGATTGGGTCTTC
1529	CATWDNN LGAGVF	2353	TGCGCAACATGGGATAACAACCTGGGTGCTGGGGT GTTC
1530	CATWDNK LTSGVF	2354	TGCGCAACATGGGATAACAAGCTGACTTCTGGGGT CTTC
1531	CATWDNIL SAWVF	2355	TGCGCAACATGGGATAACATCCTGAGTGCCTGGGT GTTT
1532	CATWDNDI HSGLF	2356	TGCGCAACCTGGGACAACGATATACATTCTGGGCT GTTC
1533	CATWDLSL SALF	2357	TGCGCAACTTGGGATCTCAGCCTGAGTGCCCTGTTC
1534	CATWDITL SAEVF	2358	TGCGCAACATGGGATATCACCCTGAGTGCTGAGGT GTTC
1535	CATWDISP SAGGVF	2359	TGCGCAACGTGGGATATCAGCCCGAGTGCTGGCGG GGTGTTC
1536	CATWDISL STGRAVF	2360	TGCGCAACATGGGATATCAGTCTAAGTACTGGCCG GGCTGTGTTC
1537	CATWDISL SQVF	2361	TGCGCAACATGGGATATCAGTCTGAGTCAGGTATT C
1538	CATWDIRL SSGVF	2362	TGCGCAACATGGGATATCAGGCTGAGTAGTGGAGT GTTC
1539	CATWDIGP SAGGVF	2363	TGCGCAACGTGGGATATCGGCCCGAGTGCTGGCGG GGTGTTC
1540	CATWDHSR AGVLF	2364	TGCGCAACATGGGATCACAGCCGGGCTGGTGTGCT ATTC
1541	CATWDHSP SVGEVF	2365	TGCGCAACATGGGATCACAGTCCGAGTGTTGGAGA AGTCTTC
1542	CATWDHSL RVGVF	2366	TGCGCAACATGGGATCACAGCCTGCGTGTTGGGGT GTTC
1543	CATWDHSL NIGVF	2367	TGCGCAACATGGGATCACAGCCTGAACATTGGGGT GTTC
1544	CATWDHSL GLWAF	2368	TGCGCAACATGGGATCACAGCCTGGGTCTTTGGGC ATTC
1545	CATWDHN LRLVF	2369	TGCGCCACATGGGATCACAATCTGCGTCTTGTTTTC
1546	CATWDHIL ASGVF	2370	TGCGCGACTTGGGATCACATCCTGGCTTCTGGGGT GTTC
1547	CATWDFSL SVWVF	2371	TGCGCAACATGGGATTTCAGCCTGAGTGTTTGGGT GTTC
1548	CATWDFSL SAWVF	2372	TGCGCAACATGGGATTTCAGCCTGAGTGCTTGGGT GTTC
1549	CATWDDTL TAGVF	2373	TGCGCAACATGGGATGACACCCTCACTGCTGGTGT GTTC
1550	CATWDDR LSAVLF	2374	TGCGCAACATGGGACGACAGGCTGAGTGCTGTGCT TTTC
1551	CATWDDR LDAAVF	2375	TGCGCAACATGGGATGACAGGCTGGATGCTGCGGT GTTC

[0285]

1552	CATWDATL NTGVF	2376	TGCGCAACATGGGATGCGACCCTGAATACTGGGGT GTTC
1553	CATWDASL SVWLL	2377	TGCGCAACATGGGATGCCAGCCTGAGTGTTTGGCT GCTC
1554	CATWDASL SGGVF	2378	TGCGCGACATGGGATGCCAGCCTGAGTGGTGGGGT GTTC
1555	CATRDTTL SAVLF	2379	TGCGCAACACGGGATACCACCCTCAGCGCCGTTCT GTTC
1556	CATLGSSLS LWVF	2380	TGCGCTACATTGGGTAGTAGCCTGAGTCTCTGGGT GTTC
1557	CATIETSLP AWVF	2381	TGCGCAACAATCGAAACTAGCCTGCCTGCCTGGGT ATTC
1558	CATGDRSL TVEVF	2382	TGCGCAACAGGGGACAGAAGCCTGACTGTTGAGGT ATTC
1559	CATGDLGL TIVF	2383	TGCGCTACAGGGGATCTCGGCCTGACCATAGTCTT C
1560	CASWDYR GRSGWVF	2384	TGCGCATCATGGGATTACAGGGGGAGATCTGGTTG GGTGTTC
1561	CASWDTTL NVGVF	2385	TGCGCATCATGGGATACCACCCTGAATGTTGGGGT GTTC
1562	CASWDTTL GFVLF	2386	TGCGCTTCATGGGATACCACCCTGGGTTTTGTGTTA TTC
1563	CASWDTSL SGGYVF	2387	TGCGCATCATGGGATACCAGCCTGAGTGGTGGTTA TGTCTTC
1564	CASWDTSL RAGVF	2388	TGCGCATCATGGGATACCAGCCTCCGTGCTGGGGT GTTC
1565	CASWDTSL GAGVF	2389	TGCGCATCATGGGATACCAGCCTGGGTGCTGGGGT GTTC
1566	CASWDRGL SAVVF	2390	TGCGCATCATGGGACAGAGGCCTGAGTGCAGTGGT GTTC
1567	CASWDNV LRGVVF	2391	TGTGCTAGTTGGGATAACGTCCTGCGTGGTGTGGT ATTC
1568	CASWDNRL TAVVF	2392	TGCGCGTCATGGGATAACAGGCTGACTGCCGTGGT TTTC
1569	CASWDASL SVAF	2393	TGCGCATCATGGGATGCAAGCCTGTCCGTCGCTTTC
1570	CASWDAG LSSYVF	2394	TGCGCTTCGTGGGATGCCGGCCTGAGTTCTTATGTC TTC
1571	CASGDTSL SGVIF	2395	TGCGCATCCGGGGATACCAGCCTGAGTGGTGTGAT ATTC
1572	CARWHTSL SIWVF	2396	TGCGCAAGATGGCATACGAGCCTAAGTATTTGGGT CTTC
1573	CAIWDTGL SPGQVAF	2397	TGCGCAATATGGGATACCGGCCTGAGTCCTGGCCA AGTTGCCTTC
1574	CAAWHSG LGLPVF	2398	TGCGCAGCATGGCATAGCGGCCTGGGTCTCCCGGT CTTC
1575	CAAWDYS LSAGVF	2399	TGCGCAGCATGGGATTACAGCCTGAGTGCTGGGGT GTTC
1576	CAAWDTTL RVRLF	2400	TGCGCAGCCTGGGATACTACCCTGCGTGTTAGGCT GTTC

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1577	CAAWDTSL TAWVF	2401	TGCGCAGCATGGGATACCAGCCTGACTGCCTGGGT TTTC
1578	CAAWDTSL SGGVF	2402	TGCGCAGCATGGGATACCAGCTTGAGTGGTGGGGT GTTC
1579	CAAWDTSL SGEAVF	2403	TGCGCAGCATGGGATACCAGCCTGAGTGGCGAGGC TGTGTTC
1580	CAAWDTSL SGAVF	2404	TGCGCAGCATGGGATACCAGCTTGAGTGGTGCGGT GTTC
1581	CAAWDTSL SAWVF	2405	TGCGCAGCATGGGATACCAGCCTGAGTGCCTGGGT GTTC
1582	CAAWDTSL SAGVF	2406	TGCGCAGCATGGGATACCAGCCTGAGTGCTGGGGT ATTC
1583	CAAWDTSL DTYVF	2407	TGCGCAGCATGGGATACCAGCCTGGATACTTATGT CTTC
1584	CAAWDTR LSGVLF	2408	TGCGCTGCATGGGATACCCGTCTGAGTGGTGTGTT ATTC
1585	CAAWDTR LSAGVF	2409	TGCGCAGCATGGGATACCAGGCTGAGTGCTGGGGT GTTC
1586	CAAWDRSL STGVF	2410	TGCGCAGCATGGGATCGCAGTCTGAGTACTGGAGT TTTC
1587	CAAWDIRR SVLF	2411	TGCGCAGCGTGGGATATCCGCCGGTCTGTCCTTTTC
1588	CAAWDHT QRLSF	2412	TGCGCTGCGTGGGATCACACTCAGCGTCTTTCCTTC
1589	CAAWDHS LSAGQVF	2413	TGCGCAGCATGGGATCACAGCCTGAGTGCTGGCCA GGTGTTC
1590	CAAVDTGL KEWVF	2414	TGCGCAGCAGTCGATACTGGTCTGAAAGAATGGGT GTTC

[0287]

[0288] CDR은 아미노산 장애, 잠재 스플라이스 부위 또는 뉴클레오티드 제한 부위를 함유하지 않도록 예비 스크리닝되었다. CDR 변이는 적어도 2명의 개체에서 관찰되었고, 단일, 이중 및 삼중 돌연변이의 생식선 근처 공간을 포함한다. 조립 순서는 도 21c에 도시되어 있다.

[0289] 설계된 VH 도메인은 IGHV1-69 및 IGHV3-30을 포함한다. 2개의 중쇄 VH 도메인 각각은 그 각각의 4개의 불변 프레임워크 요소(FW1, FW2, FW3, FW4) 및 가변적인 3개의 CDR(H1, H2, H3) 요소로 조립된다. IGHV1-69의 경우, 417개의 변이체가 H1에 대해 설계되었고, 258개의 변이체가 H2에 대해 설계되었다. IGHV3-30의 경우, 535개의 변이체가 H1에 대해 설계되었고, 165개의 변이체가 H2에 대해 설계되었다. CDR H3의 경우, 동일한 카세트가 IGHV1-69 및 IGHV-30 둘 모두에 사용되었으며, 이것은 설계된 둘 모두가 동일한 FW4를 사용하고 FW3의 가장자리도 IGHV1-69 및 IGHV3-30 둘 모두에 대해 동일하기 때문이다. CDR H3은 1×10^{10}의 다양성을 생성하기 위해 중앙의 중간 요소에 조합 결합된 N-말단 및 C-말단 요소를 포함한다. N-말단 및 중간 요소는 "GGG" 글리신 코돈과 중첩된다. 중간 및 C-말단 요소는 "GGT" 글리신 코돈과 중첩된다. CDR H3은 개별적으로 조립된 5개의 서브풀을 포함한다. 다양한 N-말단 및 C-말단 요소는 표 14에 나타낸 서열을 포함한다.

[0290] 표 14. N-말단 및 C-말단 요소의 서열

요소	서열 번호	서열
줄기 A	2415	CARDLRELECEEWT XXX SRGPCVDPRGVAGSFDVW
줄기 B	2416	CARDMYYDF XXX EVVPADDAFDIW
줄기 C	2417	CARDGRGSLPRPKGGP XXX YDSSEDSGGAFDIW
줄기 D	2418	CARANQHF XXX GYHYYGMDVW
줄기 E	2419	CAKHMSMQ XXX RADLVGDAFDVW

[0291]

[0292] **실시예 12. GPCR GLP1R 결합 단백질의 농축**

[0293] GPCR 결합 단백질의 변이체 단편을 갖는 CDR-H3 영역을 갖는 항체는 본원에서 설명되는 방법에 의해 생성되었으며, 실시예 10에 기재된 바와 같이 특정 GPCR에 결합하기 위해 농축된 확인된 변이체로 세포 기반 방법을 사용하여 패닝하였다.

[0294] GLP C-말단 펩티드의 변이체는 항체의 CDR-H3 영역에 매립될 때 GPCR GLP1R에 결합하기 위해 반복적으로 및 선택적으로 농축된다는 것이 확인되었다(표 15에 나열 됨).

[0295] 표 15. CDR-H3에 매립된 GLP1의 서열

서열 번호	서열
2420	CAKHMSMQEGAVTGEGQAAKEFIAWLVKGRVRADLVGDAFDVW
2421	CARDGRGSLPRPKGGPQTVGEGQAAKEFIAWLVKGGLTYDSSEDSGGAFDIW
2422	CAKHMSMQDYLVIGEGQAAKEFIAWLVKGGPARADLVGDAFDVW
2423	CAKHMSMQEGAVTGEGQDAKEFIAWLVKGRVRADLVGDAFDVW
2424	WAKHMSMQEGAVTGEGQAAKEFIAWLVKGRVRADLVGDAFDVW
2425	CARDGRGSLPRPKGGPQTVGEGQAAKEFIAWLVKGRVRADLVGDAFDVW
2426	CARANQHFYEQEGTFTSDVSSYLEGQAAKEFIAWLVKGGIRGYHYYGMDVW
2427	CARANQHFTELHGEGQAAKEFIAWLVKGRGQIDIGYHYYGMDVW
2428	CARANQHFLGAGVSSYLEGQAAKEFIAWLVKGDTTGYHYYGMDVW
2429	CARANQHFLDKGTFTSDVSSYLEGQAAKEFIAWLVKGIYPGYHYYGMDVW
2430	CARANQHFGTLSAGEGQAAKEFIAWLVKGGSQYDSSEDSGGAFDIW
2431	CARANQHFGLHAQGEGQAAKEFIAWLVKGSGTYGYHYYGMDVW
2432	CARANQHFGGKGEGQAAKEFIAWLVKGGGSGAGYHYYGMDVW
2433	CAKQMSMQEGAVTGEGQAAKEFIAWLVKGRVRADLVGDAFDVW
2434	CAKHMSMQEGAVTGEGQAAKEFIAWLVKGGPARADLVGDAFDVW
2435	CAKHMSMQEGAVTGEGQAAKEFIAWLVKGGLTYDSSEDSGGAFDIW
2436	CAKHMSMQDYLVIGEGQAAKEFIAWLVKGRVRADLVGDAFDVW

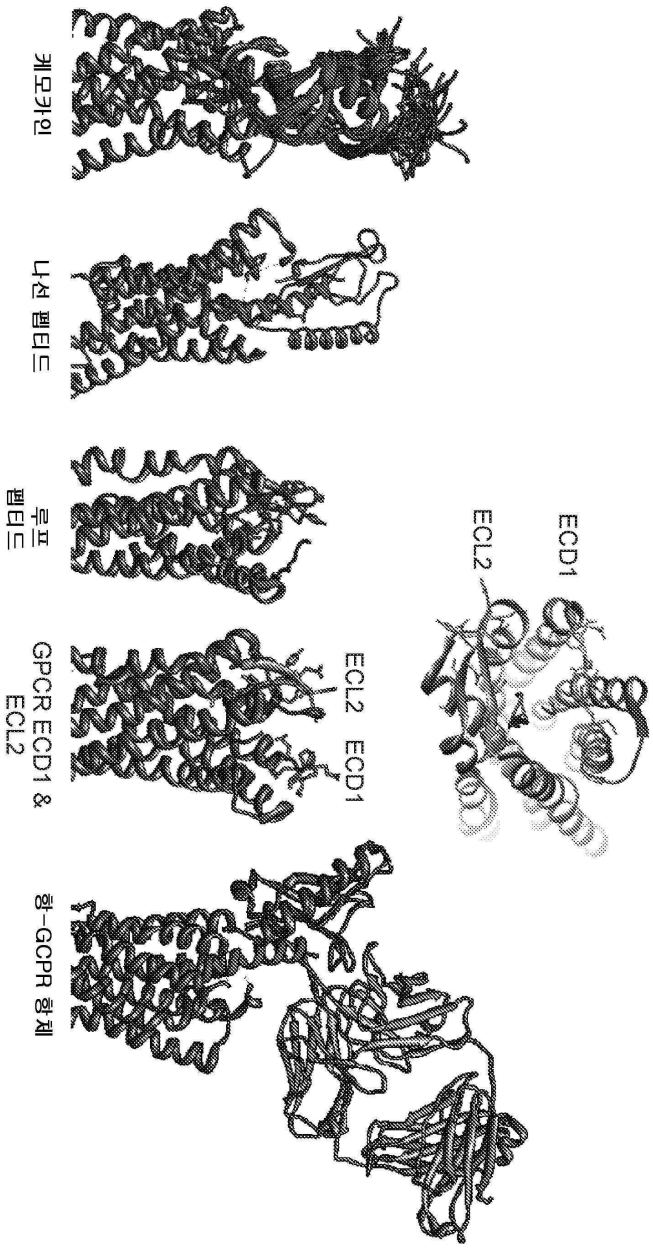
[0296]

[0297] 본 개시내용의 바람직한 실시양태가 본원에서 제시되고 설명되어 있지만, 이러한 실시양태는 단지 예로서 제공된다는 것이 관련 기술 분야의 통상의 기술자에게 자명할 것이다. 본 개시내용을 벗어나지 않으면서 다수의 변경, 변화 및 치환이 관련 기술 분야의 통상의 기술자에게 인식될 것이다. 본원에서 설명되는 개시내용의 실시양

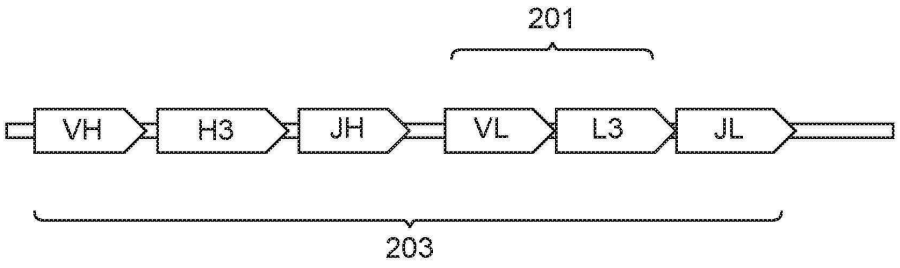
태에 대한 다양한 대안이 본 개시내용을 실시할 때 사용될 수 있다는 것을 이해하여야 한다. 하기 청구범위가 본 개시내용의 범위를 정의하고, 이들 청구범위 내의 방법 및 구조 및 이들의 균등물은 이에 의해 커버되는 것으로 의도된다.

도면

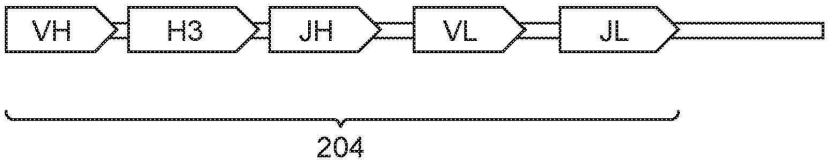
도면1



도면2a



도면2b



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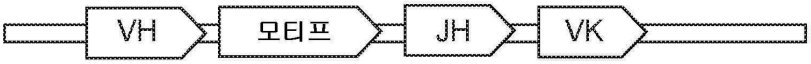
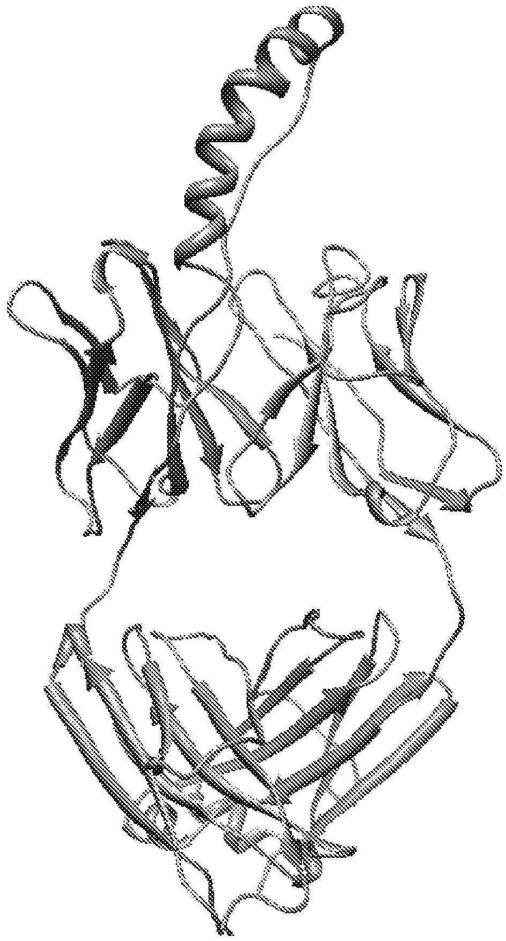
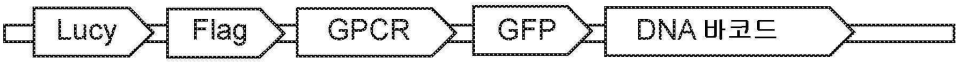
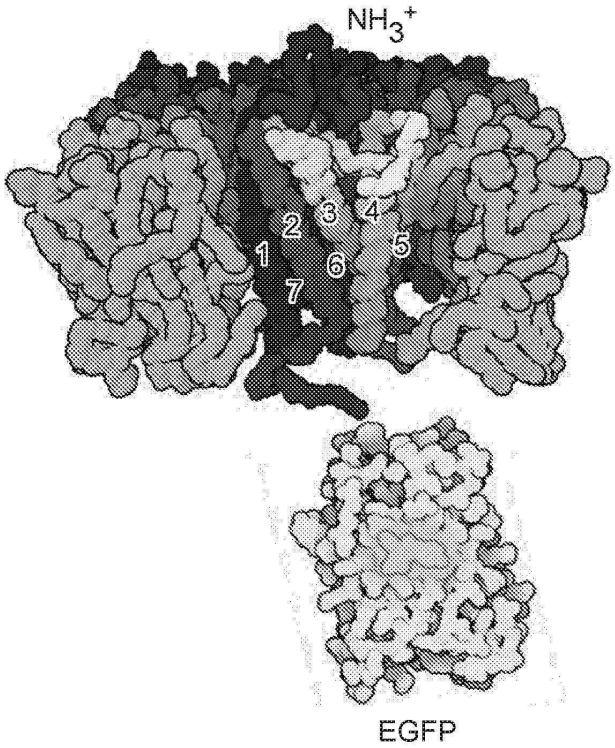




도면4





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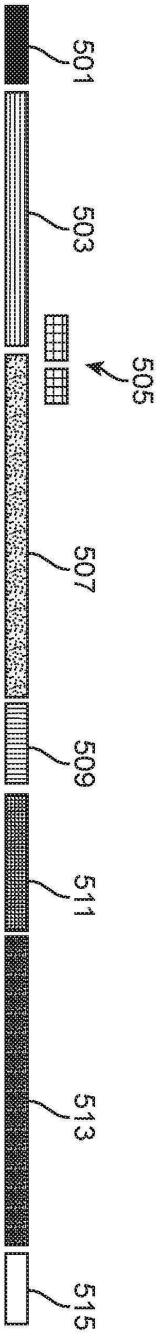

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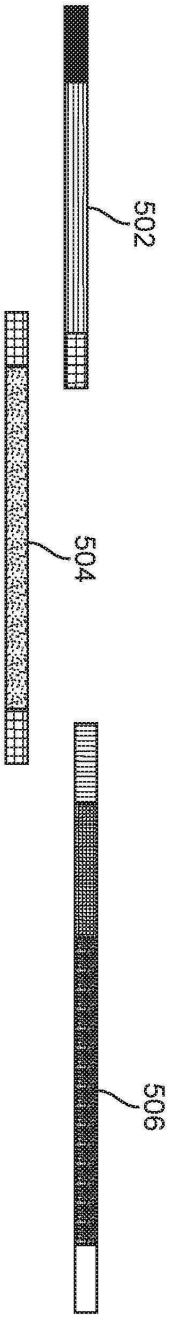
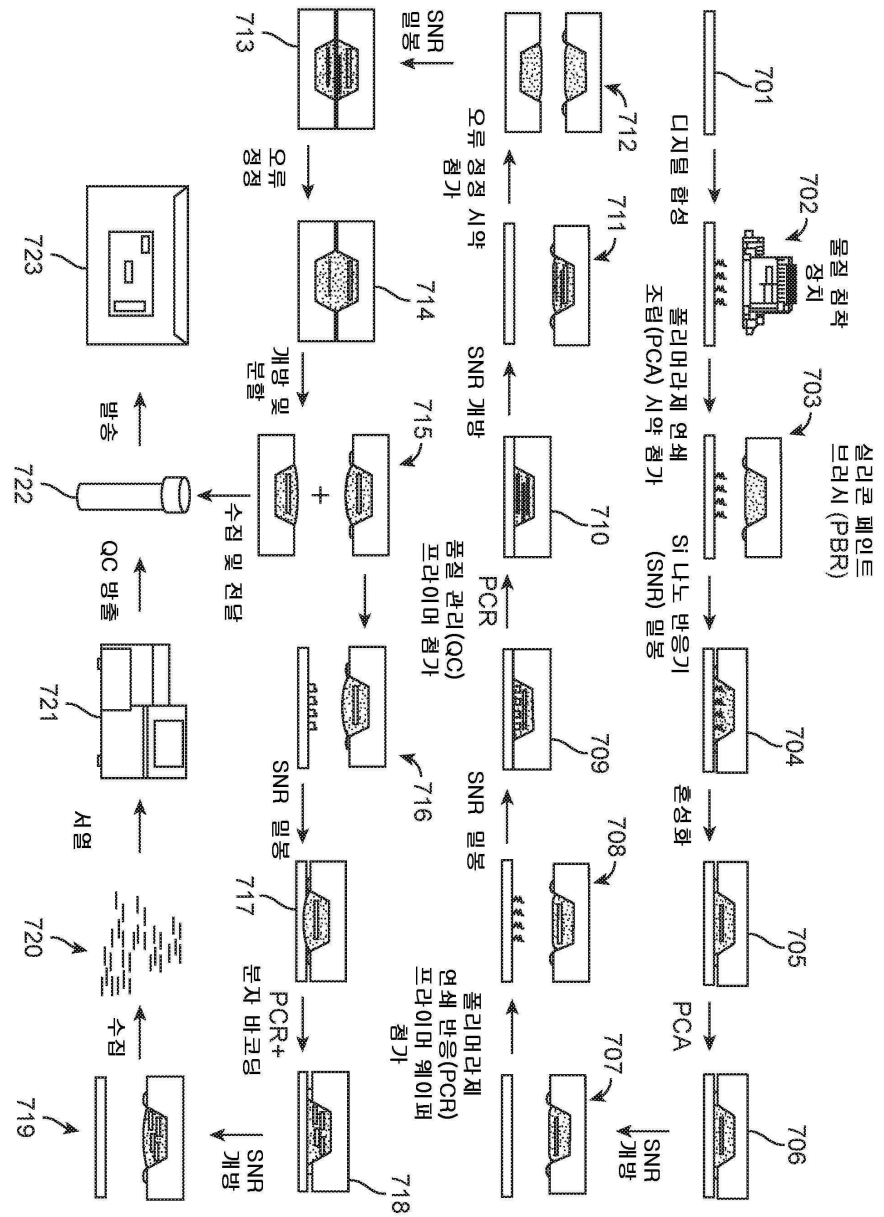


도면7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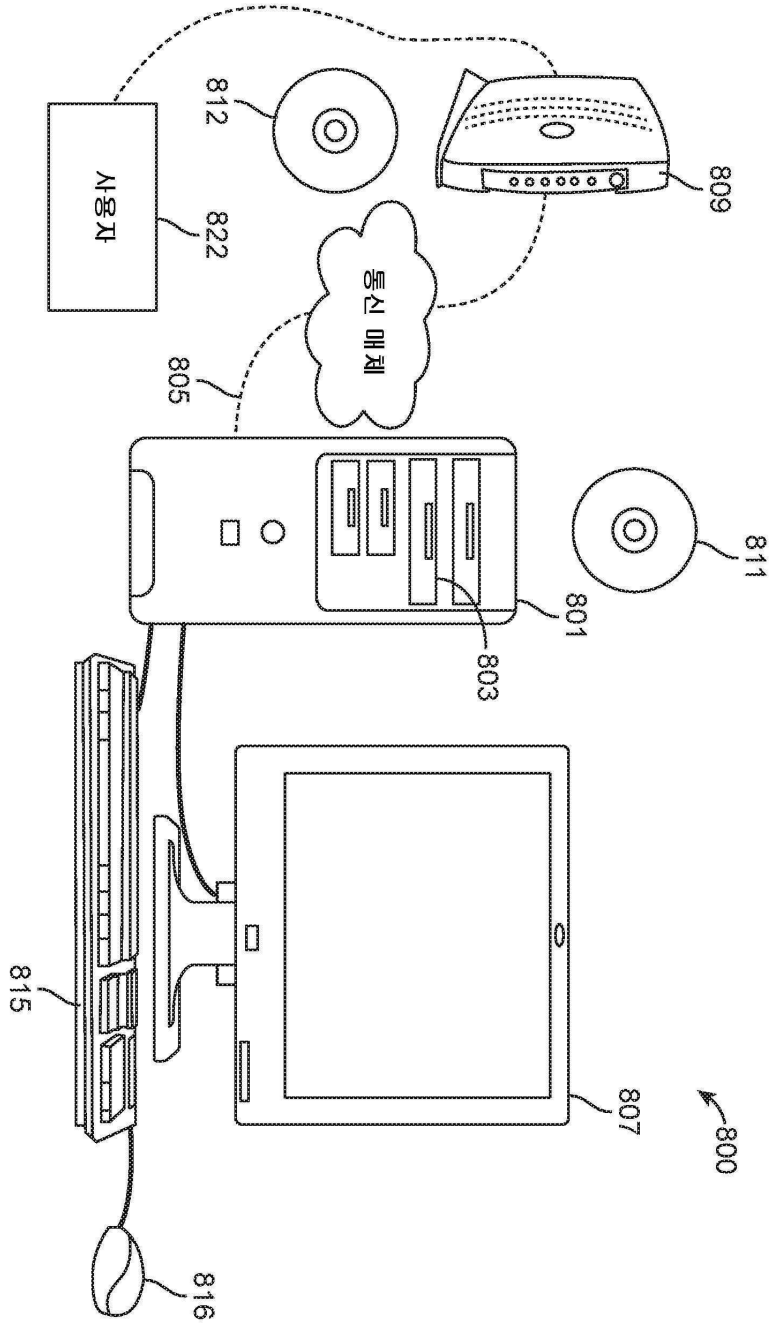
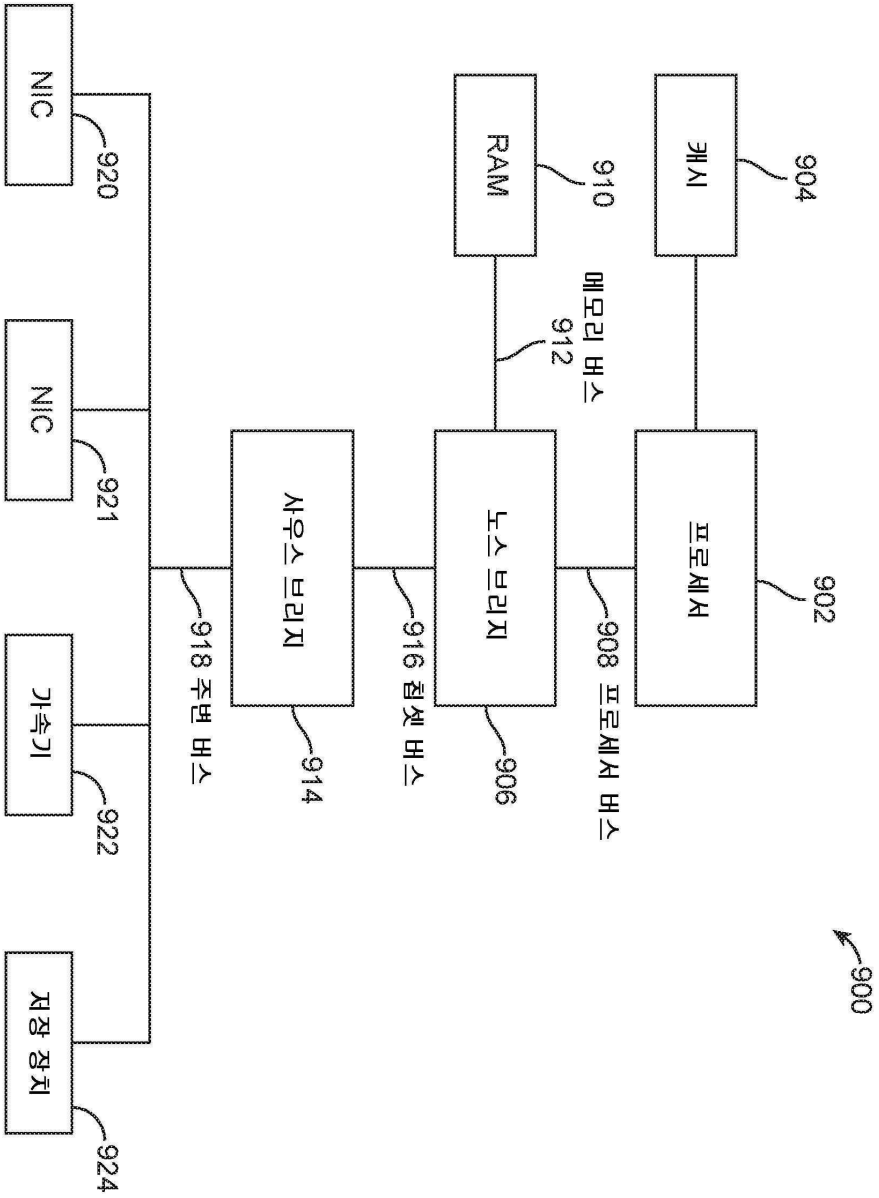
디지털 합성
702
물질 침착 정지
703
실리콘 페인트 브러시 (PBR)
폴리머라제 연쇄 조립(PCA) 시약 첨가
Si 나노 반응기 (SNR) 밀봉
704
혼성화
705
PCA
706
707
SNR 개방
708
폴리머라제 연쇄 반응(PCR) 프라이머 웨이퍼 첨가
709
SNR 밀봉
710
PCR
711
712
오류 정정 시약 첨가
SNR 개방
713
SNR 밀봉
714
개방 및 분할
715
품질 관리(QC) 프라이머 첨가
716
SNR 밀봉
717
PCR+ 분자 바코딩
718
SNR 개방
719
수집
720
서열
721
QC 방출
722
발송
723
오류 정정
수집 및 전달

도면8



도면9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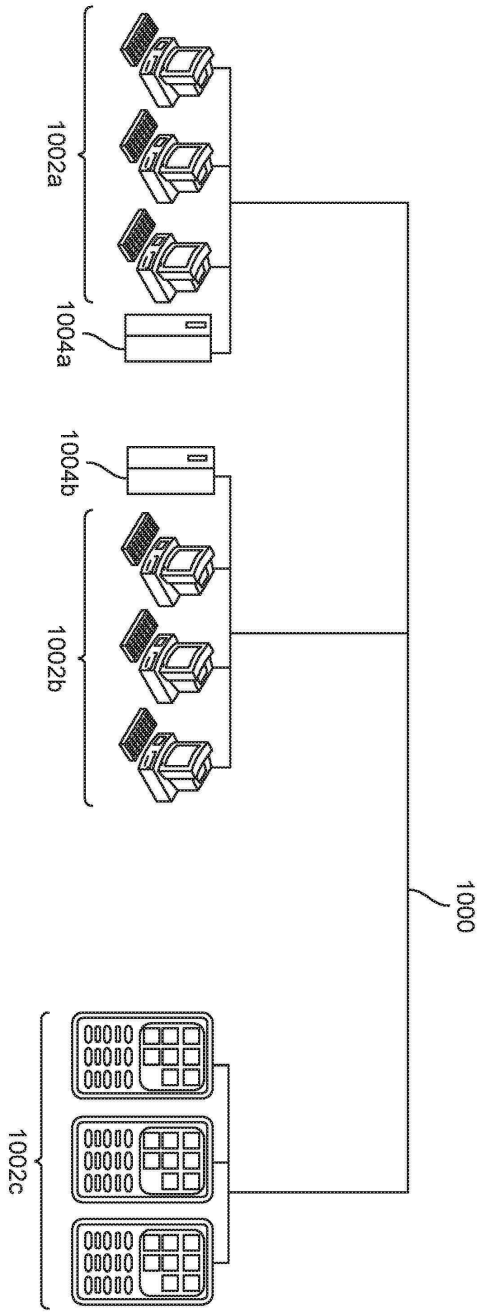
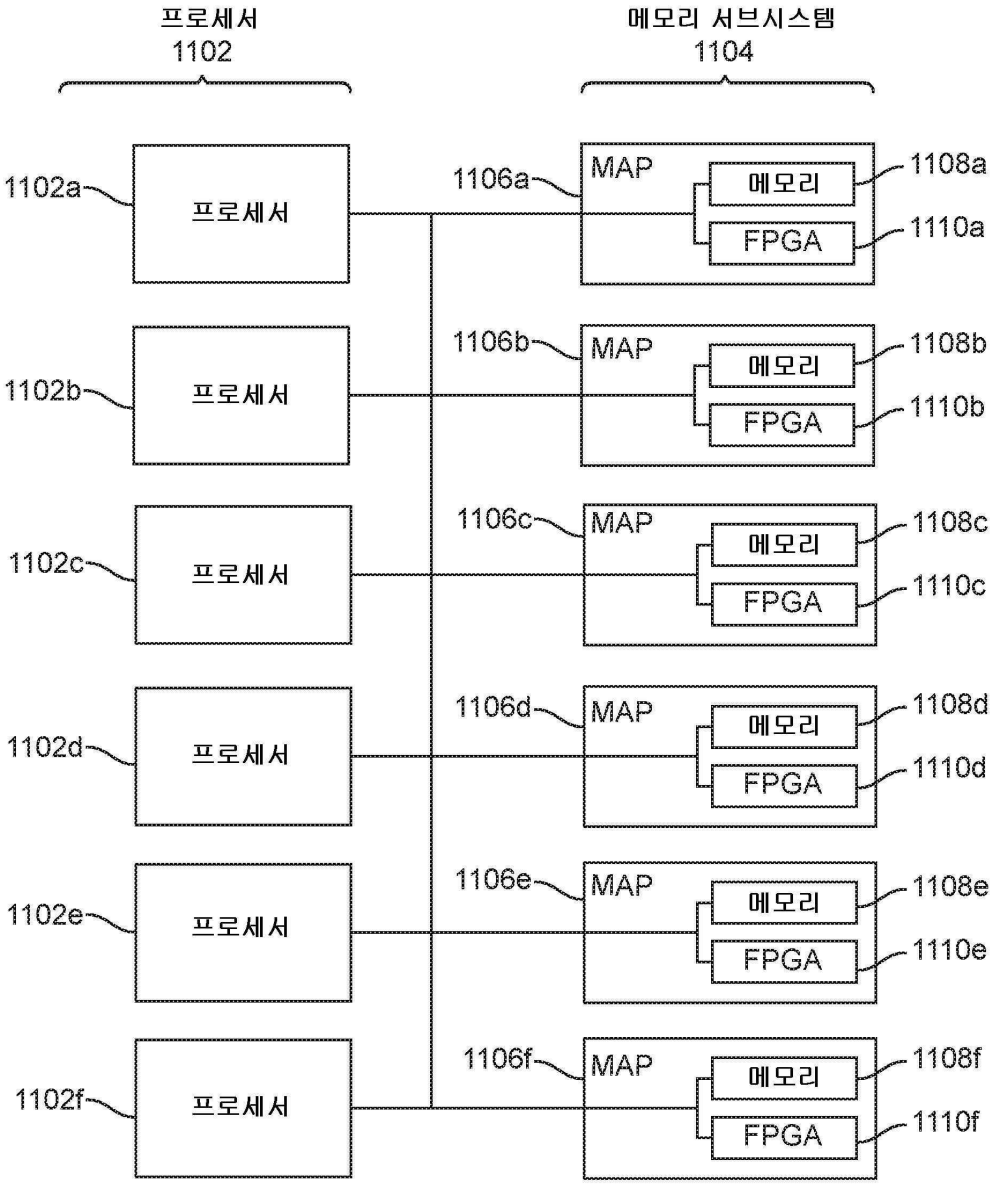
프로세서
902
908 프로세서 버스
노스 브리지
906
916 칩셋 버스
사우스 브리지
914
918 주변 버스
캐시
904
RAM
910
메모리 버스
912
NIC
920
NIC
921
가속기
922
저장 장치
924

도면10



도면11


프로세서
1102
메모리 서브시스템
1104
1102a
프로세서
1102b
프로세서
1102c
프로세서
1102d
프로세서
1102e
프로세서
1102f
프로세서
1106a
MAP
메모리
FPGA
1108a
1110a
1106b
MAP
메모리
FPGA
1108b
1110b
1106c
MAP
메모리
FPGA
1108c
1110c
1106d
MAP
메모리
FPGA
1108d
1110d
1106e
MAP
메모리
FPGA
1108e
1110e
1106f
MAP
메모리
FPGA
1108f
1110f

도면12a

도면12b

```
   7 IGHV3-30/33rn;IGLV2-14
IGHV3-30/33rn;CAKDLGYQDYGMSGYNYFYGMDVW;                                                
```

도면12c

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5 IGHV4-59/61;IGKV1-39
IGHV4-59/61;CARDNLLDIVVVPAAMFDAWYYYHGMDVW;  CQQSYNTPSLTF;GSINSGSYYWN;GRIYTSGDTNYN;RASSINNYLN;RASSLQS;IGKV1-39
IGHV4-59/61;CARDSLITDIVVVPADQRVYYYYGMDVW;   CQQSVSTPRAF;  GSISSYYWS;GYIYYSGSTNYN;RASQSISSYLN;AASSLQS;IGKV1-39
IGHV4-59/61;CARGAKERVVMVRGVIKSDYGLDVW;      CQQSHSIPRTF;  ASIRTYFWS;GYIYYGGKTDYN;RASQSVSNYLN;AALSLQS;IGKV1-39
IGHV4-59/61;CARIHYTSGSYLSWAGESIIDYYHGMDVW;  CQQSSVLPLTF;  GSVTSDSYYWS;GHIYVSGNTNYN;RASSISDYLH;GAYRLQS;IGKV1-39
IGHV4-59/61;CARSWGKLAGELITPYSTSAIGHFDFW;    CQQNFSLVTF;  GSVSSGNYFWS;GYIHHTGTTKFN;RSSQKISESLN;GTSNLQR;IGKV1-39

5 IGHV4-39;IGKV3-20
IGHV4-39;CARHNILFWASVTGTVAGTGLIDFW;         CQQYGSSPLTF;  GSISSNNYFWG;GTIYYTGRTYYN;RASQSVSGSYLA;GASSRAT;IGKV3-20
IGHV4-39;CARVGYQNSANQPVGVWFGQFYGLDVW;       CQQYGTSWTF;   GSITDNSYYWG;GRINNHGRTYYS;RASQSVNSNSLA;GASNRAT;IGKV3-20
IGHV4-39;CEKHASAYYDFWSGSYNNNYYGMDVW;        CQQYGSSPLYSF; GSISSNYYWG;GCIYYSGTTYYN;RASQSISSNLA;GASSRAT;IGKV3-20
IGHV4-39;CVRIPVGNYDFFSGAQRGQYYFDFW;         CQQYSDSPPTF;  GSVSSRGYQWG;GTVYYSGNTYYT;RASQRISSSYLA;GASSRAT;IGKV3-20
IGHV4-39;CVRSKAGVILGPSSGYQNVIPGYFDYW;       CQHYGTSSRDTF; GSISSPNFHWG;GSVHYNGNTHYN;RASQRVTSRYLA;GASTRAT;IGKV3-20

5 IGHV3-23;IGKV3-11
IGHV3-23;CAKEGFVLFLSGGTTLLRGPISAYYDYGMDVW;CQQRRSF     ;ITTFNSYAMG;SSISSPSDSTYYA;RASQSVGSDLA;DASSRAT;IGKV3-11
IGHV3-23;CAKNLEKSKIVVPAANPPHAFDIW;          CQQRSNWPITF ;FTISSYAMS;SAISGSGGSTYYA;RASQSVSSYLA;DASNRAT;IGKV3-11
IGHV3-23;CAKSVSYYSHLSPTDPSNFWYSDLW;         CQQRTSWLF   ;FTFSGYAMS;SGISASGDKAIGA;RTSQTINNYLA;DAFNRAT;IGKV3-11
IGHV3-23;CARDILGKEMPKVKVYVGLWYFDLW;         CQHRNNWPPRYTF;FTFSNHAMY;SAIAGFSSSYYA;RASQSVGTFLA;DASSRAT;IGKV3-11
IGHV3-23;CVGWPQQNFDQSVWLGSYSLDVW;           CQQRDWPTF   ;ISFNTYVMT;AGVSGGATGTYYA;RASRNIDFHLA;DASNRAT;IGKV3-11

5 IGHV3-23;IGKV2-28
IGHV3-23;CAKRAGCSGGSCHREWGFTYYAMAVW;  CMQALQTPYTF  ;FMFGSYAMS;SVISGSGDGTYYA;RSSQSLLYNNEYNYLD;LSSTRAS;IGKV2-28
IGHV3-23;CAKGGDYPGYQSPSQYRHFVYYGLDVW; CMQALQIPRTF  ;FTFSSYAMS;SGISGGGSTYYA;RSSQSLLHSNGYNYLD;LGSNRAS;IGKV2-28
IGHV3-23;CAKGSGLMTLIRGATVNYGYGMDVW;   CMQALQIPPAF  ;FAFSSDPMS;SVISSSGSSTDYA;RSSQSLLHSNGTNYLD;LGFNRAS;IGKV2-28
IGHV3-23;CAKLGATRPNIAVIPVAVDMKKATVKVRGSEATDYW;CMQGLQTPYTF;FTLTSDAMS;SSISDSGDKTDYA;RSSQSLLHDLGYNYLD;LGSNRAS;IGKV2-28
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IGHV3-21;CARDLKSWYTTSGVRVVPNYDFAMDVW; CQHYDTSLGYTF  ;FTFNDFSMN;SSISSGSTFIYYA;RASFSVSSTYLA;GSSRRAT;IGKV3-20
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4 IGHV4-39;IGLV2-14
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IGHV4-39;CARRVFGYYDRSGHYRVVHDAFDIW;   CSSYTRSSTVVF ;GSISSSSFHWG;GNIFYTGSTYN;TGTSSDVGGYNYVS;DVSNRPS;IGLV2-14
IGHV4-39;CASGHSAYYDFWSGYLELNDAFDIW;   CSSTSASTHVIF;ASISTSSYYWG;GSVYYSGSTYN;TGTSSDIGGYKYVS;AVNNRPS;IGLV2-14
```

도면13

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4ocw_H_mol	CARDLRELECEEWTLYNYYDFGSRGPCVDPRGVAGSFDVW	40	VRC26
4od3_H_mol	CAKDLREDECEEWWSDYYOFGKKLPCRKSRGVAGVFDKW	39	VRC26
4ocs_H_mol	CAKDMREYECEYWTSDYYDFGRPQPCIDRRGVVGIFDMW	39	VRC26
4odl_H_mol	CAKDLREDECEEWWSDYYDFGKQLPCRKSRGVAGIFDGW	39	VRC26
4odh_H_mol	CAKDLGESENEEWATDYYDFSIGYPGQDPRGVVGAFDIW	39	VRC26
3uls_H_mol	CLTGSKHRLRDYFLYNEYGPNYEEWGDYLATLDVW	35	VRC26
3mug_H_mol	CAREAGGPIWHDDVKYYDFNDGYYNYHYMDVW	32	PG16
3lrs_E_mol	CAREAGGPIWHDDVKYYDFNDGYYNYHYMDVW	32	PG16
3mme_C_mol	CAREAGGPIWHDDVKYYDFNDGYYNYHYMDVW	32	PG16
3u36_H_mol	CVREAGGPDYRNGYNYYDFYDGYYNYHYMDVW	32	PG16
3u36_C_mol	CVREAGGPDYRNGYNYYDFYDGYYNYHYMDVW	32	PG16
3mme_A_mol	CAREAGGPIWHDDVKYYDFNDGYYNYHYMDVW	32	PG16
3lrs_C_mol	CAREAGGPIWHDDVKYYDFNDGYYNYHYMDVW	32	PG16
3mug_J_mol	CAREAGGPIWHDDVKYYDFNDGYYNYHYMDVW	32	PG16
3mug_D_mol	CAREAGGPIWHDDVKYYDFNDGYYNYHYMDVW	32	PG16
3mug_B_mol	CAREAGGPIWHDDVKYYDFNDGYYNYHYMDVW	32	PG16
3u4e_A_mol	CVREAGGPDYRNGYNYYDFYDGYYNYHYMDVW	32	PG16
3u2s_H_mol	CVREAGGPDYRNGYNYYDFYDGYYNYHYMDVW	32	PG16
3u4e_H_mol	CVREAGGPDYRNGYNYYDFYDGYYNYHYMDVW	32	PG16
3lrs_H_mol	CAREAGGPIWHDDVKYYDFNDGYYNYHYMDVW	32	PG16
3mme_H_mol	CAREAGGPIWHDDVKYYDFNDGYYNYHYMDVW	32	PG16
3mug_F_mol	CAREAGGPIWHDDVKYYDFNDGYYNYHYMDVW	32	PG16
3u2s_A_mol	CVREAGGPDYRNGYNYYDFYDGYYNYHYMDVW	32	PG16
3lrs_A_mol	CAREAGGPIWHDDVKYYDFNDGYYNYHYMDVW	32	PG16
3u36_A_mol	CVREAGGPDYRNGYNYYDFYDGYYNYHYMDVW	32	PG16
3u36_E_mol	CVREAGGPDYRNGYNYYDFYDGYYNYHYMDVW	32	PG16
3mug_L_mol	CAREAGGPIWHDDVKYYDFNDGYYNYHYMDVW	32	PG16
4dqo_H_mol	CAREAGGPIWHDDVKYYDFNDGYYNYHYMDVW	32	PG16
4nuj_B_mol	CARMFQESGPPRFDSWSGRNYYYYSGMDVW	30	PGT152
4nug_H_mol	CARMFQESGPPRLDRWSGRNYYYYSGMDVW	30	PGT152
3q6g_l_mol	CARDVVITSHEDDFGDYYTGEYYGLDSW	29	rmAb
3q6g_H_mol	CARDVVITSHEDDFGDYYTGEYYGLDSW	29	rmAb
1rzf_H_mol	CASNSIAGVAAAGDYADYDGGYYYDMDVW	29	loop-d-loop
1jto_A_mol	CAADSTIYASYYECGBGLSTGGYGYDSW	28	
4fqr_c_mol	CAKHMSMQQVVSAGWERADLVGDAFDVW	28	
4fqr_m_mol	CAKHMSMQQVVSAGWERADLVGDAFDVW	28	
4fqr_i_mol	CAKHMSMQQVVSAGWERADLVGDAFDVW	28	
4fqr_k_mol	CAKHMSMQQVVSAGWERADLVGDAFDVW	28	
4fqr_u_mol	CAKHMSMQQVVSAGWERADLVGDAFDVW	28	
4fnl_l_mol	CAKHMSMQQVVSAGWERADLVGDAFDVW	28	
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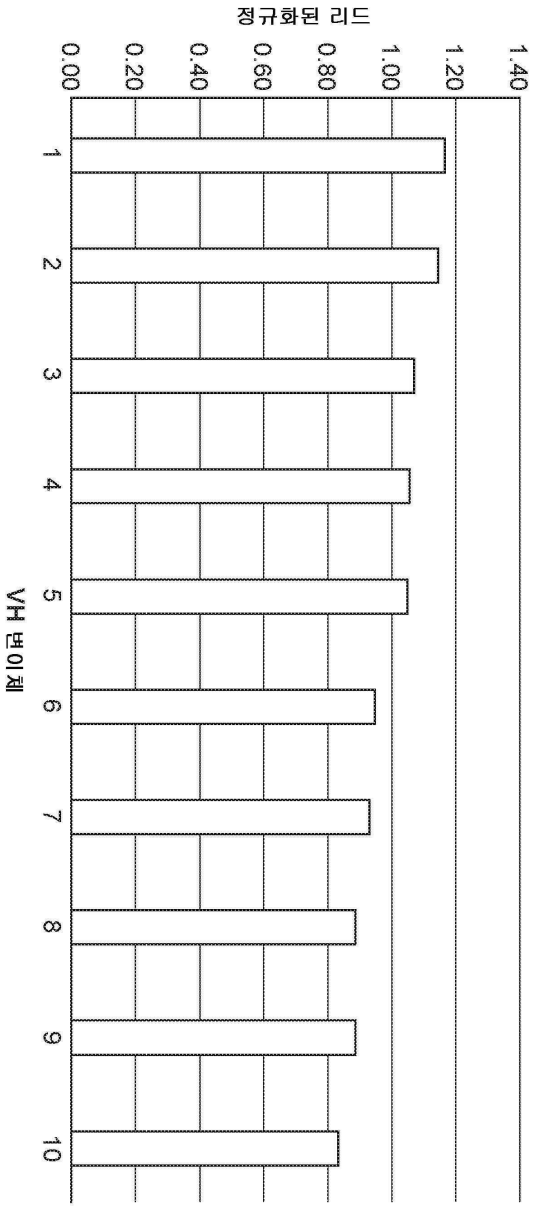
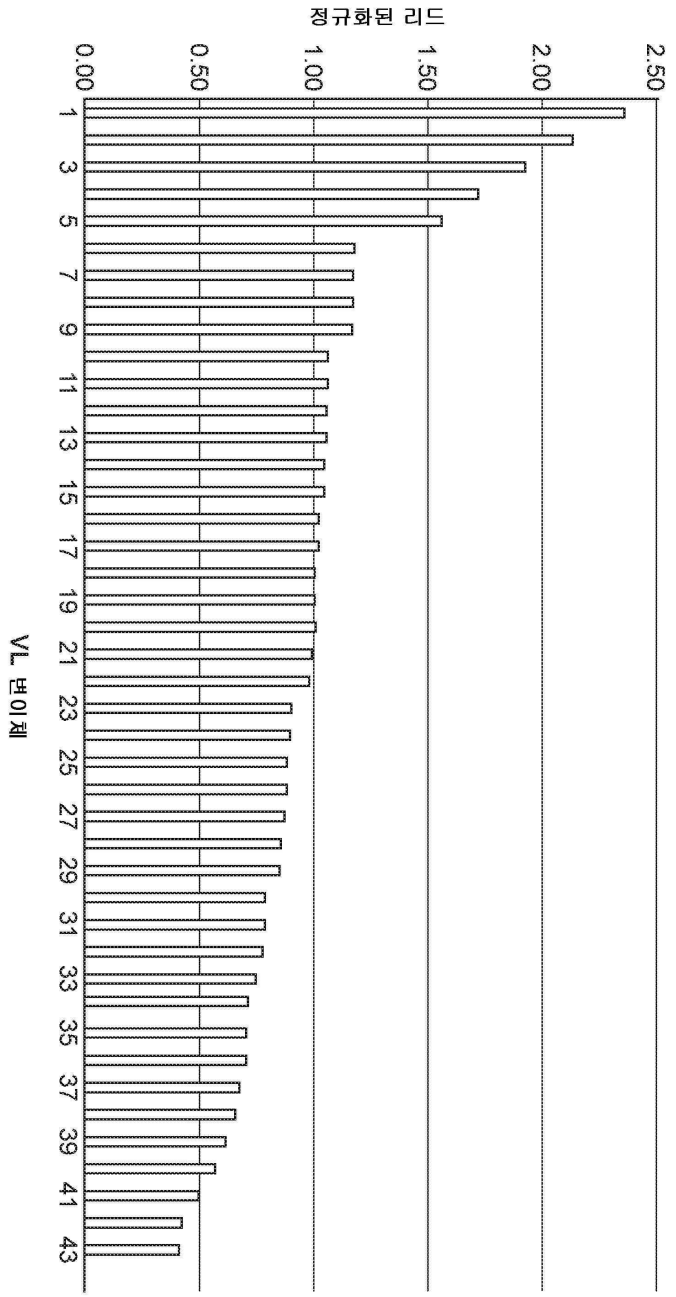
도면14



도면15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1.00
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1
3
5
7
9
11
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33
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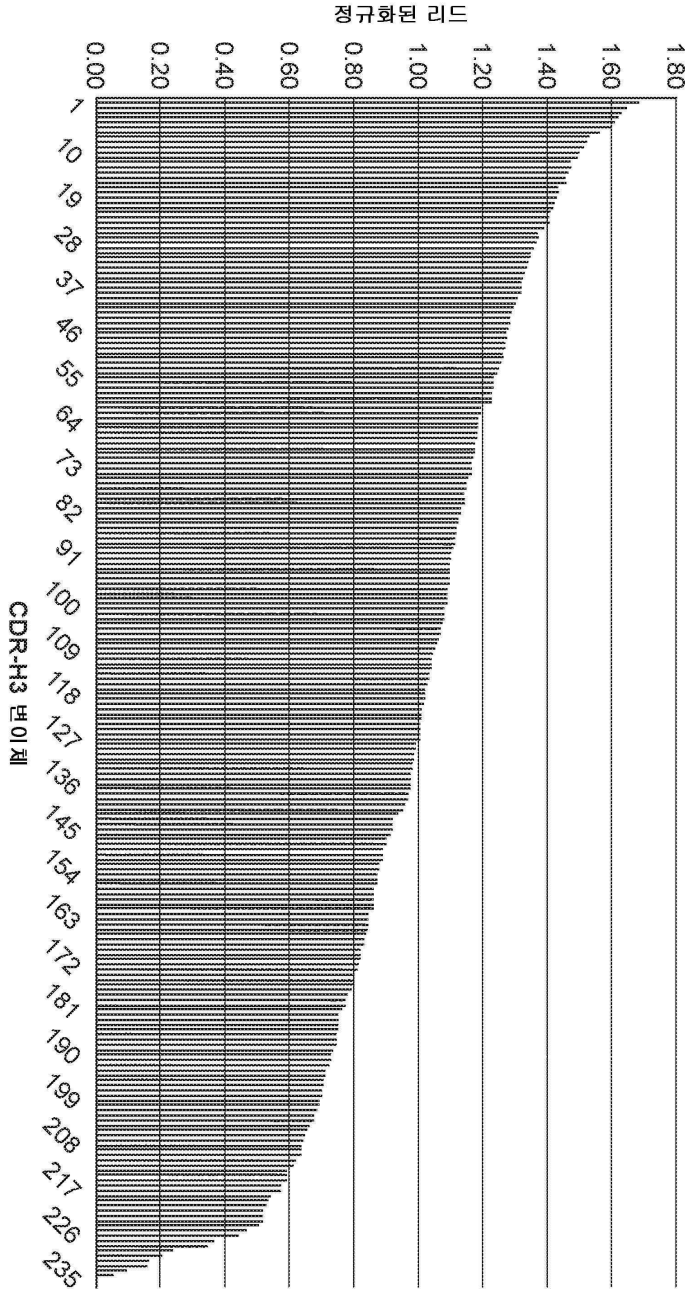
41
43

도면16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1.60
1.80
CDR-H3 변이체
1
10
19
28
37
46
55
64
73
82
91
100
109
118
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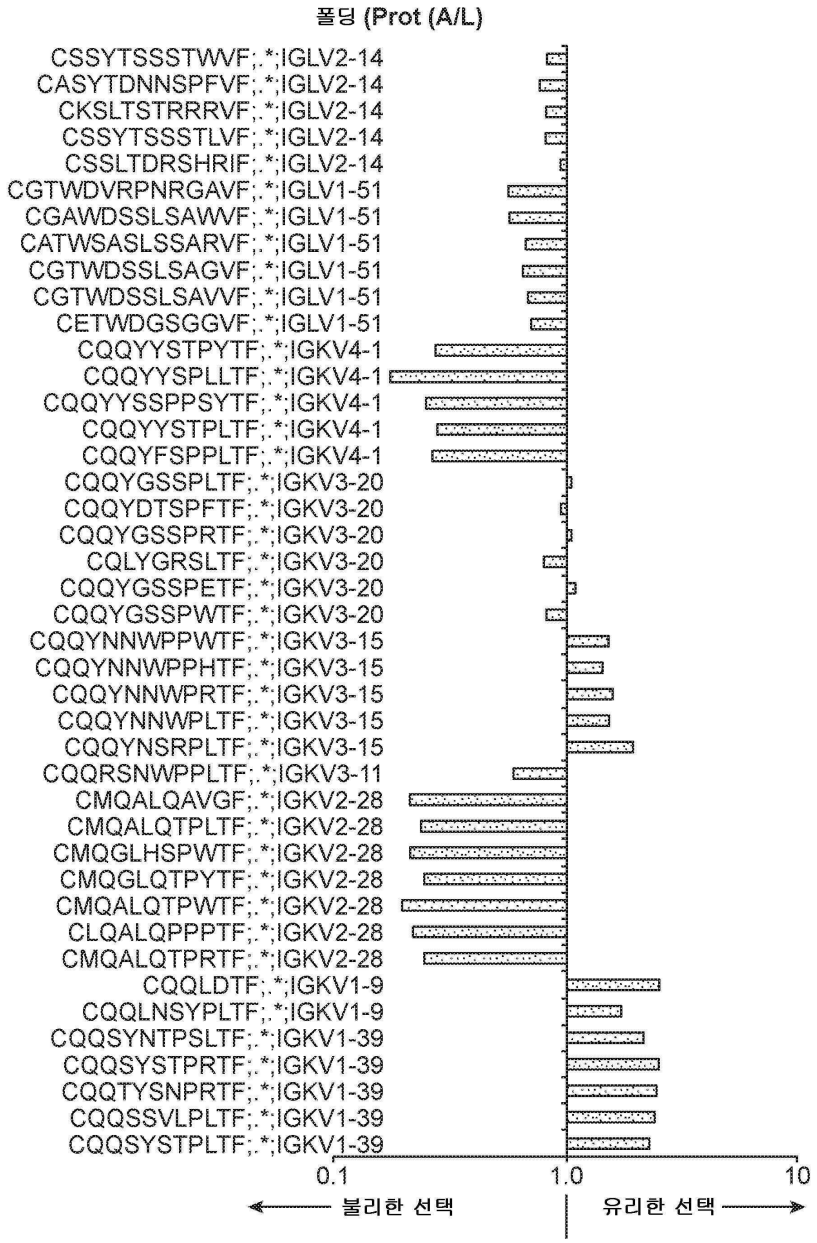
도면17a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CSSLTDRSHRIF;.*;IGLV2-14
CGTWDVRPNRGAVF;.*;IGLV1-51
CGAWDSSLSAWVF;.*;IGLV1-51
CATWSASLSSARVF;.*;IGLV1-51
CGTWDSSLSAGVF;.*;IGLV1-51
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CETWDGSGGVF;.*;IGLV1-51
CQQYYSTPYTF;.*;IGKV4-1
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불리한 선택
유리한 선택

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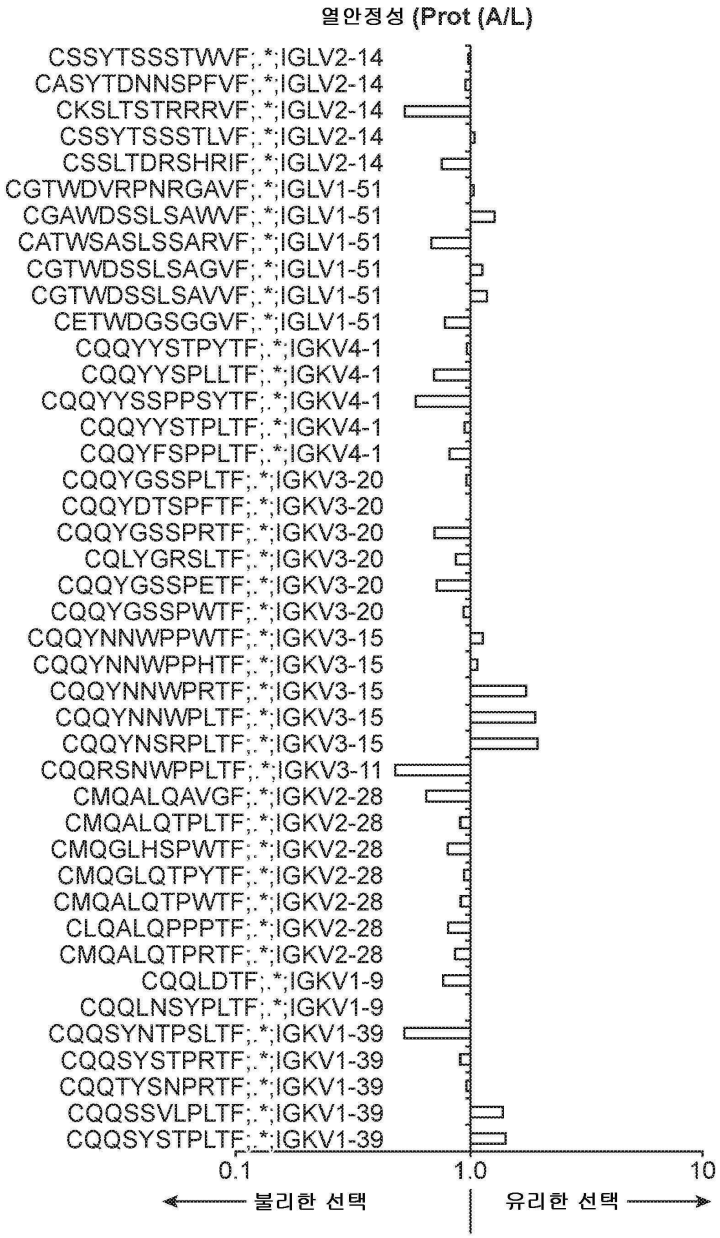
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불리한 선택
유리한 선택

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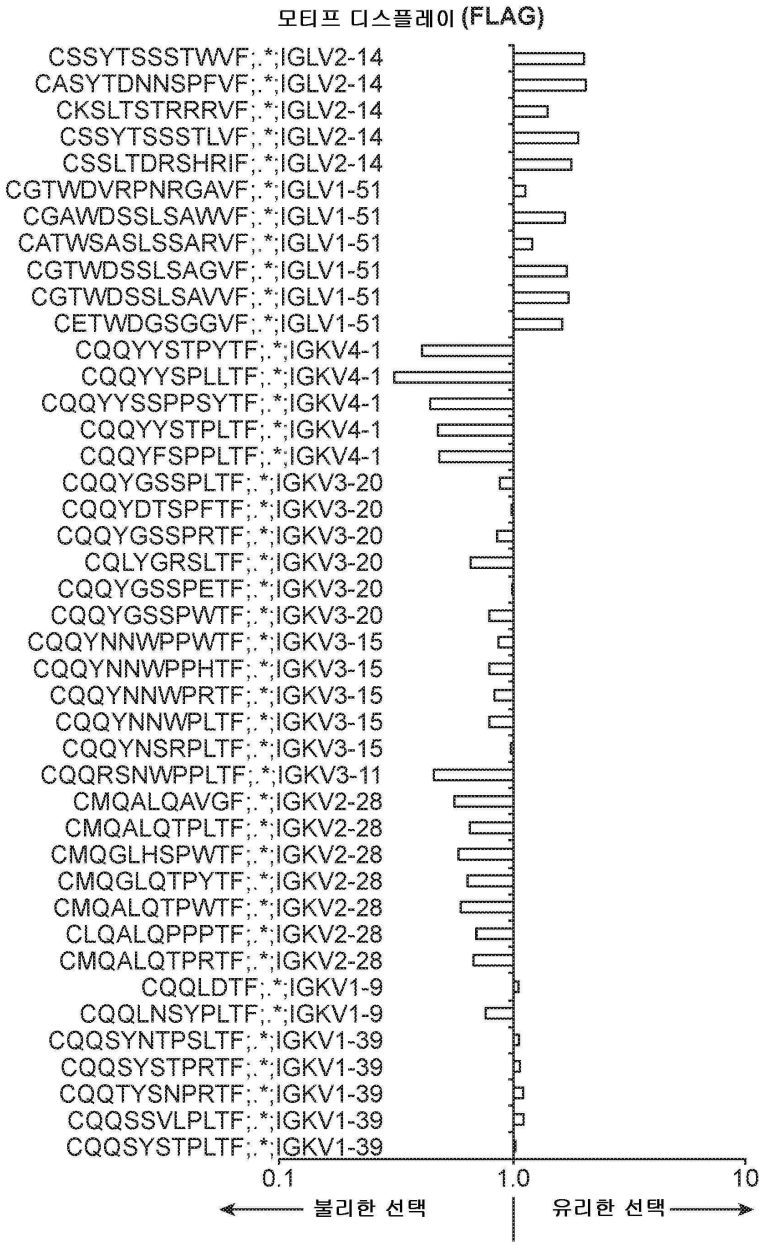
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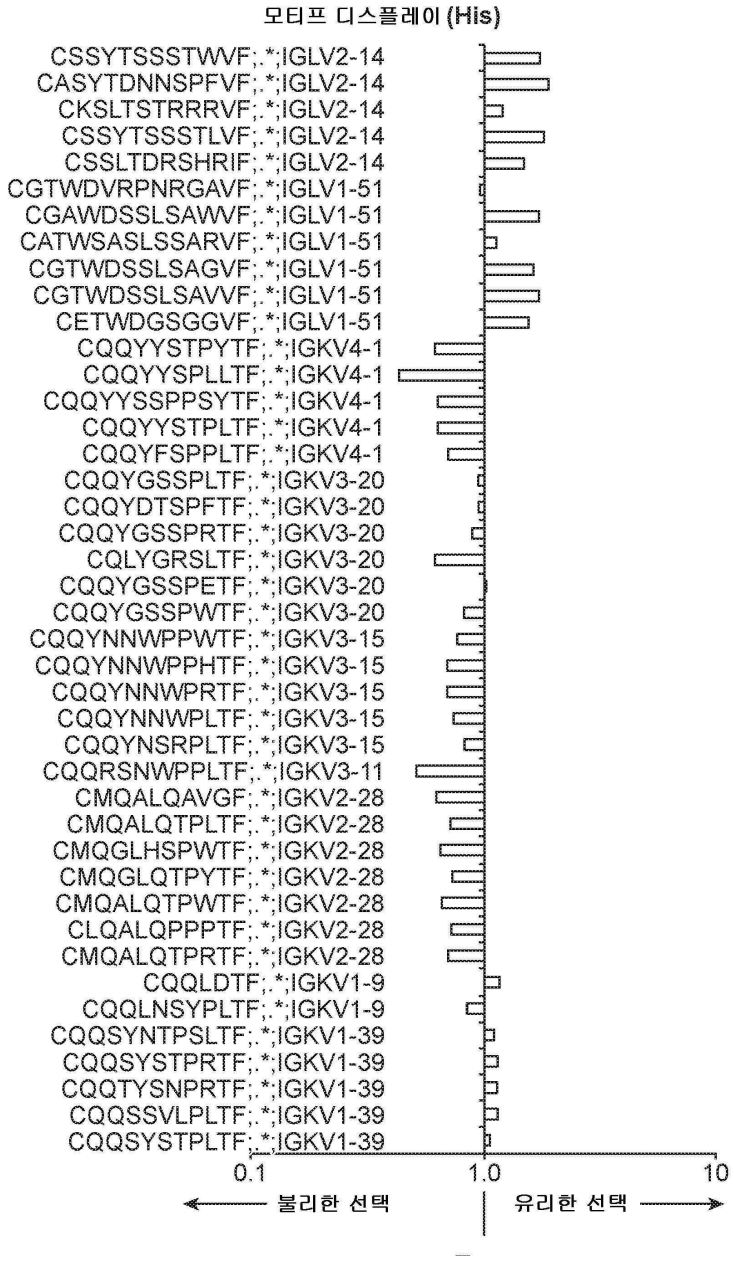
불리한 선택
유리한 선택

도면17d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유리한 선택

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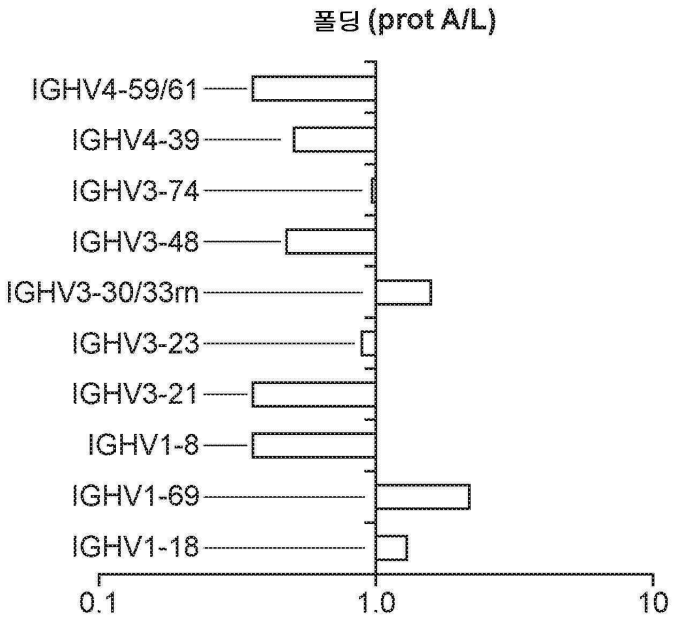
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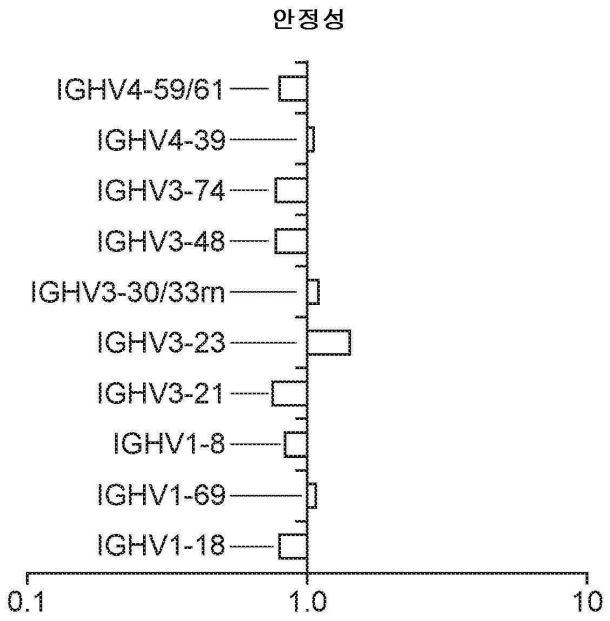
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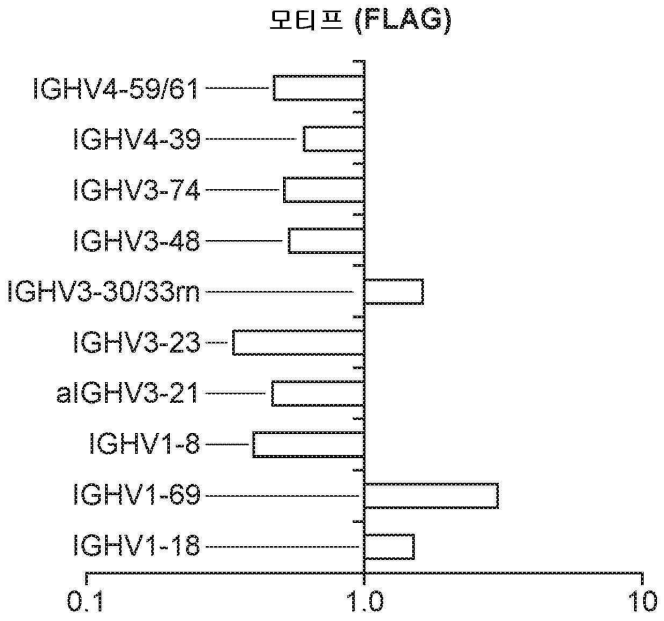
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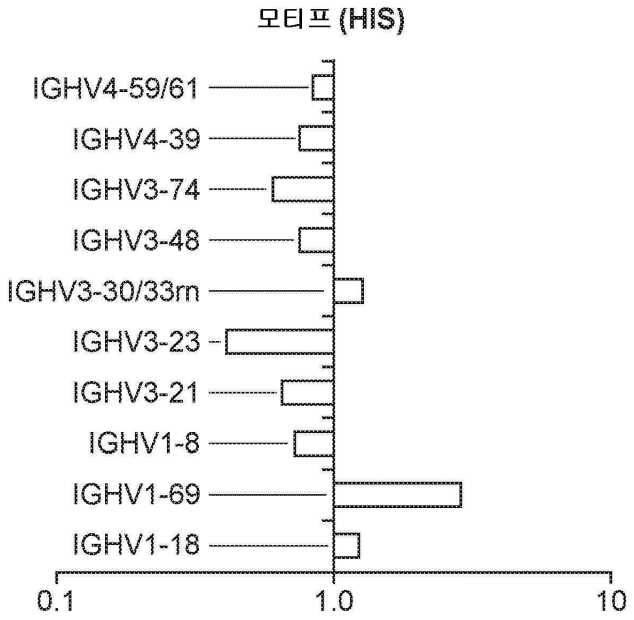
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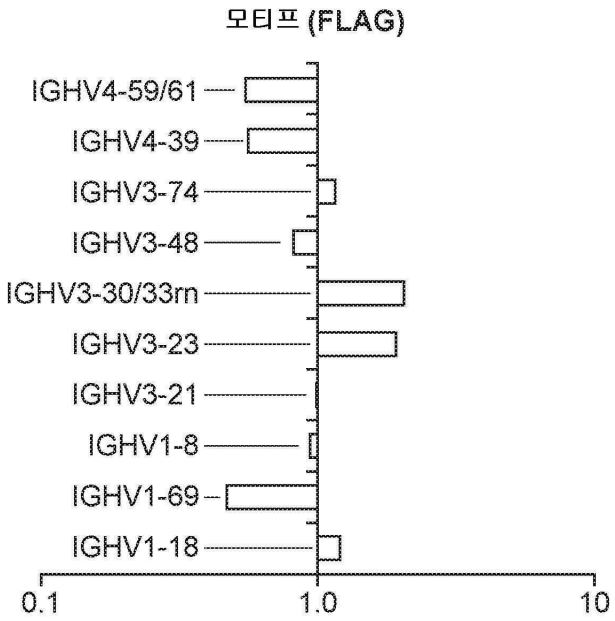
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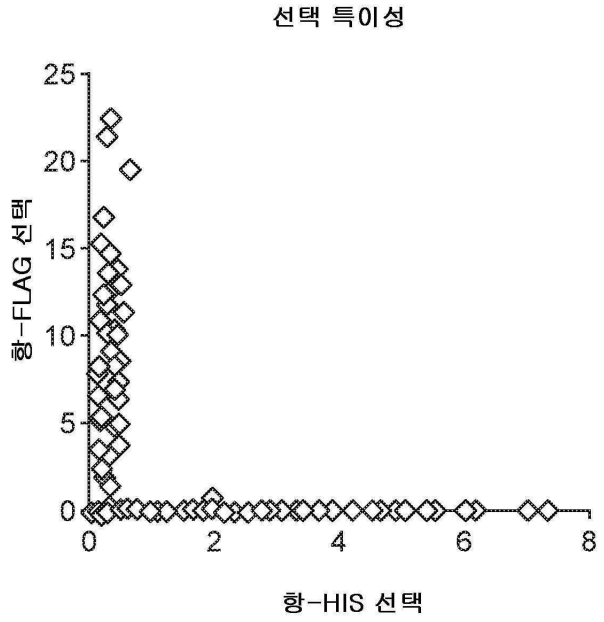
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항-HIS 선택

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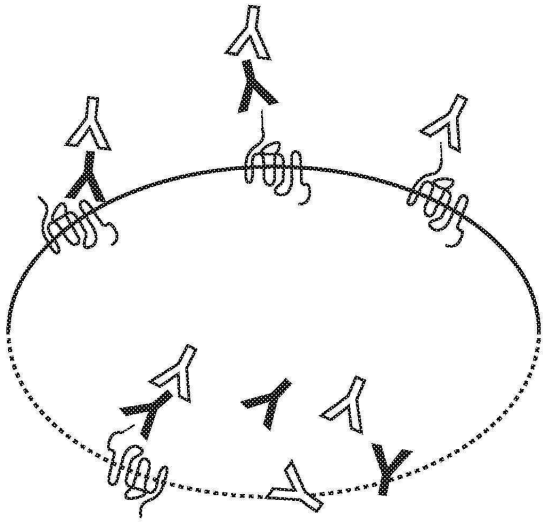

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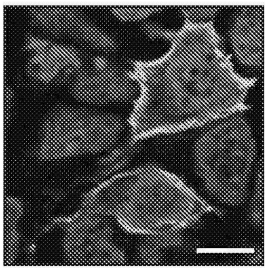

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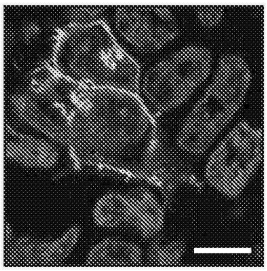

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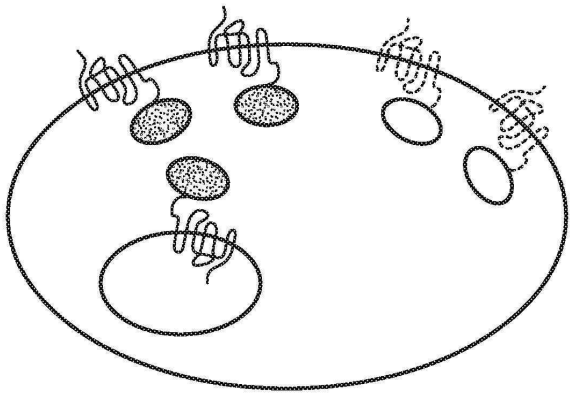

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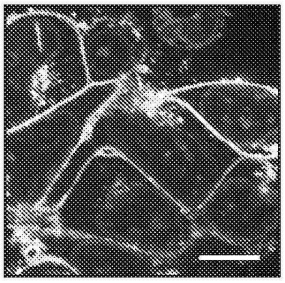

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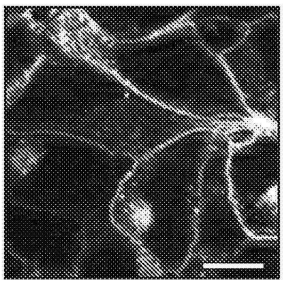
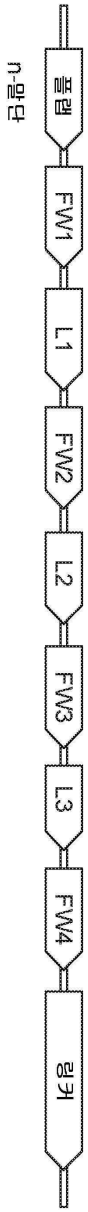


도면21a

도면21b

도면21c



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Gly Ala Pro Met Leu Phe Val Val Pro Trp Ala Val Val Lys Cys Leu

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Trp Ile Leu Arg Phe Pro Val Phe Leu Ala Ile Leu Ile Asn Phe Phe

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Gly Asp Ile Ile Ile Gly Ala Leu Phe Ser Val His His Gln Pro Thr
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Val Asp Lys Val His Glu Arg Lys Cys Gly Ala Val Arg Glu Gln Tyr
50 55 60
Gly Ile Gln Arg Val Glu Ala Met Leu His Thr Leu Glu Arg Ile Asn
65 70 75 80
Ser Asp Pro Thr Leu Leu Pro Asn Ile Thr Leu Gly Cys Glu Ile Arg
85 90 95

Asp Ser Cys Trp His Ser Ala Val Ala Leu Glu Gln Ser Ile Glu Phe
100 105 110
Ile Arg Asp Ser Leu Ile Ser Ser Glu Glu Glu Glu Gly Leu Val Arg
115 120 125
Cys Val Asp Gly Ser Ser Ser Ser Phe Arg Ser Lys Lys Pro Ile Val

130 135 140

Gly Val Ile Gly Pro Gly Ser Ser Ser Val Ala Ile Gln Val Gln Asn
145 150 155 160

Leu Leu Gln Leu Phe Asn Ile Pro Gln Ile Ala Tyr Ser Ala Thr Ser
165 170 175

Met Asp Leu Ser Asp Lys Thr Leu Phe Lys Tyr Phe Met Arg Val Val
180 185 190

Pro Ser Asp Ala Gln Gln Ala Arg Ala Met Val Asp Ile Val Lys Arg
195 200 205

Tyr Asn Trp Thr Tyr Val Ser Ala Val His Thr Glu Gly Asn Tyr Gly
210 215 220

Glu Ser Gly Met Glu Ala Phe Lys Asp Met Ser Ala Lys Glu Gly Ile
225 230 235 240

Cys Ile Ala His Ser Tyr Lys Ile Tyr Ser Asn Ala Gly Glu Gln Ser
245 250 255

Phe Asp Lys Leu Leu Lys Lys Leu Thr Ser His Leu Pro Lys Ala Arg
260 265 270

Val Val Ala Cys Phe Cys Glu Gly Met Thr Val Arg Gly Leu Leu Met
275 280 285

Ala Met Arg Arg Leu Gly Leu Ala Gly Glu Phe Leu Leu Leu Gly Ser
290 295 300

Asp Gly Trp Ala Asp Arg Tyr Asp Val Thr Asp Gly Tyr Gln Arg Glu
305 310 315 320

Ala Val Gly Gly Ile Thr Ile Lys Leu Gln Ser Pro Asp Val Lys Trp
325 330 335

Phe Asp Asp Tyr Tyr Leu Lys Leu Arg Pro Glu Thr Asn His Arg Asn
340 345 350

Pro Trp Phe Gln Glu Phe Trp Gln His Arg Phe Gln Cys Arg Leu Glu
355 360 365

Gly Phe Pro Gln Glu Asn Ser Lys Tyr Asn Lys Thr Cys Asn Ser Ser
370 375 380

Leu Thr Leu Lys Thr His His Val Gln Asp Ser Lys Met Gly Phe Val
385 390 395 400
Ile Asn Ala Ile Tyr Ser Met Ala Tyr Gly Leu His Asn Met Gln Met
405 410 415

Ser Leu Cys Pro Gly Tyr Ala Gly Leu Cys Asp Ala Met Lys Pro Ile
420 425 430
Asp Gly Arg Lys Leu Leu Glu Ser Leu Met Lys Thr Asn Phe Thr Gly
435 440 445
Val Ser Gly Asp Thr Ile Leu Phe Asp Glu Asn Gly Asp Ser Pro Gly
450 455 460
Arg Tyr Glu Ile Met Asn Phe Lys Glu Met Gly Lys Asp Tyr Phe Asp
465 470 475 480

Tyr Ile Asn Val Gly Ser Trp Asp Asn Gly Glu Leu Lys Met Asp Asp
485 490 495
Asp Glu Val Trp Ser Lys Lys Ser Asn Ile Ile Arg Ser Val Cys Ser
500 505 510
Glu Pro Cys Glu Lys Gly Gln Ile Lys Val Ile Arg Lys Gly Glu Val
515 520 525
Ser Cys Cys Trp Thr Cys Thr Pro Cys Lys Glu Asn Glu Tyr Val Phe
530 535 540

Asp Glu Tyr Thr Cys Lys Ala Cys Gln Leu Gly Ser Trp Pro Thr Asp
545 550 555 560
Asp Leu Thr Gly Cys Asp Leu Ile Pro Val Gln Tyr Leu Arg Trp Gly
565 570 575
Asp Pro Glu Pro Ile Ala Ala Val Val Phe Ala Cys Leu Gly Leu Leu
580 585 590
Ala Thr Leu Phe Val Thr Val Val Phe Ile Ile Tyr Arg Asp Thr Pro
595 600 605

Val Val Lys Ser Ser Ser Arg Glu Leu Cys Tyr Ile Ile Leu Ala Gly
610 615 620
Ile Cys Leu Gly Tyr Leu Cys Thr Phe Cys Leu Ile Ala Lys Pro Lys

625 630 635 640

Gln Ile Tyr Cys Tyr Leu Gln Arg Ile Gly Ile Gly Leu Ser Pro Ala

645 650 655

Met Ser Tyr Ser Ala Leu Val Thr Lys Thr Asn Arg Ile Ala Arg Ile

660 665 670

Leu Ala Gly Ser Lys Lys Lys Ile Cys Thr Lys Lys Pro Arg Phe Met

675 680 685

Ser Ala Cys Ala Gln Leu Val Ile Ala Phe Ile Leu Ile Cys Ile Gln

690 695 700

Leu Gly Ile Ile Val Ala Leu Phe Ile Met Glu Pro Pro Asp Ile Met

705 710 715 720

His Asp Tyr Pro Ser Ile Arg Glu Val Tyr Leu Ile Cys Asn Thr Thr

725 730 735

Asn Leu Gly Val Val Thr Pro Leu Gly Tyr Asn Gly Leu Leu Ile Leu

740 745 750

Ser Cys Thr Phe Tyr Ala Phe Lys Thr Arg Asn Val Pro Ala Asn Phe

755 760 765

Asn Glu Ala Lys Tyr Ile Ala Phe Thr Met Tyr Thr Thr Cys Ile Ile

770 775 780

Trp Leu Ala Phe Val Pro Ile Tyr Phe Gly Ser Asn Tyr Lys Ile Ile

785 790 795 800

Thr Met Cys Phe Ser Val Ser Leu Ser Ala Thr Val Ala Leu Gly Cys

805 810 815

Met Phe Val Pro Lys Val Tyr Ile Ile Leu Ala Lys Pro Glu Arg Asn

820 825 830

Val Arg Ser Ala Phe Thr Thr Ser Thr Val Val Arg Met His Val Gly

835 840 845

Asp Gly Lys Ser Ser Ser Ala Ala Ser Arg Ser Ser Ser Leu Val Asn

850 855 860

Leu Trp Lys Arg Arg Gly Ser Ser Gly Glu Thr Leu Arg Tyr Lys Asp

865 870 875 880

Arg Arg Leu Ala Gln His Lys Ser Glu Ile Glu Cys Phe Thr Pro Lys
885 890 895

Gly Ser Met Gly Asn Gly Gly Arg Ala Thr Met Ser Ser Ser Asn Gly
900 905 910

Lys Ser Val Thr Trp Ala Gln Asn Glu Lys Ser Ser Arg Gly Gln His
915 920 925

Leu Trp Gln Arg Leu Ser Ile His Ile Asn Lys Lys Glu Asn Pro Asn
930 935 940

Gln Thr Ala Val Ile Lys Pro Phe Pro Lys Ser Thr Glu Ser Arg Gly
945 950 955 960

Leu Gly Ala Gly Ala Gly Ala Gly Gly Ser Ala Gly Gly Val Gly Ala
965 970 975

Thr Gly Gly Ala Gly Cys Ala Gly Ala Gly Pro Gly Gly Pro Glu Ser
980 985 990

Pro Asp Ala Gly Pro Lys Ala Leu Tyr Asp Val Ala Glu Ala Glu Glu
995 1000 1005

His Phe Pro Ala Pro Ala Arg Pro Arg Ser Pro Ser Pro Ile Ser
1010 1015 1020

Thr Leu Ser His Arg Ala Gly Ser Ala Ser Arg Thr Asp Asp Asp
1025 1030 1035

Val Pro Ser Leu His Ser Glu Pro Val Ala Arg Ser Ser Ser Ser
1040 1045 1050

Gln Gly Ser Leu Met Glu Gln Ile Ser Ser Val Val Thr Arg Phe
1055 1060 1065

Thr Ala Asn Ile Ser Glu Leu Asn Ser Met Met Leu Ser Thr Ala
1070 1075 1080

Ala Pro Ser Pro Gly Val Gly Ala Pro Leu Cys Ser Ser Tyr Leu
1085 1090 1095

Ile Pro Lys Glu Ile Gln Leu Pro Thr Thr Met Thr Thr Phe Ala
1100 1105 1110

Glu Ile Gln Pro Leu Pro Ala Ile Glu Val Thr Gly Gly Ala Gln

1115 1120 1125

Pro Ala Ala Gly Ala Gln Ala Ala Gly Asp Ala Ala Arg Glu Ser

1130 1135 1140

Pro Ala Ala Gly Pro Glu Ala Ala Ala Ala Lys Pro Asp Leu Glu

1145 1150 1155

Glu Leu Val Ala Leu Thr Pro Pro Ser Pro Phe Arg Asp Ser Val

1160 1165 1170

Asp Ser Gly Ser Thr Thr Pro Asn Ser Pro Val Ser Glu Ser Ala

1175 1180 1185

Leu Cys Ile Pro Ser Ser Pro Lys Tyr Asp Thr Leu Ile Ile Arg

1190 1195 1200

Asp Tyr Thr Gln Ser Ser Ser Ser Leu

1205 1210

<210> 5

<211> 440

<212> PRT

<213> Homo sapiens

<400> 5

Arg Pro Gln Gly Ala Thr Val Ser Leu Trp Glu Thr Val Gln Lys Trp

1 5 10 15

Arg Glu Tyr Arg Arg Gln Cys Gln Arg Ser Leu Thr Glu Asp Pro Pro

20 25 30

Pro Ala Thr Asp Leu Phe Cys Asn Arg Thr Phe Asp Glu Tyr Ala Cys

35 40 45

Trp Pro Asp Gly Glu Pro Gly Ser Phe Val Asn Val Ser Cys Pro Trp

50 55 60

Tyr Leu Pro Trp Ala Ser Ser Val Pro Gln Gly His Val Tyr Arg Phe

65 70 75 80

Cys Thr Ala Glu Gly Leu Trp Leu Gln Lys Asp Asn Ser Ser Leu Pro

85 90 95

Trp Arg Asp Leu Ser Glu Cys Glu Glu Ser Lys Arg Gly Glu Arg Ser

100 105 110

Ser Pro Glu Glu Gln Leu Leu Phe Leu Tyr Ile Ile Tyr Thr Val Gly
115 120 125

Tyr Ala Leu Ser Phe Ser Ala Leu Val Ile Ala Ser Ala Ile Leu Leu
130 135 140

Gly Phe Arg His Leu His Cys Thr Arg Asn Tyr Ile His Leu Asn Leu
145 150 155 160

Phe Ala Ser Phe Ile Leu Arg Ala Leu Ser Val Phe Ile Lys Asp Ala
165 170 175

Ala Leu Lys Trp Met Tyr Ser Thr Ala Ala Gln Gln His Gln Trp Asp
180 185 190

Gly Leu Leu Ser Tyr Gln Asp Ser Leu Ser Cys Arg Leu Val Phe Leu
195 200 205

Leu Met Gln Tyr Cys Val Ala Ala Asn Tyr Tyr Trp Leu Leu Val Glu
210 215 220

Gly Val Tyr Leu Tyr Thr Leu Leu Ala Phe Ser Val Leu Ser Glu Gln
225 230 235 240

Trp Ile Phe Arg Leu Tyr Val Ser Ile Gly Trp Gly Val Pro Leu Leu
245 250 255

Phe Val Val Pro Trp Gly Ile Val Lys Tyr Leu Tyr Glu Asp Glu Gly
260 265 270

Cys Trp Thr Arg Asn Ser Asn Met Asn Tyr Trp Leu Ile Ile Arg Leu
275 280 285

Pro Ile Leu Phe Ala Ile Gly Val Asn Phe Leu Ile Phe Val Arg Val
290 295 300

Ile Cys Ile Val Val Ser Lys Leu Lys Ala Asn Leu Met Cys Lys Thr
305 310 315 320

Asp Ile Lys Cys Arg Leu Ala Lys Ser Thr Leu Thr Leu Ile Pro Leu
325 330 335

Leu Gly Thr His Glu Val Ile Phe Ala Phe Val Met Asp Glu His Ala
340 345 350

Arg Gly Thr Leu Arg Phe Ile Lys Leu Phe Thr Glu Leu Ser Phe Thr

355 360 365

Ser Phe Gln Gly Leu Met Val Ala Ile Leu Tyr Cys Phe Val Asn Asn

370 375 380

Glu Val Gln Leu Glu Phe Arg Lys Ser Trp Glu Arg Trp Arg Leu Glu

385 390 395 400

His Leu His Ile Gln Arg Asp Ser Ser Met Lys Pro Leu Lys Cys Pro

405 410 415

Thr Ser Ser Leu Ser Ser Gly Ala Thr Ala Gly Ser Ser Met Tyr Thr

420 425 430

Ala Thr Cys Gln Ala Ser Cys Ser

435 440

<210> 6

<211> 961

<212> PRT

<213> Homo sapiens

<400> 6

Met Leu Leu Leu Leu Leu Leu Ala Pro Leu Phe Leu Arg Pro Pro Gly

1 5 10 15

Ala Gly Gly Ala Gln Thr Pro Asn Ala Thr Ser Glu Gly Cys Gln Ile

20 25 30

Ile His Pro Pro Trp Glu Gly Gly Ile Arg Tyr Arg Gly Leu Thr Arg

35 40 45

Asp Gln Val Lys Ala Ile Asn Phe Leu Pro Val Asp Tyr Glu Ile Glu

50 55 60

Tyr Val Cys Arg Gly Glu Arg Glu Val Val Gly Pro Lys Val Arg Lys

65 70 75 80

Cys Leu Ala Asn Gly Ser Trp Thr Asp Met Asp Thr Pro Ser Arg Cys

85 90 95

Val Arg Ile Cys Ser Lys Ser Tyr Leu Thr Leu Glu Asn Gly Lys Val

100 105 110

Phe Leu Thr Gly Gly Asp Leu Pro Ala Leu Asp Gly Ala Arg Val Asp

115 120 125

Phe Arg Cys Asp Pro Asp Phe His Leu Val Gly Ser Ser Arg Ser Ile
130 135 140

Cys Ser Gln Gly Gln Trp Ser Thr Pro Lys Pro His Cys Gln Val Asn
145 150 155 160
Arg Thr Pro His Ser Glu Arg Arg Ala Val Tyr Ile Gly Ala Leu Phe
165 170 175
Pro Met Ser Gly Gly Trp Pro Gly Gly Gln Ala Cys Gln Pro Ala Val
180 185 190
Glu Met Ala Leu Glu Asp Val Asn Ser Arg Arg Asp Ile Leu Pro Asp
195 200 205

Tyr Glu Leu Lys Leu Ile His His Asp Ser Lys Cys Asp Pro Gly Gln
210 215 220
Ala Thr Lys Tyr Leu Tyr Glu Leu Leu Tyr Asn Asp Pro Ile Lys Ile
225 230 235 240
Ile Leu Met Pro Gly Cys Ser Ser Val Ser Thr Leu Val Ala Glu Ala
245 250 255
Ala Arg Met Trp Asn Leu Ile Val Leu Ser Tyr Gly Ser Ser Ser Pro
260 265 270

Ala Leu Ser Asn Arg Gln Arg Phe Pro Thr Phe Phe Arg Thr His Pro
275 280 285
Ser Ala Thr Leu His Asn Pro Thr Arg Val Lys Leu Phe Glu Lys Trp
290 295 300
Gly Trp Lys Lys Ile Ala Thr Ile Gln Gln Thr Thr Glu Val Phe Thr
305 310 315 320
Ser Thr Leu Asp Asp Leu Glu Glu Arg Val Lys Glu Ala Gly Ile Glu
325 330 335

Ile Thr Phe Arg Gln Ser Phe Phe Ser Asp Pro Ala Val Pro Val Lys
340 345 350
Asn Leu Lys Arg Gln Asp Ala Arg Ile Ile Val Gly Leu Phe Tyr Glu
355 360 365
Thr Glu Ala Arg Lys Val Phe Cys Glu Val Tyr Lys Glu Arg Leu Phe

370 375 380

Gly Lys Lys Tyr Val Trp Phe Leu Ile Gly Trp Tyr Ala Asp Asn Trp

385 390 395 400

Phe Lys Ile Tyr Asp Pro Ser Ile Asn Cys Thr Val Asp Glu Met Thr

405 410 415

Glu Ala Val Glu Gly His Ile Thr Thr Glu Ile Val Met Leu Asn Pro

420 425 430

Ala Asn Thr Arg Ser Ile Ser Asn Met Thr Ser Gln Glu Phe Val Glu

435 440 445

Lys Leu Thr Lys Arg Leu Lys Arg His Pro Glu Glu Thr Gly Gly Phe

450 455 460

Gln Glu Ala Pro Leu Ala Tyr Asp Ala Ile Trp Ala Leu Ala Leu Ala

465 470 475 480

Leu Asn Lys Thr Ser Gly Gly Gly Gly Arg Ser Gly Val Arg Leu Glu

485 490 495

Asp Phe Asn Tyr Asn Asn Gln Thr Ile Thr Asp Gln Ile Tyr Arg Ala

500 505 510

Met Asn Ser Ser Ser Phe Glu Gly Val Ser Gly His Val Val Phe Asp

515 520 525

Ala Ser Gly Ser Arg Met Ala Trp Thr Leu Ile Glu Gln Leu Gln Gly

530 535 540

Gly Ser Tyr Lys Lys Ile Gly Tyr Tyr Asp Ser Thr Lys Asp Asp Leu

545 550 555 560

Ser Trp Ser Lys Thr Asp Lys Trp Ile Gly Gly Ser Pro Pro Ala Asp

565 570 575

Gln Thr Leu Val Ile Lys Thr Phe Arg Phe Leu Ser Gln Lys Leu Phe

580 585 590

Ile Ser Val Ser Val Leu Ser Ser Leu Gly Ile Val Leu Ala Val Val

595 600 605

Cys Leu Ser Phe Asn Ile Tyr Asn Ser His Val Arg Tyr Ile Gln Asn

610 615 620

Ser Gln Pro Asn Leu Asn Asn Leu Thr Ala Val Gly Cys Ser Leu Ala
625 630 635 640
Leu Ala Ala Val Phe Pro Leu Gly Leu Asp Gly Tyr His Ile Gly Arg
645 650 655

Asn Gln Phe Pro Phe Val Cys Gln Ala Arg Leu Trp Leu Leu Gly Leu
660 665 670
Gly Phe Ser Leu Gly Tyr Gly Ser Met Phe Thr Lys Ile Trp Trp Val
675 680 685
His Thr Val Phe Thr Lys Lys Glu Glu Lys Lys Glu Trp Arg Lys Thr
690 695 700
Leu Glu Pro Trp Lys Leu Tyr Ala Thr Val Gly Leu Leu Val Gly Met
705 710 715 720

Asp Val Leu Thr Leu Ala Ile Trp Gln Ile Val Asp Pro Leu His Arg
725 730 735
Thr Ile Glu Thr Phe Ala Lys Glu Glu Pro Lys Glu Asp Ile Asp Val
740 745 750
Ser Ile Leu Pro Gln Leu Glu His Cys Ser Ser Arg Lys Met Asn Thr
755 760 765
Trp Leu Gly Ile Phe Tyr Gly Tyr Lys Gly Leu Leu Leu Leu Leu Gly
770 775 780

Ile Phe Leu Ala Tyr Glu Thr Lys Ser Val Ser Thr Glu Lys Ile Asn
785 790 795 800
Asp His Arg Ala Val Gly Met Ala Ile Tyr Asn Val Ala Val Leu Cys
805 810 815
Leu Ile Thr Ala Pro Val Thr Met Ile Leu Ser Ser Gln Gln Asp Ala
820 825 830
Ala Phe Ala Phe Ala Ser Leu Ala Ile Val Phe Ser Ser Tyr Ile Thr
835 840 845

Leu Val Val Leu Phe Val Pro Lys Met Arg Arg Leu Ile Thr Arg Gly
850 855 860
Glu Trp Gln Ser Glu Ala Gln Asp Thr Met Lys Thr Gly Ser Ser Thr

865 870 875 880

Asn Asn Asn Glu Glu Glu Lys Ser Arg Leu Leu Glu Lys Glu Asn Arg

885 890 895

Glu Leu Glu Lys Ile Ile Ala Glu Lys Glu Glu Arg Val Ser Glu Leu

900 905 910

Arg His Gln Leu Gln Ser Arg Gln Gln Leu Arg Ser Arg Arg His Pro

915 920 925

Pro Thr Pro Pro Glu Pro Ser Gly Gly Leu Pro Arg Gly Pro Pro Glu

930 935 940

Pro Pro Asp Arg Leu Ser Cys Asp Gly Ser Arg Val His Leu Leu Tyr

945 950 955 960

Lys

<210> 7

<211> 400

<212> PRT

<213> Homo sapiens

<400> 7

Met Asp Ser Ser Ala Ala Pro Thr Asn Ala Ser Asn Cys Thr Asp Ala

1 5 10 15

Leu Ala Tyr Ser Ser Cys Ser Pro Ala Pro Ser Pro Gly Ser Trp Val

20 25 30

Asn Leu Ser His Leu Asp Gly Asn Leu Ser Asp Pro Cys Gly Pro Asn

35 40 45

Arg Thr Asp Leu Gly Gly Arg Asp Ser Leu Cys Pro Pro Thr Gly Ser

50 55 60

Pro Ser Met Ile Thr Ala Ile Thr Ile Met Ala Leu Tyr Ser Ile Val

65 70 75 80

Cys Val Val Gly Leu Phe Gly Asn Phe Leu Val Met Tyr Val Ile Val

85 90 95

Arg Tyr Thr Lys Met Lys Thr Ala Thr Asn Ile Tyr Ile Phe Asn Leu

100 105 110

Ala Leu Ala Asp Ala Leu Ala Thr Ser Thr Leu Pro Phe Gln Ser Val
115 120 125
Asn Tyr Leu Met Gly Thr Trp Pro Phe Gly Thr Ile Leu Cys Lys Ile

130 135 140
Val Ile Ser Ile Asp Tyr Tyr Asn Met Phe Thr Ser Ile Phe Thr Leu
145 150 155 160
Cys Thr Met Ser Val Asp Arg Tyr Ile Ala Val Cys His Pro Val Lys
165 170 175
Ala Leu Asp Phe Arg Thr Pro Arg Asn Ala Lys Ile Ile Asn Val Cys
180 185 190
Asn Trp Ile Leu Ser Ser Ala Ile Gly Leu Pro Val Met Phe Met Ala

195 200 205
Thr Thr Lys Tyr Arg Gln Gly Ser Ile Asp Cys Thr Leu Thr Phe Ser
210 215 220
His Pro Thr Trp Tyr Trp Glu Asn Leu Leu Lys Ile Cys Val Phe Ile
225 230 235 240
Phe Ala Phe Ile Met Pro Val Leu Ile Ile Thr Val Cys Tyr Gly Leu
245 250 255
Met Ile Leu Arg Leu Lys Ser Val Arg Met Leu Ser Gly Ser Lys Glu

260 265 270
Lys Asp Arg Asn Leu Arg Arg Ile Thr Arg Met Val Leu Val Val Val
275 280 285
Ala Val Phe Ile Val Cys Trp Thr Pro Ile His Ile Tyr Val Ile Ile
290 295 300
Lys Ala Leu Val Thr Ile Pro Glu Thr Thr Phe Gln Thr Val Ser Trp
305 310 315 320
His Phe Cys Ile Ala Leu Gly Tyr Thr Asn Ser Cys Leu Asn Pro Val

325 330 335
Leu Tyr Ala Phe Leu Asp Glu Asn Phe Lys Arg Cys Phe Arg Glu Phe
340 345 350
Cys Ile Pro Thr Ser Ser Asn Ile Glu Gln Gln Asn Ser Thr Arg Ile

355 360 365

Arg Gln Asn Thr Arg Asp His Pro Ser Thr Ala Asn Thr Val Asp Arg

370 375 380

Thr Asn His Gln Leu Glu Asn Leu Glu Ala Glu Thr Ala Pro Leu Pro

385 390 395 400

<210> 8

<211> 380

<212> PRT

<213> Homo sapiens

<400> 8

Met Asp Ser Pro Ile Gln Ile Phe Arg Gly Glu Pro Gly Pro Thr Cys

1 5 10 15

Ala Pro Ser Ala Cys Leu Pro Pro Asn Ser Ser Ala Trp Phe Pro Gly

20 25 30

Trp Ala Glu Pro Asp Ser Asn Gly Ser Ala Gly Ser Glu Asp Ala Gln

35 40 45

Leu Glu Pro Ala His Ile Ser Pro Ala Ile Pro Val Ile Ile Thr Ala

50 55 60

Val Tyr Ser Val Val Phe Val Val Gly Leu Val Gly Asn Ser Leu Val

65 70 75 80

Met Phe Val Ile Ile Arg Tyr Thr Lys Met Lys Thr Ala Thr Asn Ile

85 90 95

Tyr Ile Phe Asn Leu Ala Leu Ala Asp Ala Leu Val Thr Thr Thr Met

100 105 110

Pro Phe Gln Ser Thr Val Tyr Leu Met Asn Ser Trp Pro Phe Gly Asp

115 120 125

Val Leu Cys Lys Ile Val Ile Ser Ile Asp Tyr Tyr Asn Met Phe Thr

130 135 140

Ser Ile Phe Thr Leu Thr Met Met Ser Val Asp Arg Tyr Ile Ala Val

145 150 155 160

Cys His Pro Val Lys Ala Leu Asp Phe Arg Thr Pro Leu Lys Ala Lys

165 170 175

Ile Ile Asn Ile Cys Ile Trp Leu Leu Ser Ser Ser Val Gly Ile Ser
180 185 190
Ala Ile Val Leu Gly Gly Thr Lys Val Arg Glu Asp Val Asp Val Ile
195 200 205
Glu Cys Ser Leu Gln Phe Pro Asp Asp Asp Tyr Ser Trp Trp Asp Leu
210 215 220
Phe Met Lys Ile Cys Val Phe Ile Phe Ala Phe Val Ile Pro Val Leu
225 230 235 240

Ile Ile Ile Val Cys Tyr Thr Leu Met Ile Leu Arg Leu Lys Ser Val
245 250 255
Arg Leu Leu Ser Gly Ser Arg Glu Lys Asp Arg Asn Leu Arg Arg Ile
260 265 270
Thr Arg Leu Val Leu Val Val Val Ala Val Phe Val Val Cys Trp Thr
275 280 285
Pro Ile His Ile Phe Ile Leu Val Glu Ala Leu Gly Ser Thr Ser His
290 295 300

Ser Thr Ala Ala Leu Ser Ser Tyr Tyr Phe Cys Ile Ala Leu Gly Tyr
305 310 315 320
Thr Asn Ser Ser Leu Asn Pro Ile Leu Tyr Ala Phe Leu Asp Glu Asn
325 330 335
Phe Lys Arg Cys Phe Arg Asp Phe Cys Phe Pro Leu Lys Met Arg Met
340 345 350
Glu Arg Gln Ser Thr Ser Arg Val Arg Asn Thr Val Gln Asp Pro Ala
355 360 365

Tyr Leu Arg Asp Ile Asp Gly Met Asn Lys Pro Val
370 375 380

<210> 9
<211> 350
<212> PRT
<213> Homo sapiens

<400> 9

Met Asp Ser Phe Asn Tyr Thr Thr Pro Asp Tyr Gly His Tyr Asp Asp
1 5 10 15

Lys Asp Thr Leu Asp Leu Asn Thr Pro Val Asp Lys Thr Ser Asn Thr
20 25 30

Leu Arg Val Pro Asp Ile Leu Ala Leu Val Ile Phe Ala Val Val Phe
35 40 45

Leu Val Gly Val Leu Gly Asn Ala Leu Val Val Trp Val Thr Ala Phe
50 55 60

Glu Ala Lys Arg Thr Ile Asn Ala Ile Trp Phe Leu Asn Leu Ala Val
65 70 75 80

Ala Asp Phe Leu Ser Cys Leu Ala Leu Pro Ile Leu Phe Thr Ser Ile
85 90 95

Val Gln His His His Trp Pro Phe Gly Gly Ala Ala Cys Ser Ile Leu
100 105 110

Pro Ser Leu Ile Leu Leu Asn Met Tyr Ala Ser Ile Leu Leu Leu Ala
115 120 125

Thr Ile Ser Ala Asp Arg Phe Leu Leu Val Phe Lys Pro Ile Trp Cys
130 135 140

Gln Asn Phe Arg Gly Ala Gly Leu Ala Trp Ile Ala Cys Ala Val Ala
145 150 155 160

Trp Gly Leu Ala Leu Leu Leu Thr Ile Pro Ser Phe Leu Tyr Arg Val
165 170 175

Val Arg Glu Glu Tyr Phe Pro Pro Lys Val Leu Cys Gly Val Asp Tyr
180 185 190

Ser His Asp Lys Arg Arg Glu Arg Ala Val Ala Ile Val Arg Leu Val
195 200 205

Leu Gly Phe Leu Trp Pro Leu Leu Thr Leu Thr Ile Cys Tyr Thr Phe
210 215 220

Ile Leu Leu Arg Thr Trp Ser Arg Arg Ala Thr Arg Ser Thr Lys Thr
225 230 235 240

Leu Lys Val Val Val Ala Val Val Ala Ser Phe Phe Ile Phe Trp Leu
245 250 255
Pro Tyr Gln Val Thr Gly Ile Met Met Ser Phe Leu Glu Pro Ser Ser
260 265 270
Pro Thr Phe Leu Leu Leu Lys Lys Leu Asp Ser Leu Cys Val Ser Phe
275 280 285
Ala Tyr Ile Asn Cys Cys Ile Asn Pro Ile Ile Tyr Val Val Ala Gly
290 295 300

Gln Gly Phe Gln Gly Arg Leu Arg Lys Ser Leu Pro Ser Leu Leu Arg
305 310 315 320
Asn Val Leu Thr Glu Glu Ser Val Val Arg Glu Ser Lys Ser Phe Thr
325 330 335
Arg Ser Thr Val Asp Thr Met Ala Gln Lys Thr Gln Ala Val
340 345 350

<210> 10
<211> 439
<212> PRT
<213> Homo sapiens
<400> 10

Glu Leu Glu Glu Ser Pro Glu Asp Ser Ile Gln Leu Gly Val Thr Arg

1 5 10 15
Asn Lys Ile Met Thr Ala Gln Tyr Glu Cys Tyr Gln Lys Ile Met Gln
20 25 30
Asp Pro Ile Gln Gln Ala Glu Gly Val Tyr Cys Asn Arg Thr Trp Asp
35 40 45
Gly Trp Leu Cys Trp Asn Asp Val Ala Ala Gly Thr Glu Ser Met Gln
50 55 60
Leu Cys Pro Asp Tyr Phe Gln Asp Phe Asp Pro Ser Glu Lys Val Thr

65 70 75 80
Lys Ile Cys Asp Gln Asp Gly Asn Trp Phe Arg His Pro Ala Ser Asn
85 90 95
Arg Thr Trp Thr Asn Tyr Thr Gln Cys Asn Val Asn Thr His Glu Lys

100 105 110

Val Lys Thr Ala Leu Asn Leu Phe Tyr Leu Thr Ile Ile Gly His Gly

115 120 125

Leu Ser Ile Ala Ser Leu Leu Ile Ser Leu Gly Ile Phe Phe Tyr Phe

130 135 140

Lys Ser Leu Ser Cys Gln Arg Ile Thr Leu His Lys Asn Leu Phe Phe

145 150 155 160

Ser Phe Val Cys Asn Ser Val Val Thr Ile Ile His Leu Thr Ala Val

165 170 175

Ala Asn Asn Gln Ala Leu Val Ala Thr Asn Pro Val Ser Cys Lys Val

180 185 190

Ser Gln Phe Ile His Leu Tyr Leu Met Gly Cys Asn Tyr Phe Trp Met

195 200 205

Leu Cys Glu Gly Ile Tyr Leu His Thr Leu Ile Val Val Ala Val Phe

210 215 220

Ala Glu Lys Gln His Leu Met Trp Tyr Tyr Phe Leu Gly Trp Gly Phe

225 230 235 240

Pro Leu Ile Pro Ala Cys Ile His Ala Ile Ala Arg Ser Leu Tyr Tyr

245 250 255

Asn Asp Asn Cys Trp Ile Ser Ser Asp Thr His Leu Leu Tyr Ile Ile

260 265 270

His Gly Pro Ile Cys Ala Ala Leu Leu Val Asn Leu Phe Phe Leu Leu

275 280 285

Asn Ile Val Arg Val Leu Ile Thr Lys Leu Lys Val Thr His Gln Ala

290 295 300

Glu Ser Asn Leu Tyr Met Lys Ala Val Arg Ala Thr Leu Ile Leu Val

305 310 315 320

Pro Leu Leu Gly Ile Glu Phe Val Leu Ile Pro Trp Arg Pro Glu Gly

325 330 335

Lys Ile Ala Glu Glu Val Tyr Asp Tyr Ile Met His Ile Leu Met His

340 345 350

Phe Gln Gly Leu Leu Val Ser Thr Ile Phe Cys Phe Phe Asn Gly Glu
355 360 365
Val Gln Ala Ile Leu Arg Arg Asn Trp Asn Gln Tyr Lys Ile Gln Phe
370 375 380
Gly Asn Ser Phe Ser Asn Ser Glu Ala Leu Arg Ser Ala Ser Tyr Thr

385 390 395 400
Val Ser Thr Ile Ser Asp Gly Pro Gly Tyr Ser His Asp Cys Pro Ser
405 410 415
Glu His Leu Asn Gly Lys Ser Ile His Asp Ile Glu Asn Val Leu Leu
420 425 430
Lys Pro Glu Asn Leu Tyr Asn
435

<210> 11
<211> 460
<212> PRT
<213> Homo sapiens
<400> 11
Met Asn Thr Ser Ala Pro Pro Ala Val Ser Pro Asn Ile Thr Val Leu

1 5 10 15
Ala Pro Gly Lys Gly Pro Trp Gln Val Ala Phe Ile Gly Ile Thr Thr
20 25 30
Gly Leu Leu Ser Leu Ala Thr Val Thr Gly Asn Leu Leu Val Leu Ile
35 40 45
Ser Phe Lys Val Asn Thr Glu Leu Lys Thr Val Asn Asn Tyr Phe Leu
50 55 60
Leu Ser Leu Ala Cys Ala Asp Leu Ile Ile Gly Thr Phe Ser Met Asn

65 70 75 80
Leu Tyr Thr Thr Tyr Leu Leu Met Gly His Trp Ala Leu Gly Thr Leu
85 90 95
Ala Cys Asp Leu Trp Leu Ala Leu Asp Tyr Val Ala Ser Asn Ala Ser
100 105 110
Val Met Asn Leu Leu Leu Ile Ser Phe Asp Arg Tyr Phe Ser Val Thr

115 120 125

Arg Pro Leu Ser Tyr Arg Ala Lys Arg Thr Pro Arg Arg Ala Ala Leu

130 135 140

Met Ile Gly Leu Ala Trp Leu Val Ser Phe Val Leu Trp Ala Pro Ala

145 150 155 160

Ile Leu Phe Trp Gln Tyr Leu Val Gly Glu Arg Thr Val Leu Ala Gly

165 170 175

Gln Cys Tyr Ile Gln Phe Leu Ser Gln Pro Ile Ile Thr Phe Gly Thr

180 185 190

Ala Met Ala Ala Phe Tyr Leu Pro Val Thr Val Met Cys Thr Leu Tyr

195 200 205

Trp Arg Ile Tyr Arg Glu Thr Glu Asn Arg Ala Arg Glu Leu Ala Ala

210 215 220

Leu Gln Gly Ser Glu Thr Pro Gly Lys Gly Gly Gly Ser Ser Ser Ser

225 230 235 240

Ser Glu Arg Ser Gln Pro Gly Ala Glu Gly Ser Pro Glu Thr Pro Pro

245 250 255

Gly Arg Cys Cys Arg Cys Cys Arg Ala Pro Arg Leu Leu Gln Ala Tyr

260 265 270

Ser Trp Lys Glu Glu Glu Glu Glu Asp Glu Gly Ser Met Glu Ser Leu

275 280 285

Thr Ser Ser Glu Gly Glu Glu Pro Gly Ser Glu Val Val Ile Lys Met

290 295 300

Pro Met Val Asp Pro Glu Ala Gln Ala Pro Thr Lys Gln Pro Pro Arg

305 310 315 320

Ser Ser Pro Asn Thr Val Lys Arg Pro Thr Lys Lys Gly Arg Asp Arg

325 330 335

Ala Gly Lys Gly Gln Lys Pro Arg Gly Lys Glu Gln Leu Ala Lys Arg

340 345 350

Lys Thr Phe Ser Leu Val Lys Glu Lys Lys Ala Ala Arg Thr Leu Ser

355 360 365

Ala Ile Leu Leu Ala Phe Ile Leu Thr Trp Thr Pro Tyr Asn Ile Met
370 375 380
Val Leu Val Ser Thr Phe Cys Lys Asp Cys Val Pro Glu Thr Leu Trp

385 390 395 400
Glu Leu Gly Tyr Trp Leu Cys Tyr Val Asn Ser Thr Ile Asn Pro Met
405 410 415
Cys Tyr Ala Leu Cys Asn Lys Ala Phe Arg Asp Thr Phe Arg Leu Leu
420 425 430
Leu Leu Cys Arg Trp Asp Lys Arg Arg Trp Arg Lys Ile Pro Lys Arg
435 440 445
Pro Gly Ser Val His Arg Thr Pro Ser Arg Gln Cys

450 455 460

<210> 12
<211> 479
<212> PRT
<213> Homo sapiens
<400> 12
Met Ala Asn Phe Thr Pro Val Asn Gly Ser Ser Gly Asn Gln Ser Val
1 5 10 15
Arg Leu Val Thr Ser Ser Ser His Asn Arg Tyr Glu Thr Val Glu Met
20 25 30
Val Phe Ile Ala Thr Val Thr Gly Ser Leu Ser Leu Val Thr Val Val
35 40 45

Gly Asn Ile Leu Val Met Leu Ser Ile Lys Val Asn Arg Gln Leu Gln
50 55 60
Thr Val Asn Asn Tyr Phe Leu Phe Ser Leu Ala Cys Ala Asp Leu Ile
65 70 75 80
Ile Gly Ala Phe Ser Met Asn Leu Tyr Thr Val Tyr Ile Ile Lys Gly
85 90 95
Tyr Trp Pro Leu Gly Ala Val Val Cys Asp Leu Trp Leu Ala Leu Asp
100 105 110

Tyr Val Val Ser Asn Ala Ser Val Met Asn Leu Leu Ile Ile Ser Phe
115 120 125

Asp Arg Tyr Phe Cys Val Thr Lys Pro Leu Thr Tyr Pro Ala Arg Arg
130 135 140

Thr Thr Lys Met Ala Gly Leu Met Ile Ala Ala Ala Trp Val Leu Ser
145 150 155 160

Phe Val Leu Trp Ala Pro Ala Ile Leu Phe Trp Gln Phe Val Val Gly
165 170 175

Lys Arg Thr Val Pro Asp Asn Gln Cys Phe Ile Gln Phe Leu Ser Asn
180 185 190

Pro Ala Val Thr Phe Gly Thr Ala Ile Ala Ala Phe Tyr Leu Pro Val
195 200 205

Val Ile Met Thr Val Leu Tyr Ile His Ile Ser Leu Ala Ser Arg Ser
210 215 220

Arg Val His Lys His Arg Pro Glu Gly Pro Lys Glu Lys Lys Ala Lys
225 230 235 240

Thr Leu Ala Phe Leu Lys Ser Pro Leu Met Lys Gln Ser Val Lys Lys
245 250 255

Pro Pro Pro Gly Glu Ala Ala Arg Glu Glu Leu Arg Asn Gly Lys Leu
260 265 270

Glu Glu Ala Pro Pro Pro Ala Leu Pro Pro Pro Pro Arg Pro Val Ala
275 280 285

Asp Lys Asp Thr Ser Asn Glu Ser Ser Ser Gly Ser Ala Thr Gln Asn
290 295 300

Thr Lys Glu Arg Pro Ala Thr Glu Leu Ser Thr Thr Glu Ala Thr Thr
305 310 315 320

Pro Ala Met Pro Ala Pro Pro Leu Gln Pro Arg Ala Leu Asn Pro Ala
325 330 335

Ser Arg Trp Ser Lys Ile Gln Ile Val Thr Lys Gln Thr Gly Asn Glu
340 345 350

Cys Val Thr Ala Ile Glu Ile Val Pro Ala Thr Pro Ala Gly Met Arg

355 360 365

Pro Ala Ala Asn Val Ala Arg Lys Phe Ala Ser Ile Ala Arg Asn Gln
370 375 380
Val Arg Lys Lys Arg Gln Met Ala Ala Arg Glu Arg Lys Val Thr Arg
385 390 395 400
Thr Ile Phe Ala Ile Leu Leu Ala Phe Ile Leu Thr Trp Thr Pro Tyr
405 410 415
Asn Val Met Val Leu Val Asn Thr Phe Cys Gln Ser Cys Ile Pro Asp
420 425 430

Thr Val Trp Ser Ile Gly Tyr Trp Leu Cys Tyr Val Asn Ser Thr Ile
435 440 445
Asn Pro Ala Cys Tyr Ala Leu Cys Asn Ala Thr Phe Lys Lys Thr Phe
450 455 460
Arg His Leu Leu Leu Cys Gln Tyr Arg Asn Ile Gly Thr Ala Arg
465 470 475
<210> 13
<211> 374
<212> PRT
<213> Homo sapiens
<400> 13
Met Leu Ser Thr Ser Arg Ser Arg Phe Ile Arg Asn Thr Asn Glu Ser

1 5 10 15
Gly Glu Glu Val Thr Thr Phe Phe Asp Tyr Asp Tyr Gly Ala Pro Cys
20 25 30
His Lys Phe Asp Val Lys Gln Ile Gly Ala Gln Leu Leu Pro Pro Leu
35 40 45
Tyr Ser Leu Val Phe Ile Phe Gly Phe Val Gly Asn Met Leu Val Val
50 55 60
Leu Ile Leu Ile Asn Cys Lys Lys Leu Lys Cys Leu Thr Asp Ile Tyr

65 70 75 80
Leu Leu Asn Leu Ala Ile Ser Asp Leu Leu Phe Leu Ile Thr Leu Pro

85 90 95

Leu Trp Ala His Ser Ala Ala Asn Glu Trp Val Phe Gly Asn Ala Met

100 105 110

Cys Lys Leu Phe Thr Gly Leu Tyr His Ile Gly Tyr Phe Gly Gly Ile

115 120 125

Phe Phe Ile Ile Leu Leu Thr Ile Asp Arg Tyr Leu Ala Ile Val His

130 135 140

Ala Val Phe Ala Leu Lys Ala Arg Thr Val Thr Phe Gly Val Val Thr

145 150 155 160

Ser Val Ile Thr Trp Leu Val Ala Val Phe Ala Ser Val Pro Gly Ile

165 170 175

Ile Phe Thr Lys Cys Gln Lys Glu Asp Ser Val Tyr Val Cys Gly Pro

180 185 190

Tyr Phe Pro Arg Gly Trp Asn Asn Phe His Thr Ile Met Arg Asn Ile

195 200 205

Leu Gly Leu Val Leu Pro Leu Leu Ile Met Val Ile Cys Tyr Ser Gly

210 215 220

Ile Leu Lys Thr Leu Leu Arg Cys Arg Asn Glu Lys Lys Arg His Arg

225 230 235 240

Ala Val Arg Val Ile Phe Thr Ile Met Ile Val Tyr Phe Leu Phe Trp

245 250 255

Thr Pro Tyr Asn Ile Val Ile Leu Leu Asn Thr Phe Gln Glu Phe Phe

260 265 270

Gly Leu Ser Asn Cys Glu Ser Thr Ser Gln Leu Asp Gln Ala Thr Gln

275 280 285

Val Thr Glu Thr Leu Gly Met Thr His Cys Cys Ile Asn Pro Ile Ile

290 295 300

Tyr Ala Phe Val Gly Glu Lys Phe Arg Ser Leu Phe His Ile Ala Leu

305 310 315 320

Gly Cys Arg Ile Ala Pro Leu Gln Lys Pro Val Cys Gly Gly Pro Gly

325 330 335

Val Arg Pro Gly Lys Asn Val Lys Val Thr Thr Gln Gly Leu Leu Asp
340 345 350
Gly Arg Gly Lys Gly Lys Ser Ile Gly Arg Ala Pro Glu Ala Ser Leu
355 360 365
Gln Asp Lys Glu Gly Ala
370

<210> 14
<211> 369
<212> PRT
<213> Homo sapiens
<400> 14

Met Thr Pro Thr Asp Phe Thr Ser Pro Ile Pro Asn Met Ala Asp Asp

1 5 10 15
Tyr Gly Ser Glu Ser Thr Ser Ser Met Glu Asp Tyr Val Asn Phe Asn
20 25 30
Phe Thr Asp Phe Tyr Cys Glu Lys Asn Asn Val Arg Gln Phe Ala Ser
35 40 45
His Phe Leu Pro Pro Leu Tyr Trp Leu Val Phe Ile Val Gly Ala Leu
50 55 60
Gly Asn Ser Leu Val Ile Leu Val Tyr Trp Tyr Cys Thr Arg Val Lys

65 70 75 80
Thr Met Thr Asp Met Phe Leu Leu Asn Leu Ala Ile Ala Asp Leu Leu
85 90 95
Phe Leu Val Thr Leu Pro Phe Trp Ala Ile Ala Ala Ala Asp Gln Trp
100 105 110
Lys Phe Gln Thr Phe Met Cys Lys Val Val Asn Ser Met Tyr Lys Met
115 120 125
Asn Phe Tyr Ser Cys Val Leu Leu Ile Met Cys Ile Ser Val Asp Arg

130 135 140
Tyr Ile Ala Ile Ala Gln Ala Met Arg Ala His Thr Trp Arg Glu Lys
145 150 155 160
Arg Leu Leu Tyr Ser Lys Met Val Cys Phe Thr Ile Trp Val Leu Ala

165 170 175

Ala Ala Leu Cys Ile Pro Glu Ile Leu Tyr Ser Gln Ile Lys Glu Glu

180 185 190

Ser Gly Ile Ala Ile Cys Thr Met Val Tyr Pro Ser Asp Glu Ser Thr

195 200 205

Lys Leu Lys Ser Ala Val Leu Thr Leu Lys Val Ile Leu Gly Phe Phe

210 215 220

Leu Pro Phe Val Val Met Ala Cys Cys Tyr Thr Ile Ile Ile His Thr

225 230 235 240

Leu Ile Gln Ala Lys Lys Ser Ser Lys His Lys Ala Leu Lys Val Thr

245 250 255

Ile Thr Val Leu Thr Val Phe Val Leu Ser Gln Phe Pro Tyr Asn Cys

260 265 270

Ile Leu Leu Val Gln Thr Ile Asp Ala Tyr Ala Met Phe Ile Ser Asn

275 280 285

Cys Ala Val Ser Thr Asn Ile Asp Ile Cys Phe Gln Val Thr Gln Thr

290 295 300

Ile Ala Phe Phe His Ser Cys Leu Asn Pro Val Leu Tyr Val Phe Val

305 310 315 320

Gly Glu Arg Phe Arg Arg Asp Leu Val Lys Thr Leu Lys Asn Leu Gly

325 330 335

Cys Ile Ser Gln Ala Gln Trp Val Ser Phe Thr Arg Arg Glu Gly Ser

340 345 350

Leu Lys Leu Ser Ser Met Leu Leu Glu Thr Thr Ser Gly Ala Leu Ser

355 360 365

Leu

<210> 15

<211> 333

<212> PRT

<213> Homo sapiens

<400> 15

Met Pro Ala Asn Tyr Thr Cys Thr Arg Pro Asp Gly Asp Asn Thr Asp
1 5 10 15

Phe Arg Tyr Phe Ile Tyr Ala Val Thr Tyr Thr Val Ile Leu Val Pro
20 25 30

Gly Leu Ile Gly Asn Ile Leu Ala Leu Trp Val Phe Tyr Gly Tyr Met
35 40 45

Lys Glu Thr Lys Arg Ala Val Ile Phe Met Ile Asn Leu Ala Ile Ala
50 55 60

Asp Leu Leu Gln Val Leu Ser Leu Pro Leu Arg Ile Phe Tyr Tyr Leu
65 70 75 80

Asn His Asp Trp Pro Phe Gly Pro Gly Leu Cys Met Phe Cys Phe Tyr
85 90 95

Leu Lys Tyr Val Asn Met Tyr Ala Ser Ile Tyr Phe Leu Val Cys Ile
100 105 110

Ser Val Arg Arg Phe Trp Phe Leu Met Tyr Pro Phe Arg Phe His Asp
115 120 125

Cys Lys Gln Lys Tyr Asp Leu Tyr Ile Ser Ile Ala Gly Trp Leu Ile
130 135 140

Ile Cys Leu Ala Cys Val Leu Phe Pro Leu Leu Arg Thr Ser Asp Asp
145 150 155 160

Thr Ser Gly Asn Arg Thr Lys Cys Phe Val Asp Leu Pro Thr Arg Asn
165 170 175

Val Asn Leu Ala Gln Ser Val Val Met Met Thr Ile Gly Glu Leu Ile
180 185 190

Gly Phe Val Thr Pro Leu Leu Ile Val Leu Tyr Cys Thr Trp Lys Thr
195 200 205

Val Leu Ser Leu Gln Asp Lys Tyr Pro Met Ala Gln Asp Leu Gly Glu
210 215 220

Lys Gln Lys Ala Leu Lys Met Ile Leu Thr Cys Ala Gly Val Phe Leu
225 230 235 240

Ile Cys Phe Ala Pro Tyr His Phe Ser Phe Pro Leu Asp Phe Leu Val

245 250 255

Lys Ser Asn Glu Ile Lys Ser Cys Leu Ala Arg Arg Val Ile Leu Ile

260 265 270

Phe His Ser Val Ala Leu Cys Leu Ala Ser Leu Asn Ser Cys Leu Asp

275 280 285

Pro Val Ile Tyr Tyr Phe Ser Thr Asn Glu Phe Arg Arg Arg Leu Ser

290 295 300

Arg Gln Asp Leu His Asp Ser Ile Gln Leu His Ala Lys Ser Phe Val

305 310 315 320

Ser Asn His Thr Ala Ser Thr Met Thr Pro Glu Leu Cys

325 330

<210> 16

<211> 671

<212> PRT

<213> Homo sapiens

<400> 16

Thr Pro Leu Gly Pro Lys Trp Pro Glu Pro Val Phe Gly Arg Leu Ala

1 5 10 15

Ser Pro Gly Phe Pro Gly Glu Tyr Ala Asn Asp Gln Glu Arg Arg Trp

20 25 30

Thr Leu Thr Ala Pro Pro Gly Tyr Arg Leu Arg Leu Tyr Phe Thr His

35 40 45

Phe Asp Leu Glu Leu Ser His Leu Cys Glu Tyr Asp Phe Val Lys Leu

50 55 60

Ser Ser Gly Ala Lys Val Leu Ala Thr Leu Cys Gly Gln Glu Ser Thr

65 70 75 80

Asp Thr Glu Arg Ala Pro Gly Lys Asp Thr Phe Tyr Ser Leu Gly Ser

85 90 95

Ser Leu Asp Ile Thr Phe Arg Ser Asp Tyr Ser Asn Glu Lys Pro Phe

100 105 110

Thr Gly Phe Glu Ala Phe Tyr Ala Ala Glu Asp Ile Asp Glu Cys Gln

115 120 125

Val Ala Pro Gly Glu Ala Pro Thr Cys Asp His His Cys His Asn His

130 135 140

Leu Gly Gly Phe Tyr Cys Ser Cys Arg Ala Gly Tyr Val Leu His Arg

145 150 155 160

Asn Lys Arg Thr Cys Ser Ala Leu Cys Ser Gly Gln Val Phe Thr Gln

165 170 175

Arg Ser Gly Glu Leu Ser Ser Pro Glu Tyr Pro Arg Pro Tyr Pro Lys

180 185 190

Leu Ser Ser Cys Thr Tyr Ser Ile Ser Leu Glu Glu Gly Phe Ser Val

195 200 205

Ile Leu Asp Phe Val Glu Ser Phe Asp Val Glu Thr His Pro Glu Thr

210 215 220

Leu Cys Pro Tyr Asp Phe Leu Lys Ile Gln Thr Asp Arg Glu Glu His

225 230 235 240

Gly Pro Phe Cys Gly Lys Thr Leu Pro His Arg Ile Glu Thr Lys Ser

245 250 255

Asn Thr Val Thr Ile Thr Phe Val Thr Asp Glu Ser Gly Asp His Thr

260 265 270

Gly Trp Lys Ile His Tyr Thr Ser Thr Ala Gln Pro Cys Pro Tyr Pro

275 280 285

Met Ala Pro Pro Asn Gly His Val Ser Pro Val Gln Ala Lys Tyr Ile

290 295 300

Leu Lys Asp Ser Phe Ser Ile Phe Cys Glu Thr Gly Tyr Glu Leu Leu

305 310 315 320

Gln Gly His Leu Pro Leu Lys Ser Phe Thr Ala Val Cys Gln Lys Asp

325 330 335

Gly Ser Trp Asp Arg Pro Met Pro Ala Cys Ser Ile Val Asp Cys Gly

340 345 350

Pro Pro Asp Asp Leu Pro Ser Gly Arg Val Glu Tyr Ile Thr Gly Pro

355 360 365

Gly Val Thr Thr Tyr Lys Ala Val Ile Gln Tyr Ser Cys Glu Glu Thr

370 375 380

Phe Tyr Thr Met Lys Val Asn Asp Gly Lys Tyr Val Cys Glu Ala Asp

385 390 395 400

Gly Phe Trp Thr Ser Ser Lys Gly Glu Lys Ser Leu Pro Val Cys Glu

405 410 415

Pro Val Cys Gly Leu Ser Ala Arg Thr Thr Gly Gly Arg Ile Tyr Gly

420 425 430

Gly Gln Lys Ala Lys Pro Gly Asp Phe Pro Trp Gln Val Leu Ile Leu

435 440 445

Gly Gly Thr Thr Ala Ala Gly Ala Leu Leu Tyr Asp Asn Trp Val Leu

450 455 460

Thr Ala Ala His Ala Val Tyr Glu Gln Lys His Asp Ala Ser Ala Leu

465 470 475 480

Asp Ile Arg Met Gly Thr Leu Lys Arg Leu Ser Pro His Tyr Thr Gln

485 490 495

Ala Trp Ser Glu Ala Val Phe Ile His Glu Gly Tyr Thr His Asp Ala

500 505 510

Gly Phe Asp Asn Asp Ile Ala Leu Ile Lys Leu Asn Asn Lys Val Val

515 520 525

Ile Asn Ser Asn Ile Thr Pro Ile Cys Leu Pro Arg Lys Glu Ala Glu

530 535 540

Ser Phe Met Arg Thr Asp Asp Ile Gly Thr Ala Ser Gly Trp Gly Leu

545 550 555 560

Thr Gln Arg Gly Phe Leu Ala Arg Asn Leu Met Tyr Val Asp Ile Pro

565 570 575

Ile Val Asp His Gln Lys Cys Thr Ala Ala Tyr Glu Lys Pro Pro Tyr

580 585 590

Pro Arg Gly Ser Val Thr Ala Asn Met Leu Cys Ala Gly Leu Glu Ser

595 600 605

Gly Gly Lys Asp Ser Cys Arg Gly Asp Ser Gly Gly Ala Leu Val Phe

610 615 620

Leu Asp Ser Glu Thr Glu Arg Trp Phe Val Gly Gly Ile Val Ser Trp

625 630 635 640

Gly Ser Met Asn Cys Gly Glu Ala Gly Gln Tyr Gly Val Tyr Thr Lys

645 650 655

Val Ile Asn Tyr Ile Pro Trp Ile Glu Asn Ile Ile Ser Asp Phe

660 665 670

<210> 17

<211> 352

<212> PRT

<213> Homo sapiens

<400> 17

Met Asp Tyr Gln Val Ser Ser Pro Ile Tyr Asp Ile Asn Tyr Tyr Thr

1 5 10 15

Ser Glu Pro Cys Gln Lys Ile Asn Val Lys Gln Ile Ala Ala Arg Leu

20 25 30

Leu Pro Pro Leu Tyr Ser Leu Val Phe Ile Phe Gly Phe Val Gly Asn

35 40 45

Met Leu Val Ile Leu Ile Leu Ile Asn Cys Lys Arg Leu Lys Ser Met

50 55 60

Thr Asp Ile Tyr Leu Leu Asn Leu Ala Ile Ser Asp Leu Phe Phe Leu

65 70 75 80

Leu Thr Val Pro Phe Trp Ala His Tyr Ala Ala Ala Gln Trp Asp Phe

85 90 95

Gly Asn Thr Met Cys Gln Leu Leu Thr Gly Leu Tyr Phe Ile Gly Phe

100 105 110

Phe Ser Gly Ile Phe Phe Ile Ile Leu Leu Thr Ile Asp Arg Tyr Leu

115 120 125

Ala Val Val His Ala Val Phe Ala Leu Lys Ala Arg Thr Val Thr Phe

130 135 140

Gly Val Val Thr Ser Val Ile Thr Trp Val Val Ala Val Phe Ala Ser

145 150 155 160

Leu Pro Gly Ile Ile Phe Thr Arg Ser Gln Lys Glu Gly Leu His Tyr

165 170 175

Thr Cys Ser Ser His Phe Pro Tyr Ser Gln Tyr Gln Phe Trp Lys Asn

180 185 190

Phe Gln Thr Leu Lys Ile Val Ile Leu Gly Leu Val Leu Pro Leu Leu

195 200 205

Val Met Val Ile Cys Tyr Ser Gly Ile Leu Lys Thr Leu Leu Arg Cys

210 215 220

Arg Asn Glu Lys Lys Arg His Arg Ala Val Arg Leu Ile Phe Thr Ile

225 230 235 240

Met Ile Val Tyr Phe Leu Phe Trp Ala Pro Tyr Asn Ile Val Leu Leu

245 250 255

Leu Asn Thr Phe Gln Glu Phe Phe Gly Leu Asn Asn Cys Ser Ser Ser

260 265 270

Asn Arg Leu Asp Gln Ala Met Gln Val Thr Glu Thr Leu Gly Met Thr

275 280 285

His Cys Cys Ile Asn Pro Ile Ile Tyr Ala Phe Val Gly Glu Lys Phe

290 295 300

Arg Asn Tyr Leu Leu Val Phe Phe Gln Lys His Ile Ala Lys Arg Phe

305 310 315 320

Cys Lys Cys Cys Ser Ile Phe Gln Gln Glu Ala Pro Glu Arg Ala Ser

325 330 335

Ser Val Tyr Thr Arg Ser Thr Gly Glu Gln Glu Ile Ser Val Gly Leu

340 345 350

<210> 18

<211> 678

<212> PRT

<213> Homo sapiens

<400> 18

Cys His His Arg Ile Cys His Cys Ser Asn Arg Val Phe Leu Cys Gln

1 5 10 15

Glu Ser Lys Val Thr Glu Ile Pro Ser Asp Leu Pro Arg Asn Ala Ile

20 25 30

Glu Leu Arg Phe Val Leu Thr Lys Leu Arg Val Ile Gln Lys Gly Ala

35 40 45

Phe Ser Gly Phe Gly Asp Leu Glu Lys Ile Glu Ile Ser Gln Asn Asp

50 55 60

Val Leu Glu Val Ile Glu Ala Asp Val Phe Ser Asn Leu Pro Lys Leu

65 70 75 80

His Glu Ile Arg Ile Glu Lys Ala Asn Asn Leu Leu Tyr Ile Asn Pro

85 90 95

Glu Ala Phe Gln Asn Leu Pro Asn Leu Gln Tyr Leu Leu Ile Ser Asn

100 105 110

Thr Gly Ile Lys His Leu Pro Asp Val His Lys Ile His Ser Leu Gln

115 120 125

Lys Val Leu Leu Asp Ile Gln Asp Asn Ile Asn Ile His Thr Ile Glu

130 135 140

Arg Asn Ser Phe Val Gly Leu Ser Phe Glu Ser Val Ile Leu Trp Leu

145 150 155 160

Asn Lys Asn Gly Ile Gln Glu Ile His Asn Cys Ala Phe Asn Gly Thr

165 170 175

Gln Leu Asp Glu Leu Asn Leu Ser Asp Asn Asn Asn Leu Glu Glu Leu

180 185 190

Pro Asn Asp Val Phe His Gly Ala Ser Gly Pro Val Ile Leu Asp Ile

195 200 205

Ser Arg Thr Arg Ile His Ser Leu Pro Ser Tyr Gly Leu Glu Asn Leu

210 215 220

Lys Lys Leu Arg Ala Arg Ser Thr Tyr Asn Leu Lys Lys Leu Pro Thr

225 230 235 240

Leu Glu Lys Leu Val Ala Leu Met Glu Ala Ser Leu Thr Tyr Pro Ser

245 250 255

His Cys Cys Ala Phe Ala Asn Trp Arg Arg Gln Ile Ser Glu Leu His

260 265 270

Pro Ile Cys Asn Lys Ser Ile Leu Arg Gln Glu Val Asp Tyr Met Thr

275 280 285

Gln Ala Arg Gly Gln Arg Ser Ser Leu Ala Glu Asp Asn Glu Ser Ser

290 295 300

Tyr Ser Arg Gly Phe Asp Met Thr Tyr Thr Glu Phe Asp Tyr Asp Leu

305 310 315 320

Cys Asn Glu Val Val Asp Val Thr Cys Ser Pro Lys Pro Asp Ala Phe

325 330 335

Asn Pro Cys Glu Asp Ile Met Gly Tyr Asn Ile Leu Arg Val Leu Ile

340 345 350

Trp Phe Ile Ser Ile Leu Ala Ile Thr Gly Asn Ile Ile Val Leu Val

355 360 365

Ile Leu Thr Thr Ser Gln Tyr Lys Leu Thr Val Pro Arg Phe Leu Met

370 375 380

Cys Asn Leu Ala Phe Ala Asp Leu Cys Ile Gly Ile Tyr Leu Leu Leu

385 390 395 400

Ile Ala Ser Val Asp Ile His Thr Lys Ser Gln Tyr His Asn Tyr Ala

405 410 415

Ile Asp Trp Gln Thr Gly Ala Gly Cys Asp Ala Ala Gly Phe Phe Thr

420 425 430

Val Phe Ala Ser Glu Leu Ser Val Tyr Thr Leu Thr Ala Ile Thr Leu

435 440 445

Glu Arg Trp His Thr Ile Thr His Ala Met Gln Leu Asp Cys Lys Val

450 455 460

Gln Leu Arg His Ala Ala Ser Val Met Val Met Gly Trp Ile Phe Ala

465 470 475 480

Phe Ala Ala Ala Leu Phe Pro Ile Phe Gly Ile Ser Ser Tyr Met Lys

485 490 495

Val Ser Ile Cys Leu Pro Met Asp Ile Asp Ser Pro Leu Ser Gln Leu

500 505 510

Tyr Val Met Ser Leu Leu Val Leu Asn Val Leu Ala Phe Val Val Ile
515 520 525

Cys Gly Cys Tyr Ile His Ile Tyr Leu Thr Val Arg Asn Pro Asn Ile
530 535 540

Val Ser Ser Ser Ser Asp Thr Arg Ile Ala Lys Arg Met Ala Met Leu

545 550 555 560

Ile Phe Thr Asp Phe Leu Cys Met Ala Pro Ile Ser Phe Phe Ala Ile
565 570 575

Ser Ala Ser Leu Lys Val Pro Leu Ile Thr Val Ser Lys Ala Lys Ile
580 585 590

Leu Leu Val Leu Phe His Pro Ile Asn Ser Cys Ala Asn Pro Phe Leu
595 600 605

Tyr Ala Ile Phe Thr Lys Asn Phe Arg Arg Asp Phe Phe Ile Leu Leu

610 615 620

Ser Lys Cys Gly Cys Tyr Glu Met Gln Ala Gln Ile Tyr Arg Thr Glu
625 630 635 640

Thr Ser Ser Thr Val His Asn Thr His Pro Arg Asn Gly His Cys Ser
645 650 655

Ser Ala Pro Arg Val Thr Asn Gly Ser Thr Tyr Ile Leu Val Pro Leu
660 665 670

Ser His Leu Ala Gln Asn
675

<210> 19
<211> 854
<212> PRT
<213> Homo sapiens
<400> 19

Glu Gly Pro Ala Lys Lys Val Leu Thr Leu Glu Gly Asp Leu Val Leu
1 5 10 15

Gly Gly Leu Phe Pro Val His Gln Lys Gly Gly Pro Ala Glu Asp Cys
20 25 30

Gly Pro Val Asn Glu His Arg Gly Ile Gln Arg Leu Glu Ala Met Leu

35 40 45

Phe Ala Leu Asp Arg Ile Asn Arg Asp Pro His Leu Leu Pro Gly Val

50 55 60

Arg Leu Gly Ala His Ile Leu Asp Ser Cys Ser Lys Asp Thr His Ala
65 70 75 80

Leu Glu Gln Ala Leu Asp Phe Val Arg Ala Ser Leu Ser Arg Gly Ala
85 90 95

Asp Gly Ser Arg His Ile Cys Pro Asp Gly Ser Tyr Ala Thr His Gly
100 105 110

Asp Ala Pro Thr Ala Ile Thr Gly Val Ile Gly Gly Ser Tyr Ser Asp

115 120 125

Val Ser Ile Gln Val Ala Asn Leu Leu Arg Leu Phe Gln Ile Pro Gln
130 135 140

Ile Ser Tyr Ala Ser Thr Ser Ala Lys Leu Ser Asp Lys Ser Arg Tyr
145 150 155 160

Asp Tyr Phe Ala Arg Thr Val Pro Pro Asp Phe Phe Gln Ala Lys Ala
165 170 175

Met Ala Glu Ile Leu Arg Phe Phe Asn Trp Thr Tyr Val Ser Thr Val

180 185 190

Ala Ser Glu Gly Asp Tyr Gly Glu Thr Gly Ile Glu Ala Phe Glu Leu

195 200 205

Glu Ala Arg Ala Arg Asn Ile Cys Val Ala Thr Ser Glu Lys Val Gly
210 215 220

Arg Ala Met Ser Arg Ala Ala Phe Glu Gly Val Val Arg Ala Leu Leu
225 230 235 240

Gln Lys Pro Ser Ala Arg Val Ala Val Leu Phe Thr Arg Ser Glu Asp

245 250 255

Ala Arg Glu Leu Leu Ala Ala Ser Gln Arg Leu Asn Ala Ser Phe Thr

260 265 270

Trp Val Ala Ser Asp Gly Trp Gly Ala Leu Glu Ser Val Val Ala Gly

275 280 285

Ser Glu Gly Ala Ala Glu Gly Ala Ile Thr Ile Glu Leu Ala Ser Tyr

290 295 300

Pro Ile Ser Asp Phe Ala Ser Tyr Phe Gln Ser Leu Asp Pro Trp Asn

305 310 315 320

Asn Ser Arg Asn Pro Trp Phe Arg Glu Phe Trp Glu Gln Arg Phe Arg

325 330 335

Cys Ser Phe Arg Gln Arg Asp Cys Ala Ala His Ser Leu Arg Ala Val

340 345 350

Pro Phe Glu Gln Glu Ser Lys Ile Met Phe Val Val Asn Ala Val Tyr

355 360 365

Ala Met Ala His Ala Leu His Asn Met His Arg Ala Leu Cys Pro Asn

370 375 380

Thr Thr Arg Leu Cys Asp Ala Met Arg Pro Val Asn Gly Arg Arg Leu

385 390 395 400

Tyr Lys Asp Phe Val Leu Asn Val Lys Phe Asp Ala Pro Phe Arg Pro

405 410 415

Ala Asp Thr His Asn Glu Val Arg Phe Asp Arg Phe Gly Asp Gly Ile

420 425 430

Gly Arg Tyr Asn Ile Phe Thr Tyr Leu Arg Ala Gly Ser Gly Arg Tyr

435 440 445

Arg Tyr Gln Lys Val Gly Tyr Trp Ala Glu Gly Leu Thr Leu Asp Thr

450 455 460

Ser Leu Ile Pro Trp Ala Ser Pro Ser Ala Gly Pro Leu Pro Ala Ser

465 470 475 480

Arg Cys Ser Glu Pro Cys Leu Gln Asn Glu Val Lys Ser Val Gln Pro

485 490 495

Gly Glu Val Cys Cys Trp Leu Cys Ile Pro Cys Gln Pro Tyr Glu Tyr

500 505 510

Arg Leu Asp Glu Phe Thr Cys Ala Asp Cys Gly Leu Gly Tyr Trp Pro

515 520 525

Asn Ala Ser Leu Thr Gly Cys Phe Glu Leu Pro Gln Glu Tyr Ile Arg

530 535 540

Trp Gly Asp Ala Trp Ala Val Gly Pro Val Thr Ile Ala Cys Leu Gly

545 550 555 560

Ala Leu Ala Thr Leu Phe Val Leu Gly Val Phe Val Arg His Asn Ala

565 570 575

Thr Pro Val Val Lys Ala Ser Gly Arg Glu Leu Cys Tyr Ile Leu Leu

580 585 590

Gly Gly Val Phe Leu Cys Tyr Cys Met Thr Phe Ile Phe Ile Ala Lys

595 600 605

Pro Ser Thr Ala Val Cys Thr Leu Arg Arg Leu Gly Leu Gly Thr Ala

610 615 620

Phe Ser Val Cys Tyr Ser Ala Leu Leu Thr Lys Thr Asn Arg Ile Ala

625 630 635 640

Arg Ile Phe Gly Gly Ala Arg Glu Gly Ala Gln Arg Pro Arg Phe Ile

645 650 655

Ser Pro Ala Ser Gln Val Ala Ile Cys Leu Ala Leu Ile Ser Gly Gln

660 665 670

Leu Leu Ile Val Val Ala Trp Leu Val Val Glu Ala Pro Gly Thr Gly

675 680 685

Lys Glu Thr Ala Pro Glu Arg Arg Glu Val Val Thr Leu Arg Cys Asn

690 695 700

His Arg Asp Ala Ser Met Leu Gly Ser Leu Ala Tyr Asn Val Leu Leu

705 710 715 720

Ile Ala Leu Cys Thr Leu Tyr Ala Phe Lys Thr Arg Lys Cys Pro Glu

725 730 735

Asn Phe Asn Glu Ala Lys Phe Ile Gly Phe Thr Met Tyr Thr Thr Cys

740 745 750

Ile Ile Trp Leu Ala Phe Leu Pro Ile Phe Tyr Val Thr Ser Ser Asp

755 760 765

Tyr Arg Val Gln Thr Thr Thr Met Cys Val Ser Val Ser Leu Ser Gly

770 775 780

Ser Val Val Leu Gly Cys Leu Phe Ala Pro Lys Leu His Ile Ile Leu
785 790 795 800
Phe Gln Pro Gln Lys Asn Val Val Ser His Arg Ala Pro Thr Ser Arg
805 810 815
Phe Gly Ser Ala Ala Ala Arg Ala Ser Ser Ser Leu Gly Gln Gly Ser

820 825 830
Gly Ser Gln Phe Val Pro Thr Val Cys Asn Gly Arg Glu Val Val Asp
835 840 845
Ser Thr Thr Ser Ser Leu
850

<210> 20
<211> 857
<212> PRT
<213> Homo sapiens
<400> 20
Leu Gly Asp His Asn Phe Leu Arg Arg Glu Ile Lys Ile Glu Gly Asp
1 5 10 15
Leu Val Leu Gly Gly Leu Phe Pro Ile Asn Glu Lys Gly Thr Gly Thr

20 25 30
Glu Glu Cys Gly Arg Ile Asn Glu Asp Arg Gly Ile Gln Arg Leu Glu
35 40 45
Ala Met Leu Phe Ala Ile Asp Glu Ile Asn Lys Asp Asp Tyr Leu Leu
50 55 60
Pro Gly Val Lys Leu Gly Val His Ile Leu Asp Thr Cys Ser Arg Asp
65 70 75 80
Thr Tyr Ala Leu Glu Gln Ser Leu Glu Phe Val Arg Ala Ser Leu Thr

85 90 95
Lys Val Asp Glu Ala Glu Tyr Met Cys Pro Asp Gly Ser Tyr Ala Ile
100 105 110
Gln Glu Asn Ile Pro Leu Leu Ile Ala Gly Val Ile Gly Gly Ser Tyr
115 120 125
Ser Ser Val Ser Ile Gln Val Ala Asn Leu Leu Arg Leu Phe Gln Ile

130 135 140

Pro Gln Ile Ser Tyr Ala Ser Thr Ser Ala Lys Leu Ser Asp Lys Ser

145 150 155 160

Arg Tyr Asp Tyr Phe Ala Arg Thr Val Pro Pro Asp Phe Tyr Gln Ala

165 170 175

Lys Ala Met Ala Glu Ile Leu Arg Phe Phe Asn Trp Thr Tyr Val Ser

180 185 190

Thr Val Ala Ser Glu Gly Asp Tyr Gly Glu Thr Gly Ile Glu Ala Phe

195 200 205

Glu Gln Glu Ala Arg Leu Arg Asn Ile Cys Ile Ala Thr Ala Glu Lys

210 215 220

Val Gly Arg Ser Asn Ile Arg Lys Ser Tyr Asp Ser Val Ile Arg Glu

225 230 235 240

Leu Leu Gln Lys Pro Asn Ala Arg Val Val Val Leu Phe Met Arg Ser

245 250 255

Asp Asp Ser Arg Glu Leu Ile Ala Ala Ala Ser Arg Ala Asn Ala Ser

260 265 270

Phe Thr Trp Val Ala Ser Asp Gly Trp Gly Ala Gln Glu Ser Ile Ile

275 280 285

Lys Gly Ser Glu His Val Ala Tyr Gly Ala Ile Thr Leu Glu Leu Ala

290 295 300

Ser Gln Pro Val Arg Gln Phe Asp Arg Tyr Phe Gln Ser Leu Asn Pro

305 310 315 320

Tyr Asn Asn His Arg Asn Pro Trp Phe Arg Asp Phe Trp Glu Gln Lys

325 330 335

Phe Gln Cys Ser Leu Gln Asn Lys Arg Asn His Arg Arg Val Cys Asp

340 345 350

Lys His Leu Ala Ile Asp Ser Ser Asn Tyr Glu Gln Glu Ser Lys Ile

355 360 365

Met Phe Val Val Asn Ala Val Tyr Ala Met Ala His Ala Leu His Lys

370 375 380

Met Gln Arg Thr Leu Cys Pro Asn Thr Thr Lys Leu Cys Asp Ala Met
385 390 395 400
Lys Ile Leu Asp Gly Lys Lys Leu Tyr Lys Asp Tyr Leu Leu Lys Ile

405 410 415
Asn Phe Thr Ala Pro Phe Asn Pro Asn Lys Asp Ala Asp Ser Ile Val
420 425 430
Lys Phe Asp Thr Phe Gly Asp Gly Met Gly Arg Tyr Asn Val Phe Asn
435 440 445
Phe Gln Asn Val Gly Gly Lys Tyr Ser Tyr Leu Lys Val Gly His Trp
450 455 460
Ala Glu Thr Leu Ser Leu Asp Val Asn Ser Ile His Trp Ser Arg Asn

465 470 475 480
Ser Val Pro Thr Ser Gln Cys Ser Asp Pro Cys Ala Pro Asn Glu Met
485 490 495
Lys Asn Met Gln Pro Gly Asp Val Cys Cys Trp Ile Cys Ile Pro Cys
500 505 510
Glu Pro Tyr Glu Tyr Leu Ala Asp Glu Phe Thr Cys Met Asp Cys Gly
515 520 525
Ser Gly Gln Trp Pro Thr Ala Asp Leu Thr Gly Cys Tyr Asp Leu Pro

530 535 540
Glu Asp Tyr Ile Arg Trp Glu Asp Ala Trp Ala Ile Gly Pro Val Thr
545 550 555 560
Ile Ala Cys Leu Gly Phe Met Cys Thr Cys Met Val Val Thr Val Phe
565 570 575
Ile Lys His Asn Asn Thr Pro Leu Val Lys Ala Ser Gly Arg Glu Leu
580 585 590
Cys Tyr Ile Leu Leu Phe Gly Val Gly Leu Ser Tyr Cys Met Thr Phe

595 600 605
Phe Phe Ile Ala Lys Pro Ser Pro Val Ile Cys Ala Leu Arg Arg Leu
610 615 620
Gly Leu Gly Ser Ser Phe Ala Ile Cys Tyr Ser Ala Leu Leu Thr Lys

625 630 635 640

Thr Asn Cys Ile Ala Arg Ile Phe Asp Gly Val Lys Asn Gly Ala Gln

645 650 655

Arg Pro Lys Phe Ile Ser Pro Ser Ser Gln Val Phe Ile Cys Leu Gly

660 665 670

Leu Ile Leu Val Gln Ile Val Met Val Ser Val Trp Leu Ile Leu Glu

675 680 685

Ala Pro Gly Thr Arg Arg Tyr Thr Leu Ala Glu Lys Arg Glu Thr Val

690 695 700

Ile Leu Lys Cys Asn Val Lys Asp Ser Ser Met Leu Ile Ser Leu Thr

705 710 715 720

Tyr Asp Val Ile Leu Val Ile Leu Cys Thr Val Tyr Ala Phe Lys Thr

725 730 735

Arg Lys Cys Pro Glu Asn Phe Asn Glu Ala Lys Phe Ile Gly Phe Thr

740 745 750

Met Tyr Thr Thr Cys Ile Ile Trp Leu Ala Phe Leu Pro Ile Phe Tyr

755 760 765

Val Thr Ser Ser Asp Tyr Arg Val Gln Thr Thr Thr Met Cys Ile Ser

770 775 780

Val Ser Leu Ser Gly Phe Val Val Leu Gly Cys Leu Phe Ala Pro Lys

785 790 795 800

Val His Ile Ile Leu Phe Gln Pro Gln Lys Asn Val Val Thr His Arg

805 810 815

Leu His Leu Asn Arg Phe Ser Val Ser Gly Thr Gly Thr Thr Tyr Ser

820 825 830

Gln Ser Ser Ala Ser Thr Tyr Val Pro Thr Val Cys Asn Gly Arg Glu

835 840 845

Val Leu Asp Ser Thr Thr Ser Ser Leu

850 855

<210> 21

<211> 880

<212> PRT

<213> Homo sapiens

<400> 21

Lys Pro Lys Gly His Pro His Met Asn Ser Ile Arg Ile Asp Gly Asp
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Ile Thr Leu Gly Gly Leu Phe Pro Val His Gly Arg Gly Ser Glu Gly
20 25 30

Lys Pro Cys Gly Glu Leu Lys Lys Glu Lys Gly Ile His Arg Leu Glu
35 40 45

Ala Met Leu Phe Ala Leu Asp Arg Ile Asn Asn Asp Pro Asp Leu Leu

50 55 60

Pro Asn Ile Thr Leu Gly Ala Arg Ile Leu Asp Thr Cys Ser Arg Asp
65 70 75 80

Thr His Ala Leu Glu Gln Ser Leu Thr Phe Val Gln Ala Leu Ile Glu
85 90 95

Lys Asp Gly Thr Glu Val Arg Cys Gly Ser Gly Gly Pro Pro Ile Ile
100 105 110

Thr Lys Pro Glu Arg Val Val Gly Val Ile Gly Ala Ser Gly Ser Ser

115 120 125

Val Ser Ile Met Val Ala Asn Ile Leu Arg Leu Phe Lys Ile Pro Gln
130 135 140

Ile Ser Tyr Ala Ser Thr Ala Pro Asp Leu Ser Asp Asn Ser Arg Tyr
145 150 155 160

Asp Phe Phe Ser Arg Val Val Pro Ser Asp Thr Tyr Gln Ala Gln Ala
165 170 175

Met Val Asp Ile Val Arg Ala Leu Lys Trp Asn Tyr Val Ser Thr Val

180 185 190

Ala Ser Glu Gly Ser Tyr Gly Glu Ser Gly Val Glu Ala Phe Ile Gln
195 200 205

Lys Ser Arg Glu Asp Gly Gly Val Cys Ile Ala Gln Ser Val Lys Ile
210 215 220

Pro Arg Glu Pro Lys Ala Gly Glu Phe Asp Lys Ile Ile Arg Arg Leu

225 230 235 240

Leu Glu Thr Ser Asn Ala Arg Ala Val Ile Ile Phe Ala Asn Glu Asp

245 250 255

Asp Ile Arg Arg Val Leu Glu Ala Ala Arg Arg Ala Asn Gln Thr Gly

260 265 270

His Phe Phe Trp Met Gly Ser Asp Ser Trp Gly Ser Lys Ile Ala Pro

275 280 285

Val Leu His Leu Glu Glu Val Ala Glu Gly Ala Val Thr Ile Leu Pro

290 295 300

Lys Arg Met Ser Val Arg Gly Phe Asp Arg Tyr Phe Ser Ser Arg Thr

305 310 315 320

Leu Asp Asn Asn Arg Arg Asn Ile Trp Phe Ala Glu Phe Trp Glu Asp

325 330 335

Asn Phe His Cys Lys Leu Ser Arg His Ala Leu Lys Lys Gly Ser His

340 345 350

Val Lys Lys Cys Thr Asn Arg Glu Arg Ile Gly Gln Asp Ser Ala Tyr

355 360 365

Glu Gln Glu Gly Lys Val Gln Phe Val Ile Asp Ala Val Tyr Ala Met

370 375 380

Gly His Ala Leu His Ala Met His Arg Asp Leu Cys Pro Gly Arg Val

385 390 395 400

Gly Leu Cys Pro Arg Met Asp Pro Val Asp Gly Thr Gln Leu Leu Lys

405 410 415

Tyr Ile Arg Asn Val Asn Phe Ser Gly Ile Ala Gly Asn Pro Val Thr

420 425 430

Phe Asn Glu Asn Gly Asp Ala Pro Gly Arg Tyr Asp Ile Tyr Gln Tyr

435 440 445

Gln Leu Arg Asn Asp Ser Ala Glu Tyr Lys Val Ile Gly Ser Trp Thr

450 455 460

Asp His Leu His Leu Arg Ile Glu Arg Met His Trp Pro Gly Ser Gly

465 470 475 480

Gln Gln Leu Pro Arg Ser Ile Cys Ser Leu Pro Cys Gln Pro Gly Glu
485 490 495
Arg Lys Lys Thr Val Lys Gly Met Pro Cys Cys Trp His Cys Glu Pro

500 505 510
Cys Thr Gly Tyr Gln Tyr Gln Val Asp Arg Tyr Thr Cys Lys Thr Cys
515 520 525
Pro Tyr Asp Met Arg Pro Thr Glu Asn Arg Thr Gly Cys Arg Pro Ile
530 535 540
Pro Ile Ile Lys Leu Glu Trp Gly Ser Pro Trp Ala Val Leu Pro Leu
545 550 555 560
Phe Leu Ala Val Val Gly Ile Ala Ala Thr Leu Phe Val Val Ile Thr

565 570 575
Phe Val Arg Tyr Asn Asp Thr Pro Ile Val Lys Ala Ser Gly Arg Glu
580 585 590
Leu Ser Tyr Val Leu Leu Ala Gly Ile Phe Leu Cys Tyr Ala Thr Thr
595 600 605
Phe Leu Met Ile Ala Glu Pro Asp Leu Gly Thr Cys Ser Leu Arg Arg
610 615 620
Ile Phe Leu Gly Leu Gly Met Ser Ile Ser Tyr Ala Ala Leu Leu Thr

625 630 635 640
Lys Thr Asn Arg Ile Tyr Arg Ile Phe Glu Gln Gly Lys Arg Ser Val
645 650 655
Ser Ala Pro Arg Phe Ile Ser Pro Ala Ser Gln Leu Ala Ile Thr Phe
660 665 670
Ser Leu Ile Ser Leu Gln Leu Leu Gly Ile Cys Val Trp Phe Val Val
675 680 685
Asp Pro Ser His Ser Val Val Asp Phe Gln Asp Gln Arg Thr Leu Asp

690 695 700
Pro Arg Phe Ala Arg Gly Val Leu Lys Cys Asp Ile Ser Asp Leu Ser
705 710 715 720
Leu Ile Cys Leu Leu Gly Tyr Ser Met Leu Leu Met Val Thr Cys Thr

725 730 735

Val Tyr Ala Ile Lys Thr Arg Gly Val Pro Glu Thr Phe Asn Glu Ala

740 745 750

Lys Pro Ile Gly Phe Thr Met Tyr Thr Thr Cys Ile Val Trp Leu Ala

755 760 765

Phe Ile Pro Ile Phe Phe Gly Thr Ser Gln Ser Ala Asp Lys Leu Tyr

770 775 780

Ile Gln Thr Thr Thr Leu Thr Val Ser Val Ser Leu Ser Ala Ser Val

785 790 795 800

Ser Leu Gly Met Leu Tyr Met Pro Lys Val Tyr Ile Ile Leu Phe His

805 810 815

Pro Glu Gln Asn Val Pro Lys Arg Lys Arg Ser Leu Lys Ala Val Val

820 825 830

Thr Ala Ala Thr Met Ser Asn Lys Phe Thr Gln Lys Gly Asn Phe Arg

835 840 845

Pro Asn Gly Glu Ala Lys Ser Glu Leu Cys Glu Asn Leu Glu Ala Pro

850 855 860

Ala Leu Ala Thr Lys Gln Thr Tyr Val Thr Tyr Thr Asn His Ala Ile

865 870 875 880

<210> 22

<211> 881

<212> PRT

<213> Homo sapiens

<400> 22

Gln Glu Met Tyr Ala Pro His Ser Ile Arg Ile Glu Gly Asp Val Thr

1 5 10 15

Leu Gly Gly Leu Phe Pro Val His Ala Lys Gly Pro Ser Gly Val Pro

20 25 30

Cys Gly Asp Ile Lys Arg Glu Asn Gly Ile His Arg Leu Glu Ala Met

35 40 45

Leu Tyr Ala Leu Asp Gln Ile Asn Ser Asp Pro Asn Leu Leu Pro Asn

50 55 60

Val Thr Leu Gly Ala Arg Ile Leu Asp Thr Cys Ser Arg Asp Thr Tyr
65 70 75 80
Ala Leu Glu Gln Ser Leu Thr Phe Val Gln Ala Leu Ile Gln Lys Asp
85 90 95
Thr Ser Asp Val Arg Cys Thr Asn Gly Glu Pro Pro Val Phe Val Lys
100 105 110
Pro Glu Lys Val Val Gly Val Ile Gly Ala Ser Gly Ser Ser Val Ser
115 120 125

Ile Met Val Ala Asn Ile Leu Arg Leu Phe Gln Ile Pro Gln Ile Ser
130 135 140
Tyr Ala Ser Thr Ala Pro Glu Leu Ser Asp Asp Arg Arg Tyr Asp Phe
145 150 155 160
Phe Ser Arg Val Val Pro Pro Asp Ser Phe Gln Ala Gln Ala Met Val
165 170 175
Asp Ile Val Lys Ala Leu Gly Trp Asn Tyr Val Ser Thr Leu Ala Ser
180 185 190

Glu Gly Ser Tyr Gly Glu Lys Gly Val Glu Ser Phe Thr Gln Ile Ser
195 200 205
Lys Glu Ala Gly Gly Leu Cys Ile Ala Gln Ser Val Arg Ile Pro Gln
210 215 220
Glu Arg Lys Asp Arg Thr Ile Asp Phe Asp Arg Ile Ile Lys Gln Leu
225 230 235 240
Leu Asp Thr Pro Asn Ser Arg Ala Val Val Ile Phe Ala Asn Asp Glu
245 250 255

Asp Ile Lys Gln Ile Leu Ala Ala Ala Lys Arg Ala Asp Gln Val Gly
260 265 270
His Phe Leu Trp Val Gly Ser Asp Ser Trp Gly Ser Lys Ile Asn Pro
275 280 285
Leu His Gln His Glu Asp Ile Ala Glu Gly Ala Ile Thr Ile Gln Pro
290 295 300

Lys Arg Ala Thr Val Glu Gly Phe Asp Ala Tyr Phe Thr Ser Arg Thr
305 310 315 320

Leu Glu Asn Asn Arg Arg Asn Val Trp Phe Ala Glu Tyr Trp Glu Glu
325 330 335
Asn Phe Asn Cys Lys Leu Thr Ile Ser Gly Ser Lys Lys Glu Asp Thr
340 345 350
Asp Arg Lys Cys Thr Gly Gln Glu Arg Ile Gly Lys Asp Ser Asn Tyr
355 360 365
Glu Gln Glu Gly Lys Val Gln Phe Val Ile Asp Ala Val Tyr Ala Met
370 375 380

Ala His Ala Leu His His Met Asn Lys Asp Leu Cys Ala Asp Tyr Arg
385 390 395 400
Gly Val Cys Pro Glu Met Glu Gln Ala Gly Gly Lys Lys Leu Leu Lys
405 410 415
Tyr Ile Arg Asn Val Asn Phe Asn Gly Ser Ala Gly Thr Pro Val Met
420 425 430
Phe Asn Lys Asn Gly Asp Ala Pro Gly Arg Tyr Asp Ile Phe Gln Tyr
435 440 445

Gln Thr Thr Asn Thr Ser Asn Pro Gly Tyr Arg Leu Ile Gly Gln Trp
450 455 460
Thr Asp Glu Leu Gln Leu Asn Ile Glu Asp Met Gln Trp Gly Lys Gly
465 470 475 480
Val Arg Glu Ile Pro Ala Ser Val Cys Thr Leu Pro Cys Lys Pro Gly
485 490 495
Gln Arg Lys Lys Thr Gln Lys Gly Thr Pro Cys Cys Trp Thr Cys Glu
500 505 510

Pro Cys Asp Gly Tyr Gln Tyr Gln Phe Asp Glu Met Thr Cys Gln His
515 520 525
Cys Pro Tyr Asp Gln Arg Pro Asn Glu Asn Arg Thr Gly Cys Gln Asp
530 535 540
Ile Pro Ile Ile Lys Leu Glu Trp His Ser Pro Trp Ala Val Ile Pro

545 550 555 560

Val Phe Leu Ala Met Leu Gly Ile Ile Ala Thr Ile Phe Val Met Ala

565 570 575

Thr Phe Ile Arg Tyr Asn Asp Thr Pro Ile Val Arg Ala Ser Gly Arg

580 585 590

Glu Leu Ser Tyr Val Leu Leu Thr Gly Ile Phe Leu Cys Tyr Ile Ile

595 600 605

Thr Phe Leu Met Ile Ala Lys Pro Asp Val Ala Val Cys Ser Phe Arg

610 615 620

Arg Val Phe Leu Gly Leu Gly Met Cys Ile Ser Tyr Ala Ala Leu Leu

625 630 635 640

Thr Lys Thr Asn Arg Ile Tyr Arg Ile Phe Glu Gln Gly Lys Lys Ser

645 650 655

Val Thr Ala Pro Arg Leu Ile Ser Pro Thr Ser Gln Leu Ala Ile Thr

660 665 670

Ser Ser Leu Ile Ser Val Gln Leu Leu Gly Val Phe Ile Trp Phe Gly

675 680 685

Val Asp Pro Pro Asn Ile Ile Ile Asp Tyr Asp Glu His Lys Thr Met

690 695 700

Asn Pro Glu Gln Ala Arg Gly Val Leu Lys Cys Asp Ile Thr Asp Leu

705 710 715 720

Gln Ile Ile Cys Ser Leu Gly Tyr Ser Ile Leu Leu Met Val Thr Cys

725 730 735

Thr Val Tyr Ala Ile Lys Thr Arg Gly Val Pro Glu Asn Phe Asn Glu

740 745 750

Ala Lys Pro Ile Gly Phe Thr Met Tyr Thr Thr Cys Ile Val Trp Leu

755 760 765

Ala Phe Ile Pro Ile Phe Phe Gly Thr Ala Gln Ser Ala Glu Lys Leu

770 775 780

Tyr Ile Gln Thr Thr Thr Leu Thr Ile Ser Met Asn Leu Ser Ala Ser

785 790 795 800

Val Ala Leu Gly Met Leu Tyr Met Pro Lys Val Tyr Ile Ile Ile Phe
805 810 815
His Pro Glu Leu Asn Val Gln Lys Arg Lys Arg Ser Phe Lys Ala Val
820 825 830

Val Thr Ala Ala Thr Met Ser Ser Arg Leu Ser His Lys Pro Ser Asp
835 840 845
Arg Pro Asn Gly Glu Ala Lys Thr Glu Leu Cys Glu Asn Val Asp Pro
850 855 860
Asn Ser Pro Ala Ala Lys Lys Lys Tyr Val Ser Tyr Asn Asn Leu Val
865 870 875 880
Ile

<210> 23
<211> 368
<212> PRT
<213> Homo sapiens
<400> 23
Met Val Leu Glu Val Ser Asp His Gln Val Leu Asn Asp Ala Glu Val

1 5 10 15
Ala Ala Leu Leu Glu Asn Phe Ser Ser Ser Tyr Asp Tyr Gly Glu Asn
20 25 30
Glu Ser Asp Ser Cys Cys Thr Ser Pro Pro Cys Pro Gln Asp Phe Ser
35 40 45
Leu Asn Phe Asp Arg Ala Phe Leu Pro Ala Leu Tyr Ser Leu Leu Phe
50 55 60
Leu Leu Gly Leu Leu Gly Asn Gly Ala Val Ala Ala Val Leu Leu Ser

65 70 75 80
Arg Arg Thr Ala Leu Ser Ser Thr Asp Thr Phe Leu Leu His Leu Ala
85 90 95
Val Ala Asp Thr Leu Leu Val Leu Thr Leu Pro Leu Trp Ala Val Asp
100 105 110
Ala Ala Val Gln Trp Val Phe Gly Ser Gly Leu Cys Lys Val Ala Gly

115 120 125

Ala Leu Phe Asn Ile Asn Phe Tyr Ala Gly Ala Leu Leu Leu Ala Cys

130 135 140

Ile Ser Phe Asp Arg Tyr Leu Asn Ile Val His Ala Thr Gln Leu Tyr

145 150 155 160

Arg Arg Gly Pro Pro Ala Arg Val Thr Leu Thr Cys Leu Ala Val Trp

165 170 175

Gly Leu Cys Leu Leu Phe Ala Leu Pro Asp Phe Ile Phe Leu Ser Ala

180 185 190

His His Asp Glu Arg Leu Asn Ala Thr His Cys Gln Tyr Asn Phe Pro

195 200 205

Gln Val Gly Arg Thr Ala Leu Arg Val Leu Gln Leu Val Ala Gly Phe

210 215 220

Leu Leu Pro Leu Leu Val Met Ala Tyr Cys Tyr Ala His Ile Leu Ala

225 230 235 240

Val Leu Leu Val Ser Arg Gly Gln Arg Arg Leu Arg Ala Met Arg Leu

245 250 255

Val Val Val Val Val Val Ala Phe Ala Leu Cys Trp Thr Pro Tyr His

260 265 270

Leu Val Val Leu Val Asp Ile Leu Met Asp Leu Gly Ala Leu Ala Arg

275 280 285

Asn Cys Gly Arg Glu Ser Arg Val Asp Val Ala Lys Ser Val Thr Ser

290 295 300

Gly Leu Gly Tyr Met His Cys Cys Leu Asn Pro Leu Leu Tyr Ala Phe

305 310 315 320

Val Gly Val Lys Phe Arg Glu Arg Met Trp Met Leu Leu Leu Arg Leu

325 330 335

Gly Cys Pro Asn Gln Arg Gly Leu Gln Arg Gln Pro Ser Ser Ser Arg

340 345 350

Arg Asp Ser Ser Trp Ser Glu Thr Ser Glu Ala Ser Tyr Ser Gly Leu

355 360 365

<210> 24

<211> 355

<212> PRT

<213> Homo sapiens

<400> 24

Met Asp Tyr Thr Leu Asp Leu Ser Val Thr Thr Val Thr Asp Tyr Tyr
1 5 10 15

Tyr Pro Asp Ile Phe Ser Ser Pro Cys Asp Ala Glu Leu Ile Gln Thr
20 25 30

Asn Gly Lys Leu Leu Leu Ala Val Phe Tyr Cys Leu Leu Phe Val Phe
35 40 45

Ser Leu Leu Gly Asn Ser Leu Val Ile Leu Val Leu Val Val Cys Lys
50 55 60

Lys Leu Arg Ser Ile Thr Asp Val Tyr Leu Leu Asn Leu Ala Leu Ser
65 70 75 80

Asp Leu Leu Phe Val Phe Ser Phe Pro Phe Gln Thr Tyr Tyr Leu Leu
85 90 95

Asp Gln Trp Val Phe Gly Thr Val Met Cys Lys Val Val Ser Gly Phe
100 105 110

Tyr Tyr Ile Gly Phe Tyr Ser Ser Met Phe Phe Ile Thr Leu Met Ser
115 120 125

Val Asp Arg Tyr Leu Ala Val Val His Ala Val Tyr Ala Leu Lys Val
130 135 140

Arg Thr Ile Arg Met Gly Thr Thr Leu Cys Leu Ala Val Trp Leu Thr
145 150 155 160

Ala Ile Met Ala Thr Ile Pro Leu Leu Val Phe Tyr Gln Val Ala Ser
165 170 175

Glu Asp Gly Val Leu Gln Cys Tyr Ser Phe Tyr Asn Gln Gln Thr Leu
180 185 190

Lys Trp Lys Ile Phe Thr Asn Phe Lys Met Asn Ile Leu Gly Leu Leu
195 200 205

Ile Pro Phe Thr Ile Phe Met Phe Cys Tyr Ile Lys Ile Leu His Gln
210 215 220
Leu Lys Arg Cys Gln Asn His Asn Lys Thr Lys Ala Ile Arg Leu Val
225 230 235 240
Leu Ile Val Val Ile Ala Ser Leu Leu Phe Trp Val Pro Phe Asn Val
245 250 255
Val Leu Phe Leu Thr Ser Leu His Ser Met His Ile Leu Asp Gly Cys
260 265 270

Ser Ile Ser Gln Gln Leu Thr Tyr Ala Thr His Val Thr Glu Ile Ile
275 280 285
Ser Phe Thr His Cys Cys Val Asn Pro Val Ile Tyr Ala Phe Val Gly
290 295 300
Glu Lys Phe Lys Lys His Leu Ser Glu Ile Phe Gln Lys Ser Cys Ser
305 310 315 320
Gln Ile Phe Asn Tyr Leu Gly Arg Gln Met Pro Arg Glu Ser Cys Glu
325 330 335

Lys Ser Ser Ser Cys Gln Gln His Ser Ser Arg Ser Ser Ser Val Asp
340 345 350
Tyr Ile Leu
355

<210> 25
<211> 412
<212> PRT
<213> Homo sapiens
<400> 25
Met Pro Ile Met Gly Ser Ser Val Tyr Ile Thr Val Glu Leu Ala Ile
1 5 10 15
Ala Val Leu Ala Ile Leu Gly Asn Val Leu Val Cys Trp Ala Val Trp
20 25 30
Leu Asn Ser Asn Leu Gln Asn Val Thr Asn Tyr Phe Val Val Ser Leu

35 40 45
Ala Ala Ala Asp Ile Ala Val Gly Val Leu Ala Ile Pro Phe Ala Ile

50 55 60

Thr Ile Ser Thr Gly Phe Cys Ala Ala Cys His Gly Cys Leu Phe Ile

65 70 75 80

Ala Cys Phe Val Leu Val Leu Thr Gln Ser Ser Ile Phe Ser Leu Leu

85 90 95

Ala Ile Ala Ile Asp Arg Tyr Ile Ala Ile Arg Ile Pro Leu Arg Tyr

100 105 110

Asn Gly Leu Val Thr Gly Thr Arg Ala Lys Gly Ile Ile Ala Ile Cys

115 120 125

Trp Val Leu Ser Phe Ala Ile Gly Leu Thr Pro Met Leu Gly Trp Asn

130 135 140

Asn Cys Gly Gln Pro Lys Glu Gly Lys Asn His Ser Gln Gly Cys Gly

145 150 155 160

Glu Gly Gln Val Ala Cys Leu Phe Glu Asp Val Val Pro Met Asn Tyr

165 170 175

Met Val Tyr Phe Asn Phe Phe Ala Cys Val Leu Val Pro Leu Leu Leu

180 185 190

Met Leu Gly Val Tyr Leu Arg Ile Phe Leu Ala Ala Arg Arg Gln Leu

195 200 205

Lys Gln Met Glu Ser Gln Pro Leu Pro Gly Glu Arg Ala Arg Ser Thr

210 215 220

Leu Gln Lys Glu Val His Ala Ala Lys Ser Leu Ala Ile Ile Val Gly

225 230 235 240

Leu Phe Ala Leu Cys Trp Leu Pro Leu His Ile Ile Asn Cys Phe Thr

245 250 255

Phe Phe Cys Pro Asp Cys Ser His Ala Pro Leu Trp Leu Met Tyr Leu

260 265 270

Ala Ile Val Leu Ser His Thr Asn Ser Val Val Asn Pro Phe Ile Tyr

275 280 285

Ala Tyr Arg Ile Arg Glu Phe Arg Gln Thr Phe Arg Lys Ile Ile Arg

290 295 300

Ser His Val Leu Arg Gln Gln Glu Pro Phe Lys Ala Ala Gly Thr Ser
305 310 315 320
Ala Arg Val Leu Ala Ala His Gly Ser Asp Gly Glu Gln Val Ser Leu
325 330 335
Arg Leu Asn Gly His Pro Pro Gly Val Trp Ala Asn Gly Ser Ala Pro
340 345 350
His Pro Glu Arg Arg Pro Asn Gly Tyr Ala Leu Gly Leu Val Ser Gly

355 360 365
Gly Ser Ala Gln Glu Ser Gln Gly Asn Thr Gly Leu Pro Asp Val Glu
370 375 380
Leu Leu Ser His Glu Leu Lys Gly Val Cys Pro Glu Pro Pro Gly Leu
385 390 395 400
Asp Asp Pro Leu Ala Gln Asp Gly Ala Gly Val Ser
405 410

<210> 26
<211> 425
<212> PRT
<213> Homo sapiens
<400> 26
Met Glu Pro Ser Ala Thr Pro Gly Ala Gln Met Gly Val Pro Pro Gly

1 5 10 15
Ser Arg Glu Pro Ser Pro Val Pro Pro Asp Tyr Glu Asp Glu Phe Leu
20 25 30
Arg Tyr Leu Trp Arg Asp Tyr Leu Tyr Pro Lys Gln Tyr Glu Trp Val
35 40 45
Leu Ile Ala Ala Tyr Val Ala Val Phe Val Val Ala Leu Val Gly Asn
50 55 60
Thr Leu Val Cys Leu Ala Val Trp Arg Asn His His Met Arg Thr Val

65 70 75 80
Thr Asn Tyr Phe Ile Val Asn Leu Ser Leu Ala Asp Val Leu Val Thr
85 90 95
Ala Ile Cys Leu Pro Ala Ser Leu Leu Val Asp Ile Thr Glu Ser Trp

100 105 110

Leu Phe Gly His Ala Leu Cys Lys Val Ile Pro Tyr Leu Gln Ala Val

115 120 125

Ser Val Ser Val Ala Val Leu Thr Leu Ser Phe Ile Ala Leu Asp Arg

130 135 140

Trp Tyr Ala Ile Cys His Pro Leu Leu Phe Lys Ser Thr Ala Arg Arg

145 150 155 160

Ala Arg Gly Ser Ile Leu Gly Ile Trp Ala Val Ser Leu Ala Ile Met

165 170 175

Val Pro Gln Ala Ala Val Met Glu Cys Ser Ser Val Leu Pro Glu Leu

180 185 190

Ala Asn Arg Thr Arg Leu Phe Ser Val Cys Asp Glu Arg Trp Ala Asp

195 200 205

Asp Leu Tyr Pro Lys Ile Tyr His Ser Cys Phe Phe Ile Val Thr Tyr

210 215 220

Leu Ala Pro Leu Gly Leu Met Ala Met Ala Tyr Phe Gln Ile Phe Arg

225 230 235 240

Lys Leu Trp Gly Arg Gln Ile Pro Gly Thr Thr Ser Ala Leu Val Arg

245 250 255

Asn Trp Lys Arg Pro Ser Asp Gln Leu Gly Asp Leu Glu Gln Gly Leu

260 265 270

Ser Gly Glu Pro Gln Pro Arg Ala Arg Ala Phe Leu Ala Glu Val Lys

275 280 285

Gln Met Arg Ala Arg Arg Lys Thr Ala Lys Met Leu Met Val Val Leu

290 295 300

Leu Val Phe Ala Leu Cys Tyr Leu Pro Ile Ser Val Leu Asn Val Leu

305 310 315 320

Lys Arg Val Phe Gly Met Phe Arg Gln Ala Ser Asp Arg Glu Ala Val

325 330 335

Tyr Ala Cys Phe Thr Phe Ser His Trp Leu Val Tyr Ala Asn Ser Ala

340 345 350

Ala Asn Pro Ile Ile Tyr Asn Phe Leu Ser Gly Lys Phe Arg Glu Gln
355 360 365
Phe Lys Ala Ala Phe Ser Cys Cys Leu Pro Gly Leu Gly Pro Cys Gly
370 375 380
Ser Leu Lys Ala Pro Ser Pro Arg Ser Ser Ala Ser His Lys Ser Leu

385 390 395 400
Ser Leu Gln Ser Arg Cys Ser Ile Ser Lys Ile Ser Glu His Val Val
405 410 415
Leu Thr Ser Val Thr Thr Val Leu Pro
420 425

<210> 27
<211> 444
<212> PRT
<213> Homo sapiens
<400> 27

Met Ser Gly Thr Lys Leu Glu Asp Ser Pro Pro Cys Arg Asn Trp Ser
1 5 10 15
Ser Ala Ser Glu Leu Asn Glu Thr Gln Glu Pro Phe Leu Asn Pro Thr

20 25 30
Asp Tyr Asp Asp Glu Glu Phe Leu Arg Tyr Leu Trp Arg Glu Tyr Leu
35 40 45
His Pro Lys Glu Tyr Glu Trp Val Leu Ile Ala Gly Tyr Ile Ile Val
50 55 60
Phe Val Val Ala Leu Ile Gly Asn Val Leu Val Cys Val Ala Val Trp
65 70 75 80
Lys Asn His His Met Arg Thr Val Thr Asn Tyr Phe Ile Val Asn Leu

85 90 95
Ser Leu Ala Asp Val Leu Val Thr Ile Thr Cys Leu Pro Ala Thr Leu
100 105 110
Val Val Asp Ile Thr Glu Thr Trp Phe Phe Gly Gln Ser Leu Cys Lys
115 120 125
Val Ile Pro Tyr Leu Gln Thr Val Ser Val Ser Val Ser Val Leu Thr

130 135 140

Leu Ser Cys Ile Ala Leu Asp Arg Trp Tyr Ala Ile Cys His Pro Leu

145 150 155 160

Met Phe Lys Ser Thr Ala Lys Arg Ala Arg Asn Ser Ile Val Ile Ile

165 170 175

Trp Ile Val Ser Cys Ile Ile Met Ile Pro Gln Ala Ile Val Met Glu

180 185 190

Cys Ser Thr Val Phe Pro Gly Leu Ala Asn Lys Thr Thr Leu Phe Thr

195 200 205

Val Cys Asp Glu Arg Trp Gly Gly Glu Ile Tyr Pro Lys Met Tyr His

210 215 220

Ile Cys Phe Phe Leu Val Thr Tyr Met Ala Pro Leu Cys Leu Met Val

225 230 235 240

Leu Ala Tyr Leu Gln Ile Phe Arg Lys Leu Trp Cys Arg Gln Ile Pro

245 250 255

Gly Thr Ser Ser Val Val Gln Arg Lys Trp Lys Pro Leu Gln Pro Val

260 265 270

Ser Gln Pro Arg Gly Pro Gly Gln Pro Thr Lys Ser Arg Met Ser Ala

275 280 285

Val Ala Ala Glu Ile Lys Gln Ile Arg Ala Arg Arg Lys Thr Ala Arg

290 295 300

Met Leu Met Ile Val Leu Leu Val Phe Ala Ile Cys Tyr Leu Pro Ile

305 310 315 320

Ser Ile Leu Asn Val Leu Lys Arg Val Phe Gly Met Phe Ala His Thr

325 330 335

Glu Asp Arg Glu Thr Val Tyr Ala Trp Phe Thr Phe Ser His Trp Leu

340 345 350

Val Tyr Ala Asn Ser Ala Ala Asn Pro Ile Ile Tyr Asn Phe Leu Ser

355 360 365

Gly Lys Phe Arg Glu Glu Phe Lys Ala Ala Phe Ser Cys Cys Cys Leu

370 375 380

Gly Val His His Arg Gln Glu Asp Arg Leu Thr Arg Gly Arg Thr Ser
385 390 395 400
Thr Glu Ser Arg Lys Ser Leu Thr Thr Gln Ile Ser Asn Phe Asp Asn

405 410 415
Ile Ser Lys Leu Ser Glu Gln Val Val Leu Thr Ser Ile Ser Thr Leu
420 425 430
Pro Ala Ala Asn Gly Ala Gly Pro Leu Gln Asn Trp
435 440

<210> 28
<211> 372
<212> PRT
<213> Homo sapiens
<400> 28

Ile Gln Gly Thr Asn Arg Ser Ser Lys Gly Arg Ser Leu Ile Gly Lys
1 5 10 15
Val Asp Gly Thr Ser His Val Thr Gly Lys Gly Val Thr Val Glu Thr

20 25 30
Val Phe Ser Val Asp Glu Phe Ser Ala Ser Val Leu Thr Gly Lys Leu
35 40 45
Thr Thr Val Phe Leu Pro Ile Val Tyr Thr Ile Val Phe Val Val Gly
50 55 60
Leu Pro Ser Asn Gly Met Ala Leu Trp Val Phe Leu Phe Arg Thr Lys
65 70 75 80
Lys Lys His Pro Ala Val Ile Tyr Met Ala Asn Leu Ala Leu Ala Asp

85 90 95
Leu Leu Ser Val Ile Trp Phe Pro Leu Lys Ile Ala Tyr His Ile His
100 105 110
Gly Asn Asn Trp Ile Tyr Gly Glu Ala Leu Cys Asn Val Leu Ile Gly
115 120 125
Phe Phe Tyr Gly Asn Met Tyr Cys Ser Ile Leu Phe Met Thr Cys Leu
130 135 140

Ser Val Gln Arg Tyr Trp Val Ile Val Asn Pro Met Gly His Ser Arg

145 150 155 160

Lys Lys Ala Asn Ile Ala Ile Gly Ile Ser Leu Ala Ile Trp Leu Leu

165 170 175

Ile Leu Leu Val Thr Ile Pro Leu Tyr Val Val Lys Gln Thr Ile Phe

180 185 190

Ile Pro Ala Leu Asn Ile Thr Thr Cys His Asp Val Leu Pro Glu Gln

195 200 205

Leu Leu Val Gly Asp Met Phe Asn Tyr Phe Leu Ser Leu Ala Ile Gly

210 215 220

Val Phe Leu Phe Pro Ala Phe Leu Thr Ala Ser Ala Tyr Val Leu Met

225 230 235 240

Ile Arg Met Leu Arg Ser Ser Ala Met Asp Glu Asn Ser Glu Lys Lys

245 250 255

Arg Lys Arg Ala Ile Lys Leu Ile Val Thr Val Leu Ala Met Tyr Leu

260 265 270

Ile Cys Phe Thr Pro Ser Asn Leu Leu Leu Val Val His Tyr Phe Leu

275 280 285

Ile Lys Ser Gln Gly Gln Ser His Val Tyr Ala Leu Tyr Ile Val Ala

290 295 300

Leu Cys Leu Ser Thr Leu Asn Ser Cys Ile Asp Pro Phe Val Tyr Tyr

305 310 315 320

Phe Val Ser His Asp Phe Arg Asp His Ala Lys Asn Ala Leu Leu Cys

325 330 335

Arg Ser Val Arg Thr Val Lys Gln Met Gln Val Ser Leu Thr Ser Lys

340 345 350

Lys His Ser Arg Lys Ser Ser Ser Tyr Ser Ser Ser Ser Thr Thr Val

355 360 365

Lys Thr Ser Tyr

370

<210> 29

<211> 482

<212> PRT

<213> Homo sapiens

<400> 29

Met Ala Ser Phe Ser Ala Glu Thr Asn Ser Thr Asp Leu Leu Ser Gln
1 5 10 15

Pro Trp Asn Glu Pro Pro Val Ile Leu Ser Met Val Ile Leu Ser Leu
20 25 30

Thr Phe Leu Leu Gly Leu Pro Gly Asn Gly Leu Val Leu Trp Val Ala
35 40 45

Gly Leu Lys Met Gln Arg Thr Val Asn Thr Ile Trp Phe Leu His Leu
50 55 60

Thr Leu Ala Asp Leu Leu Cys Cys Leu Ser Leu Pro Phe Ser Leu Ala
65 70 75 80

His Leu Ala Leu Gln Gly Gln Trp Pro Tyr Gly Arg Phe Leu Cys Lys
85 90 95

Leu Ile Pro Ser Ile Ile Val Leu Asn Met Phe Ala Ser Val Phe Leu
100 105 110

Leu Thr Ala Ile Ser Leu Asp Arg Cys Leu Val Val Phe Lys Pro Ile
115 120 125

Trp Cys Gln Asn His Arg Asn Val Gly Met Ala Cys Ser Ile Cys Gly
130 135 140

Cys Ile Trp Val Val Ala Phe Val Met Cys Ile Pro Val Phe Val Tyr
145 150 155 160

Arg Glu Ile Phe Thr Thr Asp Asn His Asn Arg Cys Gly Tyr Lys Phe
165 170 175

Gly Leu Ser Ser Ser Leu Asp Tyr Pro Asp Phe Tyr Gly Asp Pro Leu
180 185 190

Glu Asn Arg Ser Leu Glu Asn Ile Val Gln Pro Pro Gly Glu Met Asn
195 200 205

Asp Arg Leu Asp Pro Ser Ser Phe Gln Thr Asn Asp His Pro Trp Thr

210 215 220

Val Pro Thr Val Phe Gln Pro Gln Thr Phe Gln Arg Pro Ser Ala Asp
225 230 235 240
Ser Leu Pro Arg Gly Ser Ala Arg Leu Thr Ser Gln Asn Leu Tyr Ser
245 250 255
Asn Val Phe Lys Pro Ala Asp Val Val Ser Pro Lys Ile Pro Ser Gly
260 265 270
Phe Pro Ile Glu Asp His Glu Thr Ser Pro Leu Asp Asn Ser Asp Ala
275 280 285

Phe Leu Ser Thr His Leu Lys Leu Phe Pro Ser Ala Ser Ser Asn Ser
290 295 300
Phe Tyr Glu Ser Glu Leu Pro Gln Gly Phe Gln Asp Tyr Tyr Asn Leu
305 310 315 320
Gly Gln Phe Thr Asp Asp Asp Gln Val Pro Thr Pro Leu Val Ala Ile
325 330 335
Thr Ile Thr Arg Leu Val Val Gly Phe Leu Leu Pro Ser Val Ile Met
340 345 350

Ile Ala Cys Tyr Ser Phe Ile Val Phe Arg Met Gln Arg Gly Arg Phe
355 360 365
Ala Lys Ser Gln Ser Lys Thr Phe Arg Val Ala Val Val Val Val Ala
370 375 380
Val Phe Leu Val Cys Trp Thr Pro Tyr His Ile Phe Gly Val Leu Ser
385 390 395 400
Leu Leu Thr Asp Pro Glu Thr Pro Leu Gly Lys Thr Leu Met Ser Trp
405 410 415

Asp His Val Cys Ile Ala Leu Ala Ser Ala Asn Ser Cys Phe Asn Pro
420 425 430
Phe Leu Tyr Ala Leu Leu Gly Lys Asp Phe Arg Lys Lys Ala Arg Gln
435 440 445
Ser Ile Gln Gly Ile Leu Glu Ala Ala Phe Ser Glu Glu Leu Thr Arg
450 455 460

Ser Thr His Cys Pro Ser Asn Asn Val Ile Ser Glu Arg Asn Ser Thr
465 470 475 480

Thr Val

<210> 30
<211> 886
<212> PRT
<213> Homo sapiens
<400> 30
Gly Ser Ser Pro Arg Ser Gly Val Leu Leu Arg Gly Cys Pro Thr His
1 5 10 15
Cys His Cys Glu Pro Asp Gly Arg Met Leu Leu Arg Val Asp Cys Ser
20 25 30
Asp Leu Gly Leu Ser Glu Leu Pro Ser Asn Leu Ser Val Phe Thr Ser
35 40 45
Tyr Leu Asp Leu Ser Met Asn Asn Ile Ser Gln Leu Leu Pro Asn Pro

50 55 60
Leu Pro Ser Leu Arg Phe Leu Glu Glu Leu Arg Leu Ala Gly Asn Ala
65 70 75 80
Leu Thr Tyr Ile Pro Lys Gly Ala Phe Thr Gly Leu Tyr Ser Leu Lys
85 90 95
Val Leu Met Leu Gln Asn Asn Gln Leu Arg His Val Pro Thr Glu Ala
100 105 110
Leu Gln Asn Leu Arg Ser Leu Gln Ser Leu Arg Leu Asp Ala Asn His

115 120 125
Ile Ser Tyr Val Pro Pro Ser Cys Phe Ser Gly Leu His Ser Leu Arg
130 135 140
His Leu Trp Leu Asp Asp Asn Ala Leu Thr Glu Ile Pro Val Gln Ala
145 150 155 160
Phe Arg Ser Leu Ser Ala Leu Gln Ala Met Thr Leu Ala Leu Asn Lys
165 170 175

Ile His His Ile Pro Asp Tyr Ala Phe Gly Asn Leu Ser Ser Leu Val

180 185 190

Val Leu His Leu His Asn Asn Arg Ile His Ser Leu Gly Lys Lys Cys

195 200 205

Phe Asp Gly Leu His Ser Leu Glu Thr Leu Asp Leu Asn Tyr Asn Asn

210 215 220

Leu Asp Glu Phe Pro Thr Ala Ile Arg Thr Leu Ser Asn Leu Lys Glu

225 230 235 240

Leu Gly Phe His Ser Asn Asn Ile Arg Ser Ile Pro Glu Lys Ala Phe

245 250 255

Val Gly Asn Pro Ser Leu Ile Thr Ile His Phe Tyr Asp Asn Pro Ile

260 265 270

Gln Phe Val Gly Arg Ser Ala Phe Gln His Leu Pro Glu Leu Arg Thr

275 280 285

Leu Thr Leu Asn Gly Ala Ser Gln Ile Thr Glu Phe Pro Asp Leu Thr

290 295 300

Gly Thr Ala Asn Leu Glu Ser Leu Thr Leu Thr Gly Ala Gln Ile Ser

305 310 315 320

Ser Leu Pro Gln Thr Val Cys Asn Gln Leu Pro Asn Leu Gln Val Leu

325 330 335

Asp Leu Ser Tyr Asn Leu Leu Glu Asp Leu Pro Ser Phe Ser Val Cys

340 345 350

Gln Lys Leu Gln Lys Ile Asp Leu Arg His Asn Glu Ile Tyr Glu Ile

355 360 365

Lys Val Asp Thr Phe Gln Gln Leu Leu Ser Leu Arg Ser Leu Asn Leu

370 375 380

Ala Trp Asn Lys Ile Ala Ile Ile His Pro Asn Ala Phe Ser Thr Leu

385 390 395 400

Pro Ser Leu Ile Lys Leu Asp Leu Ser Ser Asn Leu Leu Ser Ser Phe

405 410 415

Pro Ile Thr Gly Leu His Gly Leu Thr His Leu Lys Leu Thr Gly Asn

420 425 430

His Ala Leu Gln Ser Leu Ile Ser Ser Glu Asn Phe Pro Glu Leu Lys

435 440 445

Val Ile Glu Met Pro Tyr Ala Tyr Gln Cys Cys Ala Phe Gly Val Cys

450 455 460

Glu Asn Ala Tyr Lys Ile Ser Asn Gln Trp Asn Lys Gly Asp Asn Ser

465 470 475 480

Ser Met Asp Asp Leu His Lys Lys Asp Ala Gly Met Phe Gln Ala Gln

485 490 495

Asp Glu Arg Asp Leu Glu Asp Phe Leu Leu Asp Phe Glu Glu Asp Leu

500 505 510

Lys Ala Leu His Ser Val Gln Cys Ser Pro Ser Pro Gly Pro Phe Lys

515 520 525

Pro Cys Glu His Leu Leu Asp Gly Trp Leu Ile Arg Ile Gly Val Trp

530 535 540

Thr Ile Ala Val Leu Ala Leu Thr Cys Asn Ala Leu Val Thr Ser Thr

545 550 555 560

Val Phe Arg Ser Pro Leu Tyr Ile Ser Pro Ile Lys Leu Leu Ile Gly

565 570 575

Val Ile Ala Ala Val Asn Met Leu Thr Gly Val Ser Ser Ala Val Leu

580 585 590

Ala Gly Val Asp Ala Phe Thr Phe Gly Ser Phe Ala Arg His Gly Ala

595 600 605

Trp Trp Glu Asn Gly Val Gly Cys His Val Ile Gly Phe Leu Ser Ile

610 615 620

Phe Ala Ser Glu Ser Ser Val Phe Leu Leu Thr Leu Ala Ala Leu Glu

625 630 635 640

Arg Gly Phe Ser Val Lys Tyr Ser Ala Lys Phe Glu Thr Lys Ala Pro

645 650 655

Phe Ser Ser Leu Lys Val Ile Ile Leu Leu Cys Ala Leu Leu Ala Leu

660 665 670

Thr Met Ala Ala Val Pro Leu Leu Gly Gly Ser Lys Tyr Gly Ala Ser
675 680 685
Pro Leu Cys Leu Pro Leu Pro Phe Gly Glu Pro Ser Thr Met Gly Tyr

690 695 700
Met Val Ala Leu Ile Leu Leu Asn Ser Leu Cys Phe Leu Met Met Thr
705 710 715 720
Ile Ala Tyr Thr Lys Leu Tyr Cys Asn Leu Asp Lys Gly Asp Leu Glu
725 730 735
Asn Ile Trp Asp Cys Ser Met Val Lys His Ile Ala Leu Leu Leu Phe
740 745 750
Thr Asn Cys Ile Leu Asn Cys Pro Val Ala Phe Leu Ser Phe Ser Ser

755 760 765
Leu Ile Asn Leu Thr Phe Ile Ser Pro Glu Val Ile Lys Phe Ile Leu
770 775 780
Leu Val Val Val Pro Leu Pro Ala Cys Leu Asn Pro Leu Leu Tyr Ile
785 790 795 800
Leu Phe Asn Pro His Phe Lys Glu Asp Leu Val Ser Leu Arg Lys Gln
805 810 815
Thr Tyr Val Trp Thr Arg Ser Lys His Pro Ser Leu Met Ser Ile Asn

820 825 830
Ser Asp Asp Val Glu Lys Gln Ser Cys Asp Ser Thr Gln Ala Leu Val
835 840 845
Thr Phe Thr Ser Ser Ser Ile Thr Tyr Asp Leu Pro Pro Ser Ser Val
850 855 860
Pro Ser Pro Ala Tyr Pro Val Thr Glu Ser Cys His Leu Ser Ser Val
865 870 875 880
Ala Phe Val Pro Cys Leu
885

<210> 31
<211> 508
<212> PRT

<213> Homo sapiens

<400> 31

Met Thr Ser Thr Cys Thr Asn Ser Thr Arg Glu Ser Asn Ser Ser His
1 5 10 15

Thr Cys Met Pro Leu Ser Lys Met Pro Ile Ser Leu Ala His Gly Ile
20 25 30

Ile Arg Ser Thr Val Leu Val Ile Phe Leu Ala Ala Ser Phe Val Gly
35 40 45

Asn Ile Val Leu Ala Leu Val Leu Gln Arg Lys Pro Gln Leu Leu Gln

50 55 60

Val Thr Asn Arg Phe Ile Phe Asn Leu Leu Val Thr Asp Leu Leu Gln
65 70 75 80

Ile Ser Leu Val Ala Pro Trp Val Val Ala Thr Ser Val Pro Leu Phe
85 90 95

Trp Pro Leu Asn Ser His Phe Cys Thr Ala Leu Val Ser Leu Thr His
100 105 110

Leu Phe Ala Phe Ala Ser Val Asn Thr Ile Val Val Val Ser Val Asp

115 120 125

Arg Tyr Leu Ser Ile Ile His Pro Leu Ser Tyr Pro Ser Lys Met Thr
130 135 140

Gln Arg Arg Gly Tyr Leu Leu Leu Tyr Gly Thr Trp Ile Val Ala Ile
145 150 155 160

Leu Gln Ser Thr Pro Pro Leu Tyr Gly Trp Gly Gln Ala Ala Phe Asp
165 170 175

Glu Arg Asn Ala Leu Cys Ser Met Ile Trp Gly Ala Ser Pro Ser Tyr

180 185 190

Thr Ile Leu Ser Val Val Ser Phe Ile Val Ile Pro Leu Ile Val Met
195 200 205

Ile Ala Cys Tyr Ser Val Val Phe Cys Ala Ala Arg Arg Gln His Ala
210 215 220

Leu Leu Tyr Asn Val Lys Arg His Ser Leu Glu Val Arg Val Lys Asp
225 230 235 240

Cys Val Glu Asn Glu Asp Glu Glu Gly Ala Glu Lys Lys Glu Glu Phe

245 250 255

Gln Asp Glu Ser Glu Phe Arg Arg Gln His Glu Gly Glu Val Lys Ala

260 265 270

Lys Glu Gly Arg Met Glu Ala Lys Asp Gly Ser Leu Lys Ala Lys Glu

275 280 285

Gly Ser Thr Gly Thr Ser Glu Ser Ser Val Glu Ala Arg Gly Ser Glu

290 295 300

Glu Val Arg Glu Ser Ser Thr Val Ala Ser Asp Gly Ser Met Glu Gly

305 310 315 320

Lys Glu Gly Ser Thr Lys Val Glu Glu Asn Ser Met Lys Ala Asp Lys

325 330 335

Gly Arg Thr Glu Val Asn Gln Cys Ser Ile Asp Leu Gly Glu Asp Asp

340 345 350

Met Glu Phe Gly Glu Asp Asp Ile Asn Phe Ser Glu Asp Asp Val Glu

355 360 365

Ala Val Asn Ile Pro Glu Ser Leu Pro Pro Ser Arg Arg Asn Ser Asn

370 375 380

Ser Asn Pro Pro Leu Pro Arg Cys Tyr Gln Cys Lys Ala Ala Lys Val

385 390 395 400

Ile Phe Ile Ile Ile Phe Ser Tyr Val Leu Ser Leu Gly Pro Tyr Cys

405 410 415

Phe Leu Ala Val Leu Ala Val Trp Val Asp Val Glu Thr Gln Val Pro

420 425 430

Gln Trp Val Ile Thr Ile Ile Ile Trp Leu Phe Phe Leu Gln Cys Cys

435 440 445

Ile His Pro Tyr Val Tyr Gly Tyr Met His Lys Thr Ile Lys Lys Glu

450 455 460

Ile Gln Asp Met Leu Lys Lys Phe Phe Cys Lys Glu Lys Pro Pro Lys

465 470 475 480

Glu Asp Ser His Pro Asp Leu Pro Gly Thr Glu Gly Gly Thr Glu Gly

485 490 495

Lys Ile Val Pro Ser Tyr Asp Ser Ala Thr Phe Pro

500 505

<210> 32

<211> 419

<212> PRT

<213> Homo sapiens

<400> 32

Met Leu Ala Ala Ala Phe Ala Asp Ser Asn Ser Ser Ser Met Asn Val
1 5 10 15

Ser Phe Ala His Leu His Phe Ala Gly Gly Tyr Leu Pro Ser Asp Ser
20 25 30

Gln Asp Trp Arg Thr Ile Ile Pro Ala Leu Leu Val Ala Val Cys Leu
35 40 45

Val Gly Phe Val Gly Asn Leu Cys Val Ile Gly Ile Leu Leu His Asn
50 55 60

Ala Trp Lys Gly Lys Pro Ser Met Ile His Ser Leu Ile Leu Asn Leu
65 70 75 80

Ser Leu Ala Asp Leu Ser Leu Leu Leu Phe Ser Ala Pro Ile Arg Ala
85 90 95

Thr Ala Tyr Ser Lys Ser Val Trp Asp Leu Gly Trp Phe Val Cys Lys
100 105 110

Ser Ser Asp Trp Phe Ile His Thr Cys Met Ala Ala Lys Ser Leu Thr
115 120 125

Ile Val Val Val Ala Lys Val Cys Phe Met Tyr Ala Ser Asp Pro Ala
130 135 140

Lys Gln Val Ser Ile His Asn Tyr Thr Ile Trp Ser Val Leu Val Ala
145 150 155 160

Ile Trp Thr Val Ala Ser Leu Leu Pro Leu Pro Glu Trp Phe Phe Ser
165 170 175

Thr Ile Arg His His Glu Gly Val Glu Met Cys Leu Val Asp Val Pro

180 185 190

Ala Val Ala Glu Glu Phe Met Ser Met Phe Gly Lys Leu Tyr Pro Leu

195 200 205

Leu Ala Phe Gly Leu Pro Leu Phe Phe Ala Ser Phe Tyr Phe Trp Arg

210 215 220

Ala Tyr Asp Gln Cys Lys Lys Arg Gly Thr Lys Thr Gln Asn Leu Arg

225 230 235 240

Asn Gln Ile Arg Ser Lys Gln Val Thr Val Met Leu Leu Ser Ile Ala

245 250 255

Ile Ile Ser Ala Leu Leu Trp Leu Pro Glu Trp Val Ala Trp Leu Trp

260 265 270

Val Trp His Leu Lys Ala Ala Gly Pro Ala Pro Pro Gln Gly Phe Ile

275 280 285

Ala Leu Ser Gln Val Leu Met Phe Ser Ile Ser Ser Ala Asn Pro Leu

290 295 300

Ile Phe Leu Val Met Ser Glu Glu Phe Arg Glu Gly Leu Lys Gly Val

305 310 315 320

Trp Lys Trp Met Ile Thr Lys Lys Pro Pro Thr Val Ser Glu Ser Gln

325 330 335

Glu Thr Pro Ala Gly Asn Ser Glu Gly Leu Pro Asp Lys Val Pro Ser

340 345 350

Pro Glu Ser Pro Ala Ser Ile Pro Glu Lys Glu Lys Pro Ser Ser Pro

355 360 365

Ser Ser Gly Lys Gly Lys Thr Glu Lys Ala Glu Ile Pro Ile Leu Pro

370 375 380

Asp Val Glu Gln Phe Trp His Glu Arg Asp Thr Val Pro Ser Val Gln

385 390 395 400

Asp Asn Asp Pro Ile Pro Trp Glu His Glu Asp Gln Glu Thr Gly Glu

405 410 415

Gly Val Lys

<210> 33

<211> 529

<212> PRT

<213> Homo sapiens

<400> 33

Met Ser Leu Asn Ser Ser Leu Ser Cys Arg Lys Glu Leu Ser Asn Leu

1 5 10 15

Thr Glu Glu Glu Gly Gly Glu Gly Gly Val Ile Ile Thr Gln Phe Ile

20 25 30

Ala Ile Ile Val Ile Thr Ile Phe Val Cys Leu Gly Asn Leu Val Ile

35 40 45

Val Val Thr Leu Tyr Lys Lys Ser Tyr Leu Leu Thr Leu Ser Asn Lys

50 55 60

Phe Val Phe Ser Leu Thr Leu Ser Asn Phe Leu Leu Ser Val Leu Val

65 70 75 80

Leu Pro Phe Val Val Thr Ser Ser Ile Arg Arg Glu Trp Ile Phe Gly

85 90 95

Val Val Trp Cys Asn Phe Ser Ala Leu Leu Tyr Leu Leu Ile Ser Ser

100 105 110

Ala Ser Met Leu Thr Leu Gly Val Ile Ala Ile Asp Arg Tyr Tyr Ala

115 120 125

Val Leu Tyr Pro Met Val Tyr Pro Met Lys Ile Thr Gly Asn Arg Ala

130 135 140

Val Met Ala Leu Val Tyr Ile Trp Leu His Ser Leu Ile Gly Cys Leu

145 150 155 160

Pro Pro Leu Phe Gly Trp Ser Ser Val Glu Phe Asp Glu Phe Lys Trp

165 170 175

Met Cys Val Ala Ala Trp His Arg Glu Pro Gly Tyr Thr Ala Phe Trp

180 185 190

Gln Ile Trp Cys Ala Leu Phe Pro Phe Leu Val Met Leu Val Cys Tyr

195 200 205

Gly Phe Ile Phe Arg Val Ala Arg Val Lys Ala Arg Lys Val His Cys

210 215 220

Gly Thr Val Val Ile Val Glu Glu Asp Ala Gln Arg Thr Gly Arg Lys

225 230 235 240

Asn Ser Ser Thr Ser Thr Ser Ser Ser Gly Ser Arg Arg Asn Ala Phe

245 250 255

Gln Gly Val Val Tyr Ser Ala Asn Gln Cys Lys Ala Leu Ile Thr Ile

260 265 270

Leu Val Val Leu Gly Ala Phe Met Val Thr Trp Gly Pro Tyr Met Val

275 280 285

Val Ile Ala Ser Glu Ala Leu Trp Gly Lys Ser Ser Val Ser Pro Ser

290 295 300

Leu Glu Thr Trp Ala Thr Trp Leu Ser Phe Ala Ser Ala Val Cys His

305 310 315 320

Pro Leu Ile Tyr Gly Leu Trp Asn Lys Thr Val Arg Lys Glu Leu Leu

325 330 335

Gly Met Cys Phe Gly Asp Arg Tyr Tyr Arg Glu Pro Phe Val Gln Arg

340 345 350

Gln Arg Thr Ser Arg Leu Phe Ser Ile Ser Asn Arg Ile Thr Asp Leu

355 360 365

Gly Leu Ser Pro His Leu Thr Ala Leu Met Ala Gly Gly Gln Pro Leu

370 375 380

Gly His Ser Ser Ser Thr Gly Asp Thr Gly Phe Ser Cys Ser Gln Asp

385 390 395 400

Ser Gly Thr Asp Met Met Leu Leu Glu Asp Tyr Thr Ser Asp Asp Asn

405 410 415

Pro Pro Ser His Cys Thr Cys Pro Pro Lys Arg Arg Ser Ser Val Thr

420 425 430

Phe Glu Asp Glu Val Glu Gln Ile Lys Glu Ala Ala Lys Asn Ser Ile

435 440 445

Leu His Val Lys Ala Glu Val His Lys Ser Leu Asp Ser Tyr Ala Ala

450 455 460

Ser Leu Ala Lys Ala Ile Glu Ala Glu Ala Lys Ile Asn Leu Phe Gly
465 470 475 480
Glu Glu Ala Leu Pro Gly Val Leu Val Thr Ala Arg Thr Val Pro Gly
485 490 495
Gly Gly Phe Gly Gly Arg Arg Gly Ser Arg Thr Leu Val Ser Gln Arg
500 505 510
Leu Gln Leu Gln Ser Ile Glu Glu Gly Asp Val Leu Ala Ala Glu Gln

515 520 525
Arg

<210> 34
<211> 367
<212> PRT
<213> Homo sapiens
<400> 34
Met Ser Lys Arg Ser Trp Trp Ala Gly Ser Arg Lys Pro Pro Arg Glu
1 5 10 15
Met Leu Lys Leu Ser Gly Ser Asp Ser Ser Gln Ser Met Asn Gly Leu
20 25 30
Glu Val Ala Pro Pro Gly Leu Ile Thr Asn Phe Ser Leu Ala Thr Ala
35 40 45

Glu Gln Cys Gly Gln Glu Thr Pro Leu Glu Asn Met Leu Phe Ala Ser
50 55 60
Phe Tyr Leu Leu Asp Phe Ile Leu Ala Leu Val Gly Asn Thr Leu Ala
65 70 75 80
Leu Trp Leu Phe Ile Arg Asp His Lys Ser Gly Thr Pro Ala Asn Val
85 90 95
Phe Leu Met His Leu Ala Val Ala Asp Leu Ser Cys Val Leu Val Leu
100 105 110

Pro Thr Arg Leu Val Tyr His Phe Ser Gly Asn His Trp Pro Phe Gly
115 120 125
Glu Ile Ala Cys Arg Leu Thr Gly Phe Leu Phe Tyr Leu Asn Met Tyr

130 135 140

Ala Ser Ile Tyr Phe Leu Thr Cys Ile Ser Ala Asp Arg Phe Leu Ala
145 150 155 160
Ile Val His Pro Val Lys Ser Leu Lys Leu Arg Arg Pro Leu Tyr Ala
165 170 175

His Leu Ala Cys Ala Phe Leu Trp Val Val Val Ala Val Ala Met Ala
180 185 190
Pro Leu Leu Val Ser Pro Gln Thr Val Gln Thr Asn His Thr Val Val
195 200 205
Cys Leu Gln Leu Tyr Arg Glu Lys Ala Ser His His Ala Leu Val Ser
210 215 220
Leu Ala Val Ala Phe Thr Phe Pro Phe Ile Thr Thr Val Thr Cys Tyr
225 230 235 240

Leu Leu Ile Ile Arg Ser Leu Arg Gln Gly Leu Arg Val Glu Lys Arg
245 250 255
Leu Lys Thr Lys Ala Val Arg Met Ile Ala Ile Val Leu Ala Ile Phe
260 265 270
Leu Val Cys Phe Val Pro Tyr His Val Asn Arg Ser Val Tyr Val Leu
275 280 285
His Tyr Arg Ser His Gly Ala Ser Cys Ala Thr Gln Arg Ile Leu Ala
290 295 300

Leu Ala Asn Arg Ile Thr Ser Cys Leu Thr Ser Leu Asn Gly Ala Leu
305 310 315 320
Asp Pro Ile Met Tyr Phe Phe Val Ala Glu Lys Phe Arg His Ala Leu
325 330 335
Cys Asn Leu Leu Cys Gly Lys Arg Leu Lys Gly Pro Pro Pro Ser Phe
340 345 350
Glu Gly Lys Thr Asn Glu Ser Ser Leu Ser Ala Lys Ser Glu Leu
355 360 365

<210> 35

<211> 361

<212> PRT

<213> Homo sapiens

<400> 35

Met Asp Ile Gln Met Ala Asn Asn Phe Thr Pro Pro Ser Ala Thr Pro
1 5 10 15

Gln Gly Asn Asp Cys Asp Leu Tyr Ala His His Ser Thr Ala Arg Ile
20 25 30

Val Met Pro Leu His Tyr Ser Leu Val Phe Ile Ile Gly Leu Val Gly
35 40 45

Asn Leu Leu Ala Leu Val Val Ile Val Gln Asn Arg Lys Lys Ile Asn
50 55 60

Ser Thr Thr Leu Tyr Ser Thr Asn Leu Val Ile Ser Asp Ile Leu Phe
65 70 75 80

Thr Thr Ala Leu Pro Thr Arg Ile Ala Tyr Tyr Ala Met Gly Phe Asp
85 90 95

Trp Arg Ile Gly Asp Ala Leu Cys Arg Ile Thr Ala Leu Val Phe Tyr
100 105 110

Ile Asn Thr Tyr Ala Gly Val Asn Phe Met Thr Cys Leu Ser Ile Asp
115 120 125

Arg Phe Ile Ala Val Val His Pro Leu Arg Tyr Asn Lys Ile Lys Arg
130 135 140

Ile Glu His Ala Lys Gly Val Cys Ile Phe Val Trp Ile Leu Val Phe
145 150 155 160

Ala Gln Thr Leu Pro Leu Leu Ile Asn Pro Met Ser Lys Gln Glu Ala
165 170 175

Glu Arg Ile Thr Cys Met Glu Tyr Pro Asn Phe Glu Glu Thr Lys Ser
180 185 190

Leu Pro Trp Ile Leu Leu Gly Ala Cys Phe Ile Gly Tyr Val Leu Pro
195 200 205

Leu Ile Ile Ile Leu Ile Cys Tyr Ser Gln Ile Cys Cys Lys Leu Phe
210 215 220

Arg Thr Ala Lys Gln Asn Pro Leu Thr Glu Lys Ser Gly Val Asn Lys

225 230 235 240

Lys Ala Leu Asn Thr Ile Ile Leu Ile Ile Val Val Phe Val Leu Cys

245 250 255

Phe Thr Pro Tyr His Val Ala Ile Ile Gln His Met Ile Lys Lys Leu

260 265 270

Arg Phe Ser Asn Phe Leu Glu Cys Ser Gln Arg His Ser Phe Gln Ile

275 280 285

Ser Leu His Phe Thr Val Cys Leu Met Asn Phe Asn Cys Cys Met Asp

290 295 300

Pro Phe Ile Tyr Phe Phe Ala Cys Lys Gly Tyr Lys Arg Lys Val Met

305 310 315 320

Arg Met Leu Lys Arg Gln Val Ser Val Ser Ile Ser Ser Ala Val Lys

325 330 335

Ser Ala Pro Glu Glu Asn Ser Arg Glu Met Thr Glu Thr Gln Met Met

340 345 350

Ile His Ser Lys Ser Ser Asn Gly Lys

355 360

<210> 36

<211> 395

<212> PRT

<213> Homo sapiens

<400> 36

Met Ser Ala Asn Ala Thr Leu Lys Pro Leu Cys Pro Ile Leu Glu Gln

1 5 10 15

Met Ser Arg Leu Gln Ser His Ser Asn Thr Ser Ile Arg Tyr Ile Asp

20 25 30

His Ala Ala Val Leu Leu His Gly Leu Ala Ser Leu Leu Gly Leu Val

35 40 45

Glu Asn Gly Val Ile Leu Phe Val Val Gly Cys Arg Met Arg Gln Thr

50 55 60

Val Val Thr Thr Trp Val Leu His Leu Ala Leu Ser Asp Leu Leu Ala

65 70 75 80

Ser Ala Ser Leu Pro Phe Phe Thr Tyr Phe Leu Ala Val Gly His Ser

85 90 95

Trp Glu Leu Gly Thr Thr Phe Cys Lys Leu His Ser Ser Ile Phe Phe

100 105 110

Leu Asn Met Phe Ala Ser Gly Phe Leu Leu Ser Ala Ile Ser Leu Asp

115 120 125

Arg Cys Leu Gln Val Val Arg Pro Val Trp Ala Gln Asn His Arg Thr

130 135 140

Val Ala Ala Ala His Lys Val Cys Leu Val Leu Trp Ala Leu Ala Val

145 150 155 160

Leu Asn Thr Val Pro Tyr Phe Val Phe Arg Asp Thr Ile Ser Arg Leu

165 170 175

Asp Gly Arg Ile Met Cys Tyr Tyr Asn Val Leu Leu Leu Asn Pro Gly

180 185 190

Pro Asp Arg Asp Ala Thr Cys Asn Ser Arg Gln Val Ala Leu Ala Val

195 200 205

Ser Lys Phe Leu Leu Ala Phe Leu Val Pro Leu Ala Ile Ile Ala Ser

210 215 220

Ser His Ala Ala Val Ser Leu Arg Leu Gln His Arg Gly Arg Arg Arg

225 230 235 240

Pro Gly Arg Phe Val Arg Leu Val Ala Ala Val Val Ala Ala Phe Ala

245 250 255

Leu Cys Trp Gly Pro Tyr His Val Phe Ser Leu Leu Glu Ala Arg Ala

260 265 270

His Ala Asn Pro Gly Leu Arg Pro Leu Val Trp Arg Gly Leu Pro Phe

275 280 285

Val Thr Ser Leu Ala Phe Phe Asn Ser Val Ala Asn Pro Val Leu Tyr

290 295 300

Val Leu Thr Cys Pro Asp Met Leu Arg Lys Leu Arg Arg Ser Leu Arg

305 310 315 320

Thr Val Leu Glu Ser Val Leu Val Asp Asp Ser Glu Leu Gly Gly Ala

325 330 335

Gly Ser Ser Arg Arg Arg Arg Thr Ser Ser Thr Ala Arg Ser Ala Ser

340 345 350

Pro Leu Ala Leu Cys Ser Arg Pro Glu Glu Pro Arg Gly Pro Ala Arg

355 360 365

Leu Leu Gly Trp Leu Leu Gly Ser Cys Ala Ala Ser Pro Gln Thr Gly

370 375 380

Pro Leu Asn Arg Ala Leu Ser Ser Thr Ser Ser

385 390 395

<210> 37

<211> 388

<212> PRT

<213> Homo sapiens

<400> 37

Met Asp Lys Leu Asp Ala Asn Val Ser Ser Glu Glu Gly Phe Gly Ser

1 5 10 15

Val Glu Lys Val Val Leu Leu Thr Phe Leu Ser Thr Val Ile Leu Met

20 25 30

Ala Ile Leu Gly Asn Leu Leu Val Met Val Ala Val Cys Trp Asp Arg

35 40 45

Gln Leu Arg Lys Ile Lys Thr Asn Tyr Phe Ile Val Ser Leu Ala Phe

50 55 60

Ala Asp Leu Leu Val Ser Val Leu Val Met Pro Phe Gly Ala Ile Glu

65 70 75 80

Leu Val Gln Asp Ile Trp Ile Tyr Gly Glu Val Phe Cys Leu Val Arg

85 90 95

Thr Ser Leu Asp Val Leu Leu Thr Thr Ala Ser Ile Phe His Leu Cys

100 105 110

Cys Ile Ser Leu Asp Arg Tyr Tyr Ala Ile Cys Cys Gln Pro Leu Val

115 120 125

Tyr Arg Asn Lys Met Thr Pro Leu Arg Ile Ala Leu Met Leu Gly Gly
130 135 140
Cys Trp Val Ile Pro Thr Phe Ile Ser Phe Leu Pro Ile Met Gln Gly
145 150 155 160
Trp Asn Asn Ile Gly Ile Ile Asp Leu Ile Glu Lys Arg Lys Phe Asn
165 170 175
Gln Asn Ser Asn Ser Thr Tyr Cys Val Phe Met Val Asn Lys Pro Tyr

180 185 190
Ala Ile Thr Cys Ser Val Val Ala Phe Tyr Ile Pro Phe Leu Leu Met
195 200 205
Val Leu Ala Tyr Tyr Arg Ile Tyr Val Thr Ala Lys Glu His Ala His
210 215 220
Gln Ile Gln Met Leu Gln Arg Ala Gly Ala Ser Ser Glu Ser Arg Pro
225 230 235 240
Gln Ser Ala Asp Gln His Ser Thr His Arg Met Arg Thr Glu Thr Lys

245 250 255
Ala Ala Lys Thr Leu Cys Ile Ile Met Gly Cys Phe Cys Leu Cys Trp
260 265 270
Ala Pro Phe Phe Val Thr Asn Ile Val Asp Pro Phe Ile Asp Tyr Thr
275 280 285
Val Pro Gly Gln Val Trp Thr Ala Phe Leu Trp Leu Gly Tyr Ile Asn
290 295 300
Ser Gly Leu Asn Pro Phe Leu Tyr Ala Phe Leu Asn Lys Ser Phe Arg

305 310 315 320
Arg Ala Phe Leu Ile Ile Leu Cys Cys Asp Asp Glu Arg Tyr Arg Arg
325 330 335
Pro Ser Ile Leu Gly Gln Thr Val Pro Cys Ser Thr Thr Thr Ile Asn
340 345 350
Gly Ser Thr His Val Leu Arg Asp Ala Val Glu Cys Gly Gly Gln Trp
355 360 365
Glu Ser Gln Cys His Pro Pro Ala Thr Ser Pro Leu Val Ala Ala Gln

370 375 380

Pro Ser Asp Thr

385

<210> 38

<211> 440

<212> PRT

<213> Homo sapiens

<400> 38

Met Val Pro Glu Pro Gly Pro Thr Ala Asn Ser Thr Pro Ala Trp Gly

1 5 10 15

Ala Gly Pro Pro Ser Ala Pro Gly Gly Ser Gly Trp Val Ala Ala Ala

20 25 30

Leu Cys Val Val Ile Ala Leu Thr Ala Ala Ala Asn Ser Leu Leu Ile

35 40 45

Ala Leu Ile Cys Thr Gln Pro Ala Leu Arg Asn Thr Ser Asn Phe Phe

50 55 60

Leu Val Ser Leu Phe Thr Ser Asp Leu Met Val Gly Leu Val Val Met

65 70 75 80

Pro Pro Ala Met Leu Asn Ala Leu Tyr Gly Arg Trp Val Leu Ala Arg

85 90 95

Gly Leu Cys Leu Leu Trp Thr Ala Phe Asp Val Met Cys Cys Ser Ala

100 105 110

Ser Ile Leu Asn Leu Cys Leu Ile Ser Leu Asp Arg Tyr Leu Leu Ile

115 120 125

Leu Ser Pro Leu Arg Tyr Lys Leu Arg Met Thr Pro Leu Arg Ala Leu

130 135 140

Ala Leu Val Leu Gly Ala Trp Ser Leu Ala Ala Leu Ala Ser Phe Leu

145 150 155 160

Pro Leu Leu Leu Gly Trp His Glu Leu Gly His Ala Arg Pro Pro Val

165 170 175

Pro Gly Gln Cys Arg Leu Leu Ala Ser Leu Pro Phe Val Leu Val Ala

180 185 190

Ser Gly Leu Thr Phe Phe Leu Pro Ser Gly Ala Ile Cys Phe Thr Tyr
195 200 205

Cys Arg Ile Leu Leu Ala Ala Arg Lys Gln Ala Val Gln Val Ala Ser
210 215 220

Leu Thr Thr Gly Met Ala Ser Gln Ala Ser Glu Thr Leu Gln Val Pro
225 230 235 240

Arg Thr Pro Arg Pro Gly Val Glu Ser Ala Asp Ser Arg Arg Leu Ala
245 250 255

Thr Lys His Ser Arg Lys Ala Leu Lys Ala Ser Leu Thr Leu Gly Ile
260 265 270

Leu Leu Gly Met Phe Phe Val Thr Trp Leu Pro Phe Phe Val Ala Asn
275 280 285

Ile Val Gln Ala Val Cys Asp Cys Ile Ser Pro Gly Leu Phe Asp Val
290 295 300

Leu Thr Trp Leu Gly Tyr Cys Asn Ser Thr Met Asn Pro Ile Ile Tyr
305 310 315 320

Pro Leu Phe Met Arg Asp Phe Lys Arg Ala Leu Gly Arg Phe Leu Pro
325 330 335

Cys Pro Arg Cys Pro Arg Glu Arg Gln Ala Ser Leu Ala Ser Pro Ser
340 345 350

Leu Arg Thr Ser His Ser Gly Pro Arg Pro Gly Leu Ser Leu Gln Gln
355 360 365

Val Leu Pro Leu Pro Leu Pro Pro Asp Ser Asp Ser Asp Ser Asp Ala
370 375 380

Gly Ser Gly Gly Ser Ser Gly Leu Arg Leu Thr Ala Gln Leu Leu Leu
385 390 395 400

Pro Gly Glu Ala Thr Gln Asp Pro Pro Leu Pro Thr Arg Ala Ala Ala
405 410 415

Ala Val Asn Phe Phe Asn Ile Asp Pro Ala Glu Pro Glu Leu Arg Pro
420 425 430

His Pro Leu Gly Ile Pro Thr Asn

435 440

<210> 39

<211> 360

<212> PRT

<213> Homo sapiens

<400> 39

Met Glu Glu Cys Trp Val Thr Glu Ile Ala Asn Gly Ser Lys Asp Gly
1 5 10 15

Leu Asp Ser Asn Pro Met Lys Asp Tyr Met Ile Leu Ser Gly Pro Gln
20 25 30

Lys Thr Ala Val Ala Val Leu Cys Thr Leu Leu Gly Leu Leu Ser Ala
35 40 45

Leu Glu Asn Val Ala Val Leu Tyr Leu Ile Leu Ser Ser His Gln Leu
50 55 60

Arg Arg Lys Pro Ser Tyr Leu Phe Ile Gly Ser Leu Ala Gly Ala Asp
65 70 75 80

Phe Leu Ala Ser Val Val Phe Ala Cys Ser Phe Val Asn Phe His Val
85 90 95

Phe His Gly Val Asp Ser Lys Ala Val Phe Leu Leu Lys Ile Gly Ser
100 105 110

Val Thr Met Thr Phe Thr Ala Ser Val Gly Ser Leu Leu Leu Thr Ala
115 120 125

Ile Asp Arg Tyr Leu Cys Leu Arg Tyr Pro Pro Ser Tyr Lys Ala Leu
130 135 140

Leu Thr Arg Gly Arg Ala Leu Val Thr Leu Gly Ile Met Trp Val Leu
145 150 155 160

Ser Ala Leu Val Ser Tyr Leu Pro Leu Met Gly Trp Thr Cys Cys Pro
165 170 175

Arg Pro Cys Ser Glu Leu Phe Pro Leu Ile Pro Asn Asp Tyr Leu Leu
180 185 190

Ser Trp Leu Leu Phe Ile Ala Phe Leu Phe Ser Gly Ile Ile Tyr Thr
195 200 205

Tyr Gly His Val Leu Trp Lys Ala His Gln His Val Ala Ser Leu Ser
210 215 220
Gly His Gln Asp Arg Gln Val Pro Gly Met Ala Arg Met Arg Leu Asp
225 230 235 240

Val Arg Leu Ala Lys Thr Leu Gly Leu Val Leu Ala Val Leu Leu Ile
245 250 255
Cys Trp Phe Pro Val Leu Ala Leu Met Ala His Ser Leu Ala Thr Thr
260 265 270
Leu Ser Asp Gln Val Lys Lys Ala Phe Ala Phe Cys Ser Met Leu Cys
275 280 285
Leu Ile Asn Ser Met Val Asn Pro Val Ile Tyr Ala Leu Arg Ser Gly
290 295 300

Glu Ile Arg Ser Ser Ala His His Cys Leu Ala His Trp Lys Lys Cys
305 310 315 320
Val Arg Gly Leu Gly Ser Glu Ala Lys Glu Glu Ala Pro Arg Ser Ser
325 330 335
Val Thr Glu Thr Glu Ala Asp Gly Lys Ile Thr Pro Trp Pro Asp Ser
340 345 350
Arg Asp Leu Asp Leu Ser Asp Cys
355 360

<210> 40
<211> 445
<212> PRT
<213> Homo sapiens

<400> 40
Met Glu Arg Ala Pro Pro Asp Gly Pro Leu Asn Ala Ser Gly Ala Leu
1 5 10 15
Ala Gly Glu Ala Ala Ala Ala Gly Gly Ala Arg Gly Phe Ser Ala Ala
20 25 30
Trp Thr Ala Val Leu Ala Ala Leu Met Ala Leu Leu Ile Val Ala Thr
35 40 45
Val Leu Gly Asn Ala Leu Val Met Leu Ala Phe Val Ala Asp Ser Ser

50 55 60

Leu Arg Thr Gln Asn Asn Phe Phe Leu Leu Asn Leu Ala Ile Ser Asp
65 70 75 80
Phe Leu Val Gly Ala Phe Cys Ile Pro Leu Tyr Val Pro Tyr Val Leu
85 90 95
Thr Gly Arg Trp Thr Phe Gly Arg Gly Leu Cys Lys Leu Trp Leu Val
100 105 110
Val Asp Tyr Leu Leu Cys Thr Ser Ser Ala Phe Asn Ile Val Leu Ile
115 120 125

Ser Tyr Asp Arg Phe Leu Ser Val Thr Arg Ala Val Ser Tyr Arg Ala
130 135 140
Gln Gln Gly Asp Thr Arg Arg Ala Val Arg Lys Met Leu Leu Val Trp
145 150 155 160
Val Leu Ala Phe Leu Leu Tyr Gly Pro Ala Ile Leu Ser Trp Glu Tyr
165 170 175
Leu Ser Gly Gly Ser Ser Ile Pro Glu Gly His Cys Tyr Ala Glu Phe
180 185 190

Phe Tyr Asn Trp Tyr Phe Leu Ile Thr Ala Ser Thr Leu Glu Phe Phe
195 200 205
Thr Pro Phe Leu Ser Val Thr Phe Phe Asn Leu Ser Ile Tyr Leu Asn
210 215 220
Ile Gln Arg Arg Thr Arg Leu Arg Leu Asp Gly Ala Arg Glu Ala Ala
225 230 235 240
Gly Pro Glu Pro Pro Pro Glu Ala Gln Pro Ser Pro Pro Pro Pro Pro
245 250 255

Gly Cys Trp Gly Cys Trp Gln Lys Gly His Gly Glu Ala Met Pro Leu
260 265 270
His Arg Tyr Gly Val Gly Glu Ala Ala Val Gly Ala Glu Ala Gly Glu
275 280 285
Ala Thr Leu Gly Gly Gly Gly Gly Gly Gly Ser Val Ala Ser Pro Thr
290 295 300

Ser Ser Ser Gly Ser Ser Ser Arg Gly Thr Glu Arg Pro Arg Ser Leu
305 310 315 320

Lys Arg Gly Ser Lys Pro Ser Ala Ser Ser Ala Ser Leu Glu Lys Arg
325 330 335
Met Lys Met Val Ser Gln Ser Phe Thr Gln Arg Phe Arg Leu Ser Arg
340 345 350
Asp Arg Lys Val Ala Lys Ser Leu Ala Val Ile Val Ser Ile Phe Gly
355 360 365
Leu Cys Trp Ala Pro Tyr Thr Leu Leu Met Ile Ile Arg Ala Ala Cys
370 375 380

His Gly His Cys Val Pro Asp Tyr Trp Tyr Glu Thr Ser Phe Trp Leu
385 390 395 400
Leu Trp Ala Asn Ser Ala Val Asn Pro Val Leu Tyr Pro Leu Cys His
405 410 415
His Ser Phe Arg Arg Ala Phe Thr Lys Leu Leu Cys Pro Gln Lys Leu
420 425 430
Lys Ile Gln Pro His Ser Ser Leu Glu His Cys Trp Lys
435 440 445
<210> 41

<211> 427
<212> PRT
<213> Homo sapiens
<400> 41
Ala Arg Leu Gln Glu Glu Cys Asp Tyr Val Gln Met Ile Glu Val Gln
1 5 10 15
His Lys Gln Cys Leu Glu Glu Ala Gln Leu Glu Asn Glu Thr Ile Gly
20 25 30
Cys Ser Lys Met Trp Asp Asn Leu Thr Cys Trp Pro Ala Thr Pro Arg
35 40 45
Gly Gln Val Val Val Leu Ala Cys Pro Leu Ile Phe Lys Leu Phe Ser

50 55 60

Ser Ile Gln Gly Arg Asn Val Ser Arg Ser Cys Thr Asp Glu Gly Trp
65 70 75 80
Thr His Leu Glu Pro Gly Pro Tyr Pro Ile Ala Cys Gly Leu Asp Asp
85 90 95
Lys Ala Ala Ser Leu Asp Glu Gln Gln Thr Met Phe Tyr Gly Ser Val
100 105 110
Lys Thr Gly Tyr Thr Ile Gly Tyr Gly Leu Ser Leu Ala Thr Leu Leu

115 120 125
Val Ala Thr Ala Ile Leu Ser Leu Phe Arg Lys Leu His Cys Thr Arg
130 135 140
Asn Tyr Ile His Met His Leu Phe Ile Ser Phe Ile Leu Arg Ala Ala
145 150 155 160
Ala Val Phe Ile Lys Asp Leu Ala Leu Phe Asp Ser Gly Glu Ser Asp
165 170 175
Gln Cys Ser Glu Gly Ser Val Gly Cys Lys Ala Ala Met Val Phe Phe

180 185 190
Gln Tyr Cys Val Met Ala Asn Phe Phe Trp Leu Leu Val Glu Gly Leu
195 200 205
Tyr Leu Tyr Thr Leu Leu Ala Val Ser Phe Phe Ser Glu Arg Lys Tyr
210 215 220
Phe Trp Gly Tyr Ile Leu Ile Gly Trp Gly Val Pro Ser Thr Phe Thr
225 230 235 240
Met Val Trp Thr Ile Ala Arg Ile His Phe Glu Asp Tyr Gly Cys Trp

245 250 255
Asp Thr Ile Asn Ser Ser Leu Trp Trp Ile Ile Lys Gly Pro Ile Leu
260 265 270
Thr Ser Ile Leu Val Asn Phe Ile Leu Phe Ile Cys Ile Ile Arg Ile
275 280 285
Leu Leu Gln Lys Leu Arg Pro Pro Asp Ile Arg Lys Ser Asp Ser Ser
290 295 300
Pro Tyr Ser Arg Leu Ala Arg Ser Thr Leu Leu Leu Ile Pro Leu Phe

305 310 315 320

Gly Val His Tyr Ile Met Phe Ala Phe Phe Pro Asp Asn Phe Lys Pro

325 330 335

Glu Val Lys Met Val Phe Glu Leu Val Val Gly Ser Phe Gln Gly Phe

340 345 350

Val Val Ala Ile Leu Tyr Cys Phe Leu Asn Gly Glu Val Gln Ala Glu

355 360 365

Leu Arg Arg Lys Trp Arg Arg Trp His Leu Gln Gly Val Leu Gly Trp

370 375 380

Asn Pro Lys Tyr Arg His Pro Ser Gly Gly Ser Asn Gly Ala Thr Cys

385 390 395 400

Ser Thr Gln Val Ser Met Leu Thr Arg Val Ser Pro Gly Ala Arg Arg

405 410 415

Ser Ser Ser Phe Gln Ala Glu Val Ser Leu Val

420 425

<210> 42

<211> 445

<212> PRT

<213> Homo sapiens

<400> 42

Arg Ala Glu Thr Gly Ser Lys Gly Gln Thr Ala Gly Glu Leu Tyr Gln

1 5 10 15

Arg Trp Glu Arg Tyr Arg Arg Glu Cys Gln Glu Thr Leu Ala Ala Ala

20 25 30

Glu Pro Pro Ser Gly Leu Ala Cys Asn Gly Ser Phe Asp Met Tyr Val

35 40 45

Cys Trp Asp Tyr Ala Ala Pro Asn Ala Thr Ala Arg Ala Ser Cys Pro

50 55 60

Trp Tyr Leu Pro Trp His His His Val Ala Ala Gly Phe Val Leu Arg

65 70 75 80

Gln Cys Gly Ser Asp Gly Gln Trp Gly Leu Trp Arg Asp His Thr Gln

85 90 95

Cys Glu Asn Pro Glu Lys Asn Glu Ala Phe Leu Asp Gln Arg Leu Ile
100 105 110
Leu Glu Arg Leu Gln Val Met Tyr Thr Val Gly Tyr Ser Leu Ser Leu
115 120 125
Ala Thr Leu Leu Leu Ala Leu Leu Ile Leu Ser Leu Phe Arg Arg Leu

130 135 140
His Cys Thr Arg Asn Tyr Ile His Ile Asn Leu Phe Thr Ser Phe Met
145 150 155 160
Leu Arg Ala Ala Ala Ile Leu Ser Arg Asp Arg Leu Leu Pro Arg Pro
165 170 175
Gly Pro Tyr Leu Gly Asp Gln Ala Leu Ala Leu Trp Asn Gln Ala Leu
180 185 190
Ala Ala Cys Arg Thr Ala Gln Ile Val Thr Gln Tyr Cys Val Gly Ala

195 200 205
Asn Tyr Thr Trp Leu Leu Val Glu Gly Val Tyr Leu His Ser Leu Leu
210 215 220
Val Leu Val Gly Gly Ser Glu Glu Gly His Phe Arg Tyr Tyr Leu Leu
225 230 235 240
Leu Gly Trp Gly Ala Pro Ala Leu Phe Val Ile Pro Trp Val Ile Val
245 250 255
Arg Tyr Leu Tyr Glu Asn Thr Gln Cys Trp Glu Arg Asn Glu Val Lys

260 265 270
Ala Ile Trp Trp Ile Ile Arg Thr Pro Ile Leu Met Thr Ile Leu Ile
275 280 285
Asn Phe Leu Ile Phe Ile Arg Ile Leu Gly Ile Leu Leu Ser Lys Leu
290 295 300
Arg Thr Arg Gln Met Arg Cys Arg Asp Tyr Arg Leu Arg Leu Ala Arg
305 310 315 320
Ser Thr Leu Thr Leu Val Pro Leu Leu Gly Val His Glu Val Val Phe

325 330 335
Ala Pro Val Thr Glu Glu Gln Ala Arg Gly Ala Leu Arg Phe Ala Lys

340 345 350

Leu Gly Phe Glu Ile Phe Leu Ser Ser Phe Gln Gly Phe Leu Val Ser

355 360 365

Val Leu Tyr Cys Phe Ile Asn Lys Glu Val Gln Ser Glu Ile Arg Arg

370 375 380

Gly Trp His His Cys Arg Leu Arg Arg Ser Leu Gly Glu Glu Gln Arg

385 390 395 400

Gln Leu Pro Glu Arg Ala Phe Arg Ala Leu Pro Ser Gly Ser Gly Pro

405 410 415

Gly Glu Val Pro Thr Ser Arg Gly Leu Ser Ser Gly Thr Leu Pro Gly

420 425 430

Pro Gly Asn Glu Ala Ser Arg Glu Leu Glu Ser Tyr Cys

435 440 445

<210> 43

<211> 390

<212> PRT

<213> Homo sapiens

<400> 43

Met Glu Glu Pro Gly Ala Gln Cys Ala Pro Pro Pro Pro Ala Gly Ser

1 5 10 15

Glu Thr Trp Val Pro Gln Ala Asn Leu Ser Ser Ala Pro Ser Gln Asn

20 25 30

Cys Ser Ala Lys Asp Tyr Ile Tyr Gln Asp Ser Ile Ser Leu Pro Trp

35 40 45

Lys Val Leu Leu Val Met Leu Leu Ala Leu Ile Thr Leu Ala Thr Thr

50 55 60

Leu Ser Asn Ala Phe Val Ile Ala Thr Val Tyr Arg Thr Arg Lys Leu

65 70 75 80

His Thr Pro Ala Asn Tyr Leu Ile Ala Ser Leu Ala Val Thr Asp Leu

85 90 95

Leu Val Ser Ile Leu Val Met Pro Ile Ser Thr Met Tyr Thr Val Thr

100 105 110

Gly Arg Trp Thr Leu Gly Gln Val Val Cys Asp Phe Trp Leu Ser Ser
115 120 125
Asp Ile Thr Cys Cys Thr Ala Ser Ile Leu His Leu Cys Val Ile Ala

130 135 140
Leu Asp Arg Tyr Trp Ala Ile Thr Asp Ala Val Glu Tyr Ser Ala Lys
145 150 155 160
Arg Thr Pro Lys Arg Ala Ala Val Met Ile Ala Leu Val Trp Val Phe
165 170 175
Ser Ile Ser Ile Ser Leu Pro Pro Phe Phe Trp Arg Gln Ala Lys Ala
180 185 190
Glu Glu Glu Val Ser Glu Cys Val Val Asn Thr Asp His Ile Leu Tyr

195 200 205
Thr Val Tyr Ser Thr Val Gly Ala Phe Tyr Phe Pro Thr Leu Leu Leu
210 215 220
Ile Ala Leu Tyr Gly Arg Ile Tyr Val Glu Ala Arg Ser Arg Ile Leu
225 230 235 240
Lys Gln Thr Pro Asn Arg Thr Gly Lys Arg Leu Thr Arg Ala Gln Leu
245 250 255
Ile Thr Asp Ser Pro Gly Ser Thr Ser Ser Val Thr Ser Ile Asn Ser

260 265 270
Arg Val Pro Asp Val Pro Ser Glu Ser Gly Ser Pro Val Tyr Val Asn
275 280 285
Gln Val Lys Val Arg Val Ser Asp Ala Leu Leu Glu Lys Lys Lys Leu
290 295 300
Met Ala Ala Arg Glu Arg Lys Ala Thr Lys Thr Leu Gly Ile Ile Leu
305 310 315 320
Gly Ala Phe Ile Val Cys Trp Leu Pro Phe Phe Ile Ile Ser Leu Val

325 330 335
Met Pro Ile Cys Lys Asp Ala Cys Trp Phe His Leu Ala Ile Phe Asp
340 345 350
Phe Phe Thr Trp Leu Gly Tyr Leu Asn Ser Leu Ile Asn Pro Ile Ile

355 360 365

Tyr Thr Met Ser Asn Glu Asp Phe Lys Gln Ala Phe His Lys Leu Ile

370 375 380

Arg Phe Lys Cys Thr Ser

385 390

<210> 44

<211> 354

<212> PRT

<213> Homo sapiens

<400> 44

Gln Asp Glu Val Thr Asp Asp Tyr Ile Gly Asp Asn Thr Thr Val Asp

1 5 10 15

Tyr Thr Leu Phe Glu Ser Leu Cys Ser Lys Lys Asp Val Arg Asn Phe

20 25 30

Lys Ala Trp Phe Leu Pro Ile Met Tyr Ser Ile Ile Cys Phe Val Gly

35 40 45

Leu Leu Gly Asn Gly Leu Val Val Leu Thr Tyr Ile Tyr Phe Lys Arg

50 55 60

Leu Lys Thr Met Thr Asp Thr Tyr Leu Leu Asn Leu Ala Val Ala Asp

65 70 75 80

Ile Leu Phe Leu Leu Thr Leu Pro Phe Trp Ala Tyr Ser Ala Ala Lys

85 90 95

Ser Trp Val Phe Gly Val His Phe Cys Lys Leu Ile Phe Ala Ile Tyr

100 105 110

Lys Met Ser Phe Phe Ser Gly Met Leu Leu Leu Leu Cys Ile Ser Ile

115 120 125

Asp Arg Tyr Val Ala Ile Val Gln Ala Val Ser Ala His Arg His Arg

130 135 140

Ala Arg Val Leu Leu Ile Ser Lys Leu Ser Cys Val Gly Ile Trp Ile

145 150 155 160

Leu Ala Thr Val Leu Ser Ile Pro Glu Leu Leu Tyr Ser Asp Leu Gln

165 170 175

Arg Ser Ser Ser Glu Gln Ala Met Arg Cys Ser Leu Ile Thr Glu His

180 185 190

Val Glu Ala Phe Ile Thr Ile Gln Val Ala Gln Met Val Ile Gly Phe

195 200 205

Leu Val Pro Leu Leu Ala Met Ser Phe Cys Tyr Leu Val Ile Ile Arg

210 215 220

Thr Leu Leu Gln Ala Arg Asn Phe Glu Arg Asn Lys Ala Ile Lys Val

225 230 235 240

Ile Ile Ala Val Val Val Val Phe Ile Val Phe Gln Leu Pro Tyr Asn

245 250 255

Gly Val Val Leu Ala Gln Thr Val Ala Asn Phe Asn Ile Thr Ser Ser

260 265 270

Thr Cys Glu Leu Ser Lys Gln Leu Asn Ile Ala Tyr Asp Val Thr Tyr

275 280 285

Ser Leu Ala Cys Val Arg Cys Cys Val Asn Pro Phe Leu Tyr Ala Phe

290 295 300

Ile Gly Val Lys Phe Arg Asn Asp Leu Phe Lys Leu Phe Lys Asp Leu

305 310 315 320

Gly Cys Leu Ser Gln Glu Gln Leu Arg Gln Trp Ser Ser Cys Arg His

325 330 335

Ile Arg Arg Ser Ser Met Ser Val Glu Ala Glu Thr Thr Thr Thr Phe

340 345 350

Ser Pro

<210> 45

<211> 372

<212> PRT

<213> Homo sapiens

<400> 45

Met Asn Tyr Pro Leu Thr Leu Glu Met Asp Leu Glu Asn Leu Glu Asp

1 5 10 15

Leu Phe Trp Glu Leu Asp Arg Leu Asp Asn Tyr Asn Asp Thr Ser Leu
20 25 30
Val Glu Asn His Leu Cys Pro Ala Thr Glu Gly Pro Leu Met Ala Ser
35 40 45
Phe Lys Ala Val Phe Val Pro Val Ala Tyr Ser Leu Ile Phe Leu Leu
50 55 60
Gly Val Ile Gly Asn Val Leu Val Leu Val Ile Leu Glu Arg His Arg
65 70 75 80

Gln Thr Arg Ser Ser Thr Glu Thr Phe Leu Phe His Leu Ala Val Ala
85 90 95
Asp Leu Leu Leu Val Phe Ile Leu Pro Phe Ala Val Ala Glu Gly Ser
100 105 110
Val Gly Trp Val Leu Gly Thr Phe Leu Cys Lys Thr Val Ile Ala Leu
115 120 125
His Lys Val Asn Phe Tyr Cys Ser Ser Leu Leu Leu Ala Cys Ile Ala
130 135 140

Val Asp Arg Tyr Leu Ala Ile Val His Ala Val His Ala Tyr Arg His
145 150 155 160
Arg Arg Leu Leu Ser Ile His Ile Thr Cys Gly Thr Ile Trp Leu Val
165 170 175
Gly Phe Leu Leu Ala Leu Pro Glu Ile Leu Phe Ala Lys Val Ser Gln
180 185 190
Gly His His Asn Asn Ser Leu Pro Arg Cys Thr Phe Ser Gln Glu Asn
195 200 205

Gln Ala Glu Thr His Ala Trp Phe Thr Ser Arg Phe Leu Tyr His Val
210 215 220
Ala Gly Phe Leu Leu Pro Met Leu Val Met Gly Trp Cys Tyr Val Gly
225 230 235 240
Val Val His Arg Leu Arg Gln Ala Gln Arg Arg Pro Gln Arg Gln Lys
245 250 255
Ala Val Arg Val Ala Ile Leu Val Thr Ser Ile Phe Phe Leu Cys Trp

260 265 270

Ser Pro Tyr His Ile Val Ile Phe Leu Asp Thr Leu Ala Arg Leu Lys
275 280 285
Ala Val Asp Asn Thr Cys Lys Leu Asn Gly Ser Leu Pro Val Ala Ile
290 295 300
Thr Met Cys Glu Phe Leu Gly Leu Ala His Cys Cys Leu Asn Pro Met
305 310 315 320
Leu Tyr Thr Phe Ala Gly Val Lys Phe Arg Ser Asp Leu Ser Arg Leu
325 330 335

Leu Thr Lys Leu Gly Cys Thr Gly Pro Ala Ser Leu Cys Gln Leu Phe
340 345 350
Pro Ser Trp Arg Arg Ser Ser Leu Ser Glu Ser Glu Asn Ala Thr Ser
355 360 365
Leu Thr Thr Phe
370

<210> 46
<211> 335
<212> PRT
<213> Homo sapiens
<400> 46
Met Glu Ser Ser Phe Ser Phe Gly Val Ile Leu Ala Val Leu Ala Ser
1 5 10 15
Leu Ile Ile Ala Thr Asn Thr Leu Val Ala Val Ala Val Leu Leu Leu

20 25 30
Ile His Lys Asn Asp Gly Val Ser Leu Cys Phe Thr Leu Asn Leu Ala
35 40 45
Val Ala Asp Thr Leu Ile Gly Val Ala Ile Ser Gly Leu Leu Thr Asp
50 55 60
Gln Leu Ser Ser Pro Ser Arg Pro Thr Gln Lys Thr Leu Cys Ser Leu
65 70 75 80
Arg Met Ala Phe Val Thr Ser Ser Ala Ala Ala Ser Val Leu Thr Val

85 90 95

Met Leu Ile Thr Phe Asp Arg Tyr Leu Ala Ile Lys Gln Pro Phe Arg

100 105 110

Tyr Leu Lys Ile Met Ser Gly Phe Val Ala Gly Ala Cys Ile Ala Gly

115 120 125

Leu Trp Leu Val Ser Tyr Leu Ile Gly Phe Leu Pro Leu Gly Ile Pro

130 135 140

Met Phe Gln Gln Thr Ala Tyr Lys Gly Gln Cys Ser Phe Phe Ala Val

145 150 155 160

Phe His Pro His Phe Val Leu Thr Leu Ser Cys Val Gly Phe Phe Pro

165 170 175

Ala Met Leu Leu Phe Val Phe Phe Tyr Cys Asp Met Leu Lys Ile Ala

180 185 190

Ser Met His Ser Gln Gln Ile Arg Lys Met Glu His Ala Gly Ala Met

195 200 205

Ala Gly Gly Tyr Arg Ser Pro Arg Thr Pro Ser Asp Phe Lys Ala Leu

210 215 220

Arg Thr Val Ser Val Leu Ile Gly Ser Phe Ala Leu Ser Trp Thr Pro

225 230 235 240

Phe Leu Ile Thr Gly Ile Val Gln Val Ala Cys Gln Glu Cys His Leu

245 250 255

Tyr Leu Val Leu Glu Arg Tyr Leu Trp Leu Leu Gly Val Gly Asn Ser

260 265 270

Leu Leu Asn Pro Leu Ile Tyr Ala Tyr Trp Gln Lys Glu Val Arg Leu

275 280 285

Gln Leu Tyr His Met Ala Leu Gly Val Lys Lys Val Leu Thr Ser Phe

290 295 300

Leu Leu Phe Leu Ser Ala Arg Asn Cys Gly Pro Glu Arg Pro Arg Glu

305 310 315 320

Ser Ser Cys His Ile Val Thr Ile Ser Ser Ser Glu Phe Asp Gly

325 330 335

<210> 47

<211> 319

<212> PRT

<213> Homo sapiens

<

400> 47

Met Ser Gln Gln Asn Thr Ser Gly Asp Cys Leu Phe Asp Gly Val Asn
1 5 10 15

Glu Leu Met Lys Thr Leu Gln Phe Ala Val His Ile Pro Thr Phe Val
20 25 30

Leu Gly Leu Leu Leu Asn Leu Leu Ala Ile His Gly Phe Ser Thr Phe
35 40 45

Leu Lys Asn Arg Trp Pro Asp Tyr Ala Ala Thr Ser Ile Tyr Met Ile
50 55 60

Asn Leu Ala Val Phe Asp Leu Leu Leu Val Leu Ser Leu Pro Phe Lys
65 70 75 80

Met Val Leu Ser Gln Val Gln Ser Pro Phe Pro Ser Leu Cys Thr Leu
85 90 95

Val Glu Cys Leu Tyr Phe Val Ser Met Tyr Gly Ser Val Phe Thr Ile
100 105 110

Cys Phe Ile Ser Met Asp Arg Phe Leu Ala Ile Arg Tyr Pro Leu Leu
115 120 125

Val Ser His Leu Arg Ser Pro Arg Lys Ile Phe Gly Ile Cys Cys Thr
130 135 140

Ile Trp Val Leu Val Trp Thr Gly Ser Ile Pro Ile Tyr Ser Phe His
145 150 155 160

Gly Lys Val Glu Lys Tyr Met Cys Phe His Asn Met Ser Asp Asp Thr
165 170 175

Trp Ser Ala Lys Val Phe Phe Pro Leu Glu Val Phe Gly Phe Leu Leu
180 185 190

Pro Met Gly Ile Met Gly Phe Cys Cys Ser Arg Ser Ile His Ile Leu
195 200 205

Leu Gly Arg Arg Asp His Thr Gln Asp Trp Val Gln Gln Lys Ala Cys

210 215 220

Ile Tyr Ser Ile Ala Ala Ser Leu Ala Val Phe Val Val Ser Phe Leu

225 230 235 240

Pro Val His Leu Gly Phe Phe Leu Gln Phe Leu Val Arg Asn Ser Phe

245 250 255

Ile Val Glu Cys Arg Ala Lys Gln Ser Ile Ser Phe Phe Leu Gln Leu

260 265 270

Ser Met Cys Phe Ser Asn Val Asn Cys Cys Leu Asp Val Phe Cys Tyr

275 280 285

Tyr Phe Val Ile Lys Glu Phe Arg Met Asn Ile Arg Ala His Arg Pro

290 295 300

Ser Arg Val Gln Leu Val Leu Gln Asp Thr Thr Ile Ser Arg Gly

305 310 315

<210> 48

<211> 62

<212> DNA

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

oligonucleotide

<220><221> modified_base

<222> (51)..(52)

<223> Thymidine-succinyl hexamide CED phosphoramidite

<400> 48

agacaatcaa ccatttgggg tggacagcct tgacctctag acttcggcat ttttttttt 60

tt 62

<210> 49

<211> 112

<212> DNA

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

polynucleotide

<220><221> modified_base

<222> (103)..(104)

<223> Thymidine-succinyl hexamide CED phosphoramidite

<400> 49

cgggatcctt atcgtcatcg tcgtacagat cccgacccat ttgctgtcca ccagtcatgc 60

tagccatacc atgatgatga tgatgatgag aaccccgcat ttttttttt tt 112

<210> 50

<211> 19

<212> DNA

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic primer

<400> 50

atgcggggtt ctcatcatc 19

<210> 51

<211> 20

<212> DNA

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic primer

<400> 51

cgggatcctt atcgtcatcg 20

<210> 52

<211> 99

<212> PRT

<213> Homo sapiens

<400> 52

Met Thr Ser Lys Leu Ala Val Ala Leu Leu Ala Ala Phe Leu Ile Ser
1 5 10 15

Ala Ala Leu Cys Glu Gly Ala Val Leu Pro Arg Ser Ala Lys Glu Leu
20 25 30

Arg Cys Gln Cys Ile Lys Thr Tyr Ser Lys Pro Phe His Pro Lys Phe
35 40 45

Ile Lys Glu Leu Arg Val Ile Glu Ser Gly Pro His Cys Ala Asn Thr
50 55 60
Glu Ile Ile Val Lys Leu Ser Asp Gly Arg Glu Leu Cys Leu Asp Pro
65 70 75 80
Lys Glu Asn Trp Val Gln Arg Val Val Glu Lys Phe Leu Lys Arg Ala
85 90 95

Glu Asn Ser

<210> 53
<211> 15
<212> PRT
<213> Artificial Sequence
<220><223> Description of Artificial Sequence: Synthetic peptide
<400> 53
Gly Gly Gly Gly Ser Asp Tyr Lys Pro Val Ser Leu Ser Tyr Arg
1 5 10 15
<210> 54
<211> 14
<212> PRT
<213> Artificial Sequence
<220><223> Description of Artificial Sequence: Synthetic peptide
<400> 54
Gly Gly Gly Gly Asp Tyr Lys Pro Val Ser Leu Ser Tyr Arg
1 5 10

<210> 55
<211> 13
<212> PRT
<213> Artificial Sequence
<220><223> Description of Artificial Sequence: Synthetic peptide
<400> 55

Gly Gly Gly Gly Tyr Lys Pro Val Ser Leu Ser Tyr Arg

1 5 10

<210> 56

<211> 12

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 56

Gly Gly Gly Gly Lys Pro Val Ser Leu Ser Tyr Arg

1 5 10

<210> 57

<211> 11

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 57

Gly Gly Gly Gly Pro Val Ser Leu Ser Tyr Arg

1 5 10

<210> 58

<211> 18

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 58

Gly Gly Gly Gly Ser Ala Ala Leu Cys Glu Gly Ala Val Leu Pro Arg

1 5 10 15

Ser Ala

<210> 59

<211> 17

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 59

Gly Gly Gly Gly Ala Ala Leu Cys Glu Gly Ala Val Leu Pro Arg Ser

1 5 10 15

Ala

<210> 60

<211> 16

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 60

Gly Gly Gly Gly Ala Leu Cys Glu Gly Ala Val Leu Pro Arg Ser Ala

1 5 10 15

<210> 61

<211> 15

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 61

Gly Gly Gly Gly Leu Cys Glu Gly Ala Val Leu Pro Arg Ser Ala

1 5 10 15

<210> 62

<211> 14

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 62

Gly Gly Gly Gly Cys Glu Gly Ala Val Leu Pro Arg Ser Ala

1 5 10

<210> 63

<211> 20

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 63

Gly Gly Gly Gly Ser Ala Ala Leu Cys Glu Gly Ala Val Leu Pro Arg

1 5 10 15

Ser Ala Lys Glu

20

<210> 64

<211> 19

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 64

Gly Gly Gly Gly Ala Ala Leu Cys Glu Gly Ala Val Leu Pro Arg Ser

1 5 10 15

Ala Lys Glu

<210> 65

<211> 18

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 65

Gly Gly Gly Gly Ala Leu Cys Glu Gly Ala Val Leu Pro Arg Ser Ala

1 5 10 15

Lys Glu

<210> 66

<211> 17

<212> PRT

<213

> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 66

Gly Gly Gly Gly Leu Cys Glu Gly Ala Val Leu Pro Arg Ser Ala Lys

1 5 10 15

Glu

<210> 67

<211> 16

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 67

Gly Gly Gly Gly Cys Glu Gly Ala Val Leu Pro Arg Ser Ala Lys Glu

1 5 10 15

<210> 68

<211> 22

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 68

Gly Gly Gly Gly Ser Ala Ala Leu Cys Glu Gly Ala Val Leu Pro Arg

1 5 10 15

Ser Ala Lys Glu Leu Arg

20

<210> 69

<211> 21

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 69

Gly Gly Gly Gly Ala Ala Leu Cys Glu Gly Ala Val Leu Pro Arg Ser

1 5 10 15

Ala Lys Glu Leu Arg

20

<210> 70

<211> 20

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 70

Gly Gly Gly Gly Ala Leu Cys Glu Gly Ala Val Leu Pro Arg Ser Ala

1 5 10 15

Lys Glu Leu Arg

20

<210> 71

<211> 19

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 71

Gly Gly Gly Gly Leu Cys Glu Gly Ala Val Leu Pro Arg Ser Ala Lys

1 5 10 15

Glu Leu Arg

<210> 72

<211> 18

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 72

Gly Gly Gly Gly Cys Glu Gly Ala Val Leu Pro Arg Ser Ala Lys Glu
1 5 10 15
Leu Arg

<210> 73

<211> 31

<212> PRT

<213> Homo sapiens

<400> 73

His Ala Glu Gly Thr Phe Thr Ser Asp Val Ser Ser Tyr Leu Glu Gly
1 5 10 15
Gln Ala Ala Lys Glu Phe Ile Ala Trp Leu Val Lys Gly Arg Gly
20 25 30

<210> 74

<211> 42

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic polypeptide

<400> 74

Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly His

1 5 10 15
Ala Glu Gly Thr Phe Thr Ser Asp Val Ser Ser Tyr Leu Glu Gly Gln
20 25 30
Ala Ala Lys Glu Phe Ile Ala Trp Leu Val

35 40

<210> 75

<211> 41

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic polypeptide

<400> 75

Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ala
1 5 10 15

Glu Gly Thr Phe Thr Ser Asp Val Ser Ser Tyr Leu Glu Gly Gln Ala
20 25 30

Ala Lys Glu Phe Ile Ala Trp Leu Val
35 40

<210> 76

<211> 40

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic polypeptide

<400> 76

Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Glu
1 5 10 15

Gly Thr Phe Thr Ser Asp Val Ser Ser Tyr Leu Glu Gly Gln Ala Ala
20 25 30

Lys Glu Phe Ile Ala Trp Leu Val
35 40

<210> 77

<211> 39

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic polypeptide

<400> 77

Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Gly
1 5 10 15
Thr Phe Thr Ser Asp Val Ser Ser Tyr Leu Glu Gly Gln Ala Ala Lys
20 25 30

Glu Phe Ile Ala Trp Leu Val
35

<210> 78

<211> 38

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic polypeptide

<400> 78

Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Thr
1 5 10 15
Phe Thr Ser Asp Val Ser Ser Tyr Leu Glu Gly Gln Ala Ala Lys Glu
20 25 30
Phe Ile Ala Trp Leu Val
35

<210> 79

<211> 37

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic polypeptide

<400> 79

Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Phe
1 5 10 15
Thr Ser Asp Val Ser Ser Tyr Leu Glu Gly Gln Ala Ala Lys Glu Phe
20 25 30
Ile Ala Trp Leu Val
35

<210> 80

<211> 36

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

polypeptide

<400> 80

Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Thr

1 5 10 15

Ser Asp Val Ser Ser Tyr Leu Glu Gly Gln Ala Ala Lys Glu Phe Ile

20 25 30

Ala Trp Leu Val

35

<210> 81

<211> 35

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

polypeptide

<400> 81

Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser

1 5 10 15

Asp Val Ser Ser Tyr Leu Glu Gly Gln Ala Ala Lys Glu Phe Ile Ala

20 25 30

Trp Leu Val

35

<210> 82

<211> 34

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

polypeptide

<400> 82

Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Asp

1 5 10 15

Val Ser Ser Tyr Leu Glu Gly Gln Ala Ala Lys Glu Phe Ile Ala Trp

20 25 30

Leu Val

<210> 83

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<220><221> MOD_RES

<222> (6)..(13)

<223> Phe, Gly, His, Pro or Tyr

<400> 83

Ser Gly Gly Gly Gly Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa

1 5 10

<210> 84

<211> 26

<212> PRT

<213> Homo sapiens

<400> 84

Glu Tyr Ile Val Leu Thr Met Asn Arg Thr Asn Val Asn Val Phe Ser

1 5 10 15

Glu Leu Ser Ala Pro Arg Arg Asn Glu Asp

20 25

<210> 85

<211> 24

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 85

Tyr Ile Val Leu Thr Met Asn Arg Thr Asn Val Asn Val Phe Ser Glu
1 5 10 15

Leu Ser Ala Pro Arg Arg Asn Glu
20

<210> 86

<211> 22

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 86

Ile Val Leu Thr Met Asn Arg Thr Asn Val Asn Val Phe Ser Glu Leu
1 5 10 15

Ser Ala Pro Arg Arg Asn
20

<210> 87

<211> 20

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 87

Val Leu Thr Met Asn Arg Thr Asn Val Asn Val Phe Ser Glu Leu Ser
1 5 10 15

Ala Pro Arg Arg
20

<210> 88

<211> 45

<212> DNA

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic oligonucleotide

<400> 88

gcagccgctg gcttgctgct gctggcagct cagccggcca tggcc 45

<210> 89

<211> 60

<212> DNA

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

oligonucleotide

<400> 89

gctagcggtg gaggcggttc aggcggaggt ggctctggcg gtggcggatc gcatgcatcc 60

<210> 90

<211> 42

<212> DNA

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

oligonucleotide

<400> 90

cgcgcggccg ctggaagcgg ctcccaccat caccatcacc at 42

<210> 91

<211> 22

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 91

Gln Ser Val Leu Thr Gln Pro Pro Ser Val Ser Ala Ala Pro Gly Gln

1 5 10 15

Lys Val Thr Ile Ser Cys

20

<210> 92

<211> 66

<212> DNA

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 92

cagtctgtgt tgacgcagcc gccctcagtg tctgcggccc caggacagaa ggtcaccatc 60

tcctgc 66

<210> 93

<211> 15

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
peptide

<400> 93

Trp Tyr Gln Gln Leu Pro Gly Thr Ala Pro Lys Leu Leu Ile Tyr
1 5 10 15

<210> 94

<211> 45

<212> DNA

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 94

tggtatcagc agctcccagg aacagccccc aaactcctca tttat 45

<210> 95

<211> 31

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
polypeptide

<400> 95

Gly Ile Pro Asp Arg Phe Ser Gly Ser Lys Ser Gly Thr Ser Ala Thr
1 5 10 15

Leu Gly Ile Thr Gly Leu Gln Thr Gly Asp Glu Ala Asp Tyr Tyr
20 25 30

<210> 96

<211> 93

<212> DNA

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 96

gggattcctg accgattctc tggctccaag tctggcacgt cagccaccct gggcatcacc 60

ggactccaga ctggggacga ggccgattat tac 93

<210> 97

<211> 9

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
peptide

<400> 97

Gly Gly Gly Thr Lys Leu Thr Val Leu
1 5

<210> 98

<211> 27

<212> DNA

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 98

ggcggaggga ccaagctgac cgtccta 27

<210> 99

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
peptide

<400> 99

Ser Gly Ser Ser Ser Asn Ile Gly Ser Asn His Val Ser

1 5 10

<210> 100

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 100

Ser Gly Ser Ser Ser Asn Ile Gly Asn Asn Tyr Leu Ser

1 5 10

<210> 101

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 101

Ser Gly Ser Ser Ser Asn Ile Ala Asn Asn Tyr Val Ser

1 5 10

<210> 102

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 102

Ser Gly Ser Ser Pro Asn Ile Gly Asn Asn Tyr Val Ser

1 5 10

<210> 103

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
peptide

<400> 103

Ser Gly Ser Arg Ser Asn Ile Gly Ser Asn Tyr Val Ser
1 5 10

<210> 104

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
peptide

<400> 104

Ser Gly Ser Ser Ser Asn Val Gly Asp Asn Tyr Val Ser
1 5 10

<210> 105

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
peptide

<400> 105

Ser Gly Ser Ser Ser Asn Ile Gly Ile Gln Tyr Val Ser
1 5 10

<210> 106

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
peptide

<400> 106

Ser Gly Ser Ser Ser Asn Val Gly Asn Asn Phe Val Ser
1 5 10

<210> 107

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 107

Ser Gly Ser Ala Ser Asn Ile Gly Asn Asn Tyr Val Ser
1 5 10

<210> 108

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 108

Ser Gly Ser Gly Ser Asn Ile Gly Asn Asn Asp Val Ser
1 5 10

<210> 109

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 109

Ser Gly Ser Ile Ser Asn Ile Gly Asn Asn Tyr Val Ser
1 5 10

<210> 110

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 110

Ser Gly Ser Ile Ser Asn Ile Gly Lys Asn Tyr Val Ser

1 5 10

<210> 111

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 111

Ser Gly Ser Ser Ser Asn Ile Gly His Asn Tyr Val Ser

1 5 10

<210> 112

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 112

Pro Gly Ser Ser Ser Asn Ile Gly Asn Asn Tyr Val Ser

1 5 10

<210> 113

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 113

Ser Gly Ser Thr Ser Asn Ile Gly Ile His Tyr Val Ser

1 5 10

<210> 114

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 114

Ser Gly Ser Ser Ser Asn Ile Gly Ser His Tyr Val Ser

1 5 10

<210> 115

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 115

Ser Gly Ser Ser Ser Asn Ile Gly Asn Glu Tyr Val Ser

1 5 10

<210> 116

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 116

Ser Gly Ser Thr Ser Asn Ile Gly Asn Asn Tyr Ile Ser

1 5 10

<210> 117

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 117

Ser Gly Ser Ser Ser Asn Ile Gly Asn His Phe Val Ser

1 5 10

<210> 118

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 118

Ser Gly Ser Ser Ser Asn Ile Gly Asn Asn Tyr Val Ala
1 5 10

<210> 119

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 119

Ser Gly Ser Ser Ser Asn Ile Gly Ser Tyr Tyr Val Ser
1 5 10

<210> 120

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 120

Ser Gly Ser Gly Phe Asn Ile Gly Asn Asn Tyr Val Ser
1 5 10

<210> 121

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 121

Ser Gly Ser Thr Ser Asn Ile Gly Asn Asn Tyr Val Ser

1 5 10

<210> 122

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 122

Ser Gly Ser Ser Ser Asp Ile Gly Asn Asn Tyr Val Ser

1 5 10

<210> 123

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 123

Ser Gly Ser Ser Ser Asn Ile Gly Asn Asn Val Val Ser

1 5 10

<210> 124

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 124

Ser Gly Ser Lys Ser Asn Ile Gly Lys Asn Tyr Val Ser

1 5 10

<210> 125

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 125

Ser Gly Ser Ser Thr Asn Ile Gly Asn Asn Tyr Val Ser

1 5 10

<210> 126

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 126

Ser Gly Ser Ile Ser Asn Ile Gly Asp Asn Tyr Val Ser

1 5 10

<210> 127

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 127

Ser Gly Ser Ser Ser Asn Ile Gly Ser Lys Asp Val Ser

1 5 10

<210> 128

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 128

Ser Gly Ser Ser Ser Asn Ile Glu Asn Asn Asp Val Ser

1 5 10

<210> 129

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 129

Ser Gly Ser Ser Ser Asn Ile Gly Asn His Tyr Val Ser
1 5 10

<210> 130

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 130

Ser Gly Ser Ser Ser Asn Ile Gly Lys Asp Phe Val Ser
1 5 10

<210> 131

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 131

Ser Gly Ser Thr Ser Asn Ile Gly Ser Asn Phe Val Ser
1 5 10

<210> 132

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 132

Ser Gly Ser Thr Ser Asn Ile Gly His Asn Tyr Val Ser
1 5 10

<210> 133

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 133

Ser Ala Ser Ser Ser Asn Ile Gly Asn Asn Tyr Val Ser

1 5 10

<210> 134

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 134

Ser Gly Ser Ser Ser Ser Ile Gly Asn Asn Tyr Val Ser

1 5 10

<210> 135

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 135

Ser Gly Ser Ser Ser Thr Ile Gly Asn Asn Tyr Val Ser

1 5 10

<210> 136

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 136

Ser Gly Ser Ser Ser Asn Ile Glu Asn Asn Tyr Val Ser

1 5 10

<210> 137

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 137

Ser Gly Ser Ser Ser Asn Ile Gly Asn Gln Tyr Val Ser

1 5 10

<210> 138

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 138

Ser Gly Ser Ser Ser Asn Ile Gly Asn Asn Tyr Val Phe

1 5 10

<210> 139

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 139

Ser Gly Ser Ser Ser Asn Ile Gly Arg Asn Tyr Val Ser

1 5 10

<210> 140

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 140

Ser Gly Gly Ser Ser Asn Ile Gly Asn Tyr Tyr Val Ser
1 5 10

<210> 141

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 141

Ser Gly Ser Ser Ser Asn Ile Gly Asp Asn Tyr Val Ser
1 5 10

<210> 142

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 142

Ser Gly Gly Ser Ser Asn Ile Gly Ile Asn Tyr Val Ser
1 5 10

<210> 143

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 143

Ser Gly Gly Ser Ser Asn Ile Gly Lys Asn Tyr Val Ser
1 5 10

<210> 144

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 144

Ser Gly Ser Ser Ser Asn Ile Gly Lys Arg Ser Val Ser

1 5 10

<210> 145

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 145

Ser Gly Ser Arg Ser Asn Ile Gly Asn Asn Tyr Val Ser

1 5 10

<210> 146

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 146

Ser Gly Ser Ser Ser Asn Ile Gly Asn Asn Leu Val Ser

1 5 10

<210> 147

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 147

Ser Gly Ser Ser Ser Asn Ile Gly Ile Asn Tyr Val Ser

1 5 10

<210> 148

<211> 13

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<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

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<400> 148

Ser Gly Ser Ser Ser Asn Ile Gly Asn Asn Phe Val Ser

1 5 10

<210> 149

<211> 13

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<220><223> Description of Artificial Sequence: Synthetic

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<400> 149

Ser Gly Thr Ser Ser Asn Ile Gly Arg Asn Phe Val Ser

1 5 10

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Ser Gly Arg Arg Ser Asn Ile Gly Asn Asn Tyr Val Ser

1 5 10

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<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

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Ser Gly Gly Ser Phe Asn Ile Gly Asn Asn Tyr Val Ser
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<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

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Ser Gly Ser Thr Ser Asn Ile Gly Glu Asn Tyr Val Ser
1 5 10

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<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 153

Ser Gly Ser Ser Ser Asn Ile Gly Ser Asp Tyr Val Ser
1 5 10

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<211> 13

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<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

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Ser Gly Thr Ser Ser Asn Ile Gly Ser Asn Tyr Val Ser
1 5 10

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<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 155

Ser Gly Ser Ser Ser Asn Ile Gly Thr Asn Phe Val Ser
1 5 10

<210> 156

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<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 156

Ser Gly Ser Ser Ser Asn Phe Gly Asn Asn Tyr Val Ser
1 5 10

<210> 157

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<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 157

Ser Gly Ser Thr Ser Asn Ile Gly Asn Asn His Val Ser
1 5 10

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<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 158

Ser Gly Ser Ser Ser Asn Ile Gly Asn Asp Phe Val Ser

1 5 10

<210> 159

<211> 13

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<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 159

Ser Gly Ser Ser Ser Asp Ile Gly Asp Asn Tyr Val Ser

1 5 10

<210> 160

<211> 13

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<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 160

Ser Gly Ser Ser Ser Asn Ile Gly Lys Tyr Tyr Val Ser

1 5 10

<210> 161

<211> 13

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<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 161

Ser Gly Ser Ser Ser Asn Ile Gly Gly Asn Tyr Val Ser

1 5 10

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<211> 13

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<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

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Ser Gly Ser Ser Ser Asn Thr Gly Asn Asn Tyr Val Ser
1 5 10

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<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 163

Ser Gly Ser Ser Ser Asn Val Gly Asn Asn Tyr Val Ser
1 5 10

<210> 164

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<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

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Ser Gly Ser Ser Ser Asn Ile Ala Asn Asn Phe Val Ser
1 5 10

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<211> 13

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<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 165

Ser Gly Ser Ser Ser Asn Ile Gly Asn Asp Tyr Val Ser
1 5 10

<210> 166

<211> 13

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<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 166

Ser Gly Ser Thr Ser Asn Ile Glu Asn Asn Tyr Val Ser

1 5 10

<210> 167

<211> 13

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<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 167

Ser Gly Gly Ser Ser Asn Ile Gly Asn Asn Asp Val Ser

1 5 10

<210> 168

<211> 13

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<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 168

Ser Gly Ser Thr Ser Asn Ile Gly Asn His Tyr Val Ser

1 5 10

<210> 169

<211> 13

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<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 169

Ser Gly Ser Ser Ser Asn Ile Gly Asp Asn Asp Val Ser

1 5 10

<210> 170

<211> 13

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<213> Artificial Sequence

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Ser Gly Tyr Ser Ser Asn Ile Gly Asn Asn Tyr Val Ser

1 5 10

<210> 171

<211> 13

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peptide

<400> 171

Ser Gly Ser Gly Ser Asn Ile Gly Asn Asn Phe Val Ser

1 5 10

<210> 172

<211> 13

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peptide

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Ser Gly Ser Ser Ser Asn Ile Trp Asn Asn Tyr Val Ser

1 5 10

<210> 173

<211> 13

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<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
peptide

<400> 173

Phe Gly Ser Ser Ser Asn Ile Gly Asn Asn Tyr Val Ser
1 5 10

<210> 174

<211> 13

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<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
peptide

<400> 174

Ser Gly Ser Ser Ser Asn Ile Glu Lys Asn Tyr Val Ser
1 5 10

<210> 175

<211> 13

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<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
peptide

<400> 175

Ser Gly Ser Arg Ser Asn Ile Gly Asn Tyr Tyr Val Ser
1 5 10

<210> 176

<211> 13

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<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
peptide

<400> 176

Ser Gly Thr Lys Ser Asn Ile Gly Asn Asn Tyr Val Ser
1 5 10

<210> 177

<211> 13

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<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 177

Ser Gly Ser Thr Ser Asn Ile Gly Asn Tyr Tyr Val Ser

1 5 10

<210> 178

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 178

Ser Gly Thr Ser Ser Asn Ile Gly Asn Asn Tyr Val Ala

1 5 10

<210> 179

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 179

Pro Gly Thr Ser Ser Asn Ile Gly Asn Asn Tyr Val Ser

1 5 10

<210> 180

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 180

Ser Gly Ser Thr Ser Asn Ile Gly Ile Asn Tyr Val Ser

1 5 10

<210> 181

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 181

Ser Gly Ser Ser Ser Asn Ile Gly Ser Asn Leu Val Ser

1 5 10

<210> 182

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 182

Ser Gly Ser Ser Ser Asn Ile Glu Asn Asn His Val Ser

1 5 10

<210> 183

<211> 13

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<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 183

Ser Gly Thr Arg Ser Asn Ile Gly Asn Asn Tyr Val Ser

1 5 10

<210> 184

<211> 13

<212> PRT

<213> Artificial Sequence

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<400> 184

Ser Gly Ser Thr Ser Asn Ile Gly Asp Asn Tyr Val Ser
1 5 10

<210> 185

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 185

Ser Gly Gly Ser Ser Asn Ile Gly Lys Asn Phe Val Ser
1 5 10

<210> 186

<211> 13

<212> PRT

<213> Artificial Sequence

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<400> 186

Ser Gly Ser Arg Ser Asp Ile Gly Asn Asn Tyr Val Ser
1 5 10

<210> 187

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 187

Ser Gly Thr Ser Ser Asn Ile Gly Asn Asn Asp Val Ser
1 5 10

<210> 188

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 188

Ser Gly Ser Ser Ser Asn Ile Gly Ser Lys Tyr Val Ser

1 5 10

<210> 189

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 189

Ser Gly Ser Ser Phe Asn Ile Gly Asn Asn Tyr Val Ser

1 5 10

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<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 190

Ser Gly Ser Ser Ser Asn Ile Gly Asn Thr Tyr Val Ser

1 5 10

<210> 191

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 191

Ser Gly Ser Ser Ser Asn Ile Gly Asp Asn His Val Ser

1 5 10

<210> 192

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 192

Ser Gly Ser Ser Ser Asn Ile Gly Asn Asn His Val Ser

1 5 10

<210> 193

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 193

Ser Gly Ser Thr Ser Asn Ile Gly Asn Asn Asp Val Ser

1 5 10

<210> 194

<211> 13

<212> PRT

<213> Artificial Sequence

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peptide

<400> 194

Ser Gly Ser Arg Ser Asn Val Gly Asn Asn Tyr Val Ser

1 5 10

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<211> 13

<212> PRT

<213> Artificial Sequence

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<400> 195

Ser Gly Gly Thr Ser Asn Ile Gly Lys Asn Tyr Val Ser
1 5 10

<210> 196

<211> 13

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<213> Artificial Sequence

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<400> 196

Ser Gly Ser Ser Ser Asn Ile Ala Asp Asn Tyr Val Ser
1 5 10

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<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 197

Ser Gly Ser Ser Ser Asn Ile Gly Ala Asn Tyr Val Ser
1 5 10

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<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 198

Ser Gly Ser Ser Ser Asn Ile Gly Ser Asn Tyr Val Ala
1 5 10

<210> 199

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<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 199

Ser Gly Ser Ser Ser Asn Ile Gly Asn Asn Phe Leu Ser
1 5 10

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<211> 13

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<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 200

Ser Gly Arg Ser Ser Asn Ile Gly Lys Asn Tyr Val Ser
1 5 10

<210> 201

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 201

Ser Gly Ser Ser Pro Asn Ile Gly Ala Asn Tyr Val Ser
1 5 10

<210> 202

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 202

Ser Gly Ser Ser Ser Asn Ile Gly Pro Asn Tyr Val Ser

1 5 10

<210> 203

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 203

Ser Gly Ser Ser Ser Thr Ile Gly Asn Asn Tyr Ile Ser

1 5 10

<210> 204

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 204

Ser Gly Ser Ser Ser Asn Ile Gly Asn Tyr Phe Val Ser

1 5 10

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<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 205

Ser Gly Ser Arg Ser Asn Ile Gly Asn Asn Phe Val Ser

1 5 10

<210> 206

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 206

Ser Gly Gly Ser Ser Asn Ile Gly Ser Asn Phe Val Ser
1 5 10

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<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 207

Ser Gly Ser Ser Ser Asn Ile Gly Tyr Asn Tyr Val Ser
1 5 10

<210> 208

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 208

Ser Gly Thr Ser Ser Asn Ile Glu Asn Asn Tyr Val Ser
1 5 10

<210> 209

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 209

Ser Gly Ser Ser Ser Asn Ile Gly Asn Tyr Tyr Val Ser
1 5 10

<210> 210

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 210

Ser Gly Ser Thr Ser Asn Ile Gly Lys Asn Tyr Val Ser

1 5 10

<210> 211

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 211

Ser Gly Ser Ser Ser Asn Ile Gly Thr Tyr Tyr Val Ser

1 5 10

<210> 212

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 212

Ser Gly Ser Ser Ser Asn Val Gly Lys Asn Tyr Val Ser

1 5 10

<210> 213

<211> 13

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<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 213

Ser Gly Ser Thr Ser Asn Ile Gly Asp Asn Phe Val Ser

1 5 10

<210> 214

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 214

Ser Gly Ser Thr Ser Asn Ile Gly Thr Asn Tyr Val Ser

1 5 10

<210> 215

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 215

Ser Gly Gly Thr Ser Asn Ile Gly Asn Asn Tyr Val Ser

1 5 10

<210> 216

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 216

Ser Gly Ser Tyr Ser Asn Ile Gly Asn Asn Tyr Val Ser

1 5 10

<210> 217

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 217

Ser Gly Ser Ser Ser Asn Ile Glu Asp Asn Tyr Val Ser
1 5 10

<210> 218

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 218

Ser Gly Ser Ser Ser Asn Ile Gly Lys His Tyr Val Ser
1 5 10

<210> 219

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 219

Ser Gly Ser Gly Ser Asn Ile Gly Ser Asn Tyr Val Ser
1 5 10

<210> 220

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 220

Ser Gly Ser Ser Ser Asn Ile Gly Asn Asn Tyr Ile Ser
1 5 10

<210> 221

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 221

Ser Gly Ala Ser Ser Asn Ile Gly Asn Asn Tyr Val Ser

1 5 10

<210> 222

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 222

Ser Gly Arg Thr Ser Asn Ile Gly Asn Asn Tyr Val Ser

1 5 10

<210> 223

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 223

Ser Gly Gly Ser Ser Asn Ile Gly Ser Asn Tyr Val Ser

1 5 10

<210> 224

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 224

Ser Gly Ser Gly Ser Asn Ile Gly Asn Asn Tyr Val Ser

1 5 10

<210> 225

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 225

Ser Gly Ser Thr Ser Asn Ile Gly Ser Asn Tyr Val Ser

1 5 10

<210> 226

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 226

Ser Gly Ser Ser Ser Ser Ile Gly Asn Asn Tyr Val Ala

1 5 10

<210> 227

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 227

Ser Gly Ser Ser Ser Asn Leu Gly Asn Asn Tyr Val Ser

1 5 10

<210> 228

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 228

Ser Gly Thr Ser Ser Asn Ile Gly Lys Asn Tyr Val Ser
1 5 10

<210> 229

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 229

Ser Gly Ser Ser Ser Asp Ile Gly Asn Lys Tyr Ile Ser
1 5 10

<210> 230

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 230

Ser Gly Ser Ser Ser Asn Ile Gly Ser Asn Tyr Ile Ser
1 5 10

<210> 231

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 231

Ser Gly Ser Thr Ser Asn Ile Gly Ala Asn Tyr Val Ser
1 5 10

<210> 232

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<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 232

Ser Gly Ser Ser Ser Asn Ile Gly Asn Lys Tyr Val Ser
1 5 10

<210> 233

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 233

Ser Gly Ser Ser Ser Asn Ile Gly Asn Asn Tyr Gly Ser
1 5 10

<210> 234

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 234

Ser Gly Ser Thr Ser Asn Ile Ala Asn Asn Tyr Val Ser
1 5 10

<210> 235

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 235

Ser Gly Ser Tyr Ser Asn Ile Gly Ser Asn Tyr Val Ser

1 5 10

<210> 236

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 236

Ser Gly Ser Ser Ser Asn Ile Gly Ser Asn Phe Val Ser

1 5 10

<210> 237

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 237

Ser Gly Ser Ser Ser Asn Leu Glu Asn Asn Tyr Val Ser

1 5 10

<210> 238

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 238

Ser Gly Ser Ile Ser Asn Ile Gly Ser Asn Tyr Val Ser

1 5 10

<210> 239

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 239

Ser Gly Ser Ser Ser Asp Ile Gly Ser Asn Tyr Val Ser
1 5 10

<210> 240

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 240

Ser Gly Ser Ser Ser Asn Ile Gly Thr Asn Tyr Val Ser
1 5 10

<210> 241

<211> 13

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<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 241

Ser Gly Ser Ser Ser Asn Ile Gly Lys Asn Phe Val Ser
1 5 10

<210> 242

<211> 13

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<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 242

Ser Gly Ser Ser Ser Asn Ile Gly Asn Asn Phe Ile Ser
1 5 10

<210> 243

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 243

Ser Gly Gly Ser Ser Asn Ile Gly Asn Asn Tyr Val Ser

1 5 10

<210> 244

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 244

Ser Gly Ser Ser Ser Asn Ile Gly Glu Asn Tyr Val Ser

1 5 10

<210> 245

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 245

Ser Gly Ser Ser Ser Asn Ile Gly Asn Asn Phe Val Ala

1 5 10

<210> 246

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 246

Ser Gly Gly Ser Ser Asn Ile Gly Asn Asn Tyr Val Ala

1 5 10

<210> 247

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 247

Ser Gly Ser Ser Ser His Ile Gly Asn Asn Tyr Val Ser

1 5 10

<210> 248

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 248

Ser Gly Ser Ser Ser Asn Ile Gly Ser Asn Asp Val Ser

1 5 10

<210> 249

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 249

Ser Gly Ser Ser Ser Asn Ile Gly Asn Asn Tyr Val Thr

1 5 10

<210> 250

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 250

Ser Gly Ser Ser Ser Asn Ile Gly Asn Asn Pro Val Ser
1 5 10

<210> 251

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 251

Ser Gly Gly Ser Ser Asn Ile Gly Asn His Tyr Val Ser
1 5 10

<210> 252

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 252

Ser Gly Thr Ser Ser Asn Ile Gly Asn Asn Tyr Val Ser
1 5 10

<210> 253

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 253

Ser Gly Ser Ser Ser Asn Ile Gly Ser Asn Tyr Val Ser
1 5 10

<210> 254

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 254

Ser Gly Gly Thr Ser Asn Ile Gly Ser Asn Tyr Val Ser

1 5 10

<210> 255

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 255

Ser Gly Ser Lys Ser Asn Ile Gly Asn Asn Tyr Val Ser

1 5 10

<210> 256

<211> 13

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Ser Gly Arg Ser Ser Asn Ile Gly Asn Asn Tyr Val Ser

1 5 10

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<220><223> Description of Artificial Sequence: Synthetic peptide

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Ser Gly Ser Ser Ser Asn Val Gly Ser Asn Tyr Val Ser

1 5 10

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<220><223> Description of Artificial Sequence: Synthetic

peptide

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Ser Gly Ser Thr Ser Asn Ile Gly Asn Asn Phe Val Ser

1 5 10

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Ser Gly Ser Asn Phe Asn Ile Gly Asn Asn Tyr Val Ser

1 5 10

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peptide

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Ser Gly Ser Thr Ser Asn Ile Gly Tyr Asn Tyr Val Ser

1 5 10

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Ser Gly Ser Ser Ser Asn Ile Val Ser Asn Tyr Val Ser
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Ser Gly Thr Ser Ser Asn Ile Gly Asn Asn Phe Val Ser
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Ser Gly Thr Thr Ser Asn Ile Gly Asn Asn Tyr Val Ser
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Ser Gly Ser Ser Ser Asn Ile Gly Asn Asn Asp Val Ser

1 5 10

<210> 266

<211> 13

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<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 266

Ser Gly Ser Ser Ser Asn Ile Gly Asn His Asp Val Ser

1 5 10

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<400> 267

Ser Gly Ser Ser Ser Asn Ile Gly Ser Ser His Val Ser

1 5 10

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<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 268

Ser Gly Ser Ser Ser Asn Ile Gly Ile His Tyr Val Ser

1 5 10

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Ser Gly Gly Gly Ser Asn Ile Gly Tyr Asn Tyr Val Ser

1 5 10

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Ser Gly Ser Ser Ser Asn Ile Gly Asp His Tyr Val Ser

1 5 10

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<400> 271

Ser Gly Ser Ser Ser Asn Leu Gly Lys Asn Tyr Val Ser

1 5 10

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Ser Gly Ser Ser Ser Asn Ile Gly Asp Asn Phe Val Ser
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Ser Gly Ser Thr Ser Asn Ile Glu Lys Asn Tyr Val Ser
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Ser Gly Ser Ser Ser Asn Ile Gly Asn Asn Tyr Val Ser

1 5 10

<210> 277

<211> 13

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Ser Gly Ser Ser Ser Asn Ile Gly Asn Asn Tyr Ala Ser

1 5 10

<210> 278

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Ser Gly Ile Ser Ser Asn Ile Gly Asn Asn Tyr Val Ser

1 5 10

<210> 279

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Thr Gly Ser Ser Ser Asn Ile Gly Asn Asn Tyr Val Ser

1 5 10

<210> 280

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peptide

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Ser Gly Thr Ser Ser Asn Ile Gly Asn Asn His Val Ser

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peptide

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Ser Gly Ser Arg Ser Asn Ile Gly Lys Asn Tyr Val Ser

1 5 10

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oligonucleotide

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<211> 39

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oligonucleotide

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<211> 39

<212> DNA

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oligonucleotide

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<211> 39

<212> DNA

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oligonucleotide

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<212> DNA

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<210> 294

<211> 39

<212> DNA

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<210> 295

<211> 39

<212> DNA

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<211> 39

<212> DNA

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<211> 39

<212> DNA

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oligonucleotide

<400> 298

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<211> 39

<212> DNA

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oligonucleotide

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<210> 300

<211> 39

<212> DNA

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<211> 39

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<210> 302

<211> 39

<212> DNA

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<210> 303

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<212> DNA

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oligonucleotide

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<212> DNA

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oligonucleotide

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<211> 39

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oligonucleotide

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<211> 39

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<210> 308

<211> 39

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<210> 311

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<210> 313

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<212> DNA

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oligonucleotide

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oligonucleotide

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oligonucleotide

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oligonucleotide

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oligonucleotide

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<212> DNA

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<212> DNA

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<212> DNA

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<400> 323

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oligonucleotide

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oligonucleotide

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<212> DNA

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oligonucleotide

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oligonucleotide

<400> 328

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oligonucleotide

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oligonucleotide

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oligonucleotide

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<212> DNA

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<210> 335

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<212> DNA

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oligonucleotide

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oligonucleotide

<400> 340

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<212> DNA

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oligonucleotide

<400> 345

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oligonucleotide

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oligonucleotide

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oligonucleotide

<400> 349

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oligonucleotide

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tctggaggca gctccaatat tggcaataat gatgtgtcc 39

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oligonucleotide

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oligonucleotide

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<212> DNA

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oligonucleotide

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<212> DNA

<213> Artificial Sequence

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<400> 354

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<210> 355

<211> 39

<212> DNA

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<212> DNA

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oligonucleotide

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<212> DNA

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peptide

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1 5

<210> 466

<211> 7

<212> PRT

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Glu Asn Asn Arg Arg Pro Ser

1 5

<210> 467

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<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 467

Asp Asn Asn Lys Gln Pro Ser

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Asp Asn Asn Lys Arg Pro Leu

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<210> 469

<211> 7

<212> PRT

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peptide

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Asp Asn Asp Lys Arg Pro Ala

1 5

<210> 470

<211> 7

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peptide

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Asp Asn His Glu Arg Pro Ser

1 5

<210> 471

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peptide

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Glu Asn Arg Lys Arg Pro Ser

1 5

<210> 472

<211> 7

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peptide

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Asp Asn Asp Gln Arg Pro Ser

1 5

<210

> 473

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Asp Asn His Asn Arg Pro Ser

1 5

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Asp Asn Tyr Glu Arg Pro Ser

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Glu Asn Asn Lys Arg Ser Ser

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peptide

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Asp Asp His Lys Arg Pro Ser

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peptide

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Asp Asn Asn Lys Arg Arg Ser

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Asp Asn Asp Lys Arg Pro Ser

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Asp Lys Asn Lys Arg Pro Ser

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peptide

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Asp Asn Asn Lys Arg Pro Ser

1 5

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peptide

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Asp Ile Asp Lys Arg Pro Ser

1 5

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peptide

<400> 606

Asp Asp Lys Lys Arg Pro Ser

1 5

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peptide

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Ala Asn Asn Lys Arg Pro Ser

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peptide

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Asp Asn Asp Lys Gly Pro Ser

1 5

<210> 609

<211> 7

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peptide

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Glu Asp Asn Arg Arg Pro Ser

1 5

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peptide

<400> 610

Glu Asn Asn Lys Arg Pro Ser

1 5

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<400> 611

Asn Asn Asn Lys Arg Pro Ser

1 5

<210> 612

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Asp Asn Asn Glu Arg Pro Ser

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Asp Asn Ile Gln Arg Pro Ser

1 5

<210> 614

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<400> 614

Asp Asn Asn Tyr Arg Pro Ser

1 5

<210> 615

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peptide

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Asp Asn Tyr Asn Arg Pro Ser

1 5

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oligonucleotide

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oligonucleotide

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oligonucleotide

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oligonucleotide

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oligonucleotide

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oligonucleotide

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gacaatgata agcgaccccc a 21

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oligonucleotide

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gaccataata agcgaccctc a 21

<210> 629

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oligonucleotide

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<210> 630

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oligonucleotide

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<210> 631

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<212> DNA

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oligonucleotide

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<210> 632

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<212> DNA

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oligonucleotide

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gaaaatatta agcgaccctc a 21

<210> 633

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oligonucleotide

<400> 633

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oligonucleotide

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<210> 635

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<212> DNA

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oligonucleotide

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gaaaataata agcgacactc a 21

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oligonucleotide

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oligonucleotide

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<210> 640

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gacaataatc agcgaccctc a 21

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<211> 21

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gagaatgtta agcgaccctc a 21

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<211> 21

<212> DNA

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oligonucleotide

<400> 643

gacacttata agagaccctc a 21

<210> 644

<211> 21

<212> DNA

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<400> 644

aacaataata accgaccctc a 21

<210> 645

<211> 21

<212> DNA

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oligonucleotide

<400> 645

ggcaataata atcgaccctc a 21

<210> 646

<211> 21

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gaaaatgatc agcgaccctc a 21

<210> 647

<211> 21

<212> DNA

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oligonucleotide

<400> 647

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<210> 648

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oligonucleotide

<400> 648

gacaatgata agcgaccctt a 21

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<211> 21

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oligonucleotide

<400> 649

gacactgatg agcgaccttc a 21

<210> 650

<211> 21

<212> DNA

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oligonucleotide

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oligonucleotide

<400> 651

gacaatgatg ctcgaccctc a 21

<210> 652

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<212> DNA

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oligonucleotide

<400> 652

gacaataata agcgactctc a 21

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<400> 653

gacaatgata agcgagcctc a 21

<210> 654

<211> 21

<212> DNA

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<400> 654

gacaatactg agcgaccctc a 21

<210> 655

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oligonucleotide

<400> 655

gacaataata ttcgaccctc a 21

<210> 656

<211> 21

<212> DNA

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oligonucleotide

<400> 656

gacaataaga ggcgaccctc a 21

<210> 657

<211> 21

<212> DNA

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oligonucleotide

<400> 657

gacgataata accgaccctc a 21

<210> 658

<211> 21

<212> DNA

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oligonucleotide

<400> 658

gcgaataatc gacgaccctc a 21

<210> 659

<211> 21

<212> DNA

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oligonucleotide

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gacaatgata agcgactgtc a 21

<210> 660

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oligonucleotide

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gacaataata agcgacccgc a 21

<210> 661

<211> 21

<212> DNA

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oligonucleotide

<400> 661

gacaattata gacgtccctc a 21

<210> 662

<211> 21

<212> DNA

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oligonucleotide

<400> 662

gccaatgatc agcgaccctc a 21

<210> 663

<211> 21

<212> DNA

<213> Artificial Sequence

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oligonucleotide

<400> 663

gacaatgata agcgacgctc a 21

<210> 664

<211> 21

<212> DNA

<213> Artificial Sequence

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oligonucleotide

<400> 664

gacaagaatg agcgaccctc a 21

<210> 665

<211> 21

<212> DNA

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oligonucleotide

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gacaataagg agcgaccctc a 21

<210> 666

<211> 21

<212> DNA

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oligonucleotide

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gacaataata agggaccctc a 21

<210> 667

<211> 21

<212> DNA

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oligonucleotide

<400> 667

gaaaatgata gacgaccctc a 21

<210> 668

<211> 21

<212> DNA

<213> Artificial Sequence

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oligonucleotide

<400> 668

gaaaatgatg agcgaccctc a 21

<210> 669

<211> 21

<212> DNA

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oligonucleotide

<400> 669

caaaataata agcgaccctc a 21

<210> 670

<211> 21

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oligonucleotide

<400> 670

gacaatcgtg agcgaccctc a 21

<210> 671

<211> 21

<212> DNA

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oligonucleotide

<400> 671

gacaataata gacgaccctc a 21

<210> 672

<211> 21

<212> DNA

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oligonucleotide

<400> 672

ggaaataata ggcgaccctc a 21

<210> 673

<211> 21

<212> DNA

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oligonucleotide

<400> 673

gacaatgata accgaccctc a 21

<210> 674

<211> 21

<212> DNA

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oligonucleotide

<400> 674

gaagataata agcgaccctc a 21

<210> 675

<211> 21

<212> DNA

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oligonucleotide

<400> 675

gacgatgatg agcggccctc a 21

<210> 676

<211> 21

<212> DNA

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oligonucleotide

<400> 676

gcaagtaata agcgaccctc a 21

<210> 677

<211> 21

<212> DNA

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

oligonucleotide

<400> 677

gacaataata agcgatcctc a 21

<210> 678

<211> 21

<212> DNA

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<220><223> Description of Artificial Sequence: Synthetic

oligonucleotide

<400> 678

caaaataatg agcgaccctc a 21

<210> 679

<211> 21

<212> DNA

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oligonucleotide

<400> 679

gacgatgata ggcgaccctc a 21

<210> 680

<211> 21

<212> DNA

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oligonucleotide

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aacaatgata agcgaccctc a 21

<210> 681

<211> 21

<212> DNA

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<220><223> Description of Artificial Sequence: Synthetic oligonucleotide

<400> 681

gacaataata accgaccctc a 21

<210> 682

<211> 21

<212> DNA

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic oligonucleotide

<400> 682

gacaataatg tgcgaccctc a 21

<210> 683

<211> 21

<212> DNA

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic oligonucleotide

<400> 683

gaaaataatg agcgaccctc a 21

<210> 684

<211> 21

<212> DNA

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic oligonucleotide

<400> 684

gacaataatc accgaccctc a 21

<210> 685

<211> 21

<212> DNA

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

oligonucleotide

<400> 685

gacaatgatg agcgcccctc g 21

<210> 686

<211> 21

<212> DNA

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<220><223> Description of Artificial Sequence: Synthetic

oligonucleotide

<400> 686

gacaatatcc ggcgaccctc a 21

<210> 687

<211> 21

<212> DNA

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

oligonucleotide

<400> 687

gactttaata agcgaccctc a 21

<210> 688

<211> 21

<212> DNA

<213> Artificial Sequence

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oligonucleotide

<400> 688

gaaactaata agcgaccctc a 21

<210> 689

<211> 21

<212> DNA

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

oligonucleotide

<400> 689

aacgataata agcgaccctc a 21

<210> 690

<211> 21

<212> DNA

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

oligonucleotide

<400> 690

gacgataata agcgaccctc a 21

<210> 691

<211> 21

<212> DNA

<213> Artificial Sequence

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oligonucleotide

<400> 691

gacaattata agcgaccctc a 21

<210> 692

<211> 21

<212> DNA

<213> Artificial Sequence

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oligonucleotide

<400> 692

cacaataata agcgaccctc a 21

<210> 693

<211> 21

<212> DNA

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 693

gacaatcatc agcgaccctc a 21

<210> 694

<211> 21

<212> DNA

<213> Artificial Sequence

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oligonucleotide

<400> 694

gacaattata agcgagcctc a 21

<210> 695

<211> 21

<212> DNA

<213> Artificial Sequence

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oligonucleotide

<400> 695

gacaatatta agcgaccctc a 21

<210> 696

<211> 21

<212> DNA

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<220><223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 696

gacactcata agcgaccctc a 21

<210> 697

<211> 21

<212> DNA

<213> Artificial Sequence

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oligonucleotide

<400> 697

gacactaata ggcgaccctc t 21

<210> 698

<211> 21

<212> DNA

<213> Artificial Sequence

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oligonucleotide

<400> 698

gacactaatc agcgaccctc a 21

<210> 699

<211> 21

<212> DNA

<213> Artificial Sequence

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oligonucleotide

<400> 699

gaaagtgata agcgaccctc a 21

<210> 700

<211> 21

<212> DNA

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<220><223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 700

gacaatgata agcgatcttc g 21

<210> 701

<211> 21

<212> DNA

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<220><223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 701

ggcagtaata agcgaccctc a 21

<210> 702

<211> 21

<212> DNA

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 702

gacaataaca agcgagtttc a 21

<210> 703

<211> 21

<212> DNA

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 703

aacaataata ggcgaccctc a 21

<210> 704

<211> 21

<212> DNA

<213> Artificial Sequence

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oligonucleotide

<400> 704

gacaatttta agcgaccctc a 21

<210> 705

<211> 21

<212> DNA

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oligonucleotide

<400> 705

gaaaatgata aacgaccctc a 21

<210> 706

<211> 21

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oligonucleotide

<400> 706

gaaaataata agcgactctc a 21

<210> 707

<211> 21

<212> DNA

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oligonucleotide

<400> 707

gcagataata agcgaccctc a 21

<210> 708

<211> 21

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oligonucleotide

<400> 708

gaagataatg agcgcccctc a 21

<210> 709

<211> 21

<212> DNA

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oligonucleotide

<400> 709

gacactgatc agcgaccctc a 21

<210> 710

<211> 21

<212> DNA

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

oligonucleotide

<400> 710

gacaattatc agcgaccctc a 21

<210> 711

<211> 21

<212> DNA

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<220><223> Description of Artificial Sequence: Synthetic

oligonucleotide

<400> 711

gacgagaata agcgaccctc a 21

<210> 712

<211> 21

<212> DNA

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

oligonucleotide

<400> 712

gacactaata agcgaccctc a 21

<210> 713

<211> 21

<212> DNA

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

oligonucleotide

<400> 713

gacgattatc ggcgaccctc a 21

<210> 714

<211> 21

<212> DNA

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 714

gacaacgata agcggcactc a 21

<210> 715

<211> 21

<212> DNA

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 715

gaaaatgata atcgaccctc a 21

<210> 716

<211> 21

<212> DNA

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 716

gacgataatg agcgcccctc a 21

<210> 717

<211> 21

<212> DNA

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oligonucleotide

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<210> 718

<211> 21

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<220><223> Description of Artificial Sequence: Synthetic
oligonucleotide

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gacgttgata agcgaccctc a 21

<210> 719

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<220><223> Description of Artificial Sequence: Synthetic
oligonucleotide

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<210> 720

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oligonucleotide

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oligonucleotide

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<212> DNA

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oligonucleotide

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gacattaata agcgaccctc a 21

<210> 723

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<212> DNA

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 723

gccaataatg agcgaccctc a 21

<210> 724

<211> 21

<212> DNA

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 724

gacaatgaaa accgaccgtc a 21

<210> 725

<211> 21

<212> DNA

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 725

ggcgatgata agcgaccctc a 21

<210> 726

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<212> DNA

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
oligonucleotide

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gccaataatc agcgaccttc a 21

<210> 727

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<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
oligonucleotide

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gacgatgata agcgaccctc a 21

<210> 728

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<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
oligonucleotide

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tacaataata agcggccctc a 21

<210> 729

<211> 21

<212> DNA

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<220><223> Description of Artificial Sequence: Synthetic
oligonucleotide

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gaagatgata agcgaccctc a 21

<210> 730

<211> 21

<212> DNA

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<220><223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 730

gaaaacaata accgaccctc g 21

<210> 731

<211> 21

<212> DNA

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<220><223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 731

gacaataatc tgcgaccctc a 21

<210> 732

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<212> DNA

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 732

gagagtaaca agcgaccctc a 21

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<212> DNA

<213> Artificial Sequence

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oligonucleotide

<400> 733

gacactgata agcggccctc a 21

<210> 734

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<212> DNA

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

oligonucleotide

<400> 734

gacgatgatc agcgaccctc a 21

<210> 735

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<212> DNA

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oligonucleotide

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gtgaataata agagaccctc c 21

<210> 736

<211> 21

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<220><223> Description of Artificial Sequence: Synthetic

oligonucleotide

<400> 736

gacgattata agcgaccctc a 21

<210> 737

<211> 21

<212> DNA

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

oligonucleotide

<400> 737

gacaatacta agcgaccctc a 21

<210> 738

<211> 21

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<213> Artificial Sequence

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oligonucleotide

<400> 738

gacgatactg agcgaccctc a 21

<210> 739

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<212> DNA

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic oligonucleotide

<400> 739

ggcaatgata agcgaccctc a 21

<210> 740

<211> 21

<212> DNA

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic oligonucleotide

<400> 740

gacaatgaaa agcgaccctc a 21

<210> 741

<211> 21

<212> DNA

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic oligonucleotide

<400> 741

gacaatgatg accgaccctc a 21

<210> 742

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<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic oligonucleotide

<400> 742

gacgataata ggcgtccctc a 21

<210> 743

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<212> DNA

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oligonucleotide

<400> 743

ggcaataata agcgaccctc a 21

<210> 744

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oligonucleotide

<400> 744

gccaatgata agcgaccctc a 21

<210> 745

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oligonucleotide

<400> 745

gacaataata agcgacactc a 21

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oligonucleotide

<400> 746

gacgacaatc agcgaccctc a 21

<210> 747

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<212> DNA

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

oligonucleotide

<400> 747

ggcaatgata ggcgaccctc a 21

<210> 748

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<212> DNA

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

oligonucleotide

<400> 748

gacaatcata accgaccctc a 21

<210> 749

<211> 21

<212> DNA

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

oligonucleotide

<400> 749

gacaattatg agcgaccctc a 21

<210> 750

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<212> DNA

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<220><223> Description of Artificial Sequence: Synthetic

oligonucleotide

<400> 750

gaaaataata agcgatcctc a 21

<210> 751

<211> 21

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<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 751

gacgatcata agcggccctc a 21

<210> 752

<211> 21

<212> DNA

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 752

gacaataata aacgacgttc a 21

<210> 753

<211> 21

<212> DNA

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 753

gacaatgata agcgaccgtc a 21

<210> 754

<211> 21

<212> DNA

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<220><223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 754

gacaagaata agcgaccctc a 21

<210> 755

<211> 21

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<220><223> Description of Artificial Sequence: Synthetic

oligonucleotide

<400> 755

gacaataata agcgaccctc a 21

<210> 756

<211> 21

<212> DNA

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

oligonucleotide

<400> 756

gacattgata agcgaccctc a 21

<210> 757

<211> 21

<212> DNA

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

oligonucleotide

<400> 757

gacgataaga agcgaccctc a 21

<210> 758

<211> 21

<212> DNA

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<220><223> Description of Artificial Sequence: Synthetic

oligonucleotide

<400> 758

gccaataata agcgaccctc a 21

<210> 759

<211> 21

<212> DNA

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

oligonucleotide

<400> 759

gacaatgata agggaccctc a 21

<210> 760

<211> 21

<212> DNA

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<220><223> Description of Artificial Sequence: Synthetic

oligonucleotide

<400> 760

gaagataata ggcgaccctc a 21

<210> 761

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<212> DNA

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<220><223> Description of Artificial Sequence: Synthetic

oligonucleotide

<400> 761

gagaataata agcgaccctc a 21

<210> 762

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<212> DNA

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<220><223> Description of Artificial Sequence: Synthetic

oligonucleotide

<400> 762

aacaataata agcgaccctc a 21

<210> 763

<211> 21

<212> DNA

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

oligonucleotide

<400> 763

gacaataatg agcgaccctc a 21

<210> 764

<211> 21

<212> DNA

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic oligonucleotide

<400> 764

gacaatattc agcgaccctc a 21

<210> 765

<211> 21

<212> DNA

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic oligonucleotide

<400> 765

gacaataatt accgaccctc a 21

<210> 766

<211> 21

<212> DNA

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic oligonucleotide

<400> 766

gacaattata accgaccctc a 21

<210> 767

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 767

Cys Gly Thr Trp Asp Thr Ser Leu Ser Ala Val Val Phe

1 5 10

<210> 768

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 768

Cys Gly Thr Trp Asp Thr Ser Leu Ser Ala Gly Val Phe

1 5 10

<210> 769

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 769

Cys Gly Thr Trp Asp Thr Ser Leu Ser Ala Trp Val Phe

1 5 10

<210> 770

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 770

Cys Gly Thr Trp Asp Arg Ser Leu Ser Ala Gly Val Phe

1 5 10

<210> 771

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
peptide

<400> 771

Cys Gly Thr Trp Asp Arg Ser Leu Ser Ala Trp Val Phe
1 5 10

<210> 772

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
peptide

<400> 772

Cys Gly Thr Trp Asp Thr Ser Leu Ser Gly Gly Val Phe
1 5 10

<210> 773

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
peptide

<400> 773

Cys Gly Thr Trp Asp Thr Ser Leu Arg Ala Gly Val Phe
1 5 10

<210> 774

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
peptide

<400> 774

Cys Gly Thr Trp Asp Arg Ser Leu Ser Val Trp Val Phe
1 5 10

<210> 775

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 775

Cys Gly Thr Trp Asp Thr Ser Leu Ser Val Val Val Phe
1 5 10

<210> 776

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 776

Cys Gly Thr Trp Asp Thr Ser Leu Ser Ala Ala Val Phe
1 5 10

<210> 777

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 777

Cys Gly Ala Trp Asp Thr Ser Leu Ser Ala Gly Val Phe
1 5 10

<210> 778

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 778

Cys Ala Thr Trp Asp Thr Ser Leu Ser Ala Val Val Phe

1 5 10

<210> 779

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 779

Cys Ala Thr Trp Asp Thr Ser Leu Ser Ala Gly Val Phe

1 5 10

<210> 780

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 780

Cys Gly Thr Trp Glu Ser Ser Leu Ser Ala Trp Val Phe

1 5 10

<210> 781

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 781

Cys Gly Thr Trp Asp Thr Thr Leu Ser Ala Gly Val Phe

1 5 10

<210> 782

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 782

Cys Gly Thr Trp Asp Thr Ser Leu Ser Val Trp Val Phe

1 5 10

<210> 783

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 783

Cys Gly Thr Trp Asp Thr Ser Leu Ser Val Gly Val Phe

1 5 10

<210> 784

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 784

Cys Gly Thr Trp Asp Thr Ser Leu Ser Thr Gly Val Phe

1 5 10

<210> 785

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 785

Cys Gly Thr Trp Asp Thr Ser Leu Ser Gly Val Val Phe

1 5 10

<210> 786

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 786

Cys Gly Thr Trp Asp Thr Ser Leu Ser Ala Tyr Val Phe

1 5 10

<210> 787

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 787

Cys Gly Thr Trp Asp Thr Ser Leu Ser Ala Glu Val Phe

1 5 10

<210> 788

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 788

Cys Gly Thr Trp Asp Thr Gly Leu Ser Ala Gly Val Phe

1 5 10

<210> 789

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 789

Cys Gly Thr Trp Asp Arg Ser Leu Ser Ala Tyr Val Phe

1 5 10

<210> 790

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 790

Cys Gly Thr Trp Asp Arg Ser Leu Ser Ala Val Val Phe

1 5 10

<210> 791

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 791

Cys Gly Thr Trp Asp Asn Thr Leu Ser Ala Trp Val Phe

1 5 10

<210> 792

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 792

Cys Gly Thr Trp Asp Asn Arg Leu Ser Ala Gly Val Phe

1 5 10

<210> 793

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 793

Cys Gly Thr Trp Asp Ile Ser Leu Ser Ala Trp Val Phe

1 5 10

<210> 794

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 794

Cys Gly Thr Trp His Ser Ser Leu Ser Ala Gly Val Phe

1 5 10

<210> 795

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 795

Cys Gly Thr Trp Gly Ser Ser Leu Ser Ala Trp Val Phe

1 5 10

<210> 796

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 796

Cys Gly Thr Trp Glu Ser Ser Leu Ser Gly Trp Val Phe

1 5 10

<210> 797

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 797

Cys Gly Thr Trp Glu Ser Ser Leu Ser Ala Val Val Phe
1 5 10

<210> 798

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 798

Cys Gly Thr Trp Asp Tyr Ser Leu Ser Ala Val Val Phe
1 5 10

<210> 799

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 799

Cys Gly Thr Trp Asp Tyr Ser Leu Ser Ala Gly Val Phe
1 5 10

<210> 800

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 800

Cys Gly Thr Trp Asp Val Ser Leu Ser Val Gly Val Phe
1 5 10

<210> 801

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 801

Cys Gly Thr Trp Asp Thr Thr Leu Ser Ala Val Val Phe

1 5 10

<210> 802

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 802

Cys Gly Thr Trp Asp Thr Thr Leu Asn Ile Gly Val Phe

1 5 10

<210> 803

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 803

Cys Gly Thr Trp Asp Thr Ser Leu Thr Ala Val Val Phe

1 5 10

<210> 804

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 804

Cys Gly Thr Trp Asp Thr Ser Leu Thr Ala Ala Val Phe

1 5 10

<210> 805

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 805

Cys Gly Thr Trp Asp Thr Ser Leu Ser Val Gly Leu Phe

1 5 10

<210> 806

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 806

Cys Gly Thr Trp Asp Thr Ser Leu Ser Gly Arg Val Phe

1 5 10

<210> 807

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 807

Cys Gly Thr Trp Asp Thr Ser Leu Ser Gly Ala Val Phe

1 5 10

<210> 808

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 808

Cys Gly Thr Trp Asp Thr Ser Leu Ser Ala Gly Leu Phe
1 5 10

<210> 809

<211> 14

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 809

Cys Gly Thr Trp Asp Thr Ser Leu Ser Ala Gly Gly Val Phe
1 5 10

<210> 810

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 810

Cys Gly Thr Trp Asp Thr Ser Leu Arg Ala Tyr Val Phe
1 5 10

<210> 811

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 811

Cys Gly Thr Trp Asp Thr Ser Leu Arg Ala Trp Val Phe
1 5 10

<210> 812

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 812

Cys Gly Thr Trp Asp Thr Ser Leu Asn Thr Gly Val Phe

1 5 10

<210> 813

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 813

Cys Gly Thr Trp Asp Thr Ser Leu Asn Ile Trp Val Phe

1 5 10

<210> 814

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 814

Cys Gly Thr Trp Asp Thr Ser Leu Asn Ile Gly Val Phe

1 5 10

<210> 815

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 815

Cys Gly Thr Trp Asp Thr Ser Leu Ile Ala Val Val Phe

1 5 10

<210> 816

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 816

Cys Gly Thr Trp Asp Arg Ser Leu Ser Gly Trp Val Phe

1 5 10

<210> 817

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 817

Cys Gly Thr Trp Asp Asn Arg Leu Ser Gly Trp Val Phe

1 5 10

<210> 818

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 818

Cys Gly Thr Trp Asp Lys Ser Leu Ser Ala Val Val Phe

1 5 10

<210> 819

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 819

Cys Gly Thr Trp Asp Lys Gly Leu Ser Ala Trp Val Phe
1 5 10

<210> 820

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 820

Cys Gly Thr Trp Asp Ile Ser Leu Ser Ala Gly Val Phe
1 5 10

<210> 821

<211> 15

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 821

Cys Gly Thr Trp Asp Glu Ser Leu Ser Gly Gly Glu Val Val Phe
1 5 10 15

<210> 822

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 822

Cys Gly Thr Trp Asp Ala Ser Leu Ser Ala Trp Val Phe
1 5 10

<210> 823

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 823

Cys Gly Thr Trp Asp Ala Gly Leu Ser Ala Trp Val Phe

1 5 10

<210> 824

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 824

Cys Gly Ala Trp Asp Thr Ser Leu Ser Ala Trp Val Phe

1 5 10

<210> 825

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 825

Cys Gly Ala Trp Asp Thr Ser Leu Ser Ala Val Val Phe

1 5 10

<210> 826

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 826

Cys Gly Ala Trp Asp Thr Ser Leu Arg Ala Gly Val Phe

1 5 10

<210> 827

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 827

Cys Ala Thr Trp Asp Thr Ser Val Ser Ala Trp Val Phe

1 5 10

<210> 828

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 828

Cys Ala Thr Trp Asp Thr Ser Leu Ser Ala Trp Val Phe

1 5 10

<210> 829

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 829

Cys Ala Thr Trp Asp Asn Thr Leu Ser Ala Gly Val Phe

1 5 10

<210> 830

<211> 13

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Cys Tyr Thr Trp His Ser Ser Leu Arg Gly Gly Val Phe
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<210> 832

<211> 13

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Cys Val Thr Trp Thr Ser Ser Pro Ser Ala Trp Val Phe
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Cys Val Thr Trp Arg Gly Gly Leu Val Leu Phe
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Cys Val Thr Trp Asp Thr Ser Leu Thr Ser Val Val Leu

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peptide

<400> 835

Cys Val Thr Trp Asp Thr Ser Leu Ser Val Tyr Trp Val Phe

1 5 10

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peptide

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Cys Val Thr Trp Asp Thr Ser Leu Ser Ala Trp Val Phe

1 5 10

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<211> 13

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peptide

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Cys Val Thr Trp Asp Thr Asp Leu Ser Val Ala Leu Phe

1 5 10

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<211> 13

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Cys Val Thr Trp Asp Arg Ser Leu Ser Gly Trp Val Phe

1 5 10

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Cys Val Thr Trp Asp Arg Ser Leu Arg Glu Val Leu Phe

1 5 10

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<211> 13

<212> PRT

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Cys Val Thr Trp Asp Arg Ser Leu Arg Ala Val Val Phe

1 5 10

<210> 841

<211> 13

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peptide

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Cys Val Thr Trp Asp Arg Ser Leu Asp Ala Gly Val Phe

1 5 10

<210> 842

<211> 13

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peptide

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Cys Val Thr Trp Asp Asn Thr Leu Ser Ala Gly Val Phe

1 5 10

<210> 843

<211> 13

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Cys Val Thr Trp Asp Asn Asn Leu Phe Gly Val Val Phe

1 5 10

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<211> 13

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Cys Val Ser Trp Asp Thr Ser Leu Ser Gly Ala Val Phe

1 5 10

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1 5 10

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<211> 13

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1 5 10

<210> 847

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Cys Thr Thr Trp Phe Arg Thr Ala Ser Asp Val Val Phe

1 5 10

<210> 848

<211> 12

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Cys Thr Thr Trp Asp Tyr Gly Leu Ser Val Val Phe

1 5 10

<210> 849

<211> 14

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Cys Thr Ala Arg Asp Thr Ser Leu Ser Pro Gly Gly Val Phe

1 5 10

<210> 850

<211> 13

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<213> Artificial Sequence

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Cys Ser Thr Trp Asn Thr Arg Pro Ser Asp Val Val Phe

1 5 10

<210> 851

<211> 13

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<400> 851

Cys Ser Thr Trp Glu Ser Ser Leu Thr Thr Val Val Phe

1 5 10

<210> 852

<211> 13

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<213> Artificial Sequence

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peptide

<400> 852

Cys Ser Thr Trp Asp Thr Ser Leu Thr Asn Val Leu Phe
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<213> Artificial Sequence

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peptide

<400> 853

Cys Ser Thr Trp Asp Thr Ser Leu Ser Gly Val Val Phe
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<211> 13

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<213> Artificial Sequence

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peptide

<400> 854

Cys Ser Thr Trp Asp His Ser Leu Lys Ala Ala Leu Phe
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<210> 855

<211> 13

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peptide

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Cys Ser Thr Trp Asp Ala Arg Leu Ser Val Arg Val Phe
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peptide

<400> 856

Cys Ser Ser Tyr Thr Ser Ser Ser Thr Trp Val Phe

1 5 10

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<211> 13

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peptide

<400

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Cys Ser Ser Tyr Ala Thr Arg Gly Leu Arg Val Leu Phe

1 5 10

<210> 858

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Cys Ser Ser Trp Asp Ala Thr Leu Ser Val Arg Ile Phe

1 5 10

<210> 859

<211> 13

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<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 859

Cys Gln Val Trp Glu Gly Ser Ser Asp His Trp Val Phe

1 5 10

<210> 860

<211> 13

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<400> 860

Cys Gln Thr Trp Asp Asn Arg Leu Ser Ala Val Val Phe

1 5 10

<210> 861

<211> 13

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<400> 861

Cys Gln Thr Trp Asp His Ser Leu His Val Gly Val Phe

1 5 10

<210> 862

<211> 13

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<400> 862

Cys Gln Ser Tyr Asp Asp Ile Leu Asn Val Trp Val Leu

1 5 10

<210> 863

<211> 13

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Cys Asn Thr Trp Asp Lys Ser Leu Thr Ser Glu Leu Phe

1 5 10

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<211> 13

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peptide

<400> 864

Cys Leu Thr Trp Asp Arg Ser Leu Asn Val Arg Val Phe

1 5 10

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<211> 13

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<220><223> Description of Artificial Sequence: Synthetic

peptide

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Cys Leu Thr Trp Asp His Ser Leu Thr Ala Tyr Val Phe

1 5 10

<210> 866

<211> 13

<212> PRT

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Cys Leu Thr Arg Asp Thr Ser Leu Ser Ala Pro Val Phe

1 5 10

<210> 867

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<212> PRT

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<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 867

Cys Lys Thr Trp Glu Ser Gly Leu Asn Phe Gly His Val Phe
1 5 10

<210> 868

<211> 13

<212> PRT

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<400> 868

Cys Lys Thr Trp Asp Thr Ser Leu Ser Ala Val Val Phe
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<210> 869

<211> 13

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Cys Gly Val Trp Asp Val Ser Leu Gly Ala Gly Val Phe
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<210> 870

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<212> PRT

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<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 870

Cys Gly Val Trp Asp Thr Thr Pro Ser Ala Val Leu Phe

1 5 10

<210> 871

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 871

Cys Gly Val Trp Asp Thr Thr Leu Ser Ala Val Leu Phe

1 5 10

<210> 872

<211> 11

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 872

Cys Gly Val Trp Asp Thr Ser Leu Gly Val Phe

1 5 10

<210> 873

<211> 13

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<400> 873

Cys Gly Val Trp Asp Thr Asn Leu Gly Lys Trp Val Phe

1 5 10

<210> 874

<211> 14

<212> PRT

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Cys Gly Val Trp Asp Thr Gly Leu Asp Ala Gly Trp Val Phe

1 5 10

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<211> 13

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<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 875

Cys Gly Val Trp Asp Asn Val Leu Glu Ala Tyr Val Phe

1 5 10

<210> 876

<211> 14

<212> PRT

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peptide

<400> 876

Cys Gly Val Trp Asp Ile Ser Leu Ser Ala Asn Trp Val Phe

1 5 10

<210> 877

<211> 13

<212> PRT

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peptide

<400> 877

Cys Gly Val Trp Asp His Ser Leu Gly Ile Trp Ala Phe

1 5 10

<210> 878

<211> 13

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<400> 878

Cys Gly Val Trp Asp Asp Ile Leu Thr Ala Glu Val Phe

1 5 10

<210> 879

<211> 11

<212> PRT

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<400> 879

Cys Gly Val Arg Asp Thr Ser Leu Gly Val Phe

1 5 10

<210> 880

<211> 13

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<400> 880

Cys Gly Thr Tyr Asp Thr Ser Leu Pro Ala Trp Val Phe

1 5 10

<210> 881

<211> 13

<212> PRT

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<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 881

Cys Gly Thr Tyr Asp Asn Leu Val Phe Gly Tyr Val Phe

1 5 10

<210> 882

<211> 12

<212> PRT

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<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 882

Cys Gly Thr Tyr Asp Asp Arg Leu Arg Glu Val Phe

1 5 10

<210> 883

<211> 13

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<400> 883

Cys Gly Thr Trp Val Thr Ser Leu Ser Ala Gly Val Phe

1 5 10

<210> 884

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<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 884

Cys Gly Thr Trp Val Ser Ser Leu Thr Thr Val Val Phe

1 5 10

<210> 885

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 885

Cys Gly Thr Trp Val Ser Ser Leu Asn Val Trp Val Phe

1 5 10

<210> 886

<211> 11

<212> PRT

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<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 886

Cys Gly Thr Trp Val Gly Arg Phe Trp Val Phe

1 5 10

<210> 887

<211> 14

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 887

Cys Gly Thr Trp Ser Gly Gly Pro Ser Gly His Trp Leu Phe

1 5 10

<210> 888

<211> 14

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 888

Cys Gly Thr Trp Ser Gly Gly Leu Ser Gly His Trp Leu Phe

1 5 10

<210> 889

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 889

Cys Gly Thr Trp Gln Thr Gly Arg Glu Ala Val Leu Phe
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<210> 890

<211> 12

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 890

Cys Gly Thr Trp Gln Ser Arg Leu Arg Trp Val Phe
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<210> 891

<211> 12

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<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 891

Cys Gly Thr Trp Gln Ser Arg Leu Gly Trp Val Phe
1 5 10

<210> 892

<211> 14

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 892

Cys Gly Thr Trp Pro Arg Ser Leu Ser Ala Val Trp Val Phe
1 5 10

<210> 893

<211> 15

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 893

Cys Gly Thr Trp Asn Asn Tyr Leu Ser Ala Gly Asp Val Val Phe
1 5 10 15

<210> 894

<211> 14

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 894

Cys Gly Thr Trp Leu Gly Ser Gln Ser Pro Tyr Trp Val Phe
1 5 10

<210> 895

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 895

Cys Gly Thr Trp His Thr Gly Leu Ser Ala Tyr Val Phe
1 5 10

<210> 896

<211> 15

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 896

Cys Gly Thr Trp His Ser Thr Leu Ser Ala Gly His Trp Val Phe

1 5 10 15

<210> 897

<211> 13

<212> PRT

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peptide

<400> 897

Cys Gly Thr Trp His Ser Ser Leu Ser Thr Trp Val Phe

1 5 10

<210> 898

<211> 13

<212> PRT

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Cys Gly Thr Trp His Ser Ser Leu Ser Ala Tyr Val Phe

1 5 10

<210> 899

<211> 13

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<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 899

Cys Gly Thr Trp His Ser Ser Leu Ser Ala Val Val Phe

1 5 10

<210> 900

<211> 13

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<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 900

Cys Gly Thr Trp His Ser Gly Leu Ser Gly Trp Val Phe
1 5 10

<210> 901

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 901

Cys Gly Thr Trp His Asn Thr Leu Arg Asn Val Ile Phe
1 5 10

<210> 902

<211> 12

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 902

Cys Gly Thr Trp His Ala Ser Leu Thr Ala Val Phe
1 5 10

<210> 903

<211> 15

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 903

Cys Gly Thr Trp Gly Trp Tyr Gly Ser Gln Arg Gly Val Val Phe
1 5 10 15

<210> 904

<211> 15

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 904

Cys Gly Thr Trp Gly Trp Tyr Gly Gly Gln Arg Gly Val Val Phe
1 5 10 15

<210> 905

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 905

Cys Gly Thr Trp Gly Thr Ser Leu Ser Ala Trp Val Phe
1 5 10

<210> 906

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 906

Cys Gly Thr Trp Gly Ser Ser Leu Thr Thr Gly Leu Phe
1 5 10

<210> 907

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 907

Cys Gly Thr Trp Gly Ser Ser Leu Thr Ala Tyr Val Phe

1 5 10

<210> 908

<211> 12

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 908

Cys Gly Thr Trp Gly Ser Ser Leu Ser Val Val Phe

1 5 10

<210> 909

<211> 13

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<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 909

Cys Gly Thr Trp Gly Ser Ser Leu Ser Gly Gly Val Phe

1 5 10

<210

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<211> 14

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<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 910

Cys Gly Thr Trp Gly Ser Ser Leu Ser Ala Tyr Trp Val Phe

1 5 10

<210> 911

<211> 14

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 911

Cys Gly Thr Trp Gly Ser Ser Leu Ser Ala Tyr Val Val Phe
1 5 10

<210> 912

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 912

Cys Gly Thr Trp Gly Ser Ser Leu Ser Ala Tyr Val Phe
1 5 10

<210> 913

<211> 13

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<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 913

Cys Gly Thr Trp Gly Ser Ser Leu Ser Ala Val Val Phe
1 5 10

<210> 914

<211> 14

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<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 914

Cys Gly Thr Trp Gly Ser Ser Leu Ser Ala Pro Tyr Val Phe
1 5 10

<210> 915

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 915

Cys Gly Thr Trp Gly Ser Ser Leu Ser Ala Pro Val Phe
1 5 10

<210> 916

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 916

Cys Gly Thr Trp Gly Ser Ser Leu Ser Ala Gly Val Phe
1 5 10

<210> 917

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 917

Cys Gly Thr Trp Gly Ser Ser Leu Ser Ala Gly Leu Phe
1 5 10

<210> 918

<211> 14

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 918

Cys Gly Thr Trp Gly Ser Ser Leu Ser Ala Gly Ala Leu Phe

1 5 10

<210> 919

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 919

Cys Gly Thr Trp Gly Ser Ser Leu Arg Ala Trp Val Phe

1 5 10

<210> 920

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 920

Cys Gly Thr Trp Phe Thr Ser Leu Ala Ser Gly Val Phe

1 5 10

<210> 921

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 921

Cys Gly Thr Trp Glu Thr Ser Leu Ser Val Val Val Ile

1 5 10

<210> 922

<211> 12

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
peptide

<400> 922

Cys Gly Thr Trp Glu Thr Ser Leu Ser Gly Val Phe
1 5 10

<210> 923

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
peptide

<400> 923

Cys Gly Thr Trp Glu Thr Ser Leu Ser Asp Trp Val Phe
1 5 10

<210
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<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
peptide

<400> 924

Cys Gly Thr Trp Glu Thr Ser Leu Ser Ala Gly Val Phe
1 5 10

<210> 925

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
peptide

<400> 925

Cys Gly Thr Trp Glu Thr Ser Leu Asn Tyr Val Ala Phe
1 5 10

<210> 926

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 926

Cys Gly Thr Trp Glu Thr Ser Leu Asn Thr Trp Leu Leu
1 5 10

<210> 927

<211> 14

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 927

Cys Gly Thr Trp Glu Thr Ser Glu Ser Gly Asn Tyr Ile Phe
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<210> 928

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 928

Cys Gly Thr Trp Glu Thr Arg Leu Gly Thr Trp Val Ile
1 5 10

<210> 929

<211> 12

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<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 929

Cys Gly Thr Trp Glu Thr Gln Leu Tyr Trp Val Phe

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<211> 14

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peptide

<400> 930

Cys Gly Thr Trp Glu Thr Gly Leu Ser Ala Gly Glu Val Phe

1 5 10

<210> 931

<211> 13

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<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 931

Cys Gly Thr Trp Glu Ser Thr Leu Ser Val Phe Leu Phe

1 5 10

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<211> 13

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peptide

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Cys Gly Thr Trp Glu Ser Ser Leu Thr Val Val Val Phe

1 5 10

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<211> 13

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<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 933

Cys Gly Thr Trp Glu Ser Ser Leu Thr Gly Val Val Phe

1 5 10

<210> 934

<211> 13

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<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 934

Cys Gly Thr Trp Glu Ser Ser Leu Thr Gly Phe Val Phe

1 5 10

<210> 935

<211> 13

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<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 935

Cys Gly Thr Trp Glu Ser Ser Leu Ser Val Gly Val Phe

1 5 10

<210> 936

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 936

Cys Gly Thr Trp Glu Ser Ser Leu Ser Glu Trp Val Phe

1 5 10

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<210> 948

<211> 13

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<213> Artificial Sequence

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<210> 949

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1 5 10

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Cys Gly Thr Trp Asp Tyr Ser Leu Ser Ala Trp Val Phe

1 5 10

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<211> 13

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<213> Artificial Sequence

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Cys Gly Thr Trp Asp Tyr Ser Leu Ser Ala Glu Val Phe

1 5 10

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1 5 10

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<211> 13

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<400> 962

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Cys Gly Thr Trp Asp Val Thr Leu His Ile Gly Val Phe

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<211> 13

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1 5 10

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<211> 13

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peptide

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Cys Gly Thr Trp Asp Val Ser Leu Ser Val Gly Val Leu

1 5 10

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<211> 15

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peptide

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Cys Gly Thr Trp Asp Val Ser Leu Ser Ala Gly Asp Val Val Phe

1 5 10 15

<210> 969

<211> 13

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1 5 10

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<211> 13

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<211> 13

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Cys Gly Thr Trp Asp Val Ile Leu Ser Ala Glu Val Phe

1 5 10

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<211> 13

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Cys Gly Thr Trp Asp Thr Thr Val Ser Ala Val Val Phe

1 5 10

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1 5 10

<210> 976

<211> 13

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Cys Gly Thr Trp Asp Thr Thr Leu Ser Val Phe Leu Phe

1 5 10

<210> 977

<211> 13

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peptide

<400> 977

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1 5 10

<210> 978

<211> 13

<212> PRT

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1 5 10

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1 5 10 15

<210> 980

<211> 13

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1 5 10

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<211> 14

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 981

Cys Gly Thr Trp Asp Thr Ser Arg Asn Pro Gly Gly Ile Phe
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<210> 982

<211> 12

<212> PRT

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Cys Gly Thr Trp Asp Thr Ser Arg Gly His Val Phe
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<211> 15

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<400> 983

Cys Gly Thr Trp Asp Thr Ser Pro Ser Thr Gly Gln Val Leu Phe
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<210> 984

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<400> 984

Cys Gly Thr Trp Asp Thr Ser Pro Ser Ala Trp Val Phe

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<210> 985

<211> 12

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<400> 985

Cys Gly Thr Trp Asp Thr Ser Leu Thr Trp Val Phe

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<211> 14

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<400> 986

Cys Gly Thr Trp Asp Thr Ser Leu Thr Trp Phe Ala Val Phe

1 5 10

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<211> 13

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<400> 987

Cys Gly Thr Trp Asp Thr Ser Leu Thr Val Val Val Phe

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<210> 988

<211> 14

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1 5 10 15

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<211> 13

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<400> 992

Cys Gly Thr Trp Asp Thr Ser Leu Thr Ala Trp Val Phe
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<400> 993

Cys Gly Thr Trp Asp Thr Ser Leu Thr Ala Trp Gly Val Phe
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Cys Gly Thr Trp Asp Thr Ser Leu Thr Ala Val Val Leu
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<400> 995

Cys Gly Thr Trp Asp Thr Ser Leu Thr Ala Arg Val Phe

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<210> 996

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<400> 996

Cys Gly Thr Trp Asp Thr Ser Leu Thr Ala Ile Val Phe

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<400> 997

Cys Gly Thr Trp Asp Thr Ser Leu Thr Ala Gly Val Phe

1 5 10

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Cys Gly Thr Trp Asp Thr Ser Leu Ser Val Tyr Val Phe

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<211> 12

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<400> 1000

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1 5 10

<210> 1001

<211> 13

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<400> 1001

Cys Gly Thr Trp Asp Thr Ser Leu Ser Thr Trp Val Phe

1 5 10

<210> 1002

<211> 13

<212> PRT

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<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 1002

Cys Gly Thr Trp Asp Thr Ser Leu Ser Thr Val Val Phe

1 5 10

<210> 1003

<211> 15

<212> PRT

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peptide

<400> 1003

Cys Gly Thr Trp Asp Thr Ser Leu Ser Thr Gly Gln Val Leu Phe

1 5 10 15

<210> 1004

<211> 16

<212> PRT

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peptide

<400> 1004

Cys Gly Thr Trp Asp Thr Ser Leu Ser Thr Gly Pro Leu Trp Val Phe

1 5 10 15

<210> 1005

<211> 13

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peptide

<400> 1005

Cys Gly Thr Trp Asp Thr Ser Leu Ser Ser Tyr Val Phe

1 5 10

<210> 1006

<211> 13

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peptide

<400> 1006

Cys Gly Thr Trp Asp Thr Ser Leu Ser Ser Val Val Phe

1 5 10

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<211> 14

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Cys Gly Thr Trp Asp Thr Ser Leu Ser Ser Arg Tyr Ile Phe

1 5 10

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<211> 14

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Cys Gly Thr Trp Asp Thr Ser Leu Ser Ser Arg Phe Ile Phe

1 5 10

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<211> 14

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<400> 1009

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1 5 10

<210> 1010

<211> 13

<212> PRT

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1 5 10

<210> 1011

<211> 13

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peptide

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Cys Gly Thr Trp Asp Thr Ser Leu Ser Gln Trp Leu Phe

1 5 10

<210> 1012

<211> 15

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peptide

<400> 1012

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1 5 10 15

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peptide

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1 5 10

<210> 1014

<211> 13

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Cys Gly Thr Trp Asp Thr Ser Leu Ser Ile Trp Val Phe

1 5 10

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1 5 10 15

<210> 1016

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peptide

<400> 1016

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1 5 10

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<211> 13

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Cys Gly Thr Trp Asp Thr Ser Leu Ser Gly Thr Val Phe

1 5 10

<210> 1018

<211> 14

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<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1018

Cys Gly Thr Trp Asp Thr Ser Leu Ser Gly Gly Gln Val Phe

1 5 10

<210> 1019

<211> 13

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<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1019

Cys Gly Thr Trp Asp Thr Ser Leu Ser Gly Gly Ile Phe

1 5 10

<210> 1020

<211> 15

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1020

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1 5 10 15

<210> 1021

<211> 14

<212> PRT

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peptide

<400> 1021

Cys Gly Thr Trp Asp Thr Ser Leu Ser Phe Leu Tyr Ala Phe
1 5 10

<210> 1022

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<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 1022

Cys Gly Thr Trp Asp Thr Ser Leu Ser Glu Val Val Phe
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<210> 1023

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peptide

<400> 1023

Cys Gly Thr Trp Asp Thr Ser Leu Ser Glu Val Phe
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<210> 1024

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peptide

<400> 1024

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<211> 13

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<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1025

Cys Gly Thr Trp Asp Thr Ser Leu Ser Ala Tyr Ile Phe
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<210> 1026

<211> 13

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<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1026

Cys Gly Thr Trp Asp Thr Ser Leu Ser Ala Val Val Leu
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<210> 1027

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<400> 1027

Cys Gly Thr Trp Asp Thr Ser Leu Ser Ala Val Phe
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<210> 1028

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<400> 1028

Cys Gly Thr Trp Asp Thr Ser Leu Ser Ala Arg Val Phe

1 5 10

<210> 1029

<211> 14

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<400> 1029

Cys Gly Thr Trp Asp Thr Ser Leu Ser Ala Arg Gln Val Phe

1 5 10

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<211> 13

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<400> 1030

Cys Gly Thr Trp Asp Thr Ser Leu Ser Ala Leu Val Phe

1 5 10

<210> 1031

<211> 13

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<400> 1031

Cys Gly Thr Trp Asp Thr Ser Leu Ser Ala Lys Val Phe

1 5 10

<210> 1032

<211> 13

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peptide

<400> 1032

Cys Gly Thr Trp Asp Thr Ser Leu Ser Ala Lys Ile Phe

1 5 10

<210> 1033

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peptide

<400> 1033

Cys Gly Thr Trp Asp Thr Ser Leu Ser Ala Lys Ala Val Phe

1 5 10

<210> 1034

<211> 14

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peptide

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1 5 10

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Cys Gly Thr Trp Asp Thr Ser Leu Ser Ala Gly Tyr Val Phe

1 5 10

<210> 1036

<211> 15

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peptide

<400> 1036

Cys Gly Thr Trp Asp Thr Ser Leu Ser Ala Gly Arg Trp Val Phe

1 5 10 15

<210> 1037

<211> 13

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peptide

<400> 1037

Cys Gly Thr Trp Asp Thr Ser Leu Ser Ala Gly Ile Phe

1 5 10

<210> 1038

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peptide

<400> 1038

Cys Gly Thr Trp Asp Thr Ser Leu Ser Ala Gly Gly Phe Arg Val Phe

1 5 10 15

<210> 1039

<211> 13

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Cys Gly Thr Trp Asp Thr Ser Leu Ser Ala Gly Ala Phe

1 5 10

<210> 1040

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<400> 1040

Cys Gly Thr Trp Asp Thr Ser Leu Ser Ala Asp Trp Phe Phe

1 5 10

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<400> 1041

Cys Gly Thr Trp Asp Thr Ser Leu Ser Ala Asp Glu Tyr Val Phe

1 5 10 15

<210> 1042

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<400> 1042

Cys Gly Thr Trp Asp Thr Ser Leu Ser Ala Ala Trp Val Phe

1 5 10

<210> 1043

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 1043

Cys Gly Thr Trp Asp Thr Ser Leu Ser Ala Ala Leu Phe
1 5 10

<210> 1044

<211> 14

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 1044

Cys Gly Thr Trp Asp Thr Ser Leu Ser Ala Ala Gly Val Phe
1 5 10

<210> 1045

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 1045

Cys Gly Thr Trp Asp Thr Ser Leu Arg Val Val Val Phe
1 5 10

<210> 1046

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 1046

Cys Gly Thr Trp Asp Thr Ser Leu Arg Thr Trp Val Phe
1 5 10

<210> 1047

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1047

Cys Gly Thr Trp Asp Thr Ser Leu Arg Gly Ala Val Phe
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<210> 1048

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1048

Cys Gly Thr Trp Asp Thr Ser Leu Arg Ala Val Val Phe
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<210> 1049

<211> 14

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1049

Cys Gly Thr Trp Asp Thr Ser Leu Asn Val Val Tyr Val Phe
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<210> 1050

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1050

Cys Gly Thr Trp Asp Thr Ser Leu Asn Thr Tyr Leu Phe

1 5 10

<210> 1051

<211> 14

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1051

Cys Gly Thr Trp Asp Thr Ser Leu Asn Phe Ala Trp Leu Phe

1 5 10

<210> 1052

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1052

Cys Gly Thr Trp Asp Thr Ser Leu Leu Val Trp Leu Phe

1 5 10

<210> 1053

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1053

Cys Gly Thr Trp Asp Thr Ser Leu Lys Thr Trp Val Phe

1 5 10

<210> 1054

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 1054

Cys Gly Thr Trp Asp Thr Ser Leu Ile Val Trp Val Phe

1 5 10

<210> 1055

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 1055

Cys Gly Thr Trp Asp Thr Ser Leu Ile Thr Gly Val Phe

1 5 10

<210> 1056

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 1056

Cys Gly Thr Trp Asp Thr Ser Leu Ile Ser Val Val Phe

1 5 10

<210> 1057

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 1057

Cys Gly Thr Trp Asp Thr Ser Leu Ile Ala Tyr Val Phe

1 5 10

<210> 1058

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1058

Cys Gly Thr Trp Asp Thr Ser Leu His Thr Glu Leu Phe
1 5 10

<210> 1059

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1059

Cys Gly Thr Trp Asp Thr Ser Leu Gly Ser Tyr Val Phe
1 5 10

<210> 1060

<211> 14

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1060

Cys Gly Thr Trp Asp Thr Ser Leu Gly Ser Leu Trp Val Phe
1 5 10

<210> 1061

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1061

Cys Gly Thr Trp Asp Thr Ser Leu Gly Ser Gly Val Phe

1 5 10

<210> 1062

<211> 14

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1062

Cys Gly Thr Trp Asp Thr Ser Leu Gly Gly Arg Gly Val Phe

1 5 10

<210> 1063

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1063

Cys Gly Thr Trp Asp Thr Ser Leu Gly Ala Trp Val Phe

1 5 10

<210> 1064

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1064

Cys Gly Thr Trp Asp Thr Ser Leu Gly Ala Val Val Phe

1 5 10

<210> 1065

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 1065

Cys Gly Thr Trp Asp Thr Ser Leu Gly Ala Gly Val Phe
1 5 10

<210> 1066

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1066

Cys Gly Thr Trp Asp Thr Ser Leu Gly Ala Gly Leu Phe
1 5 10

<210> 1067

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1067

Cys Gly Thr Trp Asp Thr Ser Leu Asp Ala Val Val Phe
1 5 10

<210> 1068

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1068

Cys Gly Thr Trp Asp Thr Ser Leu Asp Ala Val Leu Phe
1 5 10

<210> 1069

<211> 12

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1069

Cys Gly Thr Trp Asp Thr Ser Leu Ala Trp Val Phe
1 5 10

<210> 1070

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1070

Cys Gly Thr Trp Asp Thr Ser Leu Ala Thr Gly Leu Phe
1 5 10

<210> 1071

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1071

Cys Gly Thr Trp Asp Thr Ser Leu Ala Pro Val Val Phe
1 5 10

<210> 1072

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1072

Cys Gly Thr Trp Asp Thr Arg Leu Thr Ile Val Ile Phe

1 5 10

<210> 1073

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1073

Cys Gly Thr Trp Asp Thr Arg Leu Ser Val Trp Leu Phe

1 5 10

<210> 1074

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1074

Cys Gly Thr Trp Asp Thr Arg Leu Ser Val Gly Val Phe

1 5 10

<210> 1075

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1075

Cys Gly Thr Trp Asp Thr Arg Leu Ser Thr Val Ile Phe

1 5 10

<210> 1076

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 1076

Cys Gly Thr Trp Asp Thr Arg Leu Ser Ser Val Val Phe

1 5 10

<210> 1077

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 1077

Cys Gly Thr Trp Asp Thr Arg Leu Ser Ile Val Val Phe

1 5 10

<210> 1078

<211> 14

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 1078

Cys Gly Thr Trp Asp Thr Arg Leu Ser Ala Tyr Val Val Phe

1 5 10

<210> 1079

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 1079

Cys Gly Thr Trp Asp Thr Arg Leu Ser Ala Trp Val Phe

1 5 10

<210> 1080

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1080

Cys Gly Thr Trp Asp Thr Arg Leu Ser Ala Val Val Phe
1 5 10

<210> 1081

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1081

Cys Gly Thr Trp Asp Thr Arg Leu Ser Ala Gly Leu Phe
1 5 10

<210> 1082

<211> 14

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1082

Cys Gly Thr Trp Asp Thr Arg Leu Ser Ala Gly Gly Val Phe
1 5 10

<210> 1083

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1083

Cys Gly Thr Trp Asp Thr Arg Leu Asn Val Trp Leu Phe

1 5 10

<210> 1084

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1084

Cys Gly Thr Trp Asp Thr Asn Arg Glu Val Val Leu Leu

1 5 10

<210> 1085

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1085

Cys Gly Thr Trp Asp Thr Asn Leu Arg Ala His Val Phe

1 5 10

<210> 1086

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1086

Cys Gly Thr Trp Asp Thr Asn Leu Pro Ala Val Val Phe

1 5 10

<210> 1087

<211> 12

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 1087

Cys Gly Thr Trp Asp Thr Asn Leu Gly Gly Val Phe
1 5 10

<210> 1088

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1088

Cys Gly Thr Trp Asp Thr Ile Val Ser Ile Gly Val Phe
1 5 10

<210> 1089

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1089

Cys Gly Thr Trp Asp Thr Ile Leu Ser Ala Val Val Phe
1 5 10

<210> 1090

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1090

Cys Gly Thr Trp Asp Thr Ile Leu Ser Ala Glu Val Phe
1 5 10

<210> 1091

<211> 12

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1091

Cys Gly Thr Trp Asp Thr His Leu Gly Val Val Phe
1 5 10

<210> 1092

<211> 14

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1092

Cys Gly Thr Trp Asp Thr Gly Pro Ser Pro His Trp Leu Phe
1 5 10

<210> 1093

<211> 14

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1093

Cys Gly Thr Trp Asp Thr Gly Leu Thr Phe Gly Gly Val Phe
1 5 10

<210> 1094

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1094

Cys Gly Thr Trp Asp Thr Gly Leu Thr Ala Phe Val Phe

1 5 10

<210> 1095

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1095

Cys Gly Thr Trp Asp Thr Gly Leu Ser Val Trp Val Phe

1 5 10

<210> 1096

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1096

Cys Gly Thr Trp Asp Thr Gly Leu Ser Thr Gly Ile Phe

1 5 10

<210> 1097

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1097

Cys Gly Thr Trp Asp Thr Gly Leu Ser Ser Leu Leu Phe

1 5 10

<210> 1098

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 1098

Cys Gly Thr Trp Asp Thr Gly Leu Ser Ile Val Val Phe

1 5 10

<210> 1099

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 1099

Cys Gly Thr Trp Asp Thr Gly Leu Ser Phe Val Val Phe

1 5 10

<210> 1100

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 1100

Cys Gly Thr Trp Asp Thr Gly Leu Ser Ala Trp Val Phe

1 5 10

<210> 1101

<211> 14

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 1101

Cys Gly Thr Trp Asp Thr Gly Leu Ser Ala Gly Val Val Phe

1 5 10

<210> 1102

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1102

Cys Gly Thr Trp Asp Thr Gly Leu Arg Gly Trp Ile Phe
1 5 10

<210> 1103

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1103

Cys Gly Thr Trp Asp Thr Glu Leu Ser Ala Gly Val Phe
1 5 10

<210> 1104

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1104

Cys Gly Thr Trp Asp Thr Ala Leu Thr Ala Gly Val Phe
1 5 10

<210> 1105

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1105

Cys Gly Thr Trp Asp Thr Ala Leu Ser Leu Val Val Phe

1 5 10

<210> 1106

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1106

Cys Gly Thr Trp Asp Thr Ala Leu Ser Ala Trp Leu Phe

1 5 10

<210> 1107

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1107

Cys Gly Thr Trp Asp Thr Ala Leu Ser Ala Gly Val Phe

1 5 10

<210> 1108

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1108

Cys Gly Thr Trp Asp Thr Ala Leu Arg Gly Val Leu Phe

1 5 10

<210> 1109

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 1109

Cys Gly Thr Trp Asp Thr Ala Leu Lys Glu Trp Leu Phe

1 5 10

<210> 1110

<211> 15

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 1110

Cys Gly Thr Trp Asp Arg Thr Leu Thr Ala Gly Asp Val Leu Phe

1 5 10 15

<210> 1111

<211> 12

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 1111

Cys Gly Thr Trp Asp Arg Ser Val Thr Tyr Val Phe

1 5 10

<210> 1112

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 1112

Cys Gly Thr Trp Asp Arg Ser Arg Asn Glu Trp Val Phe

1 5 10

<210> 1113

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1113

Cys Gly Thr Trp Asp Arg Ser Leu Thr Val Trp Val Phe
1 5 10

<210> 1114

<211> 14

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1114

Cys Gly Thr Trp Asp Arg Ser Leu Thr Pro Gly Trp Leu Phe
1 5 10

<210> 1115

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1115

Cys Gly Thr Trp Asp Arg Ser Leu Thr Ala Trp Val Phe
1 5 10

<210> 1116

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1116

Cys Gly Thr Trp Asp Arg Ser Leu Ser Val Val Val Phe

1 5 10

<210> 1117

<211> 12

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1117

Cys Gly Thr Trp Asp Arg Ser Leu Ser Val Val Phe

1 5 10

<210> 1118

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1118

Cys Gly Thr Trp Asp Arg Ser Leu Ser Val Gln Leu Phe

1 5 10

<210> 1119

<211> 14

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1119

Cys Gly Thr Trp Asp Arg Ser Leu Ser Val Leu Trp Val Phe

1 5 10

<210> 1120

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 1120

Cys Gly Thr Trp Asp Arg Ser Leu Ser Val Gly Leu Phe

1 5 10

<210> 1121

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 1121

Cys Gly Thr Trp Asp Arg Ser Leu Ser Thr Trp Val Phe

1 5 10

<210> 1122

<211> 14

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 1122

Cys Gly Thr Trp Asp Arg Ser Leu Ser Thr His Trp Val Leu

1 5 10

<210> 1123

<211> 14

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 1123

Cys Gly Thr Trp Asp Arg Ser Leu Ser Thr His Trp Val Phe

1 5 10

<210> 1124

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1124

Cys Gly Thr Trp Asp Arg Ser Leu Ser Ser Ala Val Phe
1 5 10

<210> 1125

<211> 14

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1125

Cys Gly Thr Trp Asp Arg Ser Leu Ser Pro Ser Tyr Val Phe
1 5 10

<210> 1126

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1126

Cys Gly Thr Trp Asp Arg Ser Leu Ser Gly Glu Val Phe
1 5 10

<210> 1127

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1127

Cys Gly Thr Trp Asp Arg Ser Leu Ser Gly Ala Val Phe

1 5 10

<210> 1128

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1128

Cys Gly Thr Trp Asp Arg Ser Leu Ser Ala Val Ala Phe

1 5 10

<210> 1129

<211> 14

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1129

Cys Gly Thr Trp Asp Arg Ser Leu Ser Ala Gly Gly Glu Phe

1 5 10

<210> 1130

<211> 14

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1130

Cys Gly Thr Trp Asp Arg Ser Leu Ser Ala Phe Trp Val Phe

1 5 10

<210> 1131

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 1131

Cys Gly Thr Trp Asp Arg Ser Leu Ser Ala Ala Val Phe

1 5 10

<210> 1132

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 1132

Cys Gly Thr Trp Asp Arg Ser Leu Ser Ala Ala Leu Phe

1 5 10

<210> 1133

<211> 11

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 1133

Cys Gly Thr Trp Asp Arg Ser Leu Arg Val Phe

1 5 10

<210> 1134

<211> 12

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 1134

Cys Gly Thr Trp Asp Arg Ser Leu Asn Trp Val Phe

1 5 10

<210> 1135

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1135

Cys Gly Thr Trp Asp Arg Ser Leu Asn Val Tyr Val Phe
1 5 10

<210> 1136

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1136

Cys Gly Thr Trp Asp Arg Ser Leu Asn Val Gly Val Phe
1 5 10

<210> 1137

<211> 12

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1137

Cys Gly Thr Trp Asp Arg Ser Leu His Val Val Phe
1 5 10

<210> 1138

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1138

Cys Gly Thr Trp Asp Arg Ser Leu Gly Gly Trp Val Phe

1 5 10

<210> 1139

<211> 14

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1139

Cys Gly Thr Trp Asp Arg Ser Leu Gly Ala Phe Trp Val Phe

1 5 10

<210> 1140

<211> 12

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1140

Cys Gly Thr Trp Asp Arg Ser Leu Phe Trp Val Phe

1 5 10

<210> 1141

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1141

Cys Gly Thr Trp Asp Arg Ser Leu Ala Ala Gly Val Phe

1 5 10

<210> 1142

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 1142

Cys Gly Thr Trp Asp Arg Arg Leu Ser Gly Val Val Phe

1 5 10

<210> 1143

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 1143

Cys Gly Thr Trp Asp Arg Arg Leu Ser Asp Val Val Phe

1 5 10

<210> 1144

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 1144

Cys Gly Thr Trp Asp Arg Arg Leu Ser Ala Val Val Phe

1 5 10

<210> 1145

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 1145

Cys Gly Thr Trp Asp Arg Arg Leu Asn Val Ala Phe Phe

1 5 10

<210> 1146

<211> 12

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1146

Cys Gly Thr Trp Asp Arg Arg Leu Leu Ala Val Phe
1 5 10

<210> 1147

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1147

Cys Gly Thr Trp Asp Arg Asn Leu Arg Ala Val Val Phe
1 5 10

<210> 1148

<211> 12

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1148

Cys Gly Thr Trp Asp Arg Leu Ser Ala Gly Val Phe
1 5 10

<210> 1149

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<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1149

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1 5 10

<210> 1150

<211> 14

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

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Cys Gly Thr Trp Asp Arg Gly Leu Asn Thr Val Tyr Val Phe

1 5 10

<210> 1151

<211> 14

<212> PRT

<213> Artificial Sequence

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Cys Gly Thr Trp Asp Asn Tyr Val Ser Ala Pro Trp Val Phe

1 5 10

<210> 1152

<211> 15

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1152

Cys Gly Thr Trp Asp Asn Tyr Leu Ser Ala Gly Asp Val Val Phe

1 5 10 15

<210> 1153

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 1153

Cys Gly Thr Trp Asp Asn Tyr Leu Arg Ala Gly Val Phe

1 5 10

<210> 1154

<211> 13

<212> PRT

<213> Artificial Sequence

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Cys Gly Thr Trp Asp Asn Tyr Leu Gly Ala Gly Val Phe

1 5 10

<210> 1156

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1 5 10

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<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

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<210> 1158

<211> 13

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<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

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<210> 1159

<211> 13

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<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1159

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<210> 1160

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

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1 5 10

<210> 1161

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1161

Cys Gly Thr Trp Asp Asn Arg Leu Ser Ala Val Val Phe

1 5 10

<210> 1162

<211> 14

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1162

Cys Gly Thr Trp Asp Asn Arg Leu Ser Ala Gly Gly Ile Phe

1 5 10

<210> 1163

<211> 13

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<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1163

Cys Gly Thr Trp Asp Asn Arg Leu Ser Ala Glu Val Phe

1 5 10

<210> 1164

<211> 13

<212> PRT

<213> Artificial Sequence

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Cys Gly Thr Trp Asp Asn Arg Leu Arg Val Gly Val Leu

1 5 10

<210> 1165

<211> 13

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Cys Gly Thr Trp Asp Asn Arg Leu Leu Glu Asn Val Phe

1 5 10

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<220><223> Description of Artificial Sequence: Synthetic

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<400> 1166

Cys Gly Thr Trp Asp Asn Asn Leu Arg Ala Val Phe

1 5 10

<210> 1167

<211> 13

<212> PRT

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peptide

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Cys Gly Thr Trp Asp Asn Asn Leu Arg Ala Gly Val Phe

1 5 10

<210> 1168

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<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1168

Cys Gly Thr Trp Asp Asn Asn Leu Gly Gly Gly Arg Val Phe
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<210> 1169

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1169

Cys Gly Thr Trp Asp Asn Asn Leu Gly Ala Gly Val Leu
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<210> 1170

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

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<210> 1171

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1171

Cys Gly Thr Trp Asp Asn Ile Leu Ser Ala Ala Val Phe

1 5 10

<210> 1172

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1172

Cys Gly Thr Trp Asp Asn Ile Leu Asp Ala Gly Val Phe

1 5 10

<210> 1173

<211> 13

<212> PRT

<213> Artificial Sequence

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<400> 1173

Cys Gly Thr Trp Asp Asn Asp Leu Ser Gly Trp Leu Phe

1 5 10

<210> 1174

<211> 13

<212> PRT

<213> Artificial Sequence

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<400> 1174

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1 5 10

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<211> 13

<212> PRT

<213> Artificial Sequence

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Cys Gly Thr Trp Asp Leu Thr Leu Gly Gly Val Val Phe

1 5 10

<210> 1176

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 1176

Cys Gly Thr Trp Asp Leu Ser Leu Ser Ala Gly Val Phe

1 5 10

<210> 1177

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 1177

Cys Gly Thr Trp Asp Leu Ser Leu Lys Glu Trp Val Phe

1 5 10

<210> 1178

<211> 13

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Cys Gly Thr Trp Asp Leu Ser Leu Asp Ala Val Val Phe

1 5 10

<210> 1179

<211> 9

<212> PRT

<213> Artificial Sequence

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peptide

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Cys Gly Thr Trp Asp Leu Lys Val Phe

1 5

<210> 1180

<211> 13

<212> PRT

<213> Artificial Sequence

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1 5 10

<210> 1181

<211> 13

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Cys Gly Thr Trp Asp Lys Ser Leu Ser Val Trp Val Phe

1 5 10

<210> 1182

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Cys Gly Thr Trp Asp Lys Ser Leu Ser Gly Val Val Phe

1 5 10

<210> 1183

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1183

Cys Gly Thr Trp Asp Lys Ser Leu Ser Asp Trp Val Phe

1 5 10

<210> 1184

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1184

Cys Gly Thr Trp Asp Lys Ser Leu Ser Ala Leu Val Phe

1 5 10

<210> 1185

<211> 13

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<213> Artificial Sequence

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<400> 1185

Cys Gly Thr Trp Asp Lys Ser Leu Ser Ala Gly Val Phe

1 5 10

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<211> 13

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<213> Artificial Sequence

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Cys Gly Thr Trp Asp Lys Ser Leu Ser Ala Asp Val Phe

1 5 10

<210> 1187

<211> 13

<212> PRT

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<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 1187

Cys Gly Thr Trp Asp Lys Arg Leu Thr Ile Val Val Phe

1 5 10

<210> 1188

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 1188

Cys Gly Thr Trp Asp Lys Arg Leu Ser Ala Trp Val Leu

1 5 10

<210> 1189

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 1189

Cys Gly Thr Trp Asp Lys Asn Leu Arg Ala Val Val Phe

1 5 10

<210> 1190

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1190

Cys Gly Thr Trp Asp Ile Thr Leu Ser Gly Phe Val Phe
1 5 10

<210> 1191

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1191

Cys Gly Thr Trp Asp Ile Thr Leu His Thr Gly Val Phe
1 5 10

<210> 1192

<211> 12

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1192

Cys Gly Thr Trp Asp Ile Ser Val Thr Val Val Phe
1 5 10

<210> 1193

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1193

Cys Gly Thr Trp Asp Ile Ser Val Arg Gly Tyr Ala Phe

1 5 10

<210> 1194

<211> 11

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<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1194

Cys Gly Thr Trp Asp Ile Ser Arg Trp Val Phe

1 5 10

<210> 1195

<211> 13

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<213> Artificial Sequence

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<400> 1195

Cys Gly Thr Trp Asp Ile Ser Pro Ser Ala Trp Val Phe

1 5 10

<210> 1196

<211> 13

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<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1196

Cys Gly Thr Trp Asp Ile Ser Leu Ser Val Trp Val Phe

1 5 10

<210> 1197

<211> 12

<212> PRT

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Cys Gly Thr Trp Asp Ile Ser Leu Ser Val Val Phe

1 5 10

<210> 1198

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 1198

Cys Gly Thr Trp Asp Ile Ser Leu Ser Ser Val Val Phe

1 5 10

<210> 1199

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 1199

Cys Gly Thr Trp Asp Ile Ser Leu Ser His Trp Leu Phe

1 5 10

<210

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<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 1200

Cys Gly Thr Trp Asp Ile Ser Leu Ser Gly Trp Val Phe

1 5 10

<210> 1201

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1201

Cys Gly Thr Trp Asp Ile Ser Leu Ser Gly Arg Val Phe
1 5 10

<210> 1202

<211> 13

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<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1202

Cys Gly Thr Trp Asp Ile Ser Leu Ser Ala Trp Ala Phe
1 5 10

<210> 1203

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1203

Cys Gly Thr Trp Asp Ile Ser Leu Ser Ala Val Val Phe
1 5 10

<210> 1204

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1204

Cys Gly Thr Trp Asp Ile Ser Leu Ser Ala Val Ile Phe

1 5 10

<210> 1205

<211> 12

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1205

Cys Gly Thr Trp Asp Ile Ser Leu Ser Ala Val Phe

1 5 10

<210> 1206

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1206

Cys Gly Thr Trp Asp Ile Ser Leu Ser Ala Arg Val Phe

1 5 10

<210> 1207

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1207

Cys Gly Thr Trp Asp Ile Ser Leu Ser Ala Leu Val Phe

1 5 10

<210> 1208

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 1208

Cys Gly Thr Trp Asp Ile Ser Leu Ser Ala His Val Phe

1 5 10

<210> 1209

<211> 14

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 1209

Cys Gly Thr Trp Asp Ile Ser Leu Ser Ala Gly Val Val Phe

1 5 10

<210> 1210

<211> 15

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 1210

Cys Gly Thr Trp Asp Ile Ser Leu Ser Ala Gly Pro Tyr Val Phe

1 5 10 15

<210> 1211

<211> 14

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 1211

Cys Gly Thr Trp Asp Ile Ser Leu Ser Ala Gly Gly Val Phe

1 5 10

<210> 1212

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1212

Cys Gly Thr Trp Asp Ile Ser Leu Ser Ala Glu Val Phe
1 5 10

<210> 1213

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1213

Cys Gly Thr Trp Asp Ile Ser Leu Ser Ala Ala Val Phe
1 5 10

<210> 1214

<211> 12

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1214

Cys Gly Thr Trp Asp Ile Ser Leu Arg Ala Val Phe
1 5 10

<210> 1215

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1215

Cys Gly Thr Trp Asp Ile Ser Leu Asn Thr Gly Val Phe

1 5 10

<210> 1216

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1216

Cys Gly Thr Trp Asp Ile Ser Leu Asn Asn Tyr Val Phe

1 5 10

<210> 1217

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1217

Cys Gly Thr Trp Asp Ile Ser Leu Ile Ala Gly Val Phe

1 5 10

<210> 1218

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1218

Cys Gly Thr Trp Asp Ile Ser Leu His Thr Trp Leu Phe

1 5 10

<210> 1219

<211> 14

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 1219

Cys Gly Thr Trp Asp Ile Arg Leu Thr Asp Glu Leu Leu Phe
1 5 10

<210> 1220

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 1220

Cys Gly Thr Trp Asp Ile Arg Leu Ser Gly Phe Val Phe
1 5 10

<210> 1221

<211> 16

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 1221

Cys Gly Thr Trp Asp Ile Asn Leu Gly Ala Gly Gly Leu Tyr Val Phe
1 5 10 15

<210> 1222

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 1222

Cys Gly Thr Trp Asp Ile Ile Leu Ser Ala Glu Val Phe
1 5 10

<210> 1223

<211> 12

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1223

Cys Gly Thr Trp Asp His Thr Leu Ser Ala Val Phe
1 5 10

<210> 1224

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1224

Cys Gly Thr Trp Asp His Thr Leu Leu Thr Val Leu Phe
1 5 10

<210> 1225

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1225

Cys Gly Thr Trp Asp His Ser Leu Thr Ala Val Val Phe
1 5 10

<210> 1226

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1226

Cys Gly Thr Trp Asp His Ser Leu Thr Ala Gly Ile Phe

1 5 10

<210> 1227

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1227

Cys Gly Thr Trp Asp His Ser Leu Ser Val Val Leu Phe

1 5 10

<210> 1228

<211> 12

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1228

Cys Gly Thr Trp Asp His Ser Leu Ser Leu Val Phe

1 5 10

<210> 1229

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1229

Cys Gly Thr Trp Asp His Ser Leu Ser Ile Gly Val Phe

1 5 10

<210> 1230

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 1230

Cys Gly Thr Trp Asp His Ser Leu Ser Ala Gly Val Phe

1 5 10

<210> 1231

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 1231

Cys Gly Thr Trp Asp His Ser Leu Ser Ala Phe Val Phe

1 5 10

<210> 1232

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 1232

Cys Gly Thr Trp Asp His Ser Leu Ser Ala Ala Val Phe

1 5 10

<210> 1233

<211> 12

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 1233

Cys Gly Thr Trp Asp His Asn Leu Arg Ala Val Phe

1 5 10

<210> 1234

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1234

Cys Gly Thr Trp Asp Phe Thr Leu Ser Val Gly Arg Phe
1 5 10

<210> 1235

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1235

Cys Gly Thr Trp Asp Phe Thr Leu Ser Ala Pro Val Phe
1 5 10

<210> 1236

<211> 14

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1236

Cys Gly Thr Trp Asp Phe Ser Val Ser Ala Gly Trp Val Phe
1 5 10

<210> 1237

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1237

Cys Gly Thr Trp Asp Phe Ser Leu Thr Thr Trp Leu Phe

1 5 10

<210> 1238

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1238

Cys Gly Thr Trp Asp Phe Ser Leu Ser Val Trp Val Phe

1 5 10

<210> 1239

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1239

Cys Gly Thr Trp Asp Phe Ser Leu Ser Thr Gly Val Phe

1 5 10

<210> 1240

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1240

Cys Gly Thr Trp Asp Phe Ser Leu Ser Gly Val Val Phe

1 5 10

<210> 1241

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 1241

Cys Gly Thr Trp Asp Phe Ser Leu Ser Gly Phe Val Phe
1 5 10

<210> 1242

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1242

Cys Gly Thr Trp Asp Phe Ser Leu Ser Ala Gly Val Phe
1 5 10

<210> 1243

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1243

Cys Gly Thr Trp Asp Glu Thr Val Arg Gly Trp Val Phe
1 5 10

<210> 1244

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1244

Cys Gly Thr Trp Asp Glu Ser Leu Arg Ser Trp Val Phe
1 5 10

<210> 1245

<211> 15

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1245

Cys Gly Thr Trp Asp Glu Arg Gln Thr Asp Glu Ser Tyr Val Phe
1 5 10 15

<210> 1246

<211> 14

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1246

Cys Gly Thr Trp Asp Glu Arg Leu Val Ala Gly Gln Val Phe
1 5 10

<210> 1247

<211> 14

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1247

Cys Gly Thr Trp Asp Glu Arg Leu Ser Pro Gly Ala Phe Phe
1 5 10

<210> 1248

<211> 9

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1248

Cys Gly Thr Trp Asp Glu Lys Val Phe

1 5

<210> 1249

<211> 15

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1249

Cys Gly Thr Trp Asp Glu Gly Gln Thr Thr Asp Phe Phe Val Phe
1 5 10 15

<210> 1250

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1250

Cys Gly Thr Trp Asp Asp Thr Leu Ala Gly Val Val Phe
1 5 10

<210> 1251

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1251

Cys Gly Thr Trp Asp Asp Arg Leu Thr Ser Ala Val Phe
1 5 10

<210

> 1252

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 1252

Cys Gly Thr Trp Asp Asp Arg Leu Phe Val Val Val Phe

1 5 10

<210> 1253

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 1253

Cys Gly Thr Trp Asp Asp Asn Leu Arg Gly Trp Val Phe

1 5 10

<210> 1254

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 1254

Cys Gly Thr Trp Asp Asp Asn Leu Arg Gly Val Val Phe

1 5 10

<210> 1255

<211> 14

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

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<400> 1255

Cys Gly Thr Trp Asp Asp Asn Leu Asn Ile Gly Arg Val Phe

1 5 10

<210> 1256

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1256

Cys Gly Thr Trp Asp Asp Ile Leu Ser Ala Val Ile Phe
1 5 10

<210> 1257

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1257

Cys Gly Thr Trp Asp Asp Ile Leu Arg Gly Trp Val Phe
1 5 10

<210> 1258

<211> 14

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1258

Cys Gly Thr Trp Asp Ala Thr Leu Ser Pro Gly Trp Leu Phe
1 5 10

<210> 1259

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1259

Cys Gly Thr Trp Asp Ala Ser Val Thr Ser Trp Val Phe

1 5 10

<210> 1260

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1260

Cys Gly Thr Trp Asp Ala Ser Leu Thr Ser Val Val Phe

1 5 10

<210> 1261

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1261

Cys Gly Thr Trp Asp Ala Ser Leu Ser Val Trp Val Phe

1 5 10

<210> 1262

<211> 14

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1262

Cys Gly Thr Trp Asp Ala Ser Leu Ser Val Pro Trp Val Phe

1 5 10

<210> 1263

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 1263

Cys Gly Thr Trp Asp Ala Ser Leu Ser Val Ala Val Phe
1 5 10

<210> 1264

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1264

Cys Gly Thr Trp Asp Ala Ser Leu Ser Thr Trp Val Phe
1 5 10

<210> 1265

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1265

Cys Gly Thr Trp Asp Ala Ser Leu Ser Gly Val Val Phe
1 5 10

<210> 1266

<211> 14

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1266

Cys Gly Thr Trp Asp Ala Ser Leu Ser Gly Gly Gly Glu Phe
1 5 10

<210> 1267

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 1267

Cys Gly Thr Trp Asp Ala Ser Leu Ser Ala Gly Val Phe

1 5 10

<210> 1268

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 1268

Cys Gly Thr Trp Asp Ala Ser Leu Ser Ala Gly Leu Phe

1 5 10

<210> 1269

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 1269

Cys Gly Thr Trp Asp Ala Ser Leu Ser Ala Glu Val Phe

1 5 10

<210> 1270

<211> 15

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 1270

Cys Gly Thr Trp Asp Ala Ser Leu Ser Ala Asp Phe Trp Val Phe

1 5 10 15

<210> 1271

<211> 12

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1271

Cys Gly Thr Trp Asp Ala Ser Leu Arg Val Phe Phe

1 5 10

<210> 1272

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1272

Cys Gly Thr Trp Asp Ala Ser Leu Arg Ala Val Val Leu

1 5 10

<210> 1273

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1273

Cys Gly Thr Trp Asp Ala Ser Leu Asn Ile Trp Val Phe

1 5 10

<210> 1274

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 1274

Cys Gly Thr Trp Asp Ala Ser Leu Lys Asn Leu Val Phe

1 5 10

<210> 1275

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

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<400> 1275

Cys Gly Thr Trp Asp Ala Ser Leu Gly Ala Trp Val Phe

1 5 10

<210> 1276

<211> 13

<212> PRT

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<220><223> Description of Artificial Sequence: Synthetic

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<400> 1276

Cys Gly Thr Trp Asp Ala Ser Leu Gly Ala Val Val Phe

1 5 10

<210> 1277

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 1277

Cys Gly Thr Trp Asp Ala Ser Leu Gly Ala Gly Val Phe

1 5 10

<210> 1278

<211> 14

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1278

Cys Gly Thr Trp Asp Ala Arg Leu Ser Gly Leu Tyr Val Phe
1 5 10

<210> 1279

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1279

Cys Gly Thr Trp Asp Ala Arg Leu Gly Gly Ala Val Phe
1 5 10

<210> 1280

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1280

Cys Gly Thr Trp Asp Ala Asn Leu Arg Ala Gly Val Phe
1 5 10

<210> 1281

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1281

Cys Gly Thr Trp Asp Ala Ile Ile Ser Gly Trp Val Phe

1 5 10

<210> 1282

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1282

Cys Gly Thr Trp Asp Ala Gly Gln Ser Val Trp Val Phe

1 5 10

<210> 1283

<211> 14

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1283

Cys Gly Thr Trp Asp Ala Gly Leu Thr Gly Leu Tyr Val Phe

1 5 10

<210> 1284

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1284

Cys Gly Thr Trp Asp Ala Gly Leu Ser Val Tyr Val Phe

1 5 10

<210> 1285

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 1285

Cys Gly Thr Trp Asp Ala Gly Leu Ser Thr Gly Val Phe
1 5 10

<210> 1286

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1286

Cys Gly Thr Trp Asp Ala Gly Leu Ser Gly Asp Val Phe
1 5 10

<210> 1287

<211> 14

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1287

Cys Gly Thr Trp Asp Ala Gly Leu Ser Ala Gly Tyr Val Phe
1 5 10

<210> 1288

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1288

Cys Gly Thr Trp Asp Ala Gly Leu Arg Val Trp Val Phe
1 5 10

<210> 1289

<211> 12

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1289

Cys Gly Thr Trp Asp Ala Gly Leu Arg Glu Ile Phe
1 5 10

<210> 1290

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1290

Cys Gly Thr Trp Ala Ser Ser Leu Ser Ser Trp Val Phe
1 5 10

<210> 1291

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1291

Cys Gly Thr Trp Ala Gly Ser Leu Ser Gly His Val Phe
1 5 10

<210> 1292

<211> 14

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1292

Cys Gly Thr Trp Ala Gly Ser Leu Ser Ala Ala Trp Val Phe

1 5 10

<210> 1293

<211> 14

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1293

Cys Gly Thr Trp Ala Gly Ser Leu Asn Val Tyr Trp Val Phe

1 5 10

<210> 1294

<211> 14

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1294

Cys Gly Thr Trp Ala Gly Asn Leu Arg Pro Asn Trp Val Phe

1 5 10

<210> 1295

<211> 12

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1295

Cys Gly Thr Arg Gly Ser Leu Gly Gly Ala Val Phe

1 5 10

<210> 1296

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 1296

Cys Gly Thr Arg Asp Thr Thr Leu Ser Val Pro Val Phe

1 5 10

<210> 1297

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 1297

Cys Gly Thr Arg Asp Thr Ser Leu Asn Ile Glu Ile Phe

1 5 10

<210> 1298

<211> 12

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 1298

Cys Gly Thr Arg Asp Thr Ser Leu Asn Asp Val Phe

1 5 10

<210> 1299

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 1299

Cys Gly Thr Arg Asp Thr Arg Leu Ser Ile Val Val Phe

1 5 10

<210> 1300

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1300

Cys Gly Thr Arg Asp Thr Ile Leu Ser Ala Glu Val Phe

1 5 10

<210> 1301

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1301

Cys Gly Thr Arg Asp Arg Ser Leu Ser Gly Trp Val Phe

1 5 10

<210> 1302

<211> 11

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1302

Cys Gly Ser Trp Tyr Tyr Asn Val Phe Leu Phe

1 5 10

<210> 1303

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1303

Cys Gly Ser Trp His Ser Ser Leu Asn Leu Val Val Phe

1 5 10

<210> 1304

<211> 14
<212> PRT
<213> Artificial Sequence
<220><223> Description of Artificial Sequence: Synthetic
peptide
<400> 1304
Cys Gly Ser Trp Gly Ser Gly Leu Ser Ala Pro Tyr Val Phe
1 5 10
<210> 1305
<211> 13
<212> PRT
<213> Artificial Sequence
<220><223> Description of Artificial Sequence: Synthetic
peptide
<400> 1305
Cys Gly Ser Trp Glu Ser Gly Leu Gly Ala Trp Leu Phe
1 5 10

<210> 1306
<211> 11
<212> PRT
<213> Artificial Sequence
<220><223> Description of Artificial Sequence: Synthetic
peptide
<400> 1306
Cys Gly Ser Trp Asp Tyr Gly Leu Leu Leu Phe
1 5 10
<210> 1307
<211> 12
<212> PRT
<213> Artificial Sequence
<220><223> Description of Artificial Sequence: Synthetic
peptide

<400> 1307

Cys Gly Ser Trp Asp Val Ser Leu Thr Ala Val Phe

1 5 10

<210> 1308

<211

> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 1308

Cys Gly Ser Trp Asp Val Ser Leu Asn Val Gly Ile Phe

1 5 10

<210> 1309

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 1309

Cys Gly Ser Trp Asp Thr Thr Leu Arg Ala Trp Val Phe

1 5 10

<210> 1310

<211> 14

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 1310

Cys Gly Ser Trp Asp Thr Ser Pro Val Arg Ala Trp Val Phe

1 5 10

<210> 1311

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1311

Cys Gly Ser Trp Asp Thr Ser Leu Ser Val Trp Val Phe
1 5 10

<210> 1312

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1312

Cys Gly Ser Trp Asp Thr Ser Leu Ser Ala Glu Val Phe
1 5 10

<210> 1313

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1313

Cys Gly Ser Trp Asp Thr Ser Leu Arg Ala Trp Val Phe
1 5 10

<210> 1314

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1314

Cys Gly Ser Trp Asp Thr Ser Leu Arg Ala Trp Ala Phe
1 5 10

<210> 1315

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1315

Cys Gly Ser Trp Asp Thr Ser Leu Asp Ala Arg Leu Phe

1 5 10

<210> 1316

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1316

Cys Gly Ser Trp Asp Thr Ile Leu Leu Val Tyr Val Phe

1 5 10

<210> 1317

<211> 12

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1317

Cys Gly Ser Trp Asp Arg Trp Gln Ala Ala Val Phe

1 5 10

<210> 1318

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1318

Cys Gly Ser Trp Asp Arg Ser Leu Ser Gly Tyr Val Phe

1 5 10

<210> 1319

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 1319

Cys Gly Ser Trp Asp Arg Ser Leu Ser Ala Tyr Val Phe

1 5 10

<210> 1320

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 1320

Cys Gly Ser Trp Asp Arg Ser Leu Ser Ala Val Val Phe

1 5 10

<210> 1321

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 1321

Cys Gly Ser Trp Asp Asn Thr Leu Gly Val Val Leu Phe

1 5 10

<210> 1322

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1322

Cys Gly Ser Trp Asp Asn Arg Leu Ser Thr Val Ile Phe
1 5 10

<210> 1323

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1323

Cys Gly Ser Trp Asp Asn Arg Leu Asn Thr Val Ile Phe
1 5 10

<210> 1324

<211> 14

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1324

Cys Gly Ser Trp Asp Leu Ser Pro Val Arg Val Leu Val Phe
1 5 10

<210> 1325

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1325

Cys Gly Ser Trp Asp Leu Ser Leu Ser Ala Val Val Phe
1 5 10

<210> 1326

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1326

Cys Gly Ser Trp Asp Lys Asn Leu Arg Ala Val Leu Phe
1 5 10

<210> 1327

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1327

Cys Gly Ser Trp Asp Ile Ser Leu Ser Ala Gly Val Phe
1 5 10

<210> 1328

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1328

Cys Gly Ser Trp Asp Ile Arg Leu Ser Ala Glu Val Phe
1 5 10

<210> 1329

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1329

Cys Gly Ser Trp Asp Ile Lys Leu Asn Ile Gly Val Phe

1 5 10

<210> 1330

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1330

Cys Gly Ser Trp Asp Phe Ser Leu Asn Tyr Phe Val Phe

1 5 10

<210> 1331

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1331

Cys Gly Ser Trp Asp Ala Ser Leu Ser Thr Glu Val Phe

1 5 10

<210> 1332

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1332

Cys Gly Ser Trp Asp Ala Gly Leu Arg Gly Trp Val Phe

1 5 10

<210> 1333

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1333

Cys Gly Arg Trp Glu Ser Ser Leu Gly Ala Val Val Phe
1 5 10

<210> 1334

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1334

Cys Gly Arg Trp Asp Phe Ser Leu Ser Ala Tyr Val Phe
1 5 10

<210> 1335

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1335

Cys Gly Gln Trp Asp Asn Asp Leu Ser Val Trp Val Phe
1 5 10

<210> 1336

<211> 14

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1336

Cys Gly Pro Trp His Ser Ser Val Thr Ser Gly His Val Leu
1 5 10

<210> 1337

<211> 15

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1337

Cys Gly Leu Trp Asp Ala Ser Leu Ser Ala Pro Thr Trp Val Phe
1 5 10 15

<210> 1338

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1338

Cys Gly Ile Trp His Thr Ser Leu Ser Ala Trp Val Phe
1 5 10

<210> 1339

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1339

Cys Gly Ile Trp Asp Tyr Ser Leu Asp Thr Trp Val Phe
1 5 10

<210> 1340

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1340

Cys Gly Ile Trp Asp Thr Ser Leu Ser Ala Trp Val Phe

1 5 10

<210> 1341

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1341

Cys Gly Ile Trp Asp Thr Arg Leu Ser Val Tyr Val Phe

1 5 10

<210> 1342

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1342

Cys Gly Ile Trp Asp Thr Arg Leu Ser Val Tyr Ile Phe

1 5 10

<210> 1343

<211> 12

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1343

Cys Gly Ile Trp Asp Thr Asn Leu Gly Tyr Leu Phe

1 5 10

<210> 1344

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1344

Cys Gly Ile Trp Asp Thr Gly Leu Ser Ala Val Val Phe
1 5 10

<210> 1345

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1345

Cys Gly Ile Trp Asp Arg Ser Leu Ser Ala Trp Val Phe
1 5 10

<210> 1346

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1346

Cys Gly Ile Arg Asp Thr Arg Leu Ser Val Tyr Val Phe
1 5 10

<210> 1347

<211> 14

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1347

Cys Gly Gly Trp Ser Ser Arg Leu Gly Val Gly Pro Val Phe
1 5 10

<210> 1348

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1348

Cys Gly Gly Trp Gly Ser Gly Leu Ser Ala Trp Val Phe
1 5 10

<210> 1349

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1349

Cys Gly Gly Trp Asp Thr Ser Leu Ser Ala Trp Val Phe
1 5 10

<210> 1350

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1350

Cys Gly Gly Trp Asp Arg Gly Leu Asp Ala Trp Val Phe
1 5 10

<210> 1351

<211> 11

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1351

Cys Gly Ala Trp Arg Asn Asn Val Trp Val Phe

1 5 10

<210> 1352

<211> 16

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1352

Cys Gly Ala Trp Asn Arg Arg Leu Asn Pro His Ser His Trp Val Phe
1 5 10 15

<210> 1353

<211> 12

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1353

Cys Gly Ala Trp His Asn Lys Leu Ser Ala Val Phe
1 5 10

<210> 1354

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1354

Cys Gly Ala Trp Gly Ser Ser Leu Arg Ala Ser Val Phe
1 5 10

<210> 1355

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 1355

Cys Gly Ala Trp Gly Ser Gly Leu Ser Ala Trp Val Phe

1 5 10

<210> 1356

<211> 14

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 1356

Cys Gly Ala Trp Glu Ser Ser Leu Ser Ala Pro Tyr Val Phe

1 5 10

<210> 1357

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 1357

Cys Gly Ala Trp Glu Ser Ser Leu Asn Val Gly Leu Ile

1 5 10

<210> 1358

<211> 14

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 1358

Cys Gly Ala Trp Glu Ser Gly Arg Ser Ala Gly Val Val Phe

1 5 10

<210> 1359

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1359

Cys Gly Ala Trp Asp Tyr Ser Val Ser Gly Trp Val Phe
1 5 10

<210> 1360

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1360

Cys Gly Ala Trp Asp Tyr Ser Leu Thr Ala Gly Val Phe
1 5 10

<210> 1361

<211> 13

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<213> Artificial Sequence

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<400> 1361

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Cys Gly Ala Trp Asp Val Arg Leu Asp Val Gly Val Phe

1 5 10

<210> 1363

<211> 11

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<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1363

Cys Gly Ala Trp Asp Thr Tyr Ser Tyr Val Phe

1 5 10

<210> 1364

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

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Cys Gly Ala Trp Asp Thr Thr Leu Ser Gly Val Val Phe

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<211> 13

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<213> Artificial Sequence

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Cys Gly Ala Trp Asp Thr Ser Gln Gly Ala Ser Tyr Val Phe

1 5 10

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<211> 14

<212> PRT

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peptide

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Cys Gly Ala Trp Asp Thr Ser Pro Val Arg Ala Gly Val Phe

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<210> 1368

<211> 11

<212> PRT

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peptide

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Cys Gly Ala Trp Asp Thr Ser Leu Trp Leu Phe

1 5 10

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<211> 13

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<211> 13

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<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

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<211> 13

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<213> Artificial Sequence

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Cys Gly Ala Trp Asp Thr Ser Leu Ser Thr Val Val Phe
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<211> 14

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<213> Artificial Sequence

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Cys Gly Ala Trp Asp Thr Ser Leu Ser Ser Arg Tyr Ile Phe
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<211> 13

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<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1373

Cys Gly Ala Trp Asp Thr Ser Leu Ser Gly Tyr Val Phe

1 5 10

<210> 1374

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1374

Cys Gly Ala Trp Asp Thr Ser Leu Ser Gly Trp Val Phe

1 5 10

<210> 1375

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1375

Cys Gly Ala Trp Asp Thr Ser Leu Ser Gly Val Leu Phe

1 5 10

<210> 1376

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1376

Cys Gly Ala Trp Asp Thr Ser Leu Ser Gly Leu Val Phe

1 5 10

<210> 1377

<211> 13

<212> PRT

<213> Artificial Sequence

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peptide

<400> 1377

Cys Gly Ala Trp Asp Thr Ser Leu Ser Gly Phe Val Phe
1 5 10

<210> 1378

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1378

Cys Gly Ala Trp Asp Thr Ser Leu Ser Gly Glu Val Phe
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<210> 1379

<211> 13

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<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

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Cys Gly Ala Trp Asp Thr Ser Leu Ser Asp Phe Val Phe
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<210> 1381

<211> 11

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<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

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<400> 1381

Cys Gly Ala Trp Asp Thr Ser Leu Arg Leu Phe

1 5 10

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<213> Artificial Sequence

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Cys Gly Ala Trp Asp Thr Ser Leu Asn Val His Val Phe

1 5 10

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Cys Gly Ala Trp Asp Thr Arg Leu Ser Ala Arg Leu Phe

1 5 10

<210> 1385

<211> 13

<212> PRT

<213> Artificial Sequence

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<400> 1385

Cys Gly Ala Trp Asp Thr Arg Leu Arg Gly Phe Ile Phe

1 5 10

<210> 1386

<211> 13

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Cys Gly Ala Trp Asp Thr Asn Leu Gly Asn Val Leu Leu

1 5 10

<210> 1387

<211> 13

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Cys Gly Ala Trp Asp Thr Asn Leu Gly Lys Trp Val Phe

1 5 10

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<211> 13

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1 5 10

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Cys Gly Ala Trp Asp Arg Ser Leu Val Ala Gly Leu Phe

1 5 10

<210> 1391

<211> 13

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Cys Gly Ala Trp Asp Arg Ser Leu Thr Val Tyr Val Phe

1 5 10

<210> 1392

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1392

Cys Gly Ala Trp Asp Arg Ser Leu Ser Gly Tyr Val Phe
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<210> 1393

<211> 13

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<213> Artificial Sequence

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<400> 1393

Cys Gly Ala Trp Asp Arg Ser Leu Ser Ala Tyr Val Phe
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<210> 1394

<211> 13

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<213> Artificial Sequence

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<400> 1394

Cys Gly Ala Trp Asp Arg Ser Leu Ser Ala Val Val Phe
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<210> 1395

<211> 13

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<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1395

Cys Gly Ala Trp Asp Arg Ser Leu Ser Ala Gly Val Phe

1 5 10

<210> 1396

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1396

Cys Gly Ala Trp Asp Arg Ser Leu Arg Ile Val Val Phe

1 5 10

<210> 1397

<211> 13

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<400> 1397

Cys Gly Ala Trp Asp Arg Ser Leu Arg Ala Tyr Val Phe

1 5 10

<210> 1398

<211> 13

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<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1398

Cys Gly Ala Trp Asp Arg Ser Leu Asn Val Trp Leu Phe

1 5 10

<210> 1399

<211> 14

<212> PRT

<213> Artificial Sequence

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1 5 10

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1 5 10

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<211> 13

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<400> 1401

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1 5 10

<210> 1402

<211> 12

<212> PRT

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<220><223> Description of Artificial Sequence: Synthetic

peptide

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Cys Gly Ala Trp Asp Phe Ser Leu Thr Pro Leu Phe

1 5 10

<210> 1403

<211> 15

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1403

Cys Gly Ala Trp Asp Asp Tyr Arg Gly Val Ser Ile Tyr Val Phe
1 5 10 15

<210> 1404

<211> 14

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1404

Cys Gly Ala Trp Asp Asp Arg Pro Ser Ser Ala Val Val Phe
1 5 10

<210> 1405

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1405

Cys Gly Ala Trp Asp Asp Arg Leu Thr Val Val Val Phe
1 5 10

<210> 1406

<211> 12

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<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1406

Cys Gly Ala Trp Asp Asp Arg Leu Gly Ala Val Phe

1 5 10

<210> 1407

<211> 14

<212> PRT

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<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1407

Cys Gly Ala Trp Asp Ala Ser Leu Asn Pro Gly Arg Ala Phe

1 5 10

<210> 1408

<211> 12

<212> PRT

<213> Artificial Sequence

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<400> 1408

Cys Gly Ala Trp Asp Ala Gly Leu Arg Glu Ile Phe

1 5 10

<210> 1409

<211> 13

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<213> Artificial Sequence

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<400> 1409

Cys Gly Ala Trp Ala Gly Ser Pro Ser Pro Trp Val Phe

1 5 10

<210> 1410

<211> 13

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Cys Gly Ala Phe Asp Thr Thr Leu Ser Ala Gly Val Phe

1 5 10

<210> 1411

<211> 13

<212> PRT

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peptide

<400> 1411

Cys Glu Thr Trp Glu Ser Ser Leu Ser Val Gly Val Phe

1 5 10

<210> 1412

<211> 13

<212> PRT

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<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 1412

Cys Glu Thr Trp Glu Ser Ser Leu Arg Val Trp Val Phe

1 5 10

<210> 1413

<211> 13

<212> PRT

<213> Artificial Sequence

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1 5 10

<210> 1414

<211> 14

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1414

Cys Glu Thr Trp Asp Thr Ser Leu Ser Asp Phe Tyr Val Phe
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<210> 1415

<211> 12

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<213> Artificial Sequence

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<400> 1415

Cys Glu Thr Trp Asp Thr Ser Leu Ser Ala Leu Phe
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<210> 1416

<211> 13

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<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1416

Cys Glu Thr Trp Asp Thr Ser Leu Arg Ala Glu Val Phe
1 5 10

<210> 1417

<211> 13

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<213> Artificial Sequence

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<400> 1417

Cys Glu Thr Trp Asp Thr Ser Leu Asn Val Val Val Phe

1 5 10

<210> 1418

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1418

Cys Glu Thr Trp Asp Thr Ser Leu Gly Ala Val Val Phe

1 5 10

<210> 1419

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1419

Cys Glu Thr Trp Asp Arg Ser Leu Ser Gly Val Val Phe

1 5 10

<210> 1420

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1420

Cys Glu Thr Trp Asp Arg Ser Leu Ser Ala Trp Val Phe

1 5 10

<210> 1421

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 1421

Cys Glu Thr Trp Asp Arg Ser Leu Ser Ala Val Val Phe

1 5 10

<210> 1422

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 1422

Cys Glu Thr Trp Asp Arg Gly Leu Ser Val Val Val Phe

1 5 10

<210> 1423

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 1423

Cys Glu Thr Trp Asp Arg Gly Leu Ser Ala Val Val Phe

1 5 10

<210> 1424

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 1424

Cys Glu Thr Trp Asp His Thr Leu Ser Val Val Ile Phe

1 5 10

<210> 1425

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1425

Cys Glu Thr Trp Asp Ala Ser Leu Thr Val Val Leu Phe
1 5 10

<210> 1426

<211> 13

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<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1426

Cys Glu Thr Trp Asp Ala Ser Leu Ser Ala Gly Val Phe
1 5 10

<210> 1427

<211> 13

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<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1427

Cys Glu Thr Trp Asp Ala Gly Leu Ser Glu Val Val Phe
1 5 10

<210> 1428

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1428

Cys Glu Thr Phe Asp Thr Ser Leu Ser Val Val Val Phe

1 5 10

<210> 1429

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1429

Cys Glu Thr Phe Asp Thr Ser Leu Asn Ile Val Val Phe

1 5 10

<210> 1430

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1430

Cys Glu Ser Trp Asp Arg Ser Arg Ile Gly Val Val Phe

1 5 10

<210> 1431

<211> 13

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<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1431

Cys Glu Ser Trp Asp Arg Ser Leu Ser Ala Arg Val Tyr

1 5 10

<210> 1432

<211> 13

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<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 1432

Cys Glu Ser Trp Asp Arg Ser Leu Arg Ala Val Val Phe

1 5 10

<210> 1433

<211> 12

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 1433

Cys Glu Ser Trp Asp Arg Ser Leu Ile Val Val Phe

1 5 10

<210> 1434

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 1434

Cys Glu Ser Trp Asp Asn Asn Leu Asn Glu Val Val Phe

1 5 10

<210> 1435

<211> 15

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 1435

Cys Glu Ile Trp Glu Ser Ser Pro Ser Ala Asp Asp Leu Val Phe

1 5 10 15

<210> 1436

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1436

Cys Glu Ala Trp Asp Thr Ser Leu Ser Gly Ala Val Phe
1 5 10

<210> 1437

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1437

Cys Glu Ala Trp Asp Thr Ser Leu Ser Ala Gly Val Phe
1 5 10

<210> 1438

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<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1438

Cys Glu Ala Trp Asp Thr Ser Leu Gly Gly Gly Val Phe
1 5 10

<210> 1439

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1439

Cys Glu Ala Trp Asp Arg Ser Leu Thr Gly Ser Leu Phe

1 5 10

<210> 1440

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1440

Cys Glu Ala Trp Asp Arg Gly Leu Ser Ala Val Val Phe

1 5 10

<210> 1441

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1441

Cys Glu Ala Trp Asp Asn Ile Leu Ser Thr Val Val Phe

1 5 10

<210> 1442

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1442

Cys Glu Ala Trp Asp Ile Ser Leu Ser Ala Gly Val Phe

1 5 10

<210> 1443

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 1443

Cys Glu Ala Trp Asp Ala Asp Leu Ser Gly Ala Val Phe
1 5 10

<210> 1444

<211> 15

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1444

Cys Ala Thr Trp Thr Gly Ser Phe Arg Thr Gly His Tyr Val Phe
1 5 10 15

<210> 1445

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1445

Cys Ala Thr Trp Ser Ser Ser Pro Arg Gly Trp Val Phe
1 5 10

<210> 1446

<211> 14

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1446

Cys Ala Thr Trp His Tyr Ser Leu Ser Ala Gly Arg Val Phe
1 5 10

<210> 1447

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1447

Cys Ala Thr Trp His Thr Ser Leu Ser Ile Val Gln Phe
1 5 10

<210> 1448

<211> 14

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1448

Cys Ala Thr Trp His Ser Thr Leu Ser Ala Asp Val Leu Phe
1 5 10

<210> 1449

<211> 14

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1449

Cys Ala Thr Trp His Ser Ser Leu Ser Ala Gly Arg Leu Phe
1 5 10

<210> 1450

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1450

Cys Ala Thr Trp His Ile Ala Arg Ser Ala Trp Val Phe

1 5 10

<210> 1451

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1451

Cys Ala Thr Trp Gly Ser Ser Gln Ser Ala Val Val Phe

1 5 10

<210> 1452

<211> 14

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1452

Cys Ala Thr Trp Gly Ser Ser Leu Ser Ala Gly Gly Val Phe

1 5 10

<210> 1453

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1453

Cys Ala Thr Trp Glu Tyr Ser Leu Ser Val Val Leu Phe

1 5 10

<210> 1454

<211> 14

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 1454

Cys Ala Thr Trp Glu Thr Thr Arg Arg Ala Ser Phe Val Phe
1 5 10

<210> 1455

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1455

Cys Ala Thr Trp Glu Thr Ser Leu Asn Val Tyr Val Phe
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<210> 1456

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1456

Cys Ala Thr Trp Glu Thr Ser Leu Asn Val Val Val Phe
1 5 10

<210> 1457

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1457

Cys Ala Thr Trp Glu Thr Ser Leu Asn Leu Tyr Val Phe
1 5 10

<210> 1458

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<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1458

Cys Ala Thr Trp Glu Thr Gly Leu Ser Ala Gly Glu Val Phe
1 5 10

<210> 1459

<211> 13

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<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1459

Cys Ala Thr Trp Glu Ser Thr Leu Ser Val Val Val Phe
1 5 10

<210> 1460

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<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1460

Cys Ala Thr Trp Glu Ser Ser Leu Ser Ile Phe Val Phe
1 5 10

<210> 1461

<211> 14

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1461

Cys Ala Thr Trp Glu Ser Ser Leu Asn Thr Phe Tyr Val Phe

1 5 10

<210> 1462

<211> 15

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1462

Cys Ala Thr Trp Glu Ser Arg Val Asp Thr Arg Gly Leu Leu Phe

1 5 10 15

<210> 1463

<211> 14

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1463

Cys Ala Thr Trp Glu Ser Gly Leu Ser Gly Ala Gly Val Phe

1 5 10

<210> 1464

<211> 14

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1464

Cys Ala Thr Trp Glu Gly Ser Leu Asn Thr Phe Tyr Val Phe

1 5 10

<210> 1465

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 1465

Cys Ala Thr Trp Asp Tyr Ser Leu Ser Ala Val Val Phe

1 5 10

<210> 1466

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 1466

Cys Ala Thr Trp Asp Tyr Arg Leu Ser Ile Val Val Phe

1 5 10

<210> 1467

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 1467

Cys Ala Thr Trp Asp Tyr Asn Leu Gly Ala Ala Val Phe

1 5 10

<210> 1468

<211> 13

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<400> 1468

Cys Ala Thr Trp Asp Val Thr Leu Gly Val Leu His Phe

1 5 10

<210> 1469

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 1469

Cys Ala Thr Trp Asp Thr Thr Leu Ser Val Trp Val Phe

1 5 10

<210> 1470

<211> 13

<212> PRT

<213> Artificial Sequence

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Cys Ala Thr Trp Asp Thr Thr Leu Ser Val Val Leu Phe

1 5 10

<210> 1471

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

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Cys Ala Thr Trp Asp Thr Thr Leu Ser Val Glu Val Phe

1 5 10

<210> 1472

<211> 16

<212> PRT

<213> Artificial Sequence

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peptide

<400> 1472

Cys Ala Thr Trp Asp Thr Ser Pro Ser Leu Ser Gly Phe Trp Val Phe

1 5 10 15

<210> 1473

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1473

Cys Ala Thr Trp Asp Thr Ser Leu Thr Gly Val Val Phe

1 5 10

<210> 1474

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1474

Cys Ala Thr Trp Asp Thr Ser Leu Thr Gly Ala Val Phe

1 5 10

<210> 1475

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1475

Cys Ala Thr Trp Asp Thr Ser Leu Thr Ala Trp Val Phe

1 5 10

<210> 1476

<211> 13

<212> PRT

<213> Artificial Sequence

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Cys Ala Thr Trp Asp Thr Ser Leu Thr Ala Val Val Phe

1 5 10

<210> 1477

<211> 13

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<220><223> Description of Artificial Sequence: Synthetic

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<400> 1477

Cys Ala Thr Trp Asp Thr Ser Leu Thr Ala Lys Val Phe

1 5 10

<210> 1478

<211> 13

<212> PRT

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<220><223> Description of Artificial Sequence: Synthetic

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<400> 1478

Cys Ala Thr Trp Asp Thr Ser Leu Ser Val Val Val Phe

1 5 10

<210> 1479

<211> 13

<212> PRT

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<400> 1479

Cys Ala Thr Trp Asp Thr Ser Leu Ser Val Gly Val Phe

1 5 10

<210> 1480

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1480

Cys Ala Thr Trp Asp Thr Ser Leu Ser Ser Trp Val Phe
1 5 10

<210> 1481

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1481

Cys Ala Thr Trp Asp Thr Ser Leu Ser Gly Gly Val Leu
1 5 10

<210> 1482

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1482

Cys Ala Thr Trp Asp Thr Ser Leu Ser Gly Gly Val Phe
1 5 10

<210> 1483

<211> 14

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1483

Cys Ala Thr Trp Asp Thr Ser Leu Ser Gly Gly Arg Val Phe

1 5 10

<210> 1484

<211> 14

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1484

Cys Ala Thr Trp Asp Thr Ser Leu Ser Gly Asp Arg Val Phe

1 5 10

<210> 1485

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1485

Cys Ala Thr Trp Asp Thr Ser Leu Ser Glu Gly Val Phe

1 5 10

<210> 1486

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1486

Cys Ala Thr Trp Asp Thr Ser Leu Ser Ala Val Val Leu

1 5 10

<210> 1487

<211> 12

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 1487

Cys Ala Thr Trp Asp Thr Ser Leu Ser Ala Val Phe

1 5 10

<210> 1488

<211> 13

<212> PRT

<213> Artificial Sequence

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peptide

<400> 1488

Cys Ala Thr Trp Asp Thr Ser Leu Ser Ala Arg Val Phe

1 5 10

<210> 1489

<211> 12

<212> PRT

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<220><223> Description of Artificial Sequence: Synthetic

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<400> 1489

Cys Ala Thr Trp Asp Thr Ser Leu Ser Ala Leu Phe

1 5 10

<210> 1490

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

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<400> 1490

Cys Ala Thr Trp Asp Thr Ser Leu Ser Ala His Val Phe

1 5 10

<210> 1491

<211> 14

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

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<400> 1491

Cys Ala Thr Trp Asp Thr Ser Leu Ser Ala Gly Arg Val Phe

1 5 10

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<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 1492

Cys Ala Thr Trp Asp Thr Ser Leu Ser Ala Glu Val Phe

1 5 10

<210> 1493

<211> 17

<212> PRT

<213> Artificial Sequence

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peptide

<400> 1493

Cys Ala Thr Trp Asp Thr Ser Leu Ser Ala Asp Ala Gly Gly Gly Val

1 5 10 15

Phe

<210> 1494

<211> 13

<212> PRT

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<220><223> Description of Artificial Sequence: Synthetic

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<400> 1494

Cys Ala Thr Trp Asp Thr Ser Leu Arg Val Val Val Phe

1 5 10

<210> 1495

<211> 12

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 1495

Cys Ala Thr Trp Asp Thr Ser Leu Arg Gly Val Phe

1 5 10

<210> 1496

<211> 13

<212> PRT

<213> Artificial Sequence

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<400> 1496

Cys Ala Thr Trp Asp Thr Ser Leu Pro Ala Trp Val Phe

1 5 10

<210> 1497

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 1497

Cys Ala Thr Trp Asp Thr Ser Leu Asn Val Gly Val Phe

1 5 10

<210> 1498

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1498

Cys Ala Thr Trp Asp Thr Ser Leu Gly Ile Val Leu Phe
1 5 10

<210> 1499

<211> 14

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1499

Cys Ala Thr Trp Asp Thr Ser Leu Gly Ala Arg Val Val Phe
1 5 10

<210> 1500

<211> 12

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1500

Cys Ala Thr Trp Asp Thr Ser Leu Gly Ala Leu Phe
1 5 10

<210> 1501

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1501

Cys Ala Thr Trp Asp Thr Ser Leu Ala Thr Gly Leu Phe
1 5 10

<210> 1502

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1502

Cys Ala Thr Trp Asp Thr Ser Leu Ala Ala Trp Val Phe
1 5 10

<210> 1503

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1503

Cys Ala Thr Trp Asp Thr Arg Leu Ser Ala Val Val Phe
1 5 10

<210> 1504

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1504

Cys Ala Thr Trp Asp Thr Arg Leu Ser Ala Gly Val Phe
1 5 10

<210> 1505

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1505

Cys Ala Thr Trp Asp Thr Arg Leu Leu Ile Thr Val Phe

1 5 10

<210> 1506

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1506

Cys Ala Thr Trp Asp Thr Leu Leu Ser Val Glu Leu Phe

1 5 10

<210> 1507

<211> 14

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1507

Cys Ala Thr Trp Asp Thr Gly Arg Asn Pro His Val Val Phe

1 5 10

<210> 1508

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1508

Cys Ala Thr Trp Asp Thr Gly Leu Ser Ser Val Leu Phe

1 5 10

<210> 1509

<211> 12

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
peptide

<400> 1509

Cys Ala Thr Trp Asp Thr Gly Leu Ser Ala Val Phe
1 5 10

<210> 1510

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
peptide

<400> 1510

Cys Ala Thr Trp Asp Arg Thr Leu Ser Ile Gly Val Phe
1 5 10

<210> 1511

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
peptide

<400> 1511

Cys Ala Thr Trp Asp Arg Ser Val Thr Ala Val Leu Phe
1 5 10

<210> 1512

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
peptide

<400> 1512

Cys Ala Thr Trp Asp Arg Ser Leu Ser Gly Val Val Phe
1 5 10

<210> 1513

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1513

Cys Ala Thr Trp Asp Arg Ser Leu Ser Ala Val Val Phe
1 5 10

<210> 1514

<211> 15

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1514

Cys Ala Thr Trp Asp Arg Ser Leu Ser Ala Val Pro Trp Val Phe
1 5 10 15

<210> 1515

<211> 13

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<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1515

Cys Ala Thr Trp Asp Arg Ser Leu Ser Ala Gly Val Phe
1 5 10

<210> 1516

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1516

Cys Ala Thr Trp Asp Arg Ser Leu Arg Ala Gly Val Phe

1 5 10

<210> 1517

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1517

Cys Ala Thr Trp Asp Arg Ser Leu Asn Val Tyr Val Leu

1 5 10

<210> 1518

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1518

Cys Ala Thr Trp Asp Arg Ile Leu Ser Ala Glu Val Phe

1 5 10

<210> 1519

<211> 13

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<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1519

Cys Ala Thr Trp Asp Arg Gly Leu Ser Thr Gly Val Phe

1 5 10

<210> 1520

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
peptide

<400> 1520

Cys Ala Thr Trp Asp Asn Tyr Leu Gly Ala Ala Val Phe
1 5 10

<210> 1521

<211> 14

<212> PRT

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<220><223> Description of Artificial Sequence: Synthetic
peptide

<400> 1521

Cys Ala Thr Trp Asp Asn Thr Pro Ser Asn Ile Val Val Phe
1 5 10

<210> 1522

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
peptide

<400> 1522

Cys Ala Thr Trp Asp Asn Thr Leu Ser Val Trp Val Phe
1 5 10

<210> 1523

<211> 14

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
peptide

<400> 1523

Cys Ala Thr Trp Asp Asn Thr Leu Ser Val Asn Trp Val Phe
1 5 10

<210> 1524

<211> 14

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1524

Cys Ala Thr Trp Asp Asn Thr Leu Asn Val Phe Tyr Val Phe
1 5 10

<210> 1525

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1525

Cys Ala Thr Trp Asp Asn Arg Leu Ser Ser Val Val Phe
1 5 10

<210> 1526

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1526

Cys Ala Thr Trp Asp Asn Arg Leu Ser Ala Gly Val Leu
1 5 10

<210> 1527

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1527

Cys Ala Thr Trp Asp Asn Arg Leu Ser Ala Gly Val Phe

1 5 10

<210> 1528

<211> 11

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1528

Cys Ala Thr Trp Asp Asn Arg Asp Trp Val Phe

1 5 10

<210> 1529

<211> 13

<212> PRT

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<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1529

Cys Ala Thr Trp Asp Asn Asn Leu Gly Ala Gly Val Phe

1 5 10

<210> 1530

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1530

Cys Ala Thr Trp Asp Asn Lys Leu Thr Ser Gly Val Phe

1 5 10

<210> 1531

<211> 13

<212> PRT

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peptide

<400> 1531

Cys Ala Thr Trp Asp Asn Ile Leu Ser Ala Trp Val Phe

1 5 10

<210

> 1532

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 1532

Cys Ala Thr Trp Asp Asn Asp Ile His Ser Gly Leu Phe

1 5 10

<210> 1533

<211> 12

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

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<400> 1533

Cys Ala Thr Trp Asp Leu Ser Leu Ser Ala Leu Phe

1 5 10

<210

> 1534

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 1534

Cys Ala Thr Trp Asp Ile Thr Leu Ser Ala Glu Val Phe

1 5 10

<210> 1535

<211> 14

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1535

Cys Ala Thr Trp Asp Ile Ser Pro Ser Ala Gly Gly Val Phe
1 5 10

<210> 1536

<211> 15

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1536

Cys Ala Thr Trp Asp Ile Ser Leu Ser Thr Gly Arg Ala Val Phe
1 5 10 15

<210> 1537

<211> 12

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1537

Cys Ala Thr Trp Asp Ile Ser Leu Ser Gln Val Phe
1 5 10

<210> 1538

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1538

Cys Ala Thr Trp Asp Ile Arg Leu Ser Ser Gly Val Phe

1 5 10

<210> 1539

<211> 14

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1539

Cys Ala Thr Trp Asp Ile Gly Pro Ser Ala Gly Gly Val Phe

1 5 10

<210> 1540

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1540

Cys Ala Thr Trp Asp His Ser Arg Ala Gly Val Leu Phe

1 5 10

<210> 1541

<211> 14

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1541

Cys Ala Thr Trp Asp His Ser Pro Ser Val Gly Glu Val Phe

1 5 10

<210> 1542

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 1542

Cys Ala Thr Trp Asp His Ser Leu Arg Val Gly Val Phe

1 5 10

<210> 1543

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 1543

Cys Ala Thr Trp Asp His Ser Leu Asn Ile Gly Val Phe

1 5 10

<210> 1544

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 1544

Cys Ala Thr Trp Asp His Ser Leu Gly Leu Trp Ala Phe

1 5 10

<210> 1545

<211> 12

<212> PRT

<213> Artificial Sequence

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peptide

<400> 1545

Cys Ala Thr Trp Asp His Asn Leu Arg Leu Val Phe

1 5 10

<210> 1546

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1546

Cys Ala Thr Trp Asp His Ile Leu Ala Ser Gly Val Phe
1 5 10

<210> 1547

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1547

Cys Ala Thr Trp Asp Phe Ser Leu Ser Val Trp Val Phe
1 5 10

<210> 1548

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1548

Cys Ala Thr Trp Asp Phe Ser Leu Ser Ala Trp Val Phe
1 5 10

<210> 1549

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1549

Cys Ala Thr Trp Asp Asp Thr Leu Thr Ala Gly Val Phe

1 5 10

<210> 1550

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1550

Cys Ala Thr Trp Asp Asp Arg Leu Ser Ala Val Leu Phe

1 5 10

<210> 1551

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1551

Cys Ala Thr Trp Asp Asp Arg Leu Asp Ala Ala Val Phe

1 5 10

<210> 1552

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1552

Cys Ala Thr Trp Asp Ala Thr Leu Asn Thr Gly Val Phe

1 5 10

<210> 1553

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 1553

Cys Ala Thr Trp Asp Ala Ser Leu Ser Val Trp Leu Leu
1 5 10

<210> 1554

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1554

Cys Ala Thr Trp Asp Ala Ser Leu Ser Gly Gly Val Phe
1 5 10

<210> 1555

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1555

Cys Ala Thr Arg Asp Thr Thr Leu Ser Ala Val Leu Phe
1 5 10

<210> 1556

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1556

Cys Ala Thr Leu Gly Ser Ser Leu Ser Leu Trp Val Phe
1 5 10

<210> 1557

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1557

Cys Ala Thr Ile Glu Thr Ser Leu Pro Ala Trp Val Phe
1 5 10

<210> 1558

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1558

Cys Ala Thr Gly Asp Arg Ser Leu Thr Val Glu Val Phe
1 5 10

<210> 1559

<211> 12

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1559

Cys Ala Thr Gly Asp Leu Gly Leu Thr Ile Val Phe
1 5 10

<210> 1560

<211> 14

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1560

Cys Ala Ser Trp Asp Tyr Arg Gly Arg Ser Gly Trp Val Phe

1 5 10

<210> 1561

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1561

Cys Ala Ser Trp Asp Thr Thr Leu Asn Val Gly Val Phe

1 5 10

<210> 1562

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1562

Cys Ala Ser Trp Asp Thr Thr Leu Gly Phe Val Leu Phe

1 5 10

<210> 1563

<211> 14

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1563

Cys Ala Ser Trp Asp Thr Ser Leu Ser Gly Gly Tyr Val Phe

1 5 10

<210> 1564

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 1564

Cys Ala Ser Trp Asp Thr Ser Leu Arg Ala Gly Val Phe

1 5 10

<210> 1565

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 1565

Cys Ala Ser Trp Asp Thr Ser Leu Gly Ala Gly Val Phe

1 5 10

<210> 1566

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 1566

Cys Ala Ser Trp Asp Arg Gly Leu Ser Ala Val Val Phe

1 5 10

<210> 1567

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 1567

Cys Ala Ser Trp Asp Asn Val Leu Arg Gly Val Val Phe

1 5 10

<210> 1568

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1568

Cys Ala Ser Trp Asp Asn Arg Leu Thr Ala Val Val Phe
1 5 10

<210> 1569

<211> 12

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1569

Cys Ala Ser Trp Asp Ala Ser Leu Ser Val Ala Phe
1 5 10

<210> 1570

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1570

Cys Ala Ser Trp Asp Ala Gly Leu Ser Ser Tyr Val Phe
1 5 10

<210> 1571

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1571

Cys Ala Ser Gly Asp Thr Ser Leu Ser Gly Val Ile Phe

1 5 10

<210> 1572

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1572

Cys Ala Arg Trp His Thr Ser Leu Ser Ile Trp Val Phe

1 5 10

<210> 1573

<211> 15

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1573

Cys Ala Ile Trp Asp Thr Gly Leu Ser Pro Gly Gln Val Ala Phe

1 5 10 15

<210> 1574

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1574

Cys Ala Ala Trp His Ser Gly Leu Gly Leu Pro Val Phe

1 5 10

<210> 1575

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 1575

Cys Ala Ala Trp Asp Tyr Ser Leu Ser Ala Gly Val Phe
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<210> 1576

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1576

Cys Ala Ala Trp Asp Thr Thr Leu Arg Val Arg Leu Phe
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<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1577

Cys Ala Ala Trp Asp Thr Ser Leu Thr Ala Trp Val Phe
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<210> 1578

<211> 13

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<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1578

Cys Ala Ala Trp Asp Thr Ser Leu Ser Gly Gly Val Phe
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<210> 1579

<211> 14

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1579

Cys Ala Ala Trp Asp Thr Ser Leu Ser Gly Glu Ala Val Phe
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<210> 1580

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<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1580

Cys Ala Ala Trp Asp Thr Ser Leu Ser Gly Ala Val Phe
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<210> 1581

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<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1581

Cys Ala Ala Trp Asp Thr Ser Leu Ser Ala Trp Val Phe
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<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1582

Cys Ala Ala Trp Asp Thr Ser Leu Ser Ala Gly Val Phe

1 5 10

<210> 1583

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<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1583

Cys Ala Ala Trp Asp Thr Ser Leu Asp Thr Tyr Val Phe

1 5 10

<210> 1584

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1584

Cys Ala Ala Trp Asp Thr Arg Leu Ser Gly Val Leu Phe

1 5 10

<210> 1585

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1585

Cys Ala Ala Trp Asp Thr Arg Leu Ser Ala Gly Val Phe

1 5 10

<210> 1586

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 1586

Cys Ala Ala Trp Asp Arg Ser Leu Ser Thr Gly Val Phe

1 5 10

<210> 1587

<211> 12

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 1587

Cys Ala Ala Trp Asp Ile Arg Arg Ser Val Leu Phe

1 5 10

<210> 1588

<211> 12

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 1588

Cys Ala Ala Trp Asp His Thr Gln Arg Leu Ser Phe

1 5 10

<210> 1589

<211> 14

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 1589

Cys Ala Ala Trp Asp His Ser Leu Ser Ala Gly Gln Val Phe

1 5 10

<210> 1590

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 1590

Cys Ala Ala Val Asp Thr Gly Leu Lys Glu Trp Val Phe
1 5 10

<210> 1591

<211> 39

<212> DNA

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic oligonucleotide

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<210> 1592

<211> 39

<212> DNA

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic oligonucleotide

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<210> 1593

<211> 39

<212> DNA

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic oligonucleotide

<400> 1593

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<210> 1594

<211> 39

<212> DNA

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 1594

tgcggaacat gggataggag cctgagtgcg ggggtgttc 39

<210> 1595

<211> 39

<212> DNA

<213> Artificial Sequence

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oligonucleotide

<400> 1595

tgcggaacat gggataggag cctgagtgct tgggtattt 39

<210> 1596

<211> 39

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<213> Artificial Sequence

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oligonucleotide

<400> 1596

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<210> 1597

<211> 39

<212> DNA

<213> Artificial Sequence

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oligonucleotide

<400> 1597

tgcggaacat gggatactag cctgcgtgct ggcgtcttc 39

<210> 1598

<211> 39

<212> DNA

<213> Artificial Sequence

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oligonucleotide

<400> 1598

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<210> 1599

<211> 39

<212> DNA

<213> Artificial Sequence

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oligonucleotide

<400> 1599

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<210> 1600

<211> 39

<212> DNA

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oligonucleotide

<400> 1600

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<210> 1601

<211> 39

<212> DNA

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oligonucleotide

<400> 1601

tgcggagcat gggataccag cctgagtgct ggagtgttc 39

<210> 1602

<211> 39

<212> DNA

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

oligonucleotide

<400> 1602

tgcgcaacat gggataccag cctgagtgct gtggtattc 39

<210> 1603

<211> 39

<212> DNA

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

oligonucleotide

<400> 1603

tgcgcaacat gggataccag cctgagtgct ggtgtgttc 39

<210> 1604

<211> 39

<212> DNA

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

oligonucleotide

<400> 1604

tgtggaacat gggagagcag cctgagtgct tgggtgttc 39

<210> 1605

<211> 39

<212> DNA

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

oligonucleotide

<400> 1605

tgcggaacat gggataccac cctgagtgcg ggtgtcttc 39

<210> 1606

<211> 39

<212> DNA

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

oligonucleotide

<400> 1606

tgcggaacat gggatactag cctgagtgtg tgggtgttc 39

<210> 1607

<211> 39

<212> DNA

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

oligonucleotide

<400> 1607

tgcggaacat gggatactag cctgagtgtt ggggtgttc 39

<210> 1608

<211> 39

<212> DNA

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oligonucleotide

<400> 1608

tgcggaacat gggacaccag tctgagcact ggcgtcttc 39

<210> 1609

<211> 39

<212> DNA

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

oligonucleotide

<400> 1609

tgcggaacat gggataccag cctgagtggt gtggtcttc 39

<210> 1610

<211> 39

<212> DNA

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

oligonucleotide

<400> 1610

tgcggaacat gggataccag cctgagtgct tatgtcttc 39

<210> 1611

<211> 39

<212> DNA

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic oligonucleotide

<400> 1611

tgcggaacat gggataccag cctgagtgct gaggtgttc 39

<210> 1612

<211> 39

<212> DNA

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic oligonucleotide

<400> 1612

tgcggaacat gggataccgg cctgagtgct ggggtattc 39

<210> 1613

<211> 39

<212> DNA

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<220><223> Description of Artificial Sequence: Synthetic oligonucleotide

<400> 1613

tgcggaacgt gggataggag cctgagtgct tatgtcttc 39

<210> 1614

<211> 39

<212> DNA

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic oligonucleotide

<400> 1614

tgcggaacat gggataggag cctcagtgcc gtggtattc 39

<210> 1615

<211> 39

<212> DNA

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> Artificial Sequence

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tgcggaacat gggataacac cctgagtgcg tgggtgttc 39

<210> 1616

<211> 39

<212> DNA

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

oligonucleotide

<400> 1616

tgcggaacat gggataacag gctgagtgct ggggtgttc 39

<210> 1617

<211> 39

<212> DNA

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

oligonucleotide

<400> 1617

tgcggaacat gggacatcag cctgagtgct tgggtgttc 39

<210> 1618

<211> 39

<212> DNA

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

oligonucleotide

<400> 1618

tgcggaacat ggcatagcag cctgagtgct ggggtattc 39

<210> 1619

<211> 39

<212> DNA

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 1619

tgcggaacat ggggtagcag tttgagtgct tgggtgttc 39

<210> 1620

<211> 39

<212> DNA

<213> Artificial Sequence

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oligonucleotide

<400> 1620

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<210> 1621

<211> 39

<212> DNA

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oligonucleotide

<400> 1621

tgcggaacat gggagagcag cctgagtgct gtggttttc 39

<210> 1622

<211> 39

<212> DNA

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oligonucleotide

<400> 1622

tgcggaacat gggattacag cctgagtgct gtggtattc 39

<210> 1623

<211> 39

<212> DNA

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oligonucleotide

<400> 1623

tgcggaacat gggattacag cctgagtgct ggggtattc 39

<210> 1624

<211> 39

<212> DNA

<213> Artificial Sequence

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oligonucleotide

<400> 1624

tgcggaacat gggatgtcag cctgagtgtt ggagtgttc 39

<210> 1625

<211> 39

<212> DNA

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oligonucleotide

<400> 1625

tgcggaacat gggataccac cctgagtgct gtggttttc 39

<210> 1626

<211> 39

<212> DNA

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oligonucleotide

<400> 1626

tgcggaacat gggataccac tctgaatatt ggggtgttc 39

<210> 1627

<211> 39

<212> DNA

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oligonucleotide

<400> 1627

tgcggaacat gggataccag cctgactgct gtggtattc 39

<210> 1628

<211> 39

<212> DNA

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oligonucleotide

<400> 1628

tgcggaacct gggataccag cctgactgct gctgtgttc 39

<210> 1629

<211> 39

<212> DNA

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oligonucleotide

<400> 1629

tgcggcacat gggataccag cctgagtgtg gggctattc 39

<210> 1630

<211> 39

<212> DNA

<213> Artificial Sequence

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oligonucleotide

<400> 1630

tgcggaacct gggataccag cctgagtggt agggtgttc 39

<210> 1631

<211> 39

<212> DNA

<213> Artificial Sequence

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oligonucleotide

<400> 1631

tgcggaacat gggataccag cctgagtggt gcagtgttc 39

<210> 1632

<211> 39

<212> DNA

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

oligonucleotide

<400> 1632

tgcggaacat gggataccag cctgagtgct ggcctgttc 39

<210> 1633

<211> 42

<212> DNA

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

oligonucleotide

<400> 1633

tgcggaacat gggataccag cctgagtgct ggaggggtct tc 42

<210> 1634

<211> 39

<212> DNA

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oligonucleotide

<400> 1634

tgcggaacat gggataccag cctgcgtgct tatgtcttc 39

<210> 1635

<211> 39

<212> DNA

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oligonucleotide

<400> 1635

tgcggaacat gggatactag tttgcgtgct tgggtattc 39

<210> 1636

<211> 39

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oligonucleotide

<400> 1636

tgcggaacat gggataccag cctgaatact ggggtattc 39

<210> 1637

<211> 39

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oligonucleotide

<400> 1637

tgcggaacat gggataccag cctgaatatt tgggtgttc 39

<210> 1638

<211> 39

<212> DNA

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oligonucleotide

<400> 1638

tgcggaacat gggatacaag cctgaatatt ggggtgttc 39

<210> 1639

<211> 39

<212> DNA

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oligonucleotide

<400> 1639

tgcggaacat gggataccag cctgattgct gtggtgttc 39

<210> 1640

<211> 39

<212> DNA

<213> Artificial Sequence

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oligonucleotide

<400> 1640

tgcggaacgt gggataggag cctgagtggt tgggtgttc 39

<210> 1641

<211> 39

<212> DNA

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 1641

tgcggaacat gggataacag gctgagtggt tgggtgttc 39

<210> 1642

<211> 39

<212> DNA

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 1642

tgcggaacgt gggataagag cctgagtgct gtggtcttc 39

<210> 1643

<211> 39

<212> DNA

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<220><223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 1643

tgcggaacat gggataaagg cctgagtgct tgggtgttc 39

<210> 1644

<211> 39

<212> DNA

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

oligonucleotide

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tgcggaacat gggatatcag cctgagtgct ggggtgttc 39

<210> 1645

<211> 45

<212> DNA

<213> Artificial Sequence

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oligonucleotide

<400> 1645

tgcggaacat gggatgagag cctgagtggt ggcgaggtgg tcttc 45

<210> 1646

<211> 39

<212> DNA

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<220><223> Description of Artificial Sequence: Synthetic

oligonucleotide

<400> 1646

tgcggaacat gggatgccag cctgagtgcc tgggtgttc 39

<210> 1647

<211> 39

<212> DNA

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oligonucleotide

<400> 1647

tgcggaactt gggatgccgg cctgagtgct tgggtgttc 39

<210> 1648

<211> 39

<212> DNA

<213> Artificial Sequence

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oligonucleotide

<400> 1648

tgcggagcat gggataccag cctgagtgct tgggtgttc 39

<210> 1649

<211> 39

<212> DNA

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 1649

tgcggagcat gggataccag cctgagtgct gtggtgttc 39

<210> 1650

<211> 39

<212> DNA

<213
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<220><223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 1650

tgcggagcat gggataccag cctgcgtgct ggggttttc 39

<210> 1651

<211> 39

<212> DNA

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 1651

tgcgcaacat gggataccag cgtgagtgct tgggtgttc 39

<210> 1652

<211> 39

<212> DNA

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

oligonucleotide

<400> 1652

tgcgcaacat gggataccag cctgagtgcg tgggtgttc 39

<210> 1653

<211> 39

<212> DNA

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

oligonucleotide

<400> 1653

tgcgcaacat gggacaacac cctgagtgct ggggtgttc 39

<210> 1654

<211> 39

<212> DNA

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

oligonucleotide

<400> 1654

tgcgcagcat gggataggag cctgagtgtt tgggtgttc 39

<210> 1655

<211> 39

<212> DNA

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

oligonucleotide

<400> 1655

tgctacacat ggcattccag tctgcgtggt ggggtgttc 39

<210> 1656

<211> 39

<212> DNA

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

oligonucleotide

<400> 1656

tgcgtaacgt ggactagtag cccgagtgct tgggtgttc 39

<210> 1657

<211> 33

<212> DNA

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<220><223> Description of Artificial Sequence: Synthetic

oligonucleotide

<400> 1657

tgcgtgacat ggcgtggtgg ccttgtgttg ttc 33

<210> 1658

<211> 39

<212> DNA

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

oligonucleotide

<400> 1658

tgcgtaacat gggataccag cctgacttct gtggtactc 39

<210> 1659

<211> 42

<212> DNA

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

oligonucleotide

<400> 1659

tgcgtaacat gggataccag cctgagtgtt tattgggtgt tc 42

<210> 1660

<211> 39

<212> DNA

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

oligonucleotide

<400> 1660

tgcgttacat gggataccag cctgagtgcc tgggtgttc 39

<210> 1661

<211> 39

<212> DNA

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 1661

tgcgtcacat gggataccga cctcagcgtt gcgctcttc 39

<210> 1662

<211> 39

<212> DNA

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 1662

tgcgtaacat gggataggag cctgagtggt tgggtgttc 39

<210> 1663

<211> 39

<212> DNA

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 1663

tgcgtaacat gggatcgcag cctgagagag gtgttattc 39

<210> 1664

<211> 39

<212> DNA

<213
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<220><223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 1664

tgcgtaacat gggatcgcag cctgagagcg gtggtattc 39

<210> 1665

<211> 39

<212> DNA

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

oligonucleotide

<400> 1665

tgcgtaacat gggacaggag cctcgatgct ggggttttc 39

<210> 1666

<211> 39

<212> DNA

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

oligonucleotide

<400> 1666

tgcgtgacat gggataacac cctgagtgct ggggtcttc 39

<210> 1667

<211> 39

<212> DNA

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

oligonucleotide

<400> 1667

tgcgtaacat gggataacaa cctgtttggt gtggtcttc 39

<210> 1668

<211> 39

<212> DNA

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

oligonucleotide

<400> 1668

tgcgtatcat gggataccag cctgagtggt gcggtattc 39

<210> 1669

<211> 39

<212> DNA

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 1669

tgcgtctcat gggataccag cctgagtgct ggggtattc 39

<210> 1670

<211> 39

<212> DNA

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 1670

tgcacaacat ggtttaggac tccgagtgat gtggtcttc 39

<210> 1671

<211> 39

<212> DNA

<213
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<220><223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 1671

tgcacaacat ggtttaggac tgcgagtgat gtggtcttc 39

<210> 1672

<211> 36

<212> DNA

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 1672

tgcacaacgt gggattacgg tctgagtgtc gtcttc 36

<210> 1673

<211> 42

<212> DNA

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

oligonucleotide

<400> 1673

tgcacagcaa gggataccag cctgagtcct ggcggggtct tc 42

<210> 1674

<211> 39

<212> DNA

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

oligonucleotide

<400> 1674

tgctcaacat ggaatacgag gccgagtgat gtggtgttc 39

<210> 1675

<211> 39

<212> DNA

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

oligonucleotide

<400> 1675

tgttcaacat gggagagcag tttgactact gtggtcttc 39

<210> 1676

<211> 39

<212> DNA

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

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<210> 1705

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<210> 1706

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oligonucleotide

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oligonucleotide

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<210> 1714

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oligonucleotide

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oligonucleotide

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<212> DNA

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oligonucleotide

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oligonucleotide

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oligonucleotide

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<212> DNA

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oligonucleotide

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oligonucleotide

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oligonucleotide

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<210> 1729

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oligonucleotide

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<211> 39

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oligonucleotide

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<210> 1732

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<210> 1734

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oligonucleotide

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<210> 1735

<211> 42

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<211> 42

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oligonucleotide

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oligonucleotide

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oligonucleotide

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<210> 1742

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oligonucleotide

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<210> 1743

<211> 39

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oligonucleotide

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<210> 1744

<211> 39

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oligonucleotide

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<210> 1745

<211> 39

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<210> 1746

<211> 36

<212> DNA

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<210> 1747

<211> 39

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<210> 1748

<211> 39

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oligonucleotide

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<210> 1749

<211> 39

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oligonucleotide

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tgcggaacat gggaaaccag ccttaattat gtggccttc 39

<210> 1750

<211> 39

<212> DNA

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oligonucleotide

<400> 1750

tgcggaacat gggagaccag cctgaatact tggttgctc 39

<210> 1751

<211> 42

<212> DNA

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oligonucleotide

<400> 1751

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<210> 1752

<211> 39

<212> DNA

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oligonucleotide

<400> 1752

tgcggaacat gggaaaccag actgggtact tgggtgatc 39

<210> 1753

<211> 36

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oligonucleotide

<400> 1753

tgcggaacat gggagaccca gttatattgg gtgttc 36

<210> 1754

<211> 42

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oligonucleotide

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tgcggaacat gggagactgg cctaagtgct ggagaggtgt tc 42

<210> 1755

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oligonucleotide

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<210> 1756

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<212> DNA

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oligonucleotide

<400> 1756

tgcgggacat gggaaagtag cctgactgtt gtggtcttc 39

<210> 1757

<211> 39

<212> DNA

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oligonucleotide

<400> 1757

tgcggaacat gggaaagtag cctgactgga gtggtattc 39

<210> 1758

<211> 39

<212> DNA

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oligonucleotide

<400> 1758

tgcggaacat gggaaagcag cctgactggt tttgtcttc 39

<210> 1759

<211> 39

<212> DNA

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

oligonucleotide

<400> 1759

tgtggaacat gggagagcag cctgagtgtt ggggtgttc 39

<210> 1760

<211> 39

<212> DNA

<213> Artificial Sequence

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oligonucleotide

<400> 1760

tgcggaacct gggaaagtag cctcagtgaa tgggtgttc 39

<210> 1761

<211> 36

<212> DNA

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 1761

tgcggaacat gggagagcag cctgagtgct gtattc 36

<210> 1762

<211> 42

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oligonucleotide

<400> 1762

tgcggaacat gggagagcag cctgagtgct ggttatatct tc 42

<210> 1763

<211> 39

<212> DNA

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oligonucleotide

<400> 1763

tgcggaacat gggagagcag cctgagtgct ggagtgttc 39

<210> 1764

<211> 42

<212> DNA

<213> Artificial Sequence

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oligonucleotide

<400> 1764

tgcggaacat gggaaagcag cctgagcgct ggcccggtgt tc 42

<210> 1765

<211> 45

<212> DNA

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

oligonucleotide

<400> 1765

tgcggaacat gggaaagcag cctgagtgct ggaggccagg tgttc 45

<210> 1766

<211> 48

<212> DNA

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oligonucleotide

<400> 1766

tgcggaacat gggagagcag cctgagtgcc ttcggcggtt atgtcttc 48

<210> 1767

<211> 39

<212> DNA

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

oligonucleotide

<400> 1767

tgcggaacat gggaaagcag cctgagggtt tgggtgttc 39

<210> 1768

<211> 45

<212> DNA

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oligonucleotide

<400> 1768

tgcggaacat gggaaagcag cctctttact gggccttggg tgttc 45

<210> 1769

<211> 39

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oligonucleotide

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tgcggaacat gggagagcct gagtgccacc tatgtcttc 39

<210> 1770

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<212> DNA

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oligonucleotide

<400> 1770

tgcggaacat gggagagcgg cctgagtgct ggtgtcttc 39

<210> 1771

<211> 33

<212> DNA

<213> Artificial Sequence

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oligonucleotide

<400> 1771

tgcggaacat gggaaagcga cttttgggtg ttt 33

<210> 1772

<211> 39

<212> DNA

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oligonucleotide

<400> 1772

tgcggtacat gggaaaacag actgagtgct gtggtcttc 39

<210> 1773

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<212> DNA

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oligonucleotide

<400> 1773

tgcggaacat gggaaaacag actgagtgcc ggggtattc 39

<210> 1774

<211> 42

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oligonucleotide

<400> 1774

tgcggaacat gggaaatcag cctgactact tctgtggtat tc 42

<210> 1775

<211> 42

<212> DNA

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 1775

tgcggaacat gggaaatcag cctgagtact tctgtggtat tc 42

<210> 1776

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oligonucleotide

<400> 1776

tgcggaacat gggaaggcag cctcagtgtt gttttc 36

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oligonucleotide

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<210> 1798

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oligonucleotide

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<210> 1800

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<210> 1805

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<210> 1806

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oligonucleotide

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tgcggaacat gggacaccag tcggggtcat gttttc 36

<210> 1807

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oligonucleotide

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oligonucleotide

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oligonucleotide

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<210> 1810

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oligonucleotide

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oligonucleotide

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<210> 1813

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oligonucleotide

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<210> 1814

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<210> 1816

<211> 39

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<210> 1818

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<210> 1819

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oligonucleotide

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oligonucleotide

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tgcggaacat gggataccag cctgactgcg attgtcttc 39

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oligonucleotide

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oligonucleotide

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oligonucleotide

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oligonucleotide

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oligonucleotide

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oligonucleotide

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tgcggaacat gggataccag cctgagtact ggccaggtgc ttttc 45

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oligonucleotide

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tgcggcacat gggataccag cctgagcact ggtcctcttt gggtgttc 48

<210> 1829

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oligonucleotide

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oligonucleotide

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<210> 1831

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oligonucleotide

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<210> 1832

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tgcggaacat gggataccag cctgagttct agattcatat tc 42

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oligonucleotide

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<210> 1834

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oligonucleotide

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<210> 1835

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<210> 1837

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<210> 1838

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tgcggaacat gggataccag cctaagtatt tgggtgttc 39

<210> 1839

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oligonucleotide

<400> 1839

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<210> 1840

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oligonucleotide

<400> 1840

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<210> 1841

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oligonucleotide

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tgcggaacat gggataccag cctgagtggt acagtgttc 39

<210> 1842

<211> 42

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oligonucleotide

<400> 1842

tgcggaacat gggatactag tctgagtggt ggccaggtgt tc 42

<210> 1843

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oligonucleotide

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<210> 1844

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oligonucleotide

<400> 1844

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<210> 1845

<211> 42

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<210> 1846

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oligonucleotide

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<210> 1847

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<210> 1848

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<210> 1849

<211> 39

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oligonucleotide

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<210> 1850

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<210> 1851

<211> 36

<212> DNA

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tgcggaacat gggataccag cctgagtgct gttttc 36

<210> 1852

<211> 39

<212> DNA

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oligonucleotide

<400> 1852

tgcggaacat gggataccag cctgagtgcc cgggtgttc 39

<210> 1853

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oligonucleotide

<400> 1853

tgcggcacat gggataccag cctgagtgcc cgccaggtat tc 42

<210> 1854

<211> 39

<212> DNA

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oligonucleotide

<400> 1854

tgcggaacat gggataccag cctgagtgct ttggttttc 39

<210> 1855

<211> 39

<212> DNA

<213> Artificial Sequence

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oligonucleotide

<400> 1855

tgcggaacat gggataccag cctgagtgct aaggtgttc 39

<210> 1856

<211> 39

<212> DNA

<213> Artificial Sequence

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<400> 1856

tgcggaacat gggataccag cctgagtgcg aaaatcttc 39

<210> 1857

<211> 42

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tgcggaacat gggataccag cctgagtgcc aaggcggtat tc 42

<210> 1858

<211> 42

<212> DNA

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tgcggaacat gggataccag cctgagtgcc catgctgtgt tc 42

<210> 1859

<211> 42

<212> DNA

<213> Artificial Sequence

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tgcggaacat gggataccag cctgagtgct ggctatgtct tc 42

<210> 1860

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<212> DNA

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tgcggaacat gggacaccag tctgagtgct ggccgctggg tgttc 45

<210> 1861

<211> 39

<212> DNA

<213> Artificial Sequence

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oligonucleotide

<400> 1861

tgcggaacat gggataccag cctgagtgct gggatattc 39

<210> 1862

<211> 48

<212> DNA

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

oligonucleotide

<400> 1862

tgcggaacat gggataccag cctgagtgct ggtgggttcc gggtcttc 48

<210> 1863

<211> 39

<212> DNA

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oligonucleotide

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<210> 1864

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<212> DNA

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oligonucleotide

<400> 1864

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<210> 1865

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<212> DNA

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oligonucleotide

<400> 1865

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<210> 1866

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oligonucleotide

<400> 1866

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<210> 1867

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oligonucleotide

<400> 1867

tgcggaacat gggataccag cctgagtgct gcgctattc 39

<210> 1868

<211> 42

<212> DNA

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

oligonucleotide

<400> 1868

tgcggaacat gggataccag cctgagtgct gcgggggttt tc 42

<210> 1869

<211> 39

<212> DNA

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

oligonucleotide

<400> 1869

tgcggaacat gggataccag cctgagagtt gtggttttc 39

<210> 1870

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<212> DNA

<213> Artificial Sequence

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oligonucleotide

<400> 1870

tgcggaacat gggataccag cctgagaacc tgggtattc 39

<210> 1871

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oligonucleotide

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<210> 1872

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oligonucleotide

<400> 1872

tgcggaacat gggataccag cctgcgtgct gtggtattc 39

<210> 1873

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oligonucleotide

<400> 1873

tgcggaacat gggatacaag cctgaatgta gtttatgtct tc 42

<210> 1874

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oligonucleotide

<400> 1874

tgcggaacat gggataccag cctcaacacc tacctgttc 39

<210> 1875

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oligonucleotide

<400> 1875

tgcggaacat gggatactag cctgaacttc gcttggctgt tc 42

<210> 1876

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oligonucleotide

<400> 1876

tgcggcacat gggataccag ccttcttgtg tggcttttc 39

<210> 1877

<211> 39

<212> DNA

<213> Artificial Sequence

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oligonucleotide

<400> 1877

tgcggaacat gggataccag tctgaagacg tgggtgttc 39

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oligonucleotide

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<210> 1884

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<210> 1885

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oligonucleotide

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<210> 1890

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oligonucleotide

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<210> 1891

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oligonucleotide

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<210> 1892

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oligonucleotide

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<210> 1893

<211> 36

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<400> 1893

tgcggaacat gggataccag cctggcttgg gtgttc 36

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<210> 1895

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<210> 1896

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<210> 1897

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<210> 1898

<211> 39

<212> DNA

<213> Artificial Sequence

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<210> 1899

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oligonucleotide

<400> 1899

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<210> 1900

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<212> DNA

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oligonucleotide

<400> 1900

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<210> 1901

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oligonucleotide

<400> 1901

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<210> 1902

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oligonucleotide

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<210> 1903

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oligonucleotide

<400> 1903

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<210> 1904

<211> 39

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oligonucleotide

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<210> 1905

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<210> 1906

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<210> 1907

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<210> 1908

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<400> 1909

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<210> 1910

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oligonucleotide

<400> 1910

tgcggaacat gggatactaa tctgcccgct gtagtgttc 39

<210> 1911

<211> 36

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oligonucleotide

<400> 1911

tgcggaacat gggacaccaa tttgggtggg gtgttc 36

<210> 1912

<211> 39

<212> DNA

<213> Artificial Sequence

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oligonucleotide

<400> 1912

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<210> 1913

<211> 39

<212> DNA

<213> Artificial Sequence

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oligonucleotide

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tgcggaacat gggataccat cctgagtgcg gtggtgttc 39

<210> 1914

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<400> 1914

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<210> 1915

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<400> 1915

tgcggaacat gggataccca cctgggtgtg gttttc 36

<210> 1916

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<400> 1916

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<210> 1917

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<400> 1917

tgcggaacat gggataccgg cctgactttt ggaggcgtgt tc 42

<210> 1918

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oligonucleotide

<400> 1918

tgcggaacat gggataccgg cctgactgct tttgtcttc 39

<210> 1919

<211> 39

<212> DNA

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oligonucleotide

<400> 1919

tgcggaacat gggataccgg cctgagtgtt tgggtgttc 39

<210> 1920

<211> 39

<212> DNA

<213> Artificial Sequence

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oligonucleotide

<400> 1920

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<210> 1921

<211> 39

<212> DNA

<213> Artificial Sequence

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oligonucleotide

<400> 1921

tgcggaacat gggataccgg cctgagttcc ctgctcttc 39

<210> 1922

<211> 39

<212> DNA

<213> Artificial Sequence

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oligonucleotide

<400> 1922

tgcggaacgt gggacaccgg cctgagtatt gtggtgttc 39

<210> 1923

<211> 39

<212> DNA

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oligonucleotide

<400> 1923

tgcggaacgt gggacaccgg cctgagtttt gtggtgttc 39

<210> 1924

<211> 39

<212> DNA

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oligonucleotide

<400> 1924

tgcggaacat gggataccgg cctgagtgct tgggtgttc 39

<210> 1925

<211> 42

<212> DNA

<213> Artificial Sequence

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<400> 1925

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<210> 1926

<211> 39

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<400> 1926

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<210> 1927

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<400> 1927

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<210> 1928

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<400> 1928

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<210> 1929

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<210> 1930

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<210> 1931

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oligonucleotide

<400> 1931

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<210> 1932

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oligonucleotide

<400> 1932

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<210> 1933

<211> 39

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oligonucleotide

<400> 1933

tgcggaacat gggataccgc cctgaaagaa tggctgttc 39

<210> 1934

<211> 45

<212> DNA

<213> Artificial Sequence

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<400> 1934

tgcggaacat gggataggac cctgactgct ggcgatgtgc tcttc 45

<210> 1935

<211> 36

<212> DNA

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oligonucleotide

<400> 1935

tgcggaacat gggatagaag cgtgacttat gtcttc 36

<210> 1936

<211> 39

<212> DNA

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oligonucleotide

<400> 1936

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<210> 1937

<211> 39

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<210> 1938

<211> 42

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<400> 1938

tgcggaacat gggatcgcag cctgactcct gggtggttgt tc 42

<210> 1939

<211> 39

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oligonucleotide

<400> 1939

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<210> 1940

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<212> DNA

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oligonucleotide

<400> 1940

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<210> 1941

<211> 36

<212> DNA

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oligonucleotide

<400> 1941

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<210> 1942

<211> 39

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oligonucleotide

<400> 1942

tgcggaacat gggataggag cctgagtgtt caattgttc 39

<210> 1943

<211> 42

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oligonucleotide

<400> 1943

tgcggaacat gggatcgcag cctcagtgtt ctttgggtgt tc 42

<210> 1944

<211> 39

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oligonucleotide

<400> 1944

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<210> 1945

<211> 39

<212> DNA

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oligonucleotide

<400> 1945

tgcggaacat gggatcgcag cctgagtact tgggtgttc 39

<210> 1946

<211> 42

<212> DNA

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oligonucleotide

<400> 1946

tgcggaacat gggatagaag cctgagtact cattgggtgc tc 42

<210> 1947

<211> 42

<212> DNA

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oligonucleotide

<400> 1947

tgcggaacat gggatagaag cctgagtact cattgggtgt tc 42

<210> 1948

<211> 39

<212> DNA

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oligonucleotide

<400> 1948

tgcggaacct gggatcgaag cctgagttct gcggtgttc 39

<210> 1949

<211> 42

<212> DNA

<213> Artificial Sequence

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<400> 1949

tgcggaacat gggacagaag cctgagtccc tcttatgtct tc 42

<210> 1950

<211> 39

<212> DNA

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<400> 1950

tgcggaacat gggataggag cctgagtggt gaggtgttc 39

<210> 1951

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<400> 1951

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<210> 1952

<211> 39

<212> DNA

<213> Artificial Sequence

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oligonucleotide

<400> 1952

tgcggaacat gggatcgcag cctgagtgct gtggcattc 39

<210> 1953

<211> 42

<212> DNA

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oligonucleotide

<400> 1953

tgcggaacat gggataggag cctgagtgcc ggggggggaat tc 42

<210> 1954

<211> 42

<212> DNA

<213> Artificial Sequence

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oligonucleotide

<400> 1954

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<210> 1955

<211> 39

<212> DNA

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 1955

tgcggaacat gggataggag cctgagtgct gcggtgttc 39

<210> 1956

<211> 39

<212> DNA

<213> Artificial Sequence

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oligonucleotide

<400> 1956

tgcggaacat gggataggag cctgagtgct gcactcttc 39

<210> 1957

<211> 33

<212> DNA

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
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<400> 1957

tgcggaacat gggatcgcag cctgagagtg ttc 33

<210> 1958

<211> 36

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oligonucleotide

<400> 1958

tgcggtacat gggacagaag ccttaattgg gtgttc 36

<210> 1959

<211> 39

<212> DNA

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<400> 1959

tgcggaacat gggatcgcag cctgaatgtt tatgtcttc 39

<210> 1960

<211> 39

<212> DNA

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
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<400> 1960

tgcggaacat gggataggag cctgaatgtt ggggtgttc 39

<210> 1961

<211> 36

<212> DNA

<213> Artificial Sequence

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oligonucleotide

<400> 1961

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<210> 1962

<211> 39

<212> DNA

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 1962

tgtggaacat gggatcgcag cctgggtggt tgggtgttc 39

<210> 1963

<211> 42

<212> DNA

<213> Artificial Sequence

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oligonucleotide

<400> 1963

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<210> 1964

<211> 36

<212> DNA

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

oligonucleotide

<400> 1964

tgcggaacat gggatagaag cctgttttgg gtgttc 36

<210> 1965

<211> 39

<212> DNA

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oligonucleotide

<400> 1965

tgcggaacgt gggatcgcag cctggctgct ggggtgttc 39

<210> 1966

<211> 39

<212> DNA

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

oligonucleotide

<400> 1966

tgcggaacat gggataggag gttgagtggt gtcgtattc 39

<210> 1967

<211> 39

<212> DNA

<213> Artificial Sequence

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oligonucleotide

<400> 1967

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<210> 1968

<211> 39

<212> DNA

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 1968

tgcggaacat gggataggag gctgagtgct gtggtattc 39

<210> 1969

<211> 39

<212> DNA

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 1969

tgcggaacat gggatagacg cctgaatgtt gcgttcttc 39

<210> 1970

<211> 36

<212> DNA

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<220><223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 1970

tgtggaacat gggataggag gctgcttgct gttttc 36

<210> 1971

<211> 39

<212> DNA

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<220><223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 1971

tgcggaactt gggataggaa cctgcgcgcc gtggtcttc 39

<210> 1972

<211> 36

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oligonucleotide

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<210> 1973

<211> 39

<212> DNA

<213> Artificial Sequence

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oligonucleotide

<400> 1973

tgcggaacat gggatagagg cccgaatact ggggtattc 39

<210> 1974

<211> 42

<212> DNA

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

oligonucleotide

<400> 1974

tgcggaacat gggatagagg cctgaatact gtttacgtct tc 42

<210> 1975

<211> 42

<212> DNA

<213> Artificial Sequence

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<400> 1975

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<210> 1976

<211> 45

<212> DNA

<213> Artificial Sequence

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oligonucleotide

<400> 1976

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<210> 1977

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<400> 1977

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<210> 1978

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<400> 1978

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<210> 1979

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oligonucleotide

<400> 1979

tgcggaacat gggataacta cctgggtgcg ggggtgttc 39

<210> 1980

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<400> 1980

tgcggaacat gggataacac cgtgagtgcc ccttgggttt tc 42

<210> 1981

<211> 39

<212> DNA

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oligonucleotide

<400> 1981

tgcggaacat gggataacac cctgagtctt tgggtgttc 39

<210> 1982

<211> 39

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oligonucleotide

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oligonucleotide

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oligonucleotide

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oligonucleotide

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oligonucleotide

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<210> 1992

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oligonucleotide

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<212> DNA

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oligonucleotide

<400> 1994

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<210> 1995

<211> 39

<212> DNA

<213> Artificial Sequence

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oligonucleotide

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<210> 1996

<211> 39

<212> DNA

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<210> 1997

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oligonucleotide

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tgcggaacat gggataacga cctgagtggt tggctgttc 39

<210> 1998

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oligonucleotide

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tgcggaacat gggataacga cctgagtgcc tgggtgttc 39

<210> 1999

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oligonucleotide

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tgcggaacat gggatctcac cctgggtggt gtggtgttc 39

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oligonucleotide

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<210> 2001

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oligonucleotide

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<210> 2002

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oligonucleotide

<400> 2002

tgcggaacgt gggatctcag cctggatgct gttgttttc 39

<210> 2003

<211> 27

<212> DNA

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oligonucleotide

<400> 2003

tgcggaacct gggacctgaa ggttttc 27

<210> 2004

<211> 39

<212> DNA

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<210> 2005

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oligonucleotide

<400> 2005

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<210> 2006

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oligonucleotide

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<210> 2007

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oligonucleotide

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<210> 2008

<211> 39

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oligonucleotide

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tgcggaacat gggataagag cctgagtgct ttggttttc 39

<210> 2009

<211> 39

<212> DNA

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

oligonucleotide

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<210> 2010

<211> 39

<212> DNA

<213> Artificial Sequence

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oligonucleotide

<400> 2010

tgcggaacat gggataagag cctgagtgcc gacgtcttc 39

<210> 2011

<211> 39

<212> DNA

<213> Artificial Sequence

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oligonucleotide

<400> 2011

tgcggaacat gggataaacg cctgactatt gtggtcttc 39

<210> 2012

<211> 39

<212> DNA

<213> Artificial Sequence

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oligonucleotide

<400> 2012

tgcggaacat gggataaacg cctgagtgcc tgggtgctc 39

<210> 2013

<211> 39

<212> DNA

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oligonucleotide

<400> 2013

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<210> 2014

<211> 39

<212> DNA

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<400> 2014

tgcggaacat gggatatcac cctgagtggg tttgtcttc 39

<210> 2015

<211> 39

<212> DNA

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

oligonucleotide

<400> 2015

tgcggaacat gggatatcac cttgcatact ggagtattc 39

<210> 2016

<211> 36

<212> DNA

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

oligonucleotide

<400> 2016

tgcggaacat gggatatcag tgtgactgtg gtgttc 36

<210> 2017

<211> 39

<212> DNA

<213> Artificial Sequence

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oligonucleotide

<400> 2017

tgcggaacat gggatatcag tgtgaggggt tatgccttc 39

<210> 2018

<211> 33

<212> DNA

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oligonucleotide

<400> 2018

tgcggaacat gggatatcag ccgttgggtt ttc 33

<210> 2019

<211> 39

<212> DNA

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oligonucleotide

<400> 2019

tgcggaacat gggatatcag cccgagtgct tgggtgttc 39

<210> 2020

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oligonucleotide

<400> 2020

tgcggaacat gggatattag cctgagtgtc tgggtgttc 39

<210> 2021

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oligonucleotide

<400> 2021

tgcggaacat gggatatcag cctgagtgtt gtattc 36

<210> 2022

<211> 39

<212> DNA

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

oligonucleotide

<400> 2022

tgcggaactt gggatatcag cctgagttct gtggtgttc 39

<210> 2023

<211> 39

<212> DNA

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

oligonucleotide

<400> 2023

tgcggaacat gggatatcag cctgagtcac tggttgttc 39

<210> 2024

<211> 39

<212> DNA

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

oligonucleotide

<400> 2024

tgcggaacat gggatatcag tctgagtggt tgggtgttc 39

<210> 2025

<211> 39

<212> DNA

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

oligonucleotide

<400> 2025

tgcggaacat gggatatcag cctgagtggt cgagtgttc 39

<210> 2026

<211> 39

<212> DNA

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic oligonucleotide

<400> 2026

tgcggaacat gggacatcag cctgagtgct tgggcgttc 39

<210> 2027

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<212> DNA

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic oligonucleotide

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tgcggaacat gggatatcag cctgagtgct gtggttttc 39

<210> 2028

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<220><223> Description of Artificial Sequence: Synthetic oligonucleotide

<400> 2028

tgcgggacat gggacatcag cctgagtgct gtgatattc 39

<210> 2029

<211> 36

<212> DNA

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<400> 2029

tgcggaacat gggatatcag cctgagtgct gtgttc 36

<210> 2030

<211> 39

<212> DNA

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oligonucleotide

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<210> 2031

<211> 39

<212> DNA

<213> Artificial Sequence

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oligonucleotide

<400> 2031

tgcggaacat gggatatcag cctgagtgcc ctggtgttc 39

<210> 2032

<211> 39

<212> DNA

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oligonucleotide

<400> 2032

tgcggaacat gggatattag cctgagtgcc catgtcttc 39

<210> 2033

<211> 42

<212> DNA

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oligonucleotide

<400> 2033

tgcggaacat gggatatcag cctgagtgct ggggtggtat tc 42

<210> 2034

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<212> DNA

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oligonucleotide

<400> 2034

tgcggaacat gggatatcag cctgagtgcc ggcccttatg tcttc 45

<210> 2035

<211> 42

<212> DNA

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oligonucleotide

<400> 2035

tgcggcacat gggatatcag cctgagtgct ggaggggtgt tc 42

<210> 2036

<211> 39

<212> DNA

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oligonucleotide

<400> 2036

tgcggaacat gggatatcag cctgagtgct gaggttttc 39

<210> 2037

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<212> DNA

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oligonucleotide

<400> 2037

tgcggaacat gggatatcag cctgagtgct gctgtgttc 39

<210> 2038

<211> 36

<212> DNA

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<400> 2038

tgcggaacat gggatatcag cctgcgtgct gtgttc 36

<210> 2039

<211> 39

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<210> 2040

<211> 39

<212> DNA

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<210> 2041

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<210> 2042

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oligonucleotide

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tgcggaacat gggatatcag cctgcatact tggctgttc 39

<210> 2043

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<212> DNA

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oligonucleotide

<400> 2043

tgcggaacat gggatatccg cctgaccgat gagctgttat tc 42

<210> 2044

<211> 39

<212> DNA

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oligonucleotide

<400> 2044

tgcggaacat gggatatcag actgagcggt tttgttttc 39

<210> 2045

<211> 48

<212> DNA

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oligonucleotide

<400> 2045

tgcggaacat gggatatcaa cctgggtgct gggggccttt atgtcttc 48

<210> 2046

<211> 39

<212> DNA

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oligonucleotide

<400> 2046

tgcggaacat gggatatcat cctgagtgct gaggtattc 39

<210> 2047

<211> 36

<212> DNA

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oligonucleotide

<400> 2047

tgcggaacat gggatcacac cctgagtgct gtcttc 36

<210> 2048

<211> 39

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oligonucleotide

<400> 2048

tgcggaacat gggaccacac tctgcttact gtgttattc 39

<210> 2049

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oligonucleotide

<400> 2049

tgcggaacat gggatcacag cctgactgct gtggtattc 39

<210> 2050

<211> 39

<212> DNA

<213> Artificial Sequence

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oligonucleotide

<400> 2050

tgcggaacct gggatcacag cctgactgct gggatattc 39

<210> 2051

<211> 39

<212> DNA

<213> Artificial Sequence

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oligonucleotide

<400> 2051

tgcggaacat gggatcacag cctgagtgtt gtattattc 39

<210> 2052

<211> 36

<212> DNA

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oligonucleotide

<400> 2052

tgcggaacat gggatcacag cctgagtttg gtattc 36

<210> 2053

<211> 39

<212> DNA

<213> Artificial Sequence

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oligonucleotide

<400> 2053

tgcggaacat gggatcacag cctgtctatt ggggttttc 39

<210> 2054

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oligonucleotide

<400> 2054

tgcggaacat gggatcacag cctgagtgct ggggtgttc 39

<210> 2055

<211> 39

<212> DNA

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oligonucleotide

<400> 2055

tgtggaactt gggatcacag cctgagtgct ttcgtgttc 39

<210> 2056

<211> 39

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<220><223> Description of Artificial Sequence: Synthetic

oligonucleotide

<400> 2056

tgcggaacat gggatcacag tctgagtgct gctgttttc 39

<210> 2057

<211> 36

<212> DNA

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oligonucleotide

<400> 2057

tgcggaacat gggaccacaa tctgcgtgct gtcttc 36

<210> 2058

<211> 39

<212> DNA

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

oligonucleotide

<400> 2058

tgcgggacat gggatttcac cctgagtgtt gggcgcttc 39

<210> 2059

<211> 39

<212> DNA

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 2059

tgcggaacat gggatttcac cctgagtgct cctgtcttc 39

<210> 2060

<211> 42

<212> DNA

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 2060

tgcggaacgt gggatttcag cgtgagtgct gggtgggtgt tc 42

<210> 2061

<211> 39

<212> DNA

<213> Artificial Sequence

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oligonucleotide

<400> 2061

tgcggaacgt gggatttcag tcttactacc tggttattc 39

<210> 2062

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oligonucleotide

<400> 2062

tgcggaacat gggatttcag cctgagtgtt tgggtgttc 39

<210> 2063

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tgcggaacat gggatttcag cctgagtact ggggttttc 39

<210> 2064

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<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

oligonucleotide

<400> 2064

tgcggcacat gggatttcag cctgagtggt gtggtattc 39

<210> 2065

<211> 39

<212> DNA

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

oligonucleotide

<400> 2065

tgcggaacat gggatttcag cctgagtggt ttcgtgttc 39

<210> 2066

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<212> DNA

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

oligonucleotide

<400> 2066

tgcggaacat gggatttcag cctgagtgct ggggtgttc 39

<210> 2067

<211> 39

<212> DNA

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<220><223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 2067

tgcggaacat gggatgaaac cgtgagaggt tgggtgttc 39

<210> 2068

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oligonucleotide

<400> 2068

tgcggaacat gggatgaaag tctgagaagc tgggtgttc 39

<210> 2069

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<212> DNA

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oligonucleotide

<400> 2069

tgcggaactt gggatgagag gcagactgat gagtcctatg tcttc 45

<210> 2070

<211> 42

<212> DNA

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<220><223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 2070

tgcggaacat gggatgagag actcgttgct ggccaggtct tc 42

<210> 2071

<211> 42

<212> DNA

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<220><223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 2071

tgcggaacat gggatgagag actgagtcct ggagcttttt tc 42

<210> 2072

<211> 27

<212> DNA

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 2072

tgcggaacat gggatgagaa ggtgttc 27

<210> 2073

<211> 45

<212> DNA

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oligonucleotide

<400> 2073

tgcggaacct gggatgaagg ccagactact gatttctttg tcttc 45

<210> 2074

<211> 39

<212> DNA

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<400> 2074

tgcggaacat gggatgacac cctggctggt gtggtcttc 39

<210> 2075

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oligonucleotide

<400> 2075

tgcggaacat gggatgacag gctgacttct gcggtcttc 39

<210> 2076

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oligonucleotide

<400> 2076

tgcggaacat gggatgacag actgtttgtt gtggtattc 39

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oligonucleotide

<400> 2077

tgcggaacat gggatgataa cctgagaggt tgggtgttc 39

<210> 2078

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<220><223> Description of Artificial Sequence: Synthetic

oligonucleotide

<400> 2078

tgcggaacat gggatgacaa cctgcgtggt gtcgtgttc 39

<210> 2079

<211> 42

<212> DNA

<213> Artificial Sequence

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oligonucleotide

<400> 2079

tgcggaacct gggatgacaa tttgaatatt ggaagggtgt tc 42

<210> 2080

<211> 39

<212> DNA

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oligonucleotide

<400> 2080

tgcggaacat gggatgacat cctgagtgct gtgatattc 39

<210> 2081

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<213> Artificial Sequence

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oligonucleotide

<400> 2081

tgcggaacat gggatgatat cctgagaggt tgggtgttc 39

<210> 2082

<211> 42

<212> DNA

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 2082

tgcggaacat gggatgccac cctgagtcct gggtggttat tc 42

<210> 2083

<211> 39

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oligonucleotide

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oligonucleotide

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<210> 2103

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oligonucleotide

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oligonucleotide

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oligonucleotide

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oligonucleotide

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<210> 2118

<211> 42

<212> DNA

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oligonucleotide

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oligonucleotide

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<210> 2127

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<210> 2128

<211> 42

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<210> 2130

<211> 33

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<210> 2131

<211> 36

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oligonucleotide

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<210> 2140

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oligonucleotide

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oligonucleotide

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oligonucleotide

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<210> 2148

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oligonucleotide

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oligonucleotide

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<210> 2150

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<210> 2151

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<210> 2152

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<210> 2153

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<210> 2154

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<210> 2155

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oligonucleotide

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oligonucleotide

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oligonucleotide

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<210> 2158

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oligonucleotide

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<210> 2159

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oligonucleotide

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<210> 2160

<211> 42

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oligonucleotide

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oligonucleotide

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tgcggattat gggatgccag cctgagtgct cctacttggg tgttc 45

<210> 2162

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oligonucleotide

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oligonucleotide

<400> 2163

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<210> 2164

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oligonucleotide

<400> 2164

tgcggcatat gggataccag cctgagtgct tgggtgttc 39

<210> 2165

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oligonucleotide

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<210> 2166

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oligonucleotide

<400> 2166

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<210> 2167

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oligonucleotide

<400> 2167

tgtggaatat gggatacgaa tctgggttat ctcttc 36

<210> 2168

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<210> 2169

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oligonucleotide

<400> 2169

tgcggaatat gggatcgcag cctgagtgct tgggtgttt 39

<210> 2170

<211> 39

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oligonucleotide

<400> 2170

tgcggaattc gggataccag gctgagtgtt tatgtcttc 39

<210> 2171

<211> 42

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oligonucleotide

<400> 2171

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<210> 2172

<211> 39

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oligonucleotide

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<210> 2173

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<400> 2173

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<210> 2174

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oligonucleotide

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<210> 2176

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<212> DNA

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<220><223> Description of Artificial Sequence: Synthetic

oligonucleotide

<400> 2176

tgcggagcat ggaacaggcg cctgaatcct cattctcatt gggtgttc 48

<210> 2177

<211> 36

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oligonucleotide

<400> 2177

tgcggagcct ggcacaacaa actgagcgcg gtcttc 36

<210> 2178

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oligonucleotide

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<210> 2179

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oligonucleotide

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<210> 2180

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oligonucleotide

<400> 2180

tgcggagcat gggaaagtag cctgagtgcc ccttatgtct tc 42

<210> 2181

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oligonucleotide

<400> 2181

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<210> 2182

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oligonucleotide

<400> 2182

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<210> 2183

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<400> 2183

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<210> 2184

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<220><223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 2184

tgcggagcat gggattacag cctgactgcc ggagtattc 39

<210> 2185

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<210> 2200

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oligonucleotide

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<210> 2206

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<210> 2208

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<210> 2209

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<210> 2211

<211> 39

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<210> 2212

<211> 39

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oligonucleotide

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<210> 2214

<211> 39

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oligonucleotide

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<210> 2215

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oligonucleotide

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<210> 2216

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<210> 2218

<211> 39

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oligonucleotide

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<210> 2219

<211> 39

<212> DNA

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oligonucleotide

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<210> 2220

<211> 39

<212> DNA

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oligonucleotide

<400> 2220

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<210> 2221

<211> 39

<212> DNA

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<210> 2222

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oligonucleotide

<400> 2224

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<210> 2225

<211> 39

<212> DNA

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oligonucleotide

<400> 2225

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<210> 2226

<211> 36

<212> DNA

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<220><223> Description of Artificial Sequence: Synthetic

oligonucleotide

<400> 2226

tgcggggcat gggatttcag cctgactcct ctcttc 36

<210> 2227

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<212> DNA

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oligonucleotide

<400> 2227

tgcggagcct gggatgacta tcggggtgtg agtatttatg tcttc 45

<210> 2228

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oligonucleotide

<400> 2228

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<210> 2229

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<210> 2230

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<210> 2231

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<210> 2232

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<210> 2233

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<210> 2234

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<210> 2235

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<210> 2237

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<210> 2238

<211> 42

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oligonucleotide

<400> 2238

tgcgaaacat gggataccag cctgagtgac ttttatgtct tc 42

<210> 2239

<211> 36

<212> DNA

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tgcgaaacat gggataccag cctgagtgcc ctcttc 36

<210> 2240

<211> 39

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<210> 2241

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<210> 2242

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<210> 2243

<211> 39

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<210> 2244

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<210> 2245

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oligonucleotide

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<210> 2246

<211> 39

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oligonucleotide

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<210> 2247

<211> 39

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oligonucleotide

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<210> 2248

<211> 39

<212> DNA

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oligonucleotide

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<210> 2249

<211> 39

<212> DNA

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oligonucleotide

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<210> 2250

<211> 39

<212> DNA

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<210> 2251

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<212> DNA

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<400> 2251

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<210> 2253

<211> 39

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<400> 2253

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<210> 2254

<211> 39

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oligonucleotide

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<210> 2255

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<212> DNA

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oligonucleotide

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<210> 2256

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<212> DNA

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oligonucleotide

<400> 2256

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<210> 2257

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<212> DNA

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oligonucleotide

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<210> 2258

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oligonucleotide

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<212> DNA

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oligonucleotide

<400> 2259

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<210> 2260

<211> 39

<212> DNA

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oligonucleotide

<400> 2260

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<210> 2261

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<212> DNA

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oligonucleotide

<400> 2261

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<210> 2262

<211> 39

<212> DNA

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<400> 2262

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<210> 2263

<211> 39

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<210> 2264

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<220><223> Description of Artificial Sequence: Synthetic
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<210> 2265

<211> 39

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<210> 2266

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<210> 2267

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oligonucleotide

<400> 2267

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<210> 2268

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<212> DNA

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oligonucleotide

<400> 2268

tgcgcaacat ggactggtag tttcagaact ggccattatg tcttc 45

<210> 2269

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oligonucleotide

<400> 2269

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<210> 2270

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oligonucleotide

<400> 2270

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<210> 2271

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oligonucleotide

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tgcgcaacat ggcataccag cctgagtatt gtgcagttc 39

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oligonucleotide

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tgcgcaacat ggcatagcac cctgagtgct gatgtgcttt tc 42

<210> 2273

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oligonucleotide

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<210> 2274

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oligonucleotide

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oligonucleotide

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oligonucleotide

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<210> 2277

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oligonucleotide

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<210> 2278

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oligonucleotide

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oligonucleotide

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<210> 2280

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<210> 2281

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<212> DNA

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oligonucleotide

<400> 2281

tgcgcaacat gggagaccag cctgaatctt tatgtcttc 39

<210> 2282

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oligonucleotide

<400> 2282

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<210> 2283

<211> 39

<212> DNA

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 2283

tgcgcgacgt gggagagtac cctaagtgtt gtggttttc 39

<210> 2284

<211> 39

<212> DNA

<213> Artificial Sequence

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oligonucleotide

<400> 2284

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<210> 2285

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<210> 2286

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oligonucleotide

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<210> 2318

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oligonucleotide

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<212> DNA

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<210> 2322

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<210> 2323

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<210> 2324

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<210> 2327

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<210> 2330

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oligonucleotide

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<210> 2331

<211> 42

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oligonucleotide

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<210> 2332

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<212> DNA

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<211> 36

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<210> 2334

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<210> 2335

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oligonucleotide

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<210> 2337

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oligonucleotide

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<210> 2338

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oligonucleotide

<400> 2338

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oligonucleotide

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<210> 2340

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<210> 2344

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<210> 2345

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<210> 2346

<211> 39

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oligonucleotide

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<210> 2348

<211> 42

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oligonucleotide

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<210> 2349

<211> 39

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oligonucleotide

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oligonucleotide

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<210> 2352

<211> 33

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<210> 2353

<211> 39

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<210> 2354

<211> 39

<212> DNA

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<210> 2355

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<211> 39

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<210> 2357

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oligonucleotide

<400> 2357

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<210> 2358

<211> 39

<212> DNA

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oligonucleotide

<400> 2358

tgcgcaacat gggatatcac cctgagtgct gaggtgttc 39

<210> 2359

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<212> DNA

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oligonucleotide

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<210> 2360

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<212> DNA

<213> Artificial Sequence

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oligonucleotide

<400> 2360

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<210> 2361

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<212> DNA

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oligonucleotide

<400> 2361

tgcgcaacat gggatatcag tctgagtcag gtattc 36

<210> 2362

<211> 39

<212> DNA

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<400> 2362

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<210> 2363

<211> 42

<212> DNA

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<220><223> Description of Artificial Sequence: Synthetic oligonucleotide

<400> 2363

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<210> 2364

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<400> 2364

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<210> 2365

<211> 42

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<400> 2365

tgcgcaacat gggatcacag tccgagtgtt ggagaagtct tc 42

<210> 2366

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oligonucleotide

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tgcgcaacat gggatcacag cctgcgtgtt ggggtgttc 39

<210> 2367

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oligonucleotide

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tgcgcaacat gggatcacag cctgaacatt ggggtgttc 39

<210> 2368

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oligonucleotide

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tgcgcaacat gggatcacag cctgggtctt tgggcattc 39

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oligonucleotide

<400> 2369

tgcgccacat gggatcacaa tctgcgtctt gttttc 36

<210> 2370

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oligonucleotide

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tgcgcgactt gggatcacat cctggcttct ggggtgttc 39

<210> 2371

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oligonucleotide

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<210> 2372

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oligonucleotide

<400> 2372

tgcgcaacat gggatttcag cctgagtgct tgggtgttc 39

<210> 2373

<211> 39

<212> DNA

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oligonucleotide

<400> 2373

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<210> 2374

<211> 39

<212> DNA

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oligonucleotide

<400> 2374

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<210> 2375

<211> 39

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<210> 2376

<211> 39

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<400> 2376

tgcgcaacat gggatgcgac cctgaatact ggggtgttc 39

<210> 2377

<211> 39

<212> DNA

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<220><223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 2377

tgcgcaacat gggatgccag cctgagtgtt tggctgctc 39

<210> 2378

<211> 39

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tgcgcgacat gggatgccag cctgagtggt ggggtgttc 39

<210> 2379

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oligonucleotide

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tgcgcaacac gggataccac cctcagcgcc gttctgttc 39

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<211> 39

<212> DNA

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<220><223> Description of Artificial Sequence: Synthetic

oligonucleotide

<400> 2380

tgcgctacat tgggtagtag cctgagtctc tgggtgttc 39

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<212> DNA

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oligonucleotide

<400> 2381

tgcgcaacaa tcgaaactag cctgcctgcc tgggtattc 39

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oligonucleotide

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tgcgcaacag gggacagaag cctgactgtt gaggtattc 39

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oligonucleotide

<400> 2383

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<210> 2384

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<212> DNA

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

oligonucleotide

<400> 2384

tgcgcatcat gggattacag ggggagatct ggttgggtgt tc 42

<210> 2385

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tgcgcatcat gggataccac cctgaatgtt ggggtgttc 39

<210> 2386

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<212> DNA

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oligonucleotide

<400> 2386

tgcgcttcat gggataccac cctgggtttt gtgttattc 39

<210> 2387

<211> 42

<212> DNA

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<220><223> Description of Artificial Sequence: Synthetic

oligonucleotide

<400> 2387

tgcgcatcat gggataccag cctgagtggt ggttatgtct tc 42

<210> 2388

<211> 39

<212> DNA

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

oligonucleotide

<400> 2388

tgcgcatcat gggataccag cctccgtgct ggggtgttc 39

<210> 2389

<211> 39

<212> DNA

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

oligonucleotide

<400> 2389

tgcgcatcat gggataccag cctgggtgct ggggtgttc 39

<210> 2390

<211> 39

<212> DNA

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

oligonucleotide

<400> 2390

tgcgcatcat gggacagagg cctgagtgca gtggtgttc 39

<210> 2391

<211> 39

<212> DNA

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

oligonucleotide

<400> 2391

tgtgctagtt gggataacgt cctgcgtggt gtggtattc 39

<210> 2392

<211> 39

<212> DNA

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oligonucleotide

<400> 2392

tgcgcgtcat gggataacag gctgactgcc gtggttttc 39

<210> 2393

<211> 36

<212> DNA

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

oligonucleotide

<400> 2393

tgcgcatcat gggatgcaag cctgtccgtc gctttc 36

<210> 2394

<211> 39

<212> DNA

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

oligonucleotide

<400> 2394

tgcgcttcgt gggatgccgg cctgagttct tatgtcttc 39

<210> 2395

<211> 39

<212> DNA

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 2395

tgcgcatccg gggataccag cctgagtggt gtgatattc 39

<210> 2396

<211> 39

<212> DNA

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 2396

tgcgcaagat ggcatacgag cctaagtatt tgggtcttc 39

<210> 2397

<211> 45

<212> DNA

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 2397

tgcgcaatat gggataccgg cctgagtcct ggccaagttg ccttc 45

<210> 2398

<211> 39

<212> DNA

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 2398

tgcgcagcat ggcatagcgg cctgggtctc ccggtcttc 39

<210> 2399

<211> 39

<212> DNA

<213

> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

oligonucleotide

<400> 2399

tgcgcagcat gggattacag cctgagtgct ggggtgttc 39

<210> 2400

<211> 39

<212> DNA

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

oligonucleotide

<400> 2400

tgcgcagcct gggatactac cctgcgtgtt aggctgttc 39

<210> 2401

<211> 39

<212> DNA

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

oligonucleotide

<400> 2401

tgcgcagcat gggataccag cctgactgcc tgggttttc 39

<210> 2402

<211> 39

<212> DNA

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

oligonucleotide

<400> 2402

tgcgcagcat gggataccag cttgagtggt ggggtgttc 39

<210> 2403

<211> 42

<212> DNA

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 2403

tgcgcagcat gggataccag cctgagtggc gaggctgtgt tc 42

<210> 2404

<211> 39

<212> DNA

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 2404

tgcgcagcat gggataccag cttgagtggt gcggtgttc 39

<210> 2405

<211> 39

<212> DNA

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 2405

tgcgcagcat gggataccag cctgagtgcc tgggtgttc 39

<210> 2406

<211> 39

<212> DNA

<213
> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 2406

tgcgcagcat gggataccag cctgagtgct ggggtattc 39

<210> 2407

<211> 39

<212> DNA

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 2407

tgcgcagcat gggataccag cctggatact tatgtcttc 39

<210> 2408

<211> 39

<212> DNA

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 2408

tgcgctgcat gggatacccg tctgagtggt gtgttattc 39

<210> 2409

<211> 39

<212> DNA

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 2409

tgcgcagcat gggataccag gctgagtgct ggggtgttc 39

<210> 2410

<211> 39

<212> DNA

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
oligonucleotide

<400> 2410

tgcgcagcat gggatcgcag tctgagtact ggagttttc 39

<210> 2411

<211> 36

<212> DNA

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

oligonucleotide

<400> 2411

tgcgcagcgt gggatatccg ccggtctgtc cttttc 36

<210> 2412

<211> 36

<212> DNA

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

oligonucleotide

<400> 2412

tgcgctgcgt gggatcacac tcagcgtctt tccttc 36

<210> 2413

<211> 42

<212> DNA

<213

> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

oligonucleotide

<400> 2413

tgcgcagcat gggatcacag cctgagtgct ggccaggtgt tc 42

<210> 2414

<211> 39

<212> DNA

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

oligonucleotide

<400> 2414

tgcgcagcag tcgatactgg tctgaaagaa tgggtgttc 39

<210> 2415

<211> 35

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

polypeptide

<220><221> MOD_RES

<222> (15)..(17)

<223> Any amino acid

<400> 2415

Cys Ala Arg Asp Leu Arg Glu Leu Glu Cys Glu Glu Trp Thr Xaa Xaa
1 5 10 15

Xaa Ser Arg Gly Pro Cys Val Asp Pro Arg Gly Val Ala Gly Ser Phe
20 25 30

Asp Val Trp
35

<210> 2416

<211> 24

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<220><221> MOD_RES

<222> (10)..(12)

<223> Any amino acid

<400> 2416

Cys Ala Arg Asp Met Tyr Tyr Asp Phe Xaa Xaa Xaa Glu Val Val Pro
1 5 10 15

Ala Asp Asp Ala Phe Asp Ile Trp
20

<210> 2417

<211> 33

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

polypeptide

<220><221> MOD_RES

<222> (17)..(19)

<223> Any amino acid

<400> 2417

Cys Ala Arg Asp Gly Arg Gly Ser Leu Pro Arg Pro Lys Gly Gly Pro
1 5 10 15
Xaa Xaa Xaa Tyr Asp Ser Ser Glu Asp Ser Gly Gly Ala Phe Asp Ile
20 25 30
Trp

<210> 2418
<211> 21
<212> PRT
<213> Artificial Sequence
<220><223> Description of Artificial Sequence: Synthetic
peptide
<220><221> MOD_RES
<222> (9)..(11)
<223> Any amino acid
<400> 2418
Cys Ala Arg Ala Asn Gln His Phe Xaa Xaa Xaa Gly Tyr His Tyr Tyr

1 5 10 15
Gly Met Asp Val Trp
20
<210> 2419
<211> 23
<212> PRT
<213> Artificial Sequence
<220><223> Description of Artificial Sequence: Synthetic
peptide
<220><221> MOD_RES
<222> (9)..(11)
<223> Any amino acid
<400> 2419
Cys Ala Lys His Met Ser Met Gln Xaa Xaa Xaa Arg Ala Asp Leu Val
1 5 10 15

Gly Asp Ala Phe Asp Val Trp
20

<210> 2420
<211> 43
<212> PRT
<213> Artificial Sequence
<220><223> Description of Artificial Sequence: Synthetic polypeptide
<400> 2420
Cys Ala Lys His Met Ser Met Gln Glu Gly Ala Val Thr Gly Glu Gly
1 5 10 15
Gln Ala Ala Lys Glu Phe Ile Ala Trp Leu Val Lys Gly Arg Val Arg
20 25 30
Ala Asp Leu Val Gly Asp Ala Phe Asp Val Trp
35 40

<210> 2421
<211> 52
<212> PRT
<213> Artificial Sequence
<220><223> Description of Artificial Sequence: Synthetic polypeptide
<400> 2421
Cys Ala Arg Asp Gly Arg Gly Ser Leu Pro Arg Pro Lys Gly Gly Pro
1 5 10 15
Gln Thr Val Gly Glu Gly Gln Ala Ala Lys Glu Phe Ile Ala Trp Leu
20 25 30
Val Lys Gly Gly Leu Thr Tyr Asp Ser Ser Glu Asp Ser Gly Gly Ala
35 40 45

Phe Asp Ile Trp
50
<210> 2422
<211> 44

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
polypeptide

<400> 2422

Cys Ala Lys His Met Ser Met Gln Asp Tyr Leu Val Ile Gly Glu Gly
1 5 10 15

Gln Ala Ala Lys Glu Phe Ile Ala Trp Leu Val Lys Gly Gly Pro Ala
20 25 30

Arg Ala Asp Leu Val Gly Asp Ala Phe Asp Val Trp
35 40

<210> 2423

<211> 43

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
polypeptide

<400> 2423

Cys Ala Lys His Met Ser Met Gln Glu Gly Ala Val Thr Gly Glu Gly
1 5 10 15

Gln Asp Ala Lys Glu Phe Ile Ala Trp Leu Val Lys Gly Arg Val Arg
20 25 30

Ala Asp Leu Val Gly Asp Ala Phe Asp Val Trp
35 40

<210> 2424

<211> 43

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
polypeptide

<400> 2424

Trp Ala Lys His Met Ser Met Gln Glu Gly Ala Val Thr Gly Glu Gly
1 5 10 15

Gln Ala Ala Lys Glu Phe Ile Ala Trp Leu Val Lys Gly Arg Val Arg
20 25 30
Ala Asp Leu Val Gly Asp Ala Phe Asp Val Trp
35 40

<210> 2425
<211> 49
<212> PRT
<213> Artificial Sequence
<220><223> Description of Artificial Sequence: Synthetic polypeptide
<400> 2425
Cys Ala Arg Asp Gly Arg Gly Ser Leu Pro Arg Pro Lys Gly Gly Pro
1 5 10 15
Gln Thr Val Gly Glu Gly Gln Ala Ala Lys Glu Phe Ile Ala Trp Leu
20 25 30
Val Lys Gly Arg Val Arg Ala Asp Leu Val Gly Asp Ala Phe Asp Val
35 40 45

Trp

<210> 2426
<211> 51
<212> PRT
<213> Artificial Sequence
<220><223> Description of Artificial Sequence: Synthetic polypeptide
<400> 2426
Cys Ala Arg Ala Asn Gln His Phe Tyr Glu Gln Glu Gly Thr Phe Thr
1 5 10 15
Ser Asp Val Ser Ser Tyr Leu Glu Gly Gln Ala Ala Lys Glu Phe Ile
20 25 30
Ala Trp Leu Val Lys Gly Gly Ile Arg Gly Tyr His Tyr Tyr Gly Met
35 40 45

Asp Val Trp

50

<210> 2427

<211> 44

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic polypeptide

<400> 2427

Cys Ala Arg Ala Asn Gln His Phe Thr Glu Leu His Gly Glu Gly Gln
1 5 10 15

Ala Ala Lys Glu Phe Ile Ala Trp Leu Val Lys Gly Arg Gly Gln Ile
20 25 30

Asp Ile Gly Tyr His Tyr Tyr Gly Met Asp Val Trp
35 40

<210> 2428

<211> 45

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic polypeptide

<400> 2428

Cys Ala Arg Ala Asn Gln His Phe Leu Gly Ala Gly Val Ser Ser Tyr
1 5 10 15

Leu Glu Gly Gln Ala Ala Lys Glu Phe Ile Ala Trp Leu Val Lys Gly
20 25 30

Asp Thr Thr Gly Tyr His Tyr Tyr Gly Met Asp Val Trp
35 40 45

<210> 2429

<211> 50

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

polypeptide

<400> 2429

Cys Ala Arg Ala Asn Gln His Phe Leu Asp Lys Gly Thr Phe Thr Ser
1 5 10 15

Asp Val Ser Ser Tyr Leu Glu Gly Gln Ala Ala Lys Glu Phe Ile Ala
20 25 30

Trp Leu Val Lys Gly Ile Tyr Pro Gly Tyr His Tyr Tyr Gly Met Asp
35 40 45

Val Trp
50

<210> 2430

<211> 46

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic polypeptide

<400> 2430

Cys Ala Arg Ala Asn Gln His Phe Gly Thr Leu Ser Ala Gly Glu Gly
1 5 10 15

Gln Ala Ala Lys Glu Phe Ile Ala Trp Leu Val Lys Gly Gly Ser Gln
20 25 30

Tyr Asp Ser Ser Glu Asp Ser Gly Gly Ala Phe Asp Ile Trp
35 40 45

<210> 2431

<211> 43

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic polypeptide

<400> 2431

Cys Ala Arg Ala Asn Gln His Phe Gly Leu His Ala Gln Gly Glu Gly
1 5 10 15

Gln Ala Ala Lys Glu Phe Ile Ala Trp Leu Val Lys Gly Ser Gly Thr

20 25 30

Tyr Gly Tyr His Tyr Tyr Gly Met Asp Val Trp

35 40

<210> 2432

<211> 42

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

polypeptide

<400> 2432

Cys Ala Arg Ala Asn Gln His Phe Gly Gly Lys Gly Glu Gly Gln Ala

1 5 10 15

Ala Lys Glu Phe Ile Ala Trp Leu Val Lys Gly Gly Gly Ser Gly Ala

20 25 30

Gly Tyr His Tyr Tyr Gly Met Asp Val Trp

35 40

<210> 2433

<211> 43

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

polypeptide

<400> 2433

Cys Ala Lys Gln Met Ser Met Gln Glu Gly Ala Val Thr Gly Glu Gly

1 5 10 15

Gln Ala Ala Lys Glu Phe Ile Ala Trp Leu Val Lys Gly Arg Val Arg

20 25 30

Ala Asp Leu Val Gly Asp Ala Phe Asp Val Trp

35 40

<210> 2434

<211> 44

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
polypeptide

<400> 2434

Cys Ala Lys His Met Ser Met Gln Glu Gly Ala Val Thr Gly Glu Gly
1 5 10 15

Gln Ala Ala Lys Glu Phe Ile Ala Trp Leu Val Lys Gly Gly Pro Ala
20 25 30

Arg Ala Asp Leu Val Gly Asp Ala Phe Asp Val Trp
35 40

<210
> 2435

<211> 46

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
polypeptide

<400> 2435

Cys Ala Lys His Met Ser Met Gln Glu Gly Ala Val Thr Gly Glu Gly
1 5 10 15

Gln Ala Ala Lys Glu Phe Ile Ala Trp Leu Val Lys Gly Gly Leu Thr
20 25 30

Tyr Asp Ser Ser Glu Asp Ser Gly Gly Ala Phe Asp Ile Trp
35 40 45

<210> 2436

<211> 43

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
polypeptide

<400> 2436

Cys Ala Lys His Met Ser Met Gln Asp Tyr Leu Val Ile Gly Glu Gly
1 5 10 15

Gln Ala Ala Lys Glu Phe Ile Ala Trp Leu Val Lys Gly Arg Val Arg

20 25 30

Ala Asp Leu Val Gly Asp Ala Phe Asp Val Trp

35 40

<210> 2437

<211> 28

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 2437

Cys Ala Met Gln Phe Thr Ser Phe Asp Tyr Ile Trp Gly Ser Tyr Pro

1 5 10 15

Ala Ala Glu Asn Tyr Asn Asn Glu Met Asp Val Trp

20 25

<210> 2438

<211> 11

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 2438

Cys Gln Gln Tyr Ser Ser Phe Pro Ile Thr Phe

1 5 10

<210> 2439

<211> 9

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 2439

Ala Thr Phe Ser Ser Tyr Ala Phe Asn

1 5

<210> 2440

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 2440

Gly Arg Ile Ile Pro Ala Leu Gly Val Thr Asn Tyr Ala

1 5 10

<210> 2441

<211> 12

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 2441

Arg Ala Ser Pro Asn Val Gly Ser Arg Ser Leu Ala

1 5 10

<210> 2442

<211> 7

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 2442

Gly Ala Ser Gly Arg Pro Thr

1 5

<210> 2443

<211> 28

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 2443

Cys Ala Arg Ala Val Tyr Asn Tyr Gly Ser Gly Thr Ser Leu Glu Asp

1 5 10 15

Ser Asp Tyr Tyr Tyr Tyr Tyr Tyr Met Glu Val Trp

20 25

<210> 2444

<211> 10

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2444

Cys Gln Gln Tyr Gly Arg Ser Gln Thr Phe

1 5 10

<210> 2445

<211> 9

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2445

Asp Thr Phe Ser Asp Tyr Ala Ile Thr

1 5

<210> 2446

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2446

Gly Gly Ile Val Pro Ile Phe Gly Thr Ser Lys Lys Ala

1 5 10

<210> 2447

<211> 12

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2447

Arg Ala Ser Gln Ser Val Thr Ser Gly His Leu Ala

1 5 10

<210> 2448

<211> 7

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2448

Gly Ala Ser Ser Arg Ala Thr

1 5

<210> 2449

<211> 27

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2449

Cys Ala Arg Gly Ala Ala Glu Cys Ser Met Gly Val Cys Tyr Thr Arg

1 5 10 15

Ser Asn Tyr Phe Ser Phe Gly Met Asp Val Trp

20 25

<210> 2450

<211> 12

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2450

Cys Gln Gln Tyr Gly Asp Thr Pro Pro Ile Thr Phe

1 5 10

<210> 2451

<211> 9

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2451

Gly Gly Phe Ser Asn Tyr Ala Ile Ser

1 5

<210> 2452

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2452

Gly Gly Thr Ile Pro Ile Phe Asp Thr Thr His Tyr Ala

1 5 10

<210> 2453

<211> 12

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2453

Arg Ala Ser Arg Ser Val Thr Ser Asn Tyr Leu Ala

1 5 10

<210> 2454

<211> 26

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2454

Cys Ala Arg Gly Pro Arg Trp Ala Arg Asp Ile Ala Glu Gly Arg Pro

1 5 10 15

Gly Tyr Tyr His Tyr Tyr Leu Asp Val Trp

20 25

<210> 2455

<211> 11

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2455

Cys Gln Gln Tyr Gly Ser Ser Pro Arg Thr Phe

1 5 10

<210> 2456

<211> 8

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2456

Asp Thr Leu Ser Tyr Ile Ile Thr

1 5

<210> 2457

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2457

Gly Asp Ile Ile Pro Thr Leu Gly Thr Thr Asp Tyr Glu

1 5 10

<210> 2458

<211> 12

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 2458

Arg Ala Ser Gln Thr Val Ser Gly Lys Phe Val Ala

1 5 10

<210> 2459

<211> 7

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 2459

Gly Ala Ser Asn Arg Ala Thr

1 5

<210> 2460

<211> 27

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 2460

Cys Ala Arg Val Asn Cys Ser Ser Thr Ser Cys Tyr Leu Arg Ala Arg

1 5 10 15

Pro Thr Tyr Tyr Tyr Tyr Gly Met Asp Val Trp

20 25

<210> 2461

<211> 11

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 2461

Cys Gln Gln Tyr Gly Ser Ser Pro Leu Thr Phe
1 5 10

<210> 2462

<211> 9

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 2462

Gly Thr Phe Ser Ser Tyr Ala Ile Ser

1 5

<210> 2463

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 2463

Gly Gly Ile Ile Pro Ile Phe Gly Thr Ala Asn Tyr Ala
1 5 10

<210> 2464

<211> 12

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 2464

Arg Ala Ser Gln Ser Val Ser Ser Ser Tyr Leu Ala
1 5 10

<210> 2465

<211> 26

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2465

Cys Ala Ser Gly Leu Leu Tyr Gln Phe Asp Thr Ser Ser Leu Thr Tyr

1 5 10 15

Asn Lys Phe Phe Tyr Gly Met Asp Val Trp

20 25

<210> 2466

<211> 11

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400

> 2466

Cys Gln His Tyr Gly Asp Ser Thr Gly Thr Phe

1 5 10

<210> 2467

<211> 9

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2467

Gly Ser Phe Leu Thr Tyr Ala Ile Ser

1 5

<210> 2468

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2468

Gly Arg Ile Thr Pro Val Asn Gly Lys Ala Asn His Ala

1 5 10

<210> 2469

<211> 12

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2469

Arg Ala Ser Gln Ser Val Ser Asp Thr Ser Ile Ala

1 5 10

<210> 2470

<211> 7

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2470

Ala Ala Ser Thr Arg Val Thr

1 5

<210> 2471

<211> 26

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2471

Cys Ala Ser Gly Pro Leu Tyr Gly Phe Asp Thr Ser Ser Leu Thr Tyr

1 5 10 15

Ser Gln Leu Phe Tyr Gly Met Asp Val Trp

20 25

<210> 2472

<211> 9

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400>

2472

Gly Thr Leu Val Thr His Ala Ile Thr

1 5

<210> 2473

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 2473

Gly Arg Ile Thr Pro Ile Asn Gly Lys Ala Asn His Ala

1 5 10

<210> 2474

<211> 12

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 2474

Arg Ala Ser Gln Ser Val Arg Ser Thr Ser Ile Ala

1 5 10

<210> 2475

<211> 7

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 2475

Ala Ala Ser Thr Arg Ala Thr

1 5

<210> 2476

<211> 25

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2476

Cys Ala Thr Gln Ser Thr Asn Asp Glu Tyr Asp Gly Leu Leu Gly Asp

1 5 10 15

Asp Ser Tyr Tyr Phe Met Asp Val Trp

20 25

<210> 2477

<211> 10

<212> PRT

<213> Artificial Sequence

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peptide

<400> 2477

Cys Gln Gln Tyr Gly Thr Thr His Thr Phe

1 5 10

<210> 2478

<211> 9

<212> PRT

<213> Artificial Sequence

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peptide

<400> 2478

Gly Ile Phe Ser Asn Phe Gly Val Ser

1 5

<210> 2479

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2479

Gly Gly Ile Phe Pro Leu Gly Gly Ile Pro Ser Tyr Ala

1 5 10

<210> 2480

<211> 12

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2480

Arg Ala Ser Gln Ser Phe Ser Asp Val Tyr Leu Ala

1 5 10

<210> 2481

<211> 7

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2481

Ala Thr Ser Ser Arg Ala Pro

1 5

<210> 2482

<211> 25

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2482

Cys Ala Val Ala Phe Asn Asn Asp Tyr Leu Arg Gly Asn Tyr Arg Ser

1 5 10 15

Pro Gly Arg Ser Trp Leu Glu Ser Trp

20 25

<210> 2483

<211> 10

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 2483

Cys Gln Gln Tyr Gly Thr Ser Pro Thr Phe

1 5 10

<210> 2484

<211> 13

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<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 2484

Gly Gly Ile Ile Pro Ile Phe Gly Ser Ala Asp Tyr Ala

1 5 10

<210> 2485

<211> 12

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 2485

Arg Ala Ser Gln Ser Ile Ser Ser Thr Ser Leu Ala

1 5 10

<210> 2486

<211> 27

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
peptide

<400> 2486

Cys Ala Gly Gly Lys His His Arg Arg Ile Val Val Glu Asn Ala Ile
1 5 10 15

Ser Tyr Asp Tyr Tyr Tyr Gly Met Asp Val Trp
20 25

<210> 2487

<211> 12

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
peptide

<400> 2487

Cys Met Gln Ala Leu Gln Thr Pro Pro Tyr Thr Phe
1 5 10

<210> 2488

<211> 9

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
peptide

<400> 2488

Gly Leu Phe Tyr Ser Tyr Gly Ile Asn

1 5

<210> 2489

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
peptide

<400> 2489

Gly Gly Ile Ile Pro Phe Leu Gly Pro Ala Asn Tyr Ala

1 5 10

<210> 2490

<211> 16

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 2490

Arg Ser Ser Gln Ser Leu Gln His Ser Asn Gly Asn Asn Tyr Leu Asp

1 5 10 15

<210> 2491

<211> 7

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 2491

Leu Gly Ser Asn Arg Ala Ser

1 5

<210> 2492

<211> 26

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 2492

Cys Ala Arg Asp Arg Gly Gln Tyr Ser Tyr Val Trp Gly Ser Tyr Arg

1 5 10 15

Tyr Leu Glu Tyr Tyr Gly Met Asp Val Trp

20 25

<210> 2493

<211> 12

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2493

Cys Met Gln Ala Leu Gln Thr Pro Arg Leu Thr Phe

1 5 10

<210> 2494

<211> 9

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2494

Gly Thr Phe Ser Thr Tyr Gly Ile Asn

1 5

<210> 2495

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2495

Gly Gly Ile Ile Pro Leu Phe Asn Ile Thr Ile His Ala

1 5 10

<210> 2496

<211> 16

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2496

Arg Ser Ser Gln Ser Leu Leu His Ser Asn Gly Asn Asn Tyr Leu Asp

1 5 10 15

<210> 2497

<211> 26

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2497

Cys Ala Arg Asp Arg Ser Val Arg Gly Val Val Ser Glu Val Ser Pro

1 5 10 15

Pro His Phe His His Gly Met Asp Val Trp

20 25

<210> 2498

<211> 11

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2498

Cys Met Gln Ala Leu Gln Thr Pro Trp Thr Phe

1 5 10

<210> 2499

<211> 9

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2499

Ala Ser Phe Gln Ser Tyr Thr Ile Asn

1 5

<210> 2500

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
peptide

<400> 2500

Gly Arg Ile Thr Pro Leu Leu Gly Ser Ile His Leu Ala
1 5 10

<210> 2501

<211> 16

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
peptide

<400> 2501

Arg Ser Ser Gln Ser Leu Arg His Ser Asn Gly His His Tyr Val Asp
1 5 10 15

<210> 2502

<211> 7

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
peptide

<400> 2502

Ser Ala Ser Asn Arg Ala Ser
1 5

<210> 2503

<211> 32

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
polypeptide

<400> 2503

Cys Ala Arg Trp Ser Arg Trp Lys Gln Ala Gly Ala Thr Ser Val Gly
1 5 10 15

Ala Lys Pro Pro Gly Asn Gln Arg Phe Tyr Tyr Gly Met Asp Val Trp

20 25 30

<210> 2504

<211> 11

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 2504

Cys Met Gln Ala Leu Gln Pro Ala His Thr Phe

1 5 10

<210> 2505

<211> 9

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 2505

Gly Thr Phe Ser Thr Tyr Ser Leu Ser

1 5

<210> 2506

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 2506

Gly Met Val Ile Pro Ala Leu Arg Ile Thr Asn Leu Ala

1 5 10

<210> 2507

<211> 16

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2507

Lys Ser Ser Gln Ser Leu Leu Asp Ser Asn Gly Tyr Asn Tyr Leu Asp

1 5 10 15

<210> 2508

<211> 29

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2508

Cys Ala Ser Ala Val Val Ile Asp Ile Pro Gly Lys Pro Gly Lys Ser

1 5 10 15

Arg Gly Asn Phe Gly Phe Tyr Tyr Gly Leu Asp Val Trp

20 25

<210> 2509

<211> 12

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2509

Cys Met Gln Ala Leu Gln Thr Pro Met Tyr Thr Phe

1 5 10

<210> 2510

<211> 9

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2510

Gly Thr Phe Ser Asn Tyr Ala Ile Thr

1 5

<210> 2511

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 2511

Gly Gly Ile Ile Pro Leu Phe Asp Val Thr Lys Ser Ser

1 5 10

<210> 2512

<211> 16

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 2512

Arg Ser Ser Gln Ser Leu Leu His Ser Ser Gly Tyr Asn His Leu Asp

1 5 10 15

<210> 2513

<211> 7

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 2513

Leu Ala Ser Asn Arg Ala Ser

1 5

<210> 2514

<211> 29

<212> PRT

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<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 2514

Cys Ala Ser Ala Val Val Ile Glu Ile Pro Gly Lys Pro Gly Lys Thr

1 5 10 15

Arg Gly Asn Phe Gly Tyr Tyr Tyr Gly Leu Asp Val Trp

20 25

<210> 2515

<211> 12

<212> PRT

<213> Artificial Sequence

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peptide

<400> 2515

Cys Met Gln Ala Leu Gln Asn Pro Met Tyr Thr Phe

1 5 10

<210> 2516

<211> 9

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2516

Gly Thr Phe Thr Asn Tyr Gly Ile Ser

1 5

<210> 2517

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2517

Gly Ala Ile Ile Pro Leu Phe Asp Thr Ile Arg Ser Ala

1 5 10

<210> 2518

<211> 16

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2518

Arg Ser Ser Gln Ser Leu Leu His Ser Ser Gly Tyr Asn Tyr Leu Asp

1 5 10 15

<210> 2519

<211> 25

<212> PRT

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<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2519

Cys Ala Ser Leu Pro Asp Ser Ser Asp Trp Tyr Val Ser Ser Pro Gly

1 5 10 15

Gly Glu Tyr Tyr Gly Leu Asp Val Trp

20 25

<210> 2520

<211> 11

<212> PRT

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<400> 2520

Cys Met Gln Ala Leu Gln Thr Pro Pro Thr Phe

1 5 10

<210> 2521

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2521

Gly Gly Ile Ile Pro Val Phe Gly Thr Val His Tyr Ala

1 5 10

<210> 2522

<211> 16

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 2522

Arg Ser Ser Gln Ser Leu Leu His Ser Asn Gly Tyr Asn Tyr Leu Asp

1 5 10 15

<210> 2523

<211> 26

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 2523

Cys Ala Gly Gly Ile Trp Ala Gly Glu Leu Tyr Pro Ser Leu Pro Gly

1 5 10 15

Tyr Tyr Tyr Asn Tyr Gly Met Asp Val Trp

20 25

<210> 2524

<211> 11

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 2524

Cys His Gln Tyr Tyr Ser Ser Pro Tyr Ser Phe

1 5 10

<210> 2525

<211> 9

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2525

Asp Thr Phe Ser Arg Tyr Ser Ile Ile

1 5

<210> 2526

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2526

Gly Gly Ile Ile Pro Met Ser Ala Thr Ala Asn Tyr Ala

1 5 10

<210> 2527

<211> 17

<212> PRT

<213> Artificial Sequence

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peptide

<400> 2527

Lys Ser Ser Gln Thr Ile Leu Tyr Ser Leu Asn Asn Lys Asn Tyr Leu

1 5 10 15

Ala

<210> 2528

<211> 7

<212> PRT

<213> Artificial Sequence

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peptide

<400> 2528

Trp Ala Ser Thr Arg Gly Ser

1 5

<210> 2529

<211> 25

<212> PRT

<213> Artificial Sequence

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peptide

<400> 2529

Cys Ala Arg Asp Ser His Asp Leu Thr Leu Val Gly Gly Val Ile Asp

1 5 10 15

Tyr His Tyr Tyr Gly Met Asp Val Trp

20 25

<210> 2530

<211> 11

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2530

Cys Gln Gln Tyr Phe Ser Thr Pro Pro Thr Phe

1 5 10

<210> 2531

<211> 9

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2531

Gly Thr Phe Ser Thr Tyr Val Ile Thr

1 5

<210> 2532

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2532

Gly Arg Val Ile Pro Thr Leu Asp Lys Ala Asp Tyr Ala

1 5 10

<210> 2533

<211> 17

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<213> Artificial Sequence

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peptide

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Lys Ser Ser Gln Ser Ile Leu His Ser Ser Ser Ser Lys Ser Tyr Leu

1 5 10 15

Thr

<210> 2534

<211> 7

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2534

Trp Ala Ser Thr Arg Glu Ser

1 5

<210> 2535

<211> 27

<212> PRT

<213> Artificial Sequence

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peptide

<400> 2535

Cys Ala Arg Glu Arg Thr Asp Thr Ser Gly Asp Ile Gly Asp Ser Asn

1 5 10 15

Leu Tyr Tyr Tyr Tyr Tyr Gly Met Asp Val Trp

20 25

<210> 2536

<211> 11

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2536

Cys Gln Gln Tyr Tyr Asn Ser Pro Arg Thr Phe

1 5 10

<210> 2537

<211> 9

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2537

Asp Thr Phe Ser Arg His Ala Ile Ser

1 5

<210> 2538

<211> 13

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<400> 2538

Gly Gly Ile Ile Pro Ile Tyr Asp Ala Ala Asn Tyr Ala

1 5 10

<210> 2539

<211> 17

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
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<400> 2539

Lys Ala Ser Gln Ser Val Leu His Ser Ser Asn His Lys Asn Tyr Leu

1 5 10 15

Gly

<210> 2540

<211> 28

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
peptide

<400> 2540

Cys Ala Arg Gly Glu Asp Leu Lys Lys Asp Ser Ser Gly His Tyr Tyr

1 5 10 15

Trp Asp Arg Ile Pro Tyr Ser Tyr Phe Asp Ser Trp

20 25

<210> 2541

<211> 11

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
peptide

<400> 2541

Cys Gln Gln Tyr Tyr Ile Thr Pro Gln Thr Phe

1 5 10

<210> 2542

<211> 9

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2542

Gly Thr Phe Asn Thr Tyr Ala Ile Ser

1 5

<210> 2543

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2543

Gly Gly Ile Leu Pro Ile Phe Gly Lys Pro Asp Tyr Ala

1 5 10

<210> 2544

<211> 17

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2544

Lys Ser Ser Gln Ser Leu Phe Tyr Ser Ser Asn Asn Lys Thr Tyr Leu

1 5 10 15

Ala

<210> 2545

<211> 27

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2545

Cys Ala Arg Gly Gly Phe Ser Pro Arg Ile Thr Met Val Arg Glu Ile

1 5 10 15

Ile Ser Tyr Tyr Tyr Tyr Tyr Met Asp Val Trp

20 25

<210> 2546

<211> 10

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2546

Cys Gln Gln Tyr Tyr Ser Leu Pro Thr Phe

1 5 10

<210> 2547

<211> 9

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2547

Gly Thr Phe Ser Gly His Ala Ile Ser

1 5

<210> 2548

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2548

Gly Gly Ile Ile Pro Leu Phe Asp Thr Ser Asn Tyr Ala

1 5 10

<210> 2549

<211> 17

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
peptide

<400> 2549

Lys Ser Ser Gln Ser Val Leu Tyr Ser Ser Asn Asn Lys Asn Tyr Leu
1 5 10 15

Ala

<210> 2550

<211> 26

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
peptide

<400> 2550

Cys Ala Lys Ala Met Gly Cys Ser Gly Thr Thr Cys Ser Val Ser Trp
1 5 10 15

Gly Tyr Tyr Phe Tyr Ala Leu Asp Val Trp
20 25

<210> 2551

<211> 11

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
peptide

<400> 2551

Cys Met Gln Ala Leu Gln Thr Pro Tyr Thr Phe
1 5 10

<210> 2552

<211> 9

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
peptide

<400> 2552

Phe Thr Leu Ser Gly Tyr Gly Met His

1 5

<210> 2553

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
peptide

<400> 2553

Ala Val Ile Ser Pro Asn Gly Ser Asn Lys Tyr Tyr Ala

1 5 10

<210> 2554

<211> 16

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
peptide

<400> 2554

Arg Ser Ser Gln Ser Leu Leu Tyr Ala Asn Arg Tyr Asn Tyr Leu Asp

1 5 10 15

<210> 2555

<211> 27

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
peptide

<400> 2555

Cys Ala Lys Asp Arg Ala Arg Glu Asp Leu Arg Phe Leu Asp Trp Pro

1 5 10 15

Ser Thr Pro Pro His Tyr Asp Met Asp Val Trp

20 25

<210> 2556

<211> 11

<212> PRT

<213> Artificial Sequence

<220

><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2556

Cys Met Gln Ala Leu Gln Thr Pro Leu Thr Phe

1 5 10

<210> 2557

<211> 9

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2557

Phe Ser Phe Lys Asn Phe Ala Met His

1 5

<210> 2558

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2558

Ser Leu Ile Ser Tyr Asp Gly Lys Lys Lys Ser Tyr Val

1 5 10

<210> 2559

<211> 16

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2559

Arg Ser Ser Gln Ser Leu Leu Glu Ser Asn Gly Tyr Asn Tyr Leu Asn

1 5 10 15

<210> 2560

<211> 30

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

polypeptide

<400> 2560

Cys Ala Lys Gly Glu Glu Asn Leu Val Leu Ser Pro Ala Lys Ile Tyr

1 5 10 15

Pro Arg Lys Ser Ala Ser Ile His Tyr Ala Leu Asp Val Trp

20 25 30

<210> 2561

<211> 9

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2561

Val Thr Phe Ser Gly Phe Gly Leu His

1 5

<210

> 2562

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2562

Ala Leu Ile Ser Asn Asp Gly Asn Ile Lys His Phe Ala

1 5 10

<210> 2563

<211> 7

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 2563

Leu Gly Ser Thr Arg Ala Ser

1 5

<210> 2564

<211> 30

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic polypeptide

<400> 2564

Cys Ala Lys Gly Glu His Leu Val Val Leu Ser Pro Ala Lys Ile Tyr

1 5 10 15

Pro Arg Lys Ser Ala Ser Ile His Tyr Ala Leu Asp Val Trp

20 25 30

<210> 2565

<211> 9

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 2565

Val Ser Phe Ser Ala Tyr Gly Leu His

1 5

<210> 2566

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2566

Ala Leu Ile Ser Ser Asp Gly Ser Phe Thr Gln Tyr Gly

1 5 10

<210> 2567

<211> 16

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2567

Arg Ser Ser Gln Ser Leu Leu His Ser Asn Gly Tyr Asn Tyr Val Asp

1 5 10 15

<210> 2568

<211> 25

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2568

Cys Ala Lys Gly Gly Asp Cys Ser Ser Ala Ser Cys Asn Ala Gly Val

1 5 10 15

Tyr Tyr Tyr Tyr Gly Met Asp Val Trp

20 25

<210> 2569

<211> 10

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2569

Cys Met Gln Thr Leu Glu Ile Pro Thr Phe

1 5 10

<210> 2570

<211> 9

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 2570

Phe Ser Val Ser Ser Tyr Ala Met Asn

1 5

<210> 2571

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 2571

Ser Val Ile Ser Tyr Asp Gly Arg Ser Glu His Tyr Val

1 5 10

<210> 2572

<211> 16

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 2572

Arg Ser Ser Gln Ser Leu Leu Ser Arg Asn Lys Tyr Ile Tyr Leu Asp

1 5 10 15

<210> 2573

<211> 7

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 2573

Phe Gly Ser Asn Arg Ala Ser

1 5

<210> 2574

<211> 26

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 2574

Cys Ala Arg Ala Leu Gly Cys Gly Gly Thr Ser Cys Ser Val Ser Trp
1 5 10 15

Gly Tyr Tyr Tyr Tyr Ala Leu Glu Val Trp
20 25

<210> 2575

<211> 11

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 2575

Cys Met Gln Ala Leu Gln Ser Pro Tyr Thr Phe
1 5 10

<210> 2576

<211> 13

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<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 2576

Ala Val Ile Ser Pro Asn Gly Asn Asn Lys Tyr Tyr Ala
1 5 10

<210> 2577

<211> 16

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<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2577

Arg Ser Ser Gln Ser Leu Leu Tyr Arg Asn Arg Tyr Asn Tyr Leu Asp

1 5 10 15

<210> 2578

<211> 25

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2578

Cys Ala Arg Gly Ser Arg Met Ala His Cys Leu Ser Thr Ser Cys Ser

1 5 10 15

His Tyr Tyr Tyr Gly Met Asp Val Trp

20 25

<210>

2579

<211> 11

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2579

Cys Met Gln Thr Leu Glu Thr Pro Leu Ile Phe

1 5 10

<210> 2580

<211> 9

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2580

Phe Met Phe Asn Met Tyr Gly Ile His

1 5

<210> 2581

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2581

Ala Leu Ile Ser His Asp Gly Asn Asn Lys Tyr Tyr Ala

1 5 10

<210> 2582

<211> 26

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2582

Cys Gly Arg Gly Ile Gly Gly Gln Cys Asn Ser Pro Thr Cys Tyr Pro

1 5 10 15

Pro Gly Gly Tyr Tyr Gly Leu Glu Val Trp

20 25

<210> 2583

<211> 11

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2583

Cys Met Gln Ser Leu Gln Thr Pro Pro Thr Phe

1 5 10

<210> 2584

<211> 9

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 2584

Phe Thr Phe Ser Asn Tyr Pro Met His
1 5

<210> 2585

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 2585

Ala Val Ile Ser Tyr Asp Gly Asn Ile Lys Tyr Tyr Ala
1 5 10

<210> 2586

<211> 25

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 2586

Cys Ala Lys Asp Leu Gly Val Gln Asp Tyr Gly Phe Trp Ser Gly Tyr
1 5 10 15

Asn Tyr Phe Tyr Gly Met Asp Val Trp
20 25

<210> 2587

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
peptide

<400> 2587

Cys Ser Ser Tyr Thr Gly Ser Ser Thr Leu Val Val Phe
1 5 10

<210> 2588

<211> 9

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
peptide

<400> 2588

Phe Ala Phe Ser Thr Tyr Ala Met His
1 5

<210> 2589

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
peptide

<400> 2589

Thr Leu Thr Ser Tyr Asp Gly Ser Glu Lys Tyr Tyr Gly
1 5 10

<210> 2590

<211> 14

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
peptide

<400> 2590

Thr Gly Thr Ser Ser Asp Val Gly Gly Ser Asn Phe Val Ser
1 5 10

<210> 2591

<211> 7

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2591

Glu Val Thr Asn Arg Pro Ser

1 5

<210> 2592

<211> 34

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

polypeptide

<400> 2592

Cys Ala Arg Ala Leu Pro Ser Pro Lys Lys Ile Lys Val Gly Val Pro

1 5 10 15

Ser Leu Phe Thr Thr Thr Thr Thr Val Val Tyr Tyr Tyr Ile Met Asp

20 25 30

Val Trp

<210> 2593

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2593

Cys Asn Ser Tyr Ile Gly Ser Arg Asn Leu Val Ile Phe

1 5 10

<210> 2594

<211> 9

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
peptide

<400> 2594

Phe Thr Phe Ser Ser Tyr Thr Phe Tyr

1 5

<210> 2595

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
peptide

<400> 2595

Ala Asp Ile Ser Asp Asp Gly Thr Asn Lys Tyr Tyr Ala

1 5 10

<210> 2596

<211> 14

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
peptide

<400> 2596

Thr Gly Ile Ser Ser Asp Val Gly Asp Tyr Ser Cys Val Ser

1 5 10

<210> 2597

<211> 7

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
peptide

<400> 2597

Asp Val Thr Asn Arg Pro Ser

1 5

<210> 2598

<211> 28

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2598

Cys Ala Arg Asp Phe Lys Thr Ile Glu Tyr Tyr Asp Met Leu Ser Gly

1 5 10 15

Ser Ser Ile His Tyr His Tyr Leu Met Asp Val Trp

20 25

<210> 2599

<211> 12

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2599

Cys Ser Ser Tyr Lys Asp Thr Asn Ser Leu Val Phe

1 5 10

<210> 2600

<211> 9

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2600

Phe Thr Phe Ser Asp Tyr Ala Leu His

1 5

<210> 2601

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2601

Ala Val Ile Ser Tyr Asp Gly Ala Tyr Glu Tyr Tyr Ala

1 5 10

<210> 2602

<211> 14

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2602

Ser Gly Ser Ser Ser Asp Ile Gly Gly Tyr Asn Tyr Val Ser

1 5 10

<210> 2603

<211> 7

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2603

Asp Val Arg Asp Arg Pro Ser

1 5

<210> 2604

<211> 26

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2604

Cys Ala Arg Asp His Pro Ser Ile Thr Leu Ile Val Val Val Phe His

1 5 10 15

Thr Ala Thr Gly Tyr Ala Met Asp Ala Trp

20 25

<210> 2605

<211> 12

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 2605

Cys Ala Ser Tyr Thr Thr Ser Ser Thr Leu Leu Phe
1 5 10

<210> 2606

<211> 9

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 2606

Phe Thr Phe Ser Glu His Ala Ile His
1 5

<210> 2607

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 2607

Ala Val Ile Ser Asn Asn Gly Ile Asn Lys Tyr Tyr Ala
1 5 10

<210> 2608

<211> 14

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 2608

Thr Gly Thr Ser Ser Asp Ile Gly Gly Tyr Lys Tyr Val Ser

1 5 10

<210> 2609

<211> 7

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 2609

Glu Val Ser Asn Arg Pro Ala

1 5

<210> 2610

<211> 26

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 2610

Cys Ala Arg Asp His Pro Ser Leu Thr Leu Ile Val Val Val Phe His

1 5 10 15

Thr Ala Thr Gly Tyr Thr Leu Asp Val Trp

20 25

<210> 2611

<211> 12

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 2611

Cys Ser Ser Tyr Thr Ser Ser Ser Thr Leu Leu Phe

1 5 10

<210> 2612

<211> 9

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 2612

Phe Ser Phe Lys Glu Tyr Ala Met His
1 5

<210> 2613

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 2613

Ala Val Ile Ser Asn Thr Gly Ile Asn Lys Tyr Tyr Ala
1 5 10

<210> 2614

<211> 14

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 2614

Thr Gly Thr Ser Gly Asp Val Gly Ala Tyr Asn Tyr Val Ser
1 5 10

<210> 2615

<211> 7

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 2615

Glu Val Ser Asn Arg Pro Ser

1 5

<210> 2616

<211> 32

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic polypeptide

<400> 2616

Cys Ala Arg Gly Asp Thr Ala Tyr Cys Thr Ser Thr Asn Cys Val Thr
1 5 10 15

Gly Asp Asp Phe Trp Ile Gly Tyr Tyr Pro Gly Ala Leu Asp Tyr Trp
20 25 30

<210> 2617

<211> 15

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 2617

Cys Thr Ser Cys Thr Ser Cys Thr Thr Thr Ser Thr Val Val Phe
1 5 10 15

<210> 2618

<211> 9

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 2618

Phe Thr Phe Lys Asn Tyr Gly Val His

1 5

<210> 2619

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
peptide

<400> 2619

Gly Val Ile Trp Tyr Asp Gly Arg Asn Thr His Tyr Ala
1 5 10

<210> 2620

<211> 14

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
peptide

<400> 2620

Thr Gly Thr Ser Ser Asp Val Gly Gly Tyr Asp Tyr Val Ser
1 5 10

<210> 2621

<211> 26

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
peptide

<400> 2621

Cys Ala Arg Tyr Asp Cys Arg Gly Gly Thr Cys Tyr Gly Asn Trp Arg
1 5 10 15

Asp Tyr Tyr Tyr Phe Ala Met Asp Val Trp
20 25

<210> 2622

<211> 12

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
peptide

<400

> 2622

Cys His Ser Tyr Thr Gly Pro Asn Thr Leu Glu Phe

1 5 10

<210> 2623

<211> 9

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 2623

Phe Thr Leu Thr Lys His Ser Met His

1 5

<210> 2624

<211> 12

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 2624

Ala Thr Ile Ser Tyr His Gly Ser His Glu Tyr Val

1 5 10

<210> 2625

<211> 14

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 2625

Thr Gly Ala Ile Arg Asp Val Gly Gly Asn Asn Tyr Val Ser

1 5 10

<210> 2626

<211> 7

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2626

Glu Val Asp Asn Arg Pro Ser
1 5

<210> 2627

<211> 25

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2627

Cys Ala Lys Asp Asn Gln Tyr Tyr Asp Met Trp Ser Ser Phe Tyr Thr
1 5 10 15

Tyr Phe Tyr His Tyr Met Asp Val Trp
20 25

<210> 2628

<211> 11

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2628

Cys Gln Tyr Tyr Gly Gly Ala Pro Tyr Ile Phe
1 5 10

<210> 2629

<211> 9

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2629

Phe Ser Phe Ser Ser Tyr Gly Ile His
1 5

<210> 2630

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 2630

Ala Val Ile Ser Tyr Asp Gly Lys Asn Lys Asn Tyr Ala

1 5 10

<210> 2631

<211> 12

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 2631

Arg Ala Ser Gln Thr Leu Ala Thr Thr Ser Leu Ala

1 5 10

<210> 2632

<211> 27

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 2632

Cys Ala Arg Asp Ala Pro Tyr Cys Ser Gly Gly Ser Cys Tyr Glu Leu

1 5 10 15

Arg Asp Tyr Tyr Phe Tyr Gly Met Asp Val Trp

20 25

<210> 2633

<211> 11

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2633

Cys Gln Gln Tyr Gly Arg Ser Ser Ile Thr Phe

1 5 10

<210> 2634

<211> 9

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2634

Phe Thr Phe Asn Asn Ser Gly Met His

1 5

<210> 2635

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2635

Ala Val Ile Trp Tyr Asp Gly Ser Tyr Thr Asp Tyr Val

1 5 10

<210> 2636

<211> 12

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2636

Arg Ala Ser Gln Ser Val Gly Arg Thr Ser Leu Ala

1 5 10

<210> 2637

<211> 7

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2637

Gly Thr Ser Asn Arg Ala Thr

1 5

<210> 2638

<211> 29

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2638

Cys Ala Arg Asp Leu Ser Trp Glu Ser Asp Asn Phe Trp Ser Ala Leu

1 5 10 15

Val Arg Lys Gln Glu Asp Tyr Ser Gly Leu Asp Val Trp

20 25

<210> 2639

<211> 12

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2639

Cys Gln His Tyr Gly Ser Ser Pro Leu Phe Ile Phe

1 5 10

<210> 2640

<211> 9

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2640

Phe Thr Phe Ser Arg Tyr Gly Met Asn

1 5

<210> 2641

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2641

Ala Val Val Trp Phe Asp Gly Ser Asn Lys Tyr Tyr Ala

1 5 10

<210> 2642

<211> 12

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2642

Arg Thr Ser Gln Ser Val Ser Ser Ser Tyr Val Ala

1 5 10

<210> 2643

<211> 7

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2643

Ala Ala Ser Arg Arg Ala Thr

1 5

<210> 2644

<211> 26

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2644

Cys Ala Arg Asp Val Gly Arg Ile Gly Ser Phe Ala Leu Phe Gly Met

1 5 10 15

Val Val Ala Thr Asn Tyr Phe Asp Phe Trp

20 25

<210> 2645

<211> 11

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2645

Cys Gln Gln Tyr Asp Lys Ser Pro Trp Thr Phe

1 5 10

<210> 2646

<211> 9

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2646

Phe Ile Phe Ser Gly His Ala Met His

1 5

<210> 2647

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2647

Ser Met Ile Ser Asp Asn Gly Ile Asn Lys Leu Tyr Ser

1 5 10

<210> 2648

<211> 12

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2648

Arg Ala Ser Gln Ser Val Thr Asn Asn Tyr Leu Ala

1 5 10

<210> 2649

<211> 7

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2649

Gly Val Ser Ser Arg Ala Ala

1 5

<210> 2650

<211> 25

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2650

Cys Ala Arg Glu Glu Thr Ser Arg Ile Ala Ala Ile Gly Gly Val Thr

1 5 10 15

His Tyr Tyr Tyr Gly Met Asp Val Trp

20 25

<210> 2651

<211> 11

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 2651

Cys Gln Gln Tyr Gly Asp Ser Pro Arg Thr Phe
1 5 10

<210> 2652

<211> 9

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 2652

Phe Thr Phe Gly Ser Tyr Ala Met Asn
1 5

<210> 2653

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 2653

Ala Leu Ile Glu Tyr Asp Gly Ser Asn Lys Tyr Tyr Thr
1 5 10

<210> 2654

<211> 12

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 2654

Arg Ala Ser Gln Ser Val Ala Ser Thr Tyr Leu Ala

1 5 10

<210> 2655

<211> 25

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2655

Cys Ala Arg Gly Ala Pro Gly Gly His Thr Ala Met Val Gly Tyr Phe

1 5 10 15

Tyr Tyr Tyr Tyr Gly Met Asp Val Trp

20 25

<210> 2656

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2656

Cys Gln Gln Tyr Gly Asn Ser Pro Pro Val Tyr Thr Phe

1 5 10

<210> 2657

<211> 9

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2657

Phe Thr Phe Ser Ser Tyr Ala Met His

1 5

<210> 2658

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
peptide
<400> 2658

Ala Val Ile Ser Tyr Asp Gly Ser Asn Lys Tyr Tyr Ala
1 5 10
<210> 2659
<211> 27
<212> PRT
<213> Artificial Sequence
<220><223> Description of Artificial Sequence: Synthetic
peptide
<400> 2659
Cys Ala Lys Ala Val Tyr Phe Glu Tyr Ser Ser Gly Trp Ser Ser Leu
1 5 10 15
Thr Gln Tyr Tyr Tyr Tyr Gly Met Asp Val Trp
20 25
<210> 2660
<211> 11
<212
> PRT
<213> Artificial Sequence
<220><223> Description of Artificial Sequence: Synthetic
peptide
<400> 2660
Cys Gln Ala Trp Asp Ser Ser Thr Val Val Phe
1 5 10
<210> 2661
<211> 9
<212> PRT
<213> Artificial Sequence
<220><223> Description of Artificial Sequence: Synthetic
peptide
<400> 2661
Phe Thr Phe Ser Ser Tyr Gly Met His

1 5

<210> 2662

<211> 11

<212> PRT

<213> Artificial Sequence

<220

><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2662

Ser Gly Asp Lys Leu Gly Asp Lys Tyr Ala Cys

1 5 10

<210> 2663

<211> 7

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2663

Gln Asp Asn Lys Arg Pro Ser

1 5

<210> 2664

<211> 25

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2664

Cys Ala Lys Asp Ala Ala Gly Tyr Gly Asp His Asp Tyr Asp Asp Phe

1 5 10 15

Glu Lys Asp Phe Gly Met Asp Val Trp

20 25

<210> 2665

<211> 11

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2665

Cys Gln Ala Trp Asp Thr Arg Ile Val Val Phe

1 5 10

<210> 2666

<211> 9

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2666

Phe Thr Leu Ser Asn Tyr Gly Thr His

1 5

<210> 2667

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2667

Ala Ser Ile Ser Phe Asp Gly Ser Asn Thr Tyr Tyr Ala

1 5 10

<210> 2668

<211> 11

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2668

Ser Ala Asp Asn Leu Arg His Arg Tyr Val Phe

1 5 10

<210> 2669

<211> 7

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 2669

Gln Asn Asp Arg Arg Pro Ser

1 5

<210> 2670

<211> 25

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 2670

Cys Ala Lys Asp Gln Leu Gly Tyr Cys Thr Ser Thr Ser Cys Tyr Arg

1 5 10 15

Glu Tyr Tyr Tyr Gly Met Asp Val Trp

20 25

<210> 2671

<211> 10

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 2671

Cys Gln Ala Trp Asp Ser Ser Val Val Phe

1 5 10

<210> 2672

<211> 9

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2672

Leu Thr Phe Ser Ser Tyr Gly Met His

1 5

<210> 2673

<211> 11

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2673

Ser Gly Asp Lys Leu Gly Asp Lys Tyr Val Cys

1 5 10

<210> 2674

<211> 7

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2674

Gln Asn Thr Lys Arg Pro Ser

1 5

<210> 2675

<211> 25

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2675

Cys Ala Lys Asp Val Arg Asp Ser Ile Gln Leu Trp Leu Asn Leu Phe

1 5 10 15

Asn Tyr Tyr Ser Gly Met Asp Val Trp

20 25

<210> 2676

<211> 14

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2676

Cys Asp Ser Arg Asp Ser Ser Gly Asp Pro His Val Leu Phe

1 5 10

<210> 2677

<211> 9

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2677

Phe Thr Phe Ile Asn Tyr Asp Met His

1 5

<210> 2678

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2678

Ala Val Ile Ser Tyr Asp Gly Ser Lys Lys Tyr Tyr Val

1 5 10

<210> 2679

<211> 11

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2679

Gln Gly Asp Ser Leu Arg Ile Tyr Tyr Ala Ser

1 5 10

<210> 2680

<211> 7

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2680

Gly Lys Asn Asn Arg Pro Ser

1 5

<210> 2681

<211> 25

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2681

Cys Ala Arg Asp Glu Ser Leu Asp Gly Leu Met Ile Thr Phe Gly Gly

1 5 10 15

Ile Ile Val Thr Ala Leu Asp Val Trp

20 25

<210> 2682

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2682

Cys Ser Ser Pro Asp Ser Ser Gly Tyr His Tyr Val Phe

1 5 10

<210> 2683

<211> 9

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 2683

Phe Thr Ile Gly Gly Tyr Gly Phe His
1 5

<210> 2684

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 2684

Ala Leu Ile Ser Asp Asp Gly Ser Ser Lys Ser Tyr Ala
1 5 10

<210> 2685

<211> 11

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 2685

Gln Gly Asp Ser Leu Arg Arg Tyr Tyr Ala Ser
1 5 10

<210> 2686

<211> 7

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 2686

Gly Lys His Asn Arg Pro Ser

1 5

<210> 2687

<211> 25

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2687

Cys Ala Arg Asp Pro Pro Gly Gly Cys Ser Ser Cys Tyr Lys Ala Ser

1 5 10 15

Tyr Tyr Tyr Trp Gly Leu Asp Val Trp

20 25

<210> 2688

<211> 11

<212> PRT

<213> Artificial Sequence

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peptide

<400> 2688

Cys Gln Ala Trp Asp Thr Thr Thr Gly Val Phe

1 5 10

<210> 2689

<211> 9

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2689

Phe Pro Phe Ser Ser Tyr Val Met His

1 5

<210> 2690

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2690

Ala Ser Ile Ser Leu Asp Gly Gly Asn Thr Tyr Tyr Ala

1 5 10

<210> 2691

<211> 11

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2691

Ser Gly Asp Lys Leu Gly Asp Lys Tyr Thr Cys

1 5 10

<210> 2692

<211> 7

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2692

Gln Asp Lys Lys Arg Pro Ser

1 5

<

210> 2693

<211> 25

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2693

Cys Ala Arg Glu Ala Gly Tyr Asp Phe Ser Ser Gly Tyr Tyr Ala His

1 5 10 15

Lys Arg Thr Leu Asp Phe Asp Tyr Trp

20 25

<210> 2694

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2694

Cys Cys Ser Arg Tyr Thr Gly Gly Lys Gln Gly Val Phe

1 5 10

<210> 2695

<211> 9

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2695

Leu Thr Phe Gly Val Tyr Ser Trp His

1 5

<210> 2696

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2696

Ala Val Ile Ser Pro Asp Gly Ser Thr Thr Ser Tyr Ala

1 5 10

<210> 2697

<211> 11

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
peptide

<400> 2697

Gln Gly Asp Ser Leu Arg Gly Tyr Phe Ala Ser
1 5 10

<210> 2698

<211> 7

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
peptide

<400> 2698

Gly Asn Asn Asn Arg Pro Ser
1 5

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210> 2699

<211> 25

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
peptide

<400> 2699

Cys Ala Arg Gly Pro Asn His Tyr Asp Ser Ser Gly Tyr Glu Gly Ser
1 5 10 15

Tyr His Tyr Tyr Gly Met Asp Val Trp
20 25

<210> 2700

<211> 12

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
peptide

<400> 2700

Cys Gln Val Trp Asp Thr Arg Thr Tyr Val Val Phe

1 5 10

<210> 2701

<211> 9

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 2701

Phe Ile Phe Arg Asn Tyr Ala Leu His

1 5

<210> 2702

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 2702

Ala Leu Ile Ser Tyr Asp Gly Asn Ser Glu Asn Tyr Pro

1 5 10

<210> 2703

<211> 11

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 2703

Ser Gly Asp Asn Leu Gly Asn Lys Tyr Val Ser

1 5 10

<210> 2704

<211> 7

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2704

Gln Asp Thr Lys Arg Pro Ser

1 5

<

210> 2705

<211> 26

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2705

Cys Ala Lys Val Gly Ile Ala Ala Arg Pro Gly Gly Ala Ile Val Pro

1 5 10 15

Gln Tyr Tyr Tyr Tyr Phe Ile Asp Val Trp

20 25

<210> 2706

<211> 13

<212> PRT

<213> Artificial Sequence

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peptide

<400>

2706

Cys Gly Thr Trp Asp Asn Ser Leu Arg Gly Val Val Phe

1 5 10

<210> 2707

<211> 9

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2707

Phe Thr Phe Ser Thr Tyr Gly Ile His

1 5

<210> 2708

<211> 13

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<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 2708

Ala Ala Ile Ser His Asp Gly Arg Asn Lys Tyr Tyr Ala

1 5 10

<210> 2709

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 2709

Ser Gly Asn Ser Ser Asn Ile Val Asn Asn Tyr Val Cys

1 5 10

<210> 2710

<211> 7

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 2710

Asp Asn Asp Lys Arg Pro Ser

1 5

<210> 2711

<211> 26

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 2711

Cys Ala Lys Val Pro Tyr Ser Ser Gly Trp Tyr Asp Pro Arg Ser Leu

1 5 10 15

Thr Tyr Tyr Gln Asn Gly Met Asp Val Trp

20 25

<210> 2712

<211> 13

<212> PRT

<213> Artificial Sequence

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peptide

<400

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Cys Gly Ala Trp Asp Ser Ser Leu Ser Ala Trp Val Phe

1 5 10

<210> 2713

<211> 9

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<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2713

Phe Thr Phe Arg Lys Tyr Ala Met Tyr

1 5

<210> 2714

<211> 13

<212> PRT

<213> Artificial Sequence

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peptide

<400> 2714

Ala Val Ile Ser Tyr Asp Gly Asn Asn Glu Tyr Tyr Glu

1 5 10

<210> 2715

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2715

Ser Gly Ser Ser Ser Asn Ile Gly Asn Asn Tyr Val Ser

1 5 10

<210> 2716

<211> 7

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<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2716

Asp Asn Ser Lys Arg Pro Ser

1 5

<210> 2717

<211> 27

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2717

Cys Ala Arg Asp Gly Gly Tyr Tyr Ser Gly Ser Val Thr Tyr His Phe

1 5 10 15

Leu Asp Tyr Tyr Tyr Tyr Gly Met Asp Val Trp

20 25

<210> 2718

<211> 14

<212> PRT

<213> Artificial Sequence

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peptide

<400> 2718

Cys Gly Thr Trp Asp Ser Gly Leu Ser Ala Gly Val Val Phe

1 5 10

<210> 2719

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2719

Ala Val Ile Leu His Asp Gly Ser Asn Lys Tyr Tyr Ala

1 5 10

<210> 2720

<211> 7

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2720

Asp Asn Asn Lys Arg Pro Ser

1 5

<210> 2721

<211> 29

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2721

Cys Ala Arg Asp Leu Leu Gly Val Tyr Phe Val Val Ile Pro Asp Asn

1 5 10 15

Pro Asn Ser Ile His Tyr Tyr Tyr Asp Met Asp Val Trp

20 25

<210> 2722

<211> 9

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 2722

Phe Thr Phe Ser Ser Tyr Val Met His
1 5

<210> 2723

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 2723

Ala Val Ile Ser Tyr Asp Gly Thr Asn Lys Asn Tyr Ala
1 5 10

<210> 2724

<211> 25

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 2724

Cys Ala Arg His Leu Asn Tyr Tyr Asp Ser Ser Gly Phe Tyr Phe Pro
1 5 10 15

Gln Val Tyr Asn Gly Met Asp Val Trp
20 25

<210> 2725

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
peptide

<400> 2725

Cys Gly Thr Trp Asp Ser Ser Leu Ser Ala Val Val Phe
1 5 10

<210> 2726

<211> 9

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
peptide

<400> 2726

Phe Ala Phe Ser Ser Tyr Gly Met His
1 5

<210> 2727

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
peptide

<400> 2727

Ala Val Ile Trp Asp Asp Gly Ile Asn Lys Tyr Tyr Ala
1 5 10

<210> 2728

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
peptide

<400> 2728

Ser Gly Ser Ser Ser Asn Ile Gly Asn Asn Tyr Ile Ser
1 5 10

<210> 2729

<211> 26

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2729

Cys Ala Lys Asp Pro Val Asn Tyr Gly Leu Trp Ser Gly Asp Tyr Thr

1 5 10 15

Gly Gly Val Gly Asp Tyr Phe Asp Tyr Trp

20 25

<210> 2730

<211> 11

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2730

Cys Gln Gln Tyr Asn Asn Trp Pro Leu Thr Phe

1 5 10

<210> 2731

<211> 9

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2731

Ile Thr Phe Ser Asn Phe Gly Ile His

1 5

<210> 2732

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2732

Ala Gly Ile Ser Tyr His Gly Val Tyr Gln Tyr Tyr Ala

1 5 10

<210> 2733

<211> 11

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2733

Arg Ala Ser Gln Thr Leu Asn Asn Asn Leu Ala

1 5 10

<210> 2734

<211> 7

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2734

Gly Ala Ser Thr Arg Ala Thr

1 5

<210> 2735

<211> 28

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2735

Cys Ala Arg Asp Ala Gly Val Val Arg Gly Val Thr Asn Ser Pro Arg

1 5 10 15

Thr Phe Arg Asn Tyr Tyr Tyr Tyr Met Asp Val Trp

20 25

<210> 2736

<211> 11

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<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 2736

Cys Gln Gln Tyr Asn Ser Trp Pro Tyr Thr Phe
1 5 10

<210> 2737

<211> 9

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 2737

Phe Thr Phe Ser Leu Tyr Gly Leu His
1 5

<210> 2738

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 2738

Ala Val Ile Ser Tyr Asp Gly Arg His Lys Tyr Tyr Ala
1 5 10

<210> 2739

<211> 11

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 2739

Gly Ala Ser Glu Ser Ile Thr Thr Asn Leu Ala

1 5 10

<210> 2740

<211> 7

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 2740

Gly Ser Ser Ser Arg Ala Thr

1 5

<210> 2741

<211> 26

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 2741

Cys Ala Arg Asp Asn Pro Pro Ser His Ile Leu Thr Asp Lys Gly Ser

1 5 10 15

Tyr Tyr Tyr Tyr Tyr Ala Met Asp Val Trp

20 25

<210> 2742

<211> 11

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 2742

Cys Gln Gln Tyr Asn Ser Arg Pro Leu Thr Phe

1 5 10

<210> 2743

<211> 9

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2743

Phe Thr Leu Asn Asp Tyr Ala Met His

1 5

<210> 2744

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2744

Ala Val Ile Ser Phe Asp Gly Gly His Gln Tyr Ser Ala

1 5 10

<210> 2745

<211> 11

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2745

Arg Ala Ser Gln Ser Val Ser Arg Asn Leu Ala

1 5 10

<210> 2746

<211> 26

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2746

Cys Ala Arg Asp Ser Phe Pro Cys Gly Val Ala Arg Cys Phe Gly Asp

1 5 10 15

Pro Trp Glu Ser Lys Thr Leu Asp Thr Trp

20 25

<210> 2747

<211> 11

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 2747

Cys Gln Gln Tyr Arg Ser Trp Pro Arg Thr Phe

1 5 10

<210> 2748

<211> 9

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 2748

Ser Asp Phe Ser Asp Tyr Ala Ile His

1 5

<210> 2749

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 2749

Ala Val Ile Trp Tyr Asp Gly Ser Asn Lys Tyr Tyr Ala

1 5 10

<210> 2750

<211> 11

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
peptide

<400> 2750

Arg Ala Ser Gln Ser Val Asn Asp Tyr Leu Ala
1 5 10

<210> 2751

<211> 7

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
peptide

<400> 2751

Gly Ala Thr Ser Arg Ala Leu
1 5

<210> 2752

<211> 26

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
peptide

<400> 2752

Cys Ala Arg Asp Ser Phe Ser Cys Gly Ser Ala Arg Cys Phe Gly Asp
1 5 10 15

Pro Trp Glu Ser Lys Thr Leu Asp Leu Trp
20 25

<210> 2753

<211> 11

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
peptide

<400> 2753

Cys Gln Gln Tyr Asn Trp Trp Pro Arg Thr Phe

1 5 10

<210> 2754

<211> 11

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 2754

Arg Ala Ser Gln Ser Val Ser Asp Tyr Leu Ala

1 5 10

<210> 2755

<211> 7

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 2755

Gly Ala Ser Ser Arg Ala Pro

1 5

<210> 2756

<211> 31

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic polypeptide

<400> 2756

Cys Ala Arg Asp Asn Leu Leu Asp Ile Val Val Val Pro Ala Ala Met

1 5 10 15

Glu Pro Asp Ala Asn Tyr Tyr Tyr Tyr His Gly Met Asp Val Trp

20 25 30

<210> 2757

<211> 12

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 2757

Cys Gln Gln Ser Tyr Asn Thr Pro Ser Leu Thr Phe

1 5 10

<210> 2758

<211> 11

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 2758

Gly Ser Ile Asn Ser Gly Ser Tyr Tyr Trp Asn

1 5 10

<210> 2759

<211> 12

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 2759

Gly Arg Ile Tyr Thr Ser Gly Asp Thr Asn Tyr Asn

1 5 10

<210> 2760

<211> 11

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 2760

Arg Ala Ser Gln Ser Ile Asn Asn Tyr Leu Asn

1 5 10

<210> 2761

<211> 7

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2761

Ala Ala Ser Ser Leu Gln Ser

1 5

<210> 2762

<211> 28

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2762

Cys Ala Arg Asp Ser Leu Ile Thr Asp Ile Val Val Val Pro Ala Asp

1 5 10 15

Gln Arg Tyr Tyr Tyr Tyr Tyr Gly Met Asp Val Trp

20 25

<210> 2763

<211> 11

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2763

Cys Gln Gln Ser Tyr Ser Thr Pro Arg Ala Phe

1 5 10

<210> 2764

<211> 9

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
peptide

<400> 2764

Gly Ser Ile Ser Ser Tyr Tyr Trp Ser
1 5

<210> 2765

<211> 12

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
peptide

<400> 2765

Gly Tyr Ile Tyr Tyr Ser Gly Ser Thr Asn Tyr Asn
1 5 10

<210> 2766

<211> 11

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
peptide

<400> 2766

Arg Ala Ser Gln Ser Ile Ser Ser Tyr Leu Asn
1 5 10

<210> 2767

<211> 25

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
peptide

<400> 2767

Cys Ala Arg Gly Ala Lys Glu Arg Val Val Met Val Arg Gly Val Ile
1 5 10 15

Lys Ser Asp Tyr Gly Leu Asp Val Trp

20 25

<210> 2768

<211> 11

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 2768

Cys Gln Gln Ser His Ser Ile Pro Arg Thr Phe

1 5 10

<210> 2769

<211> 9

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 2769

Ala Ser Ile Arg Thr Tyr Phe Trp Ser

1 5

<210> 2770

<211> 12

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 2770

Gly Tyr Ile Tyr Tyr Gly Gly Lys Thr Asp Tyr Asn

1 5 10

<210> 2771

<211> 11

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 2771

Arg Ala Ser Gln Ser Val Ser Asn Tyr Leu Asn

1 5 10

<210> 2772

<211

> 7

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2772

Ala Ala Leu Ser Leu Gln Ser

1 5

<210> 2773

<211> 29

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2773

Cys Ala Arg Ile His Tyr Thr Ser Gly Ser Tyr Leu Ser Trp Ala Gly

1 5 10 15

Glu Ser Ile Ile Asp Tyr Tyr His Gly Met Asp Val Trp

20 25

<210> 2774

<211> 11

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2774

Cys Gln Gln Ser Ser Val Leu Pro Leu Thr Phe

1 5 10

<210> 2775

<211> 11

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 2775

Gly Ser Val Thr Ser Asp Ser Tyr Tyr Trp Ser
1 5 10

<210> 2776

<211> 12

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 2776

Gly His Ile Tyr Tyr Ser Gly Asn Thr Asn Tyr His
1 5 10

<210> 2777

<211> 11

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 2777

Arg Ala Ser Glu Ser Ile Ser Asp Tyr Leu His
1 5 10

<210> 2778

<211

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<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 2778

Gly Ala Tyr Arg Leu Gln Ser

1 5

<210> 2779

<211> 26

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 2779

Cys Ala Arg Ser Trp Gly Lys Leu Ala Gly Glu Leu Thr Pro Tyr Ser

1 5 10 15

Thr Ser Ala Ile Gly His Phe Asp Phe Trp

20 25

<210> 2780

<211> 11

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 2780

Cys Gln Gln Asn Phe Ser Leu Tyr Val Thr Phe

1 5 10

<210> 2781

<211> 11

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 2781

Gly Ser Val Ser Ser Gly Asn Tyr Phe Trp Ser

1 5 10

<210> 2782

<211> 12

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2782

Gly Tyr Ile His His Thr Gly Thr Thr Lys Phe Asn

1 5 10

<210> 2783

<211> 11

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2783

Arg Ser Ser Gln Lys Ile Ser Glu Ser Leu Asn

1 5 10

<210> 2784

<211

> 7

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2784

Gly Thr Ser Asn Leu Gln Arg

1 5

<210> 2785

<211> 25

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2785

Cys Ala Arg His Asn Ile Pro Phe Trp Ala Ser Val Thr Gly Thr Val

1 5 10 15

Ala Gly Thr Gly Leu Ile Asp Phe Trp

20 25

<210> 2786

<211> 11

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 2786

Gly Ser Ile Ser Ser Asn Asn Tyr Phe Trp Gly

1 5 10

<210> 2787

<211> 12

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<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 2787

Gly Thr Ile Tyr Tyr Thr Gly Arg Thr Tyr Tyr Asn

1 5 10

<210> 2788

<211> 12

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 2788

Arg Ala Ser Gln Ser Val Ser Gly Ser Tyr Leu Ala

1 5 10

<210> 2789

<211> 27

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
peptide

<400> 2789

Cys Ala Arg Val Gly Tyr Cys Asn Ser Ala Asn Cys Pro Val Gly Val
1 5 10 15

Trp Phe Gly Gln Phe Tyr Gly Leu Asp Val Trp
20 25

<210> 2790

<211> 11

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
peptide

<400> 2790

Cys Gln Gln Tyr Gly Thr Ser Val Trp Thr Phe
1 5 10

<210> 2791

<211> 11

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
peptide

<400> 2791

Gly Ser Ile Thr Asp Asn Ser Tyr Tyr Trp Gly

1 5 10

<210> 2792

<211> 12

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
peptide

<400> 2792

Gly Arg Ile Asn Asn His Gly Arg Thr Tyr Tyr Ser

1 5 10

<210> 2793

<211> 12

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 2793

Arg Ala Ser Gln Ser Val Asn Ser Asn Ser Leu Ala

1 5 10

<210> 2794

<211> 26

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 2794

Cys Glu Lys His Ala Ser Ala Tyr Tyr Asp Phe Trp Ser Gly Ser Tyr

1 5 10 15

Asn Asn Asn Tyr Tyr Gly Met Asp Val Trp

20 25

<210> 2795

<211> 12

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400

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Cys Gln Gln Tyr Gly Ser Ser Pro Leu Tyr Ser Phe

1 5 10

<210> 2796

<211> 11

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
peptide

<400> 2796

Gly Ser Ile Ser Ser Ser Asn Tyr Tyr Trp Gly
1 5 10

<210> 2797

<211> 12

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
peptide

<400> 2797

Gly Cys Ile Tyr Tyr Ser Gly Thr Thr Tyr Tyr Asn

1 5 10

<210> 2798

<211> 12

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
peptide

<400> 2798

Arg Ala Ser Gln Ser Ile Ser Ser Ser Asn Leu Ala
1 5 10

<210> 2799

<211> 25

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
peptide

<400> 2799

Cys Val Arg His Pro Val Gly Asn Tyr Asp Phe Phe Ser Gly Ala Gln

1 5 10 15

Arg Gly Gln Tyr Tyr Phe Asp Phe Trp

20 25

<210> 2800

<211> 11

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 2800

Cys Gln Gln Tyr Ser Asp Ser Pro Pro Thr Phe

1 5 10

<210> 2801

<211> 11

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 2801

Gly Ser Val Ser Ser Arg Gly Tyr Gln Trp Gly

1 5 10

<210> 2802

<211> 12

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 2802

Gly Thr Val Tyr Tyr Ser Gly Asn Thr Tyr Tyr Thr

1 5 10

<210> 2803

<211> 12

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2803

Arg Ala Ser Gln Arg Ile Ser Ser Ser Tyr Leu Ala

1 5 10

<210> 2804

<211> 29

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2804

Cys Val Arg Ser Arg Lys Ala Gly Val Ile Leu Gly Phe Cys Ser Gly

1 5 10 15

Gly Val Cys Asn Tyr Ile Pro Gly Tyr Phe Asp Tyr Trp

20 25

<210> 2805

<211> 12

<212> PRT

<213> Artificial Sequence

<220

><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2805

Cys Gln His Tyr Gly Thr Ser Ser Arg Asp Thr Phe

1 5 10

<210> 2806

<211> 11

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2806

Gly Ser Ile Ser Ser Pro Asn Phe His Trp Gly

1 5 10

<210> 2807

<211> 12

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2807

Gly Ser Val His Tyr Asn Gly Asn Thr His Tyr Asn

1 5 10

<210> 2808

<211> 12

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2808

Arg Ala Ser Gln Arg Val Thr Ser Arg Tyr Leu Ala

1 5 10

<210> 2809

<211> 32

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

polypeptide

<400> 2809

Cys Ala Lys Glu Gly Phe Val Leu Thr Leu Ser Gly Gly Ile Thr Leu

1 5 10 15

Leu Arg Gly Pro Ile Ser Ala Tyr Tyr Asp Tyr Gly Met Asp Val Trp

20 25 30

<210> 2810

<211> 7

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
peptide

<400> 2810

Cys Gln Gln Arg Arg Ser Phe
1 5

<210> 2811

<211> 9

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
peptide

<400> 2811

Ile Thr Phe Asn Ser Tyr Ala Met Gly
1 5

<210> 2812

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
peptide

<400> 2812

Ser Ser Ile Ser Ser Pro Ser Asp Ser Thr Tyr Tyr Ala
1 5 10

<210> 2813

<211> 11

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
peptide

<400> 2813

Arg Ala Ser Gln Ser Val Gly Ser Asp Leu Ala
1 5 10

<210> 2814

<211> 7

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2814

Asp Ala Ser Ser Arg Ala Thr

1 5

<210> 2815

<211> 25

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2815

Cys Ala Lys Asn Leu Glu Lys Ser Lys Ile Val Val Val Pro Ala Ala

1 5 10 15

Asn Pro Pro His Ala Phe Asp Ile Trp

20 25

<210> 2816

<211> 11

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2816

Cys Gln Gln Arg Ser Asn Trp Pro Ile Thr Phe

1 5 10

<210> 2817

<211> 9

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2817

Phe Thr Phe Ser Ser Tyr Ala Met Ser

1 5

<210> 2818

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2818

Ser Ala Ile Ser Gly Ser Gly Gly Ser Thr Tyr Tyr Ala

1 5 10

<210> 2819

<211> 11

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2819

Arg Ala Ser Gln Ser Val Ser Ser Tyr Leu Ala

1 5 10

<210> 2820

<211> 7

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2820

Asp Ala Ser Asn Arg Ala Thr

1 5

<210> 2821

<211> 25

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2821

Cys Ala Lys Ser Val Ser Tyr Tyr Ser His Leu Ser Pro Thr Asp Pro
1 5 10 15

Ser Asn Phe Trp Tyr Ser Asp Leu Trp
20 25

<210> 2822

<211> 9

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2822

Cys Gln Gln Arg Thr Ser Trp Leu Phe
1 5

<210> 2823

<211> 9

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2823

Phe Thr Phe Ser Gly Tyr Ala Met Ser
1 5

<210> 2824

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2824

Ser Gly Ile Ser Ala Ser Gly Asp Lys Ala Ile Ser Ala

1 5 10

<210> 2825

<211> 11

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2825

Arg Thr Ser Gln Thr Ile Asn Asn Tyr Leu Ala

1 5 10

<210> 2826

<211> 7

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2826

Asp Ala Phe Asn Arg Ala Thr

1 5

<210> 2827

<211> 25

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2827

Cys Ala Arg Asp Ile Leu Gly Lys Glu Met Pro Lys Val Lys Val Tyr

1 5 10 15

Val Gly Tyr Trp Tyr Phe Asp Leu Trp

20 25

<210> 2828

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2828

Cys Gln His Arg Asn Asn Trp Pro Pro Arg Val Thr Phe

1 5 10

<210> 2829

<211> 9

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2829

Phe Thr Phe Ser Asn His Ala Met Tyr

1 5

<210> 2830

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2830

Ser Ala Ile Ala Gly Phe Ser Ser Ser Ser Tyr Tyr Ala

1 5 10

<210> 2831

<211> 11

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2831

Arg Ala Ser Gln Ser Val Gly Thr Phe Leu Ala

1 5 10

<210> 2832

<211> 26

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 2832

Cys Val Gly Trp Pro Cys Cys Gly Asn Glu Glu Cys Gln Gln Ser Val
1 5 10 15

Trp Leu Cys Gly Tyr Ser Leu Asp Val Trp
20 25

<210> 2833

<211> 10

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 2833

Cys Gln Gln Arg Arg Asp Trp Pro Thr Phe
1 5 10

<210> 2834

<211> 9

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 2834

Ile Ser Phe Asn Thr Tyr Val Met Thr
1 5

<210> 2835

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2835

Ala Gly Val Ser Gly Gly Ala Thr Gly Thr Tyr Tyr Ala

1 5 10

<210> 2836

<211> 11

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2836

Arg Ala Ser Arg Asn Ile Asp Phe His Leu Ala

1 5 10

<210> 2837

<211> 26

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2837

Cys Ala Lys Ala Ala Gly Cys Ser Gly Gly Ser Cys His Arg Glu Trp

1 5 10 15

Gly Phe Tyr Tyr Tyr Ala Met Ala Val Trp

20 25

<210> 2838

<211> 9

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2838

Phe Met Phe Gly Ser Tyr Ala Met Ser

1 5

<210> 2839

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 2839

Ser Val Ile Ser Gly Ser Gly Asp Gly Thr Tyr Tyr Ala

1 5 10

<210> 2840

<211> 16

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 2840

Arg Ser Ser Gln Ser Leu Leu Tyr Asn Asn Glu Tyr Asn Tyr Leu Asp

1 5 10 15

<210> 2841

<211> 7

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 2841

Leu Ser Ser Thr Arg Ala Ser

1 5

<210> 2842

<211> 29

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2842

Cys Ala Lys Gly Gly Asp Tyr Pro Gly Tyr Cys Ser Ser Pro Ser Cys
1 5 10 15

Tyr Arg His Phe Tyr Tyr Tyr Tyr Gly Leu Asp Val Trp

20 25

<210> 2843

<211> 11

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2843

Cys Met Gln Ala Leu Gln Thr Pro Arg Thr Phe
1 5 10

<210> 2844

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2844

Ser Gly Ile Ser Gly Gly Gly Gly Ser Thr Tyr Tyr Ala
1 5 10

<210> 2845

<211> 28

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2845

Cys Ala Lys Gly Ser Gly Leu Met Thr Leu Ile Arg Gly Pro Ala Thr
1 5 10 15

Val Asn Val Tyr Gly Tyr Tyr Gly Met Asp Val Trp

20 25

<210> 2846

<211> 11

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 2846

Cys Met Gln Ala Leu Gln Ile Pro Pro Ala Phe

1 5 10

<210> 2847

<211> 9

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 2847

Phe Ala Phe Ser Ser Asp Pro Met Ser

1 5

<210> 2848

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 2848

Ser Val Ile Ser Ser Ser Gly Ser Ser Thr Asp Tyr Ala

1 5 10

<210> 2849

<211> 7

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2849

Leu Gly Phe Asn Arg Ala Ser

1 5

<210> 2850

<211> 36

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

polypeptide

<400> 2850

Cys Ala Lys Leu Gly Ala Thr Arg Pro Asn Ile Ala Val Ile Pro Val

1 5 10 15

Ala Val Asp Met Lys Lys Ala Thr Val Lys Val Arg Gly Ser Glu Ala

20 25 30

Thr Asp Tyr Trp

35

<210> 2851

<211> 11

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2851

Cys Met Gln Gly Leu Gln Thr Pro Tyr Thr Phe

1 5 10

<210> 2852

<211> 9

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2852

Phe Thr Leu Thr Ser Asp Ala Met Ser

1 5

<210> 2853

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2853

Ser Ser Ile Ser Asp Ser Gly Asp Lys Thr Asp Tyr Ala

1 5 10

<210> 2854

<211> 16

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2854

Arg Ser Ser Gln Ser Leu Leu His Asp Leu Gly Tyr Asn Tyr Leu Asp

1 5 10 15

<210> 2855

<211> 26

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2855

Cys Ala Arg Ser Ser Pro Val Asn Tyr Cys Ser Thr Thr Tyr Cys His

1 5 10 15

Tyr Tyr Tyr Tyr Asn Gly Leu Asp Val Trp

20 25

<210> 2856

<211> 11

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 2856

Cys Met Gln Ala Leu Gln Thr Pro His Thr Phe
1 5 10

<210> 2857

<211> 9

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 2857

Phe Ile Phe Ser Asn Tyr Pro Met Ser
1 5

<210> 2858

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 2858

Ser Ala Ile Ser Ser Asn Ser Gly Thr Pro Tyr Tyr Ala
1 5 10

<210> 2859

<211> 16

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 2859

Arg Ser Ser Gln Ser Leu Leu His Ile Asn Glu Tyr Asn Tyr Leu Asp

1 5 10 15

<210> 2860

<211> 26

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 2860

Cys Ala Arg Asp Leu Phe Thr Pro Gly Arg Leu Phe Ser Gly Val Val
1 5 10 15

Glu Tyr Val Tyr His Gly Met Asp Val Trp
20 25

<210> 2861

<211> 11

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 2861

Cys Gln Gln Phe Arg Ile Ser Pro Pro Thr Phe

1 5 10

<210> 2862

<211> 9

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 2862

Phe Ser Leu Ser Asn Tyr Ser Leu Asn
1 5

<210> 2863

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
peptide

<400> 2863

Ser Ser Ser Ser Ala Gly Arg Tyr His Ile Asp Tyr Ala
1 5 10

<210> 2864

<211> 12

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
peptide

<400> 2864

Arg Ala Ser Gln Ser Val Gly Ser Thr Tyr Phe Ala
1 5 10

<210> 2865

<211> 27

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
peptide

<400> 2865

Cys Ala Arg Asp Leu Lys Ser Trp Tyr Thr Thr Ser Gly Val Arg Val
1 5 10 15

Val Pro Asn Tyr Asp Phe Ala Met Asp Val Trp
20 25

<210> 2866

<211> 12

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
peptide

<400> 2866

Cys Gln His Tyr Asp Thr Ser Leu Gly Tyr Thr Phe

1 5 10

<210> 2867

<211> 9

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 2867

Phe Thr Phe Asn Asp Phe Ser Met Asn

1 5

<210> 2868

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 2868

Ser Ser Ile Ser Ser Gly Ser Thr Phe Ile Tyr Tyr Ala

1 5 10

<210> 2869

<211> 12

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 2869

Arg Ala Ser Glu Ser Val Ser Ser Thr Tyr Leu Ala

1 5 10

<210> 2870

<211> 7

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
peptide
<400> 2870
Gly Ser Ser Arg Arg Ala Thr
1 5
<210> 2871
<211> 26
<212> PRT
<213> Artificial Sequence
<220><223> Description of Artificial Sequence: Synthetic
peptide
<400> 2871
Cys Ala Arg Asp Asn Val Gly His Tyr Tyr Asp Ser Ser Gly Tyr His
1 5 10 15
Ala Tyr Tyr Tyr Tyr Gly Met Asp Val Trp

20 25
<210> 2872
<211> 8
<212> PRT
<213> Artificial Sequence
<220><223> Description of Artificial Sequence: Synthetic
peptide
<400> 2872
Cys Gln Gln Tyr Gly Ser Ser Phe
1 5
<210> 2873
<211> 9
<212> PRT
<213> Artificial Sequence
<220><223> Description of Artificial Sequence: Synthetic
peptide
<400> 2873
Phe Thr Phe Ser Ser Tyr Ser Met Asn
1 5

<210> 2874

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 2874

Ser Ser Ile Ser Ser Ser Ser Ser Tyr Ile Tyr Tyr Ala
1 5 10

<210> 2875

<211> 26

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 2875

Cys Ala Arg Glu Asn Leu Phe Leu Ile Ser Gly Ala Ser Gly Leu Leu
1 5 10 15

Val Arg Asp Tyr Asn Gly Leu Asp Val Trp
20 25

<210> 2876

<211> 12

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 2876

Cys Gln His Tyr Gly Thr Ser Pro Arg Ile Thr Phe
1 5 10

<210> 2877

<211> 9

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
peptide

<400> 2877

Phe Ile Phe Ser Ser Tyr Gly Met Thr

1 5

<210> 2878

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
peptide

<400> 2878

Ser Ser Ile Asn Asp Thr Ser Thr Tyr Ile Asn Tyr Ala

1 5 10

<210> 2879

<211> 12

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
peptide

<400> 2879

Arg Ala Ser Gln Ser Val Ser Arg Ala Tyr Leu Ala

1 5 10

<210> 2880

<211> 25

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
peptide

<400> 2880

Cys Ala Ser Leu Phe Ile Thr Met Val Arg Glu Val Ile Pro Gln Gly

1 5 10 15

His Tyr Tyr Tyr Gly Met Asp Val Trp

20 25

<210> 2881

<211> 12

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 2881

Cys Gln Gln Tyr Gly Ser Ser Pro Phe Leu Thr Phe
1 5 10

<210> 2882

<211> 25

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 2882

Cys Ala Arg Cys Pro Leu Ala Ser Ile Phe Gly Val Val Leu Met Gly
1 5 10 15

His Gly Gly Tyr Tyr Phe Asp His Trp
20 25

<210> 2883

<211> 11

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 2883

Cys Ser Ser Tyr Thr Ser Asn Thr Val Val Phe
1 5 10

<210> 2884

<211> 11

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2884

Asp Ser Ile Ser Asn Asn His Tyr Tyr Trp Gly

1 5 10

<210> 2885

<211> 12

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2885

Gly Ser Leu Ser Ser Thr Gly Ser Thr Tyr His Lys

1 5 10

<210> 2886

<211> 14

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2886

Thr Gly Thr Ser Ile Asp Leu Asn Asn Tyr Gln Phe Val Ser

1 5 10

<210> 2887

<211> 7

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2887

Glu Val Ser Ser Arg Pro Ser

1 5

<210> 2888

<211> 26

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 2888

Cys Ala Arg Asp Gln Leu Gly Gly Asp Phe Trp Ser Gly His Asn Leu
1 5 10 15

Ile Tyr Phe Tyr Tyr Ala Met Asp Val Trp
20 25

<210> 2889

<211> 12

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 2889

Cys Ser Ser Tyr Thr Ser Ser Asn Thr Val Leu Phe
1 5 10

<210> 2890

<211> 11

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 2890

Gly Ser Ile Thr Ser Thr Thr Asn Phe Trp Ala
1 5 10

<210> 2891

<211> 12

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2891

Gly His Ile Tyr Tyr Asp Gly Thr Thr His Tyr Asn

1 5 10

<210> 2892

<211> 14

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peptide

<400> 2892

Thr Gly Thr Ser Ser Asp Val Gly Gly Phe Asn Tyr Val Ser

1 5 10

<210> 2893

<211> 7

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2893

Glu Val Ser His Arg Pro Ser

1 5

<210> 2894

<211> 26

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2894

Cys Ala Arg Arg Val Phe Gly Tyr Tyr Tyr Asp Arg Ser Gly His Tyr

1 5 10 15

Arg Val Val His Asp Ala Phe Asp Ile Trp

20 25

<210> 2895

<211> 12

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 2895

Cys Ser Ser Tyr Thr Arg Ser Ser Thr Val Val Phe

1 5 10

<210> 2896

<211> 11

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 2896

Gly Ser Ile Ser Ser Ser Ser Phe His Trp Gly

1 5 10

<210> 2897

<211> 12

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 2897

Gly Asn Ile Phe Tyr Thr Gly Ser Thr Tyr Tyr Asn

1 5 10

<210> 2898

<211> 14

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2898

Thr Gly Thr Ser Ser Asp Val Gly Gly Tyr Asn Tyr Val Ser

1 5 10

<210> 2899

<211> 7

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2899

Asp Val Ser Asn Arg Pro Ser

1 5

<210> 2900

<211> 25

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2900

Cys Ala Ser Gly His Ser Ala Tyr Tyr Asp Phe Trp Ser Gly Tyr Leu

1 5 10 15

Glu Leu Asn Asp Ala Phe Asp Ile Trp

20 25

<210> 2901

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2901

Cys Ser Ser Tyr Thr Ser Ala Ser Thr His Val Ile Phe

1 5 10

<210> 2902

<211> 11

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2902

Ala Ser Ile Ser Thr Ser Ser Tyr Tyr Trp Gly

1 5 10

<210> 2903

<211> 12

<212> PRT

<213> Artificial Sequence

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<400> 2903

Gly Ser Val Tyr Tyr Ser Gly Ser Thr Tyr Tyr Asn

1 5 10

<210> 2904

<211> 7

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2904

Ala Val Asn Asn Arg Pro Ser

1 5

<210> 2905

<211> 40

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

polypeptide

<400> 2905

Cys Ala Arg Asp Leu Arg Glu Leu Glu Cys Glu Glu Trp Thr Leu Tyr
1 5 10 15

Asn Tyr Tyr Asp Phe Gly Ser Arg Gly Pro Cys Val Asp Pro Arg Gly
20 25 30

Val Ala Gly Ser Phe Asp Val Trp
35 40

<210> 2906

<211> 39

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
polypeptide

<400
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Cys Ala Lys Asp Leu Arg Glu Asp Glu Cys Glu Glu Trp Trp Ser Asp
1 5 10 15

Tyr Tyr Asp Phe Gly Lys Lys Leu Pro Cys Arg Lys Ser Arg Gly Val
20 25 30

Ala Gly Val Phe Asp Lys Trp
35

<210> 2907

<211> 39

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
polypeptide

<400> 2907

Cys Ala Lys Asp Met Arg Glu Tyr Glu Cys Glu Tyr Trp Thr Ser Asp

1 5 10 15

Tyr Tyr Asp Phe Gly Arg Pro Gln Pro Cys Ile Asp Arg Arg Gly Val
20 25 30

Val Gly Ile Phe Asp Met Trp
35

<210> 2908

<211> 39

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
polypeptide

<400> 2908

Cys Ala Lys Asp Leu Arg Glu Asp Glu Cys Glu Glu Trp Trp Ser Asp
1 5 10 15

Tyr Tyr Asp Phe Gly Lys Gln Leu Pro Cys Arg Lys Ser Arg Gly Val
20 25 30

Ala Gly Ile Phe Asp Gly Trp
35

<210> 2909

<211> 39

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
polypeptide

<400> 2909

Cys Ala Lys Asp Leu Gly Glu Ser Glu Asn Glu Glu Trp Ala Thr Asp
1 5 10 15

Tyr Tyr Asp Phe Ser Ile Gly Tyr Pro Gly Gln Asp Pro Arg Gly Val
20 25 30

Val Gly Ala Phe Asp Ile Trp
35

<210> 2910

<211> 35

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
polypeptide

<400> 2910

Cys Leu Thr Gly Ser Lys His Arg Leu Arg Asp Tyr Phe Leu Tyr Asn
1 5 10 15
Glu Tyr Gly Pro Asn Tyr Glu Glu Trp Gly Asp Tyr Leu Ala Thr Leu
20 25 30

Asp Val Trp
35

<210> 2911
<211> 32
<212> PRT
<213> Artificial Sequence
<220><223> Description of Artificial Sequence: Synthetic polypeptide
<400> 2911
Cys Ala Arg Glu Ala Gly Gly Pro Ile Trp His Asp Asp Val Lys Tyr
1 5 10 15
Tyr Asp Phe Asn Asp Gly Tyr Tyr Asn Tyr His Tyr Met Asp Val Trp
20 25 30
<210> 2912
<211> 32
<212> PRT
<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic polypeptide
<400> 2912
Cys Val Arg Glu Ala Gly Gly Pro Asp Tyr Arg Asn Gly Tyr Asn Tyr
1 5 10 15
Tyr Asp Phe Tyr Asp Gly Tyr Tyr Asn Tyr His Tyr Met Asp Val Trp
20 25 30
<210> 2913
<211> 30
<212> PRT
<213> Artificial Sequence
<220><223> Description of Artificial Sequence: Synthetic

polypeptide

<400> 2913

Cys Ala Arg Met Phe Gln Glu Ser Gly Pro Pro Arg Phe Asp Ser Trp
1 5 10 15
Ser Gly Arg Asn Tyr Tyr Tyr Tyr Ser Gly Met Asp Val Trp
20 25 30

<210> 2914

<211> 30

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

polypeptide

<400> 2914

Cys Ala Arg Met Phe Gln Glu Ser Gly Pro Pro Arg Leu Asp Arg Trp
1 5 10 15
Ser Gly Arg Asn Tyr Tyr Tyr Tyr Ser Gly Met Asp Val Trp
20 25 30

<210> 2915

<211> 29

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2915

Cys Ala Arg Ile Asp Val Val Ile Thr Ser His Glu Asp Asp Phe Gly
1 5 10 15
Asp Tyr Tyr Thr Gly Glu Tyr Tyr Gly Leu Asp Ser Trp
20 25

<210

> 2916

<211> 29

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2916

Cys Ala Ser Asn Ser Ile Ala Gly Val Ala Ala Ala Gly Asp Tyr Ala

1 5 10 15

Asp Tyr Asp Gly Gly Tyr Tyr Tyr Asp Met Asp Val Trp

20 25

<210> 2917

<211> 28

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2917

Cys Ala Ala Asp Ser Thr Ile Tyr Ala Ser Tyr Tyr Glu Cys Gly His

1 5 10 15

Gly Leu Ser Thr Gly Gly Tyr Gly Tyr Asp Ser Trp

20 25

<210> 2918

<211> 28

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2918

Cys Ala Lys His Met Ser Met Gln Gln Val Val Ser Ala Gly Trp Glu

1 5 10 15

Arg Ala Asp Leu Val Gly Asp Ala Phe Asp Val Trp

20 25

<210> 2919

<211> 12

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
peptide

<400> 2919

Cys Ser Ser Tyr Thr Ser Ser Ser Thr Trp Val Phe
1 5 10

<210> 2920

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
peptide

<400> 2920

Cys Ala Ser Tyr Thr Asp Asn Asn Ser Pro Phe Val Phe
1 5 10

<210> 2921

<211> 12

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
peptide

<400> 2921

Cys Lys Ser Leu Thr Ser Thr Arg Arg Arg Val Phe
1 5 10

<210> 2922

<211> 12

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic
peptide

<400> 2922

Cys Ser Ser Tyr Thr Ser Ser Ser Thr Leu Val Phe
1 5 10

<210> 2923

<211> 12

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 2923

Cys Ser Ser Leu Thr Asp Arg Ser His Arg Ile Phe
1 5 10

<210> 2924

<211> 14

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 2924

Cys Gly Thr Trp Asp Val Arg Pro Asn Arg Gly Ala Val Phe
1 5 10

<210> 2925

<211> 14

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 2925

Cys Ala Thr Trp Ser Ala Ser Leu Ser Ser Ala Arg Val Phe
1 5 10

<210> 2926

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 2926

Cys Gly Thr Trp Asp Ser Ser Leu Ser Ala Gly Val Phe

1 5 10

<210> 2927

<211> 11

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 2927

Cys Glu Thr Trp Asp Gly Ser Gly Gly Val Phe

1 5 10

<210> 2928

<211> 11

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 2928

Cys Gln Gln Tyr Tyr Ser Thr Pro Tyr Thr Phe

1 5 10

<210> 2929

<211> 11

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 2929

Cys Gln Gln Tyr Tyr Ser Pro Leu Leu Thr Phe

1 5 10

<210> 2930

<211> 13

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2930

Cys Gln Gln Tyr Tyr Ser Ser Pro Pro Ser Tyr Thr Phe

1 5 10

<210> 2931

<211> 11

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2931

Cys Gln Gln Tyr Tyr Ser Thr Pro Leu Thr Phe

1 5 10

<210> 2932

<211> 11

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2932

Cys Gln Gln Tyr Phe Ser Pro Pro Leu Thr Phe

1 5 10

<210> 2933

<211> 11

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2933

Cys Gln Gln Tyr Asp Thr Ser Pro Phe Thr Phe

1 5 10

<210> 2934

<211> 10

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2934

Cys Gln Leu Tyr Gly Arg Ser Leu Thr Phe

1 5 10

<210> 2935

<211> 11

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2935

Cys Gln Gln Tyr Gly Ser Ser Pro Glu Thr Phe

1 5 10

<210> 2936

<211> 11

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2936

Cys Gln Gln Tyr Gly Ser Ser Pro Trp Thr Phe

1 5 10

<210> 2937

<211> 12

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2937

Cys Gln Gln Tyr Asn Asn Trp Pro Pro Trp Thr Phe

1 5 10

<210> 2938

<211> 12

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 2938

Cys Gln Gln Tyr Asn Asn Trp Pro Pro His Thr Phe

1 5 10

<210> 2939

<211> 11

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 2939

Cys Gln Gln Tyr Asn Asn Trp Pro Arg Thr Phe

1 5 10

<210> 2940

<211> 12

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 2940

Cys Gln Gln Arg Ser Asn Trp Pro Pro Leu Thr Phe

1 5 10

<210> 2941

<211> 10

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 2941

Cys Met Gln Ala Leu Gln Ala Val Gly Phe

1 5 10

<210> 2942

<211> 11

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 2942

Cys Met Gln Gly Leu His Ser Pro Trp Thr Phe

1 5 10

<210> 2943

<211> 11

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 2943

Cys Leu Gln Ala Leu Gln Pro Pro Pro Thr Phe

1 5 10

<210> 2944

<211> 7

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic peptide

<400> 2944

Cys Gln Gln Leu Asp Thr Phe

1 5

<210> 2945

<211> 11

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2945

Cys Gln Gln Leu Asn Ser Tyr Pro Leu Thr Phe

1 5 10

<210> 2946

<211> 11

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2946

Cys Gln Gln Ser Tyr Ser Thr Pro Arg Thr Phe

1 5 10

<210> 2947

<211> 11

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2947

Cys Gln Gln Thr Tyr Ser Asn Pro Arg Thr Phe

1 5 10

<210> 2948

<211> 11

<212> PRT

<213> Artificial Sequence

<220><223> Description of Artificial Sequence: Synthetic

peptide

<400> 2948

Cys Gln Gln Ser Tyr Ser Thr Pro Leu Thr Phe

1 5 10