I857965

(19)中華民國智慧財產局

(12)發明說明書公告本 **(11)證書號數：TW I857965 B**

(45)公告日： 中華民國 113 (2024) 年 10 月 11 日

(21)申請案號：108125140 (22)申請日： 中華民國 108 (2019) 年 07 月 16 日

(51)Int. Cl.： ***C12N9/14 (2006.01)***

(30)優先權：2018/07/18 歐洲專利局 18184269.1

(71)申請人：瑞士商諾華公司 (瑞士) NOVARTIS AG (CH)
瑞士

(72)發明人：席瑞羅 阿格思提諾 CIRILLO, AGOSTINO (IT)；愛伯斯巴赫 希爾瑪 EBERSBACH, HILMAR (DE)；哈羅森 波吉 HARALDSSON, BOERJE (SE)；哈柏 湯瑪士 HUBER, THOMAS (CH)；強奇 吉多 JUNGE, GUIDO (DE)；琳克 蕾吉娜 LINK, REGINA (DE)；旺奇 麥克斯 WARNCKE, MAX (DE)；鄒超 ZOU, CHAO (CN)

(74)代理人：陳長文

(56)參考文獻：

US 2013/0142775A1

期刊 Moeckel D., et al., Optimizing human apyrase to treat arterial thrombosis and limit reperfusion injury without increasing bleeding risk", Sci Transl Med. 6(248) 2014 August 6 248ra105. doi: 10.1126/scitranslmed.3009246

期刊 Roberts V., et al., The Differential Effect of Apyrase Treatment and hCD39 Overexpression on Chronic Renal Fibrosis After Ischemia-Reperfusion Injury", Transplantation, Vol. 101(7), July 2017, page e194-e204.

審查人員：吳思嫻

申請專利範圍項數：13 項 圖式數：12 共 474 頁

(54)名稱

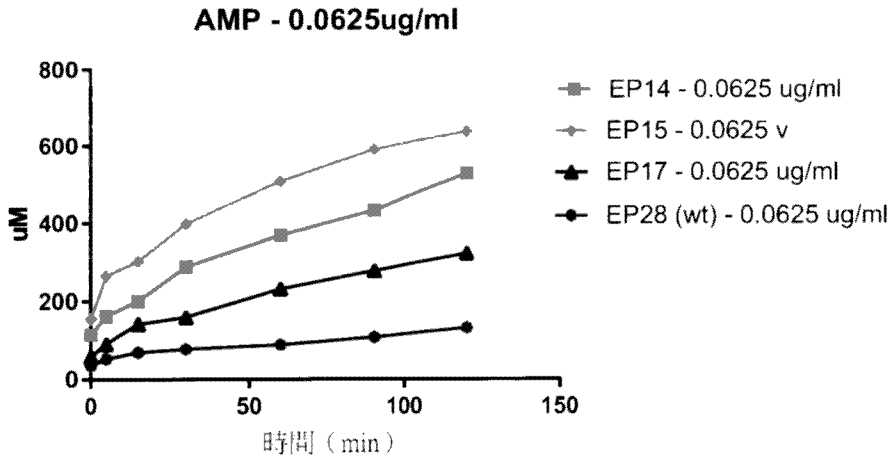
溶解的腺三磷雙磷酸酶、方法及用途

(57)摘要

本發明涉及溶解的腺三磷雙磷酸酶多肽的設計和治療用途、藥物組成物、用於預防和治療組織損傷的治療用途及方法。

The invention relates to design and therapeutic use of solubilized apyrase polypeptides, pharmaceuticals compositions, therapeutic uses and methods useful for preventing and treating tissue damage.

指定代表圖：


AMP - 0.0625ug/ml
800
600
400
200
0
uM
0
50
100
150
時間（min）
EP14 - 0.0625 ug/ml
EP15 - 0.0625 v
EP17 - 0.0625 ug/ml
EP28 (wt) - 0.0625 ug/ml

【圖 11】

公告本

222344

I857965

【發明摘要】

【中文發明名稱】　溶解的腺三磷雙磷酸酶、方法及用途

【英文發明名稱】　Solubilized apyrases, methods and use

【中文】

本發明涉及溶解的腺三磷雙磷酸酶多肽的設計和治療用途、藥物組成物、用於預防和治療組織損傷的治療用途及方法。

【英文】

The invention relates to design and therapeutic use of solubilized apyrase polypeptides, pharmaceuticals compositions, therapeutic uses and methods useful for preventing and treating tissue damage.

【指定代表圖】　圖11

【代表圖之符號簡單說明】無

【特徵化學式】無

【發明說明書】

【中文發明名稱】 溶解的腺三磷雙磷酸酶、方法及用途

【英文發明名稱】 Solubilized apyrases, methods and use

【技術領域】

【0001】 本發明涉及溶解的腺三磷雙磷酸酶多肽的設計和治療用途、藥物組成物、以及用於預防和治療組織損傷之方法。

【先前技術】

【0002】 腺三磷雙磷酸酶（ATP-二磷酸酶、腺苷二磷酸酶、ADP酶、或ATP二磷酸水解酶）係質膜結合的針對二磷酸核苷酸和三磷酸核苷酸（NDP和NTP）二者都具有活性的酶的酶組，並在兩個不同的連續磷酸鹽釋放步驟中以NDP為中間體將NTP水解成核苷酸一磷酸（NMP）。大多數在細胞表面發生並水解細胞外核苷酸的外部ATP酶屬於該酶家族。它們與藉由水解ATP和ADP二者來特異性水解ATP的ATP酶不同。

【0003】 第一種已知的人腺三磷雙磷酸酶（外核苷三磷酸二磷酸水解酶-1（基因：ENTPD1，蛋白質：NTPD酶1），也稱為分化簇39（CD39，UniProt P49961，或 SEQ ID NO: 1））係位於細胞表面的酶，具有面向細胞外的催化位點（extracellularly facing catalytic site）。

【0004】 在已知的人CD39家族中，成員CD39L3被稱為外部-腺三磷雙磷酸酶（外部-ATPD酶），其在CD39和CD39L1（外部-ATP酶）之間具有生物化

學活性。具體地，人CD39L3已被溶解並純化以用於治療目的，例如，如在US 7247300 B1（藉由援引併入本文）中所揭露的或作為SEQ ID NO: 3包括在本文中。

【發明內容】

【0005】 本揭露尤其基於如下意想不到的發現：溶解的人腺三磷雙磷酸酶（如人CD39）的某些修飾導致具有驚人活性的蛋白質，該蛋白質仍然係安全且易於製造的。

【0006】 根據本發明的第一方面，提供了一種溶解的人腺三磷雙磷酸酶，其具有至少兩個修飾，該等修飾選自由以下組成的列表：N 末端缺失、C 末端缺失和中心修飾。

【0007】 在一個實施方式中，溶解的人腺三磷雙磷酸酶包含 N 末端缺失、C 末端缺失和修飾缺失。

【0008】 在一個實施方式中，中心修飾包含一個或多個胺基酸的缺失。在另一個實施方式中，中心修飾包含一個或多個胺基酸的點突變，如取代突變。在又另一個實施方式中，中心修飾係一個或多個胺基酸的缺失和一個或多個胺基酸的點突變（如取代突變）的組合。

【0009】 N 末端缺失可以是從根據 SEQ ID NO: 1 的野生型 CD39 序列的 N 末端缺失的 30 與 50 個胺基酸之間，如 30、31、32、33、34、35、36、37、38、39、40、41、42、43、44、45、46、47、48、49 或 50 個胺基酸的缺失。在較佳的實施方式中，N 末端缺失係 34、37、38 或 45 個胺基酸。

【0010】 C 末端缺失可以是從根據 SEQ ID NO: 1 的野生型 CD39 序列的 C 末端缺失的 20 與 40 個胺基酸之間，如 20、21、22、23、24、25、26、27、28、

29、30、31、32、33、34、35、36、37、38、39 或 40 個胺基酸的缺失。在較佳的實施方式中，C 末端缺失係 22、29 或 37 個胺基酸。

【0011】 中心缺失可以是從根據 SEQ ID NO: 1 的野生型 CD39 序列缺失的 10 與 15 個連續胺基酸之間，如 10、11、12、13、14 或 15 個胺基酸的缺失。在較佳的實施方式中，中心缺失係 12 個胺基酸，如與根據 SEQ ID NO: 1 的野生型 CD39 序列相關的胺基酸編號 193 至 204。

【0012】 在一個實施方式中，溶解的人腺三磷雙磷酸酶包含與根據 SEQ ID NO: 1 的野生型 CD39 序列相關的一個、兩個、三個、四個或五個點突變，該等突變選自由以下組成之群組：K71E、N73Q、V95A、G102D、Y104S、T106S、R113M、L149M、V151A、E173D、T229A、L254M、K258R、W263R、E276D、N292Q、R304G、I319T、N327Q、A362N、F365S、N371Q、K405N、Y412F、L424Q、H436D、I437N、F439S、G441D、N457Q、P463S、和 S469R。

【0013】 在一個實施方式中，溶解的人腺三磷雙磷酸酶包含如下序列，該序列選自由以下組成之群組：SEQ ID NO: 4、SEQ ID NO: 6、SEQ ID NO: 32、SEQ ID NO: 54、SEQ ID NO: 56、SEQ ID NO: 70、SEQ ID NO: 76、和 SEQ ID NO: 78。

【0014】 在一個實施方式中，溶解的人腺三磷雙磷酸酶包含如下序列，該序列選自由以下組成之群組：SEQ ID NO: 131、SEQ ID NO: 133、SEQ ID NO: 135、SEQ ID NO: 137、SEQ ID NO: 139 和 SEQ ID NO: 141。

【0015】 在一個具體的實施方式中，溶解的人腺三磷雙磷酸酶包含如下序列，該序列選自由以下組成之群組：SEQ ID NO: 213、SEQ ID NO: 227、SEQ ID NO: 219、SEQ ID NO: 227、SEQ ID NO: 217、SEQ ID NO: 209、SEQ ID NO: 221、SEQ ID NO: 72、SEQ ID NO: 215、SEQ ID NO: 223、SEQ ID NO: 211、SEQ ID NO: 58 和 SEQ ID NO: 229。

【0016】 在一個具體的實施方式中，溶解的人腺三磷雙磷酸酶由如下序列組成，該序列選自由以下組成之群組：SEQ ID NO: 213、SEQ ID NO: 227、SEQ ID NO: 219、SEQ ID NO: 227、SEQ ID NO: 217、SEQ ID NO: 209、SEQ ID NO: 221、SEQ ID NO: 72、SEQ ID NO: 215、SEQ ID NO: 223、SEQ ID NO: 211、SEQ ID NO: 58 和 SEQ ID NO: 229。

【0017】 在較佳的實施方式中，溶解的人腺三磷雙磷酸酶包含如下序列，該序列選自由以下組成之群組：SEQ ID NO: 58、SEQ ID NO: 72 和 SEQ ID NO: 229。

【0018】 在一個實施方式中，溶解的人腺三磷雙磷酸酶包含 SEQ ID NO: 58。在一個實施方式中，溶解的人腺三磷雙磷酸酶包含 SEQ ID NO: 72。在一個實施方式中，溶解的人腺三磷雙磷酸酶包含 SEQ ID NO: 229。

【0019】 在較佳的實施方式中，溶解的人腺三磷雙磷酸酶由如下序列組成，該序列選自由以下組成之群組：SEQ ID NO: 58、SEQ ID NO: 72 和 SEQ ID NO: 229。

【0020】 在一個實施方式中，溶解的人腺三磷雙磷酸酶由 SEQ ID NO: 58 組成。在一個實施方式中，溶解的人腺三磷雙磷酸酶由 SEQ ID NO: 72 組成。在一個實施方式中，溶解的人腺三磷雙磷酸酶由 SEQ ID NO: 229 組成。

【0021】 根據本發明的第二方面，本發明涉及包含治療有效劑量的根據本發明第一方面的腺三磷雙磷酸酶的藥物組成物，並提供了一種或多種藥學上可接受的運載體。

【0022】 在一個實施方式中，藥物組成物進一步包含一種或多種另外的活性成分。

【0023】 根據本發明的第三方面，提供了用作藥物的分離的根據第一方面的腺三磷雙磷酸酶。

【0024】 根據本發明的第四方面，提供了用於治療組織損傷的分離的根據第一方面的腺三磷雙磷酸酶。

【0025】 組織損傷可以是急性腦損傷（中風）；急性多器官衰竭；腎臟或其他實體器官移植後移植物功能延遲；燒傷；輻射損傷；由於創傷和/或缺氧引起的急性損傷，如急性呼吸窘迫症候群（ARDS）或肺損傷；急性腎損傷，如繼發於胸外科手術（例如主動脈瓣置換術、冠狀動脈繞道手術）或敗血症或橫紋肌溶解症或抗生素或其他藥物的毒性作用的急性腎損傷；急性心肌損傷。

【0026】 在另一個實施方式中，本揭露的第四方面涉及根據本發明第一方面的分離的腺三磷雙磷酸酶，該腺三磷雙磷酸酶用於治療心臟手術相關的急性腎損傷。

【0027】 在另一個實施方式中，本揭露的第四方面涉及根據本發明第一方面的分離的腺三磷雙磷酸酶，該腺三磷雙磷酸酶用於治療移植物功能延遲（DGF）、急性呼吸窘迫症候群（ARDS）、急性心肌梗塞（AMI）、外傷性腦損傷（TBI）/急性缺血性中風（AIS）、缺血再灌注損傷（IRI）、或通常被稱為多器官衰竭（MOF）的其組合。

【0028】 在一個實施方式中，用於治療心臟手術相關的急性腎損傷的溶解的人腺三磷雙磷酸酶包含 SEQ ID NO: 58 的胺基酸序列。

【0029】 在一個實施方式中，用於治療心臟手術相關的急性腎損傷的溶解的人腺三磷雙磷酸酶包含 SEQ ID NO: 72 的胺基酸序列。在一個實施方式中，用於治療心臟手術相關的急性腎損傷的溶解的人腺三磷雙磷酸酶包含 SEQ ID NO: 229 的胺基酸序列。

【0030】 在另外的較佳實施方式中，本揭露涉及根據本發明第一方面的分離的腺三磷雙磷酸酶用於治療敗血症相關的急性腎損傷之用途。

【0031】 在第四方面的一個實施方式中，用於治療敗血症相關的急性腎損傷的溶解的人腺三磷雙磷酸酶包含 SEQ ID NO: 58 的胺基酸序列。

【0032】 在第四方面的一個實施方式中，用於治療敗血症相關的急性腎損傷的溶解的人腺三磷雙磷酸酶包含 SEQ ID NO: 72 的胺基酸序列。

【0033】 在第四方面的一個實施方式中，用於治療敗血症相關的急性腎損傷的溶解的人腺三磷雙磷酸酶包含 SEQ ID NO: 229 的胺基酸序列。

【0034】 根據本發明的第五方面，提供了治療人受試者中的組織損傷之方法，該方法包括向所述受試者施用治療有效劑量的根據第一方面的溶解的人腺三磷雙磷酸酶。本發明第五方面的一個實施方式涉及治療心臟手術相關的急性腎損傷之方法，該方法包括向需要這種治療的受試者施用治療有效劑量的根據本發明第一方面的分離的腺三磷雙磷酸酶。

【0035】 本發明第五方面的另一個實施方式涉及治療移植物功能延遲（DGF）、急性呼吸窘迫症候群（ARDS）、急性心肌梗塞（AMI）、外傷性腦損傷（TBI）/急性缺血性中風（AIS）、缺血再灌注損傷（IRI）、或通常被稱為多器官衰竭（MOF）的其組合之方法，該方法包括向需要這種治療的受試者施用治療有效劑量的根據本發明第一方面的分離的腺三磷雙磷酸酶。

【0036】 在第五方面的一個實施方式中，用於治療心臟手術相關的急性腎損傷的方法中的溶解的人腺三磷雙磷酸酶包含 SEQ ID NO: 58、SEQ ID NO: 72 或 SEQ ID NO: 229 的胺基酸序列。

【0037】 本發明第五方面的一個實施方式涉及治療敗血症相關的急性腎損傷之方法，該方法包括向需要這種治療的受試者施用治療有效劑量的分離的根據本發明第一方面的腺三磷雙磷酸酶。

【0038】 在第五方面的一個實施方式中，用於治療敗血症相關的急性腎損傷的方法中的溶解的人腺三磷雙磷酸酶包含 SEQ ID NO: 58、SEQ ID NO: 72 或

SEQ ID NO: 229 的胺基酸序列。組織損傷可以是急性腦損傷（中風）；急性多器官衰竭；腎臟或其他實體器官移植後移植物功能延遲；燒傷；輻射損傷；由於創傷和/或缺氧引起的急性損傷，如急性呼吸窘迫症候群（ARDS）或肺損傷；急性腎損傷，如繼發於胸外科手術（例如主動脈瓣置換術、冠狀動脈繞道手術）或敗血症或橫紋肌溶解症或抗生素或其他藥物的毒性作用的急性腎損傷；急性心肌損傷。

【0039】 根據本發明的第六方面，提供了編碼根據第一方面的任何腺三磷雙磷酸酶的分離的核酸分子。

【0040】 根據本發明的第七方面，提供了包含根據第六方面的一種或多種核酸序列的選殖載體或表現載體，其中該載體適用於根據第一方面的分離的腺三磷雙磷酸酶的重組產生。

【0041】 根據本發明的第八方面，提供了包含根據第七方面的一種或多種選殖載體或表現載體的宿主細胞。

【0042】 根據本發明的第九方面，提供了用於生產根據第一方面的腺三磷雙磷酸酶之方法，該方法包括培養根據第八方面的宿主細胞，純化和回收所述腺三磷雙磷酸酶。

【圖式簡單說明】

【0043】 [圖1] 係序列比對；

【0044】 [圖 2A] 係根據實施方式藉由抗 APP 西方墨點法跡進行的含有人 CD39 的上清液表現水平之表示；

【0045】 [圖 2B] 係根據實施方式藉由抗 APP 西方墨點法跡進行的含有半胱胺酸橋缺失的人 CD39 變體的上清液表現水平的表示；

【0046】 [圖 3] 係顯示 CD39 變體的固相 ATP 酶測定結果之圖；

【0047】 [圖 4] 係顯示根據實施方式用人 CD39 變體轉化的 HEK293 細胞上的固相 ATP 切割之圖；

【0048】 [圖 5] 係根據實施方式的載體之示意性概述；

【0049】 [圖 6] 係基於穩態近似之酶模型；

【0050】 [圖 7] 係根據實施方式的蛋白質的動力學數據和模型擬合之概述；

【0051】 [圖 8] 係根據實施方式的蛋白質的動力學數據和模型擬合之概述；

【0052】 [圖 9] 係根據實施方式的蛋白質的動力學數據和模型擬合之概述；

【0053】 [圖 10] 係實驗條件之示意性圖示。圖 10A：抗-CD39（40035）和抗-APP（27431）。圖 10B：Fab（40035）和抗-Fc/抗-CD39（40044）1 : 1 預混合物（所有 EP28aa1-16 構建體）。當藉由胺偶聯被生物素化時，抗體 40044 喪失活性，因此，僅抗體 40035 被生物素化；

【0054】 [圖 11] 係顯示根據實施方式的蛋白質的 AMP 水平之圖；以及

【0055】 [圖12] 係顯示根據實施方式的蛋白質的體內結果之圖。候選物顯示出體內劑量響應，這與它們具體的體外活性相關。圖12A顯示了親本EP28的結果，圖12B顯示了EP1xEP17的結果，圖12C顯示了EP14的結果。

【實施方式】

【0056】 本揭露尤其基於如下意想不到的發現：溶解的CD39的某些修飾導致具有驚人活性的蛋白質，該蛋白質係安全且易於製造的。

【0057】 如以下具體實例中所示，較佳的實施方式係一種溶解的人腺三磷雙磷酸酶，其具有至少兩個修飾，該等修飾選自由以下組成的列表：N 末端缺失、C 末端缺失和中心缺失，如包含如下序列的溶解的人腺三磷雙磷酸酶，該序列選自由以下組成之群組：SEQ ID NO: 4、SEQ ID NO: 6、SEQ ID NO: 32、SEQ ID NO: 54、SEQ ID NO: 56、SEQ ID NO: 70、SEQ ID NO: 76、和 SEQ ID NO: 78。

【0058】 發明人嘗試了若干種不同的序列修飾策略以獲得兼具保留活性和待表現能力的溶解的人腺三磷雙磷酸酶，同時因為免疫原性增加的風險並因此增加了安全性風險，仍未引入太多修飾。令人驚訝的是，一種被發現既增加效率又增加表現人腺三磷雙磷酸酶的能力的序列修飾係中心部分的缺失，即所謂的 δMIL（ΔMIL）修飾，同時不添加過多的免疫原性風險。

【0059】 為了增加根據本發明實施方式的溶解的人腺三磷雙磷酸酶的表現，測試了 N 末端表現標籤。各種 N 末端表現標籤係本領域已知的，但令人驚訝的是並非所有標籤都起作用。發明人發現有幾個標籤起作用，這係不可預見的。

【0060】 該等 N 末端標籤係 SEQ ID NO: 131、SEQ ID NO: 133、SEQ ID NO: 135、SEQ ID NO: 137、SEQ ID NO: 139 或 SEQ ID NO: 141。如本文所示，特別較佳的標籤係 SEQ ID NO: 133、SEQ ID NO: 135 或 SEQ ID NO: 137。

【0061】 具體細節在以下實例 9 至 13 中列出。然而，為了展示該等實例的不可預測的性質，**表 1 中呈現了比較總結。**

【0062】 [表 1]. 較佳實施方式的總結。

構建體	修飾		與親本 EP28 相比的活性		滴度（g/L）
	來自 SEQ ID NO: 131 的 N 末端 aa 的編號	點突變的數量	體外	體內	
EP1xEP17	6	2	1.5x		0.6
EP17xEP19	6	2	1.5x		0.26
EP1xEP17xEP19	6	3	1.5x		0.46
EP17xEP19	3	2	1.5x		0.40
EP1xEP17xEP19	3	3	1.5x		0.58
EP1	3	1	1x		0.29
EP1xEP14	3	2	4x		0.50
EP28	16	0	1x	1x	0.08
EP1xEP17_K405N	15	3	1.5x	1x	1.4
EP1xEP14	6	2	4x		0.3
EP1xEP17	3	2	1.5x		0.68
EP28	3	0	1x		0.10

EP14	3	1	4x	4x	0.27

【0063】 1. 定義

【0064】 為了便於熟悉該項技術者實施本發明，在整個說明書中使用以下術語。

【0065】 術語「CD39」和「hCD39」在整個揭露中同義使用，並且除非另有說明，否則意指根據 UniProt P49961 或 SEQ ID NO: 1 的人分化簇 39（CD39）。

【0066】 除非另有說明，否則術語「腺三磷雙磷酸酶」係指人腺三磷雙磷酸酶。如本文所使用的，「溶解的腺三磷雙磷酸酶」意指作為野生型蛋白質存在的與細胞膜結合的腺三磷雙磷酸酶已被修飾，使得其不再與細胞膜結合而是以可溶狀態存在，即不再錨定至細胞膜上。

【0067】 縮寫「MIL」係指膜相互作用環，其係與細胞膜相互作用的野生型（人）CD39 蛋白質的中心部分，除了藉由細胞膜物理錨定的 N 末端和 C 末端部分。術語「δMIL（delta MIL 或 ΔMIL）」係指來自野生型（人）CD39 的 MIL 序列的缺失。

【0068】 與數值 x 相關的術語「約」意指例如+/-10%。當在數值範圍或數字清單前使用時，術語「約」適用於系列中的每個數字，例如，短語「約 1-5」應被解釋為「約 1-約 5」，或例如，短語「約 1、2、3、4」應被解釋為「約 1、約 2、約 3、約 4 等」。

【0069】 詞語「基本上」不排除「完全」，例如，「基本上不含」Y 的組成物可以完全不含 Y。在必要的情況下，可以從本揭露的定義中省略詞語「基本上」。

【0070】 術語「包含」涵蓋「包括」以及「由...組成」，例如，「包含」X 的組成物可以僅由 X 組成或可以包括另外的一些，例如 X + Y。

【0071】 關於天然多肽及其功能衍生物的「同一性」在本文中定義為：在比對序列並且引入空位（如果需要的話）以實現最大同一性百分比之後，並且不考慮任何保守取代作為序列同一性的一部分，候選序列中胺基酸殘基與相應天然多肽的殘基相同的百分比。N-末端或 C-末端延伸與插入均不應解釋為降低同一性。用於比對的方法及電腦程式係熟知的。百分比同一性可藉由標準比對演算法來確定，例如 Altshul 等人描述的基本局部比對搜索工具（BLAST）（(1990) J. Mol. Biol. [分子生物學雜誌], 215: 403 410）；Needleman 等人的演算法（(1970) J. Mol. Biol. [分子生物學雜誌], 48: 444 453）；或 Meyers 等人的演算法（(1988) Comput. Appl. Biosci. [生物科學中的電腦應用], 4: 11 17）。一組參數可以是具有空位罰分 12、空位延伸罰分 4、以及移碼空位罰分 5 的 Blosum 62 評分矩陣。也可使用已經整合到 ALIGN 程式（版本 2.0）中的 E.Meyers 和 W. Miller（(1989) CABIOS, 4:11-17）的演算法，使用 PAM120 權重殘基表、空位長度罰分 12 和空位罰分 4 確定兩個胺基酸或核苷酸序列之間的百分比同一性。

【0072】 「一個或多個胺基酸」係指例如所有天然存在的 L-α-胺基酸並且包括 D-胺基酸。短語「胺基酸序列變體」係指與根據本揭露的序列相比在其胺基酸序列中具有一些差異的分子。根據本揭露的蛋白質（例如，指定序列）的胺基酸序列變體，仍然具有腺三磷雙磷酸酶活性。胺基酸序列變體包括取代性變體（去除至少一個胺基酸殘基且在根據本揭露的多肽中的相同位置插入不同胺基酸的那些變體）、插入性變體（緊鄰根據本揭露的多肽中的特定位置處的胺基酸插入一個或多個胺基酸的那些變體）以及缺失性變體（在根據本揭露的多肽中去除一個或多個胺基酸的那些變體）。

【0073】 術語「治療（treatment 或 treat）」在本文中定義為：向受試者應用或施用根據本發明的腺三磷雙磷酸酶，或者向受試者或來自受試者的分離的組織或細胞系應用或施用包含所述腺三磷雙磷酸酶的藥物組成物，其中該受試

者具有組織損傷，與組織損傷相關的症狀，其目的是尤其是藉由降低細胞外 ATP 的水平來緩解、減輕或改善組織損傷或與組織損傷相關的任何症狀。

【0074】 「治療」還旨在向受試者應用或施用包含腺三磷雙磷酸酶的藥物組成物，或者向來自受試者的分離的組織或細胞系應用或施用包含本發明的腺三磷雙磷酸酶的藥物組成物，其中該受試者具有組織損傷或與組織損傷相關的症狀，其目的是緩解、減輕或改善組織損傷或與組織損傷相關的任何症狀。

【0075】 術語「預防（prevent/preventing）」係指預防性（prophylactic/preventative）處理；其關注的是延遲或防止與之相關的疾病、障礙和/或症狀的發作。

【0076】 如本文所使用的，如果受試者將在生物學上、在醫學上或在生活品質上從治療中獲益，則這類受試者係「需要」這種治療的。

【0077】 術語「藥學上可接受的」意指不干擾一種或多種活性成分的生物活性的有效性的無毒性材料。

【0078】 如本文所使用的，術語「施用（administration/administering）」主題化合物意指向需要治療的受試者提供本發明的化合物及其前藥。與一或多種其他治療劑「組合」施用包括以任何順序和任何施用途徑同時（並行）施用和連續施用。

【0079】 如本文所使用的，「治療有效劑量」係指腺三磷雙磷酸酶在以單劑量或多劑量向患者（如人）施用時有效地治療、預防、防止發病、治癒、延遲、降低嚴重程度、減輕障礙或復發障礙的至少一種症狀、或延長患者的存活期超出無此治療存在時所預期存活期的劑量（量）。當應用於單獨施用的單獨活性成分（例如腺三磷雙磷酸酶）時，該術語係指單獨的該成分。當應用於組合時，該術語係指產生治療作用的活性成分（無論連續還是同時組合施用）的組合劑量或量。

【0080】 短語「劑量方案」意指用於治療疾病的方案，例如在組織損傷治療期間使用的給藥方案。

【0081】 短語「施用裝置」用於表示向患者全身性地施用藥物的任何可用器具，包括但不限於預填充注射器、小瓶及注射器、注射筆、自動注射器、靜脈內（i.v.）滴注器和袋、泵、貼片泵等。使用該等物品，患者可自施用藥物（即自行施用藥物），或可由醫師施用藥物。

【0082】 2. 實例 1：無膜 CD39

【0083】 野生型人腺三磷雙磷酸酶 CD39（hCD39，UniProt P49961 或 SEQ ID NO: 1）藉由 N-末端的跨膜結構域（推定的 aa 17-37）、中心推定的膜相互作用環（MIL 推定的 aa 193-204）和 C-末端的跨膜結構域（推定的 aa 479-499）天然錨定在細胞膜中。為了能夠使用哺乳動物宿主細胞表現 CD39 的可溶變體，已經修飾了 CD39 序列的若干個元件以獲得無膜的或溶解的蛋白質。天然前導序列和 N-末端跨膜區被分泌前導序列和純化標籤（SEQ ID NO: 133）取代。已經改變 CD39 的細胞外結構域的邊界以優化表現、純化和活性參數（分別為 SEQ ID NO: 1 的胺基酸編號 38-476、SEQ ID NO: 1 的胺基酸編號 39-469、SEQ ID NO: 1 的胺基酸 46-461、和 SEQ ID NO: 1 的胺基酸 46-476）。藉由用丙胺酸取代半胱胺酸或藉由縮短由二硫橋（SEQ ID 107、109、111、113 和 115）構成的環，系統地評估半胱胺酸和二硫橋對聚集傾向和酶活性的影響。在大鼠 CD39 的結構工作（Zebisch 等人, J.Mol. Biol. [分子生物學雜誌] (2012), 415, 288-306，野生型大鼠 CD39，Uniprot P97687，列出在 SEQ ID NO: 2 中）中描述了一段疏水性胺基酸，並且據認為，該環可能與細胞膜（MIL）相互作用。我們藉由序列比對將結果翻譯成人 CD39 序列，並生成具有環缺失的 CD39 變體（CD39ΔMIL 或 EP28，如 SEQ ID NO: 4 中所列出的）。評估 MIL 的缺失（或 δ/Δ）對功能性 CD39 的表現水平和熱穩定性的影響。

【0084】 從圖 1（顯示了 SEQ ID NO: 1 和 SEQ ID NO: 4 的序列比對）中可以看出，N 末端胺基酸 1 至 27、C 末端胺基酸 477 至 510 和中心膜相互作用環（MIL）胺基酸 193 至 204 從 wtCD39（SEQ ID NO: 1）缺失以形成 CD39ΔMIL（SEQ ID NO: 4）。

【0085】 研究了不同序列修飾對熱穩定性的影響。此外，研究了不同序列修飾對 CHO 細胞表現產率和單體含量的影響。

【0086】 (1) 方法

【0087】 *(a) 表現質粒的生成*

【0088】 編碼不同 hCD39 邊界變體和膜相互作用環（MIL）缺失的 DNA 序列在 GeneArt(生命技術公司(Life Technologies Inc.)雷根斯堡(Regensburg)，德國）處訂購，包括針對智人的密碼子優化。藉由標準分子生物學技術將編碼 hCD39 變體的序列從 GeneArt 衍生的載體或其內部生成的變體亞選殖到適用於在哺乳動物細胞中分泌的表現載體中。存在於半胱胺酸橋缺失變體中的半胱胺酸至丙胺酸突變被經修飾的寡核苷酸靶向，並且在隨後的組裝 PCR 步驟後，將生成的片段亞選殖到先前提及的相同表現載體中。表現載體的元件包括啟動子（巨細胞病毒（CMV）增強子 - 啟動子）、促進分泌的訊號序列、多腺苷酸化訊號和轉錄終止子（牛生長激素（BGH）基因）、允許在原核生物中游離型複製和複製的元件（例如 SV40 起點和 ColE1 或本領域已知的其他元件）和允許選擇的元件（胺苄青黴素抗性基因和吉歐黴素標記）。**表 2 中展示了截短的、溶解的人 CD39 版本的列表，其中胺基酸修飾參考 SEQ ID NO: 1 進行編號。**

【0089】 [表 2]. 截短的、溶解的人 CD39 版本。

參考	胺基酸序列 ID	一個或多個修飾
CD39（aa39-469）	SEQ ID NO: 99	N 末端截短和 C 末端截短
CD39（aa46-476）	SEQ ID NO: 101	N 末端截短和 C 末端截短
CD39（aa46-461）	SEQ ID NO: 103	N 末端截短和 C 末端截短
CD39（aa46-461）_dMIL	SEQ ID NO: 105	N 末端截短和 C 末端截短，

（193-204）		以及中心缺失
CD39（aa46-461）_δ cys1	SEQ ID NO: 107	N 末端截短和 C 末端截短，以及半胱胺酸缺失
CD39（aa46-461）_δ cys2	SEQ ID NO: 109	N 末端截短和 C 末端截短，以及半胱胺酸缺失
CD39（aa46-461）_δ cys3	SEQ ID NO: 111	N 末端截短和 C 末端截短，以及半胱胺酸缺失
CD39（aa46-461）_δ cys4	SEQ ID NO: 113	N 末端截短和 C 末端截短，以及半胱胺酸缺失
CD39（aa46-461）_δ cys5	SEQ ID NO: 115	N 末端截短和 C 末端截短，以及半胱胺酸缺失
CD39（aa46-461）_dMIL（193-204）_δ cys1	SEQ ID NO: 117	N 末端截短和 C 末端截短、中心缺失以及半胱胺酸缺失
CD39（aa46-461）_dMIL（193-204）_δ cys2	SEQ ID NO: 119	N 末端截短和 C 末端截短、中心缺失以及半胱胺酸缺失
CD39（aa46-461）_dMIL（193-204）_δ cys3	SEQ ID NO: 121	N 末端截短和 C 末端截短、中心缺失以及半胱胺酸缺失
CD39（aa46-461）_dMIL（193-204）_δ cys4	SEQ ID NO: 123	N 末端截短和 C 末端截短、中心缺失以及半胱胺酸缺失
CD39（aa46-461）_dMIL（193-204）_δ cys5	SEQ ID NO: 125	N 末端截短和 C 末端截短、中心缺失以及半胱胺酸缺失
CD39（aa38-476）_δ 337-344	SEQ ID NO: 127	N 末端截短和 C 末端截短，以及半胱胺酸缺失
CD39（aa38-476）_C338A_C343A	SEQ ID NO: 129	N 末端截短和 C 末端截短，以及半胱胺酸點突變

【0090】 *(b) hCD39 變體的微規模表現*

【0091】 選擇 293-6E 細胞（如 WO 2006096989 A2 中所揭露，藉由援引併入本文）用於微規模實驗，將其作為在不存在血清的情況下暫態表現蛋白質的較佳宿主細胞系之一。使用 FuGene HD（羅氏應用科學部（Roche Applied Science），目錄號 04709705001）作為轉染試劑進行轉染。使用 V3 無血清培養基（生物概念公司（Bioconcept），目錄號 V3-K）在懸浮培養中培養 293-6E 細胞，用於轉染和繁殖細胞。細胞在 Corning 搖瓶（科寧公司（Corning），特克斯貝裡（Tewksbury），麻塞諸塞州）中在軌道振盪器（100-120 rpm）上在 5% CO_2 的加濕培養箱中生長（種子燒瓶）。種子培養物中的細胞應保持在指數生長期

（細胞密度在 5 x 10^5 與 3 x 10^6/mL 之間），並且展現出 > 90%的轉染活力。超出該範圍的細胞密度將導致稀釋後的遲滯期或降低的轉染效率。

【0092】 對於微規模（0.5 ml）轉染，從種子培養物中取出等分試樣的細胞，並在 V3 無血清培養基中調節至 0.5 x 10^6 個細胞/mL。藉由在 14 µl 的 V3 無血清培養基中稀釋 0.5 µg 的 hCD39 表現質粒來製備 DNA 溶液（稱為溶液 1），然後也將 2.3 µl 的 FuGene HD 溶液稀釋於 14 µl 的 V3 無血清培養基中（溶液 2）。將兩種溶液在室溫（RT）下孵育 5-10 min。此後，在溫和混合下將溶液 2 添加到溶液 1 中，並在室溫下再孵育 5-15 分鐘。然後將轉染混合物以 0.5 x 10^6 個細胞/mL 添加到 0.5 ml 的細胞中，接種於 48 孔組織培養板（科寧公司，特克斯貝裡，麻塞諸塞州）中，並將板置於在 5% CO_2 的加濕培養箱中的軌道振盪器（300 rpm）上。轉染後 3 天藉由在 4°C 下以 4000 rpm 離心 10 分鐘來收穫培養物（賀利氏公司（Heraeus），Multifuge 3 S-R，賽默科技公司（Thermo Scientific），羅克福德（Rockford），伊利諾州）。將回收的細胞上清液儲存在 4°C 下直至進一步處理。

【0093】 *(c) 對微規模表現上清液進行的西方墨點法跡分析*

【0094】 對微規模表現上清液進行西方墨點法跡分析，以檢查重組 hCD39 變體的表現和正確形成。將 8 µl 的上清液稀釋在 E-PAGE™ 載入緩衝液（4 x，英傑公司（Invitrogen），#EPBNF-01）中，並在非還原條件下載入到 E-Page 48，8%凝膠上（英傑公司，#EP04808）。將凝膠在 E 基母裝置（E-base mother device）（英傑公司）上運行 23 min，並根據製造商的說明（運行 7 min）使用 iBlot 系統（英傑公司）將蛋白質轉移到硝酸纖維素膜（英傑公司 IB301001）。在 TBS/0.05 Tween20（TBST）中洗滌 3 次後，將膜與 5%乳/TBST 在溫和攪拌下孵育 1 h，隨後與在 2%乳/TBST 中稀釋的 4 µg/ml 的抗 APP 小鼠抗體（諾華公司內部抗體，針對用於蛋白質標記的澱粉樣前驅蛋白（APP）的肽段產生）溶液孵育 1 hr。在

另外 3 次洗滌步驟後，將膜與在 2%乳/TBST 中稀釋的抗小鼠 IgG-鹼性磷酸酶（西格瑪奧德里奇公司（Sigma-Aldrich），A5153-1ML）的 1 : 1000 稀釋液一起孵育，並在 TBST 中再次洗滌 3 次，隨後在 TBS 中進行沖洗步驟。根據製造商的說明使用 SIGMAFAST™ BCIP®/NBT（西格瑪奧德里奇公司，#B5655-25TAB），將訊號顯影 1-5 分鐘，並藉由用水沖洗膜來停止訊號。

【0095】 *(d) 固相 AxP 酶測定*

【0096】 使用 Pi ColorLock Gold 磷酸鹽檢測系統（伊諾華生物科學公司（Innova Biosciences），目錄號 303-0030）在來自微規模表現上清液（固相 Axp 酶測定）的板捕獲的 hCD39 變體上確定 ATP 酶的、ADP 酶的和 AMP 酶的活性。發現該方法與製造商推薦的基於溶液的測定（液相 Axp 酶測定）相比更不敏感，但是具有降低可能存在於微規模表現上清液中的宿主細胞酶介導的 AxP 酶活性的優點。將在 PBS 中稀釋的 20 µl 的抗 APP 小鼠抗體 10 µg/ml 溶液抗體（諾華公司內部抗體，針對用於蛋白質標記的澱粉樣前驅蛋白（APP）的肽段產生）添加到 maxisorp 384 孔透明板（Nunc）的每個孔中，並在 4°C 下孵育過夜。用 TBST 洗滌三次後，在室溫下在溫和攪拌下使用 100 µl 的 5%乳/TBST 將孔封閉 1 h。在另外三個洗滌步驟後，將 20 µl 的在 2%乳/TBST 中連續稀釋的微規模表現上清液一式三份添加到孔中，並在室溫下在溫和攪拌下孵育 2 hr。然後將孔用 100 µl 的 TBST 再次洗滌四次，並用 80 µl 的 50 mM Tris-Cl/5 mM $MgCl_2$ pH 7.5 洗滌兩次。將在 50 mM Tris-Cl/5 mM $MgCl_2$ pH 7.5（ATP：西格瑪公司（SIGMA）A2383，ADP：西格瑪公司 A2754）中稀釋的 30 µl 的 80 µM 腺苷磷酸鹽溶液添加到每個一式三份中，並在 37°C 下孵育 24 hr。使用根據製造商的說明製備的 7.5 µl 的金試劑混合物，將訊號顯影 10 分鐘，並使用 3 µl 的穩定劑停止反應。使用 TECAN Genios Pro 儀器讀取 620 nm 處的吸光度。

【0097】 (2) 結果

【0098】 *(a) 邊界、膜相互作用環(MIL)缺失和半胱胺酸橋缺失對hCD39表現水平的影響*

【0099】 為了評估不同 hCD39 變體的表現水平，將相應的表現質粒在 0.5 ml 的 293-6E 細胞中一式兩份轉染，並在轉染後 3 天收集的上清液上進行西方墨點法跡（抗 APP 檢測 Ab）。結果在圖 2A 和圖 2B 中展示。

【0100】 結果表示，與 aa46 相比，從 aa38 處起始的 hCD39 的表現水平更高。N 末端邊界以及 MIL 缺失似乎對表現水平沒有重大影響。還觀察到在 hCD39（aa46-461）的背景下，缺失第一或第四半胱胺酸橋的 hCD39 的更高表現水平。使用 hCD39（aa46-461）ΔMIL 骨架也證實了第一半胱胺酸橋缺失的更高表現水平。

【0101】 *(b) 邊界、膜相互作用環(MIL)缺失和半胱胺酸橋缺失對hCD39活性的影響*

【0102】 藉由固相 AxP 酶測定對上述上清液樣品測量 CD39 酶活性。結果在圖 3 和圖 4 以及**表 3 中展示。**

【0103】 [表 3]. 對 CD39 變體進行的固相 ATP 測定

樣品	序列	平均訊號			
		稀釋 1/2	稀釋 1/6	稀釋 1/18	稀釋 1/54
圖 3					
hCD39（aa46-461）_δ Cys1	SEQ ID NO: 107	0.12755	0.12905	0.13155	0.13545
hCD39（aa46-461）_δ Cys2	SEQ ID NO: 109	0.1287	0.13615	0.12915	0.1375
hCD39（aa46-461）_δ Cys3	SEQ ID NO: 111	0.12265	0.1336	0.13485	0.1365
hCD39（aa46-461）_δ Cys4	SEQ ID NO: 113	0.14	0.1302	0.13535	0.1322
hCD39（aa46-461）_δ Cys5	SEQ ID NO: 115	0.1226	0.13865	0.13375	0.13225
hCD39（aa46-461）_δ MIL_δ Cys1	SEQ ID NO: 117	0.17695	0.16	0.15755	0.1551
hCD39（aa46-461）_δ MIL_δ Cys2	SEQ ID NO: 119	0.1318	0.1419	0.13065	0.1299

hCD39（aa46-461）_δ MIL_δ Cys3	SEQ ID NO: 121	0.13505	0.1376	0.1347	0.13775
hCD39（aa46-461）_δ MIL_δ Cys4	SEQ ID NO: 123	0.21195	0.18745	0.16915	0.14975
hCD39（aa46-461）_δ MIL_δ Cys5	SEQ ID NO: 125	0.1343	0.1486	0.13135	0.10465
hCD39（aa46-461）	SEQ ID NO: 103	0.30345	0.2433	0.1879	0.1851
hCD39（aa46-461）_δ MIL	SEQ ID NO: 105	0.5037	0.3779	0.32345	0.2567
hCD39（aa38-476）	序列未顯示	0.30745	0.23855	0.18315	0.17295
hCD39（aa46-476）	SEQ ID NO: 101	0.34815	0.254	0.1975	0.1817
未轉染的		0.1459	0.14155	0.13855	0.13675
圖 4					
hCD39（aa38-476）	序列未顯示	0.45775	0.4007	0.1997	0.14215
hCD39（aa46-461）_δ MIL	SEQ ID NO: 105	0.8983	0.9294	0.6561	0.35405
hCD39（aa46-476）	SEQ ID NO: 101	0.5756	0.4855	0.27525	0.153
hCD39（aa46-461）	SEQ ID NO: 103	0.562	0.52455	0.28625	0.15175
hCD39（aa38-476）_δ MIL（EP28）	SEQ ID NO: 4	1.0224	0.9696	0.6263	0.4354
未轉染的		0.1483	0.1494	0.158	0.1502

【0104】 MIL 的缺失似乎增加了功能性表現的 CD39 重組蛋白的級分。不同邊界不顯示對活躍的 hCD39 活性的任何重大影響。結果表示所有半胱胺酸橋缺失的變體的 ATP 酶活性強烈降低或完全消除。使用固相 ADP 酶測定獲得了相似的結果。因此，令人驚訝的是，既提高效率又提高表現 CD39 的能力的序列修飾係 δMIL（ΔMIL）修飾。

【0105】 3. 實例 2：表現標籤

【0106】 為了改善候選物的表現特性，測試了不同的表現標籤。

【0107】 如表 4 中所列出的，測試了基於 IL-2（SEQ ID NO: 131）的 N-末端部分的不同表現標籤。根據 SEQ ID NO: 131，表現標籤 1-16 aa 由 Geneart 合成。

【0108】 [表 4]. IL-2 表現標籤變體概述

參考	胺基酸序列 ID	正向引物序列 ID	反向引物序列 ID

表現標籤 aa1-16	SEQ ID NO: 131	n/a	n/a
表現標籤 aa1-15	SEQ ID NO: 133	SEQ ID NO: 157	SEQ ID NO: 158
表現標籤 aa1-6	SEQ ID NO: 135	SEQ ID NO: 159	SEQ ID NO: 158
表現標籤 aa1-3	SEQ ID NO: 137	SEQ ID NO: 161	SEQ ID NO: 158
表現標籤 aa1-9	SEQ ID NO: 139	SEQ ID NO: 162	SEQ ID NO: 158
表現標籤 aa1-12	SEQ ID NO: 141	SEQ ID NO: 163	SEQ ID NO: 158
表現標籤 aa4-12	SEQ ID NO: 143	SEQ ID NO: 164	SEQ ID NO: 158

【0109】 如 SEQ ID NO: 4 中所列出的，測試了與 CD39ΔMIL 相關的所有表現標籤。所有構建體都包括 APP 標籤和 His 標籤。

【0110】 如圖 5 中所列出的，載體 pRS5a 用於表現。引物對如在**表 4 中所列出的。**

【0111】 在所有情況下退火溫度均為 64°C。

【0112】 藉由混合 1 µl 模板 DNA 儲備液，25 µl Kapa 高保真暖開機聚合酶（來自卡帕生物系統公司（kappa Biosystems）/KK2602）來製備 PCR 溶液。1.5 µl 正向引物，1.5 µl 反向引物，並用 H_2O 將終體積調節至 50 µl。

【0113】 根據表 5 中的時間表運行 PCR 反應。

【0114】 [表 5]. PCR 時間表

	溫度（°C）	時間（min）	循環
變性	94	5	1
變性	94	0.5	35
退火	64	1.5	
聚合	72	0.5	
終聚合	72	5	

【0115】 完成 PCR 反應後，根據製造商的說明，使用 Wizard® SV 凝膠和 PCR 清除套組（kit）（PCR Clean-Up Kit）（普洛麥格公司（Promega），編號 9282，1 柱，在 30 µl 中洗脫）進行 DNA 提取。

【0116】 在 CutSmart(R) 緩衝液中用新英格蘭生物實驗室公司（New England Biolabs，NEB）提供的酶 NruI-HF（NEB #R3192）和 NotI-HF（NEB #R3189）切割插入物和載體。反應時間在 37°C 下 3 h。

【0117】 根據生產者的有效方案，用快速 DNA 去磷酸化（Rapid DNA Dephosphorylation）和連接套組（Ligation Kit）（Fa. 羅氏公司，編號 04898117001）的去磷酸化載體進行過夜連接。

【0118】 第二天，挑選單菌落用於 DNA-微量製備並用正向引物 P270（SEQ ID NO: 165）和反向引物 P271（SEQ ID NO: 166）進行序列分析。

【0119】 此外，根據**表 6，測試了本領域已知的一些增加表現的蛋白質序列。**

【0120】 [表 6]. 先前技術標籤

參考	序列識別字
泛素	SEQ ID NO: 167
Cκ	SEQ ID NO: 168
HSA 結構域 I	SEQ ID NO: 169
HSA 結構域 II	SEQ ID NO: 170

【0121】 測試的所得組合在表 7 中列出。

【0122】 [表 7]. 測試的構建體

質粒名稱	*所得的胺基酸序列*
pRS5a_IL2 前導序列-APP6-Flag- hCD39（aa38-476）_δMIL（aa193-204）_8M opt	SEQ ID NO: 145
pRS5a_IL2 前導序列-hs 泛素- hCD39（aa38-476）_δMIL（aa193-204）_APP_His	SEQ ID NO: 149
pRS5a_IL2前導序列-hsCκ- hCD39（aa38-476）_δMIL（aa193-204）_APP_His	SEQ ID NO: 147
pRS5a_IL2 前導序列-HSA-結構域I- hCD39（aa38-476）_δMIL（aa193-204）_APP_His	SEQ ID NO: 151
pRS5a_IL2前導序列-HSA-結構域II- hCD39（aa38-476）_δMIL（aa193-204）_APP_His	SEQ ID NO: 153

【0123】 來自表6的先前技術標籤均未給出蛋白質的表現（數據未顯示）。這係意想不到的，因為先前技術教導該等序列應該增加表現。

【0124】 **4.** 實例 3：其他突變

【0125】 為了改善可溶 CD39 的特徵並使其適用於藥物開發，在 SEQ ID NO: 4 中列出的 CD39ΔMIL、EP28 中引入了其他修飾。不同的突變和突變的變

體見於表 **8** 中，並根據如 SEQ ID NO: 1中所列出的野生型 CD39 的胺基酸位置編號。

【0126】 [表 8]. 點突變

簡稱	突變數量	突變位置1	突變位置2	突變位置3	突變位置4	突變位置5	胺基酸序列ID
EP1	1	113: R->M					SEQ ID NO: 6
EP2	2	113: R->M	149: L->M				SEQ ID NO: 8
EP3	3	113: R->M	304: R->G	469: S->R			SEQ ID NO: 10
EP4	3	95: V->A	113: R->M	469: S->R			SEQ ID NO: 12
EP5	2	149: L->M	441: G->D				SEQ ID NO: 14
EP6	3	104: Y->S	149: L->M	263: W->R			SEQ ID NO: 16
EP7	4	71: K->E	106: T->S	151: V->A	319: I->T		SEQ ID NO: 18
EP8	1	151: V->A					SEQ ID NO: 20
EP9	1	263: W->R					SEQ ID NO: 22
EP10	1	319: I->T					SEQ ID NO: 24
EP11	2	113: R->M	319: I->T				SEQ ID NO: 26
EP12	2	276: E->D	319: I->T				SEQ ID NO: 28
EP13	2	365: F->S	424: L->P				SEQ ID NO: 30
EP14	1	365: F->S					SEQ ID NO: 32
EP15	4	292: N->K	365: F->S	424: L->P	463: P->S		SEQ ID NO: 34
EP17.1	1	412: Y->F					SEQ ID NO: 38
EP17	2	405: K->N	412: Y->F				SEQ ID No. 36
EP18	2	102: G->D	424: L->Q				SEQ ID No. 40
EP19	2	424: L->Q	436: H->D				SEQ ID No. 42
EP20	2	276: E->G	439: F->S				SEQ ID No. 44

EP21	2	113: R->M	469: S->R				SEQ ID No. 46
EP22	2	276: E->G	469: S->G				SEQ ID No. 48
EP23	4		254: L->M	263: W->R	439: F->S	469: S->R	SEQ ID No. 50
EP24	3	113: R->K	424: L->Q	437: I->N			SEQ ID No. 52
EP28 _8M	8	173: E->D	258: K->R	362: A->N	365: F->Y	404-411: VKEKY LSE-> -QERW LRD	SEQ ID No. 145

【0127】 活性位點中的兩個突變導致更高的活性（365 和 412）。

【0128】 5. 實例 4：糖基化位點去除

【0129】 基於上述 EP14 變體，藉由引入根據表 9 的點突變來檢查糖基化位點的作用，所述點突變根據如 SEQ ID NO: 1 所列出的野生型 CD39 的胺基酸位置編號。

【0130】 [表 9]. 糖基化位點突變

突變位置	糖基化位點	引物
N73Q	NDT	P928/P929
T229A	NQT	P930/P931
N292Q	NVS	P932/P933
N327Q	NTS	P934/P935
N371Q	NLT	P936/P937
N457Q	NLT	P938/P939

【0131】 *(a) 材料與方法*

【0132】 將表現載體 pRS5a（圖 5）用於選殖。使用如在表 10 中所列出的引物。

【0133】 [表 10]. 引物序列

引物	*序列*	*描述*
P928	SEQ ID NO: 171	用於去除糖基化位點N73Q的正向引物
P929	SEQ ID NO: 172	用於去除糖基化位點N73Q的反向引物
P930	SEQ ID NO: 173	用於去除糖基化位點T229A的正向引物
P931	SEQ ID NO: 174	用於去除糖基化位點T229A的反向引物
P932	SEQ ID NO: 175	用於去除糖基化位點N292Q的正向引物
P933	SEQ ID NO: 176	用於去除糖基化位點N292Q的反向引物

P934	SEQ ID NO: 177	用於去除糖基化位點N327Q的正向引物
P935	SEQ ID NO: 178	用於去除糖基化位點N327Q的反向引物
P936	SEQ ID NO: 179	用於去除糖基化位點N371Q的正向引物
P937	SEQ ID NO: 180	用於去除糖基化位點N371Q的反向引物
P938	SEQ ID NO: 181	用於去除糖基化位點N457Q的正向引物
P939	SEQ ID NO: 182	用於去除糖基化位點N457Q的反向引物

【0134】 根據製造商的說明，使用 QuikChange Lightning 定點誘變套組(安捷倫公司（Agilent），編號 210519-5）進行 PCR。

【0135】 第二天，挑選單菌落用於 DNA-微量製備並用正向引物 P270（SEQ ID NO: 165）和反向引物 P271（SEQ ID NO: 166）進行序列分析。

【0136】 同樣地，為了確保載體骨架的正確性（由於誘變），使用以下方法將測序的插入物片段選殖到 pRS5a（圖 5）的新載體骨架中。

【0137】 使用 SEQ ID NO: 36（具有表現標籤 SEQ ID NO: 135，含有 APP_HIS-標籤，儲備液濃度 3.3 μg/μl）的載體骨架製備載體。

【0138】 藉由混合 10 μg 載體-DNA、0.4 μl HindIII（100 U/μl，NEB）、2 μl EcoRI（20 U/μl，NEB）、5 μl Cutsmart 緩衝液 10x 濃度（NEB）、H_2O 至終體積為 50 μl，來消化載體。將消化在 37°C 下運行 3 h。

【0139】 用鹼性磷酸酶，牛小腸（CIP，NEB，編號 M0290L，10 U/μl）進行去磷酸化。消化後直接將 3 μl 的 CIP 添加到消化的載體中，並在 37°C 下孵育 30 min。將消化的和去磷酸化的載體載入到製備型 0.8% TAE 瓊脂糖凝膠上，切下了約 6100 bp 的載體的正確條帶大小。用 Wizard® SV 凝膠和 PCR 清除套組（普洛麥格公司，編號 9282，1 柱，在 100 ul 中洗脫）進行清除。OD260 nm 顯示濃度為 64 ng/μl。

【0140】 藉由混合 42.5 μl DNA（每種 DNA 約 3-5 ug）、5 μl Cutsmart 緩衝液（10x 濃度，NEB 編號 B7204S）、0.4 μl HindIII-HF（100 U/μl，NEB 編號 R3104S）、2 μl EcoRI-HF（20 U/μl，NEB 編號 R3103L），並用 H_2O 調節體積

至 50 µl，進行突變的插入物片段的消化。消化在 37°C 下在 PCR 儀中進行 3 h。將消化的插入物載入到製備型 0.8% TAE 瓊脂糖凝膠上，切下了約 1400 bp 的載體的正確條帶大小。用 Wizard® SV 凝膠和 PCR 清除套組（普洛麥格公司，編號 9282，1 柱，在 30 µl 中洗脫）進行清除。OD260 nm 顯示濃度為 1-25 ng/µl。

【0141】 使用（載體 : 插入物比例約 1 : 10），用快速 DNA 連接套組（編號 K1423，Fa.賽默科技公司）進行連接。將 4 µl 5x 連接緩衝液與 1 µl 連接酶、2 µl 載體片段（HindIII/EcoRI 消化的，儲備液濃度 64 ng/µl）、13 µl 插入物片段（HindIII/EcoRI 消化的，儲備液濃度 1-25 ng/µl）混合。將連接在 RT 下運行 10 分鐘。

【0142】 藉由將 10 µl 的連接與 80 µl 化學感受態 XL1Blue 細胞（諾華公司，FS/RL）在冰上孵育 30 min 進行轉化。在 Eppendorf 培養箱中在 42°C 下熱休克 45 sec，隨後在冰上孵育 2 min。之後，添加 1 ml 2YT 培養基，隨後在 Eppendorf 振盪器（800 rpm）上在 37°C 下孵育 1.5 h。將細胞以 7000 rpm 離心 3 min，並將菌落鋪板在 LB/Carb/Gluc 上。板，隨後在 37°C 下孵育過夜。

【0143】 第二天，挑選單菌落用於 DNA-微量製備並用正向引物 P270（SEQ ID NO: 165）和反向引物 P271（SEQ ID NO: 166）進行序列分析。

【0144】 根據 7 天的表現，200 ml 規模將正確的序列轉染到 HEK293 細胞中。

【0145】 使用了以下材料：

【0146】 組成型表現 SV40 大 T 抗原的人胚腎細胞（HEK293-T）（例如 ATCC11268）

【0147】 聚乙烯亞胺「MAX」MW 40.000（PEI）（波利塞斯公司（Polysciences），目錄號 24765），在 RT 下溶解於 H20 中，用 NaOH 調節至 pH 7.05。

【0148】 M11V3 無血清培養基（生物概念公司，CH，目錄號：V3-K）

【0149】 DNA：根據供應商推薦的方案，用凱傑公司（Qiagen）DNA 套組，中量製備套組（Midiprep-Kit）（編號 12943）製備

【0150】 用於暫態轉染的所有細胞培養工作均使用在無血清 M11V3 培養基中生長的懸浮適應的 HEK293-T 細胞進行。

【0151】 細胞在 Corning 搖瓶（科寧公司，美國）中在軌道振盪器（115 rpm）上在具有 5% CO_2 的加濕 CO_2 培養箱中生長（種子燒瓶）。

【0152】 使用的細胞已處於指數生長期（細胞密度在 5 x 10^5 和 3 x 10^6/ml 之間）並且具有 > 90%的活力。

【0153】 使用已計數，並且已用 M11V3 培養基調節至 1.4x10^6 個細胞/ml 的相應細胞量的細胞，以小規模（此處為 20/50 ml 或 100 ml）進行轉染。使用終轉染體積的 36%細胞懸浮液。

【0154】 藉由在 7%終體積 M11V3 中稀釋 1 mg/L 終體積 DNA 並溫和混合來製備 DNA 溶液（溶液 1）。為了防止由於未經過無菌過濾的 DNA 導致的培養物污染，在進料後已將 Penc./Strep 添加到轉染中。然後，將 3 mg/L 終體積 PEI 溶液在 7%終體積 M11V3 中稀釋並溫和混合（溶液 2）。將兩種溶液在室溫（RT）下孵育 5-10 min。此後，在溫和混合下將溶液 2 添加到溶液 1 中，並在 RT 下再孵育 5-15 分鐘。孵育後，將轉染混合物添加到細胞中，並將培養物培養四小時（115 rpm，37°C，5% CO2）。

【0155】 表現 7 天後收穫上清液。

【0156】 離心 4500 rpm，15 min，4°C（賀利氏公司，Multifuge 3 S-R）

【0157】 通過無菌過濾器（0.22 µm，Stericup 過濾器，賽默科技公司，目錄號 567-0020）澄清

【0158】 將上清液遞送至純化用於進一步的步驟。將 1 ml 的上清液樣品用於在開放存取 APP 柱（Open Access APP-column）上的 IPC。

【0159】 樣品小瓶係玻璃鉗口瓶（2 ml，安捷倫公司，目錄號 5182-0543）和帽（鉗口 11 mm，目錄號 5040-4667）。

【0160】 根據以下方案，使用 5 ml Histrap HP 柱（GE 生命科學公司集團（GE Life Sciences），訂購號 17-5248-02），在 Aekta Pure 或 Aekta Avant（GE 醫療集團（GE Healthcare））上使用固定化金屬親和層析（IMAC）純化蛋白質。說明在表 11 中列出。

【0161】 [表 11]. IMAC 方案

	CV	流速（ml/min）	緩衝液
平衡	5	5	IMAC A
樣品載入		3	細胞上清液
柱洗滌	10	3	IMAC A
洗脫	10	3	梯度 0-20% IMAC B
	10	3	100% IMAC B
分級			2 ml 級分

【0162】 使用的緩衝液根據表 12 和表 13 組成。

【0163】 [表 12]. IMAC A，平衡- 和洗滌緩衝液

濃度	化學物
10 mM	Na_2HPO_4
10 mM	NaH_2PO_4
500 mM	NaCl
20 mM	咪唑（默克公司（Merck））

【0164】 [表 13]. IMAC B，洗脫緩衝液

濃度	化學物
10 mM	Na_2HPO_4
10 mM	NaH_2PO_4
500 mM	NaCl
500 mM	咪唑（默克公司（Merck））

【0165】 根據表 14，儲存所得蛋白質。

【0166】 [表 14]. 構建體

構建體	突變位置

C1140	N73A/F365S
C1141	T229A/F365S
C1142	N292Q/F365S
C1143	N334Q/F365S
C1144	F365S/N371Q
C1145	F365S/N457Q
C1058	F365S

【0167】 *(b) 結果和解釋*

【0168】 關於分析 SEC 的產率和單體峰，突變體沒有改善。具有根據 SEQ ID NO: 137 的表現標籤的親本蛋白（EP14）在分析中給出最佳產率和最高單體峰。用突變體 N371Q 實現最低產率以及最差單體峰。

【0169】 6. 實例 5：組合

【0170】 為了嘗試和進一步改善特性，根據下**表 15 組合了上述實例 3 中引入的一些突變。根據如 SEQ ID NO: 1 中所列出的野生型 CD39 的胺基酸位置對突變進行編號。**

【0171】 [表 15]. 構建體的組合

構建體	突變 1	突變 2	突變 3	不含	引物	SEQ ID
EP14xEP19	365: F->S	424: L->Q		436: H->D	P878/P879	SEQ ID NO: 64
EP17xEP19	424: L->Q	436: H->D	412: Y->F	405: K->N	P880/P881	SEQ ID NO: 70
EP14xEP17	365: F->S	412: Y->F		405: K->N	P880/P881	SEQ ID NO: 60
EP10xEP19_H436D	424: L->Q	436: H->D	319: I->T		P882/P883	SEQ ID NO: 62
EP19 w/o H436D	424: L->Q			436: H->D	P884/P885	序列未包括在內

【0172】 *(a) 材料與方法*

【0173】 使用根據**表 16 的引物。**

【0174】 [表 16]. 引物

引物	序列
P878	SEQ ID NO: 183
P879	SEQ ID NO: 184
P880	SEQ ID NO: 185
P881	SEQ ID NO: 186
P882	SEQ ID NO: 187

P883	SEQ ID NO: 188
P884	SEQ ID NO: 189
P885	SEQ ID NO: 190

【0175】 使用以下移液方案建立 PCR 反應：

5 µl 的 10x 反應緩衝液、

1 µl ds-DNA-模板（儲備液濃度 100 ng/µl）、

1.5 µl 引物 1、

1.5 µl 引物 2、

1 µl dNTP 混合物

1.5 µl QuickSolution 公司（QuickSolution）試劑、

35.5 µl H_2O（終體積為 50 µl）、和

1 µl QuickChange Lightning Enzyme。

【0176】 使用根據表 17 的 PCR 循環參數。

【0177】 [表 17]. PCR 循環參數

	循環數	溫度	時間
1	1	96°C	2 min
2	18	96°C	20 sec
		60°C	10 sec
		68°C	3 min（30 sec/kb）
3	1	68°C	6 min

【0178】 反應後直接將 2 µl DpnI 酶添加到每個反應中，混合並在 37°C 下孵育 5 min。

【0179】 如下進行到 XL10-金超-感受態細胞的轉化。將細胞在冰上解凍。使用 45 µl/轉化，並將 2 µl B-ME 添加到每個小瓶中。然後，添加 3 µl DpnI 消化的 PCR 產物，並在冰上在 15 ml BD 管中孵育 30 min。此後，將樣品熱休克 40 秒並在冰上孵育 2 min。接下來，添加 950 µl SOC 培養基，隨後在 37°C 下在振盪培養箱中孵育 1.5 h。最後，將細胞鋪板在 LB-carb-板上並在 37°C 下孵育過夜。第二天，挑選單菌落用於 DNA-微量製備和序列分析。

【0180】 如實例 4 中所述，將正確的序列轉染到 HEK293 細胞中。

【0181】 根據以下使用固定化金屬親和層析（IMAC）純化蛋白質。使用 95 ml 上清液（保留全部的約 4 ml 用於分析（IPC））。

【0182】 使用的材料：

【0183】 鎳-NTA 瓊脂糖（凱傑公司，目錄號/ID：30230）、Poly-Prep 層析柱（空，伯樂公司（BioRad），編號 731-1550）、IMAC A 緩衝液 pH 7.4（含有 20 mM $NaPO_4$ 緩衝液和 50 mM 咪唑）。IMAC B 緩衝液 pH 7.4（含有 20 mM $NaPO_4$ 緩衝液和 300mM 咪唑）。TBS（10x 濃度，用 MilliQ 水稀釋至 1x 濃度）。Amicon Ultra-4 離心過濾單元，具有 Ultracel-10 膜，10K，UFC 801096。

【0184】 方法步驟：

【0185】 1. 用 1 ml 凱傑公司（= 0.5 ml CV）的鎳-NTA-瓊脂糖製備柱；

【0186】 2. 用 10 CV IMAC A 平衡；

【0187】 3. 在柱上載入 15/45 ml SN（收集流過物）；

【0188】 4. 用 10 CV IMAC A 洗滌（收集在 15 ml Falcon 管中）；

【0189】 5. 在 6.5 CV 的 IMAC B 中洗脫；

【0190】 6. 洗脫液濃度的確定；

【0191】 7. 用 Amicon Ultra-4 離心過濾單元 10K 將 3.5 ml 樣品濃縮至約 400 µl；

【0192】 8. 藉由添加 TBS 和離心 5000 進行緩衝液交換；

【0193】 使用具有 40 µl 每種樣品的分析 SEC 並使用具有 12 µl 每種樣品的蛋白質凝膠分析樣品。

【0194】 儲存所得蛋白質。

【0195】 *(b) 結果和解釋*

【0196】 結果顯示在表 18 中。

【0197】 [表 18]. 結果概述

名稱	產率（mg/l）	IPC（app，mg/l）	聚集（%單體峰）
EP14xEP19	6.85	4.5	75.1
EP17xEP19	13.35	11.5	68.9
EP14xEP17	17.27	11.5	69.2
EP10xEP19_H436D	7.42	4.3	74.3
EP19 w/o H436D	8.28	2.5	55.6
EP1xEP17	13.46	13.2	77.4
EP28	7.8	2.8	57.5

【0198】 蛋白酶位點：

【0199】 插入蛋白裂解酶時，沒有產率/產率非常低。具有弗林蛋白酶位點時，有約 40%的產率（但對於轉染，同樣僅使用了 50%的 DNA，因為它係與弗林蛋白酶質粒的共轉染）。

【0200】 IL2-截短：

【0201】 包括 aa1-3 的所有截短都給出了可比較的結果，aa1-3 與其他相比可能僅會略更低，但這可能是樣品之間的差異。截短 aa4-12 導致無蛋白質表現。與所有其他 EP 變體一樣，在含有 IL2-起始和 hCD39-蛋白之間的 TSS 接頭的 EP28 之間沒有發現差異。

【0202】 組合：

【0203】 與 EP19（L424Q）的組合不會導致蛋白質表現的顯著改善。

【0204】 與 EP1（R113M）組合在分析 SEC 中展現出更低的聚集。NEG726 表現良好，但顯示所有測試的最差聚集（約 37%）。EP14xEP17 的組合不會導致任何進一步的改善（F365S + Y412F）。

【0205】 7. 實例 6：最終候選物的選殖

【0206】 表現了如下表 19 中所列出的臨床候選物的選擇用於進一步測試。

【0207】 [表 19]. 最終候選物的概述。

構建體	殖株的組合	IL2 前導序列	主序列
1	EP1xEP14xEP19aa1-3	SEQ ID NO: 137	SEQ ID NO: 233

2	EP1xEP17xEP19 aa1-3	SEQ ID NO: 137	SEQ ID NO: 217
3	EP14aa1-3	SEQ ID NO: 137	SEQ ID NO: 229
4	EP17aa1-3	SEQ ID NO: 137	SEQ ID NO: 237
5	EP19aa1-3	SEQ ID NO: 137	SEQ ID NO: 243
6	EP28aa1-3 （前導/親本）	SEQ ID NO: 137	SEQ ID NO: 58
7	EP1xEP14xEP19 aa1-6	SEQ ID NO: 135	SEQ ID NO: 235
8	EP1xEP17xEP19 aa1-6	SEQ ID NO: 135	SEQ ID NO: 219
9	EP14aa1-6	SEQ ID NO: 135	SEQ ID NO: 231
10	EP17aa1-6	SEQ ID NO: 135	SEQ ID NO: 239
11	EP19aa1-6	SEQ ID NO: 135	SEQ ID NO: 245
12	EP28aa1-6 （前導/親本）	SEQ ID NO: 135	SEQ ID NO: 80

【0208】 使用以下引物：

【0209】 [表 20]. 引物

引物	序列
R113Mtempl	SEQ ID NO: 191
R113MFW	SEQ ID NO: 192
R113MRev	SEQ ID NO: 193
F330StempI	SEQ ID NO: 194
F330SFW	SEQ ID NO: 195
F330SRev	SEQ ID NO: 196
Y377FtempI	SEQ ID NO: 197
L389CtempI	SEQ ID NO: 198
Y377F/L389QtempI	SEQ ID NO: 199
FW	SEQ ID NO: 200
Rev	SEQ ID NO: 201
WT	SEQ ID NO: 202

【0210】 使用以下移液方案建立 PCR 反應：

0.25 µl DMSO、

20 ng 載體

1.5 µl 插入物（45 ng/µl）、

2 µl 5 x HF 緩衝液、

0.1 µl Phusion pol、

0.08 µl dNTP 混合物

10-X µl ddH_2O

使用根據表 17 的 PCR 循環參數。

【0211】 [表 21]. PCR 循環參數

	循環數	溫度	時間
1	1	98°C	3 min
2	25	98°C	30 sec
		60°C	30 sec
		72°C	5 min 46 sec
3	1	72°C	10 min

【0212】 反應後直接將 0.5 µl DpnI 酶添加到每個反應中，混合並在 37°C 下孵育 2 h。

【0213】 如下進行到 XL10-金超-感受態細胞的轉化。將細胞在冰上解凍。使用 45 µl/轉化，並將 2 µl B-ME 添加到每個小瓶中。然後，添加 3 µl DpnI 消化的 PCR 產物，並在冰上在 15 ml BD 管中孵育 30 min。此後，將樣品熱休克 40 秒並在冰上孵育 2 min。接下來，添加 950 µl SOC 培養基，隨後在 37°C 下在振盪培養箱中孵育 1.5 h。最後，將細胞鋪板在 LB-carb-板上並在 37°C 下孵育過夜。第二天，挑選單菌落用於 DNA-微量製備和序列分析。

【0214】 將所有構建體亞選殖到新的載體背景中以確保序列係正確的。為此，用 PCR 擴增所有構建體，插入 G4S-接頭，隨後用 HindIII/EcoRI 消化。

【0215】 儲存所得蛋白質。

【0216】 8. 實例 7：比較蛋白的生成

【0217】 (1) 無效突變

【0218】 為了生成用於體內研究的陰性對照蛋白，將一個/兩個突變插入到親本人 CD39ΔMIL 蛋白（EP28）中。已經在文獻中描述了該等突變以去除或降低該蛋白質的酶活性。突變位置係 E174A 和 S218A。

【0219】 使用以下引物：

【0220】 [表 22]. 引物

引物	序列
P910	SEQ ID NO: 203

P911	SEQ ID NO: 204
P914	SEQ ID NO: 205
P915	SEQ ID NO: 206

【0221】 使用以下移液方案建立 PCR 反應：

5 µl 的 10x 反應緩衝液、

1 µl ds-DNA-模板（儲備液濃度 100 ng/µl）、

1.5 µl 引物 1、

1.5 µl 引物 2、

1 µl dNTP 混合物

1.5 µl QuickSolution 公司（QuickSolution）試劑、

35.5 µl H_2O（終體積為 50 µl）、和

1 µl QuickChange Lightning Enzyme。

【0222】 使用根據表 17 的 PCR 循環參數。

【0223】 [表 23]. PCR 循環參數

	循環數	溫度	時間
1	1	96°C	2 min
2	18	96°C	20 sec
		60°C	10 sec
		68°C	3 min（30 sec/kb）
3	1	68°C	6 min

【0224】 反應後直接將 2 µl DpnI 酶添加到每個反應中，混合並在 37°C 下孵育 5 min。

【0225】 如下進行到 XL10-金超-感受態細胞的轉化。將細胞在冰上解凍。使用 45 µl/轉化，並將 2 µl B-ME 添加到每個小瓶中。然後，添加 3 µl DpnI 消化的 PCR 產物，並在冰上在 15 ml BD 管中孵育 30 min。此後，將樣品熱休克 40 秒並在冰上孵育 2 min。接下來，添加 950 µl SOC 培養基，隨後在 37°C 下在振盪培養箱中孵育 1.5 h。最後，將細胞鋪板在 LB-carb-板上並在 37°C 下孵育過夜。第二天，挑選單菌落用於 DNA-微量製備和序列分析。

【0226】 根據以下方案，將正確的序列轉染到 HEK293 細胞中。

【0227】 使用 10 μg 載體-DNA、0.4 μl HindIII（100 U/μl，NEB）、2 μl EcoRI（20 U/μl，NEB）、5 μl Cutsmart 緩衝液 10x 濃度（NEB）和 H_2O 來製備消化緩衝液至終體積為 50 μl。將消化反應在 37ºC 下運行 3 h。

【0228】 消化後立即運行去磷酸化反應。將牛小腸鹼性磷酸酶（10 U/μl，CIP，NEB，編號 M0290L）添加到（3 μl）消化的載體混合物中並在 37°C 下孵育 30 min。

【0229】 將消化的和去磷酸化的載體亞選殖以檢查序列。

【0230】 根據以下方案，將正確的序列轉染到 HEK293 細胞中。

【0231】 使用以下材料進行 7 天的表現；1. 組成型表現 SV40 大 T 抗原的人胚腎細胞（HEK293-T，ATCC11268）；2. 聚乙烯亞胺「MAX」MW 40.000（PEI）（波利塞斯公司，目錄號 24765）。

【0232】 藉由在室溫（RT）下將 1 g PEI 小心地溶解在 900 ml 細胞培養級水中來製備 PEI 溶液。然後用 NaOH 中和，最終 pH 為 7.05。最後，將體積調節至 1 L 並將溶液通過 0.22 μm 過濾器過濾，以等分試樣分佈並在-80°C 下冷凍直至進一步使用。解凍後，等分試樣可在-20°C 下重新冷凍 3 次，但不應在-20°C 下長期保存。

【0233】 M11V3 無血清培養基（生物概念公司，CH，目錄號：V3-K）。

【0234】 用於暫態轉染的所有細胞培養工作均使用在無血清 M11V3 培養基中生長的懸浮適應的 HEK293-T 細胞進行。

【0235】 對於小規模（< 5 L）轉染，細胞在 Corning 搖瓶（科寧公司，美國）中在軌道振盪器（100 rpm）上在具有 5% CO_2 的加濕 CO_2 培養箱中生長（種子燒瓶）。

【0236】 通常，種子培養物中的細胞應處於指數生長期（細胞密度在 5 x 10^5 與 3 x 10^6/ml 之間），並且具有 > 90%的活力。超出該範圍的細胞密度將導致分裂後的遲滯期或降低的轉染功效。

【0237】 對於小規模（此處為 2 L）轉染，從種子培養物中取出等分試樣的細胞，並將該等細胞用 M11V3 培養基在 36%的終體積中調節至 1.4 x 10^6 個細胞/ml。

【0238】 藉由在 7%終體積 M11V3 中稀釋 1 mg/L 終體積 DNA 並溫和混合來製備 DNA 溶液（溶液 1）。為了預防培養物污染，可以使用 0.22 µm 過濾器（例如 Millipore Stericup）過濾該溶液。此處因為體積小，所以尚未進行無菌過濾。然後，將 3 mg/L 終體積 PEI 溶液在 7%終體積 M11V3 中稀釋並溫和混合（溶液 2）。將兩種溶液在室溫（RT）下孵育 5-10 min。此後，在溫和混合下將溶液 2 添加到溶液 1 中，並在 RT 下再孵育 5-15 分鐘（在孵育期間不要再混合，因為 PEI 將 DNA 覆蓋/濃縮成帶正電荷的顆粒，該等顆粒與陰離子細胞表面殘留物結合並藉由胞吞作用進入細胞）。孵育後，將轉染混合物添加到細胞中，並將培養物培養四小時（10 rpm，37°C，6% CO_2）。

【0239】 最後，根據以下實例用剩餘的 50%終體積 M11V3 培養基進料培養物：接種體積：36 ml，其中 1.4 x 10^6 個細胞/ml。

【0240】 溶液 1：含有 100 µg 質粒 DNA 的 7 ml M11V3 培養基。溶液 2：含有 300 µg PEI（300 µl）的 7 ml M11V3 培養基

【0241】 進料：50 ml M11V3，總共 100 ml。

【0242】 根據以下使用固定化金屬親和層析（IMAC）純化蛋白質。使用 95 ml 上清液（保留全部的約 4 ml 用於分析（IPC））。

【0243】 使用的材料：

【0244】 鎳-NTA 瓊脂糖（凱傑公司，目錄號/ID：30230）、Poly-Prep 層析柱（空，伯樂公司（BioRad），編號 731-1550）、IMAC A 緩衝液 pH 7.4（含有 20 mM $NaPO_4$ 緩衝液和 50 mM 咪唑）。IMAC B 緩衝液 pH 7.4（含有 20 mM $NaPO_4$ 緩衝液和 300mM 咪唑）。TBS（10x 濃度，用 MilliQ 水稀釋至 1x 濃度）。Amicon Ultra-4 離心過濾單元，具有 Ultracel-10 膜，10K，UFC 801096。

【0245】 方法步驟：

【0246】 1. 用 1 ml 凱傑公司（= 0.5 ml CV）的鎳-NTA-瓊脂糖製備柱；

【0247】 2. 用 10 CV IMAC A 平衡；

【0248】 3. 在柱上載入 15/45 ml SN（收集流過物）；

【0249】 4. 用 10 CV IMAC A 洗滌（收集在 15 ml Falcon 管中）；

【0250】 5. 在 6.5 CV 的 IMAC B 中洗脫；

【0251】 6. 洗脫液濃度的確定；

【0252】 7. 用 Amicon Ultra-4 離心過濾單元 10K 將 3.5 ml 樣品濃縮至約 400 µl；

【0253】 8. 藉由添加 TBS 和離心 5000 進行緩衝液交換；

【0254】 使用具有 40 µl 每種樣品的分析 SEC 並使用具有 12 µl 每種樣品的蛋白質凝膠分析樣品。

【0255】 儲存所得蛋白質。

【0256】 (2) plusMIL

【0257】 用重疊延伸 PCR 進行具有膜相互作用環（aa193-204）的 EP14aa1-3 的選殖。

【0258】 使用以下引物：

【0259】 [表 24]. 引物

引物	序列
FW	SEQ ID NO: 207

REV	SEQ ID NO: 208
反義	SEQ ID NO: 98

【0260】 使用以下移液方案建立 PCR 反應：

1.2 µl Phusion 暖開機聚合酶、

24 µl 5x HF-緩衝液、

0.96 µl 100mM dNTPs（每種 dNTP 的 25 mM）、

0.6 µl Fw 引物、

0.6 µl Rev 引物、

92.64 µl DEPC H_2O。

【0261】 使用根據表 17 的 PCR 循環參數。

【0262】 [表 25]. PCR 循環參數

	循環數	溫度	時間
1	1	98°C	30 sec
2	30	98°C	10 sec
		50-70°C 梯度	30 sec
		72°C	30 sec
3	1	72°C	10 min

【0263】 反應後直接將 2 µl DpnI 酶添加到每個反應中，混合並在 37°C 下孵育 2 h。

【0264】 藉由將 2 µl PCR 產物轉移到 96 孔 PCR 板並在冰上冷卻，來進行轉化。添加 20 µl STELLAR 化學組分細菌，並藉由上下移液一次小心地混合。將樣品在冰上孵育 30 min，然後在 42°C 下在 PCR 儀中孵育 45 sec，隨後在冰上再孵育 60 sec。最後，添加 90 µl SOC 培養基並在 37°C 下孵育 1 hr。將整個轉染混合物鋪板在 LB-胺苄青黴素或 LB-羧苄青黴素板上，並在 37°C 下生長過夜。

【0265】 儲存所得蛋白質 EP14_plusMIL，該蛋白質具有根據 SEQ ID NO: 155 的胺基酸序列。

【0266】 9. 實例 8：酶活性

【0267】 使用酶活性測定表徵在先前實例中生成的候選物。

【0268】 使用以下試劑：Pi 游離緩衝液，無磷酸鹽的生理鹽水溶液（140 mM NaCl，5 mM KCl，1 mM MgCl2，2 mM CaCl2，10 mM Hepes，pH 7.4）；和 Pi 游離緩衝液 + 2%BSA，具有 20 mg/ml BSA 的無磷酸鹽的生理鹽水溶液；CD39 蛋白（根據 SEQ ID NO: 1）；ATP。

【0269】 以 2 μg/ml 製備重複的 CD39 溶液。從 15 μl ATP 儲備液 + 1185 μl 緩衝液（總共 1.2 ml）中以 1000 μM 製備重複的 ATP 溶液。

【0270】 藉由將 60 μl ATP 與 60 μl CD39 或 60 μl 含 Pi 游離緩衝液混合用於對照，在填充有 120 μl 終/孔的 48 孔 PCR 板中研究酶反應。終濃度為 500 μM ATP 和 1 μg/ml CD39。

【0271】 將樣品在 37°C 下分別孵育 0、5、15、30、60、90 和 150 分鐘。然後，藉由 Pi 釋放測定或 HPLC 評估樣品。

【0272】 (1) Pi 釋放測定

【0273】 *(a) 材料與方法*

【0274】 根據製造商的說明，從標準 Pi 檢測套組製備試劑。

【0275】 藉由在水中的稀釋製備具有 Pi 的標準曲線。製備 1 : 2 系列稀釋的 Pi 儲備液（100 μM）：450 μl + 450 μl 水。標準曲線濃度為：50 μM/25 μM/12.5 μM/6.25 μM/3.1 μM/1.5 μM/0 μM。

【0276】 製備金試劑混合物：4 ml 金試劑 + 40 μl 加速劑（用於 3 個板）。在 96 孔板中，將樣品在 H_2O 中 1 : 10 稀釋（在水中稀釋：10 μl 樣品 + 90 μl H2O）。將 50 μl，1 : 10 稀釋的樣品分佈在 96 個半區域孔板（科寧公司，3690）的每個孔中。將 12.5 μl 金試劑混合物添加到每個孔中（25%樣品體積），並將樣品在室溫下孵育 10 min。在 635 nm 處讀取吸光度。

【0277】 *(b) 結果和解釋*

【0278】 候選物的比較結果顯示在表 26 中。

【0279】 [表 26]. 候選物的比較結果。

	構建體	IL-2 起始	SEQ ID	ALC 後的產率	ALC 後的單體%	熔化溫度(°C)	體外酶活性(相對於 EP28)
1	EP14aa1-3	SEQ ID NO: 137	SEQ ID NO: 229	33.1	83.8	62	4
2	EP1xEP14aa1-3	SEQ ID NO: 137	SEQ ID NO: 221	3.7	50.6	65.5	4
3	EP1xEP17aa1-3	SEQ ID NO: 137	SEQ ID NO: 211	95.8	91.9	61	1.5
4	EP17xEP19 aa1-3	SEQ ID NO: 137	SEQ ID NO: 227	3.5	38.9	60.5	1.5
5	EP1xEP17xEP19aa1-3	SEQ ID NO: 137	SEQ ID NO: 217	153.2	89.7	60.75	1.5
6	EP1 aa1-3	SEQ ID NO: 137	SEQ ID NO: 209	6.0	9.2	59.75	1
7	EP1xEP14 aa1-6	SEQ ID NO: 135	SEQ ID NO: 223	148.8	91.8	64	4
8	EP1xEP17 aa1-6	SEQ ID NO: 135	SEQ ID NO: 213	59.4	86.1	59.5	1.5
9	EP17xEP19 aa1-6	SEQ ID NO: 135	SEQ ID NO: 227	2.7	13.7	60	1.5
10	EP1xEP17xEP19 aa1-6	SEQ ID NO: 135	SEQ ID NO: 219	30.9	88.4	60.75	1.5
11	EP1xEP17_K405N aa1-15	SEQ ID NO: 133	SEQ ID NO: 215	156.3	86.4	62.25	1.5
12	EP28aa1-3	SEQ ID NO: 137	SEQ ID NO: 58	2.7	10	60.5	1
13	EP28aa1-16	SEQ ID NO: 131	SEQ ID NO: 72	4.7	45	61.8	1

【0280】 藉由將 500 μM ATP 添加到酶中並用 HPLC（方法描述如下）隨時間分析 ATP、ADP、AMP 的濃度來測量酶活性。所得的動力學曲線擬合圖 6 中的模型以獲得酶常數。就酶常數 Kcat 而言，該等酶顯示以下順序（低活性至高活性）：EP28（wt）、EP17、EP14、EP15。

【0281】 圖 7 顯示了 EP28 的動力學數據和模型擬合。圖 8 顯示了 EP14 的動力學數據和模型擬合。圖 9 顯示了 EP15 的動力學數據和模型擬合。

【0282】 EP28（wt）、EP14、EP15 和 EP17 的酶常數概述顯示在**表 27 中。與野生型（WT）相比，三種新型變體顯示出增加的催化活性。重要的是，該等新變體顯示出催化速率常數（kcat）、催化效率（kcat/Km）的明顯增加。由於在組織損傷和血栓形成期間報告的 ATP 和 ADP 底物濃度高於報告的 Km，所以 kcat 和 kcat/Km 的這種增加可能轉化為更高的體內活性。**

【0283】 [表 27]. 酶常數

	ATP -> ADP + P			**ADP -> AMP + P**			**抑制**
	k^T_{cat}	K^T_M	k^T_{cat}/K^T_M	k^D_{cat}	K^D_M	k^D_{cat}/K^D_M	K^M_d
WT	65.3	0.7	89.7	40.0	0.1	400.3	0.2
EP14	380.2	1.1	352.6	90.3	固定為 0.1	903.0	556.8
EP15	734.9	1.1	658.1	128.7	0.1	1287.1	584.9
EP17	180.7	1.0	178.1	67.0	0.1	670.0	3.0

【0284】 (2) HPLC 驗證測定（動力學和劑量響應）

【0285】 *(a) 材料與方法*

【0286】 用 HPLC 驗證測定測試候選物。將 70 µl 的每種樣品轉移到用於 HPLC 的玻璃小瓶中。

【0287】 如表 28 所示，用 5 mM 的儲備溶液製備校準樣品。

【0288】 [表 28]. 儲備溶液

	5 mM	重量	H_2O
腺苷	1336.2 µg/mL	1.862 mg	1394 µL
肌苷	1341.2 µg/mL	2.668 mg	1989 µL
AMP	1736.1 µg/mL	2.182 mg	1257 µL
ADP	2506.6 µg/mL	2.500 mg	997 µL
ATP	2755.7 µg/mL	4.834 mg	1754 µL

【0289】 1000 µM 將 20 µL 的每種儲備溶液在 HPLC 小瓶中混合

【0290】 500 µM 20 µL 1 mM + 20 µL H_2O

【0291】 100 μM 10 μL 1 mM + 90 μL H_2O

【0292】 10 μM 10 μL 100 μM + 90 μL H_2O

【0293】 1 μM 10 μL 10 μM + 90 μL H_2O

【0294】 使用具有毛細管泵（CapPump）（G1376A）、脫氣器（G1379A）、ALS（G1329A）、恒溫器（G1330B）、ColComp（G1316A）和 DAD（G1315A）的安捷倫公司 1100 系統進行 HPLC 分離。溶劑 A：10 mM KH_2PO_4（04243，Riedel-de Haën）+ 2 mM TBA 溴化物，pH 7.0（86857-10G-F，佛魯卡公司（Fluka））和溶劑 B：10 mM KH2PO4/ACN 1/1 + 2 mM TBA 溴化物，pH 5.5。柱：Nucleodur 300-5 C18 ec，2 x 150 mm，5 μm，Macherey-Nagel 公司（Macherey-Nagel）760185.20 批次 E14100258 36654055。柱溫為 40°C，注射體積為 10 μL，流速為 0.3 ml/min，以及梯度為 0-3'：0% B；3-23'：0-95% B，線性；23-28'：95% B，線性；28-29'：95-0% B，線性；5'後時間"。DAD：247 nm 和 259 nm。

【0295】 使用 Waters UPLC I class 類進行 UPLC 分離。溶劑 A：10 mM KH_2PO_4/10 mM K_2HPO_4 1/1 + 2 mM TBA 溴化物，pH 7.0。溶劑 B：10 mM KH_2PO_4/ACN 1/1 + 2 mM TBA 溴化物，pH 5.5。柱：福蒂斯生物公司（Fortis Bio）C18，2.1 x 50 mm，5 μm，di2chrom BIO318-020301 SN H03161210-2。柱溫為 40°C，注射體積為 10 μL，流速為 0.5 ml/min，以及梯度為 0-1'：0% B；1-8'：0-55% B，線性；8-10'：55% B；10-11'：55-0% B，線性；14'停止時間。DAD 係 247 nm 和 259 nm。

【0296】 *(b) 結果*

【0297】 結果可以見於圖 7、8、9 和 11 中，顯示了根據不同實施方式的候選物的動力學數據和模型擬合。

【0298】 10. 實例 9：體外活性，初始篩選

【0299】 將先前實例中描述的 CD39 版本 EP1 至 EP24 選殖到哺乳動物表現載體 pRS5a_前導序列_APP_His（圖 5）中，不含 IL2-前導序列且不含 IL2-起始。

【0300】 *(a) 材料與方法*

【0301】 在 HEK293（PEI-轉染）中進行 7 天 EP-Hits 的小規模表現（20/50 ml 規模），隨後在 APP-HPLC 上進行 IPC（如上所述）。

【0302】 用 Ni-NTA 柱（0.5 ml CV）對 15/45 ml 細胞上清液進行蛋白質純化；

【0303】 用 6 CV IMAC B 緩衝液（20 mM NaPO4-緩衝液，300 mM 咪唑，pH 7.4）洗脫；

【0304】 在 TBS，pH 7.4 中濃縮和再緩衝純化的蛋白；

【0305】 用蛋白質凝膠、分析 SEC 對蛋白質進行分析；

【0306】 所有變體和三個對照（親本 hCD39-dMIL，或含有和不含 IL2-起始的 EP28，以及不含 IL2-起始的 8M-版本）的遞送：在 TBS，pH 7.4 中 90-200 ul 的純化的蛋白

【0307】 *(b) 結果和解釋*

【0308】 結果總結在下**表 29 中**。

【0309】 所有樣品均在 TBS pH 7.4 中並且具有 APP-（SEQ ID N: 247）和 His-標籤（SEQ ID NO: 249）。

【0310】 僅親本人 CD39ΔMIL（EP28）具有 15 個胺基酸長的 IL2-起始，aa1-15（SEQ ID NO: 133）。

【0311】 Pi 釋放測定 BOENKTH1-0252824，雙重檢測。持續 60 min 和 180 min。值

【0312】 [表 29]. 體外活性

Pi釋放測定，
0.25 ug/ml + 500 uM ATP

純化日期	名稱	濃度 [mg/ml]	濃度 [umolar]	總體積 [ml]	0 min	平均60 min	平均180 min
17.06.2016	EP1	0.19	3.7	0.11	10.35	20.90	45.99
14.06.2016	EP2	0.15	2.8	0.10	11.35	23.65	53.92
14.06.2016	EP3	0.11	2.2	0.10	8.92	19.22	40.76
14.06.2016	EP4	0.25	4.8	0.10	7.99	18.59	37.47
14.06.2016	EP5	0.11	2.1	0.10	17.36	39.59	72.09
17.06.2016	EP6	0.14	2.7	0.15	11.57	32.73	69.63
21.06.2016	EP7	0.41	7.8	0.11	9.47	21.19	43.68
21.06.2016	EP8	0.31	5.9	0.11	7.92	15.23	33.94
14.06.2016	EP9	0.15	2.9	0.10	5.56	13.39	31.38
21.06.2016	EP10	0.33	6.3	0.11	9.32	21.91	54.07
14.06.2016	EP11	0.23	4.4	0.10	10.24	21.27	46.21
21.06.2016	EP12	0.37	7.1	0.11	10.55	21.99	50.80
21.06.2016	EP13	0.13	2.5	0.11	4.93	3.13	3.54
21.06.2016	EP14	0.34	6.5	0.11	19.07	66.35	104.80
14.06.2016	EP15	0.19	3.7	0.10	11.11	29.26	89.92
14.06.2016	EP17	0.28	5.3	0.10	12.49	30.30	102.81
14.06.2016	EP18	0.15	2.9	0.10	3.91	9.70	23.49
17.06.2016	EP19	0.55	10.6	0.12	14.36	26.38	69.93
14.06.2016	EP20	0.14	2.7	0.10	3.36	2.22	3.60
14.06.2016	EP21	0.22	4.2	0.10	7.17	16.37	24.27
17.06.2016	EP22	0.17	3.3	0.11	8.06	15.33	37.30
21.06.2016	EP23.1	0.28	5.4	0.11	12.62	23.58	62.78
17.06.2016	EP24	0.10	2.0	0.19	3.10	3.45	4.83
14.06.2016	EP25 hCD39-dMIL 親本	0.23	4.4	0.10	4.98	11.46	24.30
17.06.2016	EP26 hCD39-8M	0.19	3.7	0.15	3.66	8.41	24.15
17.06.2016	EP28-IL2 起始-hCD39 par	2.19	42.0	0.14	10.25	23.48	52.73
21.06.2016	EP1repet.	0.49	9.5	0.11	10.03	17.84	40.33
17.06.2016	EP2 repet.	0.55	10.6	0.12	12.80	28.22	66.88
17.06.2016	EP3 repet.	0.56	10.8	0.12	18.05	33.35	79.53
17.06.2016	EP4 repet.	0.61	11.7	0.16	15.98	29.47	68.39
17.06.2016	EP5 repet.	0.66	12.6	0.15	25.53	46.10	91.32
21.06.2016	EP23.4	0.29	5.5	0.11	10.43	22.45	56.53

【0313】 11. 實例 10：體外活性，精緻篩選

【0314】 第二次測試了 12 個突變體的子集，但含有 IL-2 起始允許更大的表現規模。

【0315】 *(a) 材料與方法*

【0316】 哺乳動物表現載體 pRS5a_前導序列_APP_His，具有 15 個胺基酸長的 IL2-起始，aa1-15（SEQ ID NO: 133）（圖 5）。在 HEK293（PEI-轉染）中持續 7 天的 EP-Hits 的小規模表現（50/100 ml 規模），隨後在 APP-HPLC 上進行 IPC（如上所述）。

【0317】 用 Ni-NTA 柱（0.5 ml CV）對 45/95 ml 細胞上清液進行蛋白質純化

【0318】 用 6 CV IMAC B 緩衝液（20 mM NaPO4-緩衝液，300 mM 咪唑，pH 7.4）洗脫；

【0319】 在 TBS，pH 7.4 中濃縮和再緩衝純化的蛋白，

【0320】 用蛋白質凝膠、分析 SEC 對蛋白質進行分析；

【0321】 所有變體和對照（親本 hCD39-dMIL、或 EP28（含有 IL2-起始 aa1-15（SEQ ID NO: 133））的遞送：

【0322】 在 TBS，pH 7.4 中 500 ul 的純化的蛋白

【0323】 *(b) 結果和解釋*

【0324】 結果總結在下表 30、表 31 和表 32 中。

【0325】 [表 30]. EP-Hits 06.07.2016 的蛋白質純化，第 1 部分

名稱	*濃度 [mg/ml]*	*濃度 [umolar]*	*總體積 [ml]*	*產率/46 或 16 ml [mg]*	*產率（mg/l）*	*IPC(APP，mg/l）*
EP2	*0.64*	*12.3*	*0.5*	*0.32*	*7.13*	*6.9*
EP3	*0.72*	*13.9*	*0.5*	*0.36*	*8.02*	*8.6*
EP4	*0.86*	*16.4*	*0.5*	*0.43*	*9.49*	*8.6*
EP5	*0.89*	*17.0*	*0.5*	*0.44*	*9.84*	*10.1*
EP6	*0.40*	*7.7*	*0.5*	*0.20*	*4.46*	*4.3*

EP9	*0.57*	*11.0*	*0.5*	*0.29*	*6.35*	*6.0*
EP11	*0.74*	*14.2*	*0.5*	*0.37*	*8.18*	*8.3*
EP12	*0.85*	*16.3*	*0.5*	*0.42*	*9.40*	*8.2*
EP14	*0.82*	*15.7*	*0.5*	*0.41*	*9.09*	*7.8*
EP17	*0.94*	*18.0*	*0.5*	*0.47*	*13.04*	*13.3*
EP18	*0.70*	*13.4*	*0.5*	*0.35*	*7.75*	*6.4*
EP24	*0.65*	*12.4*	*0.5*	*0.32*	*8.99*	*10.8*
含有 IL2-起始的EP28	*0.27*	*5.2*	*0.5*	*0.14*	*9.01*	*6.6*

【0326】 [表 31]. EP-Hits 06.07.2016 的蛋白質純化，第 2 部分

名稱	*表現體積(ml)*	*聚集（%）（分析 SEC）*	*單體峰（%）（分析 SEC）*	*降解（%）（分析 SEC）*	*Pi 測定：1 ug/ml 酶，500 uM ATP，60 min（1：10）*
EP2	*50*	*15.7*	*69.5*	*14.9*	*53.572*
EP3	*50*	*14.9*	*67.6*	*17.5*	*62.6725*
EP4	*50*	*11.3*	*72.5*	*16.3*	*52.1195*
EP5	*50*	*15.1*	*67.8*	*17*	*75.1995*
EP6	*50*	*17.2*	*59.3*	*23.5*	*72.517*
EP9	*50*	*21.7*	*57.5*	*20.8*	*63.7175*
EP11	*50*	*12.3*	*72.2*	*15.6*	*59.0205*
EP12	*50*	*19.9*	*63.1*	*17.1*	*48.358*
EP14	*50*	*14.9*	*66.6*	*18.5*	*88.3785*
EP17	*40*	*17.3*	*68.9*	*13.8*	*89.8415*
EP18	*50*	*15.4*	*67.2*	*17.4*	*61.495*
EP24	*40*	*8.9*	*73*	*18*	*74.713*
含有 IL2-起始的EP28	*20*	*17.8*	*56.4*	*25.8*	*53.6735*

【0327】 [表 32]. 蛋白質純化 EP-Hits 15.07.2016

名稱	MW [kD]	e [M-1*cm-1]	濃度 [mg/ml]	濃度 [umolar]	總體積 [ml]	遞送量	表現體積（ml）
EP8	52.08	70875	0.02	0.5	0.5	0.01	50
EP10	52.08	70875	0.76	14.7	0.5	0.38	50
EP14	52.08	70875	0.21	4.0	0.5	0.10	50
EP15	52.08	70875	0.81	15.6	1	0.81	100
EP17	52.08	70875	0.22	4.3	0.5	0.11	40
EP19	52.08	70875	1.10	21.2	0.5	0.55	50
EP23	52.08	70875	0.46	8.8	0.5	0.23	50
EP28-親本對照	52.08	70875	0.77	14.7	1	0.77	100

【0328】 [表 33].點突變 ,與根據 SEQ ID NO: 1 的野生型 CD39 序列相關。

突變數量	突變位置1	突變位置2	突變位置3	突變位置4	發現的序列	Pi測定：1 ug/ml酶，500 uM ATP，60 min，1 : 10
1	151: V->A				2x	4.309
1	319: I->T				2x	54.866
1	365: F->S				唯一的	69.0195
4	292: N->K	365: F->S	424: L->P	463: P->S	唯一的	78.81
2	405: K->N	412: Y->F			唯一的	89.415
2	424: L->Q	436: H->D			唯一的	62.912
4	254: L->M	263: W->R	439: F->S	469: S->R	唯一的	88.282

【0329】 12. 實例 11：體內活性，pK

【0330】 *(a) 材料與方法*

【0331】 對於體內 PK，經由尾靜脈向 4 隻清醒的雌性 C57BL/6 小鼠靜脈內（1 ml/kg）施用 PBS 緩衝液中終濃度為 10 mg/ml 的 10 mg/kg 化合物。小鼠獲自 WIGA 獲得並且體重約 22 g。所有生命工作都是根據瑞士動物福利法（Swiss animal welfare law）進行的。

【0332】 使用 POCT Minivettes，在小體積血清管中在給藥後 0.25、3、8、24 和 48 h 收集全血（每個時間點 50 μL）。分離血清並用於濃度確定。

【0333】 Gyrolab 技術係使用親和流通物形式的奈米級自動化免疫測定，其藉由離心力和雷射誘導的螢光檢測起作用。將鏈黴親和素包被的珠預包裝在 Gyrolab Bioaffy CD 上的親和柱中。每個 CD 含有 112 個柱。每個微結構的親和捕獲柱包含 15 nl。注射的樣品藉由毛細作用進入。生物素化的捕獲試劑與鏈黴親和素包被的珠結合。然後，注射分析物溶液，其與捕獲的分子結合。最後，應用螢光團標記的檢測試劑。在 CD39 的情況下，取決於 APP 標籤的可用性，使用兩種不同的測定讀數。

【0334】 1) 抗-CD39（40035）和抗-APP（27431）見於圖 10A 中。

【0335】 2) Fab（40035）和抗-Fc/抗-CD39（40044）1 : 1 預混合物（所有 EP28aa1-16 構建體）見於圖 10B 中。當藉由胺偶聯被生物素化時，抗體 40044 喪失活性，因此，僅抗體 40035 被生物素化。

【0336】 將 CD39 構建體的所有標準曲線在含有 5%（v/v）小鼠血清的 Rexxip A 中以 1 : 2 的稀釋系列稀釋。APP 標記構建體的應用濃度範圍為 5000 ng/ml-9.77 ng/ml，並且 EP28aa1-16 的應用濃度範圍為 10000 ng/ml-9.77 ng/ml。將所有小鼠血清樣品在含有 5%（v/v）小鼠血清的 Rexxip A 中以 1 : 100 稀釋。將 CD39 構建體的 QC 樣品在含有 5%（v/v）小鼠血清的 Rexxip A 中稀釋（對於具有 APP 標籤的構建體為 50 和 500 ng/ml，對於 EP28aa1-16 為 500 和 1000 ng/ml）。所有生物素化的捕獲試劑的終濃度為 0.1 mg/ml，並且將螢光標記的檢測抗體在 Rexxip F 中稀釋至 10 nM。

【0337】 *(b) 結果和解釋*

【0338】 結果總結在表 33 中。可以看出，所有候選物都顯示出相同的 PK。因此，候選物的選擇不是基於 PK 特性。

【0339】 [表 34]. pK 值

構建體	SEQ ID	動物 1	動物 2	動物 3	動物 4	平均 t/2（d）
EP28aa1-16	SEQ ID NO: 72	1.1	1.3	1.0	1.1	1.1
EP1xEP14aa 1-6	SEQ ID NO: 223	0.9	0.7	0.7	0.3	0.7
EP28aa1-3	SEQ ID NO: 58	0.6	0.7	0.9	0.8	0.8
EP14aa1-3	SEQ ID NO: 229	0.7	1.0	0.6	1.1	0.9
EP14aa1-6	SEQ ID NO: 231	0.7	0.7	0.7	0.8	0.7
EP17aa1-3	SEQ ID NO: 237	0.9	0.8	0.9	0.8	0.9
EP17aa1-15	SEQ ID NO: 241	0.8	0.9	0.9	0.6	0.8

【0340】 13. 實例 12：體內活性，AKI 模型

【0341】 *(a) 材料與方法*

【0342】 在 I/R 設置開始之前進行右腎的腎切除術。去除第二腎以避免改變生物學的整個動態的補償機制。將自主呼吸麻醉的動物置於恒溫監測系統的恒溫毯上並用無菌紗布覆蓋。藉由直腸探針記錄體溫並控制在 36.5°C-37.5°C 的範圍內以避免體溫過低。對動物進行麻醉、剃毛和消毒（Betaseptic）。在中線切開/剖腹術之後，將腹部內容物縮回到左側並去除右側腎。將輸尿管和血管斷開並結紮（9-0 愛惜康公司（Ethicon）），然後去除腎臟。

【0343】 I/R 損傷誘導：在右腎的腎切除術後立即將腹部內容物縮回到右側，並且解剖左腎動脈游離用於腎缺血誘導。

【0344】 微動脈瘤夾*用於*夾持腎蒂以阻斷血液流向腎臟並誘導腎缺血。腎缺血的持續時間從夾持的時間開始。藉由幾秒鐘內腎臟從紅色到深紫色的顏色變化證實了成功缺血。缺血後，去除微動脈瘤夾並藉由腎臟顏色變為紅色來表明再灌注。

【0345】 *(b) 結果和解釋*

【0346】 結果見於圖 12 中。候選物顯示出體內劑量響應，這與它們具體的體外活性相關。圖 12A 顯示了親本 EP28 的結果，圖 12B 顯示了 EP1xEP17 的結果，圖 12C 顯示了 EP14 的結果。可以看出，EP28 和 EP1xEP17 顯示了相似的劑量響應，而具有較高體外活性的 EP14 在更低劑量下顯示出完全功效。

【0347】 14. 實例 13：滴度、產率和可展性

【0348】 為了以商業規模製造選擇的候選物，重要的是能夠以相對高的產率表現它們。治療蛋白與治療抗體相比可能不是那麼簡單，因為除了缺乏能夠選擇高產殖株的富集技術之外還存在形式複雜性。

【0349】 EP14aa1-3 和 EP28aa1-3 這兩種候選物具有可比較的技術特徵，這係具有挑戰性的。特別地，早期表現批次（數據未顯示）的低表現滴度影響

生產成本，或者由於對宿主細胞蛋白質的控制不穩健，甚至可能在擴大規模後甚至更低。

【0350】 為了藉由兩種候選物的早期殖株選擇來嘗試改善蛋白質表現，需要定製的純化製程。為此，生成表現候選物 EP28aa1-3 和 EP14aa1-3 的細胞庫。

【0351】 將親本 CHO 細胞系用作宿主細胞系，用於產生表現 EP28aa1-16/EP14aa1-3 的細胞系。宿主細胞系衍生自熟悉該項技術者熟知的 CHO-K1 細胞系，其方式描述於例如專利申請 WO 2015092737 和 WO 2015092735 中，將兩者藉由援引以其全文併入本文。來自 CHO 系的單個小瓶用於製備 EP28aa1-16/EP14aa1-3 重組細胞系。

【0352】 細胞在化學成分確定的培養基中生長。每次轉染添加一 μg 的 SwaI 線性化的質粒 DNA、編碼 EP28aa1-16/EP14aa1-3 的表現載體。轉染反應在化學成分確定的培養基中進行。

【0353】 根據製造商的說明，使用 AMAXA Gene Pulser 藉由電穿孔進行轉染。用於轉染的親本 CHO 細胞處於指數生長期，具有高於 95%的細胞活力。總計，用 5 x 10^6 個細胞/轉染進行三次轉染。轉染後立即將細胞轉移到含有中等大小的化學成分確定的培養基的搖瓶中。

【0354】 在開始選擇過程之前，將細胞庫在 36.5°C 和 10% CO_2 下孵育 48 小時。使用在表現載體中編碼的選擇標記進行選擇程序。在低葉酸條件下轉染和生長 48 小時後，藉由向化學成分確定的培養基中添加 10 nM MTX 來施加另外的選擇壓力。在 MTX 選擇開始後 21 天，出現了主要由 MTX 抗性細胞組成的庫群。庫回收後冷凍細胞。在化學成分確定的培養基中設置標準進料批次用於確定 EP28aa1-16/EP14aa1-3 的濃度。反相層析（RPC）用於確定產物濃度。將產生 EP28aa1-16/EP14aa1-3 的 CHO 細胞庫用於 FACS 單細胞分選/細胞印製程序以獲得個性化的選殖細胞系。

【0355】 15. 實例 14：治療用途

【0356】 激活 $P2X_7R$ 的細胞外 ATP 已明確地與若干種疾病相關聯，如增強移植物抗宿主病（Wilhelm 等人, Graft-versus-host disease is enhanced by extracellular ATP activating $P2X_7R$. [激活 $P2X_7R$ 的細胞外 ATP 增強移植物抗宿主病], Nature Medicine [自然醫學] 16:12, 第 1434-1439 頁, (2010)）。

【0357】 此外，體外和體內研究均表示 CD39 藉由調節 ADP 的水平代表心血管健康中重要的腺三磷雙磷酸酶。已知腺三磷雙磷酸酶藉由代謝細胞外 ADP 來抑制血小板聚集。

【0358】 與其他療法（像氯吡格雷（Plavix™））相反，人腺三磷雙磷酸酶不與血小板共價結合，其不可逆地與血小板上的 ADP 受體結合。這允許治療阻斷的更快消失，並因此允許對於血小板活化過度的患者更安全的方法。這為血小板活化過度的患者提供了更安全的方法。

【0359】 因此，對於降低細胞外 ATP 水平的化合物（如，根據本發明的化合物）的治療用途存在明確的基礎。

【0360】 根據本發明的化合物的治療用途的具體非限制性實例係由於創傷和/或缺氧引起的急性器官損傷，如急性呼吸窘迫症候群（ARDS）、肺損傷、腎功能衰竭、急性腎損傷（AKI）（包括冠狀動脈旁路移植手術後的急性腎損傷）、腎臟或其他實體器官移植（包括異種器官移植）後的移植物功能延遲，或血管疾病（如閉塞性血管疾病），移植和異種器官移植，治療患有由以下引起的中風、冠狀動脈疾病或損傷的個體：心肌梗塞、動脈粥樣硬化、動脈硬化、栓塞、子癇前期、血管成形術、血管損傷、移植、新生兒缺氧缺血性腦病，血小板相關的缺血性疾病（包括肺缺血、冠狀動脈缺血和腦缺血），缺血再灌注損傷（IRI）血栓性疾病（包括冠狀動脈血栓形成、腦動脈血栓形成、心內血栓形成、外周動脈血栓形成、以及靜脈血栓形成），腎臟或其他實體器官移植（包括異種器

官移植）後的移植物功能延遲。根據本發明的化合物的治療用途的其他非限制性實例係治療燒傷或輻射損傷、敗血症，改善傷口癒合，減少出血或出血風險，預防器官損傷、移植物抗宿主病或預防移植排斥。

【0361】 特別地，根據本發明的化合物的較佳治療用途係急性腎損傷（AKI），如冠狀動脈旁路移植手術或敗血症或橫紋肌溶解術後的急性腎損傷。這種情況增加患者的死亡率，並且沒有標準護理（SoC）。重症監護病房中 AKI 的主要原因係：敗血症（47.5%）、大手術（34%）、心源性休克（27%）、血容量不足（26%）和腎毒性化合物（19%）。此外，AKI 係發展為慢性腎病（CKD）的獨立強風險因素。20-30%的主要心臟手術患者獲得急性腎損傷。另一個較佳實施方式涉及分離的根據本發明的腺三磷雙磷酸酶用於治療心臟手術相關的急性腎損傷的用途。

【0362】 在另一個實施方式中，本揭露涉及分離的根據本發明的腺三磷雙磷酸酶，該腺三磷雙磷酸酶用於治療移植物功能延遲（DGF）、急性呼吸窘迫症候群（ARDS）、急性心肌梗塞（AMI）、外傷性腦損傷（TBI）/急性缺血性中風（AIS）、或通常被稱為多器官衰竭（MOF）的其組合。

【0363】 16. 急性腎損傷（AKI）係敗血症的常見併發症。28%的敗血症患者獲得 AKI。在另外的較佳實施方式中，本揭露涉及根據本發明的分離的腺三磷雙磷酸酶用於治療敗血症相關的急性腎損傷的用途。實例 15：治療組成物

【0364】 治療蛋白通常被配製成水性形式以備施用或者配製成凍乾物以在施用前與適合的稀釋劑重構。蛋白質可以被配製成凍乾物，或配製成水性組成物，例如在預填充注射器中。

【0365】 適合的製劑可以提供水性藥物組成物或凍乾物，該凍乾物可以重構以給出具有高濃度的治療蛋白活性成分和低水平的蛋白質聚集的溶液用於遞送至患者。高濃度的蛋白質之所以有用，係因為高濃度降低了必須被遞送給患

者的材料量（劑量）。降低的給藥體積使得向患者遞送固定劑量所花費的時間降至最低。具有高濃度蛋白質的本發明的水性組成物特別適合皮下施用。

【0366】 因此，本發明提供了適用於在受試者中施用（例如用於皮下施用）的水性藥物組成物，該水性藥物組成物包含治療蛋白。

【0367】 當與藥學上可接受的運載體組合時，治療蛋白可以用作藥物組成物。除治療蛋白外，這種組成物可含有運載體、各種稀釋劑、填料、鹽、緩衝液、穩定劑，增溶劑和本領域熟知的其它材料。運載體的特徵將取決於施用途徑。在所揭露的方法中使用的藥物組成物還可以含有用於治療特定靶向障礙的另外的治療劑。

【0368】 17. 實例 16：施用途徑

【0369】 通常，例如藉由靜脈內、腹膜內或皮下注射來施用根據本發明的蛋白質。完成此施用的方法係熟悉該項技術者已知的。還可能獲得可以局部或口服施用的組成物，或者能夠透過黏膜傳遞的組成物。如熟悉該項技術者所理解的，可以使用任何適合的施用方式，如適合於特定的所選施用途徑。

【0370】 可能的施用途徑的實例包括腸胃外（例如，靜脈內（I.V.或 IV）、肌內（IM）、真皮內、皮下（S.C.或 SC）、或輸注）、口服和肺（例如吸入）、經鼻、經皮（局部）、經黏膜、動脈內、持續輸注、以及直腸施用。被用於胃腸外、真皮內、或皮下應用的溶液或懸浮液可以包括以下組分：無菌稀釋劑，如注射用水、鹽水溶液、固定油、聚乙二醇、甘油、丙二醇或其他合成溶劑；抗細菌劑，如苯甲醇或對羥基苯甲酸甲酯；抗氧化劑，如抗壞血酸或亞硫酸氫鈉；螯合劑，如乙二胺四乙酸；緩衝液如乙酸鹽、檸檬酸鹽或磷酸鹽；並且用於調節滲透壓的試劑如氯化鈉或葡萄糖。可以用酸或鹼（例如鹽酸或氫氧化鈉）調節 pH。腸胃外製劑可以被封裝在由玻璃或塑膠製成的安瓿、一次性注射器或多劑量小瓶中。

【0371】 可以藉由向需要療法的受試者施用根據本發明的蛋白質的「負荷劑量」來啟動腺三磷雙磷酸酶療法。「負荷劑量」旨在施用於受試者的根據本發明的蛋白質的初始劑量，其中施用的根據本發明的蛋白質的劑量落入更高給藥範圍內。「負荷劑量」可以單次施用，例如，單次輸注，其中 IV 施用蛋白質，或多次施用，例如，多次輸注，其中 IV 施用蛋白質，只要在約 24 小時的時間段內（或基於疾病的嚴重程度，如果需要多次靜脈內施用的話，則在第一個月內）施用完整的「負荷劑量」。施用「負荷劑量」後，再向受試者施用一個或多個另外的治療有效劑量的根據本發明的蛋白質。可以例如根據每週給藥方案、或者每兩週一次、每三週一次或每四週一次施用後續治療有效劑量。在這類實施方式中，後續治療有效劑量通常落在更低給藥範圍內。

【0372】 可替代地，在一些實施方式中，在「負荷劑量」後，根據「維持方案」施用後續治療有效劑量的根據本發明的蛋白質，其中施用治療有效劑量的根據本發明的蛋白質每月一次、每 6 週一次、每兩個月一次、每 10 週一次、每三個月一次、每 14 週一次、每四個月一次、每 18 週一次、每五個月一次、每 22 週一次、每六個月一次、每 7 個月一次、每 8 個月一次、每 9 個月一次、每 10 個月一次、每 11 個月一次或者每 12 個月一次。在這類實施方式中，根據本發明的蛋白質的治療有效劑量落在更低給藥範圍內，特別是以更高頻率間隔（例如每兩週一次至每月一次）施用後續劑量時，或者落在更高給藥範圍內，特別是以更低頻率間隔施用後續劑量時，例如，在間隔一個月至 12 個月施用後續劑量的情況下。

【0373】 給藥的時間通常從第一劑量活性化合物的當天（也稱為「基線」）測量。然而，不同的醫療服務人員使用不同的命名慣例。

【0374】 值得注意的是，一些醫療服務人員可能稱第零週為第 1 週，而一些醫療服務人員可能稱第零天為第一天。因此，有可能不同醫師將指明劑量例

如在第 3 週/在第 21 天期間、在第 3 週/在第 22 天期間、第 4 週/在第 21 天期間、第 4 週/在第 22 天期間給予，而指的是相同給藥時間表。為了一致性，給藥的第一週將在本文中稱為第 0 週，而給藥的第一天將被稱為第 1 天。然而，熟悉該項技術者將理解，該命名規則僅用於一致性並且不應被解釋為限制，即，每週給藥係提供每週劑量的蛋白質，無論醫生是否參考特定的一週為「第 1 週」或「第 2 週」。如本文所述的劑量方案的實例見圖 1 和圖 2。應理解，無需在精確時間點提供劑量，例如大約預定在第 29 天的劑量可例如在第 24 天至第 34 天（例如第 30 天）提供，只要提供在適當的星期中即可。

【0375】 如本文所使用的，短語「具有足夠量的蛋白質的容器以允許 [指定劑量] 的遞送」用於表示給定容器（例如，小瓶、筆、注射器）已在其中配置可用於提供所需劑量的一定體積的蛋白質（例如，作為藥物組成物的一部分）。作為一種實例，如果所希望的劑量係 500 mg，那麼臨床醫生可能使用來自含有濃度為 250 mg/ml 的蛋白質配製物的容器中的 2 ml、來自含有濃度為 500 mg/ml 的蛋白質配製物的容器中的 1 ml、來自含有濃度為 1000 mg/ml 的蛋白質配製物的容器中的 0.5 ml 等。在每個這樣的情況下，該等容器具有足夠量的蛋白質以允許遞送所希望的 500 mg 的劑量。

【0376】 如本文所使用的，短語「以允許 [施用途徑] 遞送 [指定劑量] 的劑量配製」用於表示給定的藥物組成物可用於藉由指定的施用途徑（例如 s.c. 或 i.v.）提供所需劑量的蛋白質。作為一種實例，如果所希望的皮下劑量係 500 mg，那麼臨床醫生可能使用具有濃度為 250 mg/ml 的 2 ml 蛋白質配製物、具有濃度為 500 mg/ml 的 1 ml 蛋白質配製物、具有濃度為 1000 mg/ml 的 0.5 ml 蛋白質配製物等。在每個這樣的情況下，該等蛋白質配製物處於足夠高的濃度以允許皮下遞送蛋白質。皮下遞送通常需要遞送小於約 2 ml 的體積，較佳的是約 1 ml 或更小的體積。然而，可以使用例如貼片/泵機制隨時間遞送更高的體積。

【0377】 本文揭露了蛋白質用於製造治療患者中的組織損傷的藥物的用途，其中該藥物被配製成包含容器，每個容器具有足夠量的蛋白質以允許每單位劑量遞送至少約 75 mg、150 mg、300 mg 或 600 mg 的蛋白質。

【0378】 本文揭露了蛋白質用於製造治療患者中的組織損傷的藥物的用途，其中該藥物以一定劑量被配製以允許每單位劑量全身遞送（例如，i.v.或 s.c. 遞送）75 mg、150 mg、300 mg 或 600 mg 的蛋白質。

【0379】 18. 實例 17：套組

【0380】 本揭露還涵蓋用蛋白質治療患有組織損傷（視情況而定）的患者的套組。此類套組包含蛋白質（例如，以液體或凍乾形式）或包含該蛋白質（如上所述）的藥物組成物。另外，此類套組可包含用於施用蛋白質的裝置（例如注射器和小瓶、預填充注射器、預填充筆、貼片/泵）及使用說明書。說明書可以揭露將蛋白質作為具體給藥方案的一部分提供給患者。該等套組還可以含有用於治療銀屑病，例如用於與所裝入的蛋白質組合遞送的另外的治療劑（如上所述）。

【0381】 短語「施用裝置」用於表示向患者全身性地施用藥物的任何可用器具，包括但不限於預填充注射器、小瓶及注射器、注射筆、自動注射器、靜脈內滴注器和袋、泵、貼片/泵等。使用該等物品，患者可自施用藥物（即自行施用藥物），或可由護理給予者或醫師施用藥物。

【0382】 本文揭露了用於治療患有組織損傷的患者的套組，該等套組包含：a) 藥物組成物，該藥物組成物包含治療有效量的蛋白質；b) 用於向患者施用蛋白質的裝置；和 c) 說明書，該說明書提供了向有需要的患者皮下施用蛋白質。

【0383】 序列表

【0384】 表 34 中揭露了用於實施本發明的有用的胺基酸和核苷酸序列。

【0385】 [表35]. 用於實施本發明的序列。

SEQ ID 號	特徵	序列
野生型人 CD39		
SEQ ID NO: 1	胺基酸	MEDTKESNVKTFCSKNILAILGFSSIIAVIALLAVGLTQNKALPENVKYGIVL DAGSSHTSLYIYKWPAEKENDTGVVHQVEECRVKGPGISKFVQKVNEIGI YLTDCMERAREVIPRSQHQETPVYLGATAGMRLLRMESEELADRVLDVV ERSLSNYPFDFQGARIITGQEEGAYGWITINYLLGKFSQKTRWFSIVPYET NNQETFGALDLGGASTQVTFVPQNQTIESPDNALQFRLYGKDYNVYTHS FLCYGKDQALWQKLAKDIQVASNEILRDPCFHPGYKKVVNVSDLYKTPCT KRFEMTLPFQQFEIQGIGNYQQCHQSILELFNTSYCPYSQCAFNGIFLPPL QGDFGAFSAFYFVMKFLNLTSEKVSQEKVTEMMKKFCAQPWEEIKTSYA GVKEKYLSEYCFSGTYILSLLLQGYHFTADSWEHIHFIGKIQGSDAGWTLG YMLNLTNMIPAEQPLSTPLSHSTYVFLMVLFSLVLFTVAIIGLLIFHKPSYFW KDMV
野生型大鼠 CD39		
SEQ ID NO: 2	胺基酸	MEDIKDSKVKRFCSKNILIILGFSSVLAVIALIAVGLTHNKPLPENVKYGIVLD AGSSHTNLYIYKWPAEKENDTGVVQLLEECQVKGPGISKYAQKTDEIAAY LAECMKMSTERIPASKQHQTPVYLGATAGMRLLRMESKQSADEVLAAVS RSLKSYPFDFQGAKIITGQEEGAYGWITINYLLGRFTQEQSWLNFISDSQK QATFGALDLGGSSTQVTFVPLNQTLEAPETSLQFRLYGTDYTVYTHSFLC YGKDQALWQKLAQDIQVSSGGILKDPCFYPGYKKVVNVSELYGTPCTKR FEKKLPFNQFQVQGTGDYEQCHQSILKFFNNSHCPYSQCAFNGVFLPPL QQGSFGAFSAFYFVMDFFKKMANDSVSSQEKMTEITKNFCSKPWEEVKAS YPTVKEKYLSEYCFSGTYILSLLLQGYNFTGTSWDQIHFMGKIKDSNAGW TLGYMLNLTNMIPAEQPLSPPLPHSTYISLMVLFSLVLVAMVITGLFIFSKPS YFWKEAV
CD39L3		
SEQ ID NO: 3	胺基酸	QIHKQEVLPPGLKYGIVLDAGSSRTTVYVYQWPAEKENNTGVVSQTFKCS VKGSGISSYGNNPQDVPRAFEECMQKVKGQVPSHLHGSTPIHLGATAGM RLLRLQNETAANEVLESIQSYFKSQPFDFRGAQIISGQEEGVYGWITANYL MGNFLEKNLWHMWVHPHGVETTGALDLGGASTQISFVAGEKMDLNTSDI MQVSLYGYVYTLYTHSFQCYGRNEAEKKFLAMLLQNSPTKNHLTNPCYP RDYSISFTMGHVFDSLCTVDQRPESYNPNDVITFEGTGDPSLCKEKVASIF DFKACHDQETCSFDGVYQPKIKGPFVAFAGFYYTASALNLSGSFSLDTFN SSTWNFCSQNWSQLPLLLPKFDEVYARSYCFSANYIYHLFVNGYKFTEET WPQIHFEKEVGNSSIAWSLGYMLSLTNQIPAESPLIRLPIEP
EP28		
SEQ ID NO: 4	胺基酸	TQNKALPENVKYGIVLDAGSSHTSLYIYKWPAEKENDTGVVHQVEECRVK GPGISKFVQKVNEIGIYLTDCMERAREVIPRSQHQETPVYLGATAGMRLLR MESEELADRVLDVVERSLSNYPFDFQGARIITGQEEGAYGWITINYLLGKF SQKNQETFGALDLGGASTQVTFVPQNQTIESPDNALQFRLYGKDYNVYT HSFLCYGKDQALWQKLAKDIQVASNEILRDPCFHPGYKKVVNVSDLYKTP CTKRFEMTLPFQQFEIQGIGNYQQCHQSILELFNTSYCPYSQCAFNGIFLP PLQGDFGAFSAFYFVMKFLNLTSEKVSQEKVTEMMKKFCAQPWEEIKTS YAGVKEKYLSEYCFSGTYILSLLLQGYHFTADSWEHIHFIGKIQGSDAGWT LGYMLNLTNMIPAEQPLSTPLSHST
SEQ ID NO: 5	DNA	ACCCAGAACAAGGCCCTGCCCGAGAACGTGAAGTACGGCATCGTGCT GGATGCCGGCAGCAGCCACACCAGCCTGTACATCTACAAGTGGCCTG CCGAGAAAGAAAACGACACCGGCGTGGTGCATCAGGTGGAAGAGTGC AGAGTGAAGGGCCCTGGCATCAGCAAGTTCGTGCAGAAAGTGAACGA GATCGGCATCTACCTGACCGACTGCATGGAACGGGCCAGGGAAGTGA TCCCCAGAAGCCAGCACCAGGAAACCCCCGTGTATCTGGGAGCCACC GCCGGCATGAGACTGCTGAGAATGGAAAGCGAGGAACTGGCCGACC GGGTGCTGGACGTGGTGGAAAGAAGCCTGAGCAACTACCCATTCGAT

		TTTCAAGGCGCCAGAATCATCACCGGCCAGGAAGAAGGCGCCTACGG CTGGATCACCATCAACTACCTGCTGGGCAAGTTCAGCCAGAAGAATCA GGAAACCTTCGGCGCCCTGGACCTGGGCGGAGCTTCTACCCAAGTGA CCTTCGTGCCCCAGAATCAGACCATCGAGAGCCCCGACAACGCCCTG CAGTTCCGGCTGTACGGCAAGGACTACAATGTGTACACCCACAGCTTT CTGTGCTACGGAAAGGACCAGGCTCTGTGGCAGAAGCTGGCCAAGGA CATCCAGGTGGCCAGCAACGAGATCCTGCGGGACCCTTGCTTCCACC CCGGCTACAAGAAAGTCGTGAACGTGTCCGACCTGTACAAGACCCCC TGCACCAAGAGATTCGAGATGACCCTGCCCTTCCAGCAGTTCGAGATC CAGGGCATCGGCAATTACCAGCAGTGCCACCAGAGCATCCTGGAACT GTTCAACACCAGCTACTGCCCCTACAGCCAGTGCGCCTTCAACGGCA TCTTCCTGCCACCTCTGCAGGGGGATTTCGGCGCCTTCAGCGCCTTC TACTTCGTGATGAAGTTCCTGAACCTGACCAGCGAGAAGGTGTCCCAG GAAAAAGTGACAGAGATGATGAAGAAGTTCTGCGCCCAGCCCTGGGA GGAAATCAAGACCTCCTACGCTGGCGTGAAAGAGAAGTACCTGAGCG AGTACTGCTTCAGCGGCACCTACATCCTGAGCCTGCTGCTGCAGGGC TACCACTTCACCGCCGATAGCTGGGAGCACATCCACTTCATCGGCAA GATTCAGGGCAGCGACGCCGGCTGGACACTGGGCTACATGCTGAATC TGACCAACATGATCCCCGCCGAGCAGCCCCTGAGCACACCTCTGAGC CACAGCACC
EP1		
SEQ ID NO: 6	胺基酸	TQNKALPENVKYGIVLDAGSSHTSLYIYKWPAEKENDTGVVHQVEECRVK GPGISKFVQKVNEIGIYLTDCMERAMEVIPRSQHQETPVYLGATAGMRLL RMESEELADRVLDVVERSLSNYPFDFQGARIITGQEEGAYGWITINYLLGK FSQKNQETFGALDLGGASTQVTFVPQNQTIESPDNALQFRLYGKDYNVY THSFLCYGKDQALWQKLAKDIQVASNEILRDPCFHPGYKKVVNVSDLYKT PCTKRFEMTLPFQQFEIQGIGNYQQCHQSILELFNTSYCPYSQCAFNGIFL PPLQGDFGAFSAFYFVMKFLNLTSEKVSQEKVTEMMKKFCAQPWEEIKT SYAGVKEKYLSEYCFSGTYILSLLLQGYHFTADSWEHIHFIGKIQGSDAGW TLGYMLNLTNMIPAEQPLSTPLSHST
SEQ ID NO: 7	DNA	ACCCAGAACAAGGCCCTGCCCGAGAACGTGAAGTACGGCATCGTGCT GGATGCCGGCAGCAGCCACACCAGCCTGTACATCTACAAGTGGCCTG CCGAGAAAGAAAACGACACCGGCGTGGTGCATCAGGTGGAAGAGTGC AGAGTGAAGGGCCCTGGCATCAGCAAGTTCGTGCAGAAAGTGAACGA GATCGGCATCTACCTGACCGACTGCATGGAACGGGCCATGGAAGTGA TCCCCAGAAGCCAGCACCAGGAAACCCCCGTGTATCTGGGAGCCACC GCCGGCATGAGACTGCTGAGAATGGAAAGCGAGGAACTGGCCGACC GGGTGCTGGACGTGGTGGAAAGAAGCCTGAGCAACTACCCATTCGAT TTTCAAGGCGCCAGAATCATCACCGGCCAGGAAGAAGGCGCCTACGG CTGGATCACCATCAACTACCTGCTGGGCAAGTTCAGCCAGAAGAATCA GGAAACCTTCGGCGCCCTGGACCTGGGCGGAGCTTCTACCCAAGTGA CCTTCGTGCCCCAGAATCAGACCATCGAGAGCCCCGACAACGCCCTG CAGTTCCGGCTGTACGGCAAGGACTACAATGTGTACACCCACAGCTTT CTGTGCTACGGAAAGGACCAGGCTCTGTGGCAGAAGCTGGCCAAGGA CATCCAGGTGGCCAGCAACGAGATCCTGCGGGACCCTTGCTTCCACC CCGGCTACAAGAAAGTCGTGAACGTGTCCGACCTGTACAAGACCCCC TGCACCAAGAGATTCGAGATGACCCTGCCCTTCCAGCAGTTCGAGATC CAGGGCATCGGCAATTACCAGCAGTGCCACCAGAGCATCCTGGAACT GTTCAACACCAGCTACTGCCCCTACAGCCAGTGCGCCTTCAACGGCA TCTTCCTGCCACCTCTGCAGGGGGATTTCGGCGCCTTCAGCGCCTTC TACTTCGTGATGAAGTTCCTGAACCTGACCAGCGAGAAGGTGTCCCAG GAAAAAGTGACAGAGATGATGAAGAAGTTCTGCGCCCAGCCCTGGGA GGAAATCAAGACCTCCTACGCTGGCGTGAAAGAGAAGTACCTGAGCG AGTACTGCTTCAGCGGCACCTACATCCTGAGCCTGCTGCTGCAGGGC TACCACTTCACCGCCGATAGCTGGGAGCACATCCACTTCATCGGCAA GATTCAGGGCAGCGACGCCGGCTGGACACTGGGCTACATGCTGAATC TGACCAACATGATCCCCGCCGAGCAGCCCCTGAGCACACCTCTGAGC CACAGCACC
EP2		
SEQ ID	胺基酸	TQNKALPENVKYGIVLDAGSSHTSLYIYKWPAEKENDTGVVHQVEECRVK GPGISKFVQKVNEIGIYLTDCMERAMEVIPRSQHQETPVYLGATAGMRLL

NO: 8		RMESEELADRVMDVVERSLSNYPFDFQGARIITGQEEGAYGWITINYLLG KFSQKNQETFGALDLGGASTQVTFVPQNQTIESPDNALQFRLYGKDYNV YTHSFLCYGKDQALWQKLAKDIQVASNEILRDPCFHPGYKKVVNVSDLYK TPCTKRFEMTLPFQQFEIQGIGNYQQCHQSILELFNTSYCPYSQCAFNGIF LPPLQGDFGAFSAFYFVMKFLNLTSEKVSQEKVTEMMKKFCAQPWEEIKT SYAGVKEKYLSEYCFSGTYILSLLLQGYHFTADSWEHIHFIGKIQGSDAGW TLGYMLNLTNMIPAEQPLSTPLSHST
SEQ ID NO: 9	DNA	ACCCAGAACAAGGCCCTGCCCGAGAACGTGAAGTACGGCATCGTGCT GGATGCCGGCAGCAGCCACACCAGCCTGTACATCTACAAGTGGCCTG CCGAGAAAGAAAACGACACCGGCGTGGTGCATCAGGTGGAAGAGTGC AGAGTGAAGGGCCCTGGCATCAGCAAGTTCGTGCAGAAAGTGAACGA GATCGGCATCTACCTGACCGACTGCATGGAACGGGCCATGGAAGTGA TCCCCAGAAGCCAGCACCAGGAAACCCCCGTGTATCTGGGAGCCACC GCCGGCATGAGACTGCTGAGAATGGAAAGCGAGGAACTGGCCGACC GGGTGATGGACGTGGTGGAAAGAAGCCTGAGCAACTACCCATTCGAT TTTCAAGGCGCCAGAATCATCACCGGCCAGGAAGAAGGCGCCTACGG CTGGATCACCATCAACTACCTGCTGGGCAAGTTCAGCCAGAAGAATCA GGAAACCTTCGGCGCCCTGGACCTGGGCGGAGCTTCTACCCAAGTGA CCTTCGTGCCCCAGAATCAGACCATCGAGAGCCCCGACAACGCCCTG CAGTTCCGGCTGTACGGCAAGGACTACAATGTGTACACCCACAGCTTT CTGTGCTACGGAAAGGACCAGGCTCTGTGGCAGAAGCTGGCCAAGGA CATCCAGGTGGCCAGCAACGAGATCCTGCGGGACCCTTGCTTCCACC CCGGCTACAAGAAAGTCGTGAACGTGTCCGACCTGTACAAGACCCCC TGCACCAAGAGATTCGAGATGACCCTGCCCTTCCAGCAGTTCGAGATC CAAGGCATCGGCAATTACCAGCAGTGCCACCAGAGCATCCTGGAACT GTTCAACACCAGCTACTGCCCCTACAGCCAGTGCGCCTTCAACGGCA TCTTCCTGCCACCTCTGCAGGGGGATTTCGGCGCCTTCAGCGCCTTC TACTTCGTGATGAAGTTCCTGAACCTGACCAGCGAGAAGGTGTCCCAG GAAAAAGTGACAGAGATGATGAAGAAGTTCTGCGCCCAGCCCTGGGA GGAAATCAAGACCTCCTACGCTGGCGTGAAAGAGAAGTACCTGAGCG AGTACTGCTTCAGCGGCACCTACATCCTGAGCCTGCTGCTGCAGGGC TACCACTTCACCGCCGATAGCTGGGAGCACATCCACTTCATCGGCAA GATTCAGGGCAGCGACGCCGGCTGGACACTGGGCTACATGCTGAATC TGACCAACATGATCCCCGCCGAGCAGCCCCTGAGCACACCTCTGAGC CACAGCACC
EP3		
SEQ ID NO: 10	胺基酸	TQNKALPENVKYGIVLDAGSSHTSLYIYKWPAEKENDTGVVHQVEECRVK GPGISKFVQKVNEIGIYLTDCMERAMEVIPRSQHQETPVYLGATAGMRLL RMESEELADRVLDVVERSLSNYPFDFQGARIITGQEEGAYGWITINYLLGK FSQKNQETFGALDLGGASTQVTFVPQNQTIESPDNALQFRLYGKDYNVY THSFLCYGKDQALWQKLAKDIQVASNEILRDPCFHPGYKKVVNVSDLYKT PCTKGFEMTLPFQQFEIQGIGNYQQCHQSILELFNTSYCPYSQCAFNGIFL PPLQGDFGAFSAFYFVMKFLNLTSEKVSQEKVTEMMKKFCAQPWEEIKT SYAGVKEKYLSEYCFSGTYILSLLLQGYHFTADSWEHIHFIGKIQGSDAGW TLGYMLNLTNMIPAEQPLRTPLSHST
SEQ ID NO: 11	DNA	ACCCAGAACAAGGCCCTGCCCGAGAACGTGAAGTACGGCATCGTGCT GGATGCCGGCAGCAGCCACACCAGCCTGTACATCTACAAGTGGCCTG CCGAGAAAGAAAACGACACCGGCGTGGTGCATCAGGTGGAAGAGTGC AGAGTGAAGGGCCCTGGCATCAGCAAGTTCGTGCAGAAAGTGAACGA GATCGGCATCTACCTGACCGACTGCATGGAACGGGCCATGGAAGTGA TCCCCAGAAGCCAGCACCAGGAAACCCCCGTGTATCTGGGAGCCACC GCCGGCATGAGACTGCTGAGAATGGAAAGCGAGGAACTGGCCGACC GGGTGCTGGACGTGGTGGAAAGAAGCCTGAGCAACTACCCATTCGAT TTTCAAGGCGCCAGAATCATCACCGGCCAGGAAGAAGGCGCCTACGG CTGGATCACCATCAACTACCTGCTGGGCAAGTTCAGCCAGAAGAATCA GGAAACCTTCGGCGCCCTGGACCTGGGCGGAGCTTCTACCCAAGTGA CCTTCGTGCCCCAGAATCAGACCATCGAGAGCCCCGACAACGCCCTG CAGTTCCGGCTGTACGGCAAGGACTACAATGTGTACACCCACAGCTTT CTGTGCTACGGAAAGGACCAGGCTCTGTGGCAGAAGCTGGCCAAGGA CATCCAGGTGGCCAGCAACGAGATCCTGCGGGACCCTTGCTTCCACC CCGGCTACAAGAAAGTCGTGAACGTGTCCGACCTGTACAAGACCCCC TGCACCAAGGGATTCGAGATGACCCTGCCCTTCCAGCAGTTCGAGAT

		CCAGGGCATCGGCAATTACCAGCAGTGCCACCAGAGCATCCTGGAAC TGTTCAACACCAGCTACTGCCCCTACAGCCAGTGCGCCTTCAACGGC ATCTTCCTGCCACCTCTGCAGGGGGATTTCGGCGCCTTCAGCGCCTT CTACTTCGTGATGAAGTTCCTGAACCTGACCAGCGAGAAGGTGTCCCA GGAAAAAGTGACAGAGATGATGAAGAAGTTCTGCGCCCAGCCCTGGG AGGAAATCAAGACCTCCTACGCTGGCGTGAAAGAGAAGTACCTGAGC GAGTACTGCTTCAGCGGCACCTACATCCTGAGCCTGCTGCTGCAGGG CTACCACTTCACCGCCGATAGCTGGGAGCACATCCACTTCATCGGCAA GATTCAGGGCAGCGACGCCGGCTGGACACTGGGCTACATGCTGAATC TGACCAACATGATCCCCGCCGAGCAGCCCCTGCGCACACCTCTGAGC CACAGCACC
EP4		
SEQ ID NO: 12	胺基酸	TQNKALPENVKYGIVLDAGSSHTSLYIYKWPAEKENDTGVVHQVEECRVK GPGISKFAQKVNEIGIYLTDCMERAMEVIPRSQHQETPVYLGATAGMRLL RMESEELADRVLDVVERSLSNYPFDFQGARIITGQEEGAYGWITINYLLGK FSQKNQETFGALDLGGASTQVTFVPQNQTIESPDNALQFRLYGKDYNVY THSFLCYGKDQALWQKLAKDIQVASNEILRDPCFHPGYKKVVNVSDLYKT PCTKRFEMTLPFQQFEIQGIGNYQQCHQSILELFNTSYCPYSQCAFNGIFL PPLQGDFGAFSAFYFVMKFLNLTSEKVSQEKVTEMMKKFCAQPWEEIKT SYAGVKEKYLSEYCFSGTYILSLLLQGYHFTADSWEHIHFIGKIQGSDAGW TLGYMLNLTNMIPAEQPLRTPLSHST
SEQ ID NO: 13	DNA	ACCCAGAACAAGGCCCTGCCCGAGAACGTGAAGTACGGCATCGTGCT GGATGCCGGCAGCAGCCACACCAGCCTGTACATCTACAAGTGGCCTG CCGAGAAAGAAAACGACACCGGCGTGGTGCATCAGGTGGAAGAGTGC AGAGTGAAGGGCCCTGGCATCAGCAAGTTCGCGCAGAAAGTGAACGA GATCGGCATCTACCTGACCGACTGCATGGAACGGGCCATGGAAGTGA TCCCCAGAAGCCAGCACCAGGAAACCCCCGTGTATCTGGGAGCCACC GCCGGCATGAGACTGCTGAGAATGGAAAGCGAGGAACTGGCCGACC GGGTGCTGGACGTGGTGGAAAGAAGCCTGAGCAACTACCCATTCGAT TTTCAAGGCGCCAGAATCATCACCGGCCAGGAAGAAGGCGCCTACGG CTGGATCACCATCAACTACCTGCTGGGCAAGTTCAGCCAGAAGAATCA GGAAACCTTCGGCGCCCTGGACCTGGGCGGAGCTTCTACCCAAGTGA CCTTCGTGCCCCAGAATCAGACCATCGAGAGCCCCGACAACGCCCTG CAGTTCCGGCTGTACGGCAAGGACTACAATGTGTACACCCACAGCTTT CTGTGCTACGGAAAGGACCAGGCTCTGTGGCAGAAGCTGGCCAAGGA CATCCAGGTGGCCAGCAACGAGATCCTGCGGGACCCTTGCTTCCACC CCGGCTACAAGAAAGTCGTGAACGTGTCCGACCTGTACAAGACCCCC TGCACCAAGAGATTCGAGATGACCCTGCCCTTCCAGCAGTTCGAGATC CAGGGCATCGGCAATTACCAGCAGTGCCACCAGAGCATCCTGGAACT GTTCAACACCAGCTACTGCCCCTACAGCCAGTGCGCCTTCAACGGCA TCTTCCTGCCACCTCTGCAGGGGGATTTCGGCGCCTTCAGCGCCTTC TACTTCGTGATGAAGTTCCTGAACCTGACCAGCGAGAAGGTGTCCCAG GAAAAAGTGACAGAGATGATGAAGAAGTTCTGCGCCCAGCCCTGGGA GGAAATCAAGACCTCCTACGCTGGCGTGAAAGAGAAGTACCTGAGCG AGTACTGCTTCAGCGGCACCTACATCCTGAGCCTGCTGCTGCAGGGC TACCACTTCACCGCCGATAGCTGGGAGCACATCCACTTCATCGGCAA GATTCAGGGCAGCGACGCCGGCTGGACACTGGGCTACATGCTGAATC TGACCAACATGATCCCCGCCGAGCAGCCCCTGAGGACACCTCTGAGC CACAGCACC
EP5		
SEQ ID NO: 14	胺基酸	TQNKALPENVKYGIVLDAGSSHTSLYIYKWPAEKENDTGVVHQVEECRVK GPGISKFVQKVNEIGIYLTDCMERAREVIPRSQHQETPVYLGATAGMRLLR MESEELADRVMDVVERSLSNYPFDFQGARIITGQEEGAYGWITINYLLGK FSQKNQETFGALDLGGASTQVTFVPQNQTIESPDNALQFRLYGKDYNVY THSFLCYGKDQALWQKLAKDIQVASNEILRDPCFHPGYKKVVNVSDLYKT PCTKRFEMTLPFQQFEIQGIGNYQQCHQSILELFNTSYCPYSQCAFNGIFL PPLQGDFGAFSAFYFVMKFLNLTSEKVSQEKVTEMMKKFCAQPWEEIKT SYAGVKEKYLSEYCFSGTYILSLLLQGYHFTADSWEHIHFIDKIQGSDAGW TLGYMLNLTNMIPAEQPLSTPLSHST
SEQ ID	DNA	ACCCAGAACAAGGCCCTGCCCGAGAACGTGAAGTACGGCATCGTGCT GGATGCCGGCAGCAGCCACACCAGCCTGTACATCTACAAGTGGCCTG

NO: 15		CCGAGAAAGAAAACGACACCGGCGTGGTGCATCAGGTGGAAGAGTGC AGAGTGAAGGGCCCTGGCATCAGCAAGTTCGTGCAGAAAGTGAACGA GATCGGCATCTACCTGACCGACTGCATGGAACGGGCCAGGGAAGTGA TCCCCAGAAGCCAGCACCAGGAAACCCCCGTGTATCTGGGAGCCACC GCCGGCATGAGACTGCTGAGAATGGAAAGCGAGGAACTGGCCGACC GGGTGATGGACGTGGTGGAAAGAAGCCTGAGCAACTACCCATTCGAT TTTCAAGGCGCCAGAATCATCACCGGCCAGGAAGAAGGCGCCTACGG CTGGATCACCATCAACTACCTGCTGGGCAAGTTCAGCCAGAAGAATCA GGAAACCTTCGGCGCCCTGGACCTGGGCGGAGCTTCTACCCAAGTGA CCTTCGTGCCCCAGAATCAGACCATCGAGAGCCCCGACAACGCCCTG CAGTTCCGGCTGTACGGCAAGGACTACAATGTGTACACCCACAGCTTT CTGTGCTACGGAAAGGACCAGGCTCTGTGGCAGAAGCTGGCCAAGGA CATCCAGGTGGCCAGCAACGAGATCCTGCGGGACCCTTGCTTCCACC CCGGCTACAAGAAAGTCGTGAACGTGTCCGACCTGTACAAGACCCCC TGCACCAAGAGATTCGAGATGACCCTGCCCTTCCAGCAGTTCGAGATC CAGGGCATCGGCAATTACCAGCAGTGCCACCAGAGCATCCTGGAACT GTTCAACACCAGCTACTGCCCCTACAGCCAGTGCGCCTTCAACGGCA TCTTCCTGCCACCTCTGCAGGGGGATTTCGGCGCCTTCAGCGCCTTC TACTTCGTGATGAAGTTCCTGAACCTGACCAGCGAGAAGGTGTCCCAG GAAAAAGTGACAGAGATGATGAAGAAGTTCTGCGCCCAGCCCTGGGA GGAAATCAAGACCTCCTACGCTGGCGTGAAAGAGAAGTACCTGAGCG AGTACTGCTTCAGCGGCACCTACATCCTGAGCCTGCTGCTGCAGGGC TACCACTTCACCGCCGATAGCTGGGAGCACATCCACTTCATCGACAAG ATTCAGGGCAGCGACGCCGGCTGGACACTGGGCTACATGCTGAATCT GACCAACATGATCCCCGCCGAGCAGCCCCTGAGCACACCTCTGAGCC ACAGCACC
EP6		
SEQ ID NO: 16	胺基酸	TQNKALPENVKYGIVLDAGSSHTSLYIYKWPAEKENDTGVVHQVEECRVK GPGISKFVQKVNEIGISLTDCMERAREVIPRSQHQETPVYLGATAGMRLLR MESEELADRVMDVVERSLSNYPFDFQGARIITGQEEGAYGWITINYLLGK FSQKNQETFGALDLGGASTQVTFVPQNQTIESPDNALQFRLYGKDYNVY THSFLCYGKDQALRQKLAKDIQVASNEILRDPCFHPGYKKVVNVSDLYKT PCTKRFEMTLPFQQFEIQGIGNYQQCHQSILELFNTSYCPYSQCAFNGIFL PPLQGDFGAFSAFYFVMKFLNLTSEKVSQEKVTEMMKKFCAQPWEEIKT SYAGVKEKYLSEYCFSGTYILSLLLQGYHFTADSWEHIHFIGKIQGSDAGW TLGYMLNLTNMIPAEQPLSTPLSHST
SEQ ID NO: 17	DNA	ACCCAGAACAAGGCCCTGCCCGAGAACGTGAAGTACGGCATCGTGCT GGATGCCGGCAGCAGCCACACCAGCCTGTACATCTACAAGTGGCCTG CCGAGAAAGAAAACGACACCGGCGTGGTGCATCAGGTGGAAGAGTGC AGAGTGAAGGGCCCTGGCATCAGCAAGTTCGTGCAGAAAGTGAACGA GATCGGCATCTCCCTGACCGACTGCATGGAACGGGCCAGGGAAGTGA TCCCCAGAAGCCAGCACCAGGAAACCCCCGTGTATCTGGGAGCCACC GCCGGCATGAGACTGCTGAGAATGGAAAGCGAGGAACTGGCCGACC GGGTGATGGACGTGGTGGAAAGAAGCCTGAGCAACTACCCATTCGAT TTTCAAGGCGCCAGAATCATCACCGGCCAGGAAGAAGGCGCCTACGG CTGGATCACCATCAACTACCTGCTGGGCAAGTTCAGCCAGAAGAATCA GGAAACCTTCGGCGCCCTGGACCTGGGCGGAGCTTCTACCCAAGTGA CCTTCGTGCCCCAGAATCAGACCATCGAGAGCCCCGACAACGCCCTG CAGTTCCGGCTGTACGGCAAGGACTACAATGTGTACACCCACAGCTTT CTGTGCTACGGAAAGGACCAGGCTCTGCGGCAGAAGCTGGCCAAGG ACATCCAGGTGGCCAGCAACGAGATCCTGCGGGACCCTTGCTTCCAC CCCGGCTACAAGAAAGTCGTGAACGTGTCCGACCTGTACAAGACCCC CTGCACCAAGAGATTCGAGATGACCCTGCCCTTCCAGCAGTTCGAGAT CCAGGGCATCGGCAATTACCAGCAGTGCCACCAGAGCATCCTGGAAC TGTTCAACACCAGCTACTGCCCCTACAGCCAGTGCGCCTTCAACGGC ATCTTCCTGCCACCTCTGCAGGGGGATTTCGGCGCCTTCAGCGCCTT CTACTTCGTGATGAAGTTCCTGAACCTGACCAGCGAGAAGGTGTCCCA GGAAAAAGTGACAGAGATGATGAAGAAGTTCTGCGCCCAGCCCTGGG AGGAAATCAAGACCTCCTACGCTGGCGTGAAAGAGAAGTACCTGAGC GAGTACTGCTTCAGCGGCACCTACATCCTGAGCCTGCTGCTGCAGGG CTACCACTTCACCGCCGATAGCTGGGAGCACATCCACTTCATCGGCAA GATTCAGGGCAGCGACGCCGGCTGGACACTGGGCTACATGCTGAATC

		TGACCAACATGATCCCCGCCGAGCAGCCCCTGAGCACACCTCTGAGC CACAGCACC
EP7		
SEQ ID NO: 18	胺基酸	TQNKALPENVKYGIVLDAGSSHTSLYIYKWPAEEENDTGVVHQVEECRVK GPGISKFVQKVNEIGIYLSDCMERAREVIPRSQHQETPVYLGATAGMRLL RMESEELADRVLDAVERSLSNYPFDFQGARIITGQEEGAYGWITINYLLGK FSQKNQETFGALDLGGASTQVTFVPQNQTIESPDNALQFRLYGKDYNVY THSFLCYGKDQALWQKLAKDIQVASNEILRDPCFHPGYKKVVNVSDLYKT PCTKRFEMTLPFQQFEIQGTGNYQQCHQSILELFNTSYCPYSQCAFNGIF LPPLQGDFGAFSAFYFVMKFLNLTSEKVSQEKVTEMMKKFCAQPWEEIKT SYAGVKEKYLSEYCFSGTYILSLLLQGYHFTADSWEHIHFIGKIQGSDAGW TLGYMLNLTNMIPAEQPLSTPLSHST
SEQ ID NO: 19	DNA	ACCCAGAACAAGGCCCTGCCCGAGAACGTGAAGTACGGCATCGTGCT GGATGCCGGCAGCAGCCACACCAGCCTGTACATCTACAAGTGGCCTG CCGAGGAAGAAAACGACACCGGCGTGGTGCATCAGGTGGAAGAGTG CAGAGTGAAGGGCCCTGGCATCAGCAAGTTCGTGCAGAAAGTGAACG AGATCGGCATCTACCTGTCCGACTGCATGGAACGGGCCAGGGAAGTG ATCCCCAGAAGCCAGCACCAGGAAACCCCCGTGTATCTGGGAGCCAC CGCCGGCATGAGACTGCTGAGAATGGAAAGCGAGGAACTGGCCGAC CGGGTGCTGGACGCGGTGGAAAGAAGCCTGAGCAACTACCCATTCGA TTTTCAAGGCGCCAGAATCATCACCGGCCAGGAAGAAGGCGCCTACG GCTGGATCACCATCAACTACCTGCTGGGCAAGTTCAGCCAGAAGAATC AGGAAACCTTCGGCGCCCTGGACCTGGGCGGAGCTTCTACCCAAGTG ACCTTCGTGCCCCAGAATCAGACCATCGAGAGCCCCGACAACGCCCT GCAGTTCCGGCTGTACGGCAAGGACTACAATGTGTACACCCACAGCT TTCTGTGCTACGGAAAGGACCAGGCTCTGTGGCAGAAGCTGGCCAAG GACATCCAGGTGGCCAGCAACGAGATCCTGCGGGACCCTTGCTTCCA CCCCGGCTACAAGAAAGTCGTGAACGTGTCCGACCTGTACAAGACCC CCTGCACCAAGAGATTCGAGATGACCCTGCCCTTCCAGCAGTTCGAG ATCCAGGGCACCGGCAATTACCAGCAGTGCCACCAGAGCATCCTGGA ACTGTTCAACACCAGCTACTGCCCCTACAGCCAGTGCGCCTTCAACG GCATCTTCCTGCCACCTCTGCAGGGGGATTTCGGCGCCTTCAGCGCC TTCTACTTCGTGATGAAGTTCCTGAACCTGACCAGCGAGAAGGTGTCC CAGGAAAAAGTGACAGAGATGATGAAGAAGTTCTGCGCCCAGCCCTG GGAGGAAATCAAGACCTCCTACGCTGGCGTGAAAGAGAAGTACCTGA GCGAGTACTGCTTCAGCGGCACCTACATCCTGAGCCTGCTGCTGCAG GGCTACCACTTCACCGCCGATAGCTGGGAGCACATCCACTTCATCGG CAAGATTCAGGGCAGCGACGCCGGCTGGACACTGGGCTACATGCTGA ATCTGACCAACATGATCCCCGCCGAGCAGCCCCTGAGCACACCTCTG AGCCACAGCACC
EP8		
SEQ ID NO: 20	胺基酸	TQNKALPENVKYGIVLDAGSSHTSLYIYKWPAEKENDTGVVHQVEECRVK GPGISKFVQKVNEIGIYLTDCMERAREVIPRSQHQETPVYLGATAGMRLLR MESEELADRVLDAVERSLSNYPFDFQGARIITGQEEGAYGWITINYLLGKF SQKNQETFGALDLGGASTQVTFVPQNQTIESPDNALQFRLYGKDYNVYT HSFLCYGKDQALWQKLAKDIQVASNEILRDPCFHPGYKKVVNVSDLYKTP CTKRFEMTLPFQQFEIQGIGNYQQCHQSILELFNTSYCPYSQCAFNGIFLP PLQGDFGAFSAFYFVMKFLNLTSEKVSQEKVTEMMKKFCAQPWEEIKTS YAGVKEKYLSEYCFSGTYILSLLLQGYHFTADSWEHIHFIGKIQGSDAGWT LGYMLNLTNMIPAEQPLSTPLSHST
SEQ ID NO: 21	DNA	ACCCAGAACAAGGCCCTGCCCGAGAACGTGAAGTACGGCATCGTGCT GGATGCCGGCAGCAGCCACACCAGCCTGTACATCTACAAGTGGCCTG CCGAGAAAGAAAACGACACCGGCGTGGTGCATCAGGTGGAAGAGTGC AGAGTGAAGGGCCCTGGCATCAGCAAGTTCGTGCAGAAAGTGAACGA GATCGGCATCTACCTGACCGACTGCATGGAACGGGCCAGGGAAGTGA TTCCCAGAAGCCAGCACCAGGAAACCCCCGTGTATCTGGGAGCCACC GCCGGCATGAGACTGCTGAGAATGGAAAGCGAGGAACTGGCCGACC GGGTGCTGGACGCGGTGGAAAGAAGCCTGAGCAACTACCCATTCGAT TTTCAAGGCGCCAGAATCATCACCGGCCAGGAAGAAGGCGCCTACGG CTGGATCACCATCAACTACCTGCTGGGTAAGTTCAGCCAGAAGAATCA GGAAACCTTCGGCGCCCTGGACCTGGGCGGAGCTTCTACCCAAGTGA

		CCTTCGTGCCCCAGAATCAGACCATCGAGAGCCCCGACAACGCCCTG CAGTTCCGGCTGTACGGCAAGGACTACAATGTGTACACCCACAGCTTT CTGTGCTACGGAAAGGACCAGGCTCTGTGGCAGAAGCTGGCCAAGGA CATCCAGGTGGCCAGCAACGAGATCCTGCGGGACCCTTGCTTCCACC CCGGCTACAAGAAAGTAGTGAACGTGTCCGACCTGTACAAGACCCCC TGCACCAAGAGATTCGAGATGACCCTGCCATTCCAGCAGTTCGAGATC CAGGGCATCGGCAATTACCAGCAGTGCCACCAGAGCATCCTGGAACT GTTCAACACCAGCTACTGCCCCTACAGCCAGTGCGCCTTCAACGGCA TCTTCCTGCCACCTCTGCAGGGGGATTTCGGCGCCTTCAGCGCCTTC TACTTCGTGATGAAGTTCCTGAACCTGACCAGCGAGAAGGTGTCCCAG GAAAAAGTGACAGAGATGATGAAGAAGTTCTGCGCCCAGCCCTGGGA GGAAATCAAGACCTCCTACGCTGGCGTGAAAGAGAAGTACCTGAGCG AGTACTGCTTCAGCGGCACCTACATCCTGAGCCTGCTGCTGCAGGGC TACCACTTCACCGCCGATAGCTGGGAGCACATCCACTTCATCGGCAA GATTCAGGGCAGCGACGCCGGCTGGACACTGGGCTACATGCTGAATC TGACCAACATGATCCCCGCCGAGCAGCCCCTGAGCACACCTCTGAGC CACAGCACC
EP9		
SEQ ID NO: 22	胺基酸	TQNKALPENVKYGIVLDAGSSHTSLYIYKWPAEKENDTGVVHQVEECRVK GPGISKFVQKVNEIGIYLTDCMERAREVIPRSQHQETPVYLGATAGMRLLR MESEELADRVLDVVERSLSNYPFDFQGARIITGQEEGAYGWITINYLLGKF SQKNQETFGALDLGGASTQVTFVPQNQTIESPDNALQFRLYGKDYNVYT HSFLCYGKDQALRQKLAKDIQVASNEILRDPCFHPGYKKVVNVSDLYKTP CTKRFEMTLPFQQFEIQGIGNYQQCHQSILELFNTSYCPYSQCAFNGIFLP PLQGDFGAFSAFYFVMKFLNLTSEKVSQEKVTEMMKKFCAQPWEEIKTS YAGVKEKYLSEYCFSGTYILSLLLQGYHFTADSWEHIHFIGKIQGSDAGWT LGYMLNLTNMIPAEQPLSTPLSHST
SEQ ID NO: 23	DNA	ACCCAGAACAAGGCCCTGCCCGAGAACGTGAAGTACGGCATCGTGCT GGATGCCGGCAGCAGCCACACCAGCCTGTACATCTACAAGTGGCCTG CCGAGAAAGAAAACGACACCGGCGTGGTGCATCAGGTGGAAGAGTGC AGAGTGAAGGGCCCTGGCATCAGCAAGTTCGTGCAGAAAGTGAACGA GATCGGCATCTACCTGACCGACTGCATGGAACGGGCCAGGGAAGTGA TCCCCAGAAGCCAGCACCAGGAAACCCCCGTGTATCTGGGAGCCACC GCCGGCATGAGACTGCTGAGAATGGAAAGCGAGGAACTGGCCGACC GGGTGCTGGACGTGGTGGAAAGAAGCCTGAGCAACTACCCATTCGAT TTTCAAGGCGCCAGAATCATCACCGGCCAGGAAGAAGGCGCCTACGG CTGGATCACCATCAACTACCTGCTGGGCAAGTTCAGCCAGAAGAATCA GGAAACCTTCGGCGCCCTGGACCTGGGCGGAGCTTCTACCCAAGTGA CCTTCGTGCCCCAGAATCAGACCATCGAGAGCCCCGACAACGCCCTG CAGTTCCGGCTGTACGGCAAGGACTACAATGTGTACACCCACAGCTTT CTGTGCTACGGAAAGGACCAGGCTCTGAGGCAGAAGCTGGCCAAGGA CATCCAGGTGGCCAGCAACGAGATCCTGCGGGACCCTTGCTTCCACC CCGGCTACAAGAAAGTCGTGAACGTGTCCGACCTGTACAAGACCCCC TGCACCAAGAGATTCGAGATGACCCTGCCCTTCCAGCAGTTCGAGATC CAGGGCATCGGCAATTACCAGCAGTGCCACCAGAGCATCCTGGAACT GTTCAACACCAGCTACTGCCCCTACAGCCAGTGCGCCTTCAACGGCA TCTTCCTGCCACCTCTGCAGGGGGATTTCGGCGCCTTCAGCGCCTTC TACTTCGTGATGAAGTTCCTGAACCTGACCAGCGAGAAGGTGTCCCAG GAAAAAGTGACAGAGATGATGAAGAAGTTCTGCGCCCAGCCCTGGGA GGAAATCAAGACCTCCTACGCTGGCGTGAAAGAGAAGTACCTGAGCG AGTACTGCTTCAGCGGCACCTACATCCTGAGCCTGCTGCTGCAGGGC TACCACTTCACCGCCGATAGCTGGGAGCACATCCACTTCATCGGCAA GATTCAGGGCAGCGACGCCGGCTGGACACTGGGCTACATGCTGAATC TGACCAACATGATCCCCGCCGAGCAGCCCCTGAGCACACCTCTGAGC CACAGCACC
EP10		
SEQ ID NO: 24	胺基酸	TQNKALPENVKYGIVLDAGSSHTSLYIYKWPAEKENDTGVVHQVEECRVK GPGISKFVQKVNEIGIYLTDCMERAREVIPRSQHQETPVYLGATAGMRLLR MESEELADRVLDVVERSLSNYPFDFQGARIITGQEEGAYGWITINYLLGKF SQKNQETFGALDLGGASTQVTFVPQNQTIESPDNALQFRLYGKDYNVYT HSFLCYGKDQALWQKLAKDIQVASNEILRDPCFHPGYKKVVNVSDLYKTP

		CTKRFEMTLPFQQFEIQGTGNYQQCHQSILELFNTSYCPYSQCAFNGIFL PPLQGDFGAFSAFYFVMKFLNLTSEKVSQEKVTEMMKKFCAQPWEEIKT SYAGVKEKYLSEYCFSGTYILSLLLQGYHFTADSWEHIHFIGKIQGSDAGW TLGYMLNLTNMIPAEQPLSTPLSHST
SEQ ID NO: 25	DNA	ACCCAGAACAAGGCCCTGCCCGAGAACGTGAAGTACGGCATCGTGCT GGATGCCGGCAGCAGCCACACCAGCCTGTACATCTACAAGTGGCCTG CCGAGAAAGAAAACGACACCGGCGTGGTGCATCAGGTGGAAGAGTGC AGAGTGAAGGGCCCTGGCATCAGCAAGTTCGTGCAGAAAGTGAACGA GATCGGCATCTACCTGACCGACTGCATGGAACGGGCCAGGGAAGTGA TCCCCAGAAGCCAGCACCAGGAAACCCCCGTGTATCTGGGAGCCACC GCCGGCATGAGACTGCTGAGAATGGAAAGCGAGGAACTGGCCGACC GGGTGCTGGACGTGGTGGAAAGAAGCCTGAGCAACTACCCATTCGAT TTTCAAGGCGCCAGAATCATCACCGGCCAGGAAGAAGGCGCCTACGG CTGGATCACCATCAACTACCTGCTGGGCAAGTTCAGCCAGAAGAATCA GGAAACCTTCGGCGCCCTGGACCTGGGCGGAGCTTCTACCCAAGTGA CCTTCGTGCCCCAGAATCAGACCATCGAGAGCCCCGACAACGCCCTG CAGTTCCGGCTGTACGGCAAGGACTACAATGTGTACACCCACAGCTTT CTGTGCTATGGAAAGGACCAGGCTCTGTGGCAGAAGCTGGCCAAGGA CATCCAGGTGGCCAGCAACGAGATCCTGCGGGACCCTTGCTTCCACC CCGGCTACAAGAAAGTCGTGAACGTGTCCGACCTGTACAAGACCCCC TGCACCAAGAGATTCGAGATGACCCTGCCCTTCCAGCAGTTCGAGATC CAGGGCACCGGCAATTACCAGCAGTGCCACCAGAGCATCCTGGAACT GTTCAACACCAGCTACTGCCCCTACAGCCAGTGCGCCTTCAACGGCA TCTTCCTGCCACCTCTGCAGGGGGATTTCGGCGCCTTCAGCGCCTTC TACTTCGTGATGAAGTTCCTGAACCTGACCAGCGAGAAGGTGTCCCAG GAAAAAGTGACAGAGATGATGAAGAAGTTCTGCGCCCAGCCCTGGGA GGAAATCAAGACCTCCTACGCTGGCGTGAAAGAGAAGTACCTGAGCG AGTACTGCTTCAGCGGCACCTACATCCTGAGCCTGCTGCTGCAGGGC TACCACTTCACCGCCGATAGCTGGGAGCACATCCACTTCATCGGCAA GATTCAGGGCAGCGACGCCGGCTGGACACTGGGCTACATGCTGAATC TGACCAACATGATCCCCGCCGAGCAGCCTTTGAGCACACCTCTGAGC CACAGCACC
EP11		
SEQ ID NO: 26	胺基酸	TQNKALPENVKYGIVLDAGSSHTSLYIYKWPAEKENDTGVVHQVEECRVK GPGISKFVQKVNEIGIYLTDCMERAMEVIPRSQHQETPVYLGATAGMRLL RMESEELADRVLDVVERSLSNYPFDFQGARIITGQEEGAYGWITINYLLGK FSQKNQETFGALDLGGASTQVTFVPQNQTIESPDNALQFRLYGKDYNVY THSFLCYGKDQALWQKLAKDIQVASNEILRDPCFHPGYKKVVNVSDLYKT PCTKRFEMTLPFQQFEIQGTGNYQQCHQSILELFNTSYCPYSQCAFNGIF LPPLQGDFGAFSAFYFVMKFLNLTSEKVSQEKVTEMMKKFCAQPWEEIKT SYAGVKEKYLSEYCFSGTYILSLLLQGYHFTADSWEHIHFIGKIQGSDAGW TLGYMLNLTNMIPAEQPLSTPLSHST
SEQ ID NO: 27	DNA	ACCCAGAACAAGGCCCTGCCCGAGAACGTGAAGTACGGCATCGTGCT GGATGCCGGCAGCAGCCACACCAGCCTGTACATCTACAAGTGGCCTG CCGAGAAAGAAAACGACACCGGCGTGGTGCATCAGGTGGAAGAGTGC AGAGTGAAGGGCCCTGGCATCAGCAAGTTCGTGCAGAAAGTGAACGA GATCGGCATCTACCTGACCGACTGCATGGAACGGGCCATGGAAGTGA TCCCCAGAAGCCAGCACCAGGAAACCCCCGTGTATCTGGGAGCCACC GCCGGCATGAGACTGCTGAGAATGGAAAGCGAGGAACTGGCCGACC GGGTGCTGGACGTGGTGGAAAGAAGCCTGAGCAACTACCCATTCGAT TTTCAAGGCGCCAGAATCATCACCGGCCAGGAAGAAGGCGCCTACGG CTGGATCACCATCAACTACCTGCTGGGCAAGTTCAGCCAGAAGAATCA GGAAACCTTCGGCGCCCTGGACCTGGGCGGAGCTTCTACCCAAGTGA CCTTCGTGCCCCAGAATCAGACCATCGAGAGCCCCGACAACGCCCTG CAGTTCCGGCTGTACGGCAAGGACTACAATGTGTACACCCACAGCTTT CTGTGCTACGGAAAGGACCAGGCTCTGTGGCAGAAGCTGGCCAAGGA CATCCAGGTGGCCAGCAACGAGATCCTGCGGGACCCTTGCTTCCACC CCGGCTACAAGAAAGTCGTGAACGTGTCCGACCTGTACAAGACCCCC TGCACCAAGAGATTCGAGATGACCCTGCCCTTCCAGCAGTTCGAGATC CAGGGCACCGGCAATTACCAGCAGTGCCACCAGAGCATCCTGGAACT GTTCAACACCAGCTACTGCCCCTACAGCCAGTGCGCCTTCAACGGCA TCTTCCTGCCACCTCTGCAGGGGGATTTCGGCGCCTTCAGCGCCTTC

		TACTTCGTGATGAAGTTCCTGAACCTGACTAGCGAGAAGGTGTCCCAG GAAAAAGTGACAGAGATGATGAAGAAGTTCTGCGCCCAGCCCTGGGA GGAAATCAAGACCTCCTACGCTGGCGTGAAAGAGAAGTACCTGAGCG AGTACTGCTTCAGCGGCACCTACATCCTGAGCCTGCTGCTGCAGGGC TACCACTTCACCGCCGATAGCTGGGAGCACATCCACTTCATCGGCAA GATTCAGGGCAGCGACGCCGGCTGGACACTGGGCTACATGCTGAATC TGACCAACATGATCCCCGCCGAGCAGCCCCTGAGCACACCTCTGAGC CACAGCACC
EP12		
SEQ ID NO: 28	胺基酸	TQNKALPENVKYGIVLDAGSSHTSLYIYKWPAEKENDTGVVHQVEECRVK GPGISKFVQKVNEIGIYLTDCMERAREVIPRSQHQETPVYLGATAGMRLLR MESEELADRVLDVVERSLSNYPFDFQGARIITGQEEGAYGWITINYLLGKF SQKNQETFGALDLGGASTQVTFVPQNQTIESPDNALQFRLYGKDYNVYT HSFLCYGKDQALWQKLAKDIQVASNDILRDPCFHPGYKKVVNVSDLYKTP CTKRFEMTLPFQQFEIQGTGNYQQCHQSILELFNTSYCPYSQCAFNGIFL PPLQGDFGAFSAFYFVMKFLNLTSEKVSQEKVTEMMKKFCAQPWEEIKT SYAGVKEKYLSEYCFSGTYILSLLLQGYHFTADSWEHIHFIGKIQGSDAGW TLGYMLNLTNMIPAEQPLSTPLSHST
SEQ ID NO: 29	DNA	ACCCAGAACAAGGCCCTGCCCGAGAACGTGAAGTACGGCATCGTGCT GGATGCCGGCAGCAGCCACACCAGCCTGTACATCTACAAGTGGCCTG CCGAGAAAGAAAACGACACCGGCGTGGTGCATCAGGTGGAAGAGTGC AGAGTGAAGGGCCCTGGCATCAGCAAGTTCGTGCAGAAAGTGAACGA GATCGGCATCTACCTGACCGACTGCATGGAACGGGCCAGGGAAGTGA TCCCCAGAAGCCAGCACCAGGAAACCCCCGTGTATCTGGGAGCCACC GCCGGCATGAGACTGCTGAGAATGGAAAGCGAGGAACTGGCCGACC GGGTGCTGGACGTGGTGGAAAGAAGCCTGAGCAACTACCCATTCGAT TTTCAAGGCGCCAGAATCATCACCGGCCAGGAAGAAGGCGCCTACGG CTGGATCACCATCAACTACCTGCTGGGCAAGTTCAGCCAGAAGAATCA GGAAACCTTCGGCGCCCTGGACCTGGGCGGAGCTTCTACCCAAGTGA CCTTCGTGCCCCAGAATCAGACCATCGAGAGCCCCGACAACGCCCTG CAGTTCCGGCTGTACGGCAAGGACTACAATGTGTACACCCACAGCTTT CTGTGCTACGGAAAGGACCAGGCTCTGTGGCAGAAGCTGGCCAAGGA CATCCAGGTGGCCAGCAACGATATCCTGCGGGACCCTTGCTTCCACC CCGGCTACAAGAAAGTCGTGAACGTGTCCGACCTGTACAAGACCCCC TGCACCAAGAGATTCGAGATGACCCTGCCCTTCCAGCAGTTCGAGATC CAGGGCACCGGCAATTACCAGCAGTGCCACCAGAGCATCCTGGAACT GTTCAACACCAGCTACTGCCCCTACAGCCAGTGCGCCTTCAACGGCA TCTTCCTGCCACCTCTGCAGGGGGATTTCGGCGCCTTCAGCGCCTTC TACTTCGTGATGAAGTTCCTGAACCTGACCAGCGAGAAGGTGTCCCAG GAAAAAGTGACAGAGATGATGAAGAAGTTCTGCGCCCAGCCCTGGGA GGAAATCAAGACCTCCTACGCTGGCGTGAAAGAGAAGTACCTGAGCG AGTACTGCTTCAGCGGCACCTACATCCTGAGCCTGCTGCTGCAGGGC TACCACTTCACCGCCGATAGCTGGGAGCACATCCACTTCATCGGCAA GATTCAGGGCAGCGACGCCGGCTGGACACTGGGCTACATGCTGAATC TGACCAACATGATCCCCGCCGAGCAGCCCCTGAGCACACCTCTGAGC CACAGCACC
EP13		
SEQ ID NO: 30	胺基酸	TQNKALPENVKYGIVLDAGSSHTSLYIYKWPAEKENDTGVVHQVEECRVK GPGISKFVQKVNEIGIYLTDCMERAREVIPRSQHQETPVYLGATAGMRLLR MESEELADRVLDVVERSLSNYPFDFQGARIITGQEEGAYGWITINYLLGKF SQKNQETFGALDLGGASTQVTFVPQNQTIESPDNALQFRLYGKDYNVYT HSFLCYGKDQALWQKLAKDIQVASNEILRDPCFHPGYKKVVNVSDLYKTP CTKRFEMTLPFQQFEIQGIGNYQQCHQSILELFNTSYCPYSQCAFNGIFLP PLQGDFGAFSAFYSVMKFLNLTSEKVSQEKVTEMMKKFCAQPWEEIKTS YAGVKEKYLSEYCFSGTYILSLLPQGYHFTADSWEHIHFIGKIQGSDAGWT LGYMLNLTNMIPAEQPLSTPLSHST
SEQ ID NO: 31	DNA	ACCCAGAACAAGGCCCTGCCCGAGAACGTGAAGTACGGCATCGTGCT GGATGCCGGCAGCAGCCACACCAGCCTGTACATCTACAAGTGGCCTG CCGAGAAAGAAAACGACACCGGCGTGGTGCATCAGGTGGAAGAGTGC AGAGTGAAGGGCCCTGGCATCAGCAAGTTCGTGCAGAAAGTGAACGA GATCGGCATCTACCTGACCGACTGCATGGAACGGGCCAGGGAAGTGA

		TCCCCAGAAGCCAGCACCAGGAAACCCCCGTGTATCTGGGAGCCACC GCCGGCATGAGACTGCTGAGAATGGAAAGCGAGGAACTGGCCGACC GGGTGCTGGACGTGGTGGAAAGAAGCCTGAGCAACTACCCATTCGAT TTTCAAGGCGCCAGAATCATCACCGGCCAGGAAGAAGGCGCCTACGG CTGGATCACCATCAACTACCTGCTGGGCAAGTTCAGCCAGAAGAATCA GGAAACCTTCGGCGCCCTGGACCTGGGCGGAGCTTCTACCCAAGTGA CCTTCGTGCCCCAGAATCAGACCATCGAGAGCCCCGACAACGCCCTG CAGTTCCGGCTGTACGGCAAGGACTACAATGTGTACACCCACAGCTTT CTGTGCTACGGAAAGGACCAGGCTCTGTGGCAGAAGCTGGCCAAGGA CATCCAGGTGGCCAGCAACGAGATCCTGCGGGACCCTTGCTTCCACC CCGGCTACAAGAAAGTCGTGAACGTGTCCGACCTGTACAAGACCCCC TGCACCAAGAGATTCGAGATGACCCTGCCCTTCCAGCAGTTCGAGATC CAGGGCATCGGCAATTACCAGCAGTGCCACCAGAGCATCCTGGAACT GTTCAACACCAGCTACTGCCCCTACAGCCAGTGCGCCTTCAACGGCA TCTTCCTGCCACCTCTGCAGGGGGATTTCGGCGCCTTCAGCGCCTTC TACTCCGTGATGAAGTTCCTGAACCTGACCAGCGAGAAGGTGTCCCA GGAAAAAGTGACAGAGATGATGAAGAAGTTCTGCGCCCAGCCCTGGG AGGAAATCAAGACCTCCTACGCTGGCGTGAAAGAGAAGTACCTGAGC GAGTACTGCTTCAGCGGCACCTACATCCTGAGCCTGCTGCCGCAGGG CTACCACTTCACCGCCGATAGCTGGGAGCACATCCACTTCATCGGCAA GATTCAGGGCAGCGACGCCGGCTGGACACTGGGCTACATGCTGAATC TGACCAACATGATCCCCGCCGAGCAGCCCCTGAGCACACCTCTGAGC CACAGCACC
EP14		
SEQ ID NO: 32	胺基酸	TQNKALPENVKYGIVLDAGSSHTSLYIYKWPAEKENDTGVVHQVEECRVK GPGISKFVQKVNEIGIYLTDCMERAREVIPRSQHQETPVYLGATAGMRLLR MESEELADRVLDVVERSLSNYPFDFQGARIITGQEEGAYGWITINYLLGKF SQKNQETFGALDLGGASTQVTFVPQNQTIESPDNALQFRLYGKDYNVYT HSFLCYGKDQALWQKLAKDIQVASNEILRDPCFHPGYKKVVNVSDLYKTP CTKRFEMTLPFQQFEIQGIGNYQQCHQSILELFNTSYCPYSQCAFNGIFLP PLQGDFGAFSAFYSVMKFLNLTSEKVSQEKVTEMMKKFCAQPWEEIKTS YAGVKEKYLSEYCFSGTYILSLLLQGYHFTADSWEHIHFIGKIQGSDAGWT LGYMLNLTNMIPAEQPLSTPLSHST
SEQ ID NO: 33	DNA	ACCCAGAACAAGGCCCTGCCCGAGAACGTGAAGTACGGCATCGTGCT GGATGCCGGCAGCAGCCACACCAGCCTGTACATCTACAAGTGGCCTG CCGAGAAAGAAAACGACACCGGCGTGGTGCATCAGGTGGAAGAGTGC AGAGTGAAGGGCCCTGGCATCAGCAAGTTCGTGCAGAAAGTGAACGA GATCGGCATCTACCTGACCGACTGCATGGAACGGGCCAGGGAAGTGA TCCCCAGAAGCCAGCACCAGGAAACCCCCGTGTATCTGGGAGCCACC GCCGGCATGAGACTGCTGAGAATGGAAAGCGAGGAACTGGCCGACC GGGTGCTGGACGTGGTGGAAAGAAGCCTGAGCAACTACCCATTCGAT TTTCAAGGCGCCAGAATCATCACCGGCCAGGAAGAAGGCGCCTACGG CTGGATCACCATCAACTACCTGCTGGGCAAGTTCAGCCAGAAGAATCA GGAAACCTTCGGCGCCTTGGACCTGGGCGGAGCTTCTACCCAAGTGA CCTTCGTGCCCCAGAATCAGACCATCGAGAGCCCCGACAACGCCCTG CAGTTCCGGCTGTACGGCAAGGACTACAATGTGTACACCCACAGCTTT CTGTGCTACGGAAAGGACCAGGCTCTGTGGCAGAAGCTGGCCAAGGA CATCCAGGTGGCCAGCAACGAGATCCTGCGGGACCCTTGCTTCCACC CCGGCTACAAGAAAGTCGTGAACGTGTCCGACCTGTACAAGACCCCC TGCACCAAGAGATTCGAGATGACCCTGCCCTTCCAGCAGTTCGAGATC CAGGGCATCGGCAATTACCAGCAGTGCCACCAGAGCATCCTGGAACT GTTCAACACCAGCTACTGCCCCTACAGCCAGTGCGCCTTCAACGGCA TCTTCCTGCCACCTCTGCAGGGGGATTTCGGCGCCTTCAGCGCCTTC TACTCCGTGATGAAGTTCCTGAACCTGACCAGCGAGAAGGTGTCCCA GGAAAAAGTGACAGAGATGATGAAGAAGTTCTGCGCCCAGCCCTGGG AGGAAATCAAGACCTCCTACGCTGGCGTGAAAGAGAAGTACCTGAGC GAGTACTGCTTCAGCGGCACCTACATCCTGAGCCTGCTGCTGCAGGG CTACCACTTCACCGCCGATAGCTGGGAGCACATCCACTTCATCGGCAA GATTCAGGGCAGCGACGCCGGCTGGACACTGGGTTACATGCTGAATC TGACCAACATGATCCCCGCCGAGCAGCCCCTGAGCACACCTCTGAGC CACAGCACC

EP15		
SEQ ID NO: 34	胺基酸	TQNKALPENVKYGIVLDAGSSHTSLYIYKWPAEKENDTGVVHQVEECRVK GPGISKFVQKVNEIGIYLTDCMERAREVIPRSQHQETPVYLGATAGMRLLR MESEELADRVLDVVERSLSNYPFDFQGARIITGQEEGAYGWITINYLLGKF SQKNQETFGALDLGGASTQVTFVPQNQTIESPDNALQFRLYGKDYNVYT HSFLCYGKDQALWQKLAKDIQVASNEILRDPCFHPGYKKVVKVSDLYKTP CTKRFEMTLPFQQFEIQGIGNYQQCHQSILELFNTSYCPYSQCAFNGIFLP PLQGDFGAFSAFYSVMKFLNLTSEKVSQEKVTEMMKKFCAQPWEEIKTS YAGVKEKYLSEYCFSGTYILSLLPQGYHFTADSWEHIHFIGKIQGSDAGWT LGYMLNLTNMISAEQPLSTPLSHST
SEQ ID NO: 35	DNA	ACCCAGAACAAGGCCCTGCCCGAGAACGTGAAGTACGGCATCGTGCT GGATGCCGGCAGCAGCCACACCAGCCTGTACATCTACAAGTGGCCTG CCGAGAAAGAAAACGACACCGGCGTGGTGCATCAGGTGGAAGAGTGC AGAGTGAAGGGCCCTGGCATCAGCAAGTTCGTGCAGAAAGTGAACGA GATCGGCATCTACCTGACCGACTGCATGGAACGGGCCAGGGAAGTGA TCCCCAGAAGCCAGCACCAGGAAACCCCCGTGTATCTGGGAGCCACC GCCGGCATGAGACTGCTGAGAATGGAAAGCGAGGAACTGGCCGACC GGGTGCTGGACGTGGTGGAAAGAAGCCTGAGCAACTACCCATTCGAT TTTCAAGGCGCCAGAATCATCACCGGCCAGGAAGAAGGCGCCTACGG CTGGATCACCATCAACTACCTGCTGGGCAAGTTCAGCCAGAAGAATCA GGAAACCTTCGGCGCCCTGGACCTGGGCGGAGCTTCTACCCAAGTGA CCTTCGTGCCCCAGAATCAGACCATCGAGAGCCCCGACAACGCCCTG CAGTTCCGGCTGTACGGCAAGGACTACAATGTGTACACCCACAGCTTT CTGTGCTACGGAAAGGACCAGGCGCTGTGGCAGAAGCTGGCCAAGG ACATCCAGGTGGCCAGCAACGAGATCCTGCGGGACCCTTGCTTCCAC CCCGGCTACAAGAAAGTCGTGAAGGTGTCCGACCTGTACAAGACCCC CTGCACCAAGAGATTCGAGATGACCCTGCCCTTCCAGCAGTTCGAGAT CCAGGGCATCGGCAATTACCAGCAGTGCCACCAGAGCATCCTGGAAC TGTTCAACACCAGCTACTGCCCATACAGCCAGTGCGCCTTCAACGGCA TCTTCCTGCCACCTCTGCAGGGGGATTTCGGCGCCTTCAGCGCCTTC TACTCCGTGATGAAGTTCCTGAACCTGACCAGCGAGAAGGTGTCCCA GGAAAAAGTGACAGAGATGATGAAGAAGTTCTGCGCCCAGCCCTGGG AGGAAATCAAGACCTCCTACGCTGGCGTGAAAGAGAAGTACCTGAGC GAGTACTGCTTCAGCGGCACCTACATCCTGAGCCTGCTGCCGCAGGG CTACCACTTCACCGCCGATAGCTGGGAGCACATCCACTTCATCGGCAA GATTCAGGGCAGCGACGCCGGCTGGACACTGGGCTACATGCTGAATC TGACCAACATGATCTCCGCCGAGCAGCCCCTGAGCACACCTCTGAGC CACAGCACC
EP17		
SEQ ID NO: 36	胺基酸	TQNKALPENVKYGIVLDAGSSHTSLYIYKWPAEKENDTGVVHQVEECRVK GPGISKFVQKVNEIGIYLTDCMERAREVIPRSQHQETPVYLGATAGMRLLR MESEELADRVLDVVERSLSNYPFDFQGARIITGQEEGAYGWITINYLLGKF SQKNQETFGALDLGGASTQVTFVPQNQTIESPDNALQFRLYGKDYNVYT HSFLCYGKDQALWQKLAKDIQVASNEILRDPCFHPGYKKVVNVSDLYKTP CTKRFEMTLPFQQFEIQGIGNYQQCHQSILELFNTSYCPYSQCAFNGIFLP PLQGDFGAFSAFYFVMKFLNLTSEKVSQEKVTEMMKKFCAQPWEEIKTS YAGVNEKYLSEFCFSGTYILSLLLQGYHFTADSWEHIHFIGKIQGSDAGWT LGYMLNLTNMIPAEQPLSTPLSHST
SEQ ID NO: 37	DNA	ACCCAGAACAAGGCCCTGCCCGAGAACGTGAAGTACGGCATCGTGCT GGATGCCGGCAGCAGCCACACCAGCCTGTACATCTACAAGTGGCCTG CCGAGAAAGAAAACGACACCGGCGTGGTGCATCAGGTGGAAGAGTGC AGAGTGAAGGGCCCTGGCATCAGCAAGTTCGTGCAGAAAGTGAACGA GATCGGCATCTACCTGACCGACTGCATGGAACGGGCCAGGGAAGTGA TCCCCAGAAGCCAGCACCAGGAAACCCCCGTGTATCTGGGAGCCACC GCCGGCATGAGACTGCTGAGAATGGAAAGCGAGGAACTGGCCGACC GGGTGCTGGACGTGGTGGAAAGAAGCCTGAGCAACTACCCATTCGAT TTTCAAGGCGCCAGAATCATCACCGGCCAGGAAGAAGGCGCCTACGG CTGGATCACCATCAACTACCTGCTGGGCAAGTTCAGCCAGAAGAATCA GGAAACCTTCGGCGCCCTGGACCTGGGCGGAGCTTCTACCCAAGTGA CCTTCGTGCCCCAGAATCAGACCATCGAGAGCCCCGACAACGCCCTG CAGTTCCGGCTGTACGGCAAGGACTACAATGTGTACACCCACAGCTTT

		CTGTGCTACGGAAAGGACCAGGCTCTGTGGCAGAAGCTGGCCAAGGA CATCCAGGTGGCCAGCAACGAGATCCTGCGGGACCCTTGCTTCCACC CCGGCTACAAGAAAGTCGTGAACGTGTCCGACCTGTACAAGACCCCC TGCACCAAGAGATTCGAGATGACCCTGCCCTTCCAGCAGTTCGAGATC CAGGGCATCGGCAATTACCAGCAGTGCCACCAGAGCATCCTGGAACT GTTCAACACCAGCTACTGCCCCTACAGCCAGTGCGCCTTCAACGGCA TCTTCCTGCCACCTCTGCAGGGGGATTTCGGCGCCTTCAGCGCCTTC TACTTCGTGATGAAGTTCCTGAACCTGACCAGCGAGAAGGTGTCCCAG GAAAAAGTGACAGAGATGATGAAGAAGTTCTGCGCCCAACCCTGGGA GGAAATCAAGACCTCCTACGCTGGCGTGAACGAGAAGTACCTGAGCG AGTTTTGCTTCAGCGGCACCTACATCCTGAGCCTGCTGCTGCAGGGC TACCACTTCACCGCCGATAGCTGGGAGCACATCCACTTCATCGGCAA GATTCAGGGCAGCGACGCCGGCTGGACACTGGGCTACATGCTGAATC TGACCAACATGATCCCCGCCGAGCAGCCCCTGAGCACACCTCTGAGC CACAGCACC
EP17.1		
SEQ ID NO: 38	胺基酸	TQNKALPENVKYGIVLDAGSSHTSLYIYKWPAEKENDTGVVHQVEECRVK GPGISKFVQKVNEIGIYLTDCMERAREVIPRSQHQETPVYLGATAGMRLLR MESEELADRVLDVVERSLSNYPFDFQGARIITGQEEGAYGWITINYLLGKF SQKNQETFGALDLGGASTQVTFVPQNQTIESPDNALQFRLYGKDYNVYT HSFLCYGKDQALWQKLAKDIQVASNEILRDPCFHPGYKKVVNVSDLYKTP CTKRFEMTLPFQQFEIQGIGNYQQCHQSILELFNTSYCPYSQCAFNGIFLP PLQGDFGAFSAFYFVMKFLNLTSEKVSQEKVTEMMKKFCAQPWEEIKTS YAGVKEKYLSEFCFSGTYILSLLLQGYHFTADSWEHIHFIGKIQGSDAGWT LGYMLNLTNMIPAEQPLSTPLSHST
SEQ ID NO: 39	DNA	ACCCAGAACAAGGCCCTGCCCGAGAACGTGAAGTACGGCATCGTGCT GGATGCCGGCAGCAGCCACACCAGCCTGTACATCTACAAGTGGCCTG CCGAGAAAGAAAACGACACCGGCGTGGTGCATCAGGTGGAAGAGTGC AGAGTGAAGGGCCCTGGCATCAGCAAGTTCGTGCAGAAAGTGAACGA GATCGGCATCTACCTGACCGACTGCATGGAACGGGCCAGGGAAGTGA TCCCCAGAAGCCAGCACCAGGAAACCCCCGTGTATCTGGGAGCCACC GCCGGCATGAGACTGCTGAGAATGGAAAGCGAGGAACTGGCCGACC GGGTGCTGGACGTGGTGGAAAGAAGCCTGAGCAACTACCCATTCGAT TTTCAAGGCGCCAGAATCATCACCGGCCAGGAAGAAGGCGCCTACGG CTGGATCACCATCAACTACCTGCTGGGCAAGTTCAGCCAGAAGAATCA GGAAACCTTCGGCGCCCTGGACCTGGGCGGAGCTTCTACCCAAGTGA CCTTCGTGCCCCAGAATCAGACCATCGAGAGCCCCGACAACGCCCTG CAGTTCCGGCTGTACGGCAAGGACTACAATGTGTACACCCACAGCTTT CTGTGCTACGGAAAGGACCAGGCTCTGTGGCAGAAGCTGGCCAAGGA CATCCAGGTGGCCAGCAACGAGATCCTGCGGGACCCTTGCTTCCACC CCGGCTACAAGAAAGTCGTGAACGTGTCCGACCTGTACAAGACCCCC TGCACCAAGAGATTCGAGATGACCCTGCCCTTCCAGCAGTTCGAGATC CAGGGCATCGGCAATTACCAGCAGTGCCACCAGAGCATCCTGGAACT GTTCAACACCAGCTACTGCCCCTACAGCCAGTGCGCCTTCAACGGCA TCTTCCTGCCACCTCTGCAGGGGGATTTCGGCGCCTTCAGCGCCTTC TACTTCGTGATGAAGTTCCTGAACCTGACCAGCGAGAAGGTGTCCCAG GAAAAAGTGACAGAGATGATGAAGAAGTTCTGCGCCCAGCCCTGGGA GGAAATCAAGACCTCCTACGCTGGCGTGAAAGAGAAGTACCTGAGCG AGTTTTGCTTCAGCGGCACCTACATCCTGAGCCTGCTGCTGCAGGGC TACCACTTCACCGCCGATAGCTGGGAGCACATCCACTTCATCGGCAA GATTCAGGGCAGCGACGCCGGCTGGACACTGGGCTACATGCTGAATC TGACCAACATGATCCCCGCCGAGCAGCCCCTGAGCACACCTCTGAGC CACAGCACC
EP18		
SEQ ID NO: 40	胺基酸	TQNKALPENVKYGIVLDAGSSHTSLYIYKWPAEKENDTGVVHQVEECRVK GPGISKFVQKVNEIDIYLTDCMERAREVIPRSQHQETPVYLGATAGMRLLR MESEELADRVLDVVERSLSNYPFDFQGARIITGQEEGAYGWITINYLLGKF SQKNQETFGALDLGGASTQVTFVPQNQTIESPDNALQFRLYGKDYNVYT HSFLCYGKDQALWQKLAKDIQVASNEILRDPCFHPGYKKVVNVSDLYKTP CTKRFEMTLPFQQFEIQGIGNYQQCHQSILELFNTSYCPYSQCAFNGIFLP PLQGDFGAFSAFYFVMKFLNLTSEKVSQEKVTEMMKKFCAQPWEEIKTS

		YAGVKEKYLSEYCFSGTYILSLLQQGYHFTADSWEHIHFIGKIQGSDAGW TLGYMLNLTNMIPAEQPLSTPLSHST
SEQ ID NO: 41	DNA	ACCCAGAACAAGGCCCTGCCCGAGAACGTGAAGTACGGCATCGTGCT GGATGCCGGCAGCAGCCACACCAGCCTGTACATCTACAAGTGGCCTG CCGAGAAAGAAAACGACACCGGCGTGGTGCATCAGGTGGAAGAGTGC AGAGTGAAGGGCCCTGGCATCAGCAAGTTCGTGCAGAAAGTGAACGA GATCGACATCTACCTGACCGACTGCATGGAACGGGCCAGGGAAGTGA TCCCCAGAAGCCAGCACCAGGAAACCCCCGTGTATCTGGGAGCCACC GCCGGCATGAGACTGCTGAGAATGGAAAGCGAGGAACTGGCCGACC GGGTGCTGGACGTGGTGGAAAGAAGCCTGAGCAACTACCCATTCGAT TTTCAAGGCGCCAGAATCATCACCGGCCAGGAAGAAGGCGCCTACGG CTGGATCACCATCAACTACCTGCTGGGCAAGTTCAGCCAGAAGAATCA GGAAACCTTCGGCGCCCTGGACCTGGGCGGAGCTTCTACCCAAGTGA CCTTCGTGCCCCAGAATCAGACCATCGAGAGCCCCGACAACGCCCTG CAGTTCCGGCTGTACGGCAAGGACTACAATGTGTACACCCACAGCTTT CTGTGCTACGGAAAGGACCAGGCTCTGTGGCAGAAGCTGGCCAAGGA CATCCAGGTGGCCAGCAACGAGATCCTGCGGGACCCTTGCTTCCACC CCGGCTACAAGAAAGTCGTGAACGTGTCCGACCTGTACAAGACCCCC TGCACCAAGAGATTCGAGATGACCCTGCCCTTCCAGCAGTTCGAGATC CAGGGCATCGGCAATTACCAGCAGTGCCACCAGAGCATCCTGGAACT GTTCAACACCAGCTACTGCCCCTACAGCCAGTGCGCCTTCAACGGCA TCTTCCTGCCACCTCTGCAGGGGGATTTCGGCGCCTTCAGCGCCTTC TACTTCGTGATGAAGTTCCTGAACCTGACCAGCGAGAAGGTGTCCCAG GAAAAAGTGACAGAGATGATGAAGAAGTTCTGCGCCCAGCCCTGGGA GGAAATCAAGACCTCCTACGCTGGCGTGAAAGAGAAGTACCTGAGCG AGTACTGCTTCAGCGGCACCTACATCCTGAGCCTGCTGCAGCAGGGC TACCACTTCACCGCCGATAGCTGGGAGCACATCCACTTCATCGGCAA GATTCAGGGCAGCGACGCCGGCTGGACACTGGGCTACATGCTGAATC TGACCAACATGATCCCCGCCGAGCAGCCCCTGAGCACACCTCTGAGC CACAGCACC
EP19		
SEQ ID NO: 42	胺基酸	TQNKALPENVKYGIVLDAGSSHTSLYIYKWPAEKENDTGVVHQVEECRVK GPGISKFVQKVNEIGIYLTDCMERAREVIPRSQHQETPVYLGATAGMRLLR MESEELADRVLDVVERSLSNYPFDFQGARIITGQEEGAYGWITINYLLGKF SQKNQETFGALDLGGASTQVTFVPQNQTIESPDNALQFRLYGKDYNVYT HSFLCYGKDQALWQKLAKDIQVASNEILRDPCFHPGYKKVVNVSDLYKTP CTKRFEMTLPFQQFEIQGIGNYQQCHQSILELFNTSYCPYSQCAFNGIFLP PLQGDFGAFSAFYFVMKFLNLTSEKVSQEKVTEMMKKFCAQPWEEIKTS YAGVKEKYLSEYCFSGTYILSLLQQGYHFTADSWEDIHFIGKIQGSDAGW TLGYMLNLTNMIPAEQPLSTPLSHST
SEQ ID NO: 43	DNA	ACCCAGAACAAGGCCCTGCCCGAGAACGTGAAGTACGGCATCGTGCT GGATGCCGGCAGCAGCCACACCAGCCTGTACATCTACAAGTGGCCTG CCGAGAAAGAAAACGACACCGGCGTGGTGCATCAGGTGGAAGAGTGC AGAGTGAAGGGCCCTGGCATCAGCAAGTTCGTGCAGAAAGTGAACGA GATCGGCATCTACCTGACCGACTGCATGGAACGGGCCAGGGAAGTGA TCCCCAGAAGCCAGCACCAGGAAACCCCCGTGTATCTGGGAGCCACC GCCGGCATGAGACTGCTGAGAATGGAAAGCGAGGAACTGGCCGACC GGGTGCTGGACGTGGTGGAAAGAAGCCTGAGCAACTACCCATTCGAT TTTCAAGGCGCCAGAATCATCACCGGCCAGGAAGAAGGCGCCTACGG CTGGATCACCATCAACTACCTGCTGGGCAAGTTCAGCCAGAAGAATCA GGAAACCTTCGGCGCCCTGGACCTGGGCGGAGCTTCTACCCAAGTGA CCTTCGTGCCCCAGAATCAGACCATCGAGAGCCCCGACAACGCCCTG CAGTTCCGGCTGTACGGCAAGGACTACAATGTGTACACCCACAGCTTT CTGTGCTACGGAAAGGACCAGGCTCTGTGGCAGAAGCTGGCCAAGGA CATCCAGGTGGCCAGCAACGAGATCCTGCGGGACCCTTGCTTCCACC CCGGCTACAAGAAAGTCGTGAACGTGTCCGACCTGTACAAGACCCCC TGCACCAAGAGATTCGAGATGACCCTGCCCTTCCAGCAGTTCGAGATC CAGGGCATCGGCAATTACCAGCAGTGCCACCAGAGCATCCTGGAACT GTTCAACACCAGCTACTGCCCCTACAGCCAGTGCGCCTTCAACGGCA TCTTCCTGCCACCTCTGCAGGGGGATTTCGGCGCCTTCAGCGCCTTC TACTTCGTGATGAAGTTCCTGAACCTGACCAGCGAGAAGGTGTCCCAG GAAAAAGTGACAGAGATGATGAAGAAGTTCTGCGCCCAGCCCTGGGA

		GGAAATCAAGACCTCCTACGCTGGCGTGAAAGAGAAGTACCTGAGCG AGTACTGCTTCAGCGGCACCTACATCCTGAGCCTGCTGCAGCAGGGC TACCACTTCACCGCCGATAGCTGGGAGGACATCCACTTCATCGGCAA GATTCAGGGCAGCGACGCCGGCTGGACACTGGGCTACATGCTGAATC TGACCAACATGATCCCCGCCGAGCAGCCCCTGAGCACACCTCTGAGC CACAGCACC
EP20		
SEQ ID NO: 44	胺基酸	TQNKALPENVKYGIVLDAGSSHTSLYIYKWPAEKENDTGVVHQVEECRVK GPGISKFVQKVNEIGIYLTDCMERAREVIPRSQHQETPVYLGATAGMRLLR MESEELADRVLDVVERSLSNYPFDFQGARIITGQEEGAYGWITINYLLGKF SQKNQETFGALDLGGASTQVTFVPQNQTIESPDNALQFRLYGKDYNVYT HSFLCYGKDQALWQKLAKDIQVASNGILRDPCFHPGYKKVVNVSDLYKTP CTKRFEMTLPFQQFEIQGIGNYQQCHQSILELFNTSYCPYSQCAFNGIFLP PLQGDFGAFSAFYFVMKFLNLTSEKVSQEKVTEMMKKFCAQPWEEIKTS YAGVKEKYLSEYCFSGTYILSLLLQGYHFTADSWEHIHSIGKIQGSDAGWT LGYMLNLTNMIPAEQPLSTPLSHST
SEQ ID NO: 45	DNA	ACCCAGAACAAGGCCCTGCCCGAGAACGTGAAGTACGGCATCGTGCT GGATGCCGGCAGCAGCCACACCAGCCTGTACATCTACAAGTGGCCTG CCGAGAAAGAAAACGACACCGGCGTGGTGCATCAGGTGGAAGAGTGC AGAGTGAAGGGCCCTGGCATCAGCAAGTTCGTGCAGAAAGTGAACGA GATCGGCATCTACCTGACCGACTGCATGGAACGGGCCAGGGAAGTGA TCCCCAGAAGCCAGCACCAGGAAACCCCCGTGTATCTGGGAGCCACC GCCGGCATGAGACTGCTGAGAATGGAAAGCGAGGAACTGGCCGACC GGGTGCTGGACGTGGTGGAAAGAAGCCTGAGCAACTACCCATTCGAT TTTCAAGGCGCCAGAATCATCACCGGCCAGGAAGAAGGCGCCTACGG CTGGATCACCATCAACTACCTGCTGGGCAAGTTCAGCCAGAAGAATCA GGAAACCTTCGGCGCCCTGGACCTGGGCGGAGCTTCTACCCAAGTGA CCTTCGTGCCCCAGAATCAGACCATCGAGAGCCCCGACAACGCCCTG CAGTTCCGGCTGTACGGCAAGGACTACAATGTGTACACCCACAGCTTT CTGTGCTACGGAAAGGACCAGGCTCTGTGGCAGAAGCTGGCCAAGGA CATCCAGGTGGCCAGCAACGGGATCCTGCGGGACCCTTGCTTCCACC CCGGCTACAAGAAAGTCGTGAACGTGTCCGACCTGTACAAGACCCCC TGCACCAAGAGATTCGAGATGACCCTGCCCTTCCAGCAGTTCGAGATC CAGGGCATCGGCAATTACCAGCAGTGCCACCAGAGCATCCTGGAACT GTTCAACACCAGCTACTGCCCCTACAGCCAGTGCGCCTTCAACGGCA TCTTCCTGCCACCTCTGCAGGGGGATTTCGGCGCCTTCAGCGCCTTC TACTTCGTGATGAAGTTCCTGAACCTGACCAGCGAGAAGGTGTCCCAG GAAAAAGTGACAGAGATGATGAAGAAGTTCTGCGCCCAGCCCTGGGA GGAAATCAAGACCTCCTACGCTGGCGTGAAAGAGAAGTACCTGAGCG AGTACTGCTTCAGCGGCACCTACATCCTGAGCCTGCTGCTGCAGGGC TACCACTTCACCGCCGATAGCTGGGAGCACATCCACTCCATCGGCAA GATTCAGGGCAGCGACGCCGGCTGGACACTGGGCTACATGCTGAATC TGACCAACATGATCCCCGCCGAGCAGCCCCTGAGCACACCTCTGAGC CACAGCACC
EP21		
SEQ ID NO: 46	胺基酸	TQNKALPENVKYGIVLDAGSSHTSLYIYKWPAEKENDTGVVHQVEECRVK GPGISKFVQKVNEIGIYLTDCMERAMEVIPRSQHQETPVYLGATAGMRLL RMESEELADRVLDVVERSLSNYPFDFQGARIITGQEEGAYGWITINYLLGK FSQKNQETFGALDLGGASTQVTFVPQNQTIESPDNALQFRLYGKDYNVY THSFLCYGKDQALWQKLAKDIQVASNEILRDPCFHPGYKKVVNVSDLYKT PCTKRFEMTLPFQQFEIQGIGNYQQCHQSILELFNTSYCPYSQCAFNGIFL PPLQGDFGAFSAFYFVMKFLNLTSEKVSQEKVTEMMKKFCAQPWEEIKT SYAGVKEKYLSEYCFSGTYILSLLLQGYHFTADSWEHIHFIGKIQGSDAGW TLGYMLNLTNMIPAEQPLRTPLSHST
SEQ ID NO: 47	DNA	ACCCAGAACAAGGCCCTGCCCGAGAACGTGAAGTACGGCATCGTGCT GGATGCCGGCAGCAGCCACACCAGCCTGTACATCTACAAGTGGCCTG CCGAGAAAGAAAACGACACCGGCGTGGTGCATCAGGTGGAAGAGTGC AGAGTGAAGGGCCCTGGCATCAGCAAGTTCGTGCAGAAAGTGAACGA GATCGGCATCTACCTGACCGACTGCATGGAACGGGCCATGGAAGTGA TCCCCAGAAGCCAGCACCAGGAAACCCCCGTGTATCTGGGAGCCACC GCCGGCATGAGACTGCTGAGAATGGAAAGCGAGGAACTGGCCGACC

		GGGTGCTGGACGTGGTGGAAAGAAGCCTGAGCAACTACCCATTCGAT TTTCAAGGCGCCAGAATCATCACCGGCCAGGAAGAAGGCGCCTACGG CTGGATCACCATCAACTACCTGCTGGGCAAGTTCAGCCAGAAGAATCA GGAAACCTTCGGCGCCCTGGACCTGGGCGGAGCTTCTACCCAAGTGA CCTTCGTGCCCCAGAATCAGACCATCGAGAGCCCCGACAACGCCCTG CAGTTCCGGCTGTACGGCAAGGACTACAATGTGTACACCCACAGCTTT CTGTGCTACGGAAAGGACCAGGCTCTGTGGCAGAAGCTGGCCAAGGA CATCCAGGTGGCCAGCAACGAGATCCTGCGGGACCCTTGCTTCCACC CCGGCTACAAGAAAGTCGTGAACGTGTCCGACCTGTACAAGACCCCC TGCACCAAGAGATTCGAGATGACCCTGCCCTTCCAGCAGTTCGAGATC CAGGGCATCGGCAATTACCAGCAGTGCCACCAGAGCATCCTGGAACT GTTCAACACCAGCTACTGCCCCTACAGCCAGTGCGCCTTCAACGGCA TCTTCCTGCCACCTCTGCAGGGGGATTTCGGCGCCTTCAGCGCCTTC TACTTCGTGATGAAGTTCCTGAACCTGACCAGCGAGAAGGTGTCCCAG GAAAAAGTGACAGAGATGATGAAGAAGTTCTGCGCCCAGCCCTGGGA GGAAATCAAGACCTCCTACGCTGGCGTGAAAGAGAAGTACCTGAGCG AGTACTGCTTCAGCGGCACCTACATCCTGAGCCTGCTGCTGCAGGGC TACCACTTCACCGCCGATAGCTGGGAGCACATCCACTTCATCGGCAA GATTCAGGGCAGCGACGCCGGCTGGACACTGGGCTACATGCTGAATC TGACCAACATGATCCCCGCCGAGCAGCCCCTGCGCACACCTCTGAGC CACAGCACC
EP22		
SEQ ID NO: 48	胺基酸	TQNKALPENVKYGIVLDAGSSHTSLYIYKWPAEKENDTGVVHQVEECRVK GPGISKFVQKVNEIGIYLTDCMERAREVIPRSQHQETPVYLGATAGMRLLR MESEELADRVLDVVERSLSNYPFDFQGARIITGQEEGAYGWITINYLLGKF SQKNQETFGALDLGGASTQVTFVPQNQTIESPDNALQFRLYGKDYNVYT HSFLCYGKDQALWQKLAKDIQVASNGILRDPCFHPGYKKVVNVSDLYKTP CTKRFEMTLPFQQFEIQGIGNYQQCHQSILELFNTSYCPYSQCAFNGIFLP PLQGDFGAFSAFYFVMKFLNLTSEKVSQEKVTEMMKKFCAQPWEEIKTS YAGVKEKYLSEYCFSGTYILSLLLQGYHFTADSWEHIHFIGKIQGSDAGWT LGYMLNLTNMIPAEQPLGTPLSHST
SEQ ID NO: 49	DNA	ACCCAGAACAAGGCCCTGCCCGAGAACGTGAAGTACGGCATCGTGCT GGATGCCGGCAGCAGCCACACCAGCCTGTACATCTACAAGTGGCCTG CCGAGAAAGAAAACGACACCGGCGTGGTGCATCAGGTGGAAGAGTGC AGAGTGAAGGGCCCTGGCATCAGCAAGTTCGTGCAGAAAGTGAACGA GATCGGCATCTACCTGACCGACTGCATGGAACGGGCCAGGGAAGTGA TCCCCAGAAGCCAGCACCAGGAAACCCCCGTGTATCTGGGAGCCACC GCCGGCATGAGACTGCTGAGAATGGAAAGCGAGGAACTGGCCGACC GGGTGCTGGACGTGGTGGAAAGAAGCCTGAGCAACTACCCATTCGAT TTTCAAGGCGCCAGAATCATCACCGGCCAGGAAGAAGGCGCCTACGG CTGGATCACCATCAACTACCTGCTGGGCAAGTTCAGCCAGAAGAATCA GGAAACCTTCGGCGCCCTGGACCTGGGCGGAGCTTCTACCCAAGTGA CCTTCGTGCCCCAGAATCAGACCATCGAGAGCCCCGACAACGCCCTG CAGTTCCGGCTGTACGGCAAGGACTACAATGTGTACACCCACAGCTTT CTGTGCTACGGAAAGGACCAGGCTCTGTGGCAGAAGCTGGCCAAGGA CATCCAGGTGGCCAGCAACGGGATCCTGCGGGACCCTTGCTTCCACC CCGGCTACAAGAAAGTCGTGAACGTGTCCGACCTGTACAAGACCCCC TGCACCAAGAGATTCGAGATGACCCTGCCCTTCCAGCAGTTCGAGATC CAGGGCATCGGCAATTACCAGCAGTGCCACCAGAGCATCCTGGAACT GTTCAACACCAGCTACTGCCCCTACAGCCAGTGCGCCTTCAACGGCA TCTTCCTGCCACCTCTGCAGGGGGATTTCGGCGCCTTCAGCGCCTTC TACTTCGTGATGAAGTTCCTGAACCTGACCAGCGAGAAGGTGTCCCAG GAAAAAGTGACAGAGATGATGAAGAAGTTCTGCGCCCAGCCCTGGGA GGAAATCAAGACCTCCTACGCTGGCGTGAAAGAGAAGTACCTGAGCG AGTACTGCTTCAGCGGCACCTACATCCTGAGCCTGCTGCTGCAGGGC TACCACTTCACCGCCGATAGCTGGGAGCACATCCACTTCATCGGCAA GATTCAGGGCAGCGACGCCGGCTGGACACTGGGCTACATGTTGAATC TGACCAACATGATCCCCGCCGAGCAGCCCCTGGGCACACCTCTGAGC CACAGCACC
EP23		
SEQ ID	胺基酸	TQNKALPENVKYGIVLDAGSSHTSLYIYKWPAEKENDTGVVHQVEECRVK

NO: 50		GPGISKFVQKVNEIGIYLTDCMERAREVIPRSQHQETPVYLGATAGMRLLR MESEELADRVLDVVERSLSNYPFDFQGARIITGQEEGAYGWITINYLLGKF SQKNQETFGALDLGGASTQVTFVPQNQTIESPDNALQFRLYGKDYNVYT HSFMCYGKDQALRQKLAKDIQVASNEILRDPCFHPGYKKVVNVSDLYKTP CTKRFEMTLPFQQFEIQGIGNYQQCHQSILELFNTSYCPYSQCAFNGIFLP PLQGDFGAFSAFYFVMKFLNLTSEKVSQEKVTEMMKKFCAQPWEEIKTS YAGVKEKYLSEYCFSGTYILSLLLQGYHFTADSWEHIHSIGKIQGSDAGWT LGYMLNLTNMIPAEQPLRTPLSHST
SEQ ID NO: 51	DNA	ACCCAGAACAAGGCCCTGCCCGAGAACGTGAAGTACGGCATCGTGCT GGATGCCGGCAGCAGCCACACCAGCCTGTACATCTACAAGTGGCCTG CCGAGAAAGAAAACGACACCGGCGTGGTGCATCAGGTGGAAGAGTGC AGAGTGAAGGGCCCTGGCATCAGCAAGTTCGTGCAGAAAGTGAACGA GATCGGCATCTACCTGACCGACTGCATGGAACGGGCCAGGGAAGTGA TCCCCAGAAGCCAGCACCAGGAAACCCCCGTGTATCTGGGAGCCACC GCCGGCATGAGACTGCTGAGAATGGAAAGCGAGGAACTGGCCGACC GGGTGCTGGACGTGGTGGAAAGAAGCCTGAGCAACTACCCATTCGAT TTTCAAGGCGCCAGAATCATCACCGGCCAGGAAGAAGGCGCCTACGG CTGGATCACCATCAACTACCTGCTGGGCAAGTTCAGCCAGAAGAATCA GGAAACCTTCGGCGCCCTGGACCTGGGCGGAGCTTCTACCCAAGTGA CCTTCGTGCCCCAGAATCAGACCATCGAGAGCCCCGACAACGCCCTG CAGTTCCGGCTGTACGGCAAGGACTACAATGTGTACACCCACAGCTTT ATGTGCTACGGAAAGGACCAGGCTCTGAGGCAGAAGCTGGCCAAGGA CATCCAGGTGGCCAGCAACGAGATCCTGCGGGACCCTTGCTTCCACC CCGGCTACAAGAAAGTCGTGAACGTGTCCGACCTGTACAAGACCCCC TGTACCAAGAGATTCGAGATGACCCTGCCCTTCCAGCAGTTCGAGATC CAGGGCATCGGCAATTACCAGCAGTGCCACCAGAGCATCCTGGAACT GTTCAACACCAGCTACTGCCCCTACAGCCAGTGCGCCTTCAACGGCA TCTTCCTGCCACCTCTGCAGGGGGATTTCGGCGCCTTCAGCGCCTTC TACTTCGTGATGAAGTTCCTGAACCTGACCAGCGAGAAGGTGTCCCAG GAAAAAGTGACAGAGATGATGAAGAAGTTCTGCGCCCAGCCCTGGGA GGAAATCAAGACCTCCTACGCTGGCGTGAAAGAGAAGTACCTGAGCG AGTACTGCTTCAGCGGCACCTACATCCTGAGCCTGCTGCTGCAGGGC TACCACTTCACCGCCGATAGCTGGGAGCACATCCACTCCATCGGCAA GATTCAGGGCAGCGACGCCGGCTGGACACTGGGCTACATGCTGAATC TGACCAACATGATCCCCGCCGAGCAGCCCCTGAGAACACCTCTGAGC CACAGCACC
EP24		
SEQ ID NO: 52	胺基酸	TQNKALPENVKYGIVLDAGSSHTSLYIYKWPAEKENDTGVVHQVEECRVK GPGISKFVQKVNEIGIYLTDCMERAKEVIPRSQHQETPVYLGATAGMRLLR MESEELADRVLDVVERSLSNYPFDFQGARIITGQEEGAYGWITINYLLGKF SQKNQETFGALDLGGASTQVTFVPQNQTIESPDNALQFRLYGKDYNVYT HSFLCYGKDQALWQKLAKDIQVASNEILRDPCFHPGYKKVVNVSDLYKTP CTKRFEMTLPFQQFEIQGIGNYQQCHQSILELFNTSYCPYSQCAFNGIFLP PLQGDFGAFSAFYFVMKFLNLTSEKVSQEKVTEMMKKFCAQPWEEIKTS YAGVKEKYLSEYCFSGTYILSLLQQGYHFTADSWEHNHFIGKIQGSDAGW TLGYMLNLTNMIPAEQPLSTPLSHST
SEQ ID NO: 53	DNA	ACCCAGAACAAGGCCCTGCCCGAGAACGTGAAGTACGGCATCGTGCT GGATGCCGGCAGCAGCCACACCAGCCTGTACATCTACAAGTGGCCTG CCGAGAAAGAAAACGACACCGGCGTGGTGCATCAGGTGGAAGAGTGC AGAGTGAAGGGCCCTGGCATCAGCAAGTTCGTGCAGAAAGTGAACGA GATCGGCATCTACCTGACCGACTGCATGGAACGGGCCAAGGAAGTGA TCCCCAGAAGCCAGCACCAGGAAACCCCCGTGTATCTGGGAGCCACC GCCGGCATGAGACTGCTGAGAATGGAAAGCGAGGAACTGGCCGACC GGGTGCTGGACGTGGTGGAAAGAAGCCTGAGCAACTACCCATTCGAT TTTCAAGGCGCCAGAATCATCACCGGCCAGGAAGAAGGCGCCTACGG CTGGATCACCATCAACTACCTGCTGGGCAAGTTCAGCCAGAAGAATCA GGAAACCTTCGGCGCCCTGGACCTGGGCGGAGCTTCTACCCAAGTGA CCTTCGTGCCCCAGAATCAGACCATCGAGAGCCCCGACAACGCCCTG CAGTTCCGGCTGTACGGCAAGGACTACAATGTGTACACCCACAGCTTT CTGTGCTACGGAAAGGACCAGGCTCTGTGGCAGAAGCTGGCCAAGGA CATCCAGGTGGCCAGCAACGAGATCCTGCGGGACCCTTGCTTCCACC CCGGCTACAAGAAAGTCGTGAACGTGTCCGACCTGTACAAGACCCCC

		TGCACCAAGAGATTCGAGATGACCCTGCCCTTCCAGCAGTTCGAGATC CAGGGCATCGGCAATTACCAGCAGTGCCACCAGAGCATCCTGGAACT GTTCAACACCAGCTACTGCCCCTACAGCCAGTGCGCCTTCAACGGCA TCTTCCTGCCACCTCTGCAGGGGGATTTCGGCGCCTTCAGCGCCTTC TACTTCGTGATGAAGTTCCTGAACCTGACCAGCGAGAAGGTGTCCCAG GAAAAAGTGACAGAGATGATGAAGAAGTTCTGCGCCCAGCCCTGGGA GGAAATCAAGACCTCCTACGCTGGCGTGAAAGAGAAGTACCTGAGCG AGTACTGCTTCAGCGGCACCTACATCCTGAGCCTGCTGCAGCAGGGC TACCACTTCACCGCCGATAGCTGGGAGCACAACCACTTCATCGGCAA GATTCAGGGCAGCGACGCCGGCTGGACACTGGGCTACATGCTGAATC TGACCAACATGATCCCCGCCGAGCAGCCCCTGAGCACACCTCTGAGC CACAGCACC
EP1xEP17_K405N		
SEQ ID NO: 54	胺基酸	TQNKALPENVKYGIVLDAGSSHTSLYIYKWPAEKENDTGVVHQVEECRVK GPGISKFVQKVNEIGIYLTDCMERAMEVIPRSQHQETPVYLGATAGMRLL RMESEELADRVLDVVERSLSNYPFDFQGARIITGQEEGAYGWITINYLLGK FSQKNQETFGALDLGGASTQVTFVPQNQTIESPDNALQFRLYGKDYNVY THSFLCYGKDQALWQKLAKDIQVASNEILRDPCFHPGYKKVVNVSDLYKT PCTKRFEMTLPFQQFEIQGIGNYQQCHQSILELFNTSYCPYSQCAFNGIFL PPLQGDFGAFSAFYFVMKFLNLTSEKVSQEKVTEMMKKFCAQPWEEIKT SYAGVNEKYLSEFCFSGTYILSLLLQGYHFTADSWEHIHFIGKIQGSDAGW TLGYMLNLTNMIPAEQPLSTPLSHST
SEQ ID NO: 55	DNA	ACCCAGAACAAGGCCCTGCCCGAGAACGTGAAGTACGGCATCGTGCT GGATGCCGGCAGCAGCCACACCAGCCTGTACATCTACAAGTGGCCTG CCGAGAAAGAAAACGACACCGGCGTGGTGCATCAGGTGGAAGAGTGC AGAGTGAAGGGCCCTGGCATCAGCAAGTTCGTGCAGAAAGTGAACGA GATCGGCATCTACCTGACCGACTGCATGGAACGGGCCATGGAAGTGA TCCCCAGAAGCCAGCACCAGGAAACCCCCGTGTATCTGGGAGCCACC GCCGGCATGAGACTGCTGAGAATGGAAAGCGAGGAACTGGCCGACC GGGTGCTGGACGTGGTGGAAAGAAGCCTGAGCAACTACCCATTCGAT TTTCAAGGCGCCAGAATCATCACCGGCCAGGAAGAAGGCGCCTACGG CTGGATCACCATCAACTACCTGCTGGGCAAGTTCAGCCAGAAGAATCA GGAAACCTTCGGCGCCCTGGACCTGGGCGGAGCTTCTACCCAAGTGA CCTTCGTGCCCCAGAATCAGACCATCGAGAGCCCCGACAACGCCCTG CAGTTCCGGCTGTACGGCAAGGACTACAATGTGTACACCCACAGCTTT CTGTGCTACGGAAAGGACCAGGCTCTGTGGCAGAAGCTGGCCAAGGA CATCCAGGTGGCCAGCAACGAGATCCTGCGGGACCCTTGCTTCCACC CCGGCTACAAGAAAGTCGTGAACGTGTCCGACCTGTACAAGACCCCC TGCACCAAGAGATTCGAGATGACCCTGCCCTTCCAGCAGTTCGAGATC CAGGGCATCGGCAATTACCAGCAGTGCCACCAGAGCATCCTGGAACT GTTCAACACCAGCTACTGCCCCTACAGCCAGTGCGCCTTCAACGGCA TCTTCCTGCCACCTCTGCAGGGGGATTTCGGCGCCTTCAGCGCCTTC TACTTCGTGATGAAGTTCCTGAACCTGACCAGCGAGAAGGTGTCCCAG GAAAAAGTGACAGAGATGATGAAGAAGTTCTGCGCCCAACCCTGGGA GGAAATCAAGACCTCCTACGCTGGCGTGAACGAGAAGTACCTGAGCG AGTTTTGCTTCAGCGGCACCTACATCCTGAGCCTGCTGCTGCAGGGC TACCACTTCACCGCCGATAGCTGGGAGCACATCCACTTCATCGGCAA GATTCAGGGCAGCGACGCCGGCTGGACACTGGGCTACATGCTGAATC TGACCAACATGATCCCCGCCGAGCAGCCCCTGAGCACACCTCTGAGC CACAGCACC
EP1xEP17		
SEQ ID NO: 56	胺基酸	TQNKALPENVKYGIVLDAGSSHTSLYIYKWPAEKENDTGVVHQVEECRVK GPGISKFVQKVNEIGIYLTDCMERAMEVIPRSQHQETPVYLGATAGMRLL RMESEELADRVLDVVERSLSNYPFDFQGARIITGQEEGAYGWITINYLLGK FSQKNQETFGALDLGGASTQVTFVPQNQTIESPDNALQFRLYGKDYNVY THSFLCYGKDQALWQKLAKDIQVASNEILRDPCFHPGYKKVVNVSDLYKT PCTKRFEMTLPFQQFEIQGIGNYQQCHQSILELFNTSYCPYSQCAFNGIFL

		PPLQGDFGAFSAFYFVMKFLNLTSEKVSQEKVTEMMKKFCAQPWEEIKT SYAGVKEKYLSEFCFSGTYILSLLLQGYHFTADSWEHIHFIGKIQGSDAGW TLGYMLNLTNMIPAEQPLSTPLSHST
SEQ ID NO: 57	DNA	ACCCAGAACAAGGCCCTGCCCGAGAACGTGAAGTACGGCATCGTGCT GGATGCCGGCAGCAGCCACACCAGCCTGTACATCTACAAGTGGCCTG CCGAGAAAGAAAACGACACCGGCGTGGTGCATCAGGTGGAAGAGTGC AGAGTGAAGGGCCCTGGCATCAGCAAGTTCGTGCAGAAAGTGAACGA GATCGGCATCTACCTGACCGACTGCATGGAACGGGCCATGGAAGTGA TCCCCAGAAGCCAGCACCAGGAAACCCCCGTGTATCTGGGAGCCACC GCCGGCATGAGACTGCTGAGAATGGAAAGCGAGGAACTGGCCGACC GGGTGCTGGACGTGGTGGAAAGAAGCCTGAGCAACTACCCATTCGAT TTTCAAGGCGCCAGAATCATCACCGGCCAGGAAGAAGGCGCCTACGG CTGGATCACCATCAACTACCTGCTGGGCAAGTTCAGCCAGAAGAATCA GGAAACCTTCGGCGCCCTGGACCTGGGCGGAGCTTCTACCCAAGTGA CCTTCGTGCCCCAGAATCAGACCATCGAGAGCCCCGACAACGCCCTG CAGTTCCGGCTGTACGGCAAGGACTACAATGTGTACACCCACAGCTTT CTGTGCTACGGAAAGGACCAGGCTCTGTGGCAGAAGCTGGCCAAGGA CATCCAGGTGGCCAGCAACGAGATCCTGCGGGACCCTTGCTTCCACC CCGGCTACAAGAAAGTCGTGAACGTGTCCGACCTGTACAAGACCCCC TGCACCAAGAGATTCGAGATGACCCTGCCCTTCCAGCAGTTCGAGATC CAGGGCATCGGCAATTACCAGCAGTGCCACCAGAGCATCCTGGAACT GTTCAACACCAGCTACTGCCCCTACAGCCAGTGCGCCTTCAACGGCA TCTTCCTGCCACCTCTGCAGGGGGATTTCGGCGCCTTCAGCGCCTTC TACTTCGTGATGAAGTTCCTGAACCTGACCAGCGAGAAGGTGTCCCAG GAAAAAGTGACAGAGATGATGAAGAAGTTCTGCGCCCAGCCCTGGGA GGAAATCAAGACCTCCTACGCTGGCGTGAAAGAGAAGTACCTGAGCG AGTTTTGCTTCAGCGGCACCTACATCCTGAGCCTGCTGCTGCAGGGC TACCACTTCACCGCCGATAGCTGGGAGCACATCCACTTCATCGGCAA GATTCAGGGCAGCGACGCCGGCTGGACACTGGGCTACATGCTGAATC TGACCAACATGATCCCCGCCGAGCAGCCCCTGAGCACACCTCTGAGC CACAGCACC
EP28aa1-3		
SEQ ID NO: 58	胺基酸	APTTQNKALPENVKYGIVLDAGSSHTSLYIYKWPAEKENDTGVVHQVEEC RVKGPGISKFVQKVNEIGIYLTDCMERAREVIPRSQHQETPVYLGATAGM RLLRMESEELADRVLDVVERSLSNYPFDFQGARIITGQEEGAYGWITINYL LGKFSQKNQETFGALDLGGASTQVTFVPQNQTIESPDNALQFRLYGKDY NVYTHSFLCYGKDQALWQKLAKDIQVASNEILRDPCFHPGYKKVVNVSDL YKTPCTKRFEMTLPFQQFEIQGIGNYQQCHQSILELFNTSYCPYSQCAFN GIFLPPLQGDFGAFSAFYFVMKFLNLTSEKVSQEKVTEMMKKFCAQPWE EIKTSYAGVKEKYLSEYCFSGTYILSLLLQGYHFTADSWEHIHFIGKIQGSD AGWTLGYMLNLTNMIPAEQPLSTPLSHST
SEQ ID NO: 59	DNA	GCCCCTACCACCCAGAACAAGGCCCTGCCCGAGAACGTGAAGTACGG CATCGTGCTGGACGCCGGCTCCTCCCACACCTCCCTGTACATCTACAA GTGGCCTGCCGAGAAAGAAAACGACACCGGCGTGGTGCACCAAGTG GAAGAGTGCAGAGTGAAGGGCCCCGGCATCTCCAAGTTCGTGCAGAA AGTGAACGAGATCGGCATCTACCTGACCGACTGCATGGAACGGGCCA GAGAAGTGATCCCTCGGTCCCAGCACCAGGAAACCCCTGTCTACCTG GGCGCCACCGCCGGCATGCGGCTGCTGCGGATGGAATCCGAGGAAC TGGCCGACCGGGTGCTGGACGTGGTGGAACGGTCCCTGTCCAACTAC CCATTCGATTTTCAAGGCGCCAGAATCATCACCGGCCAGGAAGAGGG CGCCTACGGCTGGATCACCATCAACTACCTGCTGGGCAAGTTCTCCC AGAAGAATCAGGAAACCTTCGGCGCCCTGGACCTGGGCGGAGCCAG CACCCAAGTCACATTCGTGCCCCAGAACCAGACCATCGAGAGCCCCG ACAACGCCCTGCAGTTCCGGCTGTACGGCAAGGACTACAACGTGTAC ACCCACAGCTTTCTGTGCTACGGCAAGGACCAGGCCCTGTGGCAGAA GCTGGCCAAGGACATCCAAGTGGCCTCCAACGAGATCCTGCGGGACC CCTGCTTCCACCCCGGCTACAAGAAAGTGGTCAACGTGTCCGACCTG TACAAGACCCCTTGCACCAAGAGATTCGAGATGACCCTGCCCTTCCAG CAGTTCGAGATCCAGGGCATCGGCAACTACCAGCAGTGCCACCAGTC CATCCTGGAACTGTTCAACACCTCCTACTGCCCCTACTCCCAGTGCGC

		CTTCAACGGCATCTTCCTGCCTCCACTGCAGGGCGACTTCGGCGCCT TCTCCGCCTTCTACTTCGTGATGAAGTTCCTGAACCTGACCTCCGAGA AAGTGTCCCAGGAAAAAGTGACCGAGATGATGAAGAAGTTCTGCGCC CAGCCCTGGGAGGAAATCAAGACCTCCTACGCTGGCGTGAAAGAGAA GTACCTGTCCGAGTACTGCTTCTCCGGCACCTACATCCTGTCCCTGCT GCTGCAGGGCTACCACTTCACCGCCGACAGCTGGGAGCACATCCACT TCATCGGCAAGATCCAGGGATCCGACGCTGGCTGGACCCTGGGCTAC ATGCTGAATCTGACCAACATGATCCCCGCCGAGCAGCCCCTGTCCAC CCCTCTGTCTCACTCCACC
EP14xEP17		
SEQ ID NO: 60	胺基酸	TQNKALPENVKYGIVLDAGSSHTSLYIYKWPAEKENDTGVVHQVEECRVK GPGISKFVQKVNEIGIYLTDCMERAREVIPRSQHQETPVYLGATAGMRLLR MESEELADRVLDVVERSLSNYPFDFQGARIITGQEEGAYGWITINYLLGKF SQKNQETFGALDLGGASTQVTFVPQNQTIESPDNALQFRLYGKDYNVYT HSFLCYGKDQALWQKLAKDIQVASNEILRDPCFHPGYKKVVNVSDLYKTP CTKRFEMTLPFQQFEIQGIGNYQQCHQSILELFNTSYCPYSQCAFNGIFLP PLQGDFGAFSAFYSVMKFLNLTSEKVSQEKVTEMMKKFCAQPWEEIKTS YAGVKEKYLSEFCFSGTYILSLLLQGYHFTADSWEHIHFIGKIQGSDAGWT LGYMLNLTNMIPAEQPLSTPLSHST
SEQ ID NO: 61	DNA	ACCCAGAACAAGGCCCTGCCCGAGAACGTGAAGTACGGCATCGTGCT GGATGCCGGCAGCAGCCACACCAGCCTGTACATCTACAAGTGGCCTG CCGAGAAAGAAAACGACACCGGCGTGGTGCATCAGGTGGAAGAGTGC AGAGTGAAGGGCCCTGGCATCAGCAAGTTCGTGCAGAAAGTGAACGA GATCGGCATCTACCTGACCGACTGCATGGAACGGGCCAGGGAAGTGA TCCCCAGAAGCCAGCACCAGGAAACCCCCGTGTATCTGGGAGCCACC GCCGGCATGAGACTGCTGAGAATGGAAAGCGAGGAACTGGCCGACC GGGTGCTGGACGTGGTGGAAAGAAGCCTGAGCAACTACCCATTCGAT TTTCAAGGCGCCAGAATCATCACCGGCCAGGAAGAAGGCGCCTACGG CTGGATCACCATCAACTACCTGCTGGGCAAGTTCAGCCAGAAGAATCA GGAAACCTTCGGCGCCTTGGACCTGGGCGGAGCTTCTACCCAAGTGA CCTTCGTGCCCCAGAATCAGACCATCGAGAGCCCCGACAACGCCCTG CAGTTCCGGCTGTACGGCAAGGACTACAATGTGTACACCCACAGCTTT CTGTGCTACGGAAAGGACCAGGCTCTGTGGCAGAAGCTGGCCAAGGA CATCCAGGTGGCCAGCAACGAGATCCTGCGGGACCCTTGCTTCCACC CCGGCTACAAGAAAGTCGTGAACGTGTCCGACCTGTACAAGACCCCC TGCACCAAGAGATTCGAGATGACCCTGCCCTTCCAGCAGTTCGAGATC CAGGGCATCGGCAATTACCAGCAGTGCCACCAGAGCATCCTGGAACT GTTCAACACCAGCTACTGCCCCTACAGCCAGTGCGCCTTCAACGGCA TCTTCCTGCCACCTCTGCAGGGGGATTTCGGCGCCTTCAGCGCCTTC TACTCCGTGATGAAGTTCCTGAACCTGACCAGCGAGAAGGTGTCCCA GGAAAAAGTGACAGAGATGATGAAGAAGTTCTGCGCCCAGCCCTGGG AGGAAATCAAGACCTCCTACGCTGGCGTGAAAGAGAAGTACCTGAGC GAGTTTTGCTTCAGCGGCACCTACATCCTGAGCCTGCTGCTGCAGGG CTACCACTTCACCGCCGATAGCTGGGAGCACATCCACTTCATCGGCAA GATTCAGGGCAGCGACGCCGGCTGGACACTGGGTTACATGCTGAATC TGACCAACATGATCCCCGCCGAGCAGCCCCTGAGCACACCTCTGAGC CACAGCACC
EP10xEP19_H436D		
SEQ ID NO: 62	胺基酸	TQNKALPENVKYGIVLDAGSSHTSLYIYKWPAEKENDTGVVHQVEECRVK GPGISKFVQKVNEIGIYLTDCMERAREVIPRSQHQETPVYLGATAGMRLLR MESEELADRVLDVVERSLSNYPFDFQGARIITGQEEGAYGWITINYLLGKF SQKNQETFGALDLGGASTQVTFVPQNQTIESPDNALQFRLYGKDYNVYT HSFLCYGKDQALWQKLAKDIQVASNEILRDPCFHPGYKKVVNVSDLYKTP CTKRFEMTLPFQQFEIQGTGNYQQCHQSILELFNTSYCPYSQCAFNGIFL PPLQGDFGAFSAFYFVMKFLNLTSEKVSQEKVTEMMKKFCAQPWEEIKT SYAGVKEKYLSEYCFSGTYILSLLQQGYHFTADSWEDIHFIGKIQGSDAG WTLGYMLNLTNMIPAEQPLSTPLSHST

SEQ ID NO: 63	DNA	ACCCAGAACAAGGCCCTGCCCGAGAACGTGAAGTACGGCATCGTGCT GGATGCCGGCAGCAGCCACACCAGCCTGTACATCTACAAGTGGCCTG CCGAGAAAGAAAACGACACCGGCGTGGTGCATCAGGTGGAAGAGTGC AGAGTGAAGGGCCCTGGCATCAGCAAGTTCGTGCAGAAAGTGAACGA GATCGGCATCTACCTGACCGACTGCATGGAACGGGCCAGGGAAGTGA TCCCCAGAAGCCAGCACCAGGAAACCCCCGTGTATCTGGGAGCCACC GCCGGCATGAGACTGCTGAGAATGGAAAGCGAGGAACTGGCCGACC GGGTGCTGGACGTGGTGGAAAGAAGCCTGAGCAACTACCCATTCGAT TTTCAAGGCGCCAGAATCATCACCGGCCAGGAAGAAGGCGCCTACGG CTGGATCACCATCAACTACCTGCTGGGCAAGTTCAGCCAGAAGAATCA GGAAACCTTCGGCGCCCTGGACCTGGGCGGAGCTTCTACCCAAGTGA CCTTCGTGCCCCAGAATCAGACCATCGAGAGCCCCGACAACGCCCTG CAGTTCCGGCTGTACGGCAAGGACTACAATGTGTACACCCACAGCTTT CTGTGCTACGGAAAGGACCAGGCTCTGTGGCAGAAGCTGGCCAAGGA CATCCAGGTGGCCAGCAACGAGATCCTGCGGGACCCTTGCTTCCACC CCGGCTACAAGAAAGTCGTGAACGTGTCCGACCTGTACAAGACCCCC TGCACCAAGAGATTCGAGATGACCCTGCCCTTCCAGCAGTTCGAGATC CAGGGCACCGGCAATTACCAGCAGTGCCACCAGAGCATCCTGGAACT GTTCAACACCAGCTACTGCCCCTACAGCCAGTGCGCCTTCAACGGCA TCTTCCTGCCACCTCTGCAGGGGGATTTCGGCGCCTTCAGCGCCTTC TACTTCGTGATGAAGTTCCTGAACCTGACCAGCGAGAAGGTGTCCCAG GAAAAAGTGACAGAGATGATGAAGAAGTTCTGCGCCCAGCCCTGGGA GGAAATCAAGACCTCCTACGCTGGCGTGAAAGAGAAGTACCTGAGCG AGTACTGCTTCAGCGGCACCTACATCCTGAGCCTGCTGCAGCAGGGC TACCACTTCACCGCCGATAGCTGGGAGGACATCCACTTCATCGGCAA GATTCAGGGCAGCGACGCCGGCTGGACACTGGGCTACATGCTGAATC TGACCAACATGATCCCCGCCGAGCAGCCCCTGAGCACACCTCTGAGC CACAGCACC
EP14xEP19		
SEQ ID NO: 64	胺基酸	TQNKALPENVKYGIVLDAGSSHTSLYIYKWPAEKENDTGVVHQVEECRVK GPGISKFVQKVNEIGIYLTDCMERAREVIPRSQHQETPVYLGATAGMRLLR MESEELADRVLDVVERSLSNYPFDFQGARIITGQEEGAYGWITINYLLGKF SQKNQETFGALDLGGASTQVTFVPQNQTIESPDNALQFRLYGKDYNVYT HSFLCYGKDQALWQKLAKDIQVASNEILRDPCFHPGYKKVVNVSDLYKTP CTKRFEMTLPFQQFEIQGIGNYQQCHQSILELFNTSYCPYSQCAFNGIFLP PLQGDFGAFSAFYSVMKFLNLTSEKVSQEKVTEMMKKFCAQPWEEIKTS YAGVKEKYLSEYCFSGTYILSLLQQGYHFTADSWEHIHFIGKIQGSDAGW TLGYMLNLTNMIPAEQPLSTPLSHST
SEQ ID NO: 65	DNA	ACCCAGAACAAGGCCCTGCCCGAGAACGTGAAGTACGGCATCGTGCT GGATGCCGGCAGCAGCCACACCAGCCTGTACATCTACAAGTGGCCTG CCGAGAAAGAAAACGACACCGGCGTGGTGCATCAGGTGGAAGAGTGC AGAGTGAAGGGCCCTGGCATCAGCAAGTTCGTGCAGAAAGTGAACGA GATCGGCATCTACCTGACCGACTGCATGGAACGGGCCAGGGAAGTGA TCCCCAGAAGCCAGCACCAGGAAACCCCCGTGTATCTGGGAGCCACC GCCGGCATGAGACTGCTGAGAATGGAAAGCGAGGAACTGGCCGACC GGGTGCTGGACGTGGTGGAAAGAAGCCTGAGCAACTACCCATTCGAT TTTCAAGGCGCCAGAATCATCACCGGCCAGGAAGAAGGCGCCTACGG CTGGATCACCATCAACTACCTGCTGGGCAAGTTCAGCCAGAAGAATCA GGAAACCTTCGGCGCCTTGGACCTGGGCGGAGCTTCTACCCAAGTGA CCTTCGTGCCCCAGAATCAGACCATCGAGAGCCCCGACAACGCCCTG CAGTTCCGGCTGTACGGCAAGGACTACAATGTGTACACCCACAGCTTT CTGTGCTACGGAAAGGACCAGGCTCTGTGGCAGAAGCTGGCCAAGGA CATCCAGGTGGCCAGCAACGAGATCCTGCGGGACCCTTGCTTCCACC CCGGCTACAAGAAAGTCGTGAACGTGTCCGACCTGTACAAGACCCCC TGCACCAAGAGATTCGAGATGACCCTGCCCTTCCAGCAGTTCGAGATC CAGGGCATCGGCAATTACCAGCAGTGCCACCAGAGCATCCTGGAACT GTTCAACACCAGCTACTGCCCCTACAGCCAGTGCGCCTTCAACGGCA TCTTCCTGCCACCTCTGCAGGGGGATTTCGGCGCCTTCAGCGCCTTC TACTCCGTGATGAAGTTCCTGAACCTGACCAGCGAGAAGGTGTCCCA GGAAAAAGTGACAGAGATGATGAAGAAGTTCTGCGCCCAGCCCTGGG

		AGGAAATCAAGACCTCCTACGCTGGCGTGAAAGAGAAGTACCTGAGC GAGTACTGCTTCAGCGGCACCTACATCCTGAGCCTGCTGCAGCAGGG CTACCACTTCACCGCCGATAGCTGGGAGCACATCCACTTCATCGGCAA GATTCAGGGCAGCGACGCCGGCTGGACACTGGGTTACATGCTGAATC TGACCAACATGATCCCCGCCGAGCAGCCCCTGAGCACACCTCTGAGC CACAGCACC
EP28aa1-15		
SEQ ID NO: 66	胺基酸	APTSSSTKKTQLTSSTQNKALPENVKYGIVLDAGSSHTSLYIYKWPAEKEN DTGVVHQVEECRVKGPGISKFVQKVNEIGIYLTDCMERAREVIPRSQHQE TPVYLGATAGMRLLRMESEELADRVLDVVERSLSNYPFDFQGARIITGQE EGAYGWITINYLLGKFSQKNQETFGALDLGGASTQVTFVPQNQTIESPDN ALQFRLYGKDYNVYTHSFLCYGKDQALWQKLAKDIQVASNEILRDPCFHP GYKKVVNVSDLYKTPCTKRFEMTLPFQQFEIQGIGNYQQCHQSILELFNT SYCPYSQCAFNGIFLPPLQGDFGAFSAFYFVMKFLNLTSEKVSQEKVTEM MKKFCAQPWEEIKTSYAGVKEKYLSEYCFSGTYILSLLLQGYHFTADSWE HIHFIGKIQGSDAGWTLGYMLNLTNMIPAEQPLSTPLSHST
SEQ ID NO: 67	DNA	GCCCCTACCAGCAGCAGCACCAAGAAAACCCAGCTGACCAGCAGCAC CCAGAACAAGGCCCTGCCCGAGAACGTGAAGTACGGCATCGTGCTGG ATGCCGGCAGCAGCCACACCAGCCTGTACATCTACAAGTGGCCTGCC GAGAAAGAAAACGACACCGGCGTGGTGCATCAGGTGGAAGAGTGCAG AGTGAAGGGCCCTGGCATCAGCAAGTTCGTGCAGAAAGTGAACGAGA TCGGCATCTACCTGACCGACTGCATGGAACGGGCCAGGGAAGTGATC CCCAGAAGCCAGCACCAGGAAACCCCCGTGTATCTGGGAGCCACCGC CGGCATGAGACTGCTGAGAATGGAAAGCGAGGAACTGGCCGACCGG GTGCTGGACGTGGTGGAAAGAAGCCTGAGCAACTACCCATTCGATTTT CAAGGCGCCAGAATCATCACCGGCCAGGAAGAAGGCGCCTACGGCT GGATCACCATCAACTACCTGCTGGGCAAGTTCAGCCAGAAGAATCAG GAAACCTTCGGCGCCCTGGACCTGGGCGGAGCTTCTACCCAAGTGAC CTTCGTGCCCCAGAATCAGACCATCGAGAGCCCCGACAACGCCCTGC AGTTCCGGCTGTACGGCAAGGACTACAATGTGTACACCCACAGCTTTC TGTGCTACGGAAAGGACCAGGCTCTGTGGCAGAAGCTGGCCAAGGAC ATCCAGGTGGCCAGCAACGAGATCCTGCGGGACCCTTGCTTCCACCC CGGCTACAAGAAAGTCGTGAACGTGTCCGACCTGTACAAGACCCCCT GCACCAAGAGATTCGAGATGACCCTGCCCTTCCAGCAGTTCGAGATC CAGGGCATCGGCAATTACCAGCAGTGCCACCAGAGCATCCTGGAACT GTTCAACACCAGCTACTGCCCCTACAGCCAGTGCGCCTTCAACGGCA TCTTCCTGCCACCTCTGCAGGGGGATTTCGGCGCCTTCAGCGCCTTC TACTTCGTGATGAAGTTCCTGAACCTGACCAGCGAGAAGGTGTCCCAG GAAAAAGTGACAGAGATGATGAAGAAGTTCTGCGCCCAGCCCTGGGA GGAAATCAAGACCTCCTACGCTGGCGTGAAAGAGAAGTACCTGAGCG AGTACTGCTTCAGCGGCACCTACATCCTGAGCCTGCTGCTGCAGGGC TACCACTTCACCGCCGATAGCTGGGAGCACATCCACTTCATCGGCAA GATTCAGGGCAGCGACGCCGGCTGGACACTGGGCTACATGCTGAATC TGACCAACATGATCCCCGCCGAGCAGCCCCTGAGCACACCTCTGAGC CACAGCACC
EP17xEP19_H436D		
SEQ ID NO: 68	胺基酸	TQNKALPENVKYGIVLDAGSSHTSLYIYKWPAEKENDTGVVHQVEECRVK GPGISKFVQKVNEIGIYLTDCMERAREVIPRSQHQETPVYLGATAGMRLLR MESEELADRVLDVVERSLSNYPFDFQGARIITGQEEGAYGWITINYLLGKF SQKNQETFGALDLGGASTQVTFVPQNQTIESPDNALQFRLYGKDYNVYT HSFLCYGKDQALWQKLAKDIQVASNEILRDPCFHPGYKKVVNVSDLYKTP CTKRFEMTLPFQQFEIQGIGNYQQCHQSILELFNTSYCPYSQCAFNGIFLP PLQGDFGAFSAFYFVMKFLNLTSEKVSQEKVTEMMKKFCAQPWEEIKTS YAGVKEKYLSEFCFSGTYILSLLQQGYHFTADSWEDIHFIGKIQGSDAGWT LGYMLNLTNMIPAEQPLSTPLSHST
SEQ ID	DNA	ACCCAGAACAAGGCCCTGCCCGAGAACGTGAAGTACGGCATCGTGCT GGATGCCGGCAGCAGCCACACCAGCCTGTACATCTACAAGTGGCCTG

NO: 69		CCGAGAAAGAAAACGACACCGGCGTGGTGCATCAGGTGGAAGAGTGC AGAGTGAAGGGCCCTGGCATCAGCAAGTTCGTGCAGAAAGTGAACGA GATCGGCATCTACCTGACCGACTGCATGGAACGGGCCAGGGAAGTGA TCCCCAGAAGCCAGCACCAGGAAACCCCCGTGTATCTGGGAGCCACC GCCGGCATGAGACTGCTGAGAATGGAAAGCGAGGAACTGGCCGACC GGGTGCTGGACGTGGTGGAAAGAAGCCTGAGCAACTACCCATTCGAT TTTCAAGGCGCCAGAATCATCACCGGCCAGGAAGAAGGCGCCTACGG CTGGATCACCATCAACTACCTGCTGGGCAAGTTCAGCCAGAAGAATCA GGAAACCTTCGGCGCCCTGGACCTGGGCGGAGCTTCTACCCAAGTGA CCTTCGTGCCCCAGAATCAGACCATCGAGAGCCCCGACAACGCCCTG CAGTTCCGGCTGTACGGCAAGGACTACAATGTGTACACCCACAGCTTT CTGTGCTACGGAAAGGACCAGGCTCTGTGGCAGAAGCTGGCCAAGGA CATCCAGGTGGCCAGCAACGAGATCCTGCGGGACCCTTGCTTCCACC CCGGCTACAAGAAAGTCGTGAACGTGTCCGACCTGTACAAGACCCCC TGCACCAAGAGATTCGAGATGACCCTGCCCTTCCAGCAGTTCGAGATC CAGGGCATCGGCAATTACCAGCAGTGCCACCAGAGCATCCTGGAACT GTTCAACACCAGCTACTGCCCCTACAGCCAGTGCGCCTTCAACGGCA TCTTCCTGCCACCTCTGCAGGGGGATTTCGGCGCCTTCAGCGCCTTC TACTTCGTGATGAAGTTCCTGAACCTGACCAGCGAGAAGGTGTCCCAG GAAAAAGTGACAGAGATGATGAAGAAGTTCTGCGCCCAGCCCTGGGA GGAAATCAAGACCTCCTACGCTGGCGTGAAAGAGAAGTACCTGAGCG AGTTTTGCTTCAGCGGCACCTACATCCTGAGCCTGCTGCAGCAGGGC TACCACTTCACCGCCGATAGCTGGGAGGACATCCACTTCATCGGCAA GATTCAGGGCAGCGACGCCGGCTGGACACTGGGCTACATGCTGAATC TGACCAACATGATCCCCGCCGAGCAGCCCCTGAGCACACCTCTGAGC CACAGCACC
EP17xEP19		
SEQ ID NO: 70	胺基酸	TQNKALPENVKYGIVLDAGSSHTSLYIYKWPAEKENDTGVVHQVEECRVK GPGISKFVQKVNEIGIYLTDCMERAREVIPRSQHQETPVYLGATAGMRLLR MESEELADRVLDVVERSLSNYPFDFQGARIITGQEEGAYGWITINYLLGKF SQKNQETFGALDLGGASTQVTFVPQNQTIESPDNALQFRLYGKDYNVYT HSFLCYGKDQALWQKLAKDIQVASNEILRDPCFHPGYKKVVNVSDLYKTP CTKRFEMTLPFQQFEIQGIGNYQQCHQSILELFNTSYCPYSQCAFNGIFLP PLQGDFGAFSAFYFVMKFLNLTSEKVSQEKVTEMMKKFCAQPWEEIKTS YAGVKEKYLSEFCFSGTYILSLLQQGYHFTADSWEHIHFIGKIQGSDAGWT LGYMLNLTNMIPAEQPLSTPLSHST
SEQ ID NO: 71	DNA	ACCCAGAACAAGGCCCTGCCCGAGAACGTGAAGTACGGCATCGTGCT GGATGCCGGCAGCAGCCACACCAGCCTGTACATCTACAAGTGGCCTG CCGAGAAAGAAAACGACACCGGCGTGGTGCATCAGGTGGAAGAGTGC AGAGTGAAGGGCCCTGGCATCAGCAAGTTCGTGCAGAAAGTGAACGA GATCGGCATCTACCTGACCGACTGCATGGAACGGGCCAGGGAAGTGA TCCCCAGAAGCCAGCACCAGGAAACCCCCGTGTATCTGGGAGCCACC GCCGGCATGAGACTGCTGAGAATGGAAAGCGAGGAACTGGCCGACC GGGTGCTGGACGTGGTGGAAAGAAGCCTGAGCAACTACCCATTCGAT TTTCAAGGCGCCAGAATCATCACCGGCCAGGAAGAAGGCGCCTACGG CTGGATCACCATCAACTACCTGCTGGGCAAGTTCAGCCAGAAGAATCA GGAAACCTTCGGCGCCCTGGACCTGGGCGGAGCTTCTACCCAAGTGA CCTTCGTGCCCCAGAATCAGACCATCGAGAGCCCCGACAACGCCCTG CAGTTCCGGCTGTACGGCAAGGACTACAATGTGTACACCCACAGCTTT CTGTGCTACGGAAAGGACCAGGCTCTGTGGCAGAAGCTGGCCAAGGA CATCCAGGTGGCCAGCAACGAGATCCTGCGGGACCCTTGCTTCCACC CCGGCTACAAGAAAGTCGTGAACGTGTCCGACCTGTACAAGACCCCC TGCACCAAGAGATTCGAGATGACCCTGCCCTTCCAGCAGTTCGAGATC CAGGGCATCGGCAATTACCAGCAGTGCCACCAGAGCATCCTGGAACT GTTCAACACCAGCTACTGCCCCTACAGCCAGTGCGCCTTCAACGGCA TCTTCCTGCCACCTCTGCAGGGGGATTTCGGCGCCTTCAGCGCCTTC TACTTCGTGATGAAGTTCCTGAACCTGACCAGCGAGAAGGTGTCCCAG GAAAAAGTGACAGAGATGATGAAGAAGTTCTGCGCCCAGCCCTGGGA GGAAATCAAGACCTCCTACGCTGGCGTGAAAGAGAAGTACCTGAGCG AGTTTTGCTTCAGCGGCACCTACATCCTGAGCCTGCTGCAGCAGGGC

		TACCACTTCACCGCCGATAGCTGGGAGCACATCCACTTCATCGGCAA GATTCAGGGCAGCGACGCCGGCTGGACACTGGGCTACATGCTGAATC TGACCAACATGATCCCCGCCGAGCAGCCCCTGAGCACACCTCTGAGC CACAGCACC
EP28aa1 -16		
SEQ ID NO: 72	胺基酸	APTSSSTKKTQLTSSGTQNKALPENVKYGIVLDAGSSHTSLYIYKWPAEKE NDTGVVHQVEECRVKGPGISKFVQKVNEIGIYLTDCMERAREVIPRSQHQ ETPVYLGATAGMRLLRMESEELADRVLDVVERSLSNYPFDFQGARIITGQ EEGAYGWITINYLLGKFSQKNQETFGALDLGGASTQVTFVPQNQTIESPD NALQFRLYGKDYNVYTHSFLCYGKDQALWQKLAKDIQVASNEILRDPCFH PGYKKVVNVSDLYKTPCTKRFEMTLPFQQFEIQGIGNYQQCHQSILELFN TSYCPYSQCAFNGIFLPPLQGDFGAFSAFYFVMKFLNLTSEKVSQEKVTE MMKKFCAQPWEEIKTSYAGVKEKYLSEYCFSGTYILSLLLQGYHFTADSW EHIHFIGKIQGSDAGWTLGYMLNLTNMIPAEQPLSTPLSHST
SEQ ID NO: 73	DNA	GCCCCTACCTCCTCCAGCACCAAGAAAACCCAGCTGACCTCCAGCGG CACCCAGAACAAGGCCCTGCCCGAGAACGTGAAGTACGGCATCGTGC TGGACGCCGGCTCCTCCCACACCTCCCTGTACATCTACAAGTGGCCT GCCGAGAAAGAAAACGACACCGGCGTGGTGCACCAAGTGGAAGAGT GCAGAGTGAAGGGCCCCGGCATCTCCAAGTTCGTGCAGAAAGTGAAC GAGATCGGCATCTACCTGACCGACTGCATGGAACGGGCCAGAGAAGT GATCCCTCGGTCCCAGCACCAGGAAACCCCTGTCTACCTGGGCGCCA CCGCCGGCATGCGGCTGCTGCGGATGGAATCCGAGGAACTGGCCGA CCGGGTGCTGGACGTGGTGGAACGGTCCCTGTCCAACTACCCATTCG ATTTTCAAGGCGCCAGAATCATCACCGGCCAGGAAGAGGGCGCCTAC GGCTGGATCACCATCAACTACCTGCTGGGCAAGTTCTCCCAGAAGAAT CAGGAAACCTTCGGCGCCCTGGACCTGGGCGGAGCCAGCACCCAAG TCACATTCGTGCCCCAGAACCAGACCATCGAGAGCCCCGACAACGCC CTGCAGTTCCGGCTGTACGGCAAGGACTACAACGTGTACACCCACAG CTTTCTGTGCTACGGCAAGGACCAGGCCCTGTGGCAGAAGCTGGCCA AGGACATCCAAGTGGCCTCCAACGAGATCCTGCGGGACCCCTGCTTC CACCCCGGCTACAAGAAAGTGGTCAACGTGTCCGACCTGTACAAGAC CCCTTGCACCAAGAGATTCGAGATGACCCTGCCCTTCCAGCAGTTCGA GATCCAGGGCATCGGCAACTACCAGCAGTGCCACCAGTCCATCCTGG AACTGTTCAACACCTCCTACTGCCCCTACTCCCAGTGCGCCTTCAACG GCATCTTCCTGCCTCCACTGCAGGGCGACTTCGGCGCCTTCTCCGCC TTCTACTTCGTGATGAAGTTCCTGAACCTGACCTCCGAGAAAGTGTCC CAGGAAAAAGTGACCGAGATGATGAAGAAGTTCTGCGCCCAGCCCTG GGAGGAAATCAAGACCTCCTACGCTGGCGTGAAAGAGAAGTACCTGT CCGAGTACTGCTTCTCCGGCACCTACATCCTGTCCCTGCTGCTGCAG GGCTACCACTTCACCGCCGACAGCTGGGAGCACATCCACTTCATCGG CAAGATCCAGGGATCCGACGCTGGCTGGACCCTGGGCTACATGCTGA ATCTGACCAACATGATCCCCGCCGAGCAGCCCCTGTCCACCCCTCTG TCTCACTCCACC
EP1xEP 14xEP19		
SEQ ID NO: 74	胺基酸	TQNKALPENVKYGIVLDAGSSHTSLYIYKWPAEKENDTGVVHQVEECRVK GPGISKFVQKVNEIGIYLTDCMERAMEVIPRSQHQETPVYLGATAGMRLL RMESEELADRVLDVVERSLSNYPFDFQGARIITGQEEGAYGWITINYLLGK FSQKNQETFGALDLGGASTQVTFVPQNQTIESPDNALQFRLYGKDYNVY THSFLCYGKDQALWQKLAKDIQVASNEILRDPCFHPGYKKVVNVSDLYKT PCTKRFEMTLPFQQFEIQGIGNYQQCHQSILELFNTSYCPYSQCAFNGIFL PPLQGDFGAFSAFYSVMKFLNLTSEKVSQEKVTEMMKKFCAQPWEEIKT SYAGVKEKYLSEYCFSGTYILSLLQQGYHFTADSWEHIHFIGKIQGSDAG WTLGYMLNLTNMIPAEQPLSTPLSHST
SEQ ID NO: 75	DNA	ACCCAGAACAAGGCCCTGCCCGAGAACGTGAAGTACGGCATCGTGCT GGATGCCGGCAGCAGCCACACCAGCCTGTACATCTACAAGTGGCCTG CCGAGAAAGAAAACGACACCGGCGTGGTGCATCAGGTGGAAGAGTGC AGAGTGAAGGGCCCTGGCATCAGCAAGTTCGTGCAGAAAGTGAACGA GATCGGCATCTACCTGACCGACTGCATGGAACGGGCCATGGAAGTGA

		TCCCCAGAAGCCAGCACCAGGAAACCCCCGTGTATCTGGGAGCCACC GCCGGCATGAGACTGCTGAGAATGGAAAGCGAGGAACTGGCCGACC GGGTGCTGGACGTGGTGGAAAGAAGCCTGAGCAACTACCCATTCGAT TTTCAAGGCGCCAGAATCATCACCGGCCAGGAAGAAGGCGCCTACGG CTGGATCACCATCAACTACCTGCTGGGCAAGTTCAGCCAGAAGAATCA GGAAACCTTCGGCGCCCTGGACCTGGGCGGAGCTTCTACCCAAGTGA CCTTCGTGCCCCAGAATCAGACCATCGAGAGCCCCGACAACGCCCTG CAGTTCCGGCTGTACGGCAAGGACTACAATGTGTACACCCACAGCTTT CTGTGCTACGGAAAGGACCAGGCTCTGTGGCAGAAGCTGGCCAAGGA CATCCAGGTGGCCAGCAACGAGATCCTGCGGGACCCTTGCTTCCACC CCGGCTACAAGAAAGTCGTGAACGTGTCCGACCTGTACAAGACCCCC TGCACCAAGAGATTCGAGATGACCCTGCCCTTCCAGCAGTTCGAGATC CAGGGCATCGGCAATTACCAGCAGTGCCACCAGAGCATCCTGGAACT GTTCAACACCAGCTACTGCCCCTACAGCCAGTGCGCCTTCAACGGCA TCTTCCTGCCACCTCTGCAGGGGGATTTCGGCGCCTTCAGCGCCTTC TACTCCGTGATGAAGTTCCTGAACCTGACCAGCGAGAAGGTGTCCCA GGAAAAAGTGACAGAGATGATGAAGAAGTTCTGCGCCCAGCCCTGGG AGGAAATCAAGACCTCCTACGCTGGCGTGAAAGAGAAGTACCTGAGC GAGTACTGCTTCAGCGGCACCTACATCCTGAGCCTGCTGCAGCAGGG CTACCACTTCACCGCCGATAGCTGGGAGCACATCCACTTCATCGGCAA GATTCAGGGCAGCGACGCCGGCTGGACACTGGGCTACATGCTGAATC TGACCAACATGATCCCCGCCGAGCAGCCCCTGAGCACACCTCTGAGC CACAGCACC
EP1xEP17xEP19		
SEQ ID NO: 76	胺基酸	TQNKALPENVKYGIVLDAGSSHTSLYIYKWPAEKENDTGVVHQVEECRVK GPGISKFVQKVNEIGIYLTDCMERAMEVIPRSQHQETPVYLGATAGMRLL RMESEELADRVLDVVERSLSNYPFDFQGARIITGQEEGAYGWITINYLLGK FSQKNQETFGALDLGGASTQVTFVPQNQTIESPDNALQFRLYGKDYNVY THSFLCYGKDQALWQKLAKDIQVASNEILRDPCFHPGYKKVVNVSDLYKT PCTKRFEMTLPFQQFEIQGIGNYQQCHQSILELFNTSYCPYSQCAFNGIFL PPLQGDFGAFSAFYFVMKFLNLTSEKVSQEKVTEMMKKFCAQPWEEIKT SYAGVKEKYLSEFCFSGTYILSLLQQGYHFTADSWEHIHFIGKIQGSDAG WTLGYMLNLTNMIPAEQPLSTPLSHST
SEQ ID NO: 77	DNA	ACCCAGAACAAGGCCCTGCCCGAGAACGTGAAGTACGGCATCGTGCT GGATGCCGGCAGCAGCCACACCAGCCTGTACATCTACAAGTGGCCTG CCGAGAAAGAAAACGACACCGGCGTGGTGCATCAGGTGGAAGAGTGC AGAGTGAAGGGCCCTGGCATCAGCAAGTTCGTGCAGAAAGTGAACGA GATCGGCATCTACCTGACCGACTGCATGGAACGGGCCATGGAAGTGA TCCCCAGAAGCCAGCACCAGGAAACCCCCGTGTATCTGGGAGCCACC GCCGGCATGAGACTGCTGAGAATGGAAAGCGAGGAACTGGCCGACC GGGTGCTGGACGTGGTGGAAAGAAGCCTGAGCAACTACCCATTCGAT TTTCAAGGCGCCAGAATCATCACCGGCCAGGAAGAAGGCGCCTACGG CTGGATCACCATCAACTACCTGCTGGGCAAGTTCAGCCAGAAGAATCA GGAAACCTTCGGCGCCCTGGACCTGGGCGGAGCTTCTACCCAAGTGA CCTTCGTGCCCCAGAATCAGACCATCGAGAGCCCCGACAACGCCCTG CAGTTCCGGCTGTACGGCAAGGACTACAATGTGTACACCCACAGCTTT CTGTGCTACGGAAAGGACCAGGCTCTGTGGCAGAAGCTGGCCAAGGA CATCCAGGTGGCCAGCAACGAGATCCTGCGGGACCCTTGCTTCCACC CCGGCTACAAGAAAGTCGTGAACGTGTCCGACCTGTACAAGACCCCC TGCACCAAGAGATTCGAGATGACCCTGCCCTTCCAGCAGTTCGAGATC CAGGGCATCGGCAATTACCAGCAGTGCCACCAGAGCATCCTGGAACT GTTCAACACCAGCTACTGCCCCTACAGCCAGTGCGCCTTCAACGGCA TCTTCCTGCCACCTCTGCAGGGGGATTTCGGCGCCTTCAGCGCCTTC TACTTCGTGATGAAGTTCCTGAACCTGACCAGCGAGAAGGTGTCCCAG GAAAAAGTGACAGAGATGATGAAGAAGTTCTGCGCCCAGCCCTGGGA GGAAATCAAGACCTCCTACGCTGGCGTGAAAGAGAAGTACCTGAGCG AGTTCTGCTTCAGCGGCACCTACATCCTGAGCCTGCTGCAGCAGGGC TACCACTTCACCGCCGATAGCTGGGAGCACATCCACTTCATCGGCAA GATTCAGGGCAGCGACGCCGGCTGGACACTGGGCTACATGCTGAATC TGACCAACATGATCCCCGCCGAGCAGCCCCTGAGCACACCTCTGAGC

		CACAGCACC
EP1xEP14		
SEQ ID NO: 78	胺基酸	TQNKALPENVKYGIVLDAGSSHTSLYIYKWPAEKENDTGVVHQVEECRVK GPGISKFVQKVNEIGIYLTDCMERAMEVIPRSQHQETPVYLGATAGMRLL RMESEELADRVLDVVERSLSNYPFDFQGARIITGQEEGAYGWITINYLLGK FSQKNQETFGALDLGGASTQVTFVPQNQTIESPDNALQFRLYGKDYNVY THSFLCYGKDQALWQKLAKDIQVASNEILRDPCFHPGYKKVVNVSDLYKT PCTKRFEMTLPFQQFEIQGIGNYQQCHQSILELFNTSYCPYSQCAFNGIFL PPLQGDFGAFSAFYSVMKFLNLTSEKVSQEKVTEMMKKFCAQPWEEIKT SYAGVKEKYLSEYCFSGTYILSLLLQGYHFTADSWEHIHFIGKIQGSDAGW TLGYMLNLTNMIPAEQPLSTPLSHST
SEQ ID NO: 79	DNA	ACCCAGAACAAGGCCCTGCCCGAGAACGTGAAGTACGGCATCGTGCT GGATGCCGGCAGCAGCCACACCAGCCTGTACATCTACAAGTGGCCTG CCGAGAAAGAAAACGACACCGGCGTGGTGCATCAGGTGGAAGAGTGC AGAGTGAAGGGCCCTGGCATCAGCAAGTTCGTGCAGAAAGTGAACGA GATCGGCATCTACCTGACCGACTGCATGGAACGGGCCATGGAAGTGA TCCCCAGAAGCCAGCACCAGGAAACCCCCGTGTATCTGGGAGCCACC GCCGGCATGAGACTGCTGAGAATGGAAAGCGAGGAACTGGCCGACC GGGTGCTGGACGTGGTGGAAAGAAGCCTGAGCAACTACCCATTCGAT TTTCAAGGCGCCAGAATCATCACCGGCCAGGAAGAAGGCGCCTACGG CTGGATCACCATCAACTACCTGCTGGGCAAGTTCAGCCAGAAGAATCA GGAAACCTTCGGCGCCTTGGACCTGGGCGGAGCTTCTACCCAAGTGA CCTTCGTGCCCCAGAATCAGACCATCGAGAGCCCCGACAACGCCCTG CAGTTCCGGCTGTACGGCAAGGACTACAATGTGTACACCCACAGCTTT CTGTGCTACGGAAAGGACCAGGCTCTGTGGCAGAAGCTGGCCAAGGA CATCCAGGTGGCCAGCAACGAGATCCTGCGGGACCCTTGCTTCCACC CCGGCTACAAGAAAGTCGTGAACGTGTCCGACCTGTACAAGACCCCC TGCACCAAGAGATTCGAGATGACCCTGCCCTTCCAGCAGTTCGAGATC CAGGGCATCGGCAATTACCAGCAGTGCCACCAGAGCATCCTGGAACT GTTCAACACCAGCTACTGCCCCTACAGCCAGTGCGCCTTCAACGGCA TCTTCCTGCCACCTCTGCAGGGGGATTTCGGCGCCTTCAGCGCCTTC TACTCCGTGATGAAGTTCCTGAACCTGACCAGCGAGAAGGTGTCCCA GGAAAAAGTGACAGAGATGATGAAGAAGTTCTGCGCCCAGCCCTGGG AGGAAATCAAGACCTCCTACGCTGGCGTGAAAGAGAAGTACCTGAGC GAGTACTGCTTCAGCGGCACCTACATCCTGAGCCTGCTGCTGCAGGG CTACCACTTCACCGCCGATAGCTGGGAGCACATCCACTTCATCGGCAA GATTCAGGGCAGCGACGCCGGCTGGACACTGGGTTACATGCTGAATC TGACCAACATGATCCCCGCCGAGCAGCCCCTGAGCACACCTCTGAGC CACAGCACC
EP28aa1-6		
SEQ ID NO: 80	胺基酸	APTSSSTQNKALPENVKYGIVLDAGSSHTSLYIYKWPAEKENDTGVVHQV EECRVKGPGISKFVQKVNEIGIYLTDCMERAREVIPRSQHQETPVYLGATA GMRLLRMESEELADRVLDVVERSLSNYPFDFQGARIITGQEEGAYGWITI NYLLGKFSQKNQETFGALDLGGASTQVTFVPQNQTIESPDNALQFRLYGK DYNVYTHSFLCYGKDQALWQKLAKDIQVASNEILRDPCFHPGYKKVVNVS DLYKTPCTKRFEMTLPFQQFEIQGIGNYQQCHQSILELFNTSYCPYSQCA FNGIFLPPLQGDFGAFSAFYFVMKFLNLTSEKVSQEKVTEMMKKFCAQP WEEIKTSYAGVKEKYLSEYCFSGTYILSLLLQGYHFTADSWEHIHFIGKIQG SDAGWTLGYMLNLTNMIPAEQPLSTPLSHST
SEQ ID NO: 81	DNA	GCCCCTACCAGCAGCAGCACCCAGAACAAGGCCCTGCCCGAGAACGT GAAGTACGGCATCGTGCTGGATGCCGGCAGCAGCCACACCAGCCTGT ACATCTACAAGTGGCCTGCCGAGAAAGAAAACGACACCGGCGTGGTG CATCAGGTGGAAGAGTGCAGAGTGAAGGGCCCTGGCATCAGCAAGTT CGTGCAGAAAGTGAACGAGATCGGCATCTACCTGACCGACTGCATGG AACGGGCCAGGGAAGTGATCCCCAGAAGCCAGCACCAGGAAACCCC CGTGTATCTGGGAGCCACCGCCGGCATGAGACTGCTGAGAATGGAAA GCGAGGAACTGGCCGACCGGGTGCTGGACGTGGTGGAAAGAAGCCT GAGCAACTACCCATTCGATTTTCAAGGCGCCAGAATCATCACCGGCCA

		GGAAGAAGGCGCCTACGGCTGGATCACCATCAACTACCTGCTGGGCA AGTTCAGCCAGAAGAATCAGGAAACCTTCGGCGCCCTGGACCTGGGC GGAGCTTCTACCCAAGTGACCTTCGTGCCCCAGAATCAGACCATCGA GAGCCCCGACAACGCCCTGCAGTTCCGGCTGTACGGCAAGGACTACA ATGTGTACACCCACAGCTTTCTGTGCTACGGAAAGGACCAGGCTCTGT GGCAGAAGCTGGCCAAGGACATCCAGGTGGCCAGCAACGAGATCCT GCGGGACCCTTGCTTCCACCCCGGCTACAAGAAAGTCGTGAACGTGT CCGACCTGTACAAGACCCCCTGCACCAAGAGATTCGAGATGACCCTG CCCTTCCAGCAGTTCGAGATCCAGGGCATCGGCAATTACCAGCAGTG CCACCAGAGCATCCTGGAACTGTTCAACACCAGCTACTGCCCCTACAG CCAGTGCGCCTTCAACGGCATCTTCCTGCCACCTCTGCAGGGGGATT TCGGCGCCTTCAGCGCCTTCTACTTCGTGATGAAGTTCCTGAACCTGA CCAGCGAGAAGGTGTCCCAGGAAAAAGTGACAGAGATGATGAAGAAG TTCTGCGCCCAGCCCTGGGAGGAAATCAAGACCTCCTACGCTGGCGT GAAAGAGAAGTACCTGAGCGAGTACTGCTTCAGCGGCACCTACATCC TGAGCCTGCTGCTGCAGGGCTACCACTTCACCGCCGATAGCTGGGAG CACATCCACTTCATCGGCAAGATTCAGGGCAGCGACGCCGGCTGGAC ACTGGGCTACATGCTGAATCTGACCAACATGATCCCCGCCGAGCAGC CCCTGAGCACACCTCTGAGCCACAGCACC
EP28_E174A		
SEQ ID NO: 82	胺基酸	TQNKALPENVKYGIVLDAGSSHTSLYIYKWPAEKENDTGVVHQVEECRVK GPGISKFVQKVNEIGIYLTDCMERAREVIPRSQHQETPVYLGATAGMRLLR MESEELADRVLDVVERSLSNYPFDFQGARIITGQEAGAYGWITINYLLGKF SQKNQETFGALDLGGASTQVTFVPQNQTIESPDNALQFRLYGKDYNVYT HSFLCYGKDQALWQKLAKDIQVASNEILRDPCFHPGYKKVVNVSDLYKTP CTKRFEMTLPFQQFEIQGIGNYQQCHQSILELFNTSYCPYSQCAFNGIFLP PLQGDFGAFSAFYFVMKFLNLTSEKVSQEKVTEMMKKFCAQPWEEIKTS YAGVKEKYLSEYCFSGTYILSLLLQGYHFTADSWEHIHFIGKIQGSDAGWT LGYMLNLTNMIPAEQPLSTPLSHST
SEQ ID NO: 83	DNA	ACCCAGAACAAGGCCCTGCCCGAGAACGTGAAGTACGGCATCGTGCT GGATGCCGGCAGCAGCCACACCAGCCTGTACATCTACAAGTGGCCTG CCGAGAAAGAAAACGACACCGGCGTGGTGCATCAGGTGGAAGAGTGC AGAGTGAAGGGCCCTGGCATCAGCAAGTTCGTGCAGAAAGTGAACGA GATCGGCATCTACCTGACCGACTGCATGGAACGGGCCAGGGAAGTGA TCCCCAGAAGCCAGCACCAGGAAACCCCCGTGTATCTGGGAGCCACC GCCGGCATGAGACTGCTGAGAATGGAAAGCGAGGAACTGGCCGACC GGGTGCTGGACGTGGTGGAAAGAAGCCTGAGCAACTACCCATTCGAT TTTCAAGGCGCCAGAATCATCACCGGCCAGGAAGCCGGCGCCTACGG CTGGATCACCATCAACTACCTGCTGGGCAAGTTCAGCCAGAAGAATCA GGAAACCTTCGGCGCCCTGGACCTGGGCGGAGCTTCTACCCAAGTGA CCTTCGTGCCCCAGAATCAGACCATCGAGAGCCCCGACAACGCCCTG CAGTTCCGGCTGTACGGCAAGGACTACAATGTGTACACCCACAGCTTT CTGTGCTACGGAAAGGACCAGGCTCTGTGGCAGAAGCTGGCCAAGGA CATCCAGGTGGCCAGCAACGAGATCCTGCGGGACCCTTGCTTCCACC CCGGCTACAAGAAAGTCGTGAACGTGTCCGACCTGTACAAGACCCCC TGCACCAAGAGATTCGAGATGACCCTGCCCTTCCAGCAGTTCGAGATC CAGGGCATCGGCAATTACCAGCAGTGCCACCAGAGCATCCTGGAACT GTTCAACACCAGCTACTGCCCCTACAGCCAGTGCGCCTTCAACGGCA TCTTCCTGCCACCTCTGCAGGGGGATTTCGGCGCCTTCAGCGCCTTC TACTTCGTGATGAAGTTCCTGAACCTGACCAGCGAGAAGGTGTCCCAG GAAAAAGTGACAGAGATGATGAAGAAGTTCTGCGCCCAGCCCTGGGA GGAAATCAAGACCTCCTACGCTGGCGTGAAAGAGAAGTACCTGAGCG AGTACTGCTTCAGCGGCACCTACATCCTGAGCCTGCTGCTGCAGGGC TACCACTTCACCGCCGATAGCTGGGAGCACATCCACTTCATCGGCAA GATTCAGGGCAGCGACGCCGGCTGGACACTGGGCTACATGCTGAATC TGACCAACATGATCCCCGCCGAGCAGCCCCTGAGCACACCTCTGAGC CACAGCACC
EP28_E174A_S2		

18A		
SEQ ID NO: 84	胺基酸	TQNKALPENVKYGIVLDAGSSHTSLYIYKWPAEKENDTGVVHQVEECRVK GPGISKFVQKVNEIGIYLTDCMERAREVIPRSQHQETPVYLGATAGMRLLR MESEELADRVLDVVERSLSNYPFDFQGARIITGQEAGAYGWITINYLLGKF SQKNQETFGALDLGGAATQVTFVPQNQTIESPDNALQFRLYGKDYNVYT HSFLCYGKDQALWQKLAKDIQVASNEILRDPCFHPGYKKVVNVSDLYKTP CTKRFEMTLPFQQFEIQGIGNYQQCHQSILELFNTSYCPYSQCAFNGIFLP PLQGDFGAFSAFYFVMKFLNLTSEKVSQEKVTEMMKKFCAQPWEEIKTS YAGVKEKYLSEYCFSGTYILSLLLQGYHFTADSWEHIHFIGKIQGSDAGWT LGYMLNLTNMIPAEQPLSTPLSHST
SEQ ID NO: 85	DNA	ACCCAGAACAAGGCCCTGCCCGAGAACGTGAAGTACGGCATCGTGCT GGATGCCGGCAGCAGCCACACCAGCCTGTACATCTACAAGTGGCCTG CCGAGAAAGAAAACGACACCGGCGTGGTGCATCAGGTGGAAGAGTGC AGAGTGAAGGGCCCTGGCATCAGCAAGTTCGTGCAGAAAGTGAACGA GATCGGCATCTACCTGACCGACTGCATGGAACGGGCCAGGGAAGTGA TCCCCAGAAGCCAGCACCAGGAAACCCCCGTGTATCTGGGAGCCACC GCCGGCATGAGACTGCTGAGAATGGAAAGCGAGGAACTGGCCGACC GGGTGCTGGACGTGGTGGAAAGAAGCCTGAGCAACTACCCATTCGAT TTTCAAGGCGCCAGAATCATCACCGGCCAGGAAGCCGGCGCCTACGG CTGGATCACCATCAACTACCTGCTGGGCAAGTTCAGCCAGAAGAATCA GGAAACCTTCGGCGCCCTGGACCTGGGCGGAGCTGCTACCCAAGTG ACCTTCGTGCCCCAGAATCAGACCATCGAGAGCCCCGACAACGCCCT GCAGTTCCGGCTGTACGGCAAGGACTACAATGTGTACACCCACAGCT TTCTGTGCTACGGAAAGGACCAGGCTCTGTGGCAGAAGCTGGCCAAG GACATCCAGGTGGCCAGCAACGAGATCCTGCGGGACCCTTGCTTCCA CCCCGGCTACAAGAAAGTCGTGAACGTGTCCGACCTGTACAAGACCC CCTGCACCAAGAGATTCGAGATGACCCTGCCCTTCCAGCAGTTCGAG ATCCAGGGCATCGGCAATTACCAGCAGTGCCACCAGAGCATCCTGGA ACTGTTCAACACCAGCTACTGCCCCTACAGCCAGTGCGCCTTCAACG GCATCTTCCTGCCACCTCTGCAGGGGGATTTCGGCGCCTTCAGCGCC TTCTACTTCGTGATGAAGTTCCTGAACCTGACCAGCGAGAAGGTGTCC CAGGAAAAAGTGACAGAGATGATGAAGAAGTTCTGCGCCCAGCCCTG GGAGGAAATCAAGACCTCCTACGCTGGCGTGAAAGAGAAGTACCTGA GCGAGTACTGCTTCAGCGGCACCTACATCCTGAGCCTGCTGCTGCAG GGCTACCACTTCACCGCCGATAGCTGGGAGCACATCCACTTCATCGG CAAGATTCAGGGCAGCGACGCCGGCTGGACACTGGGCTACATGCTGA ATCTGACCAACATGATCCCCGCCGAGCAGCCCCTGAGCACACCTCTG AGCCACAGCACC
EP14_N73Q		
SEQ ID NO: 86	胺基酸	TQNKALPENVKYGIVLDAGSSHTSLYIYKWPAEKEQDTGVVHQVEECRVK GPGISKFVQKVNEIGIYLTDCMERAREVIPRSQHQETPVYLGATAGMRLLR MESEELADRVLDVVERSLSNYPFDFQGARIITGQEEGAYGWITINYLLGKF SQKNQETFGALDLGGASTQVTFVPQNQTIESPDNALQFRLYGKDYNVYT HSFLCYGKDQALWQKLAKDIQVASNEILRDPCFHPGYKKVVNVSDLYKTP CTKRFEMTLPFQQFEIQGIGNYQQCHQSILELFNTSYCPYSQCAFNGIFLP PLQGDFGAFSAFYSVMKFLNLTSEKVSQEKVTEMMKKFCAQPWEEIKTS YAGVKEKYLSEYCFSGTYILSLLLQGYHFTADSWEHIHFIGKIQGSDAGWT LGYMLNLTNMIPAEQPLSTPLSHST
SEQ ID NO: 87	DNA	ACCCAGAACAAGGCCCTGCCCGAGAACGTGAAGTACGGCATCGTGCT GGATGCCGGCAGCAGCCACACCAGCCTGTACATCTACAAGTGGCCTG CCGAGAAAGAACAGGACACCGGCGTGGTGCATCAGGTGGAAGAGTG CAGAGTGAAGGGCCCTGGCATCAGCAAGTTCGTGCAGAAAGTGAACG AGATCGGCATCTACCTGACCGACTGCATGGAACGGGCCAGGGAAGTG ATCCCCAGAAGCCAGCACCAGGAAACCCCCGTGTATCTGGGAGCCAC CGCCGGCATGAGACTGCTGAGAATGGAAAGCGAGGAACTGGCCGAC CGGGTGCTGGACGTGGTGGAAAGAAGCCTGAGCAACTACCCATTCGA TTTTCAAGGCGCCAGAATCATCACCGGCCAGGAAGAAGGCGCCTACG GCTGGATCACCATCAACTACCTGCTGGGCAAGTTCAGCCAGAAGAATC AGGAAACCTTCGGCGCCCTGGACCTGGGCGGAGCTTCTACCCAAGTG ACCTTCGTGCCCCAGAATCAGACCATCGAGAGCCCCGACAACGCCCT

		GCAGTTCCGGCTGTACGGCAAGGACTACAATGTGTACACCCACAGCT TTCTGTGCTACGGAAAGGACCAGGCTCTGTGGCAGAAGCTGGCCAAG GACATCCAGGTGGCCAGCAACGAGATCCTGCGGGACCCTTGCTTCCA CCCCGGCTACAAGAAAGTCGTGAACGTGTCCGACCTGTACAAGACCC CCTGCACCAAGAGATTCGAGATGACCCTGCCCTTCCAGCAGTTCGAG ATCCAGGGCATCGGCAATTACCAGCAGTGCCACCAGAGCATCCTGGA ACTGTTCAACACCAGCTACTGCCCCTACAGCCAGTGCGCCTTCAACG GCATCTTCCTGCCACCTCTGCAGGGGGATTTCGGCGCCTTCAGCGCC TTCTACTCCGTGATGAAGTTCCTGAACCTGACCAGCGAGAAGGTGTCC CAGGAAAAAGTGACAGAGATGATGAAGAAGTTCTGCGCCCAGCCCTG GGAGGAAATCAAGACCTCCTACGCTGGCGTGAAAGAGAAGTACCTGA GCGAGTACTGCTTCAGCGGCACCTACATCCTGAGCCTGCTGCTGCAG GGCTACCACTTCACCGCCGATAGCTGGGAGCACATCCACTTCATCGG CAAGATTCAGGGCAGCGACGCCGGCTGGACACTGGGCTACATGCTGA ATCTGACCAACATGATCCCCGCCGAGCAGCCCCTGAGCACACCTCTG AGCCACAGCACC
EP14_T229A		
SEQ ID NO: 88	胺基酸	TQNKALPENVKYGIVLDAGSSHTSLYIYKWPAEKENDTGVVHQVEECRVK GPGISKFVQKVNEIGIYLTDCMERAREVIPRSQHQETPVYLGATAGMRLLR MESEELADRVLDVVERSLSNYPFDFQGARIITGQEEGAYGWITINYLLGKF SQKNQETFGALDLGGASTQVTFVPQNQAIESPDNALQFRLYGKDYNVYT HSFLCYGKDQALWQKLAKDIQVASNEILRDPCFHPGYKKVVNVSDLYKTP CTKRFEMTLPFQQFEIQGIGNYQQCHQSILELFNTSYCPYSQCAFNGIFLP PLQGDFGAFSAFYSVMKFLNLTSEKVSQEKVTEMMKKFCAQPWEEIKTS YAGVKEKYLSEYCFSGTYILSLLLQGYHFTADSWEHIHFIGKIQGSDAGWT LGYMLNLTNMIPAEQPLSTPLSHST
SEQ ID NO: 89	DNA	ACCCAGAACAAGGCCCTGCCCGAGAACGTGAAGTACGGCATCGTGCT GGATGCCGGCAGCAGCCACACCAGCCTGTACATCTACAAGTGGCCTG CCGAGAAAGAAAACGACACCGGCGTGGTGCATCAGGTGGAAGAGTGC AGAGTGAAGGGCCCTGGCATCAGCAAGTTCGTGCAGAAAGTGAACGA GATCGGCATCTACCTGACCGACTGCATGGAACGGGCCAGGGAAGTGA TCCCCAGAAGCCAGCACCAGGAAACCCCCGTGTATCTGGGAGCCACC GCCGGCATGAGACTGCTGAGAATGGAAAGCGAGGAACTGGCCGACC GGGTGCTGGACGTGGTGGAAAGAAGCCTGAGCAACTACCCATTCGAT TTTCAAGGCGCCAGAATCATCACCGGCCAGGAAGAAGGCGCCTACGG CTGGATCACCATCAACTACCTGCTGGGCAAGTTCAGCCAGAAGAATCA GGAAACCTTCGGCGCCCTGGACCTGGGCGGAGCTTCTACCCAAGTGA CCTTCGTGCCCCAGAATCAGGCCATCGAGAGCCCCGACAACGCCCTG CAGTTCCGGCTGTACGGCAAGGACTACAATGTGTACACCCACAGCTTT CTGTGCTACGGAAAGGACCAGGCTCTGTGGCAGAAGCTGGCCAAGGA CATCCAGGTGGCCAGCAACGAGATCCTGCGGGACCCTTGCTTCCACC CCGGCTACAAGAAAGTCGTGAACGTGTCCGACCTGTACAAGACCCCC TGCACCAAGAGATTCGAGATGACCCTGCCCTTCCAGCAGTTCGAGATC CAGGGCATCGGCAATTACCAGCAGTGCCACCAGAGCATCCTGGAACT GTTCAACACCAGCTACTGCCCCTACAGCCAGTGCGCCTTCAACGGCA TCTTCCTGCCACCTCTGCAGGGGGATTTCGGCGCCTTCAGCGCCTTC TACTCCGTGATGAAGTTCCTGAACCTGACCAGCGAGAAGGTGTCCCA GGAAAAAGTGACAGAGATGATGAAGAAGTTCTGCGCCCAGCCCTGGG AGGAAATCAAGACCTCCTACGCTGGCGTGAAAGAGAAGTACCTGAGC GAGTACTGCTTCAGCGGCACCTACATCCTGAGCCTGCTGCTGCAGGG CTACCACTTCACCGCCGATAGCTGGGAGCACATCCACTTCATCGGCAA GATTCAGGGCAGCGACGCCGGCTGGACACTGGGCTACATGCTGAATC TGACCAACATGATCCCCGCCGAGCAGCCCCTGAGCACACCTCTGAGC CACAGCACC
EP14_N292Q		
SEQ ID NO: 90	胺基酸	TQNKALPENVKYGIVLDAGSSHTSLYIYKWPAEKENDTGVVHQVEECRVK GPGISKFVQKVNEIGIYLTDCMERAREVIPRSQHQETPVYLGATAGMRLLR MESEELADRVLDVVERSLSNYPFDFQGARIITGQEEGAYGWITINYLLGKF

		SQKNQETFGALDLGGASTQVTFVPQNQTIESPDNALQFRLYGKDYNVYT HSFLCYGKDQALWQKLAKDIQVASNEILRDPCFHPGYKKVVQVSDLYKTP CTKRFEMTLPFQQFEIQGIGNYQQCHQSILELFNTSYCPYSQCAFNGIFLP PLQGDFGAFSAFYSVMKFLNLTSEKVSQEKVTEMMKKFCAQPWEEIKTS YAGVKEKYLSEYCFSGTYILSLLLQGYHFTADSWEHIHFIGKIQGSDAGWT LGYMLNLTNMIPAEQPLSTPLSHST
SEQ ID NO: 91	DNA	ACCCAGAACAAGGCCCTGCCCGAGAACGTGAAGTACGGCATCGTGCT GGATGCCGGCAGCAGCCACACCAGCCTGTACATCTACAAGTGGCCTG CCGAGAAAGAAAACGACACCGGCGTGGTGCATCAGGTGGAAGAGTGC AGAGTGAAGGGCCCTGGCATCAGCAAGTTCGTGCAGAAAGTGAACGA GATCGGCATCTACCTGACCGACTGCATGGAACGGGCCAGGGAAGTGA TCCCCAGAAGCCAGCACCAGGAAACCCCCGTGTATCTGGGAGCCACC GCCGGCATGAGACTGCTGAGAATGGAAAGCGAGGAACTGGCCGACC GGGTGCTGGACGTGGTGGAAAGAAGCCTGAGCAACTACCCATTCGAT TTTCAAGGCGCCAGAATCATCACCGGCCAGGAAGAAGGCGCCTACGG CTGGATCACCATCAACTACCTGCTGGGCAAGTTCAGCCAGAAGAATCA GGAAACCTTCGGCGCCCTGGACCTGGGCGGAGCTTCTACCCAAGTGA CCTTCGTGCCCCAGAATCAGACCATCGAGAGCCCCGACAACGCCCTG CAGTTCCGGCTGTACGGCAAGGACTACAATGTGTACACCCACAGCTTT CTGTGCTACGGAAAGGACCAGGCTCTGTGGCAGAAGCTGGCCAAGGA CATCCAGGTGGCCAGCAACGAGATCCTGCGGGACCCTTGCTTCCACC CCGGCTACAAGAAAGTCGTGCAGGTGTCCGACCTGTACAAGACCCCC TGCACCAAGAGATTCGAGATGACCCTGCCCTTCCAGCAGTTCGAGATC CAGGGCATCGGCAATTACCAGCAGTGCCACCAGAGCATCCTGGAACT GTTCAACACCAGCTACTGCCCCTACAGCCAGTGCGCCTTCAACGGCA TCTTCCTGCCACCTCTGCAGGGGGATTTCGGCGCCTTCAGCGCCTTC TACTCCGTGATGAAGTTCCTGAACCTGACCAGCGAGAAGGTGTCCCA GGAAAAAGTGACAGAGATGATGAAGAAGTTCTGCGCCCAGCCCTGGG AGGAAATCAAGACCTCCTACGCTGGCGTGAAAGAGAAGTACCTGAGC GAGTACTGCTTCAGCGGCACCTACATCCTGAGCCTGCTGCTGCAGGG CTACCACTTCACCGCCGATAGCTGGGAGCACATCCACTTCATCGGCAA GATTCAGGGCAGCGACGCCGGCTGGACACTGGGCTACATGCTGAATC TGACCAACATGATCCCCGCCGAGCAGCCCCTGAGCACACCTCTGAGC CACAGCACC
EP14_N327Q		
SEQ ID NO: 92	胺基酸	TQNKALPENVKYGIVLDAGSSHTSLYIYKWPAEKENDTGVVHQVEECRVK GPGISKFVQKVNEIGIYLTDCMERAREVIPRSQHQETPVYLGATAGMRLLR MESEELADRVLDVVERSLSNYPFDFQGARIITGQEEGAYGWITINYLLGKF SQKNQETFGALDLGGASTQVTFVPQNQTIESPDNALQFRLYGKDYNVYT HSFLCYGKDQALWQKLAKDIQVASNEILRDPCFHPGYKKVVNVSDLYKTP CTKRFEMTLPFQQFEIQGIGNYQQCHQSILELFQTSYCPYSQCAFNGIFLP PLQGDFGAFSAFYSVMKFLNLTSEKVSQEKVTEMMKKFCAQPWEEIKTS YAGVKEKYLSEYCFSGTYILSLLLQGYHFTADSWEHIHFIGKIQGSDAGWT LGYMLNLTNMIPAEQPLSTPLSHST
SEQ ID NO: 93	DNA	ACCCAGAACAAGGCCCTGCCCGAGAACGTGAAGTACGGCATCGTGCT GGATGCCGGCAGCAGCCACACCAGCCTGTACATCTACAAGTGGCCTG CCGAGAAAGAAAACGACACCGGCGTGGTGCATCAGGTGGAAGAGTGC AGAGTGAAGGGCCCTGGCATCAGCAAGTTCGTGCAGAAAGTGAACGA GATCGGCATCTACCTGACCGACTGCATGGAACGGGCCAGGGAAGTGA TCCCCAGAAGCCAGCACCAGGAAACCCCCGTGTATCTGGGAGCCACC GCCGGCATGAGACTGCTGAGAATGGAAAGCGAGGAACTGGCCGACC GGGTGCTGGACGTGGTGGAAAGAAGCCTGAGCAACTACCCATTCGAT TTTCAAGGCGCCAGAATCATCACCGGCCAGGAAGAAGGCGCCTACGG CTGGATCACCATCAACTACCTGCTGGGCAAGTTCAGCCAGAAGAATCA GGAAACCTTCGGCGCCCTGGACCTGGGCGGAGCTTCTACCCAAGTGA CCTTCGTGCCCCAGAATCAGACCATCGAGAGCCCCGACAACGCCCTG CAGTTCCGGCTGTACGGCAAGGACTACAATGTGTACACCCACAGCTTT CTGTGCTACGGAAAGGACCAGGCTCTGTGGCAGAAGCTGGCCAAGGA CATCCAGGTGGCCAGCAACGAGATCCTGCGGGACCCTTGCTTCCACC CCGGCTACAAGAAAGTCGTGAACGTGTCCGACCTGTACAAGACCCCC

		TGCACCAAGAGATTCGAGATGACCCTGCCCTTCCAGCAGTTCGAGATC CAGGGCATCGGCAATTACCAGCAGTGCCACCAGAGCATCCTGGAACT GTTCCAGACCAGCTACTGCCCCTACAGCCAGTGCGCCTTCAACGGCA TCTTCCTGCCACCTCTGCAGGGGGATTTCGGCGCCTTCAGCGCCTTC TACTCCGTGATGAAGTTCCTGAACCTGACCAGCGAGAAGGTGTCCCA GGAAAAAGTGACAGAGATGATGAAGAAGTTCTGCGCCCAGCCCTGGG AGGAAATCAAGACCTCCTACGCTGGCGTGAAAGAGAAGTACCTGAGC GAGTACTGCTTCAGCGGCACCTACATCCTGAGCCTGCTGCTGCAGGG CTACCACTTCACCGCCGATAGCTGGGAGCACATCCACTTCATCGGCAA GATTCAGGGCAGCGACGCCGGCTGGACACTGGGCTACATGCTGAATC TGACCAACATGATCCCCGCCGAGCAGCCCCTGAGCACACCTCTGAGC CACAGCACC
EP14_N371Q		
SEQ ID NO: 94	胺基酸	TQNKALPENVKYGIVLDAGSSHTSLYIYKWPAEKENDTGVVHQVEECRVK GPGISKFVQKVNEIGIYLTDCMERAREVIPRSQHQETPVYLGATAGMRLLR MESEELADRVLDVVERSLSNYPFDFQGARIITGQEEGAYGWITINYLLGKF SQKNQETFGALDLGGASTQVTFVPQNQTIESPDNALQFRLYGKDYNVYT HSFLCYGKDQALWQKLAKDIQVASNEILRDPCFHPGYKKVVNVSDLYKTP CTKRFEMTLPFQQFEIQGIGNYQQCHQSILELFNTSYCPYSQCAFNGIFLP PLQGDFGAFSAFYSVMKFLQLTSEKVSQEKVTEMMKKFCAQPWEEIKTS YAGVKEKYLSEYCFSGTYILSLLLQGYHFTADSWEHIHFIGKIQGSDAGWT LGYMLNLTNMIPAEQPLSTPLSHST
SEQ ID NO: 95	DNA	ACCCAGAACAAGGCCCTGCCCGAGAACGTGAAGTACGGCATCGTGCT GGATGCCGGCAGCAGCCACACCAGCCTGTACATCTACAAGTGGCCTG CCGAGAAAGAAAACGACACCGGCGTGGTGCATCAGGTGGAAGAGTGC AGAGTGAAGGGCCCTGGCATCAGCAAGTTCGTGCAGAAAGTGAACGA GATCGGCATCTACCTGACCGACTGCATGGAACGGGCCAGGGAAGTGA TCCCCAGAAGCCAGCACCAGGAAACCCCCGTGTATCTGGGAGCCACC GCCGGCATGAGACTGCTGAGAATGGAAAGCGAGGAACTGGCCGACC GGGTGCTGGACGTGGTGGAAAGAAGCCTGAGCAACTACCCATTCGAT TTTCAAGGCGCCAGAATCATCACCGGCCAGGAAGAAGGCGCCTACGG CTGGATCACCATCAACTACCTGCTGGGCAAGTTCAGCCAGAAGAATCA GGAAACCTTCGGCGCCCTGGACCTGGGCGGAGCTTCTACCCAAGTGA CCTTCGTGCCCCAGAATCAGACCATCGAGAGCCCCGACAACGCCCTG CAGTTCCGGCTGTACGGCAAGGACTACAATGTGTACACCCACAGCTTT CTGTGCTACGGAAAGGACCAGGCTCTGTGGCAGAAGCTGGCCAAGGA CATCCAGGTGGCCAGCAACGAGATCCTGCGGGACCCTTGCTTCCACC CCGGCTACAAGAAAGTCGTGAACGTGTCCGACCTGTACAAGACCCCC TGCACCAAGAGATTCGAGATGACCCTGCCCTTCCAGCAGTTCGAGATC CAGGGCATCGGCAATTACCAGCAGTGCCACCAGAGCATCCTGGAACT GTTCAACACCAGCTACTGCCCCTACAGCCAGTGCGCCTTCAACGGCA TCTTCCTGCCACCTCTGCAGGGGGATTTCGGCGCCTTCAGCGCCTTC TACTCCGTGATGAAGTTCCTGCAGCTGACCAGCGAGAAGGTGTCCCA GGAAAAAGTGACAGAGATGATGAAGAAGTTCTGCGCCCAGCCCTGGG AGGAAATCAAGACCTCCTACGCTGGCGTGAAAGAGAAGTACCTGAGC GAGTACTGCTTCAGCGGCACCTACATCCTGAGCCTGCTGCTGCAGGG CTACCACTTCACCGCCGATAGCTGGGAGCACATCCACTTCATCGGCAA GATTCAGGGCAGCGACGCCGGCTGGACACTGGGCTACATGCTGAATC TGACCAACATGATCCCCGCCGAGCAGCCCCTGAGCACACCTCTGAGC CACAGCACC
EP14_N457Q		
SEQ ID NO: 96	胺基酸	TQNKALPENVKYGIVLDAGSSHTSLYIYKWPAEKENDTGVVHQVEECRVK GPGISKFVQKVNEIGIYLTDCMERAREVIPRSQHQETPVYLGATAGMRLLR MESEELADRVLDVVERSLSNYPFDFQGARIITGQEEGAYGWITINYLLGKF SQKNQETFGALDLGGASTQVTFVPQNQTIESPDNALQFRLYGKDYNVYT HSFLCYGKDQALWQKLAKDIQVASNEILRDPCFHPGYKKVVNVSDLYKTP CTKRFEMTLPFQQFEIQGIGNYQQCHQSILELFNTSYCPYSQCAFNGIFLP PLQGDFGAFSAFYSVMKFLNLTSEKVSQEKVTEMMKKFCAQPWEEIKTS

		YAGVKEKYLSEYCFSGTYILSLLLQGYHFTADSWEHIHFIGKIQGSDAGWT LGYMLQLTNMIPAEQPLSTPLSHST
SEQ ID NO: 97	DNA	ACCCAGAACAAGGCCCTGCCCGAGAACGTGAAGTACGGCATCGTGCT GGATGCCGGCAGCAGCCACACCAGCCTGTACATCTACAAGTGGCCTG CCGAGAAAGAAAACGACACCGGCGTGGTGCATCAGGTGGAAGAGTGC AGAGTGAAGGGCCCTGGCATCAGCAAGTTCGTGCAGAAAGTGAACGA GATCGGCATCTACCTGACCGACTGCATGGAACGGGCCAGGGAAGTGA TCCCCAGAAGCCAGCACCAGGAAACCCCCGTGTATCTGGGAGCCACC GCCGGCATGAGACTGCTGAGAATGGAAAGCGAGGAACTGGCCGACC GGGTGCTGGACGTGGTGGAAAGAAGCCTGAGCAACTACCCATTCGAT TTTCAAGGCGCCAGAATCATCACCGGCCAGGAAGAAGGCGCCTACGG CTGGATCACCATCAACTACCTGCTGGGCAAGTTCAGCCAGAAGAATCA GGAAACCTTCGGCGCCCTGGACCTGGGCGGAGCTTCTACCCAAGTGA CCTTCGTGCCCCAGAATCAGACCATCGAGAGCCCCGACAACGCCCTG CAGTTCCGGCTGTACGGCAAGGACTACAATGTGTACACCCACAGCTTT CTGTGCTACGGAAAGGACCAGGCTCTGTGGCAGAAGCTGGCCAAGGA CATCCAGGTGGCCAGCAACGAGATCCTGCGGGACCCTTGCTTCCACC CCGGCTACAAGAAAGTCGTGAACGTGTCCGACCTGTACAAGACCCCC TGCACCAAGAGATTCGAGATGACCCTGCCCTTCCAGCAGTTCGAGATC CAGGGCATCGGCAATTACCAGCAGTGCCACCAGAGCATCCTGGAACT GTTCAACACCAGCTACTGCCCCTACAGCCAGTGCGCCTTCAACGGCA TCTTCCTGCCACCTCTGCAGGGGGATTTCGGCGCCTTCAGCGCCTTC TACTCCGTGATGAAGTTCCTGAACCTGACCAGCGAGAAGGTGTCCCA GGAAAAAGTGACAGAGATGATGAAGAAGTTCTGCGCCCAGCCCTGGG AGGAAATCAAGACCTCCTACGCTGGCGTGAAAGAGAAGTACCTGAGC GAGTACTGCTTCAGCGGCACCTACATCCTGAGCCTGCTGCTGCAGGG CTACCACTTCACCGCCGATAGCTGGGAGCACATCCACTTCATCGGCAA GATTCAGGGCAGCGACGCCGGCTGGACACTGGGCTACATGCTGCAG CTGACCAACATGATCCCCGCCGAGCAGCCCCTGAGCACACCTCTGAG CCACAGCACC
SEQ ID NO: 98	plusMIL 反義引物	TGCCCTACGAGACAAACAATCAGGAAACCTTCGGCGCCCTGGACCTG GGCGGAGCTTCTACCCAAGTGA
CD39（aa39-469）		
SEQ ID NO: 99	胺基酸	QNKALPENVKYGIVLDAGSSHTSLYIYKWPAEKENDTGVVHQVEECRVK GPGISKFVQKVNEIGIYLTDCMERAREVIPRSQHQETPVYLGATAGMRLLR MESEELADRVLDVVERSLSNYPFDFQGARIITGQEEGAYGWITINYLLGKF SQKTRWFSIVPYETNNQETFGALDLGGASTQVTFVPQNQTIESPDNALQF RLYGKDYNVYTHSFLCYGKDQALWQKLAKDIQVASNEILRDPCFHPGYKK VVNVSDLYKTPCTKRFEMTLPFQQFEIQGIGNYQQCHQSILELFNTSYCPY SQCAFNGIFLPPLQGDFGAFSAFYFVMKFLNLTSEKVSQEKVTEMMKKFC AQPWEEIKTSYAGVKEKYLSEYCFSGTYILSLLLQGYHFTADSWEHIHFIG KIQGSDAGWTLGYMLNLTNMIPAEQPLS
SEQ ID NO: 100	DNA	CAGAACAAAGCCCTGCCCGAGAACGTGAAGTACGGCATCGTGCTGGA TGCCGGCAGCAGCCACACCAGCCTGTACATCTACAAGTGGCCTGCCG AGAAAGAAAACGATACCGGTGTCGTGCACCAGGTGGAAGAGTGCAGA GTGAAGGGCCCTGGCATCAGCAAGTTCGTGCAGAAAGTGAACGAGAT CGGCATCTACCTGACCGACTGCATGGAACGGGCCAGAGAAGTGATCC CCAGAAGCCAGCACCAGGAAACCCCCGTGTACCTGGGAGCCACAGC CGGCATGAGACTGCTGCGGATGGAAAGCGAGGAACTGGCCGACAGA GTGCTGGACGTGGTGGAAAGAAGCCTGAGCAACTACCCATTCGATTTT CAAGGGGCCAGAATCATCACCGGCCAGGAAGAGGGCGCTTACGGCT GGATCACCATCAACTACCTGCTGGGCAAGTTCAGCCAGAAAACCCGG TGGTTCAGCATCGTGCCCTACGAGACAAACAATCAGGAAACCTTCGGA GCCCTGGACCTGGGCGGAGCCTCTACCCAAGTGACCTTCGTGCCCCA GAATCAGACCATCGAGAGCCCCGACAACGCCCTGCAGTTCCGGCTGT ACGGCAAGGACTACAATGTGTACACCCACAGCTTTCTGTGCTACGGAA

		AGGACCAGGCCCTGTGGCAGAAGCTGGCCAAGGACATCCAGGTGGC CAGCAACGAGATCCTGCGGGACCCTTGCTTCCACCCCGGCTACAAGA AAGTCGTGAACGTGTCCGACCTGTACAAGACCCCCTGCACCAAGAGA TTCGAGATGACCCTGCCCTTCCAGCAGTTCGAGATCCAGGGCATCGG CAACTACCAGCAGTGCCACCAGAGCATCCTGGAACTGTTCAACACCA GCTACTGCCCCTACAGCCAGTGCGCCTTCAACGGCATCTTCCTGCCA CCTCTGCAGGGGGACTTCGGCGCTTTCAGCGCCTTCTACTTCGTGAT GAAGTTCCTGAACCTGACCAGCGAGAAGGTGTCCCAGGAAAAAGTGA CAGAGATGATGAAGAAGTTCTGCGCCCAGCCCTGGGAGGAAATCAAG ACCTCCTACGCTGGCGTGAAAGAGAAGTACCTGAGCGAGTACTGCTT CAGCGGTACCTACATCCTGAGCCTGCTGCTGCAGGGCTACCACTTCA CCGCCGATAGCTGGGAGCACATCCACTTCATCGGCAAGATTCAGGGC AGCGACGCCGGCTGGACACTGGGCTACATGCTGAATCTGACCAACAT GATCCCCGCCGAGCAGCCCCTGAGC
CD39（aa46-476）		
SEQ ID NO: 101	胺基酸	NVKYGIVLDAGSSHTSLYIYKWPAEKENDTGVVHQVEECRVKGPGISKFV QKVNEIGIYLTDCMERAREVIPRSQHQETPVYLGATAGMRLLRMESEELA DRVLDVVERSLSNYPFDFQGARIITGQEEGAYGWITINYLLGKFSQKTRW FSIVPYETNNQETFGALDLGGASTQVTFVPQNQTIESPDNALQFRLYGKD YNVYTHSFLCYGKDQALWQKLAKDIQVASNEILRDPCFHPGYKKVVNVSD LYKTPCTKRFEMTLPFQQFEIQGIGNYQQCHQSILELFNTSYCPYSQCAF NGIFLPPLQGDFGAFSAFYFVMKFLNLTSEKVSQEKVTEMMKKFCAQPW EEIKTSYAGVKEKYLSEYCFSGTYILSLLLQGYHFTADSWEHIHFIGKIQGS DAGWTLGYMLNLTNMIPAEQPLSTPLSHST
SEQ ID NO: 102	DNA	AACGTGAAGTACGGCATCGTGCTGGATGCCGGCAGCAGCCACACCAG CCTGTACATCTACAAGTGGCCTGCCGAGAAAGAAAACGATACCGGTGT CGTGCACCAGGTGGAAGAGTGCAGAGTGAAGGGCCCTGGCATCAGC AAGTTCGTGCAGAAAGTGAACGAGATCGGCATCTACCTGACCGACTG CATGGAACGGGCCAGAGAAGTGATCCCCAGAAGCCAGCACCAGGAAA CCCCCGTGTACCTGGGAGCCACAGCCGGCATGAGACTGCTGCGGAT GGAAAGCGAGGAACTGGCCGACAGAGTGCTGGACGTGGTGGAAAGA AGCCTGAGCAACTACCCATTCGATTTTCAAGGGGCCAGAATCATCACC GGCCAGGAAGAGGGCGCTTACGGCTGGATCACCATCAACTACCTGCT GGGCAAGTTCAGCCAGAAAACCCGGTGGTTCAGCATCGTGCCCTACG AGACAAACAATCAGGAAACCTTCGGAGCCCTGGACCTGGGCGGAGCC TCTACCCAAGTGACCTTCGTGCCCCAGAATCAGACCATCGAGAGCCC CGACAACGCCCTGCAGTTCCGGCTGTACGGCAAGGACTACAATGTGT ACACCCACAGCTTTCTGTGCTACGGAAAGGACCAGGCCCTGTGGCAG AAGCTGGCCAAGGACATCCAGGTGGCCAGCAACGAGATCCTGCGGG ACCCTTGCTTCCACCCCGGCTACAAGAAAGTCGTGAACGTGTCCGAC CTGTACAAGACCCCCTGCACCAAGAGATTCGAGATGACCCTGCCCTTC CAGCAGTTCGAGATCCAGGGCATCGGCAACTACCAGCAGTGCCACCA GAGCATCCTGGAACTGTTCAACACCAGCTACTGCCCCTACAGCCAGT GCGCCTTCAACGGCATCTTCCTGCCACCTCTGCAGGGGGACTTCGGC GCTTTCAGCGCCTTCTACTTCGTGATGAAGTTCCTGAACCTGACCAGC GAGAAGGTGTCCCAGGAAAAAGTGACAGAGATGATGAAGAAGTTCTG CGCCCAGCCCTGGGAGGAAATCAAGACCTCCTACGCTGGCGTGAAAG AGAAGTACCTGAGCGAGTACTGCTTCAGCGGTACCTACATCCTGAGC CTGCTGCTGCAGGGCTACCACTTCACCGCCGATAGCTGGGAGCACAT CCACTTCATCGGCAAGATTCAGGGCAGCGACGCCGGCTGGACACTGG GCTACATGCTGAATCTGACCAACATGATCCCCGCCGAGCAGCCCCTG AGCACACCTCTGTCTCACAGCACC
CD39（aa46-461）		
SEQ ID	胺基酸	NVKYGIVLDAGSSHTSLYIYKWPAEKENDTGVVHQVEECRVKGPGISKFV QKVNEIGIYLTDCMERAREVIPRSQHQETPVYLGATAGMRLLRMESEELA

NO: 103		DRVLDVVERSLSNYPFDFQGARIITGQEEGAYGWITINYLLGKFSQKTRW FSIVPYETNNQETFGALDLGGASTQVTFVPQNQTIESPDNALQFRLYGKD YNVYTHSFLCYGKDQALWQKLAKDIQVASNEILRDPCFHPGYKKVVNVSD LYKTPCTKRFEMTLPFQQFEIQGIGNYQQCHQSILELFNTSYCPYSQCAF NGIFLPPLQGDFGAFSAFYFVMKFLNLTSEKVSQEKVTEMMKKFCAQPW EEIKTSYAGVKEKYLSEYCFSGTYILSLLLQGYHFTADSWEHIHFIGKIQGS DAGWTLGYMLNLTNM
SEQ ID NO: 104	DNA	AACGTGAAGTACGGCATCGTGCTGGATGCCGGCAGCAGCCACACCAG CCTGTACATCTACAAGTGGCCTGCCGAGAAAGAAAACGATACCGGTGT CGTGCACCAGGTGGAAGAGTGCAGAGTGAAGGGCCCTGGCATCAGC AAGTTCGTGCAGAAAGTGAACGAGATCGGCATCTACCTGACCGACTG CATGGAACGGGCCAGAGAAGTGATCCCCAGAAGCCAGCACCAGGAAA CCCCCGTGTACCTGGGAGCCACAGCCGGCATGAGACTGCTGCGGAT GGAAAGCGAGGAACTGGCCGACAGAGTGCTGGACGTGGTGGAAAGA AGCCTGAGCAACTACCCATTCGATTTTCAAGGGGCCAGAATCATCACC GGCCAGGAAGAGGGCGCTTACGGCTGGATCACCATCAACTACCTGCT GGGCAAGTTCAGCCAGAAAACCCGGTGGTTCAGCATCGTGCCCTACG AGACAAACAATCAGGAAACCTTCGGAGCCCTGGACCTGGGCGGAGCC TCTACCCAAGTGACCTTCGTGCCCCAGAATCAGACCATCGAGAGCCC CGACAACGCCCTGCAGTTCCGGCTGTACGGCAAGGACTACAATGTGT ACACCCACAGCTTTCTGTGCTACGGAAAGGACCAGGCCCTGTGGCAG AAGCTGGCCAAGGACATCCAGGTGGCCAGCAACGAGATCCTGCGGG ACCCTTGCTTCCACCCCGGCTACAAGAAAGTCGTGAACGTGTCCGAC CTGTACAAGACCCCCTGCACCAAGAGATTCGAGATGACCCTGCCCTTC CAGCAGTTCGAGATCCAGGGCATCGGCAACTACCAGCAGTGCCACCA GAGCATCCTGGAACTGTTCAACACCAGCTACTGCCCCTACAGCCAGT GCGCCTTCAACGGCATCTTCCTGCCACCTCTGCAGGGGGACTTCGGC GCTTTCAGCGCCTTCTACTTCGTGATGAAGTTCCTGAACCTGACCAGC GAGAAGGTGTCCCAGGAAAAAGTGACAGAGATGATGAAGAAGTTCTG CGCCCAGCCCTGGGAGGAAATCAAGACCTCCTACGCTGGCGTGAAAG AGAAGTACCTGAGCGAGTACTGCTTCAGCGGTACCTACATCCTGAGC CTGCTGCTGCAGGGCTACCACTTCACCGCCGATAGCTGGGAGCACAT CCACTTCATCGGCAAGATTCAGGGCAGCGACGCCGGCTGGACACTGG GCTACATGCTGAATCTGACCAACATG
CD39（aa46-461）_dMIL（193-204）		
SEQ ID NO: 105	胺基酸	NVKYGIVLDAGSSHTSLYIYKWPAEKENDTGVVHQVEECRVKGPGISKFV QKVNEIGIYLTDCMERAREVIPRSQHQETPVYLGATAGMRLLRMESEELA DRVLDVVERSLSNYPFDFQGARIITGQEEGAYGWITINYLLGKFSQKNQET FGALDLGGASTQVTFVPQNQTIESPDNALQFRLYGKDYNVYTHSFLCYGK DQALWQKLAKDIQVASNEILRDPCFHPGYKKVVNVSDLYKTPCTKRFEMT LPFQQFEIQGIGNYQQCHQSILELFNTSYCPYSQCAFNGIFLPPLQGDFGA FSAFYFVMKFLNLTSEKVSQEKVTEMMKKFCAQPWEEIKTSYAGVKEKYL SEYCFSGTYILSLLLQGYHFTADSWEHIHFIGKIQGSDAGWTLGYMLNLTN M
SEQ ID NO: 106	DNA	AACGTGAAGTACGGCATCGTGCTGGATGCCGGCAGCAGCCACACCAG CCTGTACATCTACAAGTGGCCTGCCGAGAAAGAAAACGATACCGGTGT CGTGCACCAGGTGGAAGAGTGCAGAGTGAAGGGCCCTGGCATCAGC AAGTTCGTGCAGAAAGTGAACGAGATCGGCATCTACCTGACCGACTG CATGGAACGGGCCAGAGAAGTGATCCCCAGAAGCCAGCACCAGGAAA CCCCCGTGTACCTGGGAGCCACAGCCGGCATGAGACTGCTGCGGAT GGAAAGCGAGGAACTGGCCGACAGAGTGCTGGACGTGGTGGAAAGA AGCCTGAGCAACTACCCATTCGATTTTCAAGGGGCCAGAATCATCACC GGCCAGGAAGAGGGCGCTTACGGCTGGATCACCATCAACTACCTGCT GGGCAAGTTCAGCCAGAAAAATCAGGAAACCTTCGGAGCCCTGGACC

		TGGGCGGAGCCTCTACCCAAGTGACCTTCGTGCCCCAGAATCAGACC ATCGAGAGCCCCGACAACGCCCTGCAGTTCCGGCTGTACGGCAAGGA CTACAATGTGTACACCCACAGCTTTCTGTGCTACGGAAAGGACCAGGC CCTGTGGCAGAAGCTGGCCAAGGACATCCAGGTGGCCAGCAACGAG ATCCTGCGGGACCCTTGCTTCCACCCCGGCTACAAGAAAGTCGTGAA CGTGTCCGACCTGTACAAGACCCCCTGCACCAAGAGATTCGAGATGA CCCTGCCCTTCCAGCAGTTCGAGATCCAGGGCATCGGCAACTACCAG CAGTGCCACCAGAGCATCCTGGAACTGTTCAACACCAGCTACTGCCC CTACAGCCAGTGCGCCTTCAACGGCATCTTCCTGCCACCTCTGCAGG GGGACTTCGGCGCTTTCAGCGCCTTCTACTTCGTGATGAAGTTCCTGA ACCTGACCAGCGAGAAGGTGTCCCAGGAAAAAGTGACAGAGATGATG AAGAAGTTCTGCGCCCAGCCCTGGGAGGAAATCAAGACCTCCTACGC TGGCGTGAAAGAGAAGTACCTGAGCGAGTACTGCTTCAGCGGTACCT ACATCCTGAGCCTGCTGCTGCAGGGCTACCACTTCACCGCCGATAGC TGGGAGCACATCCACTTCATCGGCAAGATTCAGGGCAGCGACGCCGG CTGGACACTGGGCTACATGCTGAATCTGACCAACATG
CD39（aa46-461）_δcys1		
SEQ ID NO: 107	胺基酸	NVKYGIVLDAGSSHTSLYIYKWPAEKENDTGVVHQVEEARVKGPGISKFV QKVNEIGIYLTDAMERAREVIPRSQHQETPVYLGATAGMRLLRMESEELA DRVLDVVERSLSNYPFDFQGARIITGQEEGAYGWITINYLLGKFSQKTRW FSIVPYETNNQETFGALDLGGASTQVTFVPQNQTIESPDNALQFRLYGKD YNVYTHSFLCYGKDQALWQKLAKDIQVASNEILRDPCFHPGYKKVVNVSD LYKTPCTKRFEMTLPFQQFEIQGIGNYQQCHQSILELFNTSYCPYSQCAF NGIFLPPLQGDFGAFSAFYFVMKFLNLTSEKVSQEKVTEMMKKFCAQPW EEIKTSYAGVKEKYLSEYCFSGTYILSLLLQGYHFTADSWEHIHFIGKIQGS DAGWTLGYMLNLTNM
SEQ ID NO: 108	DNA	AACGTGAAGTACGGCATCGTGCTGGATGCCGGCAGCAGCCACACCAG CCTGTACATCTACAAGTGGCCTGCCGAGAAAGAAAACGATACCGGTGT CGTGCACCAGGTGGAAGAGGCCAGAGTGAAGGGCCCTGGCATCAGC AAGTTCGTGCAGAAAGTGAACGAGATCGGCATCTACCTGACCGACGC CATGGAACGGGCCAGAGAAGTGATCCCCAGAAGCCAGCACCAGGAAA CCCCCGTGTACCTGGGAGCCACAGCCGGCATGAGACTGCTGCGGAT GGAAAGCGAGGAACTGGCCGACAGAGTGCTGGACGTGGTGGAAAGA AGCCTGAGCAACTACCCATTCGATTTTCAAGGGGCCAGAATCATCACC GGCCAGGAAGAGGGCGCTTACGGCTGGATCACCATCAACTACCTGCT GGGCAAGTTCAGCCAGAAAACCCGGTGGTTCAGCATCGTGCCCTACG AGACAAACAATCAGGAAACCTTCGGAGCCCTGGACCTGGGCGGAGCC TCTACCCAAGTGACCTTCGTGCCCCAGAATCAGACCATCGAGAGCCC CGACAACGCCCTGCAGTTCCGGCTGTACGGCAAGGACTACAATGTGT ACACCCACAGCTTTCTGTGCTACGGAAAGGACCAGGCCCTGTGGCAG AAGCTGGCCAAGGACATCCAGGTGGCCAGCAACGAGATCCTGCGGG ACCCTTGCTTCCACCCCGGCTACAAGAAAGTCGTGAACGTGTCCGAC CTGTACAAGACCCCCTGCACCAAGAGATTCGAGATGACCCTGCCCTTC CAGCAGTTCGAGATCCAGGGCATCGGCAACTACCAGCAGTGCCACCA GAGCATCCTGGAACTGTTCAACACCAGCTACTGCCCCTACAGCCAGT GCGCCTTCAACGGCATCTTCCTGCCACCTCTGCAGGGGGACTTCGGC GCTTTCAGCGCCTTCTACTTCGTGATGAAGTTCCTGAACCTGACCAGC GAGAAGGTGTCCCAGGAAAAAGTGACAGAGATGATGAAGAAGTTCTG CGCCCAGCCCTGGGAGGAAATCAAGACCTCCTACGCTGGCGTGAAAG AGAAGTACCTGAGCGAGTACTGCTTCAGCGGTACCTACATCCTGAGC CTGCTGCTGCAGGGCTACCACTTCACCGCCGATAGCTGGGAGCACAT CCACTTCATCGGCAAGATTCAGGGCAGCGACGCCGGCTGGACACTGG GCTACATGCTGAATCTGACCAACATG
CD39（aa46-461）_δ		

cys2		
SEQ ID NO: 109	胺基酸	NVKYGIVLDAGSSHTSLYIYKWPAEKENDTGVVHQVEECRVKGPGISKFV QKVNEIGIYLTDCMERAREVIPRSQHQETPVYLGATAGMRLLRMESEELA DRVLDVVERSLSNYPFDFQGARIITGQEEGAYGWITINYLLGKFSQKTRW FSIVPYETNNQETFGALDLGGASTQVTFVPQNQTIESPDNALQFRLYGKD YNVYTHSFLCYGKDQALWQKLAKDIQVASNEILRDPAFHPGYKKVVNVSD LYKTPCTKRFEMTLPFQQFEIQGIGNYQQAHQSILELFNTSYCPYSQCAFN GIFLPPLQGDFGAFSAFYFVMKFLNLTSEKVSQEKVTEMMKKFCAQPWE EIKTSYAGVKEKYLSEYCFSGTYILSLLLQGYHFTADSWEHIHFIGKIQGSD AGWTLGYMLNLTNM
SEQ ID NO: 110	DNA	AACGTGAAGTACGGCATCGTGCTGGATGCCGGCAGCAGCCACACCAG CCTGTACATCTACAAGTGGCCTGCCGAGAAAGAAAACGATACCGGTGT CGTGCACCAGGTGGAAGAGTGCAGAGTGAAGGGCCCTGGCATCAGC AAGTTCGTGCAGAAAGTGAACGAGATCGGCATCTACCTGACCGACTG CATGGAACGGGCCAGAGAAGTGATCCCCAGAAGCCAGCACCAGGAAA CCCCCGTGTACCTGGGAGCCACAGCCGGCATGAGACTGCTGCGGAT GGAAAGCGAGGAACTGGCCGACAGAGTGCTGGACGTGGTGGAAAGA AGCCTGAGCAACTACCCATTCGATTTTCAAGGGGCCAGAATCATCACC GGCCAGGAAGAGGGCGCTTACGGCTGGATCACCATCAACTACCTGCT GGGCAAGTTCAGCCAGAAAACCCGGTGGTTCAGCATCGTGCCCTACG AGACAAACAATCAGGAAACCTTCGGAGCCCTGGACCTGGGCGGAGCC TCTACCCAAGTGACCTTCGTGCCCCAGAATCAGACCATCGAGAGCCC CGACAACGCCCTGCAGTTCCGGCTGTACGGCAAGGACTACAATGTGT ACACCCACAGCTTTCTGTGCTACGGAAAGGACCAGGCCCTGTGGCAG AAGCTGGCCAAGGACATCCAGGTGGCCAGCAACGAGATCCTGCGGG ACCCTGCCTTCCACCCCGGCTACAAGAAAGTCGTGAACGTGTCCGAC CTGTACAAGACCCCCTGCACCAAGAGATTCGAGATGACCCTGCCCTTC CAGCAGTTCGAGATCCAGGGCATCGGCAACTACCAGCAGGCCCACCA GAGCATCCTGGAACTGTTCAACACCAGCTACTGCCCCTACAGCCAGT GCGCCTTCAACGGCATCTTCCTGCCACCTCTGCAGGGGGACTTCGGC GCTTTCAGCGCCTTCTACTTCGTGATGAAGTTCCTGAACCTGACCAGC GAGAAGGTGTCCCAGGAAAAAGTGACAGAGATGATGAAGAAGTTCTG CGCCCAGCCCTGGGAGGAAATCAAGACCTCCTACGCTGGCGTGAAAG AGAAGTACCTGAGCGAGTACTGCTTCAGCGGTACCTACATCCTGAGC CTGCTGCTGCAGGGCTACCACTTCACCGCCGATAGCTGGGAGCACAT CCACTTCATCGGCAAGATTCAGGGCAGCGACGCCGGCTGGACACTGG GCTACATGCTGAATCTGACCAACATG
CD39（aa46-461）_δcys3		
SEQ ID NO: 111	胺基酸	NVKYGIVLDAGSSHTSLYIYKWPAEKENDTGVVHQVEECRVKGPGISKFV QKVNEIGIYLTDCMERAREVIPRSQHQETPVYLGATAGMRLLRMESEELA DRVLDVVERSLSNYPFDFQGARIITGQEEGAYGWITINYLLGKFSQKTRW FSIVPYETNNQETFGALDLGGASTQVTFVPQNQTIESPDNALQFRLYGKD YNVYTHSFLAYGKDQALWQKLAKDIQVASNEILRDPCFHPGYKKVVNVSD LYKTPATKRFEMTLPFQQFEIQGIGNYQQCHQSILELFNTSYCPYSQCAFN GIFLPPLQGDFGAFSAFYFVMKFLNLTSEKVSQEKVTEMMKKFCAQPWE EIKTSYAGVKEKYLSEYCFSGTYILSLLLQGYHFTADSWEHIHFIGKIQGSD AGWTLGYMLNLTNM
SEQ ID NO: 112	DNA	AACGTGAAGTACGGCATCGTGCTGGATGCCGGCAGCAGCCACACCAG CCTGTACATCTACAAGTGGCCTGCCGAGAAAGAAAACGATACCGGTGT CGTGCACCAGGTGGAAGAGTGCAGAGTGAAGGGCCCTGGCATCAGC AAGTTCGTGCAGAAAGTGAACGAGATCGGCATCTACCTGACCGACTG CATGGAACGGGCCAGAGAAGTGATCCCCAGAAGCCAGCACCAGGAAA CCCCCGTGTACCTGGGAGCCACAGCCGGCATGAGACTGCTGCGGAT GGAAAGCGAGGAACTGGCCGACAGAGTGCTGGACGTGGTGGAAAGA AGCCTGAGCAACTACCCATTCGATTTTCAAGGGGCCAGAATCATCACC GGCCAGGAAGAGGGCGCTTACGGCTGGATCACCATCAACTACCTGCT GGGCAAGTTCAGCCAGAAAACCCGGTGGTTCAGCATCGTGCCCTACG

		AGACAAACAATCAGGAAACCTTCGGAGCCCTGGACCTGGGCGGAGCC TCTACCCAAGTGACCTTCGTGCCCCAGAATCAGACCATCGAGAGCCC CGACAACGCCCTGCAGTTCCGGCTGTACGGCAAGGACTACAATGTGT ACACCCACAGCTTTCTGGCCTACGGAAAGGACCAGGCCCTGTGGCAG AAGCTGGCCAAGGACATCCAGGTGGCCAGCAACGAGATCCTGCGGG ACCCTTGCTTCCACCCCGGCTACAAGAAAGTCGTGAACGTGTCCGAC CTGTACAAGACCCCCGCCACCAAGAGATTCGAGATGACCCTGCCCTT CCAGCAGTTCGAGATCCAGGGCATCGGCAACTACCAGCAGTGCCACC AGAGCATCCTGGAACTGTTCAACACCAGCTACTGCCCCTACAGCCAGT GCGCCTTCAACGGCATCTTCCTGCCACCTCTGCAGGGGGACTTCGGC GCTTTCAGCGCCTTCTACTTCGTGATGAAGTTCCTGAACCTGACCAGC GAGAAGGTGTCCCAGGAAAAAGTGACAGAGATGATGAAGAAGTTCTG CGCCCAGCCCTGGGAGGAAATCAAGACCTCCTACGCTGGCGTGAAAG AGAAGTACCTGAGCGAGTACTGCTTCAGCGGTACCTACATCCTGAGC CTGCTGCTGCAGGGCTACCACTTCACCGCCGATAGCTGGGAGCACAT CCACTTCATCGGCAAGATTCAGGGCAGCGACGCCGGCTGGACACTGG GCTACATGCTGAATCTGACCAACATG
CD39（aa46-461）_δcys4		
SEQ ID NO: 113	胺基酸	NVKYGIVLDAGSSHTSLYIYKWPAEKENDTGVVHQVEECRVKGPGISKFV QKVNEIGIYLTDCMERAREVIPRSQHQETPVYLGATAGMRLLRMESEELA DRVLDVVERSLSNYPFDFQGARIITGQEEGAYGWITINYLLGKFSQKTRW FSIVPYETNNQETFGALDLGGASTQVTFVPQNQTIESPDNALQFRLYGKD YNVYTHSFLCYGKDQALWQKLAKDIQVASNEILRDPCFHPGYKKVVNVSD LYKTPCTKRFEMTLPFQQFEIQGIGNYQQCHQSILELFNTSYAPYSQAAFN GIFLPPLQGDFGAFSAFYFVMKFLNLTSEKVSQEKVTEMMKKFCAQPWE EIKTSYAGVKEKYLSEYCFSGTYILSLLLQGYHFTADSWEHIHFIGKIQGSD AGWTLGYMLNLTNM
SEQ ID NO: 114	DNA	AACGTGAAGTACGGCATCGTGCTGGATGCCGGCAGCAGCCACACCAG CCTGTACATCTACAAGTGGCCTGCCGAGAAAGAAAACGATACCGGTGT CGTGCACCAGGTGGAAGAGTGCAGAGTGAAGGGCCCTGGCATCAGC AAGTTCGTGCAGAAAGTGAACGAGATCGGCATCTACCTGACCGACTG CATGGAACGGGCCAGAGAAGTGATCCCCAGAAGCCAGCACCAGGAAA CCCCCGTGTACCTGGGAGCCACAGCCGGCATGAGACTGCTGCGGAT GGAAAGCGAGGAACTGGCCGACAGAGTGCTGGACGTGGTGGAAAGA AGCCTGAGCAACTACCCATTCGATTTTCAAGGGGCCAGAATCATCACC GGCCAGGAAGAGGGCGCTTACGGCTGGATCACCATCAACTACCTGCT GGGCAAGTTCAGCCAGAAAACCCGGTGGTTCAGCATCGTGCCCTACG AGACAAACAATCAGGAAACCTTCGGAGCCCTGGACCTGGGCGGAGCC TCTACCCAAGTGACCTTCGTGCCCCAGAATCAGACCATCGAGAGCCC CGACAACGCCCTGCAGTTCCGGCTGTACGGCAAGGACTACAATGTGT ACACCCACAGCTTTCTGTGCTACGGAAAGGACCAGGCCCTGTGGCAG AAGCTGGCCAAGGACATCCAGGTGGCCAGCAACGAGATCCTGCGGG ACCCTTGCTTCCACCCCGGCTACAAGAAAGTCGTGAACGTGTCCGAC CTGTACAAGACCCCCTGCACCAAGAGATTCGAGATGACCCTGCCCTTC CAGCAGTTCGAGATCCAGGGCATCGGCAACTACCAGCAGTGCCACCA GAGCATCCTGGAACTGTTCAACACCAGCTACGCCCCCTACAGCCAGG CCGCCTTCAACGGCATCTTCCTGCCACCTCTGCAGGGGGACTTCGGC GCTTTCAGCGCCTTCTACTTCGTGATGAAGTTCCTGAACCTGACCAGC GAGAAGGTGTCCCAGGAAAAAGTGACAGAGATGATGAAGAAGTTCTG CGCCCAGCCCTGGGAGGAAATCAAGACCTCCTACGCTGGCGTGAAAG AGAAGTACCTGAGCGAGTACTGCTTCAGCGGTACCTACATCCTGAGC CTGCTGCTGCAGGGCTACCACTTCACCGCCGATAGCTGGGAGCACAT CCACTTCATCGGCAAGATTCAGGGCAGCGACGCCGGCTGGACACTGG GCTACATGCTGAATCTGACCAACATG
CD39（aa46-4		

61）_δcys5		
SEQ ID NO: 115	胺基酸	NVKYGIVLDAGSSHTSLYIYKWPAEKENDTGVVHQVEECRVKGPGISKFV QKVNEIGIYLTDCMERAREVIPRSQHQETPVYLGATAGMRLLRMESEELA DRVLDVVERSLSNYPFDFQGARIITGQEEGAYGWITINYLLGKFSQKTRW FSIVPYETNNQETFGALDLGGASTQVTFVPQNQTIESPDNALQFRLYGKD YNVYTHSFLCYGKDQALWQKLAKDIQVASNEILRDPCFHPGYKKVVNVSD LYKTPCTKRFEMTLPFQQFEIQGIGNYQQCHQSILELFNTSYCPYSQCAF NGIFLPPLQGDFGAFSAFYFVMKFLNLTSEKVSQEKVTEMMKKFAAQPW EEIKTSYAGVKEKYLSEYAFSGTYILSLLLQGYHFTADSWEHIHFIGKIQGS DAGWTLGYMLNLTNM
SEQ ID NO: 116	DNA	AACGTGAAGTACGGCATCGTGCTGGATGCCGGCAGCAGCCACACCAG CCTGTACATCTACAAGTGGCCTGCCGAGAAAGAAAACGATACCGGTGT CGTGCACCAGGTGGAAGAGTGCAGAGTGAAGGGCCCTGGCATCAGC AAGTTCGTGCAGAAAGTGAACGAGATCGGCATCTACCTGACCGACTG CATGGAACGGGCCAGAGAAGTGATCCCCAGAAGCCAGCACCAGGAAA CCCCCGTGTACCTGGGAGCCACAGCCGGCATGAGACTGCTGCGGAT GGAAAGCGAGGAACTGGCCGACAGAGTGCTGGACGTGGTGGAAAGA AGCCTGAGCAACTACCCATTCGATTTTCAAGGGGCCAGAATCATCACC GGCCAGGAAGAGGGCGCTTACGGCTGGATCACCATCAACTACCTGCT GGGCAAGTTCAGCCAGAAAACCCGGTGGTTCAGCATCGTGCCCTACG AGACAAACAATCAGGAAACCTTCGGAGCCCTGGACCTGGGCGGAGCC TCTACCCAAGTGACCTTCGTGCCCCAGAATCAGACCATCGAGAGCCC CGACAACGCCCTGCAGTTCCGGCTGTACGGCAAGGACTACAATGTGT ACACCCACAGCTTTCTGTGCTACGGAAAGGACCAGGCCCTGTGGCAG AAGCTGGCCAAGGACATCCAGGTGGCCAGCAACGAGATCCTGCGGG ACCCTTGCTTCCACCCCGGCTACAAGAAAGTCGTGAACGTGTCCGAC CTGTACAAGACCCCCTGCACCAAGAGATTCGAGATGACCCTGCCCTTC CAGCAGTTCGAGATCCAGGGCATCGGCAACTACCAGCAGTGCCACCA GAGCATCCTGGAACTGTTCAACACCAGCTACTGCCCCTACAGCCAGT GCGCCTTCAACGGCATCTTCCTGCCACCTCTGCAGGGGGACTTCGGC GCTTTCAGCGCCTTCTACTTCGTGATGAAGTTCCTGAACCTGACCAGC GAGAAGGTGTCCCAGGAAAAAGTGACAGAGATGATGAAGAAGTTCGC CGCCCAGCCCTGGGAGGAAATCAAGACCTCCTACGCTGGCGTGAAAG AGAAGTACCTGAGCGAGTACGCCTTCAGCGGTACCTACATCCTGAGC CTGCTGCTGCAGGGCTACCACTTCACCGCCGATAGCTGGGAGCACAT CCACTTCATCGGCAAGATTCAGGGCAGCGACGCCGGCTGGACACTGG GCTACATGCTGAATCTGACCAACATG
CD39（aa46-461）_dMIL（193-204）_δcys1		
SEQ ID NO: 117	胺基酸	NVKYGIVLDAGSSHTSLYIYKWPAEKENDTGVVHQVEEARVKGPGISKFV QKVNEIGIYLTDAMERAREVIPRSQHQETPVYLGATAGMRLLRMESEELA DRVLDVVERSLSNYPFDFQGARIITGQEEGAYGWITINYLLGKFSQKNQET FGALDLGGASTQVTFVPQNQTIESPDNALQFRLYGKDYNVYTHSFLCYGK DQALWQKLAKDIQVASNEILRDPCFHPGYKKVVNVSDLYKTPCTKRFEMT LPFQQFEIQGIGNYQQCHQSILELFNTSYCPYSQCAFNGIFLPPLQGDFGA FSAFYFVMKFLNLTSEKVSQEKVTEMMKKFCAQPWEEIKTSYAGVKEKYL SEYCFSGTYILSLLLQGYHFTADSWEHIHFIGKIQGSDAGWTLGYMLNLTN M
SEQ ID NO: 118	DNA	AACGTGAAGTACGGCATCGTGCTGGATGCCGGCAGCAGCCACACCAG CCTGTACATCTACAAGTGGCCTGCCGAGAAAGAAAACGATACCGGTGT CGTGCACCAGGTGGAAGAGGCCAGAGTGAAGGGCCCTGGCATCAGC AAGTTCGTGCAGAAAGTGAACGAGATCGGCATCTACCTGACCGACGC

		CATGGAACGGGCCAGAGAAGTGATCCCCAGAAGCCAGCACCAGGAAA CCCCCGTGTACCTGGGAGCCACAGCCGGCATGAGACTGCTGCGGAT GGAAAGCGAGGAACTGGCCGACAGAGTGCTGGACGTGGTGGAAAGA AGCCTGAGCAACTACCCATTCGATTTTCAAGGGGCCAGAATCATCACC GGCCAGGAAGAGGGCGCTTACGGCTGGATCACCATCAACTACCTGCT GGGCAAGTTCAGCCAGAAAAATCAGGAAACCTTCGGAGCCCTGGACC TGGGCGGAGCCTCTACCCAAGTGACCTTCGTGCCCCAGAATCAGACC ATCGAGAGCCCCGACAACGCCCTGCAGTTCCGGCTGTACGGCAAGGA CTACAATGTGTACACCCACAGCTTTCTGTGCTACGGAAAGGACCAGGC CCTGTGGCAGAAGCTGGCCAAGGACATCCAGGTGGCCAGCAACGAG ATCCTGCGGGACCCTTGCTTCCACCCCGGCTACAAGAAAGTCGTGAA CGTGTCCGACCTGTACAAGACCCCCTGCACCAAGAGATTCGAGATGA CCCTGCCCTTCCAGCAGTTCGAGATCCAGGGCATCGGCAACTACCAG CAGTGCCACCAGAGCATCCTGGAACTGTTCAACACCAGCTACTGCCC CTACAGCCAGTGCGCCTTCAACGGCATCTTCCTGCCACCTCTGCAGG GGGACTTCGGCGCTTTCAGCGCCTTCTACTTCGTGATGAAGTTCCTGA ACCTGACCAGCGAGAAGGTGTCCCAGGAAAAAGTGACAGAGATGATG AAGAAGTTCTGCGCCCAGCCCTGGGAGGAAATCAAGACCTCCTACGC TGGCGTGAAAGAGAAGTACCTGAGCGAGTACTGCTTCAGCGGTACCT ACATCCTGAGCCTGCTGCTGCAGGGCTACCACTTCACCGCCGATAGC TGGGAGCACATCCACTTCATCGGCAAGATTCAGGGCAGCGACGCCGG CTGGACACTGGGCTACATGCTGAATCTGACCAACATG
CD39（aa46-461）_dMIL（193-204）_δcys2		
SEQ ID NO: 119	胺基酸	NVKYGIVLDAGSSHTSLYIYKWPAEKENDTGVVHQVEECRVKGPGISKFV QKVNEIGIYLTDCMERAREVIPRSQHQETPVYLGATAGMRLLRMESEELA DRVLDVVERSLSNYPFDFQGARIITGQEEGAYGWITINYLLGKFSQKNQET FGALDLGGASTQVTFVPQNQTIESPDNALQFRLYGKDYNVYTHSFLCYGK DQALWQKLAKDIQVASNEILRDPAFHPGYKKVVNVSDLYKTPCTKRFEMT LPFQQFEIQGIGNYQQAHQSILELFNTSYCPYSQCAFNGIFLPPLQGDFGA FSAFYFVMKFLNLTSEKVSQEKVTEMMKKFCAQPWEEIKTSYAGVKEKYL SEYCFSGTYILSLLLQGYHFTADSWEHIHFIGKIQGSDAGWTLGYMLNLTN M
SEQ ID NO: 120	DNA	AACGTGAAGTACGGCATCGTGCTGGATGCCGGCAGCAGCCACACCAG CCTGTACATCTACAAGTGGCCTGCCGAGAAAGAAAACGATACCGGTGT CGTGCACCAGGTGGAAGAGTGCAGAGTGAAGGGCCCTGGCATCAGC AAGTTCGTGCAGAAAGTGAACGAGATCGGCATCTACCTGACCGACTG CATGGAACGGGCCAGAGAAGTGATCCCCAGAAGCCAGCACCAGGAAA CCCCCGTGTACCTGGGAGCCACAGCCGGCATGAGACTGCTGCGGAT GGAAAGCGAGGAACTGGCCGACAGAGTGCTGGACGTGGTGGAAAGA AGCCTGAGCAACTACCCATTCGATTTTCAAGGGGCCAGAATCATCACC GGCCAGGAAGAGGGCGCTTACGGCTGGATCACCATCAACTACCTGCT GGGCAAGTTCAGCCAGAAAAATCAGGAAACCTTCGGAGCCCTGGACC TGGGCGGAGCCTCTACCCAAGTGACCTTCGTGCCCCAGAATCAGACC ATCGAGAGCCCCGACAACGCCCTGCAGTTCCGGCTGTACGGCAAGGA CTACAATGTGTACACCCACAGCTTTCTGTGCTACGGAAAGGACCAGGC CCTGTGGCAGAAGCTGGCCAAGGACATCCAGGTGGCCAGCAACGAG ATCCTGCGGGACCCTGCCTTCCACCCCGGCTACAAGAAAGTCGTGAA CGTGTCCGACCTGTACAAGACCCCCTGCACCAAGAGATTCGAGATGA CCCTGCCCTTCCAGCAGTTCGAGATCCAGGGCATCGGCAACTACCAG CAGGCCCACCAGAGCATCCTGGAACTGTTCAACACCAGCTACTGCCC CTACAGCCAGTGCGCCTTCAACGGCATCTTCCTGCCACCTCTGCAGG GGGACTTCGGCGCTTTCAGCGCCTTCTACTTCGTGATGAAGTTCCTGA ACCTGACCAGCGAGAAGGTGTCCCAGGAAAAAGTGACAGAGATGATG

		AAGAAGTTCTGCGCCCAGCCCTGGGAGGAAATCAAGACCTCCTACGC TGGCGTGAAAGAGAAGTACCTGAGCGAGTACTGCTTCAGCGGTACCT ACATCCTGAGCCTGCTGCTGCAGGGCTACCACTTCACCGCCGATAGC TGGGAGCACATCCACTTCATCGGCAAGATTCAGGGCAGCGACGCCGG CTGGACACTGGGCTACATGCTGAATCTGACCAACATG
CD39（aa46-461）_dMIL（193-204）_δcys3		
SEQ ID NO: 121	胺基酸	NVKYGIVLDAGSSHTSLYIYKWPAEKENDTGVVHQVEECRVKGPGISKFV QKVNEIGIYLTDCMERAREVIPRSQHQETPVYLGATAGMRLLRMESEELA DRVLDVVERSLSNYPFDFQGARIITGQEEGAYGWITINYLLGKFSQKNQET FGALDLGGASTQVTFVPQNQTIESPDNALQFRLYGKDYNVYTHSFLAYGK DQALWQKLAKDIQVASNEILRDPCFHPGYKKVVNVSDLYKTPATKRFEMT LPFQQFEIQGIGNYQQCHQSILELFNTSYCPYSQCAFNGIFLPPLQGDFGA FSAFYFVMKFLNLTSEKVSQEKVTEMMKKFCAQPWEEIKTSYAGVKEKYL SEYCFSGTYILSLLLQGYHFTADSWEHIHFIGKIQGSDAGWTLGYMLNLTN M
SEQ ID NO: 122	DNA	AACGTGAAGTACGGCATCGTGCTGGATGCCGGCAGCAGCCACACCAG CCTGTACATCTACAAGTGGCCTGCCGAGAAAGAAAACGATACCGGTGT CGTGCACCAGGTGGAAGAGTGCAGAGTGAAGGGCCCTGGCATCAGC AAGTTCGTGCAGAAAGTGAACGAGATCGGCATCTACCTGACCGACTG CATGGAACGGGCCAGAGAAGTGATCCCCAGAAGCCAGCACCAGGAAA CCCCCGTGTACCTGGGAGCCACAGCCGGCATGAGACTGCTGCGGAT GGAAAGCGAGGAACTGGCCGACAGAGTGCTGGACGTGGTGGAAAGA AGCCTGAGCAACTACCCATTCGATTTTCAAGGGGCCAGAATCATCACC GGCCAGGAAGAGGGCGCTTACGGCTGGATCACCATCAACTACCTGCT GGGCAAGTTCAGCCAGAAAAATCAGGAAACCTTCGGAGCCCTGGACC TGGGCGGAGCCTCTACCCAAGTGACCTTCGTGCCCCAGAATCAGACC ATCGAGAGCCCCGACAACGCCCTGCAGTTCCGGCTGTACGGCAAGGA CTACAATGTGTACACCCACAGCTTTCTGGCCTACGGAAAGGACCAGG CCCTGTGGCAGAAGCTGGCCAAGGACATCCAGGTGGCCAGCAACGA GATCCTGCGGGACCCTTGCTTCCACCCCGGCTACAAGAAAGTCGTGA ACGTGTCCGACCTGTACAAGACCCCCGCCACCAAGAGATTCGAGATG ACCCTGCCCTTCCAGCAGTTCGAGATCCAGGGCATCGGCAACTACCA GCAGTGCCACCAGAGCATCCTGGAACTGTTCAACACCAGCTACTGCC CCTACAGCCAGTGCGCCTTCAACGGCATCTTCCTGCCACCTCTGCAG GGGGACTTCGGCGCTTTCAGCGCCTTCTACTTCGTGATGAAGTTCCTG AACCTGACCAGCGAGAAGGTGTCCCAGGAAAAAGTGACAGAGATGAT GAAGAAGTTCTGCGCCCAGCCCTGGGAGGAAATCAAGACCTCCTACG CTGGCGTGAAAGAGAAGTACCTGAGCGAGTACTGCTTCAGCGGTACC TACATCCTGAGCCTGCTGCTGCAGGGCTACCACTTCACCGCCGATAG CTGGGAGCACATCCACTTCATCGGCAAGATTCAGGGCAGCGACGCCG GCTGGACACTGGGCTACATGCTGAATCTGACCAACATG
CD39（aa46-461）_dMIL（193-204）_δcys4		

SEQ ID NO: 123	胺基酸	NVKYGIVLDAGSSHTSLYIYKWPAEKENDTGVVHQVEECRVKGPGISKFV QKVNEIGIYLTDCMERAREVIPRSQHQETPVYLGATAGMRLLRMESEELA DRVLDVVERSLSNYPFDFQGARIITGQEEGAYGWITINYLLGKFSQKNQET FGALDLGGASTQVTFVPQNQTIESPDNALQFRLYGKDYNVYTHSFLCYGK DQALWQKLAKDIQVASNEILRDPCFHPGYKKVVNVSDLYKTPCTKRFEMT LPFQQFEIQGIGNYQQCHQSILELFNTSYAPYSQAAFNGIFLPPLQGDFGA FSAFYFVMKFLNLTSEKVSQEKVTEMMKKFCAQPWEEIKTSYAGVKEKYL SEYCFSGTYILSLLLQGYHFTADSWEHIHFIGKIQGSDAGWTLGYMLNLTN M
SEQ ID NO: 124	DNA	AACGTGAAGTACGGCATCGTGCTGGATGCCGGCAGCAGCCACACCAG CCTGTACATCTACAAGTGGCCTGCCGAGAAAGAAAACGATACCGGTGT CGTGCACCAGGTGGAAGAGTGCAGAGTGAAGGGCCCTGGCATCAGC AAGTTCGTGCAGAAAGTGAACGAGATCGGCATCTACCTGACCGACTG CATGGAACGGGCCAGAGAAGTGATCCCCAGAAGCCAGCACCAGGAAA CCCCCGTGTACCTGGGAGCCACAGCCGGCATGAGACTGCTGCGGAT GGAAAGCGAGGAACTGGCCGACAGAGTGCTGGACGTGGTGGAAAGA AGCCTGAGCAACTACCCATTCGATTTTCAAGGGGCCAGAATCATCACC GGCCAGGAAGAGGGCGCTTACGGCTGGATCACCATCAACTACCTGCT GGGCAAGTTCAGCCAGAAAAATCAGGAAACCTTCGGAGCCCTGGACC TGGGCGGAGCCTCTACCCAAGTGACCTTCGTGCCCCAGAATCAGACC ATCGAGAGCCCCGACAACGCCCTGCAGTTCCGGCTGTACGGCAAGGA CTACAATGTGTACACCCACAGCTTTCTGTGCTACGGAAAGGACCAGGC CCTGTGGCAGAAGCTGGCCAAGGACATCCAGGTGGCCAGCAACGAG ATCCTGCGGGACCCTTGCTTCCACCCCGGCTACAAGAAAGTCGTGAA CGTGTCCGACCTGTACAAGACCCCCTGCACCAAGAGATTCGAGATGA CCCTGCCCTTCCAGCAGTTCGAGATCCAGGGCATCGGCAACTACCAG CAGTGCCACCAGAGCATCCTGGAACTGTTCAACACCAGCTACGCCCC CTACAGCCAGGCCGCCTTCAACGGCATCTTCCTGCCACCTCTGCAGG GGGACTTCGGCGCTTTCAGCGCCTTCTACTTCGTGATGAAGTTCCTGA ACCTGACCAGCGAGAAGGTGTCCCAGGAAAAAGTGACAGAGATGATG AAGAAGTTCTGCGCCCAGCCCTGGGAGGAAATCAAGACCTCCTACGC TGGCGTGAAAGAGAAGTACCTGAGCGAGTACTGCTTCAGCGGTACCT ACATCCTGAGCCTGCTGCTGCAGGGCTACCACTTCACCGCCGATAGC TGGGAGCACATCCACTTCATCGGCAAGATTCAGGGCAGCGACGCCGG CTGGACACTGGGCTACATGCTGAATCTGACCAACATG
CD39（aa46-461）_dMIL（193-204）_δcys5		
SEQ ID NO: 125	胺基酸	NVKYGIVLDAGSSHTSLYIYKWPAEKENDTGVVHQVEECRVKGPGISKFV QKVNEIGIYLTDCMERAREVIPRSQHQETPVYLGATAGMRLLRMESEELA DRVLDVVERSLSNYPFDFQGARIITGQEEGAYGWITINYLLGKFSQKNQET FGALDLGGASTQVTFVPQNQTIESPDNALQFRLYGKDYNVYTHSFLCYGK DQALWQKLAKDIQVASNEILRDPCFHPGYKKVVNVSDLYKTPCTKRFEMT LPFQQFEIQGIGNYQQCHQSILELFNTSYCPYSQCAFNGIFLPPLQGDFGA FSAFYFVMKFLNLTSEKVSQEKVTEMMKKFAAQPWEEIKTSYAGVKEKYL SEYAFSGTYILSLLLQGYHFTADSWEHIHFIGKIQGSDAGWTLGYMLNLTN M
SEQ ID NO: 126	DNA	AACGTGAAGTACGGCATCGTGCTGGATGCCGGCAGCAGCCACACCAG CCTGTACATCTACAAGTGGCCTGCCGAGAAAGAAAACGATACCGGTGT CGTGCACCAGGTGGAAGAGTGCAGAGTGAAGGGCCCTGGCATCAGC AAGTTCGTGCAGAAAGTGAACGAGATCGGCATCTACCTGACCGACTG CATGGAACGGGCCAGAGAAGTGATCCCCAGAAGCCAGCACCAGGAAA CCCCCGTGTACCTGGGAGCCACAGCCGGCATGAGACTGCTGCGGAT GGAAAGCGAGGAACTGGCCGACAGAGTGCTGGACGTGGTGGAAAGA AGCCTGAGCAACTACCCATTCGATTTTCAAGGGGCCAGAATCATCACC

		GGCCAGGAAGAGGGCGCTTACGGCTGGATCACCATCAACTACCTGCT GGGCAAGTTCAGCCAGAAAAATCAGGAAACCTTCGGAGCCCTGGACC TGGGCGGAGCCTCTACCCAAGTGACCTTCGTGCCCCAGAATCAGACC ATCGAGAGCCCCGACAACGCCCTGCAGTTCCGGCTGTACGGCAAGGA CTACAATGTGTACACCCACAGCTTTCTGTGCTACGGAAAGGACCAGGC CCTGTGGCAGAAGCTGGCCAAGGACATCCAGGTGGCCAGCAACGAG ATCCTGCGGGACCCTTGCTTCCACCCCGGCTACAAGAAAGTCGTGAA CGTGTCCGACCTGTACAAGACCCCCTGCACCAAGAGATTCGAGATGA CCCTGCCCTTCCAGCAGTTCGAGATCCAGGGCATCGGCAACTACCAG CAGTGCCACCAGAGCATCCTGGAACTGTTCAACACCAGCTACTGCCC CTACAGCCAGTGCGCCTTCAACGGCATCTTCCTGCCACCTCTGCAGG GGGACTTCGGCGCTTTCAGCGCCTTCTACTTCGTGATGAAGTTCCTGA ACCTGACCAGCGAGAAGGTGTCCCAGGAAAAAGTGACAGAGATGATG AAGAAGTTCGCCGCCCAGCCCTGGGAGGAAATCAAGACCTCCTACGC TGGCGTGAAAGAGAAGTACCTGAGCGAGTACGCCTTCAGCGGTACCT ACATCCTGAGCCTGCTGCTGCAGGGCTACCACTTCACCGCCGATAGC TGGGAGCACATCCACTTCATCGGCAAGATTCAGGGCAGCGACGCCGG CTGGACACTGGGCTACATGCTGAATCTGACCAACATG
CD39（aa38-476）_δ337-344		
SEQ ID NO: 127	胺基酸	TQNKALPENVKYGIVLDAGSSHTSLYIYKWPAEKENDTGVVHQVEECRVK GPGISKFVQKVNEIGIYLTDCMERAREVIPRSQHQETPVYLGATAGMRLLR MESEELADRVLDVVERSLSNYPFDFQGARIITGQEEGAYGWITINYLLGKF SQKTRWFSIVPYETNNQETFGALDLGGASTQVTFVPQNQTIESPDNALQF RLYGKDYNVYTHSFLCYGKDQALWQKLAKDIQVASNEILRDPCFHPGYKK VVNVSDLYKTPCTKRFEMTLPFQQFEIQGIGNYQQCHQSILELFNTSFNGI FLPPLQGDFGAFSAFYFVMKFLNLTSEKVSQEKVTEMMKKFCAQPWEEIK TSYAGVKEKYLSEYCFSGTYILSLLLQGYHFTADSWEHIHFIGKIQGSDAG WTLGYMLNLTNMIPAEQPLSTPLSHST
SEQ ID NO: 128	DNA	ACACAGAACAAAGCCCTGCCCGAGAACGTGAAGTACGGCATCGTGCT GGATGCCGGCAGCAGCCACACCAGCCTGTACATCTACAAGTGGCCTG CCGAGAAAGAAAACGATACCGGTGTCGTGCACCAGGTGGAAGAGTGC AGAGTGAAGGGCCCTGGCATCAGCAAGTTCGTGCAGAAAGTGAACGA GATCGGCATCTACCTGACCGACTGCATGGAACGGGCCAGAGAAGTGA TCCCCAGAAGCCAGCACCAGGAAACCCCCGTGTACCTGGGAGCCACA GCCGGCATGAGACTGCTGCGGATGGAAAGCGAGGAACTGGCCGACA GAGTGCTGGACGTGGTGGAAAGAAGCCTGAGCAACTACCCATTCGAT TTTCAAGGGGCCAGAATCATCACCGGCCAGGAAGAGGGCGCTTACGG CTGGATCACCATCAACTACCTGCTGGGCAAGTTCAGCCAGAAAACCC GGTGGTTCAGCATCGTGCCCTACGAGACAAACAATCAGGAAACCTTC GGAGCCCTGGACCTGGGCGGAGCCTCTACCCAAGTGACCTTCGTGCC CCAGAATCAGACCATCGAGAGCCCCGACAACGCCCTGCAGTTCCGGC TGTACGGCAAGGACTACAATGTGTACACCCACAGCTTTCTGTGCTACG GAAAGGACCAGGCCCTGTGGCAGAAGCTGGCCAAGGACATCCAGGT GGCCAGCAACGAGATCCTGCGGGACCCTTGCTTCCACCCCGGCTACA AGAAAGTCGTGAACGTGTCCGACCTGTACAAGACCCCCTGCACCAAG AGATTCGAGATGACCCTGCCCTTCCAGCAGTTCGAGATCCAGGGCAT CGGCAACTACCAGCAGTGCCACCAGAGCATCCTGGAACTGTTCAACA CCAGCTTCAACGGCATCTTCCTGCCACCTCTGCAGGGGGACTTCGGC GCTTTCAGCGCCTTCTACTTCGTGATGAAGTTCCTGAACCTGACCAGC GAGAAGGTGTCCCAGGAAAAAGTGACAGAGATGATGAAGAAGTTCTG CGCCCAGCCCTGGGAGGAAATCAAGACCTCCTACGCTGGCGTGAAAG AGAAGTACCTGAGCGAGTACTGCTTCAGCGGTACCTACATCCTGAGC CTGCTGCTGCAGGGCTACCACTTCACCGCCGATAGCTGGGAGCACAT CCACTTCATCGGCAAGATTCAGGGCAGCGACGCCGGCTGGACACTGG GCTACATGCTGAATCTGACCAACATGATCCCCGCCGAGCAGCCCCTG AGCACACCTCTGTCTCACAGCACC
CD39		

（aa38-476）_C338A_C343A		
SEQ ID NO: 129	胺基酸	TQNKALPENVKYGIVLDAGSSHTSLYIYKWPAEKENDTGVVHQVEECRVK GPGISKFVQKVNEIGIYLTDCMERAREVIPRSQHQETPVYLGATAGMRLLR MESEELADRVLDVVERSLSNYPFDFQGARIITGQEEGAYGWITINYLLGKF SQKTRWFSIVPYETNNQETFGALDLGGASTQVTFVPQNQTIESPDNALQF RLYGKDYNVYTHSFLCYGKDQALWQKLAKDIQVASNEILRDPCFHPGYKK VVNVSDLYKTPCTKRFEMTLPFQQFEIQGIGNYQQCHQSILELFNTSYAPY SQAAFNGIFLPPLQGDFGAFSAFYFVMKFLNLTSEKVSQEKVTEMMKKFC AQPWEEIKTSYAGVKEKYLSEYCFSGTYILSLLLQGYHFTADSWEHIHFIG KIQGSDAGWTLGYMLNLTNMIPAEQPLSTPLSHST
SEQ ID NO: 130	DNA	ACACAGAACAAAGCCCTGCCCGAGAACGTGAAGTACGGCATCGTGCT GGATGCCGGCAGCAGCCACACCAGCCTGTACATCTACAAGTGGCCTG CCGAGAAAGAAAACGATACCGGTGTCGTGCACCAGGTGGAAGAGTGC AGAGTGAAGGGCCCTGGCATCAGCAAGTTCGTGCAGAAAGTGAACGA GATCGGCATCTACCTGACCGACTGCATGGAACGGGCCAGAGAAGTGA TCCCCAGAAGCCAGCACCAGGAAACCCCCGTGTACCTGGGAGCCACA GCCGGCATGAGACTGCTGCGGATGGAAAGCGAGGAACTGGCCGACA GAGTGCTGGACGTGGTGGAAAGAAGCCTGAGCAACTACCCATTCGAT TTTCAAGGGGCCAGAATCATCACCGGCCAGGAAGAGGGCGCTTACGG CTGGATCACCATCAACTACCTGCTGGGCAAGTTCAGCCAGAAAACCC GGTGGTTCAGCATCGTGCCCTACGAGACAAACAATCAGGAAACCTTC GGAGCCCTGGACCTGGGCGGAGCCTCTACCCAAGTGACCTTCGTGCC CCAGAATCAGACCATCGAGAGCCCCGACAACGCCCTGCAGTTCCGGC TGTACGGCAAGGACTACAATGTGTACACCCACAGCTTTCTGTGCTACG GAAAGGACCAGGCCCTGTGGCAGAAGCTGGCCAAGGACATCCAGGT GGCCAGCAACGAGATCCTGCGGGACCCTTGCTTCCACCCCGGCTACA AGAAAGTCGTGAACGTGTCCGACCTGTACAAGACCCCCTGCACCAAG AGATTCGAGATGACCCTGCCCTTCCAGCAGTTCGAGATCCAGGGCAT CGGCAACTACCAGCAGTGCCACCAGAGCATCCTGGAACTGTTCAACA CCAGCTACGCCCCCTACAGCCAGGCCGCCTTCAACGGCATCTTCCTG CCACCTCTGCAGGGGGACTTCGGCGCTTTCAGCGCCTTCTACTTCGT GATGAAGTTCCTGAACCTGACCAGCGAGAAGGTGTCCCAGGAAAAAG TGACAGAGATGATGAAGAAGTTCTGCGCCCAGCCCTGGGAGGAAATC AAGACCTCCTACGCTGGCGTGAAAGAGAAGTACCTGAGCGAGTACTG CTTCAGCGGTACCTACATCCTGAGCCTGCTGCTGCAGGGCTACCACTT CACCGCCGATAGCTGGGAGCACATCCACTTCATCGGCAAGATTCAGG GCAGCGACGCCGGCTGGACACTGGGCTACATGCTGAATCTGACCAAC ATGATCCCCGCCGAGCAGCCCCTGAGCACACCTCTGTCTCACAGCAC C
表現標籤 aa1-16		
SEQ ID NO: 131	胺基酸	APTSSSTKKTQLTSSG
SEQ ID NO: 132	DNA	GCCCCCACCAGCAGCAGCACCAAGAAGACCCAGCTGACCAGCAGCG GC
表現標籤 aa1-15		

SEQ ID NO: 133	胺基酸	APTSSSTKKTQLTSS
SEQ ID NO: 134	DNA	GCCCCTACCAGCAGCAGCACCAAGAAAACCCAGCTGACCAGCAGC
表現標籤 aa1-6		
SEQ ID NO: 135	胺基酸	APTSSS
SEQ ID NO: 136	DNA	GCCCCTACCAGCAGCAGC
表現標籤 aa1-3		
SEQ ID NO: 137	胺基酸	APT
SEQ ID NO: 138	DNA	GCCCCTACC
表現標籤 aa1-9		
SEQ ID NO: 139	胺基酸	APTSSSTKK
SEQ ID NO: 140	DNA	GCCCCTACCAGCAGCAGCACCAAGAAA
表現標籤 aa1-12		
SEQ ID NO: 141	胺基酸	APTSSSTKKTQL
SEQ ID NO: 142	DNA	GCCCCTACCAGCAGCAGCACCAAGAAAACCCAGCTG
表現標籤 aa4-12		
SEQ ID NO: 143	胺基酸	SSSTKKTQL
SEQ ID NO: 144	DNA	AGCAGCAGCACCAAGAAAACCCAGCTG

EP28_8M		
SEQ ID NO: 145	胺基酸	TQNKALPENVKYGIVLDAGSSHTSLYIYKWPAEKENDTGVVHQVEECRVK GPGISKFVQKVNEIGIYLTDCMERAREVIPRSQHQETPVYLGATAGMRLLR MESEELADRVLDVVERSLSNYPFDFQGARIITGQDEGAYGWITINYLLGKF SQKNQETFGALDLGGASTQVTFVPQNQTIESPDNALQFRLYGKDYNVYT HSFLCYGRDQALWQKLAKDIQVASNEILRDPCFHPGYKKVVNVSDLYKTP CTKRFEMTLPFQQFEIQGIGNYQQCHQSILELFNTSYCPYSQCAFNGIFLP PLQGDFGAFSNFYYVMKFLNLTSEKVSQEKVTEMMKKFCAQPWEEIKTS YAGQERWLRDYCFSGTYILSLLLQGYHFTADSWEHIHFIGKIQGSDAGWT LGYMLNLTNMIPAEQPLSTPLSHST
SEQ ID NO: 146	DNA	ACCCAGAACAAGGCCCTGCCCGAGAACGTGAAGTACGGCATCGTGCT GGATGCCGGCAGCAGCCACACCAGCCTGTACATCTACAAGTGGCCTG CCGAGAAAGAAAACGACACCGGCGTGGTGCATCAGGTGGAAGAGTGC AGAGTGAAGGGCCCTGGCATCAGCAAGTTCGTGCAGAAAGTGAACGA GATCGGCATCTACCTGACCGACTGCATGGAACGGGCCAGAGAAGTGA TCCCCAGAAGCCAGCACCAGGAAACCCCCGTGTATCTGGGAGCCACC GCCGGCATGAGACTGCTGAGAATGGAAAGCGAGGAACTGGCCGACC GGGTGCTGGACGTGGTGGAAAGAAGCCTGAGCAACTACCCATTCGAT TTTCAAGGCGCCAGAATCATCACCGGCCAGGACGAGGGCGCCTACGG CTGGATCACCATCAACTACCTGCTGGGCAAGTTCAGCCAGAAGAATCA GGAAACCTTCGGCGCCCTGGACCTGGGCGGAGCTTCTACCCAAGTGA CCTTCGTGCCCCAGAATCAGACCATCGAGAGCCCCGACAACGCCCTG CAGTTCCGGCTGTACGGCAAGGACTACAATGTGTACACCCACAGCTTT CTGTGCTACGGCCGGGACCAGGCTCTGTGGCAGAAGCTGGCCAAGG ACATCCAGGTGGCCAGCAACGAGATCCTGCGGGACCCTTGCTTCCAC CCCGGCTACAAGAAAGTCGTGAACGTGTCCGACCTGTACAAGACCCC CTGCACCAAGAGATTCGAGATGACCCTGCCCTTCCAGCAGTTCGAGAT CCAGGGCATCGGCAACTACCAGCAGTGCCACCAGAGCATCCTGGAAC TGTTCAACACCAGCTACTGCCCCTACAGCCAGTGCGCCTTCAACGGC ATCTTCCTGCCACCTCTGCAGGGGGATTTCGGCGCCTTCAGCAACTTC TACTACGTGATGAAGTTCCTGAACCTGACCAGCGAGAAGGTGTCCCA GGAAAAAGTGACAGAGATGATGAAGAAGTTCTGCGCCCAGCCCTGGG AGGAAATCAAGACCTCTTACGCCGGACAGGAACGGTGGCTGCGGGAC TACTGTTTCAGCGGCACCTACATCCTGTCCCTGCTGCTGCAGGGCTAC CACTTCACCGCCGATAGCTGGGAGCACATCCACTTCATCGGCAAGATT CAGGGCAGCGACGCCGGCTGGACACTGGGCTACATGCTGAATCTGAC CAACATGATCCCCGCCGAGCAGCCCCTGAGCACACCTCTGTCTCACA GCACC
CD39（aa38-476）_dMIL（193-204）_Cκ		
SEQ ID NO: 147	胺基酸	TVAAPSVFIFPPSDEQLKSGTASVVCLLNNFYPREAKVQWKVDNALQSGN SQESVTEQDSKDSTYSLSSTLTLSKADYEKHKVYACEVTHQGLSSPVTKS FNRGEGGGGSTQNKALPENVKYGIVLDAGSSHTSLYIYKWPAEKENDTG VVHQVEECRVKGPGISKFVQKVNEIGIYLTDCMERAREVIPRSQHQETPV YLGATAGMRLLRMESEELADRVLDVVERSLSNYPFDFQGARIITGQEEGA YGWITINYLLGKFSQKNQETFGALDLGGASTQVTFVPQNQTIESPDNALQ FRLYGKDYNVYTHSFLCYGKDQALWQKLAKDIQVASNEILRDPCFHPGYK KVVNVSDLYKTPCTKRFEMTLPFQQFEIQGIGNYQQCHQSILELFNTSYCP YSQCAFNGIFLPPLQGDFGAFSAFYFVMKFLNLTSEKVSQEKVTEMMKKF CAQPWEEIKTSYAGVKEKYLSEYCFSGTYILSLLLQGYHFTADSWEHIHFI GKIQGSDAGWTLGYMLNLTNMIPAEQPLSTPLSHST
SEQ ID	DNA	ACGGTGGCCGCTCCCAGCGTGTTCATCTTCCCCCCCAGCGACGAGCA GCTGAAGAGCGGCACCGCCAGCGTGGTGTGCCTGCTGAACAACTTCT

NO: 148		ACCCCCGGGAGGCCAAGGTGCAGTGGAAGGTGGACAACGCCCTGCA GAGCGGCAACAGCCAGGAAAGCGTCACCGAGCAGGACAGCAAGGAC TCCACCTACAGCCTGAGCAGCACCCTGACCCTGAGCAAGGCCGACTA CGAGAAGCACAAGGTGTACGCCTGCGAGGTGACCCACCAGGGCCTG TCCAGCCCCGTGACCAAGAGCTTCAACCGGGGCGAGGGAGGCGGAG GATCTACCCAGAACAAGGCCCTGCCCGAGAACGTGAAGTACGGCATC GTGCTGGATGCCGGCAGCAGCCACACCAGCCTGTACATCTACAAGTG GCCTGCCGAGAAAGAAAACGACACCGGCGTGGTGCATCAGGTGGAA GAGTGCAGAGTGAAGGGCCCTGGCATCAGCAAGTTCGTGCAGAAAGT GAACGAGATCGGCATCTACCTGACCGACTGCATGGAACGGGCCAGGG AAGTGATCCCCAGAAGCCAGCACCAGGAAACCCCCGTGTATCTGGGA GCCACCGCCGGCATGAGACTGCTGAGAATGGAAAGCGAGGAACTGG CCGACCGGGTGCTGGACGTGGTGGAAAGAAGCCTGAGCAACTACCCA TTCGATTTTCAAGGCGCCAGAATCATCACCGGCCAGGAAGAAGGCGC CTACGGCTGGATCACCATCAACTACCTGCTGGGCAAGTTCAGCCAGA AGAATCAGGAAACCTTCGGCGCCCTGGACCTGGGCGGAGCTTCTACC CAAGTGACCTTCGTGCCCCAGAATCAGACCATCGAGAGCCCCGACAA CGCCCTGCAGTTCCGGCTGTACGGCAAGGACTACAATGTGTACACCC ACAGCTTTCTGTGCTACGGAAAGGACCAGGCTCTGTGGCAGAAGCTG GCCAAGGACATCCAGGTGGCCAGCAACGAGATCCTGCGGGACCCTTG CTTCCACCCCGGCTACAAGAAAGTCGTGAACGTGTCCGACCTGTACAA GACCCCCTGCACCAAGAGATTCGAGATGACCCTGCCCTTCCAGCAGT TCGAGATCCAGGGCATCGGCAATTACCAGCAGTGCCACCAGAGCATC CTGGAACTGTTCAACACCAGCTACTGCCCCTACAGCCAGTGCGCCTTC AACGGCATCTTCCTGCCACCTCTGCAGGGGGATTTCGGCGCCTTCAG CGCCTTCTACTTCGTGATGAAGTTCCTGAACCTGACCAGCGAGAAGGT GTCCCAGGAAAAAGTGACAGAGATGATGAAGAAGTTCTGCGCCCAGC CCTGGGAGGAAATCAAGACCTCCTACGCTGGCGTGAAAGAGAAGTAC CTGAGCGAGTACTGCTTCAGCGGCACCTACATCCTGAGCCTGCTGCT GCAGGGCTACCACTTCACCGCCGATAGCTGGGAGCACATCCACTTCA TCGGCAAGATTCAGGGCAGCGACGCCGGCTGGACACTGGGCTACAT GCTGAATCTGACCAACATGATCCCCGCCGAGCAGCCCCTGAGCACAC CTCTGAGCCACAGCACC
CD39(aa 38-476) _dMIL(193-204) _UBI		
SEQ ID NO: 149	胺基酸	MQIFVKTLTGKTITLEVEPSDTIENVKAKIQDKEGIPPDQQRLIFAGKQLED GRTLSDYNIQKESTLHLVLRLRGGGGGGSTQNKALPENVKYGIVLDAGSS HTSLYIYKWPAEKENDTGVVHQVEECRVKGPGISKFVQKVNEIGIYLTDC MERAREVIPRSQHQETPVYLGATAGMRLLRMESEELADRVLDVVERSLS NYPFDFQGARIITGQEEGAYGWITINYLLGKFSQKNQETFGALDLGGAST QVTFVPQNQTIESPDNALQFRLYGKDYNVYTHSFLCYGKDQALWQKLAK DIQVASNEILRDPCFHPGYKKVVNVSDLYKTPCTKRFEMTLPFQQFEIQGI GNYQQCHQSILELFNTSYCPYSQCAFNGIFLPPLQGDFGAFSAFYFVMKF LNLTSEKVSQEKVTEMMKKFCAQPWEEIKTSYAGVKEKYLSEYCFSGTYI LSLLLQGYHFTADSWEHIHFIGKIQGSDAGWTLGYMLNLTNMIPAEQPLST PLSHST
SEQ ID NO: 150	DNA	ATGCAAATCTTCGTGAAGACCCTGACTGGTAAGACCATCACCCTCGAG GTGGAGCCCAGTGACACCATCGAGAATGTCAAGGCAAAGATCCAAGA TAAGGAAGGCATCCCTCCTGATCAGCAGAGGTTGATCTTTGCTGGGAA ACAGCTGGAAGATGGACGCACCCTGTCTGACTACAACATCCAGAAAG AGTCCACTCTGCACTTGGTCCTGCGCTTGAGGGGGGGTGGAGGCGG AGGATCTACCCAGAACAAGGCCCTGCCCGAGAACGTGAAGTACGGCA TCGTGCTGGATGCCGGCAGCAGCCACACCAGCCTGTACATCTACAAG TGGCCTGCCGAGAAAGAAAACGACACCGGCGTGGTGCATCAGGTGGA AGAGTGCAGAGTGAAGGGCCCTGGCATCAGCAAGTTCGTGCAGAAAG TGAACGAGATCGGCATCTACCTGACCGACTGCATGGAACGGGCCAGG GAAGTGATCCCCAGAAGCCAGCACCAGGAAACCCCCGTGTATCTGGG

		AGCCACCGCCGGCATGAGACTGCTGAGAATGGAAAGCGAGGAACTG GCCGACCGGGTGCTGGACGTGGTGGAAAGAAGCCTGAGCAACTACC CATTCGATTTTCAAGGCGCCAGAATCATCACCGGCCAGGAAGAAGGC GCCTACGGCTGGATCACCATCAACTACCTGCTGGGCAAGTTCAGCCA GAAGAATCAGGAAACCTTCGGCGCCCTGGACCTGGGCGGAGCTTCTA CCCAAGTGACCTTCGTGCCCCAGAATCAGACCATCGAGAGCCCCGAC AACGCCCTGCAGTTCCGGCTGTACGGCAAGGACTACAATGTGTACAC CCACAGCTTTCTGTGCTACGGAAAGGACCAGGCTCTGTGGCAGAAGC TGGCCAAGGACATCCAGGTGGCCAGCAACGAGATCCTGCGGGACCCT TGCTTCCACCCCGGCTACAAGAAAGTCGTGAACGTGTCCGACCTGTA CAAGACCCCCTGCACCAAGAGATTCGAGATGACCCTGCCCTTCCAGC AGTTCGAGATCCAGGGCATCGGCAATTACCAGCAGTGCCACCAGAGC ATCCTGGAACTGTTCAACACCAGCTACTGCCCCTACAGCCAGTGCGC CTTCAACGGCATCTTCCTGCCACCTCTGCAGGGGGATTTCGGCGCCT TCAGCGCCTTCTACTTCGTGATGAAGTTCCTGAACCTGACCAGCGAGA AGGTGTCCCAGGAAAAAGTGACAGAGATGATGAAGAAGTTCTGCGCC CAGCCCTGGGAGGAAATCAAGACCTCCTACGCTGGCGTGAAAGAGAA GTACCTGAGCGAGTACTGCTTCAGCGGCACCTACATCCTGAGCCTGC TGCTGCAGGGCTACCACTTCACCGCCGATAGCTGGGAGCACATCCAC TTCATCGGCAAGATTCAGGGCAGCGACGCCGGCTGGACACTGGGCTA CATGCTGAATCTGACCAACATGATCCCCGCCGAGCAGCCCCTGAGCA CACCTCTGAGCCACAGCACC
CD39(aa 38-476) _dMIL(193-204) _HSAI	HSA 結構域 I-G4S-CD39-dMIL	
SEQ ID NO: 151	胺基酸	DAHKSEVAHRFKDLGEENFKALVLIAFAQYLQQSPFEDHVKLVNEVTEFA KTCVADESAENCDKSLHTLFGDKLCTVATLRETYGEMADCCAKQEPERN ECFLQHKDDNPNLPRLVRPEVDVMCTAFHDNEETFLKKYLYEIARRHPYF YAPELLFFAKRYKAAFTECCQAADKAACLLPKLDELRGGGGSTQNKALPE NVKYGIVLDAGSSHTSLYIYKWPAEKENDTGVVHQVEECRVKGPGISKFV QKVNEIGIYLTDCMERAREVIPRSQHQETPVYLGATAGMRLLRMESEELA DRVLDVVERSLSNYPFDFQGARIITGQEEGAYGWITINYLLGKFSQKNQET FGALDLGGASTQVTFVPQNQTIESPDNALQFRLYGKDYNVYTHSFLCYGK DQALWQKLAKDIQVASNEILRDPCFHPGYKKVVNVSDLYKTPCTKRFEMT LPFQQFEIQGIGNYQQCHQSILELFNTSYCPYSQCAFNGIFLPPLQGDFGA FSAFYFVMKFLNLTSEKVSQEKVTEMMKKFCAQPWEEIKTSYAGVKEKYL SEYCFSGTYILSLLLQGYHFTADSWEHIHFIGKIQGSDAGWTLGYMLNLTN MIPAEQPLSTPLSHST
SEQ ID NO: 152	DNA	GACGCCCACAAGAGCGAGGTGGCCCACCGGTTCAAGGACCTGGGCG AGGAAAACTTCAAGGCCCTGGTGCTGATCGCCTTCGCCCAGTACCTG CAGCAGAGCCCCTTCGAAGATCACGTAAAGTTAGTCAACGAGGTTACG GAATTCGCAAAGACATGCGTTGCTGACGAATCCGCTGAGAATTGTGAC AAGAGTTTGCACACTTTATTCGGAGATAAGTTGTGTACTGTAGCTACTT TGAGAGAGACTTACGGTGAAATGGCTGACTGCTGTGCAAAACAGGAA CCAGAACGTAACGAATGTTTCCTTCAGCATAAGGATGATAACCCTAAC CTTCCAAGGCTTGTTAGGCCAGAAGTCGACGTGATGTGCACCGCCTT CCATGATAATGAAGAGACTTTTCTTAAAAAGTACCTATACGAGATTGCA AGGCGTCATCCATATTTTTACGCCCCAGAGCTGTTGTTTTTCGCAAAG AGATACAAAGCTGCATTTACTGAGTGTTGCCAAGCTGCCGACAAGGCC GCTTGTTTGCTACCAAAGTTGGACGAATTGAGAGGAGGCGGAGGATC TACCCAGAACAAGGCCCTGCCCGAGAACGTGAAGTACGGCATCGTGC TGGATGCCGGCAGCAGCCACACCAGCCTGTACATCTACAAGTGGCCT GCCGAGAAAGAAAACGACACCGGCGTGGTGCATCAGGTGGAAGAGT GCAGAGTGAAGGGCCCTGGCATCAGCAAGTTCGTGCAGAAAGTGAAC GAGATCGGCATCTACCTGACCGACTGCATGGAACGGGCCAGGGAAGT GATCCCCAGAAGCCAGCACCAGGAAACCCCCGTGTATCTGGGAGCCA CCGCCGGCATGAGACTGCTGAGAATGGAAAGCGAGGAACTGGCCGA CCGGGTGCTGGACGTGGTGGAAAGAAGCCTGAGCAACTACCCATTCG

		ATTTTCAAGGCGCCAGAATCATCACCGGCCAGGAAGAAGGCGCCTAC GGCTGGATCACCATCAACTACCTGCTGGGCAAGTTCAGCCAGAAGAA TCAGGAAACCTTCGGCGCCCTGGACCTGGGCGGAGCTTCTACCCAAG TGACCTTCGTGCCCCAGAATCAGACCATCGAGAGCCCCGACAACGCC CTGCAGTTCCGGCTGTACGGCAAGGACTACAATGTGTACACCCACAG CTTTCTGTGCTACGGAAAGGACCAGGCTCTGTGGCAGAAGCTGGCCA AGGACATCCAGGTGGCCAGCAACGAGATCCTGCGGGACCCTTGCTTC CACCCCGGCTACAAGAAAGTCGTGAACGTGTCCGACCTGTACAAGAC CCCCTGCACCAAGAGATTCGAGATGACCCTGCCCTTCCAGCAGTTCG AGATCCAGGGCATCGGCAATTACCAGCAGTGCCACCAGAGCATCCTG GAACTGTTCAACACCAGCTACTGCCCCTACAGCCAGTGCGCCTTCAAC GGCATCTTCCTGCCACCTCTGCAGGGGGATTTCGGCGCCTTCAGCGC CTTCTACTTCGTGATGAAGTTCCTGAACCTGACCAGCGAGAAGGTGTC CCAGGAAAAAGTGACAGAGATGATGAAGAAGTTCTGCGCCCAGCCCT GGGAGGAAATCAAGACCTCCTACGCTGGCGTGAAAGAGAAGTACCTG AGCGAGTACTGCTTCAGCGGCACCTACATCCTGAGCCTGCTGCTGCA GGGCTACCACTTCACCGCCGATAGCTGGGAGCACATCCACTTCATCG GCAAGATTCAGGGCAGCGACGCCGGCTGGACACTGGGCTACATGCT GAATCTGACCAACATGATCCCCGCCGAGCAGCCCCTGAGCACACCTC TGAGCCACAGCACC
CD39(aa 38-476) _dMIL(193-204) _HSAII		
SEQ ID NO: 153	胺基酸	DEGKASSAKQRLKCASLQKFGERAFKAWAVARLSQRFPKAEFAEVSKLV TDLTKVHTECCHGDLLECADDRADLAKYICENQDSISSKLKECCEKPLLEK SHCIAEVENDEMPADLPSLAADFVESKDVCKNYAEAKDVFLGMFLYEYAR RHPDYSVVLLLRLAKTYETTLEKCCAAADPHECYAKVFDEFKPGGGGST QNKALPENVKYGIVLDAGSSHTSLYIYKWPAEKENDTGVVHQVEECRVK GPGISKFVQKVNEIGIYLTDCMERAREVIPRSQHQETPVYLGATAGMRLLR MESEELADRVLDVVERSLSNYPFDFQGARIITGQEEGAYGWITINYLLGKF SQKNQETFGALDLGGASTQVTFVPQNQTIESPDNALQFRLYGKDYNVYT HSFLCYGKDQALWQKLAKDIQVASNEILRDPCFHPGYKKVVNVSDLYKTP CTKRFEMTLPFQQFEIQGIGNYQQCHQSILELFNTSYCPYSQCAFNGIFLP PLQGDFGAFSAFYFVMKFLNLTSEKVSQEKVTEMMKKFCAQPWEEIKTS YAGVKEKYLSEYCFSGTYILSLLLQGYHFTADSWEHIHFIGKIQGSDAGWT LGYMLNLTNMIPAEQPLSTPLSHST
SEQ ID NO: 154	DNA	GACGAGGGTAAGGCATCATCTGCCAAGCAGAGATTAAAATGTGCATCT TTGCAAAAATTTGGAGAGAGAGCTTTTAAGGCATGGGCTGTTGCCCGA CTAAGCCAAAGATTCCCAAAAGCCGAATTTGCTGAAGTATCCAAGCTG GTGACTGATTTGACTAAAGTACATACAGAATGTTGCCATGGCGACCTT TTAGAATGTGCTGATGACAGAGCAGATTTGGCTAAGTATATCTGCGAA AATCAAGATTCAATCAGCTCTAAGCTGAAGGAATGTTGCGAGAAACCA CTGTTAGAAAAATCGCATTGTATTGCTGAAGTTGAAAATGATGAGATGC CTGCTGACTTGCCTTCTCTTGCCGCTGATTTTGTTGAGTCGAAGGATG TCTGTAAGAATTATGCTGAAGCTAAAGACGTTTTCCTGGGTATGTTCTT ATATGAGTACGCAAGACGTCACCCAGATTACTCTGTGGTTCTGCTACT GAGATTGGCTAAAACATACGAGACAACGCTGGAGAAGTGCTGTGCTG CCGCTGACCCTCATGAGTGCTATGCAAAGGTTTTTGATGAATTCAAAC CAGGAGGCGGAGGATCTACCCAGAACAAGGCCCTGCCCGAGAACGT GAAGTACGGCATCGTGCTGGATGCCGGCAGCAGCCACACCAGCCTGT ACATCTACAAGTGGCCTGCCGAGAAAGAAAACGACACCGGCGTGGTG CATCAGGTGGAAGAGTGCAGAGTGAAGGGCCCTGGCATCAGCAAGTT CGTGCAGAAAGTGAACGAGATCGGCATCTACCTGACCGACTGCATGG AACGGGCCAGGGAAGTGATCCCCAGAAGCCAGCACCAGGAAACCCC CGTGTATCTGGGAGCCACCGCCGGCATGAGACTGCTGAGAATGGAAA GCGAGGAACTGGCCGACCGGGTGCTGGACGTGGTGGAAAGAAGCCT GAGCAACTACCCATTCGATTTTCAAGGCGCCAGAATCATCACCGGCCA GGAAGAAGGCGCCTACGGCTGGATCACCATCAACTACCTGCTGGGCA

		AGTTCAGCCAGAAGAATCAGGAAACCTTCGGCGCCCTGGACCTGGGC GGAGCTTCTACCCAAGTGACCTTCGTGCCCCAGAATCAGACCATCGA GAGCCCCGACAACGCCCTGCAGTTCCGGCTGTACGGCAAGGACTACA ATGTGTACACCCACAGCTTTCTGTGCTACGGAAAGGACCAGGCTCTGT GGCAGAAGCTGGCCAAGGACATCCAGGTGGCCAGCAACGAGATCCT GCGGGACCCTTGCTTCCACCCCGGCTACAAGAAAGTCGTGAACGTGT CCGACCTGTACAAGACCCCCTGCACCAAGAGATTCGAGATGACCCTG CCCTTCCAGCAGTTCGAGATCCAGGGCATCGGCAATTACCAGCAGTG CCACCAGAGCATCCTGGAACTGTTCAACACCAGCTACTGCCCCTACAG CCAGTGCGCCTTCAACGGCATCTTCCTGCCACCTCTGCAGGGGGATT TCGGCGCCTTCAGCGCCTTCTACTTCGTGATGAAGTTCCTGAACCTGA CCAGCGAGAAGGTGTCCCAGGAAAAAGTGACAGAGATGATGAAGAAG TTCTGCGCCCAGCCCTGGGAGGAAATCAAGACCTCCTACGCTGGCGT GAAAGAGAAGTACCTGAGCGAGTACTGCTTCAGCGGCACCTACATCC TGAGCCTGCTGCTGCAGGGCTACCACTTCACCGCCGATAGCTGGGAG CACATCCACTTCATCGGCAAGATTCAGGGCAGCGACGCCGGCTGGAC ACTGGGCTACATGCTGAATCTGACCAACATGATCCCCGCCGAGCAGC CCCTGAGCACACCTCTGAGCCACAGCACC
EP14_plusMIL		
SEQ ID NO: 155	胺基酸	TQNKALPENVKYGIVLDAGSSHTSLYIYKWPAEKENDTGVVHQVEECRVK GPGISKFVQKVNEIGIYLTDCMERAREVIPRSQHQETPVYLGATAGMRLLR MESEELADRVLDVVERSLSNYPFDFQGARIITGQEEGAYGWITINYLLGKF SQKTRWFSIVPYETNNQETFGALDLGGASTQVTFVPQNQTIESPDNALQF RLYGKDYNVYTHSFLCYGKDQALWQKLAKDIQVASNEILRDPCFHPGYKK VVNVSDLYKTPCTKRFEMTLPFQQFEIQGIGNYQQCHQSILELFNTSYCPY SQCAFNGIFLPPLQGDFGAFSAFYSVMKFLNLTSEKVSQEKVTEMMKKFC AQPWEEIKTSYAGVKEKYLSEYCFSGTYILSLLLQGYHFTADSWEHIHFIG KIQGSDAGWTLGYMLNLTNMIPAEQPLSTPLSHST
SEQ ID NO: 156	DNA	ACCCAGAACAAGGCCCTGCCCGAGAACGTGAAGTACGGCATCGTGCT GGATGCCGGCAGCAGCCACACCAGCCTGTACATCTACAAGTGGCCTG CCGAGAAAGAAAACGACACCGGCGTGGTGCATCAGGTGGAAGAGTGC AGAGTGAAGGGCCCTGGCATCAGCAAGTTCGTGCAGAAAGTGAACGA GATCGGCATCTACCTGACCGACTGCATGGAACGGGCCAGGGAAGTGA TCCCCAGAAGCCAGCACCAGGAAACCCCCGTGTATCTGGGAGCCACC GCCGGCATGAGACTGCTGAGAATGGAAAGCGAGGAACTGGCCGACC GGGTGCTGGACGTGGTGGAAAGAAGCCTGAGCAACTACCCATTCGAT TTTCAAGGCGCCAGAATCATCACCGGCCAGGAAGAAGGCGCCTACGG CTGGATCACCATCAACTACCTGCTGGGCAAGTTCAGCCAGAAGACCA GATGGTTCAGCATCGTGCCCTACGAGACAAACAATCAGGAAACCTTCG GCGCCCTGGACCTGGGCGGAGCTTCTACCCAAGTGACCTTCGTGCCC CAGAATCAGACCATCGAGAGCCCCGACAACGCCCTGCAGTTCCGGCT GTACGGCAAGGACTACAATGTGTACACCCACAGCTTTCTGTGCTACGG AAAGGACCAGGCTCTGTGGCAGAAGCTGGCCAAGGACATCCAGGTGG CCAGCAACGAGATCCTGCGGGACCCTTGCTTCCACCCCGGCTACAAG AAAGTCGTGAACGTGTCCGACCTGTACAAGACCCCCTGCACCAAGAG ATTCGAGATGACCCTGCCCTTCCAGCAGTTCGAGATCCAGGGCATCG GCAATTACCAGCAGTGCCACCAGAGCATCCTGGAACTGTTCAACACCA GCTACTGCCCCTACAGCCAGTGCGCCTTCAACGGCATCTTCCTGCCA CCTCTGCAGGGGGATTTCGGCGCCTTCAGCGCCTTCTACTCCGTGAT GAAGTTCCTGAACCTGACCAGCGAGAAGGTGTCCCAGGAAAAAGTGA CAGAGATGATGAAGAAGTTCTGCGCCCAGCCCTGGGAGGAAATCAAG ACCTCCTACGCTGGCGTGAAAGAGAAGTACCTGAGCGAGTACTGCTT CAGCGGCACCTACATCCTGAGCCTGCTGCTGCAGGGCTACCACTTCA CCGCCGATAGCTGGGAGCACATCCACTTCATCGGCAAGATTCAGGGC AGCGACGCCGGCTGGACACTGGGCTACATGCTGAATCTGACCAACAT GATCCCCGCCGAGCAGCCCCTGAGCACACCTCTGAGCCACAGCACC
SEQ ID NO: 157	正向引物	TCGCGATCCTGGAAGGCGTGCACTGCGCCCCTACCAGCAGCAGCACC AAGAAAACCCAGCTGACCAGCAGCACCCAGAACAAGGCCCTGC

SEQ ID NO: 158	反向引物	TAGAAGGCACAGTCGAGG
SEQ ID NO: 159	正向引物	CTGGTCGCGATCCTGGAAGGCGTGCACTGCGCCCCTACCAGCAGCAGCACCCAGAACAAGGCCCTG
SEQ ID NO: 160	正向引物	CTGGTCGCGATCCTGGAAGGCGTGCACTGCGCCCCTACCAGCAGCAGCACCCAGAACAAGGCCCTG
SEQ ID NO: 161	正向引物	CTGGTCGCGATCCTGGAAGGCGTGCACTGCGCCCCTACCACCCAGAACAAGGCCCTG
SEQ ID NO: 162	正向引物	CTGGTCGCGATCCTGGAAGGCGTGCACTGCGCCCCTACCAGCAGCAGCACCAAGAAAACCCAGAACAAGGCCCTG
SEQ ID NO: 163	正向引物	CTGGTCGCGATCCTGGAAGGCGTGCACTGCGCCCCTACCAGCAGCAGCACCAAGAAAACCCAGCTGACCCAGAACAAGGCCCTG
SEQ ID NO: 164	正向引物	CTGGTCGCGATCCTGGAAGGCGTGCACTGCAGCAGCAGCACCAAGAAAACCCAGCTGACCCAGAACAAGGCCCTG
SEQ ID NO: 165	引物 P270	CATACGATTTAGGTGA
SEQ ID NO: 166	引物 P271	TAGAAGGCACAGTCGAGG
SEQ ID NO: 167	泛素標籤	MQIFVKTLTGKTITLEVEPSDTIENVKAKIQDKEGIPPDQQRLIFAGKQLEDGRTLSDYNIQKESTLHLVLRLRGG
SEQ ID NO: 168	Cκ 標籤	TVAAPSVFIFPPSDEQLKSGTASVVCLLNNFYPREAKVQWKVDNALQSGNSQESVTEQDSKDSTYSLSSTLTLSKADYEKHKVYACEVTHQGLSSPVTKSFNRGE
SEQ ID NO: 169	HSA 結構域 I 標籤	DAHKSEVAHRFKDLGEENFKALVLIAFAQYLQQSPFEDHVKLVNEVTEFAKTCVADESAENCDKSLHTLFGDKLCTVATLRETYGEMADCCAKQEPERNECFLQHKDDNPNLPRLVRPEVDVMCTAFHDNEETFLKKYLYEIARRHPYFYAPELLFFAKRYKAAFTECCQAADKAACLLPKLDELR
SEQ ID NO: 170	HSA 結構域 II 標籤	DEGKASSAKQRLKCASLQKFGERAFKAWAVARLSQRFPKAEFAEVSKLVTDLTKVHTECCHGDLLECADDRADLAKYICENQDSISSKLKECCEKPLLEKSHCIAEVENDEMPADLPSLAADFVESKDVCKNYAEAKDVFLGMFLYEYARRHPDYSVVLLLRLAKTYETTLEKCCAAADPHECYAKVFDEFKP
SEQ ID NO: 171	P928 引物	CTGCCGAGAAAGAACAGGACACCGGCGTGG
SEQ ID NO: 172	P929 引物	CCACGCCGGTGTCCTGTTCTTTCTCGGCAG
SEQ ID NO: 173	P930 引物	CGTGCCCCAGAATCAGGCCATCGAGAGCC
SEQ ID NO: 174	P931 引物	GGCTCTCGATGGCCTGATTCTGGGGCACG
SEQ ID NO: 175	P932 引物	GGCTACAAGAAAGTCGTGCAGGTGTCCGACCTGTACAAGAC
SEQ ID NO: 176	P933 引物	GTCTTGTACAGGTCGGACACCTGCACGACTTTCTTGTAGCC

SEQ ID NO: 177	P934 引物	GCATCCTGGAACTGTTCCAGACCAGCTACTGCCCC
SEQ ID NO: 178	P935 引物	GGGGCAGTAGCTGGTCTGGAACAGTTCCAGGATGC
SEQ ID NO: 179	P936 引物	CCGTGATGAAGTTCCTGCAGCTGACCAGCGAGAAG
SEQ ID NO: 180	P937 引物	CTTCTCGCTGGTCAGCTGCAGGAACTTCATCACGG
SEQ ID NO: 181	P938 引物	CACTGGGCTACATGCTGCAGCTGACCAACATGATCC
SEQ ID NO: 182	P939 引物	GGATCATGTTGGTCAGCTGCAGCATGTAGCCCAGTG
SEQ ID NO: 183	P878 引物	CTACATCCTGAGCCTGCTGCAGCAGGGCTACCACTTCAC
SEQ ID NO: 184	P879 引物	GTGAAGTGGTAGCCCTGCTGCAGCAGGCTCAGGATGTAG
SEQ ID NO: 185	P880 引物	GAGAAGTACCTGAGCGAGTTTTGCTTCAGCGGCACCTACATCC
SEQ ID NO: 186	P881 引物	GGATGTAGGTGCCGCTGAAGCAAAACTCGCTCAGGTACTTCTC
SEQ ID NO: 187	P882 引物	GTTCGAGATCCAGGGCACCGGCAATTACCAGCAGTG
SEQ ID NO: 188	P883 引物	CACTGCTGGTAATTGCCGGTGCCCTGGATCTCGAAC
SEQ ID NO: 189	P884 引物	CGCCGATAGCTGGGAGCACATCCACTTCATCGGCAAG
SEQ ID NO: 190	P885 引物	CTTGCCGATGAAGTGGATGTGCTCCCAGCTATCGGCG
SEQ ID NO: 191	R113M templ	GAGATCGGCATCTACCTGACCGACTGCATGGAACGGGCCATGGAAGT GATCCCCAGAAGCCAGCACCAGGAAACCCCCGTGTATCTGGGAGCCA CCGCCGGCATGAGACTGCTGAGAATG
SEQ ID NO: 192	R113M FW	GAGATCGGCATCTACCTGACCGACT
SEQ ID NO: 193	R113M Rev	CATTCTCAGCAGTCTCAT
SEQ ID NO: 194	F330StempI	CTTCAGCGCCTTCTACTcCGTGATGAAGTTCCTGAACCTGACCAGCGA GAAGGTGTCCCAGGAAAAAGTGACAGAGATGATGAAGAAGTTCTGCG CCCAGCCCTGGGAGGAAATCAAGAC
SEQ ID NO: 195	F330S FW	CTTCAGCGCCTTCTACTCC
SEQ ID NO: 196	F330S Rev	GGTCTTGATTTCCTCCCAG
SEQ ID NO: 197	Y377F tempI	CTGGGAGGAAATCAAGACCTCCTACGCTGGCGTGAAAGAGAAGTACC TGAGCGAGTtCTGCTTCAGCGGCACCTACATCCTGAGCCTGCTGCTGC

		AGGGCTACCACTTCACCGCCGATA
SEQ ID NO: 198	L389C tempI	CTGGGAGGAAATCAAGACCTCCTACGCTGGCGTGAAAGAGAAGTACC TGAGCGAGTACTGCTTCAGCGGCACCTACATCCTGAGCCTGCTGCaG CAGGGCTACCACTTCACCGCCGATA
SEQ ID NO: 199	Y377F/ L389Q tempI	CTGGGAGGAAATCAAGACCTCCTACGCTGGCGTGAAAGAGAAGTACC TGAGCGAGTTCTGCTTCAGCGGCACCTACATCCTGAGCCTGCTGCaG CAGGGCTACCACTTCACCGCCGATA
SEQ ID NO: 200	FW 引物	CTGGGAGGAAATCAAGACC
SEQ ID NO: 201	Rev 引物	TATCGGCGGTGAAGTGGTA
SEQ ID NO: 202	WT 引物	CTGGGAGGAAATCAAGACCTCCTACGCTGGCGTGAAAGAGAAGTACC TGAGCGAGTACTGCTTCAGCGGCACCTACATCCTGAGCCTGCTGCTG CAGGGCTACCACTTCACCGCCGATA
SEQ ID NO: 203	fwMut 174	CACCGGCCAGGAAGCCGGCGCCTACG
SEQ ID NO: 204	revMut 174	CGTAGGCGCCGGCTTCCTGGCCGGTG
SEQ ID NO: 205	fwMut 218	GGACCTGGGCGGAGCTGCTACCCAAGTGACCTTC
SEQ ID NO: 206	revMut 218	GAAGGTCACTTGGGTAGCAGCTCCGCCCAGGTCC
SEQ ID NO: 207	plusMI Lfw	CTGGATCACCATCAACTACCTGCTGGGCAAGTTCAGCCAGAAGACCA GATGGTTCAGCATCGTGCCCTACGAGACAAACA
SEQ ID NO: 208	plusMI Lrev	TCACTTGGGTAGAAGCTCCGCCCAGGTCCAGGGCGCCGAAGGTTTCC TGATTGTTTGTCTCGTAGGGCA
EP1aa1-3		
SEQ ID NO: 209	胺基酸	APTTQNKALPENVKYGIVLDAGSSHTSLYIYKWPAEKENDTGVVHQVEEC RVKGPGISKFVQKVNEIGIYLTDCMERAMEVIPRSQHQETPVYLGATAGM RLLRMESEELADRVLDVVERSLSNYPFDFQGARIITGQEEGAYGWITINYL LGKFSQKNQETFGALDLGGASTQVTFVPQNQTIESPDNALQFRLYGKDY NVYTHSFLCYGKDQALWQKLAKDIQVASNEILRDPCFHPGYKKVVNVSDL YKTPCTKRFEMTLPFQQFEIQGIGNYQQCHQSILELFNTSYCPYSQCAFN GIFLPPLQGDFGAFSAFYFVMKFLNLTSEKVSQEKVTEMMKKFCAQPWE EIKTSYAGVKEKYLSEYCFSGTYILSLLLQGYHFTADSWEHIHFIGKIQGSD AGWTLGYMLNLTNMIPAEQPLSTPLSHST
SEQ ID NO: 210	DNA	GCCCCTACCACCCAGAACAAGGCCCTGCCCGAGAACGTGAAGTACGG CATCGTGCTGGATGCCGGCAGCAGCCACACCAGCCTGTACATCTACA AGTGGCCTGCCGAGAAAGAAAACGACACCGGCGTGGTGCATCAGGTG GAAGAGTGCAGAGTGAAGGGCCCTGGCATCAGCAAGTTCGTGCAGAA AGTGAACGAGATCGGCATCTACCTGACCGACTGCATGGAACGGGCCA TGGAAGTGATCCCCAGAAGCCAGCACCAGGAAACCCCCGTGTATCTG GGAGCCACCGCCGGCATGAGACTGCTGAGAATGGAAAGCGAGGAAC TGGCCGACCGGGTGCTGGACGTGGTGGAAAGAAGCCTGAGCAACTA CCCATTCGATTTTCAAGGCGCCAGAATCATCACCGGCCAGGAAGAAG GCGCCTACGGCTGGATCACCATCAACTACCTGCTGGGCAAGTTCAGC CAGAAGAATCAGGAAACCTTCGGCGCCCTGGACCTGGGCGGAGCTTC TACCCAAGTGACCTTCGTGCCCCAGAATCAGACCATCGAGAGCCCCG ACAACGCCCTGCAGTTCCGGCTGTACGGCAAGGACTACAATGTGTAC ACCCACAGCTTTCTGTGCTACGGAAAGGACCAGGCTCTGTGGCAGAA GCTGGCCAAGGACATCCAGGTGGCCAGCAACGAGATCCTGCGGGAC

		CCTTGCTTCCACCCCGGCTACAAGAAAGTCGTGAACGTGTCCGACCT GTACAAGACCCCCTGCACCAAGAGATTCGAGATGACCCTGCCCTTCC AGCAGTTCGAGATCCAGGGCATCGGCAATTACCAGCAGTGCCACCAG AGCATCCTGGAACTGTTCAACACCAGCTACTGCCCCTACAGCCAGTGC GCCTTCAACGGCATCTTCCTGCCACCTCTGCAGGGGGATTTCGGCGC CTTCAGCGCCTTCTACTTCGTGATGAAGTTCCTGAACCTGACCAGCGA GAAGGTGTCCCAGGAAAAAGTGACAGAGATGATGAAGAAGTTCTGCG CCCAGCCCTGGGAGGAAATCAAGACCTCCTACGCTGGCGTGAAAGAG AAGTACCTGAGCGAGTACTGCTTCAGCGGCACCTACATCCTGAGCCT GCTGCTGCAGGGCTACCACTTCACCGCCGATAGCTGGGAGCACATCC ACTTCATCGGCAAGATTCAGGGCAGCGACGCCGGCTGGACACTGGGC TACATGCTGAATCTGACCAACATGATCCCCGCCGAGCAGCCCCTGAG CACACCTCTGAGCCACAGCACC
EP1xEP17aa1-3		
SEQ ID NO: 211	胺基酸	APTTQNKALPENVKYGIVLDAGSSHTSLYIYKWPAEKENDTGVVHQVEEC RVKGPGISKFVQKVNEIGIYLTDCMERAMEVIPRSQHQETPVYLGATAGM RLLRMESEELADRVLDVVERSLSNYPFDFQGARIITGQEEGAYGWITINYL LGKFSQKNQETFGALDLGGASTQVTFVPQNQTIESPDNALQFRLYGKDY NVYTHSFLCYGKDQALWQKLAKDIQVASNEILRDPCFHPGYKKVVNVSDL YKTPCTKRFEMTLPFQQFEIQGIGNYQQCHQSILELFNTSYCPYSQCAFN GIFLPPLQGDFGAFSAFYFVMKFLNLTSEKVSQEKVTEMMKKFCAQPWE EIKTSYAGVKEKYLSEFCFSGTYILSLLLQGYHFTADSWEHIHFIGKIQGSD AGWTLGYMLNLTNMIPAEQPLSTPLSHST
SEQ ID NO: 212	DNA	GCCCCTACCACCCAGAACAAGGCCCTGCCCGAGAACGTGAAGTACGG CATCGTGCTGGATGCCGGCAGCAGCCACACCAGCCTGTACATCTACA AGTGGCCTGCCGAGAAAGAAAACGACACCGGCGTGGTGCATCAGGTG GAAGAGTGCAGAGTGAAGGGCCCTGGCATCAGCAAGTTCGTGCAGAA AGTGAACGAGATCGGCATCTACCTGACCGACTGCATGGAACGGGCCA TGGAAGTGATCCCCAGAAGCCAGCACCAGGAAACCCCCGTGTATCTG GGAGCCACCGCCGGCATGAGACTGCTGAGAATGGAAAGCGAGGAAC TGGCCGACCGGGTGCTGGACGTGGTGGAAAGAAGCCTGAGCAACTA CCCATTCGATTTTCAAGGCGCCAGAATCATCACCGGCCAGGAAGAAG GCGCCTACGGCTGGATCACCATCAACTACCTGCTGGGCAAGTTCAGC CAGAAGAATCAGGAAACCTTCGGCGCCCTGGACCTGGGCGGAGCTTC TACCCAAGTGACCTTCGTGCCCCAGAATCAGACCATCGAGAGCCCCG ACAACGCCCTGCAGTTCCGGCTGTACGGCAAGGACTACAATGTGTAC ACCCACAGCTTTCTGTGCTACGGAAAGGACCAGGCTCTGTGGCAGAA GCTGGCCAAGGACATCCAGGTGGCCAGCAACGAGATCCTGCGGGAC CCTTGCTTCCACCCCGGCTACAAGAAAGTCGTGAACGTGTCCGACCT GTACAAGACCCCCTGCACCAAGAGATTCGAGATGACCCTGCCCTTCC AGCAGTTCGAGATCCAGGGCATCGGCAATTACCAGCAGTGCCACCAG AGCATCCTGGAACTGTTCAACACCAGCTACTGCCCCTACAGCCAGTGC GCCTTCAACGGCATCTTCCTGCCACCTCTGCAGGGGGATTTCGGCGC CTTCAGCGCCTTCTACTTCGTGATGAAGTTCCTGAACCTGACCAGCGA GAAGGTGTCCCAGGAAAAAGTGACAGAGATGATGAAGAAGTTCTGCG CCCAGCCCTGGGAGGAAATCAAGACCTCCTACGCTGGCGTGAAAGAG AAGTACCTGAGCGAGTTTTGCTTCAGCGGCACCTACATCCTGAGCCTG CTGCTGCAGGGCTACCACTTCACCGCCGATAGCTGGGAGCACATCCA CTTCATCGGCAAGATTCAGGGCAGCGACGCCGGCTGGACACTGGGCT ACATGCTGAATCTGACCAACATGATCCCCGCCGAGCAGCCCCTGAGC ACACCTCTGAGCCACAGCACC
EP1xEP17aa1-6		
SEQ ID NO: 213	胺基酸	APTSSSTQNKALPENVKYGIVLDAGSSHTSLYIYKWPAEKENDTGVVHQV EECRVKGPGISKFVQKVNEIGIYLTDCMERAMEVIPRSQHQETPVYLGAT AGMRLLRMESEELADRVLDVVERSLSNYPFDFQGARIITGQEEGAYGWIT INYLLGKFSQKNQETFGALDLGGASTQVTFVPQNQTIESPDNALQFRLYG KDYNVYTHSFLCYGKDQALWQKLAKDIQVASNEILRDPCFHPGYKKVVNV SDLYKTPCTKRFEMTLPFQQFEIQGIGNYQQCHQSILELFNTSYCPYSQC

		AFNGIFLPPLQGDFGAFSAFYFVMKFLNLTSEKVSQEKVTEMMKKFCAQP WEEIKTSYAGVKEKYLSEFCFSGTYILSLLLQGYHFTADSWEHIHFIGKIQG SDAGWTLGYMLNLTNMIPAEQPLSTPLSHST
SEQ ID NO: 214	DNA	GCCCCTACCAGCAGCAGCACCCAGAACAAGGCCCTGCCCGAGAACGT GAAGTACGGCATCGTGCTGGATGCCGGCAGCAGCCACACCAGCCTGT ACATCTACAAGTGGCCTGCCGAGAAAGAAAACGACACCGGCGTGGTG CATCAGGTGGAAGAGTGCAGAGTGAAGGGCCCTGGCATCAGCAAGTT CGTGCAGAAAGTGAACGAGATCGGCATCTACCTGACCGACTGCATGG AACGGGCCATGGAAGTGATCCCCAGAAGCCAGCACCAGGAAACCCCC GTGTATCTGGGAGCCACCGCCGGCATGAGACTGCTGAGAATGGAAAG CGAGGAACTGGCCGACCGGGTGCTGGACGTGGTGGAAAGAAGCCTG AGCAACTACCCATTCGATTTTCAAGGCGCCAGAATCATCACCGGCCAG GAAGAAGGCGCCTACGGCTGGATCACCATCAACTACCTGCTGGGCAA GTTCAGCCAGAAGAATCAGGAAACCTTCGGCGCCCTGGACCTGGGCG GAGCTTCTACCCAAGTGACCTTCGTGCCCCAGAATCAGACCATCGAGA GCCCCGACAACGCCCTGCAGTTCCGGCTGTACGGCAAGGACTACAAT GTGTACACCCACAGCTTTCTGTGCTACGGAAAGGACCAGGCTCTGTG GCAGAAGCTGGCCAAGGACATCCAGGTGGCCAGCAACGAGATCCTGC GGGACCCTTGCTTCCACCCCGGCTACAAGAAAGTCGTGAACGTGTCC GACCTGTACAAGACCCCCTGCACCAAGAGATTCGAGATGACCCTGCC CTTCCAGCAGTTCGAGATCCAGGGCATCGGCAATTACCAGCAGTGCC ACCAGAGCATCCTGGAACTGTTCAACACCAGCTACTGCCCCTACAGCC AGTGCGCCTTCAACGGCATCTTCCTGCCACCTCTGCAGGGGGATTTC GGCGCCTTCAGCGCCTTCTACTTCGTGATGAAGTTCCTGAACCTGACC AGCGAGAAGGTGTCCCAGGAAAAAGTGACAGAGATGATGAAGAAGTT CTGCGCCCAGCCCTGGGAGGAAATCAAGACCTCCTACGCTGGCGTGA AAGAGAAGTACCTGAGCGAGTTCTGCTTCAGCGGCACCTACATCCTGA GCCTGCTGCTGCAGGGCTACCACTTCACCGCCGATAGCTGGGAGCAC ATCCACTTCATCGGCAAGATTCAGGGCAGCGACGCCGGCTGGACACT GGGCTACATGCTGAATCTGACCAACATGATCCCCGCCGAGCAGCCCC TGAGCACACCTCTGAGCCACAGCACC
EP1xEP17_K405Naa1-15		
SEQ ID NO: 215	胺基酸	APTSSSTKKTQLTSSTQNKALPENVKYGIVLDAGSSHTSLYIYKWPAEKEN DTGVVHQVEECRVKGPGISKFVQKVNEIGIYLTDCMERAMEVIPRSQHQE TPVYLGATAGMRLLRMESEELADRVLDVVERSLSNYPFDFQGARIITGQE EGAYGWITINYLLGKFSQKNQETFGALDLGGASTQVTFVPQNQTIESPDN ALQFRLYGKDYNVYTHSFLCYGKDQALWQKLAKDIQVASNEILRDPCFHP GYKKVVNVSDLYKTPCTKRFEMTLPFQQFEIQGIGNYQQCHQSILELFNT SYCPYSQCAFNGIFLPPLQGDFGAFSAFYFVMKFLNLTSEKVSQEKVTEM MKKFCAQPWEEIKTSYAGVNEKYLSEFCFSGTYILSLLLQGYHFTADSWE HIHFIGKIQGSDAGWTLGYMLNLTNMIPAEQPLSTPLSHST
SEQ ID NO: 216	DNA	GCCCCTACCAGCAGCAGCACCAAGAAAACCCAGCTGACCAGCAGCAC CCAGAACAAGGCCCTGCCCGAGAACGTGAAGTACGGCATCGTGCTGG ATGCCGGCAGCAGCCACACCAGCCTGTACATCTACAAGTGGCCTGCC GAGAAAGAAAACGACACCGGCGTGGTGCATCAGGTGGAAGAGTGCAG AGTGAAGGGCCCTGGCATCAGCAAGTTCGTGCAGAAAGTGAACGAGA TCGGCATCTACCTGACCGACTGCATGGAACGGGCCATGGAAGTGATC CCCAGAAGCCAGCACCAGGAAACCCCCGTGTATCTGGGAGCCACCGC CGGCATGAGACTGCTGAGAATGGAAAGCGAGGAACTGGCCGACCGG GTGCTGGACGTGGTGGAAAGAAGCCTGAGCAACTACCCATTCGATTTT CAAGGCGCCAGAATCATCACCGGCCAGGAAGAAGGCGCCTACGGCT GGATCACCATCAACTACCTGCTGGGCAAGTTCAGCCAGAAGAATCAG GAAACCTTCGGCGCCCTGGACCTGGGCGGAGCTTCTACCCAAGTGAC CTTCGTGCCCCAGAATCAGACCATCGAGAGCCCCGACAACGCCCTGC AGTTCCGGCTGTACGGCAAGGACTACAATGTGTACACCCACAGCTTTC TGTGCTACGGAAAGGACCAGGCTCTGTGGCAGAAGCTGGCCAAGGAC ATCCAGGTGGCCAGCAACGAGATCCTGCGGGACCCTTGCTTCCACCC CGGCTACAAGAAAGTCGTGAACGTGTCCGACCTGTACAAGACCCCCT GCACCAAGAGATTCGAGATGACCCTGCCCTTCCAGCAGTTCGAGATC

		CAGGGCATCGGCAATTACCAGCAGTGCCACCAGAGCATCCTGGAACT GTTCAACACCAGCTACTGCCCCTACAGCCAGTGCGCCTTCAACGGCA TCTTCCTGCCACCTCTGCAGGGGGATTTCGGCGCCTTCAGCGCCTTC TACTTCGTGATGAAGTTCCTGAACCTGACCAGCGAGAAGGTGTCCCAG GAAAAAGTGACAGAGATGATGAAGAAGTTCTGCGCCCAACCCTGGGA GGAAATCAAGACCTCCTACGCTGGCGTGAACGAGAAGTACCTGAGCG AGTTTTGCTTCAGCGGCACCTACATCCTGAGCCTGCTGCTGCAGGGC TACCACTTCACCGCCGATAGCTGGGAGCACATCCACTTCATCGGCAA GATTCAGGGCAGCGACGCCGGCTGGACACTGGGCTACATGCTGAATC TGACCAACATGATCCCCGCCGAGCAGCCCCTGAGCACACCTCTGAGC CACAGCACC
EP1xEP17xEP19aa1-3		
SEQ ID NO: 217	胺基酸	APTTQNKALPENVKYGIVLDAGSSHTSLYIYKWPAEKENDTGVVHQVEEC RVKGPGISKFVQKVNEIGIYLTDCMERAMEVIPRSQHQETPVYLGATAGM RLLRMESEELADRVLDVVERSLSNYPFDFQGARIITGQEEGAYGWITINYL LGKFSQKNQETFGALDLGGASTQVTFVPQNQTIESPDNALQFRLYGKDY NVYTHSFLCYGKDQALWQKLAKDIQVASNEILRDPCFHPGYKKVVNVSDL YKTPCTKRFEMTLPFQQFEIQGIGNYQQCHQSILELFNTSYCPYSQCAFN GIFLPPLQGDFGAFSAFYFVMKFLNLTSEKVSQEKVTEMMKKFCAQPWE EIKTSYAGVKEKYLSEFCFSGTYILSLLQQGYHFTADSWEHIHFIGKIQGSD AGWTLGYMLNLTNMIPAEQPLSTPLSHST
SEQ ID NO: 218	DNA	GCCCCTACCACCCAGAACAAGGCCCTGCCCGAGAACGTGAAGTACGG CATCGTGCTGGATGCCGGCAGCAGCCACACCAGCCTGTACATCTACA AGTGGCCTGCCGAGAAAGAAAACGACACCGGCGTGGTGCATCAGGTG GAAGAGTGCAGAGTGAAGGGCCCTGGCATCAGCAAGTTCGTGCAGAA AGTGAACGAGATCGGCATCTACCTGACCGACTGCATGGAACGGGCCA TGGAAGTGATCCCCAGAAGCCAGCACCAGGAAACCCCCGTGTATCTG GGAGCCACCGCCGGCATGAGACTGCTGAGAATGGAAAGCGAGGAAC TGGCCGACCGGGTGCTGGACGTGGTGGAAAGAAGCCTGAGCAACTA CCCATTCGATTTTCAAGGCGCCAGAATCATCACCGGCCAGGAAGAAG GCGCCTACGGCTGGATCACCATCAACTACCTGCTGGGCAAGTTCAGC CAGAAGAATCAGGAAACCTTCGGCGCCCTGGACCTGGGCGGAGCTTC TACCCAAGTGACCTTCGTGCCCCAGAATCAGACCATCGAGAGCCCCG ACAACGCCCTGCAGTTCCGGCTGTACGGCAAGGACTACAATGTGTAC ACCCACAGCTTTCTGTGCTACGGAAAGGACCAGGCTCTGTGGCAGAA GCTGGCCAAGGACATCCAGGTGGCCAGCAACGAGATCCTGCGGGAC CCTTGCTTCCACCCCGGCTACAAGAAAGTCGTGAACGTGTCCGACCT GTACAAGACCCCCTGCACCAAGAGATTCGAGATGACCCTGCCCTTCC AGCAGTTCGAGATCCAGGGCATCGGCAATTACCAGCAGTGCCACCAG AGCATCCTGGAACTGTTCAACACCAGCTACTGCCCCTACAGCCAGTGC GCCTTCAACGGCATCTTCCTGCCACCTCTGCAGGGGGATTTCGGCGC CTTCAGCGCCTTCTACTTCGTGATGAAGTTCCTGAACCTGACCAGCGA GAAGGTGTCCCAGGAAAAAGTGACAGAGATGATGAAGAAGTTCTGCG CCCAGCCCTGGGAGGAAATCAAGACCTCCTACGCTGGCGTGAAAGAG AAGTACCTGAGCGAGTTCTGCTTCAGCGGCACCTACATCCTGAGCCT GCTGCAGCAGGGCTACCACTTCACCGCCGATAGCTGGGAGCACATCC ACTTCATCGGCAAGATTCAGGGCAGCGACGCCGGCTGGACACTGGGC TACATGCTGAATCTGACCAACATGATCCCCGCCGAGCAGCCCCTGAG CACACCTCTGAGCCACAGCACC
EP1xEP17xEP19aa1-6		
SEQ ID NO: 219	胺基酸	APTSSSTQNKALPENVKYGIVLDAGSSHTSLYIYKWPAEKENDTGVVHQV EECRVKGPGISKFVQKVNEIGIYLTDCMERAMEVIPRSQHQETPVYLGAT AGMRLLRMESEELADRVLDVVERSLSNYPFDFQGARIITGQEEGAYGWIT INYLLGKFSQKNQETFGALDLGGASTQVTFVPQNQTIESPDNALQFRLYG KDYNVYTHSFLCYGKDQALWQKLAKDIQVASNEILRDPCFHPGYKKVVNV SDLYKTPCTKRFEMTLPFQQFEIQGIGNYQQCHQSILELFNTSYCPYSQC

		AFNGIFLPPLQGDFGAFSAFYFVMKFLNLTSEKVSQEKVTEMMKKFCAQP WEEIKTSYAGVKEKYLSEFCFSGTYILSLLQQGYHFTADSWEHIHFIGKIQ GSDAGWTLGYMLNLTNMIPAEQPLSTPLSHST
SEQ ID NO: 220	DNA	GCCCCTACCAGCAGCAGCACCCAGAACAAGGCCCTGCCCGAGAACGT GAAGTACGGCATCGTGCTGGATGCCGGCAGCAGCCACACCAGCCTGT ACATCTACAAGTGGCCTGCCGAGAAAGAAAACGACACCGGCGTGGTG CATCAGGTGGAAGAGTGCAGAGTGAAGGGCCCTGGCATCAGCAAGTT CGTGCAGAAAGTGAACGAGATCGGCATCTACCTGACCGACTGCATGG AACGGGCCATGGAAGTGATCCCCAGAAGCCAGCACCAGGAAACCCCC GTGTATCTGGGAGCCACCGCCGGCATGAGACTGCTGAGAATGGAAAG CGAGGAACTGGCCGACCGGGTGCTGGACGTGGTGGAAAGAAGCCTG AGCAACTACCCATTCGATTTTCAAGGCGCCAGAATCATCACCGGCCAG GAAGAAGGCGCCTACGGCTGGATCACCATCAACTACCTGCTGGGCAA GTTCAGCCAGAAGAATCAGGAAACCTTCGGCGCCCTGGACCTGGGCG GAGCTTCTACCCAAGTGACCTTCGTGCCCCAGAATCAGACCATCGAGA GCCCCGACAACGCCCTGCAGTTCCGGCTGTACGGCAAGGACTACAAT GTGTACACCCACAGCTTTCTGTGCTACGGAAAGGACCAGGCTCTGTG GCAGAAGCTGGCCAAGGACATCCAGGTGGCCAGCAACGAGATCCTGC GGGACCCTTGCTTCCACCCCGGCTACAAGAAAGTCGTGAACGTGTCC GACCTGTACAAGACCCCCTGCACCAAGAGATTCGAGATGACCCTGCC CTTCCAGCAGTTCGAGATCCAGGGCATCGGCAATTACCAGCAGTGCC ACCAGAGCATCCTGGAACTGTTCAACACCAGCTACTGCCCCTACAGCC AGTGCGCCTTCAACGGCATCTTCCTGCCACCTCTGCAGGGGGATTTC GGCGCCTTCAGCGCCTTCTACTTCGTGATGAAGTTCCTGAACCTGACC AGCGAGAAGGTGTCCCAGGAAAAAGTGACAGAGATGATGAAGAAGTT CTGCGCCCAGCCCTGGGAGGAAATCAAGACCTCCTACGCTGGCGTGA AAGAGAAGTACCTGAGCGAGTTCTGCTTCAGCGGCACCTACATCCTGA GCCTGCTGCAGCAGGGCTACCACTTCACCGCCGATAGCTGGGAGCAC ATCCACTTCATCGGCAAGATTCAGGGCAGCGACGCCGGCTGGACACT GGGCTACATGCTGAATCTGACCAACATGATCCCCGCCGAGCAGCCCC TGAGCACACCTCTGAGCCACAGCACC
EP1xEP 14aa1-3		
SEQ ID NO: 221	胺基酸	APTTQNKALPENVKYGIVLDAGSSHTSLYIYKWPAEKENDTGVVHQVEEC RVKGPGISKFVQKVNEIGIYLTDCMERAMEVIPRSQHQETPVYLGATAGM RLLRMESEELADRVLDVVERSLSNYPFDFQGARIITGQEEGAYGWITINYL LGKFSQKNQETFGALDLGGASTQVTFVPQNQTIESPDNALQFRLYGKDY NVYTHSFLCYGKDQALWQKLAKDIQVASNEILRDPCFHPGYKKVVNVSDL YKTPCTKRFEMTLPFQQFEIQGIGNYQQCHQSILELFNTSYCPYSQCAFN GIFLPPLQGDFGAFSAFYSVMKFLNLTSEKVSQEKVTEMMKKFCAQPWE EIKTSYAGVKEKYLSEYCFSGTYILSLLLQGYHFTADSWEHIHFIGKIQGSD AGWTLGYMLNLTNMIPAEQPLSTPLSHST
SEQ ID NO: 222	DNA	GCCCCTACCACCCAGAACAAGGCCCTGCCCGAGAACGTGAAGTACGG CATCGTGCTGGATGCCGGCAGCAGCCACACCAGCCTGTACATCTACA AGTGGCCTGCCGAGAAAGAAAACGACACCGGCGTGGTGCATCAGGTG GAAGAGTGCAGAGTGAAGGGCCCTGGCATCAGCAAGTTCGTGCAGAA AGTGAACGAGATCGGCATCTACCTGACCGACTGCATGGAACGGGCCA TGGAAGTGATCCCCAGAAGCCAGCACCAGGAAACCCCCGTGTATCTG GGAGCCACCGCCGGCATGAGACTGCTGAGAATGGAAAGCGAGGAAC TGGCCGACCGGGTGCTGGACGTGGTGGAAAGAAGCCTGAGCAACTA CCCATTCGATTTTCAAGGCGCCAGAATCATCACCGGCCAGGAAGAAG GCGCCTACGGCTGGATCACCATCAACTACCTGCTGGGCAAGTTCAGC CAGAAGAATCAGGAAACCTTCGGCGCCTTGGACCTGGGCGGAGCTTC TACCCAAGTGACCTTCGTGCCCCAGAATCAGACCATCGAGAGCCCCG ACAACGCCCTGCAGTTCCGGCTGTACGGCAAGGACTACAATGTGTAC ACCCACAGCTTTCTGTGCTACGGAAAGGACCAGGCTCTGTGGCAGAA GCTGGCCAAGGACATCCAGGTGGCCAGCAACGAGATCCTGCGGGAC CCTTGCTTCCACCCCGGCTACAAGAAAGTCGTGAACGTGTCCGACCT GTACAAGACCCCCTGCACCAAGAGATTCGAGATGACCCTGCCCTTCC AGCAGTTCGAGATCCAGGGCATCGGCAATTACCAGCAGTGCCACCAG AGCATCCTGGAACTGTTCAACACCAGCTACTGCCCCTACAGCCAGTGC

		GCCTTCAACGGCATCTTCCTGCCACCTCTGCAGGGGGATTTCGGCGC CTTCAGCGCCTTCTACTCCGTGATGAAGTTCCTGAACCTGACCAGCGA GAAGGTGTCCCAGGAAAAAGTGACAGAGATGATGAAGAAGTTCTGCG CCCAGCCCTGGGAGGAAATCAAGACCTCCTACGCTGGCGTGAAAGAG AAGTACCTGAGCGAGTACTGCTTCAGCGGCACCTACATCCTGAGCCT GCTGCTGCAGGGCTACCACTTCACCGCCGATAGCTGGGAGCACATCC ACTTCATCGGCAAGATTCAGGGCAGCGACGCCGGCTGGACACTGGGT TACATGCTGAATCTGACCAACATGATCCCCGCCGAGCAGCCCCTGAG CACACCTCTGAGCCACAGCACC
EP1xEP14aa1-6		
SEQ ID NO: 223	胺基酸	APTSSSTQNKALPENVKYGIVLDAGSSHTSLYIYKWPAEKENDTGVVHQV EECRVKGPGISKFVQKVNEIGIYLTDCMERAMEVIPRSQHQETPVYLGAT AGMRLLRMESEELADRVLDVVERSLSNYPFDFQGARIITGQEEGAYGWIT INYLLGKFSQKNQETFGALDLGGASTQVTFVPQNQTIESPDNALQFRLYG KDYNVYTHSFLCYGKDQALWQKLAKDIQVASNEILRDPCFHPGYKKVVNV SDLYKTPCTKRFEMTLPFQQFEIQGIGNYQQCHQSILELFNTSYCPYSQC AFNGIFLPPLQGDFGAFSAFYSVMKFLNLTSEKVSQEKVTEMMKKFCAQP WEEIKTSYAGVKEKYLSEYCFSGTYILSLLLQGYHFTADSWEHIHFIGKIQG SDAGWTLGYMLNLTNMIPAEQPLSTPLSHST
SEQ ID NO: 224	DNA	GCCCCTACCAGCAGCAGCACCCAGAACAAGGCCCTGCCCGAGAACGT GAAGTACGGCATCGTGCTGGATGCCGGCAGCAGCCACACCAGCCTGT ACATCTACAAGTGGCCTGCCGAGAAAGAAAACGACACCGGCGTGGTG CATCAGGTGGAAGAGTGCAGAGTGAAGGGCCCTGGCATCAGCAAGTT CGTGCAGAAAGTGAACGAGATCGGCATCTACCTGACCGACTGCATGG AACGGGCCATGGAAGTGATCCCCAGAAGCCAGCACCAGGAAACCCCC GTGTATCTGGGAGCCACCGCCGGCATGAGACTGCTGAGAATGGAAAG CGAGGAACTGGCCGACCGGGTGCTGGACGTGGTGGAAAGAAGCCTG AGCAACTACCCATTCGATTTTCAAGGCGCCAGAATCATCACCGGCCAG GAAGAAGGCGCCTACGGCTGGATCACCATCAACTACCTGCTGGGCAA GTTCAGCCAGAAGAATCAGGAAACCTTCGGCGCCTTGGACCTGGGCG GAGCTTCTACCCAAGTGACCTTCGTGCCCCAGAATCAGACCATCGAGA GCCCCGACAACGCCCTGCAGTTCCGGCTGTACGGCAAGGACTACAAT GTGTACACCCACAGCTTTCTGTGCTACGGAAAGGACCAGGCTCTGTG GCAGAAGCTGGCCAAGGACATCCAGGTGGCCAGCAACGAGATCCTGC GGGACCCTTGCTTCCACCCCGGCTACAAGAAAGTCGTGAACGTGTCC GACCTGTACAAGACCCCCTGCACCAAGAGATTCGAGATGACCCTGCC CTTCCAGCAGTTCGAGATCCAGGGCATCGGCAATTACCAGCAGTGCC ACCAGAGCATCCTGGAACTGTTCAACACCAGCTACTGCCCCTACAGCC AGTGCGCCTTCAACGGCATCTTCCTGCCACCTCTGCAGGGGGATTTC GGCGCCTTCAGCGCCTTCTACTCCGTGATGAAGTTCCTGAACCTGACC AGCGAGAAGGTGTCCCAGGAAAAAGTGACAGAGATGATGAAGAAGTT CTGCGCCCAGCCCTGGGAGGAAATCAAGACCTCCTACGCTGGCGTGA AAGAGAAGTACCTGAGCGAGTACTGCTTCAGCGGCACCTACATCCTG AGCCTGCTGCTGCAGGGCTACCACTTCACCGCCGATAGCTGGGAGCA CATCCACTTCATCGGCAAGATTCAGGGCAGCGACGCCGGCTGGACAC TGGGTTACATGCTGAATCTGACCAACATGATCCCCGCCGAGCAGCCC CTGAGCACACCTCTGAGCCACAGCACC
EP17xEP19aa1-3		
SEQ ID NO: 225	胺基酸	APTTQNKALPENVKYGIVLDAGSSHTSLYIYKWPAEKENDTGVVHQVEEC RVKGPGISKFVQKVNEIGIYLTDCMERAREVIPRSQHQETPVYLGATAGM RLLRMESEELADRVLDVVERSLSNYPFDFQGARIITGQEEGAYGWITINYL LGKFSQKNQETFGALDLGGASTQVTFVPQNQTIESPDNALQFRLYGKDY NVYTHSFLCYGKDQALWQKLAKDIQVASNEILRDPCFHPGYKKVVNVSDL YKTPCTKRFEMTLPFQQFEIQGIGNYQQCHQSILELFNTSYCPYSQCAFN GIFLPPLQGDFGAFSAFYFVMKFLNLTSEKVSQEKVTEMMKKFCAQPWE EIKTSYAGVKEKYLSEFCFSGTYILSLLQQGYHFTADSWEHIHFIGKIQGSD AGWTLGYMLNLTNMIPAEQPLSTPLSHST

SEQ ID NO: 226	DNA	GCCCCTACCACCCAGAACAAGGCCCTGCCCGAGAACGTGAAGTACGG CATCGTGCTGGATGCCGGCAGCAGCCACACCAGCCTGTACATCTACA AGTGGCCTGCCGAGAAAGAAAACGACACCGGCGTGGTGCATCAGGTG GAAGAGTGCAGAGTGAAGGGCCCTGGCATCAGCAAGTTCGTGCAGAA AGTGAACGAGATCGGCATCTACCTGACCGACTGCATGGAACGGGCCA GGGAAGTGATCCCCAGAAGCCAGCACCAGGAAACCCCCGTGTATCTG GGAGCCACCGCCGGCATGAGACTGCTGAGAATGGAAAGCGAGGAAC TGGCCGACCGGGTGCTGGACGTGGTGGAAAGAAGCCTGAGCAACTA CCCATTCGATTTTCAAGGCGCCAGAATCATCACCGGCCAGGAAGAAG GCGCCTACGGCTGGATCACCATCAACTACCTGCTGGGCAAGTTCAGC CAGAAGAATCAGGAAACCTTCGGCGCCCTGGACCTGGGCGGAGCTTC TACCCAAGTGACCTTCGTGCCCCAGAATCAGACCATCGAGAGCCCCG ACAACGCCCTGCAGTTCCGGCTGTACGGCAAGGACTACAATGTGTAC ACCCACAGCTTTCTGTGCTACGGAAAGGACCAGGCTCTGTGGCAGAA GCTGGCCAAGGACATCCAGGTGGCCAGCAACGAGATCCTGCGGGAC CCTTGCTTCCACCCCGGCTACAAGAAAGTCGTGAACGTGTCCGACCT GTACAAGACCCCCTGCACCAAGAGATTCGAGATGACCCTGCCCTTCC AGCAGTTCGAGATCCAGGGCATCGGCAATTACCAGCAGTGCCACCAG AGCATCCTGGAACTGTTCAACACCAGCTACTGCCCCTACAGCCAGTGC GCCTTCAACGGCATCTTCCTGCCACCTCTGCAGGGGGATTTCGGCGC CTTCAGCGCCTTCTACTTCGTGATGAAGTTCCTGAACCTGACCAGCGA GAAGGTGTCCCAGGAAAAAGTGACAGAGATGATGAAGAAGTTCTGCG CCCAGCCCTGGGAGGAAATCAAGACCTCCTACGCTGGCGTGAAAGAG AAGTACCTGAGCGAGTTTTGCTTCAGCGGCACCTACATCCTGAGCCTG CTGCAGCAGGGCTACCACTTCACCGCCGATAGCTGGGAGCACATCCA CTTCATCGGCAAGATTCAGGGCAGCGACGCCGGCTGGACACTGGGCT ACATGCTGAATCTGACCAACATGATCCCCGCCGAGCAGCCCCTGAGC ACACCTCTGAGCCACAGCACC
EP17xEP19aa1-6		
SEQ ID NO: 227	胺基酸	APTSSSTQNKALPENVKYGIVLDAGSSHTSLYIYKWPAEKENDTGVVHQV EECRVKGPGISKFVQKVNEIGIYLTDCMERAREVIPRSQHQETPVYLGATA GMRLLRMESEELADRVLDVVERSLSNYPFDFQGARIITGQEEGAYGWITI NYLLGKFSQKNQETFGALDLGGASTQVTFVPQNQTIESPDNALQFRLYGK DYNVYTHSFLCYGKDQALWQKLAKDIQVASNEILRDPCFHPGYKKVVNVS DLYKTPCTKRFEMTLPFQQFEIQGIGNYQQCHQSILELFNTSYCPYSQCA FNGIFLPPLQGDFGAFSAFYFVMKFLNLTSEKVSQEKVTEMMKKFCAQP WEEIKTSYAGVKEKYLSEFCFSGTYILSLLQQGYHFTADSWEHIHFIGKIQ GSDAGWTLGYMLNLTNMIPAEQPLSTPLSHST
SEQ ID NO: 228	DNA	GCCCCTACCAGCAGCAGCACCCAGAACAAGGCCCTGCCCGAGAACGT GAAGTACGGCATCGTGCTGGATGCCGGCAGCAGCCACACCAGCCTGT ACATCTACAAGTGGCCTGCCGAGAAAGAAAACGACACCGGCGTGGTG CATCAGGTGGAAGAGTGCAGAGTGAAGGGCCCTGGCATCAGCAAGTT CGTGCAGAAAGTGAACGAGATCGGCATCTACCTGACCGACTGCATGG AACGGGCCAGGGAAGTGATCCCCAGAAGCCAGCACCAGGAAACCCC CGTGTATCTGGGAGCCACCGCCGGCATGAGACTGCTGAGAATGGAAA GCGAGGAACTGGCCGACCGGGTGCTGGACGTGGTGGAAAGAAGCCT GAGCAACTACCCATTCGATTTTCAAGGCGCCAGAATCATCACCGGCCA GGAAGAAGGCGCCTACGGCTGGATCACCATCAACTACCTGCTGGGCA AGTTCAGCCAGAAGAATCAGGAAACCTTCGGCGCCCTGGACCTGGGC GGAGCTTCTACCCAAGTGACCTTCGTGCCCCAGAATCAGACCATCGA GAGCCCCGACAACGCCCTGCAGTTCCGGCTGTACGGCAAGGACTACA ATGTGTACACCCACAGCTTTCTGTGCTACGGAAAGGACCAGGCTCTGT GGCAGAAGCTGGCCAAGGACATCCAGGTGGCCAGCAACGAGATCCT GCGGGACCCTTGCTTCCACCCCGGCTACAAGAAAGTCGTGAACGTGT CCGACCTGTACAAGACCCCCTGCACCAAGAGATTCGAGATGACCCTG CCCTTCCAGCAGTTCGAGATCCAGGGCATCGGCAATTACCAGCAGTG CCACCAGAGCATCCTGGAACTGTTCAACACCAGCTACTGCCCCTACAG CCAGTGCGCCTTCAACGGCATCTTCCTGCCACCTCTGCAGGGGGATT TCGGCGCCTTCAGCGCCTTCTACTTCGTGATGAAGTTCCTGAACCTGA

		CCAGCGAGAAGGTGTCCCAGGAAAAAGTGACAGAGATGATGAAGAAG TTCTGCGCCCAGCCCTGGGAGGAAATCAAGACCTCCTACGCTGGCGT GAAAGAGAAGTACCTGAGCGAGTTTTGCTTCAGCGGCACCTACATCCT GAGCCTGCTGCAGCAGGGCTACCACTTCACCGCCGATAGCTGGGAGC ACATCCACTTCATCGGCAAGATTCAGGGCAGCGACGCCGGCTGGACA CTGGGCTACATGCTGAATCTGACCAACATGATCCCCGCCGAGCAGCC CCTGAGCACACCTCTGAGCCACAGCACC
EP14aa1-3		
SEQ ID NO: 229	胺基酸	APTTQNKALPENVKYGIVLDAGSSHTSLYIYKWPAEKENDTGVVHQVEEC RVKGPGISKFVQKVNEIGIYLTDCMERAREVIPRSQHQETPVYLGATAGM RLLRMESEELADRVLDVVERSLSNYPFDFQGARIITGQEEGAYGWITINYL LGKFSQKNQETFGALDLGGASTQVTFVPQNQTIESPDNALQFRLYGKDY NVYTHSFLCYGKDQALWQKLAKDIQVASNEILRDPCFHPGYKKVVNVSDL YKTPCTKRFEMTLPFQQFEIQGIGNYQQCHQSILELFNTSYCPYSQCAFN GIFLPPLQGDFGAFSAFYSVMKFLNLTSEKVSQEKVTEMMKKFCAQPWE EIKTSYAGVKEKYLSEYCFSGTYILSLLLQGYHFTADSWEHIHFIGKIQGSD AGWTLGYMLNLTNMIPAEQPLSTPLSHST
SEQ ID NO: 230	DNA	GCCCCTACCACCCAGAACAAGGCCCTGCCCGAGAACGTGAAGTACGG CATCGTGCTGGACGCCGGCTCCTCCCACACCTCCCTGTACATCTACAA GTGGCCTGCCGAGAAAGAAAACGACACCGGCGTGGTGCACCAAGTG GAAGAGTGCAGAGTGAAGGGCCCCGGCATCTCCAAGTTCGTGCAGAA AGTGAACGAGATCGGCATCTACCTGACCGACTGCATGGAACGGGCCA GAGAAGTGATCCCTCGGTCCCAGCACCAGGAAACCCCTGTCTACCTG GGCGCCACCGCCGGCATGCGGCTGCTGCGGATGGAATCCGAGGAAC TGGCCGACCGGGTGCTGGACGTGGTGGAACGGTCCCTGTCCAACTAC CCATTCGATTTTCAAGGCGCCAGAATCATCACCGGCCAGGAAGAGGG CGCCTACGGCTGGATCACCATCAACTACCTGCTGGGCAAGTTCTCCC AGAAGAATCAGGAAACCTTCGGCGCCCTGGACCTGGGCGGAGCCAG CACCCAAGTCACATTCGTGCCCCAGAACCAGACCATCGAGAGCCCCG ACAACGCCCTGCAGTTCCGGCTGTACGGCAAGGACTACAACGTGTAC ACCCACAGCTTTCTGTGCTACGGCAAGGACCAGGCCCTGTGGCAGAA GCTGGCCAAGGACATCCAAGTGGCCTCCAACGAGATCCTGCGGGACC CCTGCTTCCACCCCGGCTACAAGAAAGTGGTCAACGTGTCCGACCTG TACAAGACCCCTTGCACCAAGAGATTCGAGATGACCCTGCCCTTCCAG CAGTTCGAGATCCAGGGCATCGGCAACTACCAGCAGTGCCACCAGTC CATCCTGGAACTGTTCAACACCTCCTACTGCCCCTACTCCCAGTGCGC CTTCAACGGCATCTTCCTGCCTCCACTGCAGGGCGACTTCGGCGCCT TCTCCGCCTTCTACTCCGTGATGAAGTTCCTGAACCTGACCTCCGAGA AAGTGTCCCAGGAAAAAGTGACCGAGATGATGAAGAAGTTCTGCGCC CAGCCCTGGGAGGAAATCAAGACCTCCTACGCTGGCGTGAAAGAGAA GTACCTGTCCGAGTACTGCTTCTCCGGCACCTACATCCTGTCCCTGCT GCTGCAGGGCTACCACTTCACCGCCGACAGCTGGGAGCACATCCACT TCATCGGCAAGATCCAGGGATCCGACGCTGGCTGGACCCTGGGCTAC ATGCTGAATCTGACCAACATGATCCCCGCCGAGCAGCCCCTGTCCAC CCCTCTGTCTCACTCCACC
EP14aa1-6		
SEQ ID NO: 231	胺基酸	APTSSSTQNKALPENVKYGIVLDAGSSHTSLYIYKWPAEKENDTGVVHQV EECRVKGPGISKFVQKVNEIGIYLTDCMERAREVIPRSQHQETPVYLGATA GMRLLRMESEELADRVLDVVERSLSNYPFDFQGARIITGQEEGAYGWITI NYLLGKFSQKNQETFGALDLGGASTQVTFVPQNQTIESPDNALQFRLYGK DYNVYTHSFLCYGKDQALWQKLAKDIQVASNEILRDPCFHPGYKKVVNVS DLYKTPCTKRFEMTLPFQQFEIQGIGNYQQCHQSILELFNTSYCPYSQCA FNGIFLPPLQGDFGAFSAFYSVMKFLNLTSEKVSQEKVTEMMKKFCAQP WEEIKTSYAGVKEKYLSEYCFSGTYILSLLLQGYHFTADSWEHIHFIGKIQG SDAGWTLGYMLNLTNMIPAEQPLSTPLSHST
SEQ ID NO: 232	DNA	GCCCCTACCAGCAGCAGCACCCAGAACAAGGCCCTGCCCGAGAACGT GAAGTACGGCATCGTGCTGGATGCCGGCAGCAGCCACACCAGCCTGT ACATCTACAAGTGGCCTGCCGAGAAAGAAAACGACACCGGCGTGGTG

		CATCAGGTGGAAGAGTGCAGAGTGAAGGGCCCTGGCATCAGCAAGTT CGTGCAGAAAGTGAACGAGATCGGCATCTACCTGACCGACTGCATGG AACGGGCCAGGGAAGTGATCCCCAGAAGCCAGCACCAGGAAACCCC CGTGTATCTGGGAGCCACCGCCGGCATGAGACTGCTGAGAATGGAAA GCGAGGAACTGGCCGACCGGGTGCTGGACGTGGTGGAAAGAAGCCT GAGCAACTACCCATTCGATTTTCAAGGCGCCAGAATCATCACCGGCCA GGAAGAAGGCGCCTACGGCTGGATCACCATCAACTACCTGCTGGGCA AGTTCAGCCAGAAGAATCAGGAAACCTTCGGCGCCTTGGACCTGGGC GGAGCTTCTACCCAAGTGACCTTCGTGCCCCAGAATCAGACCATCGA GAGCCCCGACAACGCCCTGCAGTTCCGGCTGTACGGCAAGGACTACA ATGTGTACACCCACAGCTTTCTGTGCTACGGAAAGGACCAGGCTCTGT GGCAGAAGCTGGCCAAGGACATCCAGGTGGCCAGCAACGAGATCCT GCGGGACCCTTGCTTCCACCCCGGCTACAAGAAAGTCGTGAACGTGT CCGACCTGTACAAGACCCCCTGCACCAAGAGATTCGAGATGACCCTG CCCTTCCAGCAGTTCGAGATCCAGGGCATCGGCAATTACCAGCAGTG CCACCAGAGCATCCTGGAACTGTTCAACACCAGCTACTGCCCCTACAG CCAGTGCGCCTTCAACGGCATCTTCCTGCCACCTCTGCAGGGGGATT TCGGCGCCTTCAGCGCCTTCTACTCCGTGATGAAGTTCCTGAACCTGA CCAGCGAGAAGGTGTCCCAGGAAAAAGTGACAGAGATGATGAAGAAG TTCTGCGCCCAGCCCTGGGAGGAAATCAAGACCTCCTACGCTGGCGT GAAAGAGAAGTACCTGAGCGAGTACTGCTTCAGCGGCACCTACATCC TGAGCCTGCTGCTGCAGGGCTACCACTTCACCGCCGATAGCTGGGAG CACATCCACTTCATCGGCAAGATTCAGGGCAGCGACGCCGGCTGGAC ACTGGGTTACATGCTGAATCTGACCAACATGATCCCCGCCGAGCAGC CCCTGAGCACACCTCTGAGCCACAGCACC
EP1xEP14xEP19 aa1-3		
SEQ ID NO: 233	胺基酸	APTTQNKALPENVKYGIVLDAGSSHTSLYIYKWPAEKENDTGVVHQVEEC RVKGPGISKFVQKVNEIGIYLTDCMERAMEVIPRSQHQETPVYLGATAGM RLLRMESEELADRVLDVVERSLSNYPFDFQGARIITGQEEGAYGWITINYL LGKFSQKNQETFGALDLGGASTQVTFVPQNQTIESPDNALQFRLYGKDY NVYTHSFLCYGKDQALWQKLAKDIQVASNEILRDPCFHPGYKKVVNVSDL YKTPCTKRFEMTLPFQQFEIQGIGNYQQCHQSILELFNTSYCPYSQCAFN GIFLPPLQGDFGAFSAFYSVMKFLNLTSEKVSQEKVTEMMKKFCAQPWE EIKTSYAGVKEKYLSEYCFSGTYILSLLQQGYHFTADSWEHIHFIGKIQGSD AGWTLGYMLNLTNMIPAEQPLSTPLSHST
SEQ ID NO: 234	DNA	GCCCCTACCACCCAGAACAAGGCCCTGCCCGAGAACGTGAAGTACGG CATCGTGCTGGATGCCGGCAGCAGCCACACCAGCCTGTACATCTACA AGTGGCCTGCCGAGAAAGAAAACGACACCGGCGTGGTGCATCAGGTG GAAGAGTGCAGAGTGAAGGGCCCTGGCATCAGCAAGTTCGTGCAGAA AGTGAACGAGATCGGCATCTACCTGACCGACTGCATGGAACGGGCCA TGGAAGTGATCCCCAGAAGCCAGCACCAGGAAACCCCCGTGTATCTG GGAGCCACCGCCGGCATGAGACTGCTGAGAATGGAAAGCGAGGAAC TGGCCGACCGGGTGCTGGACGTGGTGGAAAGAAGCCTGAGCAACTA CCCATTCGATTTTCAAGGCGCCAGAATCATCACCGGCCAGGAAGAAG GCGCCTACGGCTGGATCACCATCAACTACCTGCTGGGCAAGTTCAGC CAGAAGAATCAGGAAACCTTCGGCGCCCTGGACCTGGGCGGAGCTTC TACCCAAGTGACCTTCGTGCCCCAGAATCAGACCATCGAGAGCCCCG ACAACGCCCTGCAGTTCCGGCTGTACGGCAAGGACTACAATGTGTAC ACCCACAGCTTTCTGTGCTACGGAAAGGACCAGGCTCTGTGGCAGAA GCTGGCCAAGGACATCCAGGTGGCCAGCAACGAGATCCTGCGGGAC CCTTGCTTCCACCCCGGCTACAAGAAAGTCGTGAACGTGTCCGACCT GTACAAGACCCCCTGCACCAAGAGATTCGAGATGACCCTGCCCTTCC AGCAGTTCGAGATCCAGGGCATCGGCAATTACCAGCAGTGCCACCAG AGCATCCTGGAACTGTTCAACACCAGCTACTGCCCCTACAGCCAGTGC GCCTTCAACGGCATCTTCCTGCCACCTCTGCAGGGGGATTTCGGCGC CTTCAGCGCCTTCTACTCCGTGATGAAGTTCCTGAACCTGACCAGCGA GAAGGTGTCCCAGGAAAAAGTGACAGAGATGATGAAGAAGTTCTGCG CCCAGCCCTGGGAGGAAATCAAGACCTCCTACGCTGGCGTGAAAGAG AAGTACCTGAGCGAGTACTGCTTCAGCGGCACCTACATCCTGAGCCT

		GCTGCAGCAGGGCTACCACTTCACCGCCGATAGCTGGGAGCACATCC ACTTCATCGGCAAGATTCAGGGCAGCGACGCCGGCTGGACACTGGGC TACATGCTGAATCTGACCAACATGATCCCCGCCGAGCAGCCCCTGAG CACACCTCTGAGCCACAGCACC
EP1xEP14xEP19aa1-6		
SEQ ID NO: 235	胺基酸	APTSSSTQNKALPENVKYGIVLDAGSSHTSLYIYKWPAEKENDTGVVHQV EECRVKGPGISKFVQKVNEIGIYLTDCMERAMEVIPRSQHQETPVYLGAT AGMRLLRMESEELADRVLDVVERSLSNYPFDFQGARIITGQEEGAYGWIT INYLLGKFSQKNQETFGALDLGGASTQVTFVPQNQTIESPDNALQFRLYG KDYNVYTHSFLCYGKDQALWQKLAKDIQVASNEILRDPCFHPGYKKVVNV SDLYKTPCTKRFEMTLPFQQFEIQGIGNYQQCHQSILELFNTSYCPYSQC AFNGIFLPPLQGDFGAFSAFYSVMKFLNLTSEKVSQEKVTEMMKKFCAQP WEEIKTSYAGVKEKYLSEYCFSGTYILSLLQQGYHFTADSWEHIHFIGKIQ GSDAGWTLGYMLNLTNMIPAEQPLSTPLSHST
SEQ ID NO: 236	DNA	GCCCCTACCAGCAGCAGCACCCAGAACAAGGCCCTGCCCGAGAACGT GAAGTACGGCATCGTGCTGGATGCCGGCAGCAGCCACACCAGCCTGT ACATCTACAAGTGGCCTGCCGAGAAAGAAAACGACACCGGCGTGGTG CATCAGGTGGAAGAGTGCAGAGTGAAGGGCCCTGGCATCAGCAAGTT CGTGCAGAAAGTGAACGAGATCGGCATCTACCTGACCGACTGCATGG AACGGGCCATGGAAGTGATCCCCAGAAGCCAGCACCAGGAAACCCCC GTGTATCTGGGAGCCACCGCCGGCATGAGACTGCTGAGAATGGAAAG CGAGGAACTGGCCGACCGGGTGCTGGACGTGGTGGAAAGAAGCCTG AGCAACTACCCATTCGATTTTCAAGGCGCCAGAATCATCACCGGCCAG GAAGAAGGCGCCTACGGCTGGATCACCATCAACTACCTGCTGGGCAA GTTCAGCCAGAAGAATCAGGAAACCTTCGGCGCCCTGGACCTGGGCG GAGCTTCTACCCAAGTGACCTTCGTGCCCCAGAATCAGACCATCGAGA GCCCCGACAACGCCCTGCAGTTCCGGCTGTACGGCAAGGACTACAAT GTGTACACCCACAGCTTTCTGTGCTACGGAAAGGACCAGGCTCTGTG GCAGAAGCTGGCCAAGGACATCCAGGTGGCCAGCAACGAGATCCTGC GGGACCCTTGCTTCCACCCCGGCTACAAGAAAGTCGTGAACGTGTCC GACCTGTACAAGACCCCCTGCACCAAGAGATTCGAGATGACCCTGCC CTTCCAGCAGTTCGAGATCCAGGGCATCGGCAATTACCAGCAGTGCC ACCAGAGCATCCTGGAACTGTTCAACACCAGCTACTGCCCCTACAGCC AGTGCGCCTTCAACGGCATCTTCCTGCCACCTCTGCAGGGGGATTTC GGCGCCTTCAGCGCCTTCTACTCCGTGATGAAGTTCCTGAACCTGACC AGCGAGAAGGTGTCCCAGGAAAAAGTGACAGAGATGATGAAGAAGTT CTGCGCCCAGCCCTGGGAGGAAATCAAGACCTCCTACGCTGGCGTGA AAGAGAAGTACCTGAGCGAGTACTGCTTCAGCGGCACCTACATCCTG AGCCTGCTGCAGCAGGGCTACCACTTCACCGCCGATAGCTGGGAGCA CATCCACTTCATCGGCAAGATTCAGGGCAGCGACGCCGGCTGGACAC TGGGCTACATGCTGAATCTGACCAACATGATCCCCGCCGAGCAGCCC CTGAGCACACCTCTGAGCCACAGCACC
EP17aa1-3		
SEQ ID NO: 237	胺基酸	APTTQNKALPENVKYGIVLDAGSSHTSLYIYKWPAEKENDTGVVHQVEEC RVKGPGISKFVQKVNEIGIYLTDCMERAREVIPRSQHQETPVYLGATAGM RLLRMESEELADRVLDVVERSLSNYPFDFQGARIITGQEEGAYGWITINYL LGKFSQKNQETFGALDLGGASTQVTFVPQNQTIESPDNALQFRLYGKDY NVYTHSFLCYGKDQALWQKLAKDIQVASNEILRDPCFHPGYKKVVNVSDL YKTPCTKRFEMTLPFQQFEIQGIGNYQQCHQSILELFNTSYCPYSQCAFN GIFLPPLQGDFGAFSAFYFVMKFLNLTSEKVSQEKVTEMMKKFCAQPWE EIKTSYAGVNEKYLSEFCFSGTYILSLLLQGYHFTADSWEHIHFIGKIQGSD AGWTLGYMLNLTNMIPAEQPLSTPLSHST
SEQ ID NO: 238	DNA	GCCCCTACCACCCAGAACAAGGCCCTGCCCGAGAACGTGAAGTACGG CATCGTGCTGGATGCCGGCAGCAGCCACACCAGCCTGTACATCTACA AGTGGCCTGCCGAGAAAGAAAACGACACCGGCGTGGTGCATCAGGTG GAAGAGTGCAGAGTGAAGGGCCCTGGCATCAGCAAGTTCGTGCAGAA AGTGAACGAGATCGGCATCTACCTGACCGACTGCATGGAACGGGCCA

		GGGAAGTGATCCCCAGAAGCCAGCACCAGGAAACCCCCGTGTATCTG GGAGCCACCGCCGGCATGAGACTGCTGAGAATGGAAAGCGAGGAAC TGGCCGACCGGGTGCTGGACGTGGTGGAAAGAAGCCTGAGCAACTA CCCATTCGATTTTCAAGGCGCCAGAATCATCACCGGCCAGGAAGAAG GCGCCTACGGCTGGATCACCATCAACTACCTGCTGGGCAAGTTCAGC CAGAAGAATCAGGAAACCTTCGGCGCCCTGGACCTGGGCGGAGCTTC TACCCAAGTGACCTTCGTGCCCCAGAATCAGACCATCGAGAGCCCCG ACAACGCCCTGCAGTTCCGGCTGTACGGCAAGGACTACAATGTGTAC ACCCACAGCTTTCTGTGCTACGGAAAGGACCAGGCTCTGTGGCAGAA GCTGGCCAAGGACATCCAGGTGGCCAGCAACGAGATCCTGCGGGAC CCTTGCTTCCACCCCGGCTACAAGAAAGTCGTGAACGTGTCCGACCT GTACAAGACCCCCTGCACCAAGAGATTCGAGATGACCCTGCCCTTCC AGCAGTTCGAGATCCAGGGCATCGGCAATTACCAGCAGTGCCACCAG AGCATCCTGGAACTGTTCAACACCAGCTACTGCCCCTACAGCCAGTGC GCCTTCAACGGCATCTTCCTGCCACCTCTGCAGGGGGATTTCGGCGC CTTCAGCGCCTTCTACTTCGTGATGAAGTTCCTGAACCTGACCAGCGA GAAGGTGTCCCAGGAAAAAGTGACAGAGATGATGAAGAAGTTCTGCG CCCAACCCTGGGAGGAAATCAAGACCTCCTACGCTGGCGTGAACGAG AAGTACCTGAGCGAGTTTTGCTTCAGCGGCACCTACATCCTGAGCCTG CTGCTGCAGGGCTACCACTTCACCGCCGATAGCTGGGAGCACATCCA CTTCATCGGCAAGATTCAGGGCAGCGACGCCGGCTGGACACTGGGCT ACATGCTGAATCTGACCAACATGATCCCCGCCGAGCAGCCCCTGAGC ACACCTCTGAGCCACAGCACC
EP17aa1-6		
SEQ ID NO: 239	胺基酸	APTSSSTQNKALPENVKYGIVLDAGSSHTSLYIYKWPAEKENDTGVVHQV EECRVKGPGISKFVQKVNEIGIYLTDCMERAREVIPRSQHQETPVYLGATA GMRLLRMESEELADRVLDVVERSLSNYPFDFQGARIITGQEEGAYGWITI NYLLGKFSQKNQETFGALDLGGASTQVTFVPQNQTIESPDNALQFRLYGK DYNVYTHSFLCYGKDQALWQKLAKDIQVASNEILRDPCFHPGYKKVVNVS DLYKTPCTKRFEMTLPFQQFEIQGIGNYQQCHQSILELFNTSYCPYSQCA FNGIFLPPLQGDFGAFSAFYFVMKFLNLTSEKVSQEKVTEMMKKFCAQP WEEIKTSYAGVNEKYLSEFCFSGTYILSLLLQGYHFTADSWEHIHFIGKIQG SDAGWTLGYMLNLTNMIPAEQPLSTPLSHST
SEQ ID NO: 240	DNA	GCCCCTACCAGCAGCAGCACCCAGAACAAGGCCCTGCCCGAGAACGT GAAGTACGGCATCGTGCTGGATGCCGGCAGCAGCCACACCAGCCTGT ACATCTACAAGTGGCCTGCCGAGAAAGAAAACGACACCGGCGTGGTG CATCAGGTGGAAGAGTGCAGAGTGAAGGGCCCTGGCATCAGCAAGTT CGTGCAGAAAGTGAACGAGATCGGCATCTACCTGACCGACTGCATGG AACGGGCCAGGGAAGTGATCCCCAGAAGCCAGCACCAGGAAACCCC CGTGTATCTGGGAGCCACCGCCGGCATGAGACTGCTGAGAATGGAAA GCGAGGAACTGGCCGACCGGGTGCTGGACGTGGTGGAAAGAAGCCT GAGCAACTACCCATTCGATTTTCAAGGCGCCAGAATCATCACCGGCCA GGAAGAAGGCGCCTACGGCTGGATCACCATCAACTACCTGCTGGGCA AGTTCAGCCAGAAGAATCAGGAAACCTTCGGCGCCCTGGACCTGGGC GGAGCTTCTACCCAAGTGACCTTCGTGCCCCAGAATCAGACCATCGA GAGCCCCGACAACGCCCTGCAGTTCCGGCTGTACGGCAAGGACTACA ATGTGTACACCCACAGCTTTCTGTGCTACGGAAAGGACCAGGCTCTGT GGCAGAAGCTGGCCAAGGACATCCAGGTGGCCAGCAACGAGATCCT GCGGGACCCTTGCTTCCACCCCGGCTACAAGAAAGTCGTGAACGTGT CCGACCTGTACAAGACCCCCTGCACCAAGAGATTCGAGATGACCCTG CCCTTCCAGCAGTTCGAGATCCAGGGCATCGGCAATTACCAGCAGTG CCACCAGAGCATCCTGGAACTGTTCAACACCAGCTACTGCCCCTACAG CCAGTGCGCCTTCAACGGCATCTTCCTGCCACCTCTGCAGGGGGATT TCGGCGCCTTCAGCGCCTTCTACTTCGTGATGAAGTTCCTGAACCTGA CCAGCGAGAAGGTGTCCCAGGAAAAAGTGACAGAGATGATGAAGAAG TTCTGCGCCCAACCCTGGGAGGAAATCAAGACCTCCTACGCTGGCGT GAACGAGAAGTACCTGAGCGAGTTTTGCTTCAGCGGCACCTACATCCT GAGCCTGCTGCTGCAGGGCTACCACTTCACCGCCGATAGCTGGGAGC ACATCCACTTCATCGGCAAGATTCAGGGCAGCGACGCCGGCTGGACA CTGGGCTACATGCTGAATCTGACCAACATGATCCCCGCCGAGCAGCC

		CCTGAGCACACCTCTGAGCCACAGCACC
EP17aa1-15		
SEQ ID NO: 241	胺基酸	APTSSSTKKTQLTSSTQNKALPENVKYGIVLDAGSSHTSLYIYKWPAEKEN DTGVVHQVEECRVKGPGISKFVQKVNEIGIYLTDCMERAREVIPRSQHQE TPVYLGATAGMRLLRMESEELADRVLDVVERSLSNYPFDFQGARIITGQE EGAYGWITINYLLGKFSQKNQETFGALDLGGASTQVTFVPQNQTIESPDN ALQFRLYGKDYNVYTHSFLCYGKDQALWQKLAKDIQVASNEILRDPCFHP GYKKVVNVSDLYKTPCTKRFEMTLPFQQFEIQGIGNYQQCHQSILELFNT SYCPYSQCAFNGIFLPPLQGDFGAFSAFYFVMKFLNLTSEKVSQEKVTEM MKKFCAQPWEEIKTSYAGVNEKYLSEFCFSGTYILSLLLQGYHFTADSWE HIHFIGKIQGSDAGWTLGYMLNLTNMIPAEQPLSTPLSHST
SEQ ID NO: 242	DNA	GCCCCTACCAGCAGCAGCACCAAGAAAACCCAGCTGACCAGCAGCAC CCAGAACAAGGCCCTGCCCGAGAACGTGAAGTACGGCATCGTGCTGG ATGCCGGCAGCAGCCACACCAGCCTGTACATCTACAAGTGGCCTGCC GAGAAAGAAAACGACACCGGCGTGGTGCATCAGGTGGAAGAGTGCAG AGTGAAGGGCCCTGGCATCAGCAAGTTCGTGCAGAAAGTGAACGAGA TCGGCATCTACCTGACCGACTGCATGGAACGGGCCAGGGAAGTGATC CCCAGAAGCCAGCACCAGGAAACCCCCGTGTATCTGGGAGCCACCGC CGGCATGAGACTGCTGAGAATGGAAAGCGAGGAACTGGCCGACCGG GTGCTGGACGTGGTGGAAAGAAGCCTGAGCAACTACCCATTCGATTTT CAAGGCGCCAGAATCATCACCGGCCAGGAAGAAGGCGCCTACGGCT GGATCACCATCAACTACCTGCTGGGCAAGTTCAGCCAGAAGAATCAG GAAACCTTCGGCGCCCTGGACCTGGGCGGAGCTTCTACCCAAGTGAC CTTCGTGCCCCAGAATCAGACCATCGAGAGCCCCGACAACGCCCTGC AGTTCCGGCTGTACGGCAAGGACTACAATGTGTACACCCACAGCTTTC TGTGCTACGGAAAGGACCAGGCTCTGTGGCAGAAGCTGGCCAAGGAC ATCCAGGTGGCCAGCAACGAGATCCTGCGGGACCCTTGCTTCCACCC CGGCTACAAGAAAGTCGTGAACGTGTCCGACCTGTACAAGACCCCCT GCACCAAGAGATTCGAGATGACCCTGCCCTTCCAGCAGTTCGAGATC CAGGGCATCGGCAATTACCAGCAGTGCCACCAGAGCATCCTGGAACT GTTCAACACCAGCTACTGCCCCTACAGCCAGTGCGCCTTCAACGGCA TCTTCCTGCCACCTCTGCAGGGGGATTTCGGCGCCTTCAGCGCCTTC TACTTCGTGATGAAGTTCCTGAACCTGACCAGCGAGAAGGTGTCCCAG GAAAAAGTGACAGAGATGATGAAGAAGTTCTGCGCCCAACCCTGGGA GGAAATCAAGACCTCCTACGCTGGCGTGAACGAGAAGTACCTGAGCG AGTTTTGCTTCAGCGGCACCTACATCCTGAGCCTGCTGCTGCAGGGC TACCACTTCACCGCCGATAGCTGGGAGCACATCCACTTCATCGGCAA GATTCAGGGCAGCGACGCCGGCTGGACACTGGGCTACATGCTGAATC TGACCAACATGATCCCCGCCGAGCAGCCCCTGAGCACACCTCTGAGC CACAGCACC
EP19aa1-3		
SEQ ID NO: 243	胺基酸	APTTQNKALPENVKYGIVLDAGSSHTSLYIYKWPAEKENDTGVVHQVEEC RVKGPGISKFVQKVNEIGIYLTDCMERAREVIPRSQHQETPVYLGATAGM RLLRMESEELADRVLDVVERSLSNYPFDFQGARIITGQEEGAYGWITINYL LGKFSQKNQETFGALDLGGASTQVTFVPQNQTIESPDNALQFRLYGKDY NVYTHSFLCYGKDQALWQKLAKDIQVASNEILRDPCFHPGYKKVVNVSDL YKTPCTKRFEMTLPFQQFEIQGIGNYQQCHQSILELFNTSYCPYSQCAFN GIFLPPLQGDFGAFSAFYFVMKFLNLTSEKVSQEKVTEMMKKFCAQPWE EIKTSYAGVKEKYLSEYCFSGTYILSLLQQGYHFTADSWEDIHFIGKIQGSD AGWTLGYMLNLTNMIPAEQPLSTPLSHST
SEQ ID NO: 244	DNA	GCCCCTACCACCCAGAACAAGGCCCTGCCCGAGAACGTGAAGTACGG CATCGTGCTGGATGCCGGCAGCAGCCACACCAGCCTGTACATCTACA AGTGGCCTGCCGAGAAAGAAAACGACACCGGCGTGGTGCATCAGGTG GAAGAGTGCAGAGTGAAGGGCCCTGGCATCAGCAAGTTCGTGCAGAA AGTGAACGAGATCGGCATCTACCTGACCGACTGCATGGAACGGGCCA GGGAAGTGATCCCCAGAAGCCAGCACCAGGAAACCCCCGTGTATCTG GGAGCCACCGCCGGCATGAGACTGCTGAGAATGGAAAGCGAGGAAC TGGCCGACCGGGTGCTGGACGTGGTGGAAAGAAGCCTGAGCAACTA

		CCCATTCGATTTTCAAGGCGCCAGAATCATCACCGGCCAGGAAGAAG GCGCCTACGGCTGGATCACCATCAACTACCTGCTGGGCAAGTTCAGC CAGAAGAATCAGGAAACCTTCGGCGCCCTGGACCTGGGCGGAGCTTC TACCCAAGTGACCTTCGTGCCCCAGAATCAGACCATCGAGAGCCCCG ACAACGCCCTGCAGTTCCGGCTGTACGGCAAGGACTACAATGTGTAC ACCCACAGCTTTCTGTGCTACGGAAAGGACCAGGCTCTGTGGCAGAA GCTGGCCAAGGACATCCAGGTGGCCAGCAACGAGATCCTGCGGGAC CCTTGCTTCCACCCCGGCTACAAGAAAGTCGTGAACGTGTCCGACCT GTACAAGACCCCCTGCACCAAGAGATTCGAGATGACCCTGCCCTTCC AGCAGTTCGAGATCCAGGGCATCGGCAATTACCAGCAGTGCCACCAG AGCATCCTGGAACTGTTCAACACCAGCTACTGCCCCTACAGCCAGTGC GCCTTCAACGGCATCTTCCTGCCACCTCTGCAGGGGGATTTCGGCGC CTTCAGCGCCTTCTACTTCGTGATGAAGTTCCTGAACCTGACCAGCGA GAAGGTGTCCCAGGAAAAAGTGACAGAGATGATGAAGAAGTTCTGCG CCCAGCCCTGGGAGGAAATCAAGACCTCCTACGCTGGCGTGAAAGAG AAGTACCTGAGCGAGTACTGCTTCAGCGGCACCTACATCCTGAGCCT GCTGCAGCAGGGCTACCACTTCACCGCCGATAGCTGGGAGGACATCC ACTTCATCGGCAAGATTCAGGGCAGCGACGCCGGCTGGACACTGGGC TACATGCTGAATCTGACCAACATGATCCCCGCCGAGCAGCCCCTGAG CACACCTCTGAGCCACAGCACC
EP19aa1-6		
SEQ ID NO: 245	胺基酸	APTSSSTQNKALPENVKYGIVLDAGSSHTSLYIYKWPAEKENDTGVVHQV EECRVKGPGISKFVQKVNEIGIYLTDCMERAREVIPRSQHQETPVYLGATA GMRLLRMESEELADRVLDVVERSLSNYPFDFQGARIITGQEEGAYGWITI NYLLGKFSQKNQETFGALDLGGASTQVTFVPQNQTIESPDNALQFRLYGK DYNVYTHSFLCYGKDQALWQKLAKDIQVASNEILRDPCFHPGYKKVVNVS DLYKTPCTKRFEMTLPFQQFEIQGIGNYQQCHQSILELFNTSYCPYSQCA FNGIFLPPLQGDFGAFSAFYFVMKFLNLTSEKVSQEKVTEMMKKFCAQP WEEIKTSYAGVKEKYLSEYCFSGTYILSLLQQGYHFTADSWEDIHFIGKIQ GSDAGWTLGYMLNLTNMIPAEQPLSTPLSHST
SEQ ID NO: 246	DNA	GCCCCTACCAGCAGCAGCACCCAGAACAAGGCCCTGCCCGAGAACGT GAAGTACGGCATCGTGCTGGATGCCGGCAGCAGCCACACCAGCCTGT ACATCTACAAGTGGCCTGCCGAGAAAGAAAACGACACCGGCGTGGTG CATCAGGTGGAAGAGTGCAGAGTGAAGGGCCCTGGCATCAGCAAGTT CGTGCAGAAAGTGAACGAGATCGGCATCTACCTGACCGACTGCATGG AACGGGCCAGGGAAGTGATCCCCAGAAGCCAGCACCAGGAAACCCC CGTGTATCTGGGAGCCACCGCCGGCATGAGACTGCTGAGAATGGAAA GCGAGGAACTGGCCGACCGGGTGCTGGACGTGGTGGAAAGAAGCCT GAGCAACTACCCATTCGATTTTCAAGGCGCCAGAATCATCACCGGCCA GGAAGAAGGCGCCTACGGCTGGATCACCATCAACTACCTGCTGGGCA AGTTCAGCCAGAAGAATCAGGAAACCTTCGGCGCCCTGGACCTGGGC GGAGCTTCTACCCAAGTGACCTTCGTGCCCCAGAATCAGACCATCGA GAGCCCCGACAACGCCCTGCAGTTCCGGCTGTACGGCAAGGACTACA ATGTGTACACCCACAGCTTTCTGTGCTACGGAAAGGACCAGGCTCTGT GGCAGAAGCTGGCCAAGGACATCCAGGTGGCCAGCAACGAGATCCT GCGGGACCCTTGCTTCCACCCCGGCTACAAGAAAGTCGTGAACGTGT CCGACCTGTACAAGACCCCCTGCACCAAGAGATTCGAGATGACCCTG CCCTTCCAGCAGTTCGAGATCCAGGGCATCGGCAATTACCAGCAGTG CCACCAGAGCATCCTGGAACTGTTCAACACCAGCTACTGCCCCTACAG CCAGTGCGCCTTCAACGGCATCTTCCTGCCACCTCTGCAGGGGGATT TCGGCGCCTTCAGCGCCTTCTACTTCGTGATGAAGTTCCTGAACCTGA CCAGCGAGAAGGTGTCCCAGGAAAAAGTGACAGAGATGATGAAGAAG TTCTGCGCCCAGCCCTGGGAGGAAATCAAGACCTCCTACGCTGGCGT GAAAGAGAAGTACCTGAGCGAGTACTGCTTCAGCGGCACCTACATCC TGAGCCTGCTGCAGCAGGGCTACCACTTCACCGCCGATAGCTGGGAG GACATCCACTTCATCGGCAAGATTCAGGGCAGCGACGCCGGCTGGAC ACTGGGCTACATGCTGAATCTGACCAACATGATCCCCGCCGAGCAGC CCCTGAGCACACCTCTGAGCCACAGCACC
SEQ ID	胺基酸	EFRHDS

NO: 247		
SEQ ID NO: 248	DNA	GAATTCCGGCACGACAGC
SEQ ID NO: 249	胺基酸	HHHHHH
SEQ ID NO: 250	DNA	CATCATCATCATCATCAC

【符號說明】

【0386】 無

【生物材料寄存】

【0387】 無

【序列表】

<110> 諾華公司（NOVARTIS AG）

<120> 溶解的腺三磷雙磷酸酶、方法及用途

<130> PAT057510-EP-EPA

<140> TW 108125140
<141> 2019-07-16

<150> EP 18184269.1
<151> 2018-07-18

<160> 253

<170> PatentIn版本3.5

<210> 1
<211> 510
<212> PRT
<213> 智人

<400> 1

```
Met Glu Asp Thr Lys Glu Ser Asn Val Lys Thr Phe Cys Ser Lys Asn
1               5                  10                  15


Ile Leu Ala Ile Leu Gly Phe Ser Ser Ile Ile Ala Val Ile Ala Leu
            20                  25                  30


Leu Ala Val Gly Leu Thr Gln Asn Lys Ala Leu Pro Glu Asn Val Lys
        35                  40                  45


Tyr Gly Ile Val Leu Asp Ala Gly Ser Ser His Thr Ser Leu Tyr Ile
    50                  55                  60


Tyr Lys Trp Pro Ala Glu Lys Glu Asn Asp Thr Gly Val Val His Gln
65                  70                  75                  80


Val Glu Glu Cys Arg Val Lys Gly Pro Gly Ile Ser Lys Phe Val Gln
                85                  90                  95


Lys Val Asn Glu Ile Gly Ile Tyr Leu Thr Asp Cys Met Glu Arg Ala
```

100 105 110

Arg Glu Val Ile Pro Arg Ser Gln His Gln Glu Thr Pro Val Tyr Leu
115 120 125

Gly Ala Thr Ala Gly Met Arg Leu Leu Arg Met Glu Ser Glu Glu Leu
130 135 140

Ala Asp Arg Val Leu Asp Val Val Glu Arg Ser Leu Ser Asn Tyr Pro
145 150 155 160

Phe Asp Phe Gln Gly Ala Arg Ile Ile Thr Gly Gln Glu Glu Gly Ala
165 170 175

Tyr Gly Trp Ile Thr Ile Asn Tyr Leu Leu Gly Lys Phe Ser Gln Lys
180 185 190

Thr Arg Trp Phe Ser Ile Val Pro Tyr Glu Thr Asn Asn Gln Glu Thr
195 200 205

Phe Gly Ala Leu Asp Leu Gly Gly Ala Ser Thr Gln Val Thr Phe Val
210 215 220

Pro Gln Asn Gln Thr Ile Glu Ser Pro Asp Asn Ala Leu Gln Phe Arg
225 230 235 240

Leu Tyr Gly Lys Asp Tyr Asn Val Tyr Thr His Ser Phe Leu Cys Tyr
245 250 255

Gly Lys Asp Gln Ala Leu Trp Gln Lys Leu Ala Lys Asp Ile Gln Val
260 265 270

Ala Ser Asn Glu Ile Leu Arg Asp Pro Cys Phe His Pro Gly Tyr Lys
275 280 285

Lys Val Val Asn Val Ser Asp Leu Tyr Lys Thr Pro Cys Thr Lys Arg
290 295 300

Phe Glu Met Thr Leu Pro Phe Gln Gln Phe Glu Ile Gln Gly Ile Gly
305 310 315 320

Asn Tyr Gln Gln Cys His Gln Ser Ile Leu Glu Leu Phe Asn Thr Ser
325 330 335

Tyr Cys Pro Tyr Ser Gln Cys Ala Phe Asn Gly Ile Phe Leu Pro Pro
340 345 350

Leu Gln Gly Asp Phe Gly Ala Phe Ser Ala Phe Tyr Phe Val Met Lys
355 360 365

Phe Leu Asn Leu Thr Ser Glu Lys Val Ser Gln Glu Lys Val Thr Glu
370 375 380

Met Met Lys Lys Phe Cys Ala Gln Pro Trp Glu Glu Ile Lys Thr Ser
385 390 395 400

Tyr Ala Gly Val Lys Glu Lys Tyr Leu Ser Glu Tyr Cys Phe Ser Gly
405 410 415

Thr Tyr Ile Leu Ser Leu Leu Leu Gln Gly Tyr His Phe Thr Ala Asp
420 425 430

Ser Trp Glu His Ile His Phe Ile Gly Lys Ile Gln Gly Ser Asp Ala
435 440 445

Gly Trp Thr Leu Gly Tyr Met Leu Asn Leu Thr Asn Met Ile Pro Ala
450 455 460

Glu Gln Pro Leu Ser Thr Pro Leu Ser His Ser Thr Tyr Val Phe Leu
465 470 475 480

Met Val Leu Phe Ser Leu Val Leu Phe Thr Val Ala Ile Ile Gly Leu
485 490 495

Leu Ile Phe His Lys Pro Ser Tyr Phe Trp Lys Asp Met Val

500 505 510

<210> 2
<211> 511
<212> PRT
<213> 褐家鼠（Rattus norvegicus）

<400> 2
Met Glu Asp Ile Lys Asp Ser Lys Val Lys Arg Phe Cys Ser Lys Asn
1 5 10 15

Ile Leu Ile Ile Leu Gly Phe Ser Ser Val Leu Ala Val Ile Ala Leu
20 25 30

Ile Ala Val Gly Leu Thr His Asn Lys Pro Leu Pro Glu Asn Val Lys
35 40 45

Tyr Gly Ile Val Leu Asp Ala Gly Ser Ser His Thr Asn Leu Tyr Ile
50 55 60

Tyr Lys Trp Pro Ala Glu Lys Glu Asn Asp Thr Gly Val Val Gln Leu
65 70 75 80

Leu Glu Glu Cys Gln Val Lys Gly Pro Gly Ile Ser Lys Tyr Ala Gln
85 90 95

Lys Thr Asp Glu Ile Ala Ala Tyr Leu Ala Glu Cys Met Lys Met Ser
100 105 110

Thr Glu Arg Ile Pro Ala Ser Lys Gln His Gln Thr Pro Val Tyr Leu
115 120 125

Gly Ala Thr Ala Gly Met Arg Leu Leu Arg Met Glu Ser Lys Gln Ser
130 135 140

Ala Asp Glu Val Leu Ala Ala Val Ser Arg Ser Leu Lys Ser Tyr Pro
145 150 155 160

Phe Asp Phe Gln Gly Ala Lys Ile Ile Thr Gly Gln Glu Glu Gly Ala

165 170 175

Tyr Gly Trp Ile Thr Ile Asn Tyr Leu Leu Gly Arg Phe Thr Gln Glu
180 185 190

Gln Ser Trp Leu Asn Phe Ile Ser Asp Ser Gln Lys Gln Ala Thr Phe
195 200 205

Gly Ala Leu Asp Leu Gly Gly Ser Ser Thr Gln Val Thr Phe Val Pro
210 215 220

Leu Asn Gln Thr Leu Glu Ala Pro Glu Thr Ser Leu Gln Phe Arg Leu
225 230 235 240

Tyr Gly Thr Asp Tyr Thr Val Tyr Thr His Ser Phe Leu Cys Tyr Gly
245 250 255

Lys Asp Gln Ala Leu Trp Gln Lys Leu Ala Gln Asp Ile Gln Val Ser
260 265 270

Ser Gly Gly Ile Leu Lys Asp Pro Cys Phe Tyr Pro Gly Tyr Lys Lys
275 280 285

Val Val Asn Val Ser Glu Leu Tyr Gly Thr Pro Cys Thr Lys Arg Phe
290 295 300

Glu Lys Lys Leu Pro Phe Asn Gln Phe Gln Val Gln Gly Thr Gly Asp
305 310 315 320

Tyr Glu Gln Cys His Gln Ser Ile Leu Lys Phe Phe Asn Asn Ser His
325 330 335

Cys Pro Tyr Ser Gln Cys Ala Phe Asn Gly Val Phe Leu Pro Pro Leu
340 345 350

Gln Gly Ser Phe Gly Ala Phe Ser Ala Phe Tyr Phe Val Met Asp Phe
355 360 365

Phe Lys Lys Met Ala Asn Asp Ser Val Ser Ser Gln Glu Lys Met Thr
370 375 380

Glu Ile Thr Lys Asn Phe Cys Ser Lys Pro Trp Glu Glu Val Lys Ala
385 390 395 400

Ser Tyr Pro Thr Val Lys Glu Lys Tyr Leu Ser Glu Tyr Cys Phe Ser
405 410 415

Gly Thr Tyr Ile Leu Ser Leu Leu Leu Gln Gly Tyr Asn Phe Thr Gly
420 425 430

Thr Ser Trp Asp Gln Ile His Phe Met Gly Lys Ile Lys Asp Ser Asn
435 440 445

Ala Gly Trp Thr Leu Gly Tyr Met Leu Asn Leu Thr Asn Met Ile Pro
450 455 460

Ala Glu Gln Pro Leu Ser Pro Pro Leu Pro His Ser Thr Tyr Ile Ser
465 470 475 480

Leu Met Val Leu Phe Ser Leu Val Leu Val Ala Met Val Ile Thr Gly
485 490 495

Leu Phe Ile Phe Ser Lys Pro Ser Tyr Phe Trp Lys Glu Ala Val
500 505 510

<210> 3
<211> 441
<212> PRT
<213> 智人

<400> 3
Gln Ile His Lys Gln Glu Val Leu Pro Pro Gly Leu Lys Tyr Gly Ile
1 5 10 15

Val Leu Asp Ala Gly Ser Ser Arg Thr Thr Val Tyr Val Tyr Gln Trp
20 25 30

Pro Ala Glu Lys Glu Asn Asn Thr Gly Val Val Ser Gln Thr Phe Lys
35 40 45

Cys Ser Val Lys Gly Ser Gly Ile Ser Ser Tyr Gly Asn Asn Pro Gln
50 55 60

Asp Val Pro Arg Ala Phe Glu Glu Cys Met Gln Lys Val Lys Gly Gln
65 70 75 80

Val Pro Ser His Leu His Gly Ser Thr Pro Ile His Leu Gly Ala Thr
85 90 95

Ala Gly Met Arg Leu Leu Arg Leu Gln Asn Glu Thr Ala Ala Asn Glu
100 105 110

Val Leu Glu Ser Ile Gln Ser Tyr Phe Lys Ser Gln Pro Phe Asp Phe
115 120 125

Arg Gly Ala Gln Ile Ile Ser Gly Gln Glu Glu Gly Val Tyr Gly Trp
130 135 140

Ile Thr Ala Asn Tyr Leu Met Gly Asn Phe Leu Glu Lys Asn Leu Trp
145 150 155 160

His Met Trp Val His Pro His Gly Val Glu Thr Thr Gly Ala Leu Asp
165 170 175

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

Asp Leu Asn Thr Ser Asp Ile Met Gln Val Ser Leu Tyr Gly Tyr Val
195 200 205

Tyr Thr Leu Tyr Thr His Ser Phe Gln Cys Tyr Gly Arg Asn Glu Ala
210 215 220

Glu Lys Lys Phe Leu Ala Met Leu Leu Gln Asn Ser Pro Thr Lys Asn

225 230 235 240

His Leu Thr Asn Pro Cys Tyr Pro Arg Asp Tyr Ser Ile Ser Phe Thr
245 250 255

Met Gly His Val Phe Asp Ser Leu Cys Thr Val Asp Gln Arg Pro Glu
260 265 270

Ser Tyr Asn Pro Asn Asp Val Ile Thr Phe Glu Gly Thr Gly Asp Pro
275 280 285

Ser Leu Cys Lys Glu Lys Val Ala Ser Ile Phe Asp Phe Lys Ala Cys
290 295 300

His Asp Gln Glu Thr Cys Ser Phe Asp Gly Val Tyr Gln Pro Lys Ile
305 310 315 320

Lys Gly Pro Phe Val Ala Phe Ala Gly Phe Tyr Tyr Thr Ala Ser Ala
325 330 335

Leu Asn Leu Ser Gly Ser Phe Ser Leu Asp Thr Phe Asn Ser Ser Thr
340 345 350

Trp Asn Phe Cys Ser Gln Asn Trp Ser Gln Leu Pro Leu Leu Leu Pro
355 360 365

Lys Phe Asp Glu Val Tyr Ala Arg Ser Tyr Cys Phe Ser Ala Asn Tyr
370 375 380

Ile Tyr His Leu Phe Val Asn Gly Tyr Lys Phe Thr Glu Glu Thr Trp
385 390 395 400

Pro Gln Ile His Phe Glu Lys Glu Val Gly Asn Ser Ser Ile Ala Trp
405 410 415

Ser Leu Gly Tyr Met Leu Ser Leu Thr Asn Gln Ile Pro Ala Glu Ser
420 425 430

Pro Leu Ile Arg Leu Pro Ile Glu Pro
435 440

<210> 4
<211> 427
<212> PRT
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成多肽"

<400> 4
Thr Gln Asn Lys Ala Leu Pro Glu Asn Val Lys Tyr Gly Ile Val Leu
1 5 10 15

Asp Ala Gly Ser Ser His Thr Ser Leu Tyr Ile Tyr Lys Trp Pro Ala
20 25 30

Glu Lys Glu Asn Asp Thr Gly Val Val His Gln Val Glu Glu Cys Arg
35 40 45

Val Lys Gly Pro Gly Ile Ser Lys Phe Val Gln Lys Val Asn Glu Ile
50 55 60

Gly Ile Tyr Leu Thr Asp Cys Met Glu Arg Ala Arg Glu Val Ile Pro
65 70 75 80

Arg Ser Gln His Gln Glu Thr Pro Val Tyr Leu Gly Ala Thr Ala Gly
85 90 95

Met Arg Leu Leu Arg Met Glu Ser Glu Glu Leu Ala Asp Arg Val Leu
100 105 110

Asp Val Val Glu Arg Ser Leu Ser Asn Tyr Pro Phe Asp Phe Gln Gly
115 120 125

Ala Arg Ile Ile Thr Gly Gln Glu Glu Gly Ala Tyr Gly Trp Ile Thr
130 135 140

Ile Asn Tyr Leu Leu Gly Lys Phe Ser Gln Lys Asn Gln Glu Thr Phe
145 150 155 160

Gly Ala Leu Asp Leu Gly Gly Ala Ser Thr Gln Val Thr Phe Val Pro
165 170 175

Gln Asn Gln Thr Ile Glu Ser Pro Asp Asn Ala Leu Gln Phe Arg Leu
180 185 190

Tyr Gly Lys Asp Tyr Asn Val Tyr Thr His Ser Phe Leu Cys Tyr Gly
195 200 205

Lys Asp Gln Ala Leu Trp Gln Lys Leu Ala Lys Asp Ile Gln Val Ala
210 215 220

Ser Asn Glu Ile Leu Arg Asp Pro Cys Phe His Pro Gly Tyr Lys Lys
225 230 235 240

Val Val Asn Val Ser Asp Leu Tyr Lys Thr Pro Cys Thr Lys Arg Phe
245 250 255

Glu Met Thr Leu Pro Phe Gln Gln Phe Glu Ile Gln Gly Ile Gly Asn
260 265 270

Tyr Gln Gln Cys His Gln Ser Ile Leu Glu Leu Phe Asn Thr Ser Tyr
275 280 285

Cys Pro Tyr Ser Gln Cys Ala Phe Asn Gly Ile Phe Leu Pro Pro Leu
290 295 300

Gln Gly Asp Phe Gly Ala Phe Ser Ala Phe Tyr Phe Val Met Lys Phe
305 310 315 320

Leu Asn Leu Thr Ser Glu Lys Val Ser Gln Glu Lys Val Thr Glu Met
325 330 335

Met Lys Lys Phe Cys Ala Gln Pro Trp Glu Glu Ile Lys Thr Ser Tyr

340 345 350

Ala Gly Val Lys Glu Lys Tyr Leu Ser Glu Tyr Cys Phe Ser Gly Thr
355 360 365

Tyr Ile Leu Ser Leu Leu Leu Gln Gly Tyr His Phe Thr Ala Asp Ser
370 375 380

Trp Glu His Ile His Phe Ile Gly Lys Ile Gln Gly Ser Asp Ala Gly
385 390 395 400

Trp Thr Leu Gly Tyr Met Leu Asn Leu Thr Asn Met Ile Pro Ala Glu
405 410 415

Gln Pro Leu Ser Thr Pro Leu Ser His Ser Thr
420 425

<210> 5
<211> 1281
<212> DNA
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成多核苷酸"

<400> 5
acccagaaca aggccctgcc cgagaacgtg aagtacggca tcgtgctgga tgccggcagc 60

agccacacca gcctgtacat ctacaagtgg cctgccgaga aagaaaacga caccggcgtg 120

gtgcatcagg tggaagagtg cagagtgaag ggccctggca tcagcaagtt cgtgcagaaa 180

gtgaacgaga tcggcatcta cctgaccgac tgcatggaac gggccaggga agtgatcccc 240

agaagccagc accaggaaac ccccgtgtat ctgggagcca ccgccggcat gagactgctg 300

agaatggaaa gcgaggaact ggccgaccgg gtgctggacg tggtggaaag aagcctgagc 360

aactacccat tcgattttca aggcgccaga atcatcaccg gccaggaaga aggcgcctac 420

ggctggatca ccatcaacta cctgctgggc aagttcagcc agaagaatca ggaaaccttc 480

ggcgccctgg acctgggcgg agcttctacc caagtgacct tcgtgcccca gaatcagacc 540

atcgagagcc ccgacaacgc cctgcagttc cggctgtacg gcaaggacta caatgtgtac 600

acccacagct ttctgtgcta cggaaaggac caggctctgt ggcagaagct ggccaaggac 660

atccaggtgg ccagcaacga gatcctgcgg gacccttgct tccaccccgg ctacaagaaa 720

gtcgtgaacg tgtccgacct gtacaagacc ccctgcacca agagattcga gatgaccctg 780

cccttccagc agttcgagat ccagggcatc ggcaattacc agcagtgcca ccagagcatc 840

ctggaactgt tcaacaccag ctactgcccc tacagccagt gcgccttcaa cggcatcttc 900

ctgccacctc tgcaggggga tttcggcgcc ttcagcgcct tctacttcgt gatgaagttc 960

ctgaacctga ccagcgagaa ggtgtcccag gaaaaagtga cagagatgat gaagaagttc 1020

tgcgcccagc cctgggagga aatcaagacc tcctacgctg gcgtgaaaga gaagtacctg 1080

agcgagtact gcttcagcgg cacctacatc ctgagcctgc tgctgcaggg ctaccacttc 1140

accgccgata gctgggagca catccacttc atcggcaaga ttcagggcag cgacgccggc 1200

tggacactgg gctacatgct gaatctgacc aacatgatcc ccgccgagca gcccctgagc 1260

acacctctga gccacagcac c 1281

<210> 6
<211> 427
<212> PRT
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成多肽"

<400> 6

Thr	Gln	Asn	Lys	Ala	Leu	Pro	Glu	Asn	Val	Lys	Tyr	Gly	Ile	Val	Leu
1				5				10					15		

Asp	Ala	Gly	Ser	Ser	His	Thr	Ser	Leu	Tyr	Ile	Tyr	Lys	Trp	Pro	Ala
			20					25					30		

Glu	Lys	Glu	Asn	Asp	Thr	Gly	Val	Val	His	Gln	Val	Glu	Glu	Cys	Arg
		35				40				45					

Val Lys Gly Pro Gly Ile Ser Lys Phe Val Gln Lys Val Asn Glu Ile
50 55 60

Gly Ile Tyr Leu Thr Asp Cys Met Glu Arg Ala Met Glu Val Ile Pro
65 70 75 80

Arg Ser Gln His Gln Glu Thr Pro Val Tyr Leu Gly Ala Thr Ala Gly
85 90 95

Met Arg Leu Leu Arg Met Glu Ser Glu Glu Leu Ala Asp Arg Val Leu
100 105 110

Asp Val Val Glu Arg Ser Leu Ser Asn Tyr Pro Phe Asp Phe Gln Gly
115 120 125

Ala Arg Ile Ile Thr Gly Gln Glu Glu Gly Ala Tyr Gly Trp Ile Thr
130 135 140

Ile Asn Tyr Leu Leu Gly Lys Phe Ser Gln Lys Asn Gln Glu Thr Phe
145 150 155 160

Gly Ala Leu Asp Leu Gly Gly Ala Ser Thr Gln Val Thr Phe Val Pro
165 170 175

Gln Asn Gln Thr Ile Glu Ser Pro Asp Asn Ala Leu Gln Phe Arg Leu
180 185 190

Tyr Gly Lys Asp Tyr Asn Val Tyr Thr His Ser Phe Leu Cys Tyr Gly
195 200 205

Lys Asp Gln Ala Leu Trp Gln Lys Leu Ala Lys Asp Ile Gln Val Ala
210 215 220

Ser Asn Glu Ile Leu Arg Asp Pro Cys Phe His Pro Gly Tyr Lys Lys
225 230 235 240

Val Val Asn Val Ser Asp Leu Tyr Lys Thr Pro Cys Thr Lys Arg Phe
245 250 255

Glu Met Thr Leu Pro Phe Gln Gln Phe Glu Ile Gln Gly Ile Gly Asn
260 265 270

Tyr Gln Gln Cys His Gln Ser Ile Leu Glu Leu Phe Asn Thr Ser Tyr
275 280 285

Cys Pro Tyr Ser Gln Cys Ala Phe Asn Gly Ile Phe Leu Pro Pro Leu
290 295 300

Gln Gly Asp Phe Gly Ala Phe Ser Ala Phe Tyr Phe Val Met Lys Phe
305 310 315 320

Leu Asn Leu Thr Ser Glu Lys Val Ser Gln Glu Lys Val Thr Glu Met
325 330 335

Met Lys Lys Phe Cys Ala Gln Pro Trp Glu Glu Ile Lys Thr Ser Tyr
340 345 350

Ala Gly Val Lys Glu Lys Tyr Leu Ser Glu Tyr Cys Phe Ser Gly Thr
355 360 365

Tyr Ile Leu Ser Leu Leu Leu Gln Gly Tyr His Phe Thr Ala Asp Ser
370 375 380

Trp Glu His Ile His Phe Ile Gly Lys Ile Gln Gly Ser Asp Ala Gly
385 390 395 400

Trp Thr Leu Gly Tyr Met Leu Asn Leu Thr Asn Met Ile Pro Ala Glu
405 410 415

Gln Pro Leu Ser Thr Pro Leu Ser His Ser Thr
420 425

<210> 7
<211> 1281
<212> DNA
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成多核苷酸"

<400> 7
acccagaaca aggccctgcc cgagaacgtg aagtacggca tcgtgctgga tgccggcagc 60

agccacacca gcctgtacat ctacaagtgg cctgccgaga aagaaaacga caccggcgtg 120

gtgcatcagg tggaagagtg cagagtgaag ggccctggca tcagcaagtt cgtgcagaaa 180

gtgaacgaga tcggcatcta cctgaccgac tgcatggaac gggccatgga agtgatcccc 240

agaagccagc accaggaaac ccccgtgtat ctgggagcca ccgccggcat gagactgctg 300

agaatggaaa gcgaggaact ggccgaccgg gtgctggacg tggtggaaag aagcctgagc 360

aactacccat tcgattttca aggcgccaga atcatcaccg gccaggaaga aggcgcctac 420

ggctggatca ccatcaacta cctgctgggc aagttcagcc agaagaatca ggaaaccttc 480

ggcgccctgg acctgggcgg agcttctacc caagtgacct tcgtgcccca gaatcagacc 540

atcgagagcc ccgacaacgc cctgcagttc cggctgtacg gcaaggacta caatgtgtac 600

acccacagct ttctgtgcta cggaaaggac caggctctgt ggcagaagct ggccaaggac 660

atccaggtgg ccagcaacga gatcctgcgg gacccttgct tccaccccgg ctacaagaaa 720

gtcgtgaacg tgtccgacct gtacaagacc ccctgcacca agagattcga gatgaccctg 780

cccttccagc agttcgagat ccagggcatc ggcaattacc agcagtgcca ccagagcatc 840

ctggaactgt tcaacaccag ctactgcccc tacagccagt gcgccttcaa cggcatcttc 900

ctgccacctc tgcaggggga tttcggcgcc ttcagcgcct tctacttcgt gatgaagttc 960

ctgaacctga ccagcgagaa ggtgtcccag gaaaaagtga cagagatgat gaagaagttc 1020

tgcgcccagc cctgggagga aatcaagacc tcctacgctg gcgtgaaaga gaagtacctg 1080

agcgagtact gcttcagcgg cacctacatc ctgagcctgc tgctgcaggg ctaccacttc 1140

accgccgata gctgggagca catccacttc atcggcaaga ttcagggcag cgacgccggc 1200

tggacactgg gctacatgct gaatctgacc aacatgatcc ccgccgagca gcccctgagc 1260

acacctctga gccacagcac c 1281

<210> 8
<211> 427
<212> PRT
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成多肽"

<400> 8

```
Thr Gln Asn Lys Ala Leu Pro Glu Asn Val Lys Tyr Gly Ile Val Leu
1               5                  10                  15

Asp Ala Gly Ser Ser His Thr Ser Leu Tyr Ile Tyr Lys Trp Pro Ala
            20                  25                  30

Glu Lys Glu Asn Asp Thr Gly Val Val His Gln Val Glu Glu Cys Arg
        35                  40                  45

Val Lys Gly Pro Gly Ile Ser Lys Phe Val Gln Lys Val Asn Glu Ile
    50                  55                  60

Gly Ile Tyr Leu Thr Asp Cys Met Glu Arg Ala Met Glu Val Ile Pro
65                  70                  75                  80

Arg Ser Gln His Gln Glu Thr Pro Val Tyr Leu Gly Ala Thr Ala Gly
                85                  90                  95

Met Arg Leu Leu Arg Met Glu Ser Glu Glu Leu Ala Asp Arg Val Met
            100                 105                 110

Asp Val Val Glu Arg Ser Leu Ser Asn Tyr Pro Phe Asp Phe Gln Gly
        115                 120                 125

Ala Arg Ile Ile Thr Gly Gln Glu Glu Gly Ala Tyr Gly Trp Ile Thr
    130                 135                 140

Ile Asn Tyr Leu Leu Gly Lys Phe Ser Gln Lys Asn Gln Glu Thr Phe
145                 150                 155                 160
```

Gly Ala Leu Asp Leu Gly Gly Ala Ser Thr Gln Val Thr Phe Val Pro
165 170 175

Gln Asn Gln Thr Ile Glu Ser Pro Asp Asn Ala Leu Gln Phe Arg Leu
180 185 190

Tyr Gly Lys Asp Tyr Asn Val Tyr Thr His Ser Phe Leu Cys Tyr Gly
195 200 205

Lys Asp Gln Ala Leu Trp Gln Lys Leu Ala Lys Asp Ile Gln Val Ala
210 215 220

Ser Asn Glu Ile Leu Arg Asp Pro Cys Phe His Pro Gly Tyr Lys Lys
225 230 235 240

Val Val Asn Val Ser Asp Leu Tyr Lys Thr Pro Cys Thr Lys Arg Phe
245 250 255

Glu Met Thr Leu Pro Phe Gln Gln Phe Glu Ile Gln Gly Ile Gly Asn
260 265 270

Tyr Gln Gln Cys His Gln Ser Ile Leu Glu Leu Phe Asn Thr Ser Tyr
275 280 285

Cys Pro Tyr Ser Gln Cys Ala Phe Asn Gly Ile Phe Leu Pro Pro Leu
290 295 300

Gln Gly Asp Phe Gly Ala Phe Ser Ala Phe Tyr Phe Val Met Lys Phe
305 310 315 320

Leu Asn Leu Thr Ser Glu Lys Val Ser Gln Glu Lys Val Thr Glu Met
325 330 335

Met Lys Lys Phe Cys Ala Gln Pro Trp Glu Glu Ile Lys Thr Ser Tyr
340 345 350

Ala Gly Val Lys Glu Lys Tyr Leu Ser Glu Tyr Cys Phe Ser Gly Thr

355 360 365

Tyr Ile Leu Ser Leu Leu Leu Gln Gly Tyr His Phe Thr Ala Asp Ser
370 375 380

Trp Glu His Ile His Phe Ile Gly Lys Ile Gln Gly Ser Asp Ala Gly
385 390 395 400

Trp Thr Leu Gly Tyr Met Leu Asn Leu Thr Asn Met Ile Pro Ala Glu
405 410 415

Gln Pro Leu Ser Thr Pro Leu Ser His Ser Thr
420 425

<210> 9
<211> 1281
<212> DNA
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成多核苷酸"

<400> 9
acccagaaca aggccctgcc cgagaacgtg aagtacggca tcgtgctgga tgccggcagc 60

agccacacca gcctgtacat ctacaagtgg cctgccgaga aagaaaacga caccggcgtg 120

gtgcatcagg tggaagagtg cagagtgaag ggccctggca tcagcaagtt cgtgcagaaa 180

gtgaacgaga tcggcatcta cctgaccgac tgcatggaac gggccatgga agtgatcccc 240

agaagccagc accaggaaac ccccgtgtat ctgggagcca ccgccggcat gagactgctg 300

agaatggaaa gcgaggaact ggccgaccgg gtgatggacg tggtggaaag aagcctgagc 360

aactacccat tcgattttca aggcgccaga atcatcaccg gccaggaaga aggcgcctac 420

ggctggatca ccatcaacta cctgctgggc aagttcagcc agaagaatca ggaaaccttc 480

ggcgccctgg acctgggcgg agcttctacc caagtgacct tcgtgcccca gaatcagacc 540

atcgagagcc ccgacaacgc cctgcagttc cggctgtacg gcaaggacta caatgtgtac 600

acccacagct ttctgtgcta cggaaaggac caggctctgt ggcagaagct ggccaaggac 660

atccaggtgg ccagcaacga gatcctgcgg gacccttgct tccaccccgg ctacaagaaa 720

gtcgtgaacg tgtccgacct gtacaagacc ccctgcacca agagattcga gatgaccctg 780

cccttccagc agttcgagat ccaaggcatc ggcaattacc agcagtgcca ccagagcatc 840

ctggaactgt tcaacaccag ctactgcccc tacagccagt gcgccttcaa cggcatcttc 900

ctgccacctc tgcaggggga tttcggcgcc ttcagcgcct tctacttcgt gatgaagttc 960

ctgaacctga ccagcgagaa ggtgtcccag gaaaaagtga cagagatgat gaagaagttc 1020

tgcgcccagc cctgggagga aatcaagacc tcctacgctg gcgtgaaaga gaagtacctg 1080

agcgagtact gcttcagcgg cacctacatc ctgagcctgc tgctgcaggg ctaccacttc 1140

accgccgata gctgggagca catccacttc atcggcaaga ttcagggcag cgacgccggc 1200

tggacactgg gctacatgct gaatctgacc aacatgatcc ccgccgagca gcccctgagc 1260

acacctctga gccacagcac c 1281

<210> 10
<211> 427
<212> PRT
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成多肽"

<400> 10
Thr Gln Asn Lys Ala Leu Pro Glu Asn Val Lys Tyr Gly Ile Val Leu
1 5 10 15

Asp Ala Gly Ser Ser His Thr Ser Leu Tyr Ile Tyr Lys Trp Pro Ala
20 25 30

Glu Lys Glu Asn Asp Thr Gly Val Val His Gln Val Glu Glu Cys Arg
35 40 45

Val Lys Gly Pro Gly Ile Ser Lys Phe Val Gln Lys Val Asn Glu Ile
50 55 60

Gly Ile Tyr Leu Thr Asp Cys Met Glu Arg Ala Met Glu Val Ile Pro
65 70 75 80

Arg Ser Gln His Gln Glu Thr Pro Val Tyr Leu Gly Ala Thr Ala Gly
85 90 95

Met Arg Leu Leu Arg Met Glu Ser Glu Glu Leu Ala Asp Arg Val Leu
100 105 110

Asp Val Val Glu Arg Ser Leu Ser Asn Tyr Pro Phe Asp Phe Gln Gly
115 120 125

Ala Arg Ile Ile Thr Gly Gln Glu Glu Gly Ala Tyr Gly Trp Ile Thr
130 135 140

Ile Asn Tyr Leu Leu Gly Lys Phe Ser Gln Lys Asn Gln Glu Thr Phe
145 150 155 160

Gly Ala Leu Asp Leu Gly Gly Ala Ser Thr Gln Val Thr Phe Val Pro
165 170 175

Gln Asn Gln Thr Ile Glu Ser Pro Asp Asn Ala Leu Gln Phe Arg Leu
180 185 190

Tyr Gly Lys Asp Tyr Asn Val Tyr Thr His Ser Phe Leu Cys Tyr Gly
195 200 205

Lys Asp Gln Ala Leu Trp Gln Lys Leu Ala Lys Asp Ile Gln Val Ala
210 215 220

Ser Asn Glu Ile Leu Arg Asp Pro Cys Phe His Pro Gly Tyr Lys Lys
225 230 235 240

Val Val Asn Val Ser Asp Leu Tyr Lys Thr Pro Cys Thr Lys Gly Phe
245 250 255

Glu Met Thr Leu Pro Phe Gln Gln Phe Glu Ile Gln Gly Ile Gly Asn
260 265 270

Tyr Gln Gln Cys His Gln Ser Ile Leu Glu Leu Phe Asn Thr Ser Tyr
275 280 285

Cys Pro Tyr Ser Gln Cys Ala Phe Asn Gly Ile Phe Leu Pro Pro Leu
290 295 300

Gln Gly Asp Phe Gly Ala Phe Ser Ala Phe Tyr Phe Val Met Lys Phe
305 310 315 320

Leu Asn Leu Thr Ser Glu Lys Val Ser Gln Glu Lys Val Thr Glu Met
325 330 335

Met Lys Lys Phe Cys Ala Gln Pro Trp Glu Glu Ile Lys Thr Ser Tyr
340 345 350

Ala Gly Val Lys Glu Lys Tyr Leu Ser Glu Tyr Cys Phe Ser Gly Thr
355 360 365

Tyr Ile Leu Ser Leu Leu Leu Gln Gly Tyr His Phe Thr Ala Asp Ser
370 375 380

Trp Glu His Ile His Phe Ile Gly Lys Ile Gln Gly Ser Asp Ala Gly
385 390 395 400

Trp Thr Leu Gly Tyr Met Leu Asn Leu Thr Asn Met Ile Pro Ala Glu
405 410 415

Gln Pro Leu Arg Thr Pro Leu Ser His Ser Thr
420 425

<210> 11
<211> 1281
<212> DNA
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成多核苷酸"

<400> 11

acccagaaca aggccctgcc cgagaacgtg aagtacggca tcgtgctgga tgccggcagc 60

agccacacca gcctgtacat ctacaagtgg cctgccgaga aagaaaacga caccggcgtg 120

gtgcatcagg tggaagagtg cagagtgaag ggccctggca tcagcaagtt cgtgcagaaa 180

gtgaacgaga tcggcatcta cctgaccgac tgcatggaac gggccatgga agtgatcccc 240

agaagccagc accaggaaac ccccgtgtat ctgggagcca ccgccggcat gagactgctg 300

agaatggaaa gcgaggaact ggccgaccgg gtgctggacg tggtggaaag aagcctgagc 360

aactacccat tcgattttca aggcgccaga atcatcaccg gccaggaaga aggcgcctac 420

ggctggatca ccatcaacta cctgctgggc aagttcagcc agaagaatca ggaaaccttc 480

ggcgccctgg acctgggcgg agcttctacc caagtgacct tcgtgcccca gaatcagacc 540

atcgagagcc ccgacaacgc cctgcagttc cggctgtacg gcaaggacta caatgtgtac 600

acccacagct ttctgtgcta cggaaaggac caggctctgt ggcagaagct ggccaaggac 660

atccaggtgg ccagcaacga gatcctgcgg gacccttgct tccaccccgg ctacaagaaa 720

gtcgtgaacg tgtccgacct gtacaagacc ccctgcacca agggattcga gatgaccctg 780

cccttccagc agttcgagat ccagggcatc ggcaattacc agcagtgcca ccagagcatc 840

ctggaactgt tcaacaccag ctactgcccc tacagccagt gcgccttcaa cggcatcttc 900

ctgccacctc tgcaggggga tttcggcgcc ttcagcgcct tctacttcgt gatgaagttc 960

ctgaacctga ccagcgagaa ggtgtcccag gaaaaagtga cagagatgat gaagaagttc 1020

tgcgcccagc cctgggagga aatcaagacc tcctacgctg gcgtgaaaga gaagtacctg 1080

agcgagtact gcttcagcgg cacctacatc ctgagcctgc tgctgcaggg ctaccacttc 1140

accgccgata gctgggagca catccacttc atcggcaaga ttcagggcag cgacgccggc 1200

tggacactgg gctacatgct gaatctgacc aacatgatcc ccgccgagca gcccctgcgc 1260

acacctctga gccacagcac c 1281

<210> 12
<211> 427
<212> PRT

<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成多肽"

<400> 12

```
Thr Gln Asn Lys Ala Leu Pro Glu Asn Val Lys Tyr Gly Ile Val Leu
1               5                  10                  15

Asp Ala Gly Ser Ser His Thr Ser Leu Tyr Ile Tyr Lys Trp Pro Ala
            20                  25                  30

Glu Lys Glu Asn Asp Thr Gly Val Val His Gln Val Glu Glu Cys Arg
        35                  40                  45

Val Lys Gly Pro Gly Ile Ser Lys Phe Ala Gln Lys Val Asn Glu Ile
    50                  55                  60

Gly Ile Tyr Leu Thr Asp Cys Met Glu Arg Ala Met Glu Val Ile Pro
65                  70                  75                  80

Arg Ser Gln His Gln Glu Thr Pro Val Tyr Leu Gly Ala Thr Ala Gly
                85                  90                  95

Met Arg Leu Leu Arg Met Glu Ser Glu Glu Leu Ala Asp Arg Val Leu
            100                 105                 110

Asp Val Val Glu Arg Ser Leu Ser Asn Tyr Pro Phe Asp Phe Gln Gly
        115                 120                 125

Ala Arg Ile Ile Thr Gly Gln Glu Glu Gly Ala Tyr Gly Trp Ile Thr
    130                 135                 140

Ile Asn Tyr Leu Leu Gly Lys Phe Ser Gln Lys Asn Gln Glu Thr Phe
145                 150                 155                 160

Gly Ala Leu Asp Leu Gly Gly Ala Ser Thr Gln Val Thr Phe Val Pro
                165                 170                 175
```

```
Gln Asn Gln Thr Ile Glu Ser Pro Asp Asn Ala Leu Gln Phe Arg Leu
            180                 185                 190

Tyr Gly Lys Asp Tyr Asn Val Tyr Thr His Ser Phe Leu Cys Tyr Gly
        195                 200                 205

Lys Asp Gln Ala Leu Trp Gln Lys Leu Ala Lys Asp Ile Gln Val Ala
    210                 215                 220

Ser Asn Glu Ile Leu Arg Asp Pro Cys Phe His Pro Gly Tyr Lys Lys
225                 230                 235                 240

Val Val Asn Val Ser Asp Leu Tyr Lys Thr Pro Cys Thr Lys Arg Phe
                245                 250                 255

Glu Met Thr Leu Pro Phe Gln Gln Phe Glu Ile Gln Gly Ile Gly Asn
            260                 265                 270

Tyr Gln Gln Cys His Gln Ser Ile Leu Glu Leu Phe Asn Thr Ser Tyr
        275                 280                 285

Cys Pro Tyr Ser Gln Cys Ala Phe Asn Gly Ile Phe Leu Pro Pro Leu
    290                 295                 300

Gln Gly Asp Phe Gly Ala Phe Ser Ala Phe Tyr Phe Val Met Lys Phe
305                 310                 315                 320

Leu Asn Leu Thr Ser Glu Lys Val Ser Gln Glu Lys Val Thr Glu Met
                325                 330                 335

Met Lys Lys Phe Cys Ala Gln Pro Trp Glu Glu Ile Lys Thr Ser Tyr
            340                 345                 350

Ala Gly Val Lys Glu Lys Tyr Leu Ser Glu Tyr Cys Phe Ser Gly Thr
        355                 360                 365

Tyr Ile Leu Ser Leu Leu Leu Gln Gly Tyr His Phe Thr Ala Asp Ser
```

370 375 380

Trp Glu His Ile His Phe Ile Gly Lys Ile Gln Gly Ser Asp Ala Gly
385 390 395 400

Trp Thr Leu Gly Tyr Met Leu Asn Leu Thr Asn Met Ile Pro Ala Glu
405 410 415

Gln Pro Leu Arg Thr Pro Leu Ser His Ser Thr
420 425

<210> 13
<211> 1281
<212> DNA
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成多核苷酸"

<400> 13
acccagaaca aggccctgcc cgagaacgtg aagtacggca tcgtgctgga tgccggcagc 60

agccacacca gcctgtacat ctacaagtgg cctgccgaga aagaaaacga caccggcgtg 120

gtgcatcagg tggaagagtg cagagtgaag ggccctggca tcagcaagtt cgcgcagaaa 180

gtgaacgaga tcggcatcta cctgaccgac tgcatggaac gggccatgga agtgatcccc 240

agaagccagc accaggaaac ccccgtgtat ctgggagcca ccgccggcat gagactgctg 300

agaatggaaa gcgaggaact ggccgaccgg gtgctggacg tggtggaaag aagcctgagc 360

aactacccat tcgattttca aggcgccaga atcatcaccg gccaggaaga aggcgcctac 420

ggctggatca ccatcaacta cctgctgggc aagttcagcc agaagaatca ggaaaccttc 480

ggcgccctgg acctgggcgg agcttctacc caagtgacct tcgtgcccca gaatcagacc 540

atcgagagcc ccgacaacgc cctgcagttc cggctgtacg gcaaggacta caatgtgtac 600

acccacagct ttctgtgcta cggaaaggac caggctctgt ggcagaagct ggccaaggac 660

atccaggtgg ccagcaacga gatcctgcgg gacccttgct tccaccccgg ctacaagaaa 720

gtcgtgaacg tgtccgacct gtacaagacc ccctgcacca agagattcga gatgaccctg 780

ccctccagc agttcgagat ccagggcatc ggcaattacc agcagtgcca ccagagcatc 840

ctggaactgt tcaacaccag ctactgcccc tacagccagt gcgccttcaa cggcatcttc 900

ctgccacctc tgcaggggga tttcggcgcc ttcagcgcct tctacttcgt gatgaagttc 960

ctgaacctga ccagcgagaa ggtgtcccag gaaaaagtga cagagatgat gaagaagttc 1020

tgcgcccagc cctgggagga aatcaagacc tcctacgctg gcgtgaaaga gaagtacctg 1080

agcgagtact gcttcagcgg cacctacatc ctgagcctgc tgctgcaggg ctaccacttc 1140

accgccgata gctgggagca catccacttc atcggcaaga ttcagggcag cgacgccggc 1200

tggacactgg gctacatgct gaatctgacc aacatgatcc ccgccgagca gcccctgagg 1260

acacctctga gccacagcac c 1281

<210> 14
<211> 427
<212> PRT
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成多肽"

<400> 14

```
Thr Gln Asn Lys Ala Leu Pro Glu Asn Val Lys Tyr Gly Ile Val Leu
1               5                  10                  15

Asp Ala Gly Ser Ser His Thr Ser Leu Tyr Ile Tyr Lys Trp Pro Ala
            20                  25                  30

Glu Lys Glu Asn Asp Thr Gly Val Val His Gln Val Glu Glu Cys Arg
        35                  40                  45

Val Lys Gly Pro Gly Ile Ser Lys Phe Val Gln Lys Val Asn Glu Ile
    50                  55                  60

Gly Ile Tyr Leu Thr Asp Cys Met Glu Arg Ala Arg Glu Val Ile Pro
65                  70                  75                  80
```

Arg Ser Gln His Gln Glu Thr Pro Val Tyr Leu Gly Ala Thr Ala Gly
85 90 95

Met Arg Leu Leu Arg Met Glu Ser Glu Glu Leu Ala Asp Arg Val Met
100 105 110

Asp Val Val Glu Arg Ser Leu Ser Asn Tyr Pro Phe Asp Phe Gln Gly
115 120 125

Ala Arg Ile Ile Thr Gly Gln Glu Glu Gly Ala Tyr Gly Trp Ile Thr
130 135 140

Ile Asn Tyr Leu Leu Gly Lys Phe Ser Gln Lys Asn Gln Glu Thr Phe
145 150 155 160

Gly Ala Leu Asp Leu Gly Gly Ala Ser Thr Gln Val Thr Phe Val Pro
165 170 175

Gln Asn Gln Thr Ile Glu Ser Pro Asp Asn Ala Leu Gln Phe Arg Leu
180 185 190

Tyr Gly Lys Asp Tyr Asn Val Tyr Thr His Ser Phe Leu Cys Tyr Gly
195 200 205

Lys Asp Gln Ala Leu Trp Gln Lys Leu Ala Lys Asp Ile Gln Val Ala
210 215 220

Ser Asn Glu Ile Leu Arg Asp Pro Cys Phe His Pro Gly Tyr Lys Lys
225 230 235 240

Val Val Asn Val Ser Asp Leu Tyr Lys Thr Pro Cys Thr Lys Arg Phe
245 250 255

Glu Met Thr Leu Pro Phe Gln Gln Phe Glu Ile Gln Gly Ile Gly Asn
260 265 270

Tyr Gln Gln Cys His Gln Ser Ile Leu Glu Leu Phe Asn Thr Ser Tyr
275 280 285

Cys Pro Tyr Ser Gln Cys Ala Phe Asn Gly Ile Phe Leu Pro Pro Leu
290 295 300

Gln Gly Asp Phe Gly Ala Phe Ser Ala Phe Tyr Phe Val Met Lys Phe
305 310 315 320

Leu Asn Leu Thr Ser Glu Lys Val Ser Gln Glu Lys Val Thr Glu Met
325 330 335

Met Lys Lys Phe Cys Ala Gln Pro Trp Glu Glu Ile Lys Thr Ser Tyr
340 345 350

Ala Gly Val Lys Glu Lys Tyr Leu Ser Glu Tyr Cys Phe Ser Gly Thr
355 360 365

Tyr Ile Leu Ser Leu Leu Leu Gln Gly Tyr His Phe Thr Ala Asp Ser
370 375 380

Trp Glu His Ile His Phe Ile Asp Lys Ile Gln Gly Ser Asp Ala Gly
385 390 395 400

Trp Thr Leu Gly Tyr Met Leu Asn Leu Thr Asn Met Ile Pro Ala Glu
405 410 415

Gln Pro Leu Ser Thr Pro Leu Ser His Ser Thr
420 425

<210> 15
<211> 1281
<212> DNA
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成多核苷酸"

<400> 15
acccagaaca aggccctgcc cgagaacgtg aagtacggca tcgtgctgga tgccggcagc 60

agccacacca gcctgtacat ctacaagtgg cctgccgaga aagaaaacga caccggcgtg 120

gtgcatcagg tggaagagtg cagagtgaag ggccctggca tcagcaagtt cgtgcagaaa 180

gtgaacgaga tcggcatcta cctgaccgac tgcatggaac gggccaggga agtgatcccc 240

agaagccagc accaggaaac ccccgtgtat ctgggagcca ccgccggcat gagactgctg 300

agaatggaaa gcgaggaact ggccgaccgg gtgatggacg tggtggaaag aagcctgagc 360

aactacccat tcgattttca aggcgccaga atcatcaccg gccaggaaga aggcgcctac 420

ggctggatca ccatcaacta cctgctgggc aagttcagcc agaagaatca ggaaaccttc 480

ggcgccctgg acctgggcgg agcttctacc caagtgacct tcgtgcccca gaatcagacc 540

atcgagagcc ccgacaacgc cctgcagttc cggctgtacg gcaaggacta caatgtgtac 600

acccacagct ttctgtgcta cggaaaggac caggctctgt ggcagaagct ggccaaggac 660

atccaggtgg ccagcaacga gatcctgcgg gacccttgct tccaccccgg ctacaagaaa 720

gtcgtgaacg tgtccgacct gtacaagacc ccctgcacca agagattcga gatgaccctg 780

cccttccagc agttcgagat ccagggcatc ggcaattacc agcagtgcca ccagagcatc 840

ctggaactgt tcaacaccag ctactgcccc tacagccagt gcgccttcaa cggcatcttc 900

ctgccacctc tgcaggggga tttcggcgcc ttcagcgcct tctacttcgt gatgaagttc 960

ctgaacctga ccagcgagaa ggtgtcccag gaaaaagtga cagagatgat gaagaagttc 1020

tgcgcccagc cctgggagga aatcaagacc tcctacgctg gcgtgaaaga gaagtacctg 1080

agcgagtact gcttcagcgg cacctacatc ctgagcctgc tgctgcaggg ctaccacttc 1140

accgccgata gctgggagca catccacttc atcgacaaga ttcagggcag cgacgccggc 1200

tggacactgg gctacatgct gaatctgacc aacatgatcc ccgccgagca gcccctgagc 1260

acacctctga gccacagcac c 1281

<210> 16
<211> 427
<212> PRT
<213> 人工序列

<220>
<221> 來源

<223> /注釋="人工序列的描述：合成多肽"

<400> 16

```
Thr Gln Asn Lys Ala Leu Pro Glu Asn Val Lys Tyr Gly Ile Val Leu
1               5                  10                  15

Asp Ala Gly Ser Ser His Thr Ser Leu Tyr Ile Tyr Lys Trp Pro Ala
            20                  25                  30

Glu Lys Glu Asn Asp Thr Gly Val Val His Gln Val Glu Glu Cys Arg
        35                  40                  45

Val Lys Gly Pro Gly Ile Ser Lys Phe Val Gln Lys Val Asn Glu Ile
    50                  55                  60

Gly Ile Ser Leu Thr Asp Cys Met Glu Arg Ala Arg Glu Val Ile Pro
65                  70                  75                  80

Arg Ser Gln His Gln Glu Thr Pro Val Tyr Leu Gly Ala Thr Ala Gly
                85                  90                  95

Met Arg Leu Leu Arg Met Glu Ser Glu Glu Leu Ala Asp Arg Val Met
            100                 105                 110

Asp Val Val Glu Arg Ser Leu Ser Asn Tyr Pro Phe Asp Phe Gln Gly
        115                 120                 125

Ala Arg Ile Ile Thr Gly Gln Glu Glu Gly Ala Tyr Gly Trp Ile Thr
    130                 135                 140

Ile Asn Tyr Leu Leu Gly Lys Phe Ser Gln Lys Asn Gln Glu Thr Phe
145                 150                 155                 160

Gly Ala Leu Asp Leu Gly Gly Ala Ser Thr Gln Val Thr Phe Val Pro
                165                 170                 175

Gln Asn Gln Thr Ile Glu Ser Pro Asp Asn Ala Leu Gln Phe Arg Leu
            180                 185                 190
```

Tyr Gly Lys Asp Tyr Asn Val Tyr Thr His Ser Phe Leu Cys Tyr Gly
195 200 205

Lys Asp Gln Ala Leu Arg Gln Lys Leu Ala Lys Asp Ile Gln Val Ala
210 215 220

Ser Asn Glu Ile Leu Arg Asp Pro Cys Phe His Pro Gly Tyr Lys Lys
225 230 235 240

Val Val Asn Val Ser Asp Leu Tyr Lys Thr Pro Cys Thr Lys Arg Phe
245 250 255

Glu Met Thr Leu Pro Phe Gln Gln Phe Glu Ile Gln Gly Ile Gly Asn
260 265 270

Tyr Gln Gln Cys His Gln Ser Ile Leu Glu Leu Phe Asn Thr Ser Tyr
275 280 285

Cys Pro Tyr Ser Gln Cys Ala Phe Asn Gly Ile Phe Leu Pro Pro Leu
290 295 300

Gln Gly Asp Phe Gly Ala Phe Ser Ala Phe Tyr Phe Val Met Lys Phe
305 310 315 320

Leu Asn Leu Thr Ser Glu Lys Val Ser Gln Glu Lys Val Thr Glu Met
325 330 335

Met Lys Lys Phe Cys Ala Gln Pro Trp Glu Glu Ile Lys Thr Ser Tyr
340 345 350

Ala Gly Val Lys Glu Lys Tyr Leu Ser Glu Tyr Cys Phe Ser Gly Thr
355 360 365

Tyr Ile Leu Ser Leu Leu Leu Gln Gly Tyr His Phe Thr Ala Asp Ser
370 375 380

Trp Glu His Ile His Phe Ile Gly Lys Ile Gln Gly Ser Asp Ala Gly

385 390 395 400

Trp Thr Leu Gly Tyr Met Leu Asn Leu Thr Asn Met Ile Pro Ala Glu
405 410 415

Gln Pro Leu Ser Thr Pro Leu Ser His Ser Thr
420 425

<210> 17
<211> 1281
<212> DNA
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成多核苷酸"

<400> 17
acccagaaca aggccctgcc cgagaacgtg aagtacggca tcgtgctgga tgccggcagc 60

agccacacca gcctgtacat ctacaagtgg cctgccgaga aagaaaacga caccggcgtg 120

gtgcatcagg tggaagagtg cagagtgaag ggccctggca tcagcaagtt cgtgcagaaa 180

gtgaacgaga tcggcatctc cctgaccgac tgcatggaac gggccaggga agtgatcccc 240

agaagccagc accaggaaac ccccgtgtat ctgggagcca ccgccggcat gagactgctg 300

agaatggaaa gcgaggaact ggccgaccgg gtgatggacg tggtggaaag aagcctgagc 360

aactacccat tcgattttca aggcgccaga atcatcaccg gccaggaaga aggcgcctac 420

ggctggatca ccatcaacta cctgctgggc aagttcagcc agaagaatca ggaaaccttc 480

ggcgccctgg acctgggcgg agcttctacc caagtgacct tcgtgcccca gaatcagacc 540

atcgagagcc ccgacaacgc cctgcagttc cggctgtacg gcaaggacta caatgtgtac 600

acccacagct ttctgtgcta cggaaaggac caggctctgc ggcagaagct ggccaaggac 660

atccaggtgg ccagcaacga gatcctgcgg gacccttgct tccaccccgg ctacaagaaa 720

gtcgtgaacg tgtccgacct gtacaagacc ccctgcacca agagattcga gatgaccctg 780

cccttccagc agttcgagat ccagggcatc ggcaattacc agcagtgcca ccagagcatc 840

ctggaactgt tcaacaccag ctactgcccc tacagccagt gcgccttcaa cggcatcttc 900

ctgccacctc tgcaggggga tttcggcgcc ttcagcgcct tctacttcgt gatgaagttc 960

ctgaacctga ccagcgagaa ggtgtcccag gaaaaagtga cagagatgat gaagaagttc 1020

tgcgcccagc cctgggagga aatcaagacc tcctacgctg gcgtgaaaga gaagtacctg 1080

agcgagtact gcttcagcgg cacctacatc ctgagcctgc tgctgcaggg ctaccacttc 1140

accgccgata gctgggagca catccacttc atcggcaaga ttcagggcag cgacgccggc 1200

tggacactgg gctacatgct gaatctgacc aacatgatcc ccgccgagca gcccctgagc 1260

acacctctga gccacagcac c 1281

<210> 18
<211> 427
<212> PRT
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成多肽"

<400> 18

```
Thr Gln Asn Lys Ala Leu Pro Glu Asn Val Lys Tyr Gly Ile Val Leu
1               5                  10                  15

Asp Ala Gly Ser Ser His Thr Ser Leu Tyr Ile Tyr Lys Trp Pro Ala
            20                  25                  30

Glu Glu Glu Asn Asp Thr Gly Val Val His Gln Val Glu Glu Cys Arg
        35                  40                  45

Val Lys Gly Pro Gly Ile Ser Lys Phe Val Gln Lys Val Asn Glu Ile
    50                  55                  60

Gly Ile Tyr Leu Ser Asp Cys Met Glu Arg Ala Arg Glu Val Ile Pro
65                  70                  75                  80

Arg Ser Gln His Gln Glu Thr Pro Val Tyr Leu Gly Ala Thr Ala Gly
                85                  90                  95
```

Met Arg Leu Leu Arg Met Glu Ser Glu Glu Leu Ala Asp Arg Val Leu
100 105 110

Asp Ala Val Glu Arg Ser Leu Ser Asn Tyr Pro Phe Asp Phe Gln Gly
115 120 125

Ala Arg Ile Ile Thr Gly Gln Glu Glu Gly Ala Tyr Gly Trp Ile Thr
130 135 140

Ile Asn Tyr Leu Leu Gly Lys Phe Ser Gln Lys Asn Gln Glu Thr Phe
145 150 155 160

Gly Ala Leu Asp Leu Gly Gly Ala Ser Thr Gln Val Thr Phe Val Pro
165 170 175

Gln Asn Gln Thr Ile Glu Ser Pro Asp Asn Ala Leu Gln Phe Arg Leu
180 185 190

Tyr Gly Lys Asp Tyr Asn Val Tyr Thr His Ser Phe Leu Cys Tyr Gly
195 200 205

Lys Asp Gln Ala Leu Trp Gln Lys Leu Ala Lys Asp Ile Gln Val Ala
210 215 220

Ser Asn Glu Ile Leu Arg Asp Pro Cys Phe His Pro Gly Tyr Lys Lys
225 230 235 240

Val Val Asn Val Ser Asp Leu Tyr Lys Thr Pro Cys Thr Lys Arg Phe
245 250 255

Glu Met Thr Leu Pro Phe Gln Gln Phe Glu Ile Gln Gly Thr Gly Asn
260 265 270

Tyr Gln Gln Cys His Gln Ser Ile Leu Glu Leu Phe Asn Thr Ser Tyr
275 280 285

Cys Pro Tyr Ser Gln Cys Ala Phe Asn Gly Ile Phe Leu Pro Pro Leu
290 295 300

Gln Gly Asp Phe Gly Ala Phe Ser Ala Phe Tyr Phe Val Met Lys Phe
305 310 315 320

Leu Asn Leu Thr Ser Glu Lys Val Ser Gln Glu Lys Val Thr Glu Met
325 330 335

Met Lys Lys Phe Cys Ala Gln Pro Trp Glu Glu Ile Lys Thr Ser Tyr
340 345 350

Ala Gly Val Lys Glu Lys Tyr Leu Ser Glu Tyr Cys Phe Ser Gly Thr
355 360 365

Tyr Ile Leu Ser Leu Leu Leu Gln Gly Tyr His Phe Thr Ala Asp Ser
370 375 380

Trp Glu His Ile His Phe Ile Gly Lys Ile Gln Gly Ser Asp Ala Gly
385 390 395 400

Trp Thr Leu Gly Tyr Met Leu Asn Leu Thr Asn Met Ile Pro Ala Glu
405 410 415

Gln Pro Leu Ser Thr Pro Leu Ser His Ser Thr
420 425

<210> 19
<211> 1281
<212> DNA
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成多核苷酸"

<400> 19
acccagaaca aggccctgcc cgagaacgtg aagtacggca tcgtgctgga tgccggcagc 60

agccacacca gcctgtacat ctacaagtgg cctgccgagg aagaaaacga caccggcgtg 120

gtgcatcagg tggaagagtg cagagtgaag ggccctggca tcagcaagtt cgtgcagaaa 180

gtgaacgaga tcggcatcta cctgtccgac tgcatggaac gggccaggga agtgatcccc 240

agaagccagc accaggaaac ccccgtgtat ctgggagcca ccgccggcat gagactgctg 300

agaatggaaa gcgaggaact ggccgaccgg gtgctggacg cggtggaaag aagcctgagc 360

aactacccat tcgattttca aggcgccaga atcatcaccg gccaggaaga aggcgcctac 420

ggctggatca ccatcaacta cctgctgggc aagttcagcc agaagaatca ggaaaccttc 480

ggcgccctgg acctgggcgg agcttctacc caagtgacct tcgtgcccca gaatcagacc 540

atcgagagcc ccgacaacgc cctgcagttc cggctgtacg gcaaggacta caatgtgtac 600

acccacagct ttctgtgcta cggaaaggac caggctctgt ggcagaagct ggccaaggac 660

atccaggtgg ccagcaacga gatcctgcgg gacccttgct tccaccccgg ctacaagaaa 720

gtcgtgaacg tgtccgacct gtacaagacc ccctgcacca agagattcga gatgaccctg 780

cccttccagc agttcgagat ccagggcacc ggcaattacc agcagtgcca ccagagcatc 840

ctggaactgt tcaacaccag ctactgcccc tacagccagt gcgccttcaa cggcatcttc 900

ctgccacctc tgcaggggga tttcggcgcc ttcagcgcct tctacttcgt gatgaagttc 960

ctgaacctga ccagcgagaa ggtgtcccag gaaaaagtga cagagatgat gaagaagttc 1020

tgcgcccagc cctgggagga aatcaagacc tcctacgctg gcgtgaaaga gaagtacctg 1080

agcgagtact gcttcagcgg cacctacatc ctgagcctgc tgctgcaggg ctaccacttc 1140

accgccgata gctgggagca catccacttc atcggcaaga ttcagggcag cgacgccggc 1200

tggacactgg gctacatgct gaatctgacc aacatgatcc ccgccgagca gcccctgagc 1260

acacctctga gccacagcac c 1281

<210> 20
<211> 427
<212> PRT
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成多肽"

<400> 20
Thr Gln Asn Lys Ala Leu Pro Glu Asn Val Lys Tyr Gly Ile Val Leu

1 5 10 15

Asp Ala Gly Ser Ser His Thr Ser Leu Tyr Ile Tyr Lys Trp Pro Ala
20 25 30

Glu Lys Glu Asn Asp Thr Gly Val Val His Gln Val Glu Glu Cys Arg
35 40 45

Val Lys Gly Pro Gly Ile Ser Lys Phe Val Gln Lys Val Asn Glu Ile
50 55 60

Gly Ile Tyr Leu Thr Asp Cys Met Glu Arg Ala Arg Glu Val Ile Pro
65 70 75 80

Arg Ser Gln His Gln Glu Thr Pro Val Tyr Leu Gly Ala Thr Ala Gly
85 90 95

Met Arg Leu Leu Arg Met Glu Ser Glu Glu Leu Ala Asp Arg Val Leu
100 105 110

Asp Ala Val Glu Arg Ser Leu Ser Asn Tyr Pro Phe Asp Phe Gln Gly
115 120 125

Ala Arg Ile Ile Thr Gly Gln Glu Glu Gly Ala Tyr Gly Trp Ile Thr
130 135 140

Ile Asn Tyr Leu Leu Gly Lys Phe Ser Gln Lys Asn Gln Glu Thr Phe
145 150 155 160

Gly Ala Leu Asp Leu Gly Gly Ala Ser Thr Gln Val Thr Phe Val Pro
165 170 175

Gln Asn Gln Thr Ile Glu Ser Pro Asp Asn Ala Leu Gln Phe Arg Leu
180 185 190

Tyr Gly Lys Asp Tyr Asn Val Tyr Thr His Ser Phe Leu Cys Tyr Gly
195 200 205

Lys Asp Gln Ala Leu Trp Gln Lys Leu Ala Lys Asp Ile Gln Val Ala
210 215 220

Ser Asn Glu Ile Leu Arg Asp Pro Cys Phe His Pro Gly Tyr Lys Lys
225 230 235 240

Val Val Asn Val Ser Asp Leu Tyr Lys Thr Pro Cys Thr Lys Arg Phe
245 250 255

Glu Met Thr Leu Pro Phe Gln Gln Phe Glu Ile Gln Gly Ile Gly Asn
260 265 270

Tyr Gln Gln Cys His Gln Ser Ile Leu Glu Leu Phe Asn Thr Ser Tyr
275 280 285

Cys Pro Tyr Ser Gln Cys Ala Phe Asn Gly Ile Phe Leu Pro Pro Leu
290 295 300

Gln Gly Asp Phe Gly Ala Phe Ser Ala Phe Tyr Phe Val Met Lys Phe
305 310 315 320

Leu Asn Leu Thr Ser Glu Lys Val Ser Gln Glu Lys Val Thr Glu Met
325 330 335

Met Lys Lys Phe Cys Ala Gln Pro Trp Glu Glu Ile Lys Thr Ser Tyr
340 345 350

Ala Gly Val Lys Glu Lys Tyr Leu Ser Glu Tyr Cys Phe Ser Gly Thr
355 360 365

Tyr Ile Leu Ser Leu Leu Leu Gln Gly Tyr His Phe Thr Ala Asp Ser
370 375 380

Trp Glu His Ile His Phe Ile Gly Lys Ile Gln Gly Ser Asp Ala Gly
385 390 395 400

Trp Thr Leu Gly Tyr Met Leu Asn Leu Thr Asn Met Ile Pro Ala Glu

405 410 415

Gln Pro Leu Ser Thr Pro Leu Ser His Ser Thr
420 425

<210> 21
<211> 1281
<212> DNA
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成多核苷酸"

<400> 21
acccagaaca aggccctgcc cgagaacgtg aagtacggca tcgtgctgga tgccggcagc 60

agccacacca gcctgtacat ctacaagtgg cctgccgaga aagaaaacga caccggcgtg 120

gtgcatcagg tggaagagtg cagagtgaag ggccctggca tcagcaagtt cgtgcagaaa 180

gtgaacgaga tcggcatcta cctgaccgac tgcatggaac gggccaggga agtgattccc 240

agaagccagc accaggaaac ccccgtgtat ctgggagcca ccgccggcat gagactgctg 300

agaatggaaa gcgaggaact ggccgaccgg gtgctggacg cggtggaaag aagcctgagc 360

aactacccat tcgattttca aggcgccaga atcatcaccg gccaggaaga aggcgcctac 420

ggctggatca ccatcaacta cctgctgggt aagttcagcc agaagaatca ggaaaccttc 480

ggcgccctgg acctgggcgg agcttctacc caagtgacct tcgtgcccca gaatcagacc 540

atcgagagcc ccgacaacgc cctgcagttc cggctgtacg gcaaggacta caatgtgtac 600

acccacagct ttctgtgcta cggaaaggac caggctctgt ggcagaagct ggccaaggac 660

atccaggtgg ccagcaacga gatcctgcgg gacccttgct tccaccccgg ctacaagaaa 720

gtagtgaacg tgtccgacct gtacaagacc ccctgcacca agagattcga gatgaccctg 780

ccattccagc agttcgagat ccagggcatc ggcaattacc agcagtgcca ccagagcatc 840

ctggaactgt tcaacaccag ctactgcccc tacagccagt gcgccttcaa cggcatcttc 900

ctgccacctc tgcaggggga tttcggcgcc ttcagcgcct tctacttcgt gatgaagttc 960

ctgaacctga ccagcgagaa ggtgtcccag gaaaaagtga cagagatgat gaagaagttc 1020

tgcgcccagc cctgggagga aatcaagacc tcctacgctg gcgtgaaaga gaagtacctg 1080

agcgagtact gcttcagcgg cacctacatc ctgagcctgc tgctgcaggg ctaccacttc 1140

accgccgata gctgggagca catccacttc atcggcaaga ttcagggcag cgacgccggc 1200

tggacactgg gctacatgct gaatctgacc aacatgatcc ccgccgagca gcccctgagc 1260

acacctctga gccacagcac c 1281

<210> 22
<211> 427
<212> PRT
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成多肽"

<400> 22
Thr Gln Asn Lys Ala Leu Pro Glu Asn Val Lys Tyr Gly Ile Val Leu
1 5 10 15

Asp Ala Gly Ser Ser His Thr Ser Leu Tyr Ile Tyr Lys Trp Pro Ala
20 25 30

Glu Lys Glu Asn Asp Thr Gly Val Val His Gln Val Glu Glu Cys Arg
35 40 45

Val Lys Gly Pro Gly Ile Ser Lys Phe Val Gln Lys Val Asn Glu Ile
50 55 60

Gly Ile Tyr Leu Thr Asp Cys Met Glu Arg Ala Arg Glu Val Ile Pro
65 70 75 80

Arg Ser Gln His Gln Glu Thr Pro Val Tyr Leu Gly Ala Thr Ala Gly
85 90 95

Met Arg Leu Leu Arg Met Glu Ser Glu Glu Leu Ala Asp Arg Val Leu
100 105 110

Asp Val Val Glu Arg Ser Leu Ser Asn Tyr Pro Phe Asp Phe Gln Gly
115 120 125

Ala Arg Ile Ile Thr Gly Gln Glu Glu Gly Ala Tyr Gly Trp Ile Thr
130 135 140

Ile Asn Tyr Leu Leu Gly Lys Phe Ser Gln Lys Asn Gln Glu Thr Phe
145 150 155 160

Gly Ala Leu Asp Leu Gly Gly Ala Ser Thr Gln Val Thr Phe Val Pro
165 170 175

Gln Asn Gln Thr Ile Glu Ser Pro Asp Asn Ala Leu Gln Phe Arg Leu
180 185 190

Tyr Gly Lys Asp Tyr Asn Val Tyr Thr His Ser Phe Leu Cys Tyr Gly
195 200 205

Lys Asp Gln Ala Leu Arg Gln Lys Leu Ala Lys Asp Ile Gln Val Ala
210 215 220

Ser Asn Glu Ile Leu Arg Asp Pro Cys Phe His Pro Gly Tyr Lys Lys
225 230 235 240

Val Val Asn Val Ser Asp Leu Tyr Lys Thr Pro Cys Thr Lys Arg Phe
245 250 255

Glu Met Thr Leu Pro Phe Gln Gln Phe Glu Ile Gln Gly Ile Gly Asn
260 265 270

Tyr Gln Gln Cys His Gln Ser Ile Leu Glu Leu Phe Asn Thr Ser Tyr
275 280 285

Cys Pro Tyr Ser Gln Cys Ala Phe Asn Gly Ile Phe Leu Pro Pro Leu
290 295 300

Gln Gly Asp Phe Gly Ala Phe Ser Ala Phe Tyr Phe Val Met Lys Phe
305 310 315 320

Leu Asn Leu Thr Ser Glu Lys Val Ser Gln Glu Lys Val Thr Glu Met
325 330 335

Met Lys Lys Phe Cys Ala Gln Pro Trp Glu Glu Ile Lys Thr Ser Tyr
340 345 350

Ala Gly Val Lys Glu Lys Tyr Leu Ser Glu Tyr Cys Phe Ser Gly Thr
355 360 365

Tyr Ile Leu Ser Leu Leu Leu Gln Gly Tyr His Phe Thr Ala Asp Ser
370 375 380

Trp Glu His Ile His Phe Ile Gly Lys Ile Gln Gly Ser Asp Ala Gly
385 390 395 400

Trp Thr Leu Gly Tyr Met Leu Asn Leu Thr Asn Met Ile Pro Ala Glu
405 410 415

Gln Pro Leu Ser Thr Pro Leu Ser His Ser Thr
420 425

<210> 23
<211> 1281
<212> DNA
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成多核苷酸"

<400> 23
acccagaaca aggccctgcc cgagaacgtg aagtacggca tcgtgctgga tgccggcagc 60

agccacacca gcctgtacat ctacaagtgg cctgccgaga aagaaaacga caccggcgtg 120

gtgcatcagg tggaagagtg cagagtgaag ggccctggca tcagcaagtt cgtgcagaaa 180

gtgaacgaga tcggcatcta cctgaccgac tgcatggaac gggccaggga agtgatcccc 240

agaagccagc accaggaaac ccccgtgtat ctgggagcca ccgccggcat gagactgctg 300

agaatggaaa gcgaggaact ggccgaccgg gtgctggacg tggtggaaag aagcctgagc 360

aactacccat tcgattttca aggcgccaga atcatcaccg gccaggaaga aggcgcctac 420

ggctggatca ccatcaacta cctgctgggc aagttcagcc agaagaatca ggaaaccttc 480

ggcgccctgg acctgggcgg agcttctacc caagtgacct tcgtgcccca gaatcagacc 540

atcgagagcc ccgacaacgc cctgcagttc cggctgtacg gcaaggacta caatgtgtac 600

acccacagct ttctgtgcta cggaaaggac caggctctga ggcagaagct ggccaaggac 660

atccaggtgg ccagcaacga gatcctgcgg gacccttgct tccaccccgg ctacaagaaa 720

gtcgtgaacg tgtccgacct gtacaagacc ccctgcacca agagattcga gatgaccctg 780

cccttccagc agttcgagat ccagggcatc ggcaattacc agcagtgcca ccagagcatc 840

ctggaactgt tcaacaccag ctactgcccc tacagccagt gcgccttcaa cggcatcttc 900

ctgccacctc tgcaggggga tttcggcgcc ttcagcgcct tctacttcgt gatgaagttc 960

ctgaacctga ccagcgagaa ggtgtcccag gaaaaagtga cagagatgat gaagaagttc 1020

tgcgcccagc cctgggagga aatcaagacc tcctacgctg gcgtgaaaga gaagtacctg 1080

agcgagtact gcttcagcgg cacctacatc ctgagcctgc tgctgcaggg ctaccacttc 1140

accgccgata gctgggagca catccacttc atcggcaaga ttcagggcag cgacgccggc 1200

tggacactgg gctacatgct gaatctgacc aacatgatcc ccgccgagca gcccctgagc 1260

acacctctga gccacagcac c 1281

<210> 24
<211> 427
<212> PRT
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成多肽"

<400> 24
Thr Gln Asn Lys Ala Leu Pro Glu Asn Val Lys Tyr Gly Ile Val Leu
1 5 10 15

Asp Ala Gly Ser Ser His Thr Ser Leu Tyr Ile Tyr Lys Trp Pro Ala

20 25 30

Glu Lys Glu Asn Asp Thr Gly Val Val His Gln Val Glu Glu Cys Arg
35 40 45

Val Lys Gly Pro Gly Ile Ser Lys Phe Val Gln Lys Val Asn Glu Ile
50 55 60

Gly Ile Tyr Leu Thr Asp Cys Met Glu Arg Ala Arg Glu Val Ile Pro
65 70 75 80

Arg Ser Gln His Gln Glu Thr Pro Val Tyr Leu Gly Ala Thr Ala Gly
85 90 95

Met Arg Leu Leu Arg Met Glu Ser Glu Glu Leu Ala Asp Arg Val Leu
100 105 110

Asp Val Val Glu Arg Ser Leu Ser Asn Tyr Pro Phe Asp Phe Gln Gly
115 120 125

Ala Arg Ile Ile Thr Gly Gln Glu Glu Gly Ala Tyr Gly Trp Ile Thr
130 135 140

Ile Asn Tyr Leu Leu Gly Lys Phe Ser Gln Lys Asn Gln Glu Thr Phe
145 150 155 160

Gly Ala Leu Asp Leu Gly Gly Ala Ser Thr Gln Val Thr Phe Val Pro
165 170 175

Gln Asn Gln Thr Ile Glu Ser Pro Asp Asn Ala Leu Gln Phe Arg Leu
180 185 190

Tyr Gly Lys Asp Tyr Asn Val Tyr Thr His Ser Phe Leu Cys Tyr Gly
195 200 205

Lys Asp Gln Ala Leu Trp Gln Lys Leu Ala Lys Asp Ile Gln Val Ala
210 215 220

Ser Asn Glu Ile Leu Arg Asp Pro Cys Phe His Pro Gly Tyr Lys Lys
225 230 235 240

Val Val Asn Val Ser Asp Leu Tyr Lys Thr Pro Cys Thr Lys Arg Phe
245 250 255

Glu Met Thr Leu Pro Phe Gln Gln Phe Glu Ile Gln Gly Thr Gly Asn
260 265 270

Tyr Gln Gln Cys His Gln Ser Ile Leu Glu Leu Phe Asn Thr Ser Tyr
275 280 285

Cys Pro Tyr Ser Gln Cys Ala Phe Asn Gly Ile Phe Leu Pro Pro Leu
290 295 300

Gln Gly Asp Phe Gly Ala Phe Ser Ala Phe Tyr Phe Val Met Lys Phe
305 310 315 320

Leu Asn Leu Thr Ser Glu Lys Val Ser Gln Glu Lys Val Thr Glu Met
325 330 335

Met Lys Lys Phe Cys Ala Gln Pro Trp Glu Glu Ile Lys Thr Ser Tyr
340 345 350

Ala Gly Val Lys Glu Lys Tyr Leu Ser Glu Tyr Cys Phe Ser Gly Thr
355 360 365

Tyr Ile Leu Ser Leu Leu Leu Gln Gly Tyr His Phe Thr Ala Asp Ser
370 375 380

Trp Glu His Ile His Phe Ile Gly Lys Ile Gln Gly Ser Asp Ala Gly
385 390 395 400

Trp Thr Leu Gly Tyr Met Leu Asn Leu Thr Asn Met Ile Pro Ala Glu
405 410 415

Gln Pro Leu Ser Thr Pro Leu Ser His Ser Thr

420 425

<210> 25
<211> 1281
<212> DNA
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成多核苷酸"

<400> 25
acccagaaca aggccctgcc cgagaacgtg aagtacggca tcgtgctgga tgccggcagc 60

agccacacca gcctgtacat ctacaagtgg cctgccgaga aagaaaacga caccggcgtg 120

gtgcatcagg tggaagagtg cagagtgaag ggccctggca tcagcaagtt cgtgcagaaa 180

gtgaacgaga tcggcatcta cctgaccgac tgcatggaac gggccaggga agtgatcccc 240

agaagccagc accaggaaac ccccgtgtat ctgggagcca ccgccggcat gagactgctg 300

agaatggaaa gcgaggaact ggccgaccgg gtgctggacg tggtggaaag aagcctgagc 360

aactacccat tcgattttca aggcgccaga atcatcaccg gccaggaaga aggcgcctac 420

ggctggatca ccatcaacta cctgctgggc aagttcagcc agaagaatca ggaaaccttc 480

ggcgccctgg acctgggcgg agcttctacc caagtgacct tcgtgcccca gaatcagacc 540

atcgagagcc ccgacaacgc cctgcagttc cggctgtacg gcaaggacta caatgtgtac 600

acccacagct ttctgtgcta tggaaaggac caggctctgt ggcagaagct ggccaaggac 660

atccaggtgg ccagcaacga gatcctgcgg gacccttgct tccaccccgg ctacaagaaa 720

gtcgtgaacg tgtccgacct gtacaagacc ccctgcacca agagattcga gatgaccctg 780

cccttccagc agttcgagat ccagggcacc ggcaattacc agcagtgcca ccagagcatc 840

ctggaactgt tcaacaccag ctactgcccc tacagccagt gcgccttcaa cggcatcttc 900

ctgccacctc tgcaggggga tttcggcgcc ttcagcgcct tctacttcgt gatgaagttc 960

ctgaacctga ccagcgagaa ggtgtcccag gaaaaagtga cagagatgat gaagaagttc 1020

tgcgcccagc cctgggagga aatcaagacc tcctacgctg gcgtgaaaga gaagtacctg 1080

agcgagtact gcttcagcgg cacctacatc ctgagcctgc tgctgcaggg ctaccacttc 1140

accgccgata gctgggagca catccacttc atcggcaaga ttcagggcag cgacgccggc 1200

tggacactgg gctacatgct gaatctgacc aacatgatcc ccgccgagca gcctttgagc 1260

acacctctga gccacagcac c 1281

<210> 26
<211> 427
<212> PRT
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成多肽"

<400> 26
Thr Gln Asn Lys Ala Leu Pro Glu Asn Val Lys Tyr Gly Ile Val Leu
1 5 10 15

Asp Ala Gly Ser Ser His Thr Ser Leu Tyr Ile Tyr Lys Trp Pro Ala
20 25 30

Glu Lys Glu Asn Asp Thr Gly Val Val His Gln Val Glu Glu Cys Arg
35 40 45

Val Lys Gly Pro Gly Ile Ser Lys Phe Val Gln Lys Val Asn Glu Ile
50 55 60

Gly Ile Tyr Leu Thr Asp Cys Met Glu Arg Ala Met Glu Val Ile Pro
65 70 75 80

Arg Ser Gln His Gln Glu Thr Pro Val Tyr Leu Gly Ala Thr Ala Gly
85 90 95

Met Arg Leu Leu Arg Met Glu Ser Glu Glu Leu Ala Asp Arg Val Leu
100 105 110

Asp Val Val Glu Arg Ser Leu Ser Asn Tyr Pro Phe Asp Phe Gln Gly
115 120 125

Ala Arg Ile Ile Thr Gly Gln Glu Glu Gly Ala Tyr Gly Trp Ile Thr
130 135 140

Ile Asn Tyr Leu Leu Gly Lys Phe Ser Gln Lys Asn Gln Glu Thr Phe
145 150 155 160

Gly Ala Leu Asp Leu Gly Gly Ala Ser Thr Gln Val Thr Phe Val Pro
165 170 175

Gln Asn Gln Thr Ile Glu Ser Pro Asp Asn Ala Leu Gln Phe Arg Leu
180 185 190

Tyr Gly Lys Asp Tyr Asn Val Tyr Thr His Ser Phe Leu Cys Tyr Gly
195 200 205

Lys Asp Gln Ala Leu Trp Gln Lys Leu Ala Lys Asp Ile Gln Val Ala
210 215 220

Ser Asn Glu Ile Leu Arg Asp Pro Cys Phe His Pro Gly Tyr Lys Lys
225 230 235 240

Val Val Asn Val Ser Asp Leu Tyr Lys Thr Pro Cys Thr Lys Arg Phe
245 250 255

Glu Met Thr Leu Pro Phe Gln Gln Phe Glu Ile Gln Gly Thr Gly Asn
260 265 270

Tyr Gln Gln Cys His Gln Ser Ile Leu Glu Leu Phe Asn Thr Ser Tyr
275 280 285

Cys Pro Tyr Ser Gln Cys Ala Phe Asn Gly Ile Phe Leu Pro Pro Leu
290 295 300

Gln Gly Asp Phe Gly Ala Phe Ser Ala Phe Tyr Phe Val Met Lys Phe
305 310 315 320

Leu Asn Leu Thr Ser Glu Lys Val Ser Gln Glu Lys Val Thr Glu Met
325 330 335

Met Lys Lys Phe Cys Ala Gln Pro Trp Glu Glu Ile Lys Thr Ser Tyr
340 345 350

Ala Gly Val Lys Glu Lys Tyr Leu Ser Glu Tyr Cys Phe Ser Gly Thr
355 360 365

Tyr Ile Leu Ser Leu Leu Leu Gln Gly Tyr His Phe Thr Ala Asp Ser
370 375 380

Trp Glu His Ile His Phe Ile Gly Lys Ile Gln Gly Ser Asp Ala Gly
385 390 395 400

Trp Thr Leu Gly Tyr Met Leu Asn Leu Thr Asn Met Ile Pro Ala Glu
405 410 415

Gln Pro Leu Ser Thr Pro Leu Ser His Ser Thr
420 425

<210> 27
<211> 1281
<212> DNA
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成多核苷酸"

<400> 27
acccagaaca aggccctgcc cgagaacgtg aagtacggca tcgtgctgga tgccggcagc 60

agccacacca gcctgtacat ctacaagtgg cctgccgaga aagaaaacga caccggcgtg 120

gtgcatcagg tggaagagtg cagagtgaag ggccctggca tcagcaagtt cgtgcagaaa 180

gtgaacgaga tcggcatcta cctgaccgac tgcatggaac gggccatgga agtgatcccc 240

agaagccagc accaggaaac ccccgtgtat ctgggagcca ccgccggcat gagactgctg 300

agaatggaaa gcgaggaact ggccgaccgg gtgctggacg tggtggaaag aagcctgagc 360

aactacccat tcgattttca aggcgccaga atcatcaccg gccaggaaga aggcgcctac 420

ggctggatca ccatcaacta cctgctgggc aagttcagcc agaagaatca ggaaaccttc 480

ggcgccctgg acctgggcgg agcttctacc caagtgacct tcgtgcccca gaatcagacc 540

atcgagagcc ccgacaacgc cctgcagttc cggctgtacg gcaaggacta caatgtgtac 600

acccacagct ttctgtgcta cggaaaggac caggctctgt ggcagaagct ggccaaggac 660

atccaggtgg ccagcaacga gatcctgcgg gacccttgct tccaccccgg ctacaagaaa 720

gtcgtgaacg tgtccgacct gtacaagacc ccctgcacca agagattcga gatgaccctg 780

cccttccagc agttcgagat ccagggcacc ggcaattacc agcagtgcca ccagagcatc 840

ctggaactgt tcaacaccag ctactgcccc tacagccagt gcgccttcaa cggcatcttc 900

ctgccacctc tgcaggggga tttcggcgcc ttcagcgcct tctacttcgt gatgaagttc 960

ctgaacctga ctagcgagaa ggtgtcccag gaaaaagtga cagagatgat gaagaagttc 1020

tgcgcccagc cctgggagga aatcaagacc tcctacgctg gcgtgaaaga gaagtacctg 1080

agcgagtact gcttcagcgg cacctacatc ctgagcctgc tgctgcaggg ctaccacttc 1140

accgccgata gctgggagca catccacttc atcggcaaga ttcagggcag cgacgccggc 1200

tggacactgg gctacatgct gaatctgacc aacatgatcc ccgccgagca gcccctgagc 1260

acacctctga gccacagcac c 1281

<210> 28
<211> 427
<212> PRT
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成多肽"

<400> 28
Thr Gln Asn Lys Ala Leu Pro Glu Asn Val Lys Tyr Gly Ile Val Leu
1 5 10 15

Asp Ala Gly Ser Ser His Thr Ser Leu Tyr Ile Tyr Lys Trp Pro Ala
20 25 30

Glu Lys Glu Asn Asp Thr Gly Val Val His Gln Val Glu Glu Cys Arg

35 40 45

Val Lys Gly Pro Gly Ile Ser Lys Phe Val Gln Lys Val Asn Glu Ile
50 55 60

Gly Ile Tyr Leu Thr Asp Cys Met Glu Arg Ala Arg Glu Val Ile Pro
65 70 75 80

Arg Ser Gln His Gln Glu Thr Pro Val Tyr Leu Gly Ala Thr Ala Gly
85 90 95

Met Arg Leu Leu Arg Met Glu Ser Glu Glu Leu Ala Asp Arg Val Leu
100 105 110

Asp Val Val Glu Arg Ser Leu Ser Asn Tyr Pro Phe Asp Phe Gln Gly
115 120 125

Ala Arg Ile Ile Thr Gly Gln Glu Glu Gly Ala Tyr Gly Trp Ile Thr
130 135 140

Ile Asn Tyr Leu Leu Gly Lys Phe Ser Gln Lys Asn Gln Glu Thr Phe
145 150 155 160

Gly Ala Leu Asp Leu Gly Gly Ala Ser Thr Gln Val Thr Phe Val Pro
165 170 175

Gln Asn Gln Thr Ile Glu Ser Pro Asp Asn Ala Leu Gln Phe Arg Leu
180 185 190

Tyr Gly Lys Asp Tyr Asn Val Tyr Thr His Ser Phe Leu Cys Tyr Gly
195 200 205

Lys Asp Gln Ala Leu Trp Gln Lys Leu Ala Lys Asp Ile Gln Val Ala
210 215 220

Ser Asn Asp Ile Leu Arg Asp Pro Cys Phe His Pro Gly Tyr Lys Lys
225 230 235 240

Val Val Asn Val Ser Asp Leu Tyr Lys Thr Pro Cys Thr Lys Arg Phe
245 250 255

Glu Met Thr Leu Pro Phe Gln Gln Phe Glu Ile Gln Gly Thr Gly Asn
260 265 270

Tyr Gln Gln Cys His Gln Ser Ile Leu Glu Leu Phe Asn Thr Ser Tyr
275 280 285

Cys Pro Tyr Ser Gln Cys Ala Phe Asn Gly Ile Phe Leu Pro Pro Leu
290 295 300

Gln Gly Asp Phe Gly Ala Phe Ser Ala Phe Tyr Phe Val Met Lys Phe
305 310 315 320

Leu Asn Leu Thr Ser Glu Lys Val Ser Gln Glu Lys Val Thr Glu Met
325 330 335

Met Lys Lys Phe Cys Ala Gln Pro Trp Glu Glu Ile Lys Thr Ser Tyr
340 345 350

Ala Gly Val Lys Glu Lys Tyr Leu Ser Glu Tyr Cys Phe Ser Gly Thr
355 360 365

Tyr Ile Leu Ser Leu Leu Leu Gln Gly Tyr His Phe Thr Ala Asp Ser
370 375 380

Trp Glu His Ile His Phe Ile Gly Lys Ile Gln Gly Ser Asp Ala Gly
385 390 395 400

Trp Thr Leu Gly Tyr Met Leu Asn Leu Thr Asn Met Ile Pro Ala Glu
405 410 415

Gln Pro Leu Ser Thr Pro Leu Ser His Ser Thr
420 425

<210> 29

<211> 1281
<212> DNA
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成多核苷酸"

<400> 29
acccagaaca aggccctgcc cgagaacgtg aagtacggca tcgtgctgga tgccggcagc 60

agccacacca gcctgtacat ctacaagtgg cctgccgaga aagaaaacga caccggcgtg 120

gtgcatcagg tggaagagtg cagagtgaag ggccctggca tcagcaagtt cgtgcagaaa 180

gtgaacgaga tcggcatcta cctgaccgac tgcatggaac gggccaggga agtgatcccc 240

agaagccagc accaggaaac ccccgtgtat ctgggagcca ccgccggcat gagactgctg 300

agaatggaaa gcgaggaact ggccgaccgg gtgctggacg tggtggaaag aagcctgagc 360

aactacccat tcgattttca aggcgccaga atcatcaccg gccaggaaga aggcgcctac 420

ggctggatca ccatcaacta cctgctgggc aagttcagcc agaagaatca ggaaaccttc 480

ggcgccctgg acctgggcgg agcttctacc caagtgacct tcgtgcccca gaatcagacc 540

atcgagagcc ccgacaacgc cctgcagttc cggctgtacg gcaaggacta caatgtgtac 600

acccacagct ttctgtgcta cggaaaggac caggctctgt ggcagaagct ggccaaggac 660

atccaggtgg ccagcaacga tatcctgcgg gacccttgct tccaccccgg ctacaagaaa 720

gtcgtgaacg tgtccgacct gtacaagacc ccctgcacca agagattcga gatgaccctg 780

cccttccagc agttcgagat ccagggcacc ggcaattacc agcagtgcca ccagagcatc 840

ctggaactgt tcaacaccag ctactgcccc tacagccagt gcgccttcaa cggcatcttc 900

ctgccacctc tgcaggggga tttcggcgcc ttcagcgcct tctacttcgt gatgaagttc 960

ctgaacctga ccagcgagaa ggtgtcccag gaaaaagtga cagagatgat gaagaagttc 1020

tgcgcccagc cctgggagga aatcaagacc tcctacgctg gcgtgaaaga gaagtacctg 1080

agcgagtact gcttcagcgg cacctacatc ctgagcctgc tgctgcaggg ctaccacttc 1140

accgccgata gctgggagca catccacttc atcggcaaga ttcagggcag cgacgccggc 1200

tggacactgg gctacatgct gaatctgacc aacatgatcc ccgccgagca gcccctgagc 1260

acacctctga gccacagcac c 1281

<210> 30
<211> 427
<212> PRT
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成多肽"

<400> 30
Thr Gln Asn Lys Ala Leu Pro Glu Asn Val Lys Tyr Gly Ile Val Leu
1 5 10 15

Asp Ala Gly Ser Ser His Thr Ser Leu Tyr Ile Tyr Lys Trp Pro Ala
20 25 30

Glu Lys Glu Asn Asp Thr Gly Val Val His Gln Val Glu Glu Cys Arg
35 40 45

Val Lys Gly Pro Gly Ile Ser Lys Phe Val Gln Lys Val Asn Glu Ile
50 55 60

Gly Ile Tyr Leu Thr Asp Cys Met Glu Arg Ala Arg Glu Val Ile Pro
65 70 75 80

Arg Ser Gln His Gln Glu Thr Pro Val Tyr Leu Gly Ala Thr Ala Gly
85 90 95

Met Arg Leu Leu Arg Met Glu Ser Glu Glu Leu Ala Asp Arg Val Leu
100 105 110

Asp Val Val Glu Arg Ser Leu Ser Asn Tyr Pro Phe Asp Phe Gln Gly
115 120 125

Ala Arg Ile Ile Thr Gly Gln Glu Glu Gly Ala Tyr Gly Trp Ile Thr
130 135 140

Ile Asn Tyr Leu Leu Gly Lys Phe Ser Gln Lys Asn Gln Glu Thr Phe
145 150 155 160

Gly Ala Leu Asp Leu Gly Gly Ala Ser Thr Gln Val Thr Phe Val Pro
165 170 175

Gln Asn Gln Thr Ile Glu Ser Pro Asp Asn Ala Leu Gln Phe Arg Leu
180 185 190

Tyr Gly Lys Asp Tyr Asn Val Tyr Thr His Ser Phe Leu Cys Tyr Gly
195 200 205

Lys Asp Gln Ala Leu Trp Gln Lys Leu Ala Lys Asp Ile Gln Val Ala
210 215 220

Ser Asn Glu Ile Leu Arg Asp Pro Cys Phe His Pro Gly Tyr Lys Lys
225 230 235 240

Val Val Asn Val Ser Asp Leu Tyr Lys Thr Pro Cys Thr Lys Arg Phe
245 250 255

Glu Met Thr Leu Pro Phe Gln Gln Phe Glu Ile Gln Gly Ile Gly Asn
260 265 270

Tyr Gln Gln Cys His Gln Ser Ile Leu Glu Leu Phe Asn Thr Ser Tyr
275 280 285

Cys Pro Tyr Ser Gln Cys Ala Phe Asn Gly Ile Phe Leu Pro Pro Leu
290 295 300

Gln Gly Asp Phe Gly Ala Phe Ser Ala Phe Tyr Ser Val Met Lys Phe
305 310 315 320

Leu Asn Leu Thr Ser Glu Lys Val Ser Gln Glu Lys Val Thr Glu Met
325 330 335

Met Lys Lys Phe Cys Ala Gln Pro Trp Glu Glu Ile Lys Thr Ser Tyr
340 345 350

Ala Gly Val Lys Glu Lys Tyr Leu Ser Glu Tyr Cys Phe Ser Gly Thr
355 360 365

Tyr Ile Leu Ser Leu Leu Pro Gln Gly Tyr His Phe Thr Ala Asp Ser
370 375 380

Trp Glu His Ile His Phe Ile Gly Lys Ile Gln Gly Ser Asp Ala Gly
385 390 395 400

Trp Thr Leu Gly Tyr Met Leu Asn Leu Thr Asn Met Ile Pro Ala Glu
405 410 415

Gln Pro Leu Ser Thr Pro Leu Ser His Ser Thr
420 425

<210> 31
<211> 1281
<212> DNA
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成多核苷酸"

<400> 31
acccagaaca aggccctgcc cgagaacgtg aagtacggca tcgtgctgga tgccggcagc 60

agccacacca gcctgtacat ctacaagtgg cctgccgaga aagaaaacga caccggcgtg 120

gtgcatcagg tggaagagtg cagagtgaag ggccctggca tcagcaagtt cgtgcagaaa 180

gtgaacgaga tcggcatcta cctgaccgac tgcatggaac gggccaggga agtgatcccc 240

agaagccagc accaggaaac ccccgtgtat ctgggagcca ccgccggcat gagactgctg 300

agaatggaaa gcgaggaact ggccgaccgg gtgctggacg tggtggaaag aagcctgagc 360

aactacccat tcgattttca aggcgccaga atcatcaccg gccaggaaga aggcgcctac 420

ggctggatca ccatcaacta cctgctgggc aagttcagcc agaagaatca ggaaaccttc 480

ggcgccctgg acctgggcgg agcttctacc caagtgacct tcgtgcccca gaatcagacc 540

atcgagagcc ccgacaacgc cctgcagttc cggctgtacg gcaaggacta caatgtgtac 600

acccacagct ttctgtgcta cggaaaggac caggctctgt ggcagaagct ggccaaggac 660

atccaggtgg ccagcaacga gatcctgcgg gacccttgct tccaccccgg ctacaagaaa 720

gtcgtgaacg tgtccgacct gtacaagacc ccctgcacca agagattcga gatgaccctg 780

cccttccagc agttcgagat ccagggcatc ggcaattacc agcagtgcca ccagagcatc 840

ctggaactgt tcaacaccag ctactgcccc tacagccagt gcgccttcaa cggcatcttc 900

ctgccacctc tgcaggggga tttcggcgcc ttcagcgcct tctactccgt gatgaagttc 960

ctgaacctga ccagcgagaa ggtgtcccag gaaaaagtga cagagatgat gaagaagttc 1020

tgcgcccagc cctgggagga aatcaagacc tcctacgctg gcgtgaaaga gaagtacctg 1080

agcgagtact gcttcagcgg cacctacatc ctgagcctgc tgccgcaggg ctaccacttc 1140

accgccgata gctgggagca catccacttc atcggcaaga ttcagggcag cgacgccggc 1200

tggacactgg gctacatgct gaatctgacc aacatgatcc ccgccgagca gcccctgagc 1260

acacctctga gccacagcac c 1281

<210> 32
<211> 427
<212> PRT
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成多肽"

<400> 32
Thr Gln Asn Lys Ala Leu Pro Glu Asn Val Lys Tyr Gly Ile Val Leu
1 5 10 15

Asp Ala Gly Ser Ser His Thr Ser Leu Tyr Ile Tyr Lys Trp Pro Ala
20 25 30

Glu Lys Glu Asn Asp Thr Gly Val Val His Gln Val Glu Glu Cys Arg
35 40 45

Val Lys Gly Pro Gly Ile Ser Lys Phe Val Gln Lys Val Asn Glu Ile

50 55 60

Gly Ile Tyr Leu Thr Asp Cys Met Glu Arg Ala Arg Glu Val Ile Pro
65 70 75 80

Arg Ser Gln His Gln Glu Thr Pro Val Tyr Leu Gly Ala Thr Ala Gly
85 90 95

Met Arg Leu Leu Arg Met Glu Ser Glu Glu Leu Ala Asp Arg Val Leu
100 105 110

Asp Val Val Glu Arg Ser Leu Ser Asn Tyr Pro Phe Asp Phe Gln Gly
115 120 125

Ala Arg Ile Ile Thr Gly Gln Glu Glu Gly Ala Tyr Gly Trp Ile Thr
130 135 140

Ile Asn Tyr Leu Leu Gly Lys Phe Ser Gln Lys Asn Gln Glu Thr Phe
145 150 155 160

Gly Ala Leu Asp Leu Gly Gly Ala Ser Thr Gln Val Thr Phe Val Pro
165 170 175

Gln Asn Gln Thr Ile Glu Ser Pro Asp Asn Ala Leu Gln Phe Arg Leu
180 185 190

Tyr Gly Lys Asp Tyr Asn Val Tyr Thr His Ser Phe Leu Cys Tyr Gly
195 200 205

Lys Asp Gln Ala Leu Trp Gln Lys Leu Ala Lys Asp Ile Gln Val Ala
210 215 220

Ser Asn Glu Ile Leu Arg Asp Pro Cys Phe His Pro Gly Tyr Lys Lys
225 230 235 240

Val Val Asn Val Ser Asp Leu Tyr Lys Thr Pro Cys Thr Lys Arg Phe
245 250 255

Glu Met Thr Leu Pro Phe Gln Gln Phe Glu Ile Gln Gly Ile Gly Asn
260 265 270

Tyr Gln Gln Cys His Gln Ser Ile Leu Glu Leu Phe Asn Thr Ser Tyr
275 280 285

Cys Pro Tyr Ser Gln Cys Ala Phe Asn Gly Ile Phe Leu Pro Pro Leu
290 295 300

Gln Gly Asp Phe Gly Ala Phe Ser Ala Phe Tyr Ser Val Met Lys Phe
305 310 315 320

Leu Asn Leu Thr Ser Glu Lys Val Ser Gln Glu Lys Val Thr Glu Met
325 330 335

Met Lys Lys Phe Cys Ala Gln Pro Trp Glu Glu Ile Lys Thr Ser Tyr
340 345 350

Ala Gly Val Lys Glu Lys Tyr Leu Ser Glu Tyr Cys Phe Ser Gly Thr
355 360 365

Tyr Ile Leu Ser Leu Leu Leu Gln Gly Tyr His Phe Thr Ala Asp Ser
370 375 380

Trp Glu His Ile His Phe Ile Gly Lys Ile Gln Gly Ser Asp Ala Gly
385 390 395 400

Trp Thr Leu Gly Tyr Met Leu Asn Leu Thr Asn Met Ile Pro Ala Glu
405 410 415

Gln Pro Leu Ser Thr Pro Leu Ser His Ser Thr
420 425

<210> 33
<211> 1281
<212> DNA
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成多核苷酸"

<400> 33
acccagaaca aggccctgcc cgagaacgtg aagtacggca tcgtgctgga tgccggcagc 60

agccacacca gcctgtacat ctacaagtgg cctgccgaga aagaaaacga caccggcgtg 120

gtgcatcagg tggaagagtg cagagtgaag ggccctggca tcagcaagtt cgtgcagaaa 180

gtgaacgaga tcggcatcta cctgaccgac tgcatggaac gggccaggga agtgatcccc 240

agaagccagc accaggaaac ccccgtgtat ctgggagcca ccgccggcat gagactgctg 300

agaatggaaa gcgaggaact ggccgaccgg gtgctggacg tggtggaaag aagcctgagc 360

aactacccat tcgattttca aggcgccaga atcatcaccg gccaggaaga aggcgcctac 420

ggctggatca ccatcaacta cctgctgggc aagttcagcc agaagaatca ggaaaccttc 480

ggcgccttgg acctgggcgg agcttctacc caagtgacct tcgtgcccca gaatcagacc 540

atcgagagcc ccgacaacgc cctgcagttc cggctgtacg gcaaggacta caatgtgtac 600

acccacagct ttctgtgcta cggaaaggac caggctctgt ggcagaagct ggccaaggac 660

atccaggtgg ccagcaacga gatcctgcgg gacccttgct tccaccccgg ctacaagaaa 720

gtcgtgaacg tgtccgacct gtacaagacc ccctgcacca agagattcga gatgaccctg 780

cccttccagc agttcgagat ccagggcatc ggcaattacc agcagtgcca ccagagcatc 840

ctggaactgt tcaacaccag ctactgcccc tacagccagt gcgccttcaa cggcatcttc 900

ctgccacctc tgcaggggga tttcggcgcc ttcagcgcct tctactccgt gatgaagttc 960

ctgaacctga ccagcgagaa ggtgtcccag gaaaaagtga cagagatgat gaagaagttc 1020

tgcgcccagc cctgggagga aatcaagacc tcctacgctg gcgtgaaaga gaagtacctg 1080

agcgagtact gcttcagcgg cacctacatc ctgagcctgc tgctgcaggg ctaccacttc 1140

accgccgata gctgggagca catccacttc atcggcaaga ttcagggcag cgacgccggc 1200

tggacactgg gttacatgct gaatctgacc aacatgatcc ccgccgagca gcccctgagc 1260

acacctctga gccacagcac c 1281

<210> 34
<211> 427
<212> PRT
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成多肽"

<400> 34

```
Thr Gln Asn Lys Ala Leu Pro Glu Asn Val Lys Tyr Gly Ile Val Leu
1               5                  10                  15

Asp Ala Gly Ser Ser His Thr Ser Leu Tyr Ile Tyr Lys Trp Pro Ala
            20                  25                  30

Glu Lys Glu Asn Asp Thr Gly Val Val His Gln Val Glu Glu Cys Arg
        35                  40                  45

Val Lys Gly Pro Gly Ile Ser Lys Phe Val Gln Lys Val Asn Glu Ile
    50                  55                  60

Gly Ile Tyr Leu Thr Asp Cys Met Glu Arg Ala Arg Glu Val Ile Pro
65                  70                  75                  80

Arg Ser Gln His Gln Glu Thr Pro Val Tyr Leu Gly Ala Thr Ala Gly
                85                  90                  95

Met Arg Leu Leu Arg Met Glu Ser Glu Glu Leu Ala Asp Arg Val Leu
            100                 105                 110

Asp Val Val Glu Arg Ser Leu Ser Asn Tyr Pro Phe Asp Phe Gln Gly
        115                 120                 125

Ala Arg Ile Ile Thr Gly Gln Glu Glu Gly Ala Tyr Gly Trp Ile Thr
    130                 135                 140

Ile Asn Tyr Leu Leu Gly Lys Phe Ser Gln Lys Asn Gln Glu Thr Phe
145                 150                 155                 160
```

Gly Ala Leu Asp Leu Gly Gly Ala Ser Thr Gln Val Thr Phe Val Pro
165 170 175

Gln Asn Gln Thr Ile Glu Ser Pro Asp Asn Ala Leu Gln Phe Arg Leu
180 185 190

Tyr Gly Lys Asp Tyr Asn Val Tyr Thr His Ser Phe Leu Cys Tyr Gly
195 200 205

Lys Asp Gln Ala Leu Trp Gln Lys Leu Ala Lys Asp Ile Gln Val Ala
210 215 220

Ser Asn Glu Ile Leu Arg Asp Pro Cys Phe His Pro Gly Tyr Lys Lys
225 230 235 240

Val Val Lys Val Ser Asp Leu Tyr Lys Thr Pro Cys Thr Lys Arg Phe
245 250 255

Glu Met Thr Leu Pro Phe Gln Gln Phe Glu Ile Gln Gly Ile Gly Asn
260 265 270

Tyr Gln Gln Cys His Gln Ser Ile Leu Glu Leu Phe Asn Thr Ser Tyr
275 280 285

Cys Pro Tyr Ser Gln Cys Ala Phe Asn Gly Ile Phe Leu Pro Pro Leu
290 295 300

Gln Gly Asp Phe Gly Ala Phe Ser Ala Phe Tyr Ser Val Met Lys Phe
305 310 315 320

Leu Asn Leu Thr Ser Glu Lys Val Ser Gln Glu Lys Val Thr Glu Met
325 330 335

Met Lys Lys Phe Cys Ala Gln Pro Trp Glu Glu Ile Lys Thr Ser Tyr
340 345 350

Ala Gly Val Lys Glu Lys Tyr Leu Ser Glu Tyr Cys Phe Ser Gly Thr
355 360 365

Tyr Ile Leu Ser Leu Leu Pro Gln Gly Tyr His Phe Thr Ala Asp Ser
370 375 380

Trp Glu His Ile His Phe Ile Gly Lys Ile Gln Gly Ser Asp Ala Gly
385 390 395 400

Trp Thr Leu Gly Tyr Met Leu Asn Leu Thr Asn Met Ile Ser Ala Glu
405 410 415

Gln Pro Leu Ser Thr Pro Leu Ser His Ser Thr
420 425

<210> 35
<211> 1281
<212> DNA
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成多核苷酸"

<400> 35
acccagaaca aggccctgcc cgagaacgtg aagtacggca tcgtgctgga tgccggcagc 60

agccacacca gcctgtacat ctacaagtgg cctgccgaga aagaaaacga caccggcgtg 120

gtgcatcagg tggaagagtg cagagtgaag ggccctggca tcagcaagtt cgtgcagaaa 180

gtgaacgaga tcggcatcta cctgaccgac tgcatggaac gggccaggga agtgatcccc 240

agaagccagc accaggaaac ccccgtgtat ctgggagcca ccgccggcat gagactgctg 300

agaatggaaa gcgaggaact ggccgaccgg gtgctggacg tggtggaaag aagcctgagc 360

aactacccat tcgattttca aggcgccaga atcatcaccg gccaggaaga aggcgcctac 420

ggctggatca ccatcaacta cctgctgggc aagttcagcc agaagaatca ggaaaccttc 480

ggcgccctgg acctgggcgg agcttctacc caagtgacct tcgtgcccca gaatcagacc 540

atcgagagcc ccgacaacgc cctgcagttc cggctgtacg gcaaggacta caatgtgtac 600

acccacagct ttctgtgcta cggaaaggac caggcgctgt ggcagaagct ggccaaggac 660

atccaggtgg ccagcaacga gatcctgcgg gacccttgct tccaccccgg ctacaagaaa 720

gtcgtgaagg tgtccgacct gtacaagacc ccctgcacca agagattcga gatgaccctg 780

cccttccagc agttcgagat ccagggcatc ggcaattacc agcagtgcca ccagagcatc 840

ctggaactgt tcaacaccag ctactgccca tacagccagt gcgccttcaa cggcatcttc 900

ctgccacctc tgcaggggga tttcggcgcc ttcagcgcct tctactccgt gatgaagttc 960

ctgaacctga ccagcgagaa ggtgtcccag gaaaaagtga cagagatgat gaagaagttc 1020

tgcgcccagc cctgggagga aatcaagacc tcctacgctg gcgtgaaaga gaagtacctg 1080

agcgagtact gcttcagcgg cacctacatc ctgagcctgc tgccgcaggg ctaccacttc 1140

accgccgata gctgggagca catccacttc atcggcaaga ttcagggcag cgacgccggc 1200

tggacactgg gctacatgct gaatctgacc aacatgatct ccgccgagca gcccctgagc 1260

acacctctga gccacagcac c 1281

<210> 36
<211> 427
<212> PRT
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成多肽"

<400> 36
Thr Gln Asn Lys Ala Leu Pro Glu Asn Val Lys Tyr Gly Ile Val Leu
1 5 10 15

Asp Ala Gly Ser Ser His Thr Ser Leu Tyr Ile Tyr Lys Trp Pro Ala
20 25 30

Glu Lys Glu Asn Asp Thr Gly Val Val His Gln Val Glu Glu Cys Arg
35 40 45

Val Lys Gly Pro Gly Ile Ser Lys Phe Val Gln Lys Val Asn Glu Ile
50 55 60

Gly Ile Tyr Leu Thr Asp Cys Met Glu Arg Ala Arg Glu Val Ile Pro

65 70 75 80

Arg Ser Gln His Gln Glu Thr Pro Val Tyr Leu Gly Ala Thr Ala Gly
85 90 95

Met Arg Leu Leu Arg Met Glu Ser Glu Glu Leu Ala Asp Arg Val Leu
100 105 110

Asp Val Val Glu Arg Ser Leu Ser Asn Tyr Pro Phe Asp Phe Gln Gly
115 120 125

Ala Arg Ile Ile Thr Gly Gln Glu Glu Gly Ala Tyr Gly Trp Ile Thr
130 135 140

Ile Asn Tyr Leu Leu Gly Lys Phe Ser Gln Lys Asn Gln Glu Thr Phe
145 150 155 160

Gly Ala Leu Asp Leu Gly Gly Ala Ser Thr Gln Val Thr Phe Val Pro
165 170 175

Gln Asn Gln Thr Ile Glu Ser Pro Asp Asn Ala Leu Gln Phe Arg Leu
180 185 190

Tyr Gly Lys Asp Tyr Asn Val Tyr Thr His Ser Phe Leu Cys Tyr Gly
195 200 205

Lys Asp Gln Ala Leu Trp Gln Lys Leu Ala Lys Asp Ile Gln Val Ala
210 215 220

Ser Asn Glu Ile Leu Arg Asp Pro Cys Phe His Pro Gly Tyr Lys Lys
225 230 235 240

Val Val Asn Val Ser Asp Leu Tyr Lys Thr Pro Cys Thr Lys Arg Phe
245 250 255

Glu Met Thr Leu Pro Phe Gln Gln Phe Glu Ile Gln Gly Ile Gly Asn
260 265 270

Tyr Gln Gln Cys His Gln Ser Ile Leu Glu Leu Phe Asn Thr Ser Tyr
275 280 285

Cys Pro Tyr Ser Gln Cys Ala Phe Asn Gly Ile Phe Leu Pro Pro Leu
290 295 300

Gln Gly Asp Phe Gly Ala Phe Ser Ala Phe Tyr Phe Val Met Lys Phe
305 310 315 320

Leu Asn Leu Thr Ser Glu Lys Val Ser Gln Glu Lys Val Thr Glu Met
325 330 335

Met Lys Lys Phe Cys Ala Gln Pro Trp Glu Glu Ile Lys Thr Ser Tyr
340 345 350

Ala Gly Val Asn Glu Lys Tyr Leu Ser Glu Phe Cys Phe Ser Gly Thr
355 360 365

Tyr Ile Leu Ser Leu Leu Leu Gln Gly Tyr His Phe Thr Ala Asp Ser
370 375 380

Trp Glu His Ile His Phe Ile Gly Lys Ile Gln Gly Ser Asp Ala Gly
385 390 395 400

Trp Thr Leu Gly Tyr Met Leu Asn Leu Thr Asn Met Ile Pro Ala Glu
405 410 415

Gln Pro Leu Ser Thr Pro Leu Ser His Ser Thr
420 425

<210> 37
<211> 1281
<212> DNA
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成多核苷酸"

<400> 37

acccagaaca aggccctgcc cgagaacgtg aagtacggca tcgtgctgga tgccggcagc 60

agccacacca gcctgtacat ctacaagtgg cctgccgaga aagaaaacga caccggcgtg 120

gtgcatcagg tggaagagtg cagagtgaag ggccctggca tcagcaagtt cgtgcagaaa 180

gtgaacgaga tcggcatcta cctgaccgac tgcatggaac gggccaggga agtgatcccc 240

agaagccagc accaggaaac ccccgtgtat ctgggagcca ccgccggcat gagactgctg 300

agaatggaaa gcgaggaact ggccgaccgg gtgctggacg tggtggaaag aagcctgagc 360

aactacccat tcgattttca aggcgccaga atcatcaccg gccaggaaga aggcgcctac 420

ggctggatca ccatcaacta cctgctgggc aagttcagcc agaagaatca ggaaaccttc 480

ggcgccctgg acctgggcgg agcttctacc caagtgacct tcgtgcccca gaatcagacc 540

atcgagagcc ccgacaacgc cctgcagttc cggctgtacg gcaaggacta caatgtgtac 600

acccacagct ttctgtgcta cggaaaggac caggctctgt ggcagaagct ggccaaggac 660

atccaggtgg ccagcaacga gatcctgcgg gacccttgct tccaccccgg ctacaagaaa 720

gtcgtgaacg tgtccgacct gtacaagacc ccctgcacca agagattcga gatgaccctg 780

cccttccagc agttcgagat ccagggcatc ggcaattacc agcagtgcca ccagagcatc 840

ctggaactgt tcaacaccag ctactgcccc tacagccagt gcgccttcaa cggcatcttc 900

ctgccacctc tgcaggggga tttcggcgcc ttcagcgcct tctacttcgt gatgaagttc 960

ctgaacctga ccagcgagaa ggtgtcccag gaaaaagtga cagagatgat gaagaagttc 1020

tgcgcccaac cctgggagga aatcaagacc tcctacgctg gcgtgaacga gaagtacctg 1080

agcgagtttt gcttcagcgg cacctacatc ctgagcctgc tgctgcaggg ctaccacttc 1140

accgccgata gctgggagca catccacttc atcggcaaga ttcagggcag cgacgccggc 1200

tggacactgg gctacatgct gaatctgacc aacatgatcc ccgccgagca gcccctgagc 1260

acacctctga gccacagcac c 1281

<210> 38
<211> 427
<212> PRT
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成多肽"

<400> 38

```
Thr Gln Asn Lys Ala Leu Pro Glu Asn Val Lys Tyr Gly Ile Val Leu
1               5                  10                  15

Asp Ala Gly Ser Ser His Thr Ser Leu Tyr Ile Tyr Lys Trp Pro Ala
            20                  25                  30

Glu Lys Glu Asn Asp Thr Gly Val Val His Gln Val Glu Glu Cys Arg
        35                  40                  45

Val Lys Gly Pro Gly Ile Ser Lys Phe Val Gln Lys Val Asn Glu Ile
    50                  55                  60

Gly Ile Tyr Leu Thr Asp Cys Met Glu Arg Ala Arg Glu Val Ile Pro
65                  70                  75                  80

Arg Ser Gln His Gln Glu Thr Pro Val Tyr Leu Gly Ala Thr Ala Gly
                85                  90                  95

Met Arg Leu Leu Arg Met Glu Ser Glu Glu Leu Ala Asp Arg Val Leu
            100                 105                 110

Asp Val Val Glu Arg Ser Leu Ser Asn Tyr Pro Phe Asp Phe Gln Gly
        115                 120                 125

Ala Arg Ile Ile Thr Gly Gln Glu Glu Gly Ala Tyr Gly Trp Ile Thr
    130                 135                 140

Ile Asn Tyr Leu Leu Gly Lys Phe Ser Gln Lys Asn Gln Glu Thr Phe
145                 150                 155                 160

Gly Ala Leu Asp Leu Gly Gly Ala Ser Thr Gln Val Thr Phe Val Pro
                165                 170                 175
```

Gln Asn Gln Thr Ile Glu Ser Pro Asp Asn Ala Leu Gln Phe Arg Leu
180 185 190

Tyr Gly Lys Asp Tyr Asn Val Tyr Thr His Ser Phe Leu Cys Tyr Gly
195 200 205

Lys Asp Gln Ala Leu Trp Gln Lys Leu Ala Lys Asp Ile Gln Val Ala
210 215 220

Ser Asn Glu Ile Leu Arg Asp Pro Cys Phe His Pro Gly Tyr Lys Lys
225 230 235 240

Val Val Asn Val Ser Asp Leu Tyr Lys Thr Pro Cys Thr Lys Arg Phe
245 250 255

Glu Met Thr Leu Pro Phe Gln Gln Phe Glu Ile Gln Gly Ile Gly Asn
260 265 270

Tyr Gln Gln Cys His Gln Ser Ile Leu Glu Leu Phe Asn Thr Ser Tyr
275 280 285

Cys Pro Tyr Ser Gln Cys Ala Phe Asn Gly Ile Phe Leu Pro Pro Leu
290 295 300

Gln Gly Asp Phe Gly Ala Phe Ser Ala Phe Tyr Phe Val Met Lys Phe
305 310 315 320

Leu Asn Leu Thr Ser Glu Lys Val Ser Gln Glu Lys Val Thr Glu Met
325 330 335

Met Lys Lys Phe Cys Ala Gln Pro Trp Glu Glu Ile Lys Thr Ser Tyr
340 345 350

Ala Gly Val Lys Glu Lys Tyr Leu Ser Glu Phe Cys Phe Ser Gly Thr
355 360 365

Tyr Ile Leu Ser Leu Leu Leu Gln Gly Tyr His Phe Thr Ala Asp Ser
370 375 380

Trp Glu His Ile His Phe Ile Gly Lys Ile Gln Gly Ser Asp Ala Gly
385 390 395 400

Trp Thr Leu Gly Tyr Met Leu Asn Leu Thr Asn Met Ile Pro Ala Glu
405 410 415

Gln Pro Leu Ser Thr Pro Leu Ser His Ser Thr
420 425

<210> 39
<211> 1281
<212> DNA
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成多核苷酸"

<400> 39
acccagaaca aggccctgcc cgagaacgtg aagtacggca tcgtgctgga tgccggcagc 60

agccacacca gcctgtacat ctacaagtgg cctgccgaga aagaaaacga caccggcgtg 120

gtgcatcagg tggaagagtg cagagtgaag ggccctggca tcagcaagtt cgtgcagaaa 180

gtgaacgaga tcggcatcta cctgaccgac tgcatggaac gggccaggga agtgatcccc 240

agaagccagc accaggaaac ccccgtgtat ctgggagcca ccgccggcat gagactgctg 300

agaatggaaa gcgaggaact ggccgaccgg gtgctggacg tggtggaaag aagcctgagc 360

aactacccat tcgattttca aggcgccaga atcatcaccg gccaggaaga aggcgcctac 420

ggctggatca ccatcaacta cctgctgggc aagttcagcc agaagaatca ggaaaccttc 480

ggcgccctgg acctgggcgg agcttctacc caagtgacct tcgtgcccca gaatcagacc 540

atcgagagcc ccgacaacgc cctgcagttc cggctgtacg gcaaggacta caatgtgtac 600

acccacagct ttctgtgcta cggaaaggac caggctctgt ggcagaagct ggccaaggac 660

atccaggtgg ccagcaacga gatcctgcgg gacccttgct tccaccccgg ctacaagaaa 720

gtcgtgaacg tgtccgacct gtacaagacc ccctgcacca agagattcga gatgaccctg 780

ccctccagc agttcgagat ccagggcatc ggcaattacc agcagtgcca ccagagcatc 840

ctggaactgt tcaacaccag ctactgcccc tacagccagt gcgccttcaa cggcatcttc 900

ctgccacctc tgcaggggga tttcggcgcc ttcagcgcct tctacttcgt gatgaagttc 960

ctgaacctga ccagcgagaa ggtgtcccag gaaaaagtga cagagatgat gaagaagttc 1020

tgcgcccagc cctgggagga aatcaagacc tcctacgctg gcgtgaaaga gaagtacctg 1080

agcgagtttt gcttcagcgg cacctacatc ctgagcctgc tgctgcaggg ctaccacttc 1140

accgccgata gctgggagca catccacttc atcggcaaga ttcagggcag cgacgccggc 1200

tggacactgg gctacatgct gaatctgacc aacatgatcc ccgccgagca gcccctgagc 1260

acacctctga gccacagcac c 1281

<210> 40
<211> 427
<212> PRT
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成多肽"

<400> 40
Thr Gln Asn Lys Ala Leu Pro Glu Asn Val Lys Tyr Gly Ile Val Leu
1 5 10 15

Asp Ala Gly Ser Ser His Thr Ser Leu Tyr Ile Tyr Lys Trp Pro Ala
20 25 30

Glu Lys Glu Asn Asp Thr Gly Val Val His Gln Val Glu Glu Cys Arg
35 40 45

Val Lys Gly Pro Gly Ile Ser Lys Phe Val Gln Lys Val Asn Glu Ile
50 55 60

Asp Ile Tyr Leu Thr Asp Cys Met Glu Arg Ala Arg Glu Val Ile Pro
65 70 75 80

Arg Ser Gln His Gln Glu Thr Pro Val Tyr Leu Gly Ala Thr Ala Gly

85 90 95

Met Arg Leu Leu Arg Met Glu Ser Glu Glu Leu Ala Asp Arg Val Leu
100 105 110

Asp Val Val Glu Arg Ser Leu Ser Asn Tyr Pro Phe Asp Phe Gln Gly
115 120 125

Ala Arg Ile Ile Thr Gly Gln Glu Glu Gly Ala Tyr Gly Trp Ile Thr
130 135 140

Ile Asn Tyr Leu Leu Gly Lys Phe Ser Gln Lys Asn Gln Glu Thr Phe
145 150 155 160

Gly Ala Leu Asp Leu Gly Gly Ala Ser Thr Gln Val Thr Phe Val Pro
165 170 175

Gln Asn Gln Thr Ile Glu Ser Pro Asp Asn Ala Leu Gln Phe Arg Leu
180 185 190

Tyr Gly Lys Asp Tyr Asn Val Tyr Thr His Ser Phe Leu Cys Tyr Gly
195 200 205

Lys Asp Gln Ala Leu Trp Gln Lys Leu Ala Lys Asp Ile Gln Val Ala
210 215 220

Ser Asn Glu Ile Leu Arg Asp Pro Cys Phe His Pro Gly Tyr Lys Lys
225 230 235 240

Val Val Asn Val Ser Asp Leu Tyr Lys Thr Pro Cys Thr Lys Arg Phe
245 250 255

Glu Met Thr Leu Pro Phe Gln Gln Phe Glu Ile Gln Gly Ile Gly Asn
260 265 270

Tyr Gln Gln Cys His Gln Ser Ile Leu Glu Leu Phe Asn Thr Ser Tyr
275 280 285

Cys Pro Tyr Ser Gln Cys Ala Phe Asn Gly Ile Phe Leu Pro Pro Leu
290 295 300

Gln Gly Asp Phe Gly Ala Phe Ser Ala Phe Tyr Phe Val Met Lys Phe
305 310 315 320

Leu Asn Leu Thr Ser Glu Lys Val Ser Gln Glu Lys Val Thr Glu Met
325 330 335

Met Lys Lys Phe Cys Ala Gln Pro Trp Glu Glu Ile Lys Thr Ser Tyr
340 345 350

Ala Gly Val Lys Glu Lys Tyr Leu Ser Glu Tyr Cys Phe Ser Gly Thr
355 360 365

Tyr Ile Leu Ser Leu Leu Gln Gln Gly Tyr His Phe Thr Ala Asp Ser
370 375 380

Trp Glu His Ile His Phe Ile Gly Lys Ile Gln Gly Ser Asp Ala Gly
385 390 395 400

Trp Thr Leu Gly Tyr Met Leu Asn Leu Thr Asn Met Ile Pro Ala Glu
405 410 415

Gln Pro Leu Ser Thr Pro Leu Ser His Ser Thr
420 425

<210> 41
<211> 1281
<212> DNA
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成多核苷酸"

<400> 41
acccagaaca aggccctgcc cgagaacgtg aagtacggca tcgtgctgga tgccggcagc 60

agccacacca gcctgtacat ctacaagtgg cctgccgaga aagaaaacga caccggcgtg 120

gtgcatcagg tggaagagtg cagagtgaag ggccctggca tcagcaagtt cgtgcagaaa 180

gtgaacgaga tcgacatcta cctgaccgac tgcatggaac gggccaggga agtgatcccc 240

agaagccagc accaggaaac ccccgtgtat ctgggagcca ccgccggcat gagactgctg 300

agaatggaaa gcgaggaact ggccgaccgg gtgctggacg tggtggaaag aagcctgagc 360

aactacccat tcgattttca aggcgccaga atcatcaccg gccaggaaga aggcgcctac 420

ggctggatca ccatcaacta cctgctgggc aagttcagcc agaagaatca ggaaaccttc 480

ggcgccctgg acctgggcgg agcttctacc caagtgacct tcgtgcccca gaatcagacc 540

atcgagagcc ccgacaacgc cctgcagttc cggctgtacg gcaaggacta caatgtgtac 600

acccacagct ttctgtgcta cggaaaggac caggctctgt ggcagaagct ggccaaggac 660

atccaggtgg ccagcaacga gatcctgcgg gacccttgct tccaccccgg ctacaagaaa 720

gtcgtgaacg tgtccgacct gtacaagacc ccctgcacca agagattcga gatgaccctg 780

cccttccagc agttcgagat ccagggcatc ggcaattacc agcagtgcca ccagagcatc 840

ctggaactgt tcaacaccag ctactgcccc tacagccagt gcgccttcaa cggcatcttc 900

ctgccacctc tgcaggggga tttcggcgcc ttcagcgcct tctacttcgt gatgaagttc 960

ctgaacctga ccagcgagaa ggtgtcccag gaaaaagtga cagagatgat gaagaagttc 1020

tgcgcccagc cctgggagga aatcaagacc tcctacgctg gcgtgaaaga gaagtacctg 1080

agcgagtact gcttcagcgg cacctacatc ctgagcctgc tgcagcaggg ctaccacttc 1140

accgccgata gctgggagca catccacttc atcggcaaga ttcagggcag cgacgccggc 1200

tggacactgg gctacatgct gaatctgacc aacatgatcc ccgccgagca gcccctgagc 1260

acacctctga gccacagcac c 1281

<210> 42
<211> 427
<212> PRT
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成多肽"

<400> 42

```
Thr Gln Asn Lys Ala Leu Pro Glu Asn Val Lys Tyr Gly Ile Val Leu
1               5                  10                  15

Asp Ala Gly Ser Ser His Thr Ser Leu Tyr Ile Tyr Lys Trp Pro Ala
            20                  25                  30

Glu Lys Glu Asn Asp Thr Gly Val Val His Gln Val Glu Glu Cys Arg
        35                  40                  45

Val Lys Gly Pro Gly Ile Ser Lys Phe Val Gln Lys Val Asn Glu Ile
    50                  55                  60

Gly Ile Tyr Leu Thr Asp Cys Met Glu Arg Ala Arg Glu Val Ile Pro
65                  70                  75                  80

Arg Ser Gln His Gln Glu Thr Pro Val Tyr Leu Gly Ala Thr Ala Gly
                85                  90                  95

Met Arg Leu Leu Arg Met Glu Ser Glu Glu Leu Ala Asp Arg Val Leu
            100                 105                 110

Asp Val Val Glu Arg Ser Leu Ser Asn Tyr Pro Phe Asp Phe Gln Gly
        115                 120                 125

Ala Arg Ile Ile Thr Gly Gln Glu Glu Gly Ala Tyr Gly Trp Ile Thr
    130                 135                 140

Ile Asn Tyr Leu Leu Gly Lys Phe Ser Gln Lys Asn Gln Glu Thr Phe
145                 150                 155                 160

Gly Ala Leu Asp Leu Gly Gly Ala Ser Thr Gln Val Thr Phe Val Pro
                165                 170                 175

Gln Asn Gln Thr Ile Glu Ser Pro Asp Asn Ala Leu Gln Phe Arg Leu
            180                 185                 190
```

Tyr Gly Lys Asp Tyr Asn Val Tyr Thr His Ser Phe Leu Cys Tyr Gly
195 200 205

Lys Asp Gln Ala Leu Trp Gln Lys Leu Ala Lys Asp Ile Gln Val Ala
210 215 220

Ser Asn Glu Ile Leu Arg Asp Pro Cys Phe His Pro Gly Tyr Lys Lys
225 230 235 240

Val Val Asn Val Ser Asp Leu Tyr Lys Thr Pro Cys Thr Lys Arg Phe
245 250 255

Glu Met Thr Leu Pro Phe Gln Gln Phe Glu Ile Gln Gly Ile Gly Asn
260 265 270

Tyr Gln Gln Cys His Gln Ser Ile Leu Glu Leu Phe Asn Thr Ser Tyr
275 280 285

Cys Pro Tyr Ser Gln Cys Ala Phe Asn Gly Ile Phe Leu Pro Pro Leu
290 295 300

Gln Gly Asp Phe Gly Ala Phe Ser Ala Phe Tyr Phe Val Met Lys Phe
305 310 315 320

Leu Asn Leu Thr Ser Glu Lys Val Ser Gln Glu Lys Val Thr Glu Met
325 330 335

Met Lys Lys Phe Cys Ala Gln Pro Trp Glu Glu Ile Lys Thr Ser Tyr
340 345 350

Ala Gly Val Lys Glu Lys Tyr Leu Ser Glu Tyr Cys Phe Ser Gly Thr
355 360 365

Tyr Ile Leu Ser Leu Leu Gln Gln Gly Tyr His Phe Thr Ala Asp Ser
370 375 380

Trp Glu Asp Ile His Phe Ile Gly Lys Ile Gln Gly Ser Asp Ala Gly
385 390 395 400

Trp Thr Leu Gly Tyr Met Leu Asn Leu Thr Asn Met Ile Pro Ala Glu
405 410 415

Gln Pro Leu Ser Thr Pro Leu Ser His Ser Thr
420 425

<210> 43
<211> 1281
<212> DNA
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成多核苷酸"

<400> 43
acccagaaca aggccctgcc cgagaacgtg aagtacggca tcgtgctgga tgccggcagc 60

agccacacca gcctgtacat ctacaagtgg cctgccgaga aagaaaacga caccggcgtg 120

gtgcatcagg tggaagagtg cagagtgaag ggccctggca tcagcaagtt cgtgcagaaa 180

gtgaacgaga tcggcatcta cctgaccgac tgcatggaac gggccaggga agtgatcccc 240

agaagccagc accaggaaac ccccgtgtat ctgggagcca ccgccggcat gagactgctg 300

agaatggaaa gcgaggaact ggccgaccgg gtgctggacg tggtggaaag aagcctgagc 360

aactacccat tcgattttca aggcgccaga atcatcaccg gccaggaaga aggcgcctac 420

ggctggatca ccatcaacta cctgctgggc aagttcagcc agaagaatca ggaaaccttc 480

ggcgccctgg acctgggcgg agcttctacc caagtgacct tcgtgcccca gaatcagacc 540

atcgagagcc ccgacaacgc cctgcagttc cggctgtacg gcaaggacta caatgtgtac 600

acccacagct ttctgtgcta cggaaaggac caggctctgt ggcagaagct ggccaaggac 660

atccaggtgg ccagcaacga gatcctgcgg gacccttgct tccaccccgg ctacaagaaa 720

gtcgtgaacg tgtccgacct gtacaagacc ccctgcacca agagattcga gatgaccctg 780

cccttccagc agttcgagat ccagggcatc ggcaattacc agcagtgcca ccagagcatc 840

ctggaactgt tcaacaccag ctactgcccc tacagccagt gcgccttcaa cggcatcttc 900

ctgccacctc tgcaggggga tttcggcgcc ttcagcgcct tctacttcgt gatgaagttc 960

ctgaacctga ccagcgagaa ggtgtcccag gaaaaagtga cagagatgat gaagaagttc 1020

tgcgcccagc cctgggagga aatcaagacc tcctacgctg gcgtgaaaga gaagtacctg 1080

agcgagtact gcttcagcgg cacctacatc ctgagcctgc tgcagcaggg ctaccacttc 1140

accgccgata gctgggagga catccacttc atcggcaaga ttcagggcag cgacgccggc 1200

tggacactgg gctacatgct gaatctgacc aacatgatcc ccgccgagca gcccctgagc 1260

acacctctga gccacagcac c 1281

<210> 44
<211> 427
<212> PRT
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成多肽"

<400> 44

```
Thr Gln Asn Lys Ala Leu Pro Glu Asn Val Lys Tyr Gly Ile Val Leu
1               5                  10                  15

Asp Ala Gly Ser Ser His Thr Ser Leu Tyr Ile Tyr Lys Trp Pro Ala
            20                  25                  30

Glu Lys Glu Asn Asp Thr Gly Val Val His Gln Val Glu Glu Cys Arg
        35                  40                  45

Val Lys Gly Pro Gly Ile Ser Lys Phe Val Gln Lys Val Asn Glu Ile
    50                  55                  60

Gly Ile Tyr Leu Thr Asp Cys Met Glu Arg Ala Arg Glu Val Ile Pro
65                  70                  75                  80

Arg Ser Gln His Gln Glu Thr Pro Val Tyr Leu Gly Ala Thr Ala Gly
                85                  90                  95

Met Arg Leu Leu Arg Met Glu Ser Glu Glu Leu Ala Asp Arg Val Leu
```

100 105 110

Asp Val Val Glu Arg Ser Leu Ser Asn Tyr Pro Phe Asp Phe Gln Gly
115 120 125

Ala Arg Ile Ile Thr Gly Gln Glu Glu Gly Ala Tyr Gly Trp Ile Thr
130 135 140

Ile Asn Tyr Leu Leu Gly Lys Phe Ser Gln Lys Asn Gln Glu Thr Phe
145 150 155 160

Gly Ala Leu Asp Leu Gly Gly Ala Ser Thr Gln Val Thr Phe Val Pro
165 170 175

Gln Asn Gln Thr Ile Glu Ser Pro Asp Asn Ala Leu Gln Phe Arg Leu
180 185 190

Tyr Gly Lys Asp Tyr Asn Val Tyr Thr His Ser Phe Leu Cys Tyr Gly
195 200 205

Lys Asp Gln Ala Leu Trp Gln Lys Leu Ala Lys Asp Ile Gln Val Ala
210 215 220

Ser Asn Gly Ile Leu Arg Asp Pro Cys Phe His Pro Gly Tyr Lys Lys
225 230 235 240

Val Val Asn Val Ser Asp Leu Tyr Lys Thr Pro Cys Thr Lys Arg Phe
245 250 255

Glu Met Thr Leu Pro Phe Gln Gln Phe Glu Ile Gln Gly Ile Gly Asn
260 265 270

Tyr Gln Gln Cys His Gln Ser Ile Leu Glu Leu Phe Asn Thr Ser Tyr
275 280 285

Cys Pro Tyr Ser Gln Cys Ala Phe Asn Gly Ile Phe Leu Pro Pro Leu
290 295 300

Gln Gly Asp Phe Gly Ala Phe Ser Ala Phe Tyr Phe Val Met Lys Phe
305 310 315 320

Leu Asn Leu Thr Ser Glu Lys Val Ser Gln Glu Lys Val Thr Glu Met
325 330 335

Met Lys Lys Phe Cys Ala Gln Pro Trp Glu Glu Ile Lys Thr Ser Tyr
340 345 350

Ala Gly Val Lys Glu Lys Tyr Leu Ser Glu Tyr Cys Phe Ser Gly Thr
355 360 365

Tyr Ile Leu Ser Leu Leu Leu Gln Gly Tyr His Phe Thr Ala Asp Ser
370 375 380

Trp Glu His Ile His Ser Ile Gly Lys Ile Gln Gly Ser Asp Ala Gly
385 390 395 400

Trp Thr Leu Gly Tyr Met Leu Asn Leu Thr Asn Met Ile Pro Ala Glu
405 410 415

Gln Pro Leu Ser Thr Pro Leu Ser His Ser Thr
420 425

<210> 45
<211> 1281
<212> DNA
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成多核苷酸"

<400> 45
acccagaaca aggccctgcc cgagaacgtg aagtacggca tcgtgctgga tgccggcagc 60

agccacacca gcctgtacat ctacaagtgg cctgccgaga aagaaaacga caccggcgtg 120

gtgcatcagg tggaagagtg cagagtgaag ggccctggca tcagcaagtt cgtgcagaaa 180

gtgaacgaga tcggcatcta cctgaccgac tgcatggaac gggccaggga agtgatcccc 240

agaagccagc accaggaaac ccccgtgtat ctgggagcca ccgccggcat gagactgctg 300

agaatggaaa gcgaggaact ggccgaccgg gtgctggacg tggtggaaag aagcctgagc 360

aactacccat tcgattttca aggcgccaga atcatcaccg gccaggaaga aggcgcctac 420

ggctggatca ccatcaacta cctgctgggc aagttcagcc agaagaatca ggaaaccttc 480

ggcgccctgg acctgggcgg agcttctacc caagtgacct tcgtgcccca gaatcagacc 540

atcgagagcc ccgacaacgc cctgcagttc cggctgtacg gcaaggacta caatgtgtac 600

acccacagct ttctgtgcta cggaaaggac caggctctgt ggcagaagct ggccaaggac 660

atccaggtgg ccagcaacgg gatcctgcgg gacccttgct tccaccccgg ctacaagaaa 720

gtcgtgaacg tgtccgacct gtacaagacc ccctgcacca agagattcga gatgaccctg 780

cccttccagc agttcgagat ccagggcatc ggcaattacc agcagtgcca ccagagcatc 840

ctggaactgt tcaacaccag ctactgcccc tacagccagt gcgccttcaa cggcatcttc 900

ctgccacctc tgcaggggga tttcggcgcc ttcagcgcct tctacttcgt gatgaagttc 960

ctgaacctga ccagcgagaa ggtgtcccag gaaaaagtga cagagatgat gaagaagttc 1020

tgcgcccagc cctgggagga aatcaagacc tcctacgctg gcgtgaaaga gaagtacctg 1080

agcgagtact gcttcagcgg cacctacatc ctgagcctgc tgctgcaggg ctaccacttc 1140

accgccgata gctgggagca catccactcc atcggcaaga ttcagggcag cgacgccggc 1200

tggacactgg gctacatgct gaatctgacc aacatgatcc ccgccgagca gcccctgagc 1260

acacctctga gccacagcac c 1281

<210> 46
<211> 427
<212> PRT
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成多肽"

<400> 46
Thr Gln Asn Lys Ala Leu Pro Glu Asn Val Lys Tyr Gly Ile Val Leu
1 5 10 15

Asp Ala Gly Ser Ser His Thr Ser Leu Tyr Ile Tyr Lys Trp Pro Ala
20 25 30

Glu Lys Glu Asn Asp Thr Gly Val Val His Gln Val Glu Glu Cys Arg
35 40 45

Val Lys Gly Pro Gly Ile Ser Lys Phe Val Gln Lys Val Asn Glu Ile
50 55 60

Gly Ile Tyr Leu Thr Asp Cys Met Glu Arg Ala Met Glu Val Ile Pro
65 70 75 80

Arg Ser Gln His Gln Glu Thr Pro Val Tyr Leu Gly Ala Thr Ala Gly
85 90 95

Met Arg Leu Leu Arg Met Glu Ser Glu Glu Leu Ala Asp Arg Val Leu
100 105 110

Asp Val Val Glu Arg Ser Leu Ser Asn Tyr Pro Phe Asp Phe Gln Gly
115 120 125

Ala Arg Ile Ile Thr Gly Gln Glu Glu Gly Ala Tyr Gly Trp Ile Thr
130 135 140

Ile Asn Tyr Leu Leu Gly Lys Phe Ser Gln Lys Asn Gln Glu Thr Phe
145 150 155 160

Gly Ala Leu Asp Leu Gly Gly Ala Ser Thr Gln Val Thr Phe Val Pro
165 170 175

Gln Asn Gln Thr Ile Glu Ser Pro Asp Asn Ala Leu Gln Phe Arg Leu
180 185 190

Tyr Gly Lys Asp Tyr Asn Val Tyr Thr His Ser Phe Leu Cys Tyr Gly
195 200 205

Lys Asp Gln Ala Leu Trp Gln Lys Leu Ala Lys Asp Ile Gln Val Ala
210 215 220

Ser Asn Glu Ile Leu Arg Asp Pro Cys Phe His Pro Gly Tyr Lys Lys
225 230 235 240

Val Val Asn Val Ser Asp Leu Tyr Lys Thr Pro Cys Thr Lys Arg Phe
245 250 255

Glu Met Thr Leu Pro Phe Gln Gln Phe Glu Ile Gln Gly Ile Gly Asn
260 265 270

Tyr Gln Gln Cys His Gln Ser Ile Leu Glu Leu Phe Asn Thr Ser Tyr
275 280 285

Cys Pro Tyr Ser Gln Cys Ala Phe Asn Gly Ile Phe Leu Pro Pro Leu
290 295 300

Gln Gly Asp Phe Gly Ala Phe Ser Ala Phe Tyr Phe Val Met Lys Phe
305 310 315 320

Leu Asn Leu Thr Ser Glu Lys Val Ser Gln Glu Lys Val Thr Glu Met
325 330 335

Met Lys Lys Phe Cys Ala Gln Pro Trp Glu Glu Ile Lys Thr Ser Tyr
340 345 350

Ala Gly Val Lys Glu Lys Tyr Leu Ser Glu Tyr Cys Phe Ser Gly Thr
355 360 365

Tyr Ile Leu Ser Leu Leu Leu Gln Gly Tyr His Phe Thr Ala Asp Ser
370 375 380

Trp Glu His Ile His Phe Ile Gly Lys Ile Gln Gly Ser Asp Ala Gly
385 390 395 400

Trp Thr Leu Gly Tyr Met Leu Asn Leu Thr Asn Met Ile Pro Ala Glu
405 410 415

Gln Pro Leu Arg Thr Pro Leu Ser His Ser Thr
420 425

<210> 47
<211> 1281
<212> DNA
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成多核苷酸"

<400> 47
acccagaaca aggccctgcc cgagaacgtg aagtacggca tcgtgctgga tgccggcagc 60

agccacacca gcctgtacat ctacaagtgg cctgccgaga aagaaaacga caccggcgtg 120

gtgcatcagg tggaagagtg cagagtgaag ggccctggca tcagcaagtt cgtgcagaaa 180

gtgaacgaga tcggcatcta cctgaccgac tgcatggaac gggccatgga agtgatcccc 240

agaagccagc accaggaaac ccccgtgtat ctgggagcca ccgccggcat gagactgctg 300

agaatggaaa gcgaggaact ggccgaccgg gtgctggacg tggtggaaag aagcctgagc 360

aactacccat tcgattttca aggcgccaga atcatcaccg gccaggaaga aggcgcctac 420

ggctggatca ccatcaacta cctgctgggc aagttcagcc agaagaatca ggaaaccttc 480

ggcgccctgg acctgggcgg agcttctacc caagtgacct tcgtgcccca gaatcagacc 540

atcgagagcc ccgacaacgc cctgcagttc cggctgtacg gcaaggacta caatgtgtac 600

acccacagct ttctgtgcta cggaaaggac caggctctgt ggcagaagct ggccaaggac 660

atccaggtgg ccagcaacga gatcctgcgg gacccttgct tccaccccgg ctacaagaaa 720

gtcgtgaacg tgtccgacct gtacaagacc ccctgcacca agagattcga gatgaccctg 780

cccttccagc agttcgagat ccagggcatc ggcaattacc agcagtgcca ccagagcatc 840

ctggaactgt tcaacaccag ctactgcccc tacagccagt gcgccttcaa cggcatcttc 900

ctgccacctc tgcaggggga tttcggcgcc ttcagcgcct tctacttcgt gatgaagttc 960

ctgaacctga ccagcgagaa ggtgtcccag gaaaaagtga cagagatgat gaagaagttc 1020

tgcgcccagc cctgggagga aatcaagacc tcctacgctg gcgtgaaaga gaagtacctg 1080

agcgagtact gcttcagcgg cacctacatc ctgagcctgc tgctgcaggg ctaccacttc 1140

accgccgata gctgggagca catccacttc atcggcaaga ttcagggcag cgacgccggc 1200

tggacactgg gctacatgct gaatctgacc aacatgatcc ccgccgagca gcccctgcgc 1260

acacctctga gccacagcac c 1281

<210> 48
<211> 427
<212> PRT
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成多肽"

<400> 48
Thr Gln Asn Lys Ala Leu Pro Glu Asn Val Lys Tyr Gly Ile Val Leu
1 5 10 15

Asp Ala Gly Ser Ser His Thr Ser Leu Tyr Ile Tyr Lys Trp Pro Ala
20 25 30

Glu Lys Glu Asn Asp Thr Gly Val Val His Gln Val Glu Glu Cys Arg
35 40 45

Val Lys Gly Pro Gly Ile Ser Lys Phe Val Gln Lys Val Asn Glu Ile
50 55 60

Gly Ile Tyr Leu Thr Asp Cys Met Glu Arg Ala Arg Glu Val Ile Pro
65 70 75 80

Arg Ser Gln His Gln Glu Thr Pro Val Tyr Leu Gly Ala Thr Ala Gly
85 90 95

Met Arg Leu Leu Arg Met Glu Ser Glu Glu Leu Ala Asp Arg Val Leu
100 105 110

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

115 120 125

Ala Arg Ile Ile Thr Gly Gln Glu Glu Gly Ala Tyr Gly Trp Ile Thr
130 135 140

Ile Asn Tyr Leu Leu Gly Lys Phe Ser Gln Lys Asn Gln Glu Thr Phe
145 150 155 160

Gly Ala Leu Asp Leu Gly Gly Ala Ser Thr Gln Val Thr Phe Val Pro
165 170 175

Gln Asn Gln Thr Ile Glu Ser Pro Asp Asn Ala Leu Gln Phe Arg Leu
180 185 190

Tyr Gly Lys Asp Tyr Asn Val Tyr Thr His Ser Phe Leu Cys Tyr Gly
195 200 205

Lys Asp Gln Ala Leu Trp Gln Lys Leu Ala Lys Asp Ile Gln Val Ala
210 215 220

Ser Asn Gly Ile Leu Arg Asp Pro Cys Phe His Pro Gly Tyr Lys Lys
225 230 235 240

Val Val Asn Val Ser Asp Leu Tyr Lys Thr Pro Cys Thr Lys Arg Phe
245 250 255

Glu Met Thr Leu Pro Phe Gln Gln Phe Glu Ile Gln Gly Ile Gly Asn
260 265 270

Tyr Gln Gln Cys His Gln Ser Ile Leu Glu Leu Phe Asn Thr Ser Tyr
275 280 285

Cys Pro Tyr Ser Gln Cys Ala Phe Asn Gly Ile Phe Leu Pro Pro Leu
290 295 300

Gln Gly Asp Phe Gly Ala Phe Ser Ala Phe Tyr Phe Val Met Lys Phe
305 310 315 320

Leu Asn Leu Thr Ser Glu Lys Val Ser Gln Glu Lys Val Thr Glu Met
325 330 335

Met Lys Lys Phe Cys Ala Gln Pro Trp Glu Glu Ile Lys Thr Ser Tyr
340 345 350

Ala Gly Val Lys Glu Lys Tyr Leu Ser Glu Tyr Cys Phe Ser Gly Thr
355 360 365

Tyr Ile Leu Ser Leu Leu Leu Gln Gly Tyr His Phe Thr Ala Asp Ser
370 375 380

Trp Glu His Ile His Phe Ile Gly Lys Ile Gln Gly Ser Asp Ala Gly
385 390 395 400

Trp Thr Leu Gly Tyr Met Leu Asn Leu Thr Asn Met Ile Pro Ala Glu
405 410 415

Gln Pro Leu Gly Thr Pro Leu Ser His Ser Thr
420 425

<210> 49
<211> 1281
<212> DNA
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成多核苷酸"

<400> 49
acccagaaca aggccctgcc cgagaacgtg aagtacggca tcgtgctgga tgccggcagc 60

agccacacca gcctgtacat ctacaagtgg cctgccgaga aagaaaacga caccggcgtg 120

gtgcatcagg tggaagagtg cagagtgaag ggccctggca tcagcaagtt cgtgcagaaa 180

gtgaacgaga tcggcatcta cctgaccgac tgcatggaac gggccaggga agtgatcccc 240

agaagccagc accaggaaac ccccgtgtat ctgggagcca ccgccggcat gagactgctg 300

agaatggaaa gcgaggaact ggccgaccgg gtgctggacg tggtggaaag aagcctgagc 360

aactacccat tcgattttca aggcgccaga atcatcaccg gccaggaaga aggcgcctac 420

ggctggatca ccatcaacta cctgctgggc aagttcagcc agaagaatca ggaaaccttc 480

ggcgccctgg acctgggcgg agcttctacc caagtgacct tcgtgcccca gaatcagacc 540

atcgagagcc ccgacaacgc cctgcagttc cggctgtacg gcaaggacta caatgtgtac 600

acccacagct ttctgtgcta cggaaaggac caggctctgt ggcagaagct ggccaaggac 660

atccaggtgg ccagcaacgg gatcctgcgg gacccttgct tccaccccgg ctacaagaaa 720

gtcgtgaacg tgtccgacct gtacaagacc ccctgcacca agagattcga gatgaccctg 780

cccttccagc agttcgagat ccagggcatc ggcaattacc agcagtgcca ccagagcatc 840

ctggaactgt tcaacaccag ctactgcccc tacagccagt gcgccttcaa cggcatcttc 900

ctgccacctc tgcaggggga tttcggcgcc ttcagcgcct tctacttcgt gatgaagttc 960

ctgaacctga ccagcgagaa ggtgtcccag gaaaaagtga cagagatgat gaagaagttc 1020

tgcgcccagc cctgggagga aatcaagacc tcctacgctg gcgtgaaaga gaagtacctg 1080

agcgagtact gcttcagcgg cacctacatc ctgagcctgc tgctgcaggg ctaccacttc 1140

accgccgata gctgggagca catccacttc atcggcaaga ttcagggcag cgacgccggc 1200

tggacactgg gctacatgtt gaatctgacc aacatgatcc ccgccgagca gcccctgggc 1260

acacctctga gccacagcac c 1281

<210> 50
<211> 427
<212> PRT
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成多肽"

<400> 50
Thr Gln Asn Lys Ala Leu Pro Glu Asn Val Lys Tyr Gly Ile Val Leu
1 5 10 15

Asp Ala Gly Ser Ser His Thr Ser Leu Tyr Ile Tyr Lys Trp Pro Ala
20 25 30

Glu Lys Glu Asn Asp Thr Gly Val Val His Gln Val Glu Glu Cys Arg
35 40 45

Val Lys Gly Pro Gly Ile Ser Lys Phe Val Gln Lys Val Asn Glu Ile
50 55 60

Gly Ile Tyr Leu Thr Asp Cys Met Glu Arg Ala Arg Glu Val Ile Pro
65 70 75 80

Arg Ser Gln His Gln Glu Thr Pro Val Tyr Leu Gly Ala Thr Ala Gly
85 90 95

Met Arg Leu Leu Arg Met Glu Ser Glu Glu Leu Ala Asp Arg Val Leu
100 105 110

Asp Val Val Glu Arg Ser Leu Ser Asn Tyr Pro Phe Asp Phe Gln Gly
115 120 125

Ala Arg Ile Ile Thr Gly Gln Glu Glu Gly Ala Tyr Gly Trp Ile Thr
130 135 140

Ile Asn Tyr Leu Leu Gly Lys Phe Ser Gln Lys Asn Gln Glu Thr Phe
145 150 155 160

Gly Ala Leu Asp Leu Gly Gly Ala Ser Thr Gln Val Thr Phe Val Pro
165 170 175

Gln Asn Gln Thr Ile Glu Ser Pro Asp Asn Ala Leu Gln Phe Arg Leu
180 185 190

Tyr Gly Lys Asp Tyr Asn Val Tyr Thr His Ser Phe Met Cys Tyr Gly
195 200 205

Lys Asp Gln Ala Leu Arg Gln Lys Leu Ala Lys Asp Ile Gln Val Ala
210 215 220

Ser Asn Glu Ile Leu Arg Asp Pro Cys Phe His Pro Gly Tyr Lys Lys
225 230 235 240

Val Val Asn Val Ser Asp Leu Tyr Lys Thr Pro Cys Thr Lys Arg Phe
245 250 255

Glu Met Thr Leu Pro Phe Gln Gln Phe Glu Ile Gln Gly Ile Gly Asn
260 265 270

Tyr Gln Gln Cys His Gln Ser Ile Leu Glu Leu Phe Asn Thr Ser Tyr
275 280 285

Cys Pro Tyr Ser Gln Cys Ala Phe Asn Gly Ile Phe Leu Pro Pro Leu
290 295 300

Gln Gly Asp Phe Gly Ala Phe Ser Ala Phe Tyr Phe Val Met Lys Phe
305 310 315 320

Leu Asn Leu Thr Ser Glu Lys Val Ser Gln Glu Lys Val Thr Glu Met
325 330 335

Met Lys Lys Phe Cys Ala Gln Pro Trp Glu Glu Ile Lys Thr Ser Tyr
340 345 350

Ala Gly Val Lys Glu Lys Tyr Leu Ser Glu Tyr Cys Phe Ser Gly Thr
355 360 365

Tyr Ile Leu Ser Leu Leu Leu Gln Gly Tyr His Phe Thr Ala Asp Ser
370 375 380

Trp Glu His Ile His Ser Ile Gly Lys Ile Gln Gly Ser Asp Ala Gly
385 390 395 400

Trp Thr Leu Gly Tyr Met Leu Asn Leu Thr Asn Met Ile Pro Ala Glu
405 410 415

Gln Pro Leu Arg Thr Pro Leu Ser His Ser Thr
420 425

<210> 51
<211> 1281
<212> DNA
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成多核苷酸"

<400> 51
acccagaaca aggccctgcc cgagaacgtg aagtacggca tcgtgctgga tgccggcagc 60

agccacacca gcctgtacat ctacaagtgg cctgccgaga aagaaaacga caccggcgtg 120

gtgcatcagg tggaagagtg cagagtgaag ggccctggca tcagcaagtt cgtgcagaaa 180

gtgaacgaga tcggcatcta cctgaccgac tgcatggaac gggccaggga agtgatcccc 240

agaagccagc accaggaaac ccccgtgtat ctgggagcca ccgccggcat gagactgctg 300

agaatggaaa gcgaggaact ggccgaccgg gtgctggacg tggtggaaag aagcctgagc 360

aactacccat tcgattttca aggcgccaga atcatcaccg gccaggaaga aggcgcctac 420

ggctggatca ccatcaacta cctgctgggc aagttcagcc agaagaatca ggaaaccttc 480

ggcgccctgg acctgggcgg agcttctacc caagtgacct tcgtgcccca gaatcagacc 540

atcgagagcc ccgacaacgc cctgcagttc cggctgtacg gcaaggacta caatgtgtac 600

acccacagct ttatgtgcta cggaaaggac caggctctga ggcagaagct ggccaaggac 660

atccaggtgg ccagcaacga gatcctgcgg gacccttgct tccaccccgg ctacaagaaa 720

gtcgtgaacg tgtccgacct gtacaagacc ccctgtacca agagattcga gatgaccctg 780

cccttccagc agttcgagat ccagggcatc ggcaattacc agcagtgcca ccagagcatc 840

ctggaactgt tcaacaccag ctactgcccc tacagccagt gcgccttcaa cggcatcttc 900

ctgccacctc tgcaggggga tttcggcgcc ttcagcgcct tctacttcgt gatgaagttc 960

ctgaacctga ccagcgagaa ggtgtcccag gaaaaagtga cagagatgat gaagaagttc 1020

tgcgcccagc cctgggagga aatcaagacc tcctacgctg gcgtgaaaga gaagtacctg 1080

agcgagtact gcttcagcgg cacctacatc ctgagcctgc tgctgcaggg ctaccacttc 1140

accgccgata gctgggagca catccactcc atcggcaaga ttcagggcag cgacgccggc 1200

tggacactgg gctacatgct gaatctgacc aacatgatcc ccgccgagca gcccctgaga 1260

acacctctga gccacagcac c 1281

<210> 52
<211> 427
<212> PRT
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成多肽"

<400> 52
Thr Gln Asn Lys Ala Leu Pro Glu Asn Val Lys Tyr Gly Ile Val Leu
1 5 10 15

Asp Ala Gly Ser Ser His Thr Ser Leu Tyr Ile Tyr Lys Trp Pro Ala
20 25 30

Glu Lys Glu Asn Asp Thr Gly Val Val His Gln Val Glu Glu Cys Arg
35 40 45

Val Lys Gly Pro Gly Ile Ser Lys Phe Val Gln Lys Val Asn Glu Ile
50 55 60

Gly Ile Tyr Leu Thr Asp Cys Met Glu Arg Ala Lys Glu Val Ile Pro
65 70 75 80

Arg Ser Gln His Gln Glu Thr Pro Val Tyr Leu Gly Ala Thr Ala Gly
85 90 95

Met Arg Leu Leu Arg Met Glu Ser Glu Glu Leu Ala Asp Arg Val Leu
100 105 110

Asp Val Val Glu Arg Ser Leu Ser Asn Tyr Pro Phe Asp Phe Gln Gly
115 120 125

Ala Arg Ile Ile Thr Gly Gln Glu Glu Gly Ala Tyr Gly Trp Ile Thr

130 135 140

Ile Asn Tyr Leu Leu Gly Lys Phe Ser Gln Lys Asn Gln Glu Thr Phe
145 150 155 160

Gly Ala Leu Asp Leu Gly Gly Ala Ser Thr Gln Val Thr Phe Val Pro
165 170 175

Gln Asn Gln Thr Ile Glu Ser Pro Asp Asn Ala Leu Gln Phe Arg Leu
180 185 190

Tyr Gly Lys Asp Tyr Asn Val Tyr Thr His Ser Phe Leu Cys Tyr Gly
195 200 205

Lys Asp Gln Ala Leu Trp Gln Lys Leu Ala Lys Asp Ile Gln Val Ala
210 215 220

Ser Asn Glu Ile Leu Arg Asp Pro Cys Phe His Pro Gly Tyr Lys Lys
225 230 235 240

Val Val Asn Val Ser Asp Leu Tyr Lys Thr Pro Cys Thr Lys Arg Phe
245 250 255

Glu Met Thr Leu Pro Phe Gln Gln Phe Glu Ile Gln Gly Ile Gly Asn
260 265 270

Tyr Gln Gln Cys His Gln Ser Ile Leu Glu Leu Phe Asn Thr Ser Tyr
275 280 285

Cys Pro Tyr Ser Gln Cys Ala Phe Asn Gly Ile Phe Leu Pro Pro Leu
290 295 300

Gln Gly Asp Phe Gly Ala Phe Ser Ala Phe Tyr Phe Val Met Lys Phe
305 310 315 320

Leu Asn Leu Thr Ser Glu Lys Val Ser Gln Glu Lys Val Thr Glu Met
325 330 335

Met Lys Lys Phe Cys Ala Gln Pro Trp Glu Glu Ile Lys Thr Ser Tyr
340 345 350

Ala Gly Val Lys Glu Lys Tyr Leu Ser Glu Tyr Cys Phe Ser Gly Thr
355 360 365

Tyr Ile Leu Ser Leu Leu Gln Gln Gly Tyr His Phe Thr Ala Asp Ser
370 375 380

Trp Glu His Asn His Phe Ile Gly Lys Ile Gln Gly Ser Asp Ala Gly
385 390 395 400

Trp Thr Leu Gly Tyr Met Leu Asn Leu Thr Asn Met Ile Pro Ala Glu
405 410 415

Gln Pro Leu Ser Thr Pro Leu Ser His Ser Thr
420 425

<210> 53
<211> 1281
<212> DNA
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成多核苷酸"

<400> 53
acccagaaca aggccctgcc cgagaacgtg aagtacggca tcgtgctgga tgccggcagc 60

agccacacca gcctgtacat ctacaagtgg cctgccgaga aagaaaacga caccggcgtg 120

gtgcatcagg tggaagagtg cagagtgaag ggccctggca tcagcaagtt cgtgcagaaa 180

gtgaacgaga tcggcatcta cctgaccgac tgcatggaac gggccaagga agtgatcccc 240

agaagccagc accaggaaac ccccgtgtat ctgggagcca ccgccggcat gagactgctg 300

agaatggaaa gcgaggaact ggccgaccgg gtgctggacg tggtggaaag aagcctgagc 360

aactacccat tcgattttca aggcgccaga atcatcaccg gccaggaaga aggcgcctac 420

ggctggatca ccatcaacta cctgctgggc aagttcagcc agaagaatca ggaaaccttc 480

ggcgccctgg acctgggcgg agcttctacc caagtgacct tcgtgcccca gaatcagacc 540

atcgagagcc ccgacaacgc cctgcagttc cggctgtacg gcaaggacta caatgtgtac 600

acccacagct ttctgtgcta cggaaaggac caggctctgt ggcagaagct ggccaaggac 660

atccaggtgg ccagcaacga gatcctgcgg gacccttgct tccaccccgg ctacaagaaa 720

gtcgtgaacg tgtccgacct gtacaagacc ccctgcacca agagattcga gatgaccctg 780

cccttccagc agttcgagat ccagggcatc ggcaattacc agcagtgcca ccagagcatc 840

ctggaactgt tcaacaccag ctactgcccc tacagccagt gcgccttcaa cggcatcttc 900

ctgccacctc tgcaggggga tttcggcgcc ttcagcgcct tctacttcgt gatgaagttc 960

ctgaacctga ccagcgagaa ggtgtcccag gaaaaagtga cagagatgat gaagaagttc 1020

tgcgcccagc cctgggagga aatcaagacc tcctacgctg gcgtgaaaga gaagtacctg 1080

agcgagtact gcttcagcgg cacctacatc ctgagcctgc tgcagcaggg ctaccacttc 1140

accgccgata gctgggagca caaccacttc atcggcaaga ttcagggcag cgacgccggc 1200

tggacactgg gctacatgct gaatctgacc aacatgatcc ccgccgagca gcccctgagc 1260

acacctctga gccacagcac c 1281

<210> 54
<211> 427
<212> PRT
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成多肽"

<400> 54
Thr Gln Asn Lys Ala Leu Pro Glu Asn Val Lys Tyr Gly Ile Val Leu
1 5 10 15

Asp Ala Gly Ser Ser His Thr Ser Leu Tyr Ile Tyr Lys Trp Pro Ala
20 25 30

Glu Lys Glu Asn Asp Thr Gly Val Val His Gln Val Glu Glu Cys Arg
35 40 45

Val Lys Gly Pro Gly Ile Ser Lys Phe Val Gln Lys Val Asn Glu Ile
50 55 60

Gly Ile Tyr Leu Thr Asp Cys Met Glu Arg Ala Met Glu Val Ile Pro
65 70 75 80

Arg Ser Gln His Gln Glu Thr Pro Val Tyr Leu Gly Ala Thr Ala Gly
85 90 95

Met Arg Leu Leu Arg Met Glu Ser Glu Glu Leu Ala Asp Arg Val Leu
100 105 110

Asp Val Val Glu Arg Ser Leu Ser Asn Tyr Pro Phe Asp Phe Gln Gly
115 120 125

Ala Arg Ile Ile Thr Gly Gln Glu Glu Gly Ala Tyr Gly Trp Ile Thr
130 135 140

Ile Asn Tyr Leu Leu Gly Lys Phe Ser Gln Lys Asn Gln Glu Thr Phe
145 150 155 160

Gly Ala Leu Asp Leu Gly Gly Ala Ser Thr Gln Val Thr Phe Val Pro
165 170 175

Gln Asn Gln Thr Ile Glu Ser Pro Asp Asn Ala Leu Gln Phe Arg Leu
180 185 190

Tyr Gly Lys Asp Tyr Asn Val Tyr Thr His Ser Phe Leu Cys Tyr Gly
195 200 205

Lys Asp Gln Ala Leu Trp Gln Lys Leu Ala Lys Asp Ile Gln Val Ala
210 215 220

Ser Asn Glu Ile Leu Arg Asp Pro Cys Phe His Pro Gly Tyr Lys Lys
225 230 235 240

Val Val Asn Val Ser Asp Leu Tyr Lys Thr Pro Cys Thr Lys Arg Phe
245 250 255

Glu Met Thr Leu Pro Phe Gln Gln Phe Glu Ile Gln Gly Ile Gly Asn
260 265 270

Tyr Gln Gln Cys His Gln Ser Ile Leu Glu Leu Phe Asn Thr Ser Tyr
275 280 285

Cys Pro Tyr Ser Gln Cys Ala Phe Asn Gly Ile Phe Leu Pro Pro Leu
290 295 300

Gln Gly Asp Phe Gly Ala Phe Ser Ala Phe Tyr Phe Val Met Lys Phe
305 310 315 320

Leu Asn Leu Thr Ser Glu Lys Val Ser Gln Glu Lys Val Thr Glu Met
325 330 335

Met Lys Lys Phe Cys Ala Gln Pro Trp Glu Glu Ile Lys Thr Ser Tyr
340 345 350

Ala Gly Val Asn Glu Lys Tyr Leu Ser Glu Phe Cys Phe Ser Gly Thr
355 360 365

Tyr Ile Leu Ser Leu Leu Leu Gln Gly Tyr His Phe Thr Ala Asp Ser
370 375 380

Trp Glu His Ile His Phe Ile Gly Lys Ile Gln Gly Ser Asp Ala Gly
385 390 395 400

Trp Thr Leu Gly Tyr Met Leu Asn Leu Thr Asn Met Ile Pro Ala Glu
405 410 415

Gln Pro Leu Ser Thr Pro Leu Ser His Ser Thr
420 425

<210> 55
<211> 1281

<212> DNA
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成多核苷酸"

<400> 55
acccagaaca aggccctgcc cgagaacgtg aagtacggca tcgtgctgga tgccggcagc 60

agccacacca gcctgtacat ctacaagtgg cctgccgaga aagaaaacga caccggcgtg 120

gtgcatcagg tggaagagtg cagagtgaag ggccctggca tcagcaagtt cgtgcagaaa 180

gtgaacgaga tcggcatcta cctgaccgac tgcatggaac gggccatgga agtgatcccc 240

agaagccagc accaggaaac ccccgtgtat ctgggagcca ccgccggcat gagactgctg 300

agaatggaaa gcgaggaact ggccgaccgg gtgctggacg tggtggaaag aagcctgagc 360

aactacccat tcgattttca aggcgccaga atcatcaccg gccaggaaga aggcgcctac 420

ggctggatca ccatcaacta cctgctgggc aagttcagcc agaagaatca ggaaaccttc 480

ggcgccctgg acctgggcgg agcttctacc caagtgacct tcgtgcccca gaatcagacc 540

atcgagagcc ccgacaacgc cctgcagttc cggctgtacg gcaaggacta caatgtgtac 600

acccacagct ttctgtgcta cggaaaggac caggctctgt ggcagaagct ggccaaggac 660

atccaggtgg ccagcaacga gatcctgcgg gacccttgct tccaccccgg ctacaagaaa 720

gtcgtgaacg tgtccgacct gtacaagacc ccctgcacca agagattcga gatgaccctg 780

cccttccagc agttcgagat ccagggcatc ggcaattacc agcagtgcca ccagagcatc 840

ctggaactgt tcaacaccag ctactgcccc tacagccagt gcgccttcaa cggcatcttc 900

ctgccacctc tgcaggggga tttcggcgcc ttcagcgcct tctacttcgt gatgaagttc 960

ctgaacctga ccagcgagaa ggtgtcccag gaaaaagtga cagagatgat gaagaagttc 1020

tgcgcccaac cctgggagga aatcaagacc tcctacgctg gcgtgaacga gaagtacctg 1080

agcgagtttt gcttcagcgg cacctacatc ctgagcctgc tgctgcaggg ctaccacttc 1140

accgccgata gctgggagca catccacttc atcggcaaga ttcagggcag cgacgccggc 1200

tggacactgg gctacatgct gaatctgacc aacatgatcc ccgccgagca gcccctgagc 1260

acacctctga gccacagcac c 1281

<210> 56
<211> 427
<212> PRT
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成多肽"

<400> 56
Thr Gln Asn Lys Ala Leu Pro Glu Asn Val Lys Tyr Gly Ile Val Leu
1 5 10 15

Asp Ala Gly Ser Ser His Thr Ser Leu Tyr Ile Tyr Lys Trp Pro Ala
20 25 30

Glu Lys Glu Asn Asp Thr Gly Val Val His Gln Val Glu Glu Cys Arg
35 40 45

Val Lys Gly Pro Gly Ile Ser Lys Phe Val Gln Lys Val Asn Glu Ile
50 55 60

Gly Ile Tyr Leu Thr Asp Cys Met Glu Arg Ala Met Glu Val Ile Pro
65 70 75 80

Arg Ser Gln His Gln Glu Thr Pro Val Tyr Leu Gly Ala Thr Ala Gly
85 90 95

Met Arg Leu Leu Arg Met Glu Ser Glu Glu Leu Ala Asp Arg Val Leu
100 105 110

Asp Val Val Glu Arg Ser Leu Ser Asn Tyr Pro Phe Asp Phe Gln Gly
115 120 125

Ala Arg Ile Ile Thr Gly Gln Glu Glu Gly Ala Tyr Gly Trp Ile Thr
130 135 140

Ile Asn Tyr Leu Leu Gly Lys Phe Ser Gln Lys Asn Gln Glu Thr Phe

145 150 155 160

Gly Ala Leu Asp Leu Gly Gly Ala Ser Thr Gln Val Thr Phe Val Pro
165 170 175

Gln Asn Gln Thr Ile Glu Ser Pro Asp Asn Ala Leu Gln Phe Arg Leu
180 185 190

Tyr Gly Lys Asp Tyr Asn Val Tyr Thr His Ser Phe Leu Cys Tyr Gly
195 200 205

Lys Asp Gln Ala Leu Trp Gln Lys Leu Ala Lys Asp Ile Gln Val Ala
210 215 220

Ser Asn Glu Ile Leu Arg Asp Pro Cys Phe His Pro Gly Tyr Lys Lys
225 230 235 240

Val Val Asn Val Ser Asp Leu Tyr Lys Thr Pro Cys Thr Lys Arg Phe
245 250 255

Glu Met Thr Leu Pro Phe Gln Gln Phe Glu Ile Gln Gly Ile Gly Asn
260 265 270

Tyr Gln Gln Cys His Gln Ser Ile Leu Glu Leu Phe Asn Thr Ser Tyr
275 280 285

Cys Pro Tyr Ser Gln Cys Ala Phe Asn Gly Ile Phe Leu Pro Pro Leu
290 295 300

Gln Gly Asp Phe Gly Ala Phe Ser Ala Phe Tyr Phe Val Met Lys Phe
305 310 315 320

Leu Asn Leu Thr Ser Glu Lys Val Ser Gln Glu Lys Val Thr Glu Met
325 330 335

Met Lys Lys Phe Cys Ala Gln Pro Trp Glu Glu Ile Lys Thr Ser Tyr
340 345 350

Ala Gly Val Lys Glu Lys Tyr Leu Ser Glu Phe Cys Phe Ser Gly Thr
355 360 365

Tyr Ile Leu Ser Leu Leu Leu Gln Gly Tyr His Phe Thr Ala Asp Ser
370 375 380

Trp Glu His Ile His Phe Ile Gly Lys Ile Gln Gly Ser Asp Ala Gly
385 390 395 400

Trp Thr Leu Gly Tyr Met Leu Asn Leu Thr Asn Met Ile Pro Ala Glu
405 410 415

Gln Pro Leu Ser Thr Pro Leu Ser His Ser Thr
420 425

<210> 57
<211> 1281
<212> DNA
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成多核苷酸"

<400> 57
acccagaaca aggccctgcc cgagaacgtg aagtacggca tcgtgctgga tgccggcagc 60

agccacacca gcctgtacat ctacaagtgg cctgccgaga aagaaaacga caccggcgtg 120

gtgcatcagg tggaagagtg cagagtgaag ggccctggca tcagcaagtt cgtgcagaaa 180

gtgaacgaga tcggcatcta cctgaccgac tgcatggaac gggccatgga agtgatcccc 240

agaagccagc accaggaaac ccccgtgtat ctgggagcca ccgccggcat gagactgctg 300

agaatggaaa gcgaggaact ggccgaccgg gtgctggacg tggtggaaag aagcctgagc 360

aactacccat tcgattttca aggcgccaga atcatcaccg gccaggaaga aggcgcctac 420

ggctggatca ccatcaacta cctgctgggc aagttcagcc agaagaatca ggaaaccttc 480

ggcgccctgg acctgggcgg agcttctacc caagtgacct tcgtgcccca gaatcagacc 540

atcgagagcc ccgacaacgc cctgcagttc cggctgtacg gcaaggacta caatgtgtac 600

acccacagct ttctgtgcta cggaaaggac caggctctgt ggcagaagct ggccaaggac 660

atccaggtgg ccagcaacga gatcctgcgg gacccttgct tccaccccgg ctacaagaaa 720

gtcgtgaacg tgtccgacct gtacaagacc ccctgcacca agagattcga gatgaccctg 780

cccttccagc agttcgagat ccagggcatc ggcaattacc agcagtgcca ccagagcatc 840

ctggaactgt tcaacaccag ctactgcccc tacagccagt gcgccttcaa cggcatcttc 900

ctgccacctc tgcaggggga tttcggcgcc ttcagcgcct tctacttcgt gatgaagttc 960

ctgaacctga ccagcgagaa ggtgtcccag gaaaaagtga cagagatgat gaagaagttc 1020

tgcgcccagc cctgggagga aatcaagacc tcctacgctg gcgtgaaaga gaagtacctg 1080

agcgagtttt gcttcagcgg cacctacatc ctgagcctgc tgctgcaggg ctaccacttc 1140

accgccgata gctgggagca catccacttc atcggcaaga ttcagggcag cgacgccggc 1200

tggacactgg gctacatgct gaatctgacc aacatgatcc ccgccgagca gcccctgagc 1260

acacctctga gccacagcac c 1281

<210> 58
<211> 430
<212> PRT
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成多肽"

<400> 58
Ala Pro Thr Thr Gln Asn Lys Ala Leu Pro Glu Asn Val Lys Tyr Gly
1 5 10 15

Ile Val Leu Asp Ala Gly Ser Ser His Thr Ser Leu Tyr Ile Tyr Lys
20 25 30

Trp Pro Ala Glu Lys Glu Asn Asp Thr Gly Val Val His Gln Val Glu
35 40 45

Glu Cys Arg Val Lys Gly Pro Gly Ile Ser Lys Phe Val Gln Lys Val
50 55 60

Asn Glu Ile Gly Ile Tyr Leu Thr Asp Cys Met Glu Arg Ala Arg Glu
65 70 75 80

Val Ile Pro Arg Ser Gln His Gln Glu Thr Pro Val Tyr Leu Gly Ala
85 90 95

Thr Ala Gly Met Arg Leu Leu Arg Met Glu Ser Glu Glu Leu Ala Asp
100 105 110

Arg Val Leu Asp Val Val Glu Arg Ser Leu Ser Asn Tyr Pro Phe Asp
115 120 125

Phe Gln Gly Ala Arg Ile Ile Thr Gly Gln Glu Glu Gly Ala Tyr Gly
130 135 140

Trp Ile Thr Ile Asn Tyr Leu Leu Gly Lys Phe Ser Gln Lys Asn Gln
145 150 155 160

Glu Thr Phe Gly Ala Leu Asp Leu Gly Gly Ala Ser Thr Gln Val Thr
165 170 175

Phe Val Pro Gln Asn Gln Thr Ile Glu Ser Pro Asp Asn Ala Leu Gln
180 185 190

Phe Arg Leu Tyr Gly Lys Asp Tyr Asn Val Tyr Thr His Ser Phe Leu
195 200 205

Cys Tyr Gly Lys Asp Gln Ala Leu Trp Gln Lys Leu Ala Lys Asp Ile
210 215 220

Gln Val Ala Ser Asn Glu Ile Leu Arg Asp Pro Cys Phe His Pro Gly
225 230 235 240

Tyr Lys Lys Val Val Asn Val Ser Asp Leu Tyr Lys Thr Pro Cys Thr
245 250 255

Lys Arg Phe Glu Met Thr Leu Pro Phe Gln Gln Phe Glu Ile Gln Gly
260 265 270

Ile Gly Asn Tyr Gln Gln Cys His Gln Ser Ile Leu Glu Leu Phe Asn
275 280 285

Thr Ser Tyr Cys Pro Tyr Ser Gln Cys Ala Phe Asn Gly Ile Phe Leu
290 295 300

Pro Pro Leu Gln Gly Asp Phe Gly Ala Phe Ser Ala Phe Tyr Phe Val
305 310 315 320

Met Lys Phe Leu Asn Leu Thr Ser Glu Lys Val Ser Gln Glu Lys Val
325 330 335

Thr Glu Met Met Lys Lys Phe Cys Ala Gln Pro Trp Glu Glu Ile Lys
340 345 350

Thr Ser Tyr Ala Gly Val Lys Glu Lys Tyr Leu Ser Glu Tyr Cys Phe
355 360 365

Ser Gly Thr Tyr Ile Leu Ser Leu Leu Leu Gln Gly Tyr His Phe Thr
370 375 380

Ala Asp Ser Trp Glu His Ile His Phe Ile Gly Lys Ile Gln Gly Ser
385 390 395 400

Asp Ala Gly Trp Thr Leu Gly Tyr Met Leu Asn Leu Thr Asn Met Ile
405 410 415

Pro Ala Glu Gln Pro Leu Ser Thr Pro Leu Ser His Ser Thr
420 425 430

<210> 59
<211> 1290
<212> DNA
<213> 人工序列

<220>

<221> 來源
<223> /注釋="人工序列的描述：合成多核苷酸"

<400> 59
gcccctacca cccagaacaa ggccctgccc gagaacgtga agtacggcat cgtgctggac 60

gccggctcct cccacacctc cctgtacatc tacaagtggc ctgccgagaa agaaaacgac 120

accggcgtgg tgcaccaagt ggaagagtgc agagtgaagg gccccggcat ctccaagttc 180

gtgcagaaag tgaacgagat cggcatctac ctgaccgact gcatggaacg ggccagagaa 240

gtgatccctc ggtcccagca ccaggaaacc cctgtctacc tgggcgccac cgccggcatg 300

cggctgctgc ggatggaatc cgaggaactg gccgaccggg tgctggacgt ggtggaacgg 360

tccctgtcca actacccatt cgattttcaa ggcgccagaa tcatcaccgg ccaggaagag 420

ggcgcctacg gctggatcac catcaactac ctgctgggca agttctccca gaagaatcag 480

gaaaccttcg gcgccctgga cctgggcgga gccagcaccc aagtcacatt cgtgccccag 540

aaccagacca tcgagagccc cgacaacgcc ctgcagttcc ggctgtacgg caaggactac 600

aacgtgtaca cccacagctt tctgtgctac ggcaaggacc aggccctgtg gcagaagctg 660

gccaaggaca tccaagtggc ctccaacgag atcctgcggg acccctgctt ccaccccggc 720

tacaagaaag tggtcaacgt gtccgacctg tacaagaccc cttgcaccaa gagattcgag 780

atgaccctgc ccttccagca gttcgagatc cagggcatcg gcaactacca gcagtgccac 840

cagtccatcc tggaactgtt caacacctcc tactgccccc actcccagtg cgccttcaac 900

ggcatcttcc tgcctccact gcagggcgac ttcggcgcct tctccgcctt ctacttcgtg 960

atgaagttcc tgaacctgac ctccgagaaa gtgtcccagg aaaaagtgac cgagatgatg 1020

aagaagttct gcgcccagcc ctgggaggaa atcaagacct cctacgctgg cgtgaaagag 1080

aagtacctgt ccgagtactg cttctccggc acctacatcc tgtccctgct gctgcagggc 1140

taccacttca ccgccgacag ctgggagcac atccacttca tcggcaagat ccagggatcc 1200

gacgctggct ggaccctggg ctacatgctg aatctgacca acatgatccc cgccgagcag 1260

cccctgtcca cccctctgtc tcactccacc 1290

<210> 60

<211> 427
<212> PRT
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成多肽"

<400> 60

```
Thr Gln Asn Lys Ala Leu Pro Glu Asn Val Lys Tyr Gly Ile Val Leu
1               5                  10                  15

Asp Ala Gly Ser Ser His Thr Ser Leu Tyr Ile Tyr Lys Trp Pro Ala
            20                  25                  30

Glu Lys Glu Asn Asp Thr Gly Val Val His Gln Val Glu Glu Cys Arg
        35                  40                  45

Val Lys Gly Pro Gly Ile Ser Lys Phe Val Gln Lys Val Asn Glu Ile
    50                  55                  60

Gly Ile Tyr Leu Thr Asp Cys Met Glu Arg Ala Arg Glu Val Ile Pro
65                  70                  75                  80

Arg Ser Gln His Gln Glu Thr Pro Val Tyr Leu Gly Ala Thr Ala Gly
                85                  90                  95

Met Arg Leu Leu Arg Met Glu Ser Glu Glu Leu Ala Asp Arg Val Leu
            100                 105                 110

Asp Val Val Glu Arg Ser Leu Ser Asn Tyr Pro Phe Asp Phe Gln Gly
        115                 120                 125

Ala Arg Ile Ile Thr Gly Gln Glu Glu Gly Ala Tyr Gly Trp Ile Thr
    130                 135                 140

Ile Asn Tyr Leu Leu Gly Lys Phe Ser Gln Lys Asn Gln Glu Thr Phe
145                 150                 155                 160

Gly Ala Leu Asp Leu Gly Gly Ala Ser Thr Gln Val Thr Phe Val Pro
```

165 170 175

Gln Asn Gln Thr Ile Glu Ser Pro Asp Asn Ala Leu Gln Phe Arg Leu
180 185 190

Tyr Gly Lys Asp Tyr Asn Val Tyr Thr His Ser Phe Leu Cys Tyr Gly
195 200 205

Lys Asp Gln Ala Leu Trp Gln Lys Leu Ala Lys Asp Ile Gln Val Ala
210 215 220

Ser Asn Glu Ile Leu Arg Asp Pro Cys Phe His Pro Gly Tyr Lys Lys
225 230 235 240

Val Val Asn Val Ser Asp Leu Tyr Lys Thr Pro Cys Thr Lys Arg Phe
245 250 255

Glu Met Thr Leu Pro Phe Gln Gln Phe Glu Ile Gln Gly Ile Gly Asn
260 265 270

Tyr Gln Gln Cys His Gln Ser Ile Leu Glu Leu Phe Asn Thr Ser Tyr
275 280 285

Cys Pro Tyr Ser Gln Cys Ala Phe Asn Gly Ile Phe Leu Pro Pro Leu
290 295 300

Gln Gly Asp Phe Gly Ala Phe Ser Ala Phe Tyr Ser Val Met Lys Phe
305 310 315 320

Leu Asn Leu Thr Ser Glu Lys Val Ser Gln Glu Lys Val Thr Glu Met
325 330 335

Met Lys Lys Phe Cys Ala Gln Pro Trp Glu Glu Ile Lys Thr Ser Tyr
340 345 350

Ala Gly Val Lys Glu Lys Tyr Leu Ser Glu Phe Cys Phe Ser Gly Thr
355 360 365

Tyr Ile Leu Ser Leu Leu Leu Gln Gly Tyr His Phe Thr Ala Asp Ser
370 375 380

Trp Glu His Ile His Phe Ile Gly Lys Ile Gln Gly Ser Asp Ala Gly
385 390 395 400

Trp Thr Leu Gly Tyr Met Leu Asn Leu Thr Asn Met Ile Pro Ala Glu
405 410 415

Gln Pro Leu Ser Thr Pro Leu Ser His Ser Thr
420 425

<210> 61
<211> 1281
<212> DNA
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成多核苷酸"

<400> 61
acccagaaca aggccctgcc cgagaacgtg aagtacggca tcgtgctgga tgccggcagc 60

agccacacca gcctgtacat ctacaagtgg cctgccgaga aagaaaacga caccggcgtg 120

gtgcatcagg tggaagagtg cagagtgaag ggccctggca tcagcaagtt cgtgcagaaa 180

gtgaacgaga tcggcatcta cctgaccgac tgcatggaac gggccaggga agtgatcccc 240

agaagccagc accaggaaac ccccgtgtat ctgggagcca ccgccggcat gagactgctg 300

agaatggaaa gcgaggaact ggccgaccgg gtgctggacg tggtggaaag aagcctgagc 360

aactacccat tcgattttca aggcgccaga atcatcaccg gccaggaaga aggcgcctac 420

ggctggatca ccatcaacta cctgctgggc aagttcagcc agaagaatca ggaaaccttc 480

ggcgccttgg acctgggcgg agcttctacc caagtgacct tcgtgcccca gaatcagacc 540

atcgagagcc ccgacaacgc cctgcagttc cggctgtacg gcaaggacta caatgtgtac 600

acccacagct ttctgtgcta cggaaaggac caggctctgt ggcagaagct ggccaaggac 660

atccaggtgg ccagcaacga gatcctgcgg gacccttgct tccaccccgg ctacaagaaa 720

gtcgtgaacg tgtccgacct gtacaagacc ccctgcacca agagattcga gatgaccctg 780

cccttccagc agttcgagat ccagggcatc ggcaattacc agcagtgcca ccagagcatc 840

ctggaactgt tcaacaccag ctactgcccc tacagccagt gcgccttcaa cggcatcttc 900

ctgccacctc tgcaggggga tttcggcgcc ttcagcgcct tctactccgt gatgaagttc 960

ctgaacctga ccagcgagaa ggtgtcccag gaaaaagtga cagagatgat gaagaagttc 1020

tgcgcccagc cctgggagga aatcaagacc tcctacgctg gcgtgaaaga gaagtacctg 1080

agcgagtttt gcttcagcgg cacctacatc ctgagcctgc tgctgcaggg ctaccacttc 1140

accgccgata gctgggagca catccacttc atcggcaaga ttcagggcag cgacgccggc 1200

tggacactgg gttacatgct gaatctgacc aacatgatcc ccgccgagca gcccctgagc 1260

acacctctga gccacagcac c 1281

<210> 62
<211> 427
<212> PRT
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述: 合成多肽"

<400> 62
Thr Gln Asn Lys Ala Leu Pro Glu Asn Val Lys Tyr Gly Ile Val Leu
1 5 10 15

Asp Ala Gly Ser Ser His Thr Ser Leu Tyr Ile Tyr Lys Trp Pro Ala
20 25 30

Glu Lys Glu Asn Asp Thr Gly Val Val His Gln Val Glu Glu Cys Arg
35 40 45

Val Lys Gly Pro Gly Ile Ser Lys Phe Val Gln Lys Val Asn Glu Ile
50 55 60

Gly Ile Tyr Leu Thr Asp Cys Met Glu Arg Ala Arg Glu Val Ile Pro
65 70 75 80

Arg Ser Gln His Gln Glu Thr Pro Val Tyr Leu Gly Ala Thr Ala Gly
85 90 95

Met Arg Leu Leu Arg Met Glu Ser Glu Glu Leu Ala Asp Arg Val Leu
100 105 110

Asp Val Val Glu Arg Ser Leu Ser Asn Tyr Pro Phe Asp Phe Gln Gly
115 120 125

Ala Arg Ile Ile Thr Gly Gln Glu Glu Gly Ala Tyr Gly Trp Ile Thr
130 135 140

Ile Asn Tyr Leu Leu Gly Lys Phe Ser Gln Lys Asn Gln Glu Thr Phe
145 150 155 160

Gly Ala Leu Asp Leu Gly Gly Ala Ser Thr Gln Val Thr Phe Val Pro
165 170 175

Gln Asn Gln Thr Ile Glu Ser Pro Asp Asn Ala Leu Gln Phe Arg Leu
180 185 190

Tyr Gly Lys Asp Tyr Asn Val Tyr Thr His Ser Phe Leu Cys Tyr Gly
195 200 205

Lys Asp Gln Ala Leu Trp Gln Lys Leu Ala Lys Asp Ile Gln Val Ala
210 215 220

Ser Asn Glu Ile Leu Arg Asp Pro Cys Phe His Pro Gly Tyr Lys Lys
225 230 235 240

Val Val Asn Val Ser Asp Leu Tyr Lys Thr Pro Cys Thr Lys Arg Phe
245 250 255

Glu Met Thr Leu Pro Phe Gln Gln Phe Glu Ile Gln Gly Thr Gly Asn
260 265 270

Tyr Gln Gln Cys His Gln Ser Ile Leu Glu Leu Phe Asn Thr Ser Tyr
275 280 285

Cys Pro Tyr Ser Gln Cys Ala Phe Asn Gly Ile Phe Leu Pro Pro Leu
290 295 300

Gln Gly Asp Phe Gly Ala Phe Ser Ala Phe Tyr Phe Val Met Lys Phe
305 310 315 320

Leu Asn Leu Thr Ser Glu Lys Val Ser Gln Glu Lys Val Thr Glu Met
325 330 335

Met Lys Lys Phe Cys Ala Gln Pro Trp Glu Glu Ile Lys Thr Ser Tyr
340 345 350

Ala Gly Val Lys Glu Lys Tyr Leu Ser Glu Tyr Cys Phe Ser Gly Thr
355 360 365

Tyr Ile Leu Ser Leu Leu Gln Gln Gly Tyr His Phe Thr Ala Asp Ser
370 375 380

Trp Glu Asp Ile His Phe Ile Gly Lys Ile Gln Gly Ser Asp Ala Gly
385 390 395 400

Trp Thr Leu Gly Tyr Met Leu Asn Leu Thr Asn Met Ile Pro Ala Glu
405 410 415

Gln Pro Leu Ser Thr Pro Leu Ser His Ser Thr
420 425

<210> 63
<211> 1281
<212> DNA
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成多核苷酸"

<400> 63

acccagaaca aggccctgcc cgagaacgtg aagtacggca tcgtgctgga tgccggcagc 60

agccacacca gcctgtacat ctacaagtgg cctgccgaga aagaaaacga caccggcgtg 120

gtgcatcagg tggaagagtg cagagtgaag ggccctggca tcagcaagtt cgtgcagaaa 180

gtgaacgaga tcggcatcta cctgaccgac tgcatggaac gggccaggga agtgatcccc 240

agaagccagc accaggaaac ccccgtgtat ctgggagcca ccgccggcat gagactgctg 300

agaatggaaa gcgaggaact ggccgaccgg gtgctggacg tggtggaaag aagcctgagc 360

aactacccat tcgattttca aggcgccaga atcatcaccg gccaggaaga aggcgcctac 420

ggctggatca ccatcaacta cctgctgggc aagttcagcc agaagaatca ggaaaccttc 480

ggcgccctgg acctgggcgg agcttctacc caagtgacct tcgtgcccca gaatcagacc 540

atcgagagcc ccgacaacgc cctgcagttc cggctgtacg gcaaggacta caatgtgtac 600

acccacagct ttctgtgcta cggaaaggac caggctctgt ggcagaagct ggccaaggac 660

atccaggtgg ccagcaacga gatcctgcgg gacccttgct tccaccccgg ctacaagaaa 720

gtcgtgaacg tgtccgacct gtacaagacc ccctgcacca agagattcga gatgaccctg 780

cccttccagc agttcgagat ccagggcacc ggcaattacc agcagtgcca ccagagcatc 840

ctggaactgt tcaacaccag ctactgcccc tacagccagt gcgccttcaa cggcatcttc 900

ctgccacctc tgcaggggga tttcggcgcc ttcagcgcct tctacttcgt gatgaagttc 960

ctgaacctga ccagcgagaa ggtgtcccag gaaaaagtga cagagatgat gaagaagttc 1020

tgcgcccagc cctgggagga aatcaagacc tcctacgctg gcgtgaaaga gaagtacctg 1080

agcgagtact gcttcagcgg cacctacatc ctgagcctgc tgcagcaggg ctaccacttc 1140

accgccgata gctgggagga catccacttc atcggcaaga ttcagggcag cgacgccggc 1200

tggacactgg gctacatgct gaatctgacc aacatgatcc ccgccgagca gcccctgagc 1260

acacctctga gccacagcac c 1281

<210> 64
<211> 427
<212> PRT
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成多肽"

<400> 64

```
Thr Gln Asn Lys Ala Leu Pro Glu Asn Val Lys Tyr Gly Ile Val Leu
1               5                  10                  15

Asp Ala Gly Ser Ser His Thr Ser Leu Tyr Ile Tyr Lys Trp Pro Ala
            20                  25                  30

Glu Lys Glu Asn Asp Thr Gly Val Val His Gln Val Glu Glu Cys Arg
        35                  40                  45

Val Lys Gly Pro Gly Ile Ser Lys Phe Val Gln Lys Val Asn Glu Ile
    50                  55                  60

Gly Ile Tyr Leu Thr Asp Cys Met Glu Arg Ala Arg Glu Val Ile Pro
65                  70                  75                  80

Arg Ser Gln His Gln Glu Thr Pro Val Tyr Leu Gly Ala Thr Ala Gly
                85                  90                  95

Met Arg Leu Leu Arg Met Glu Ser Glu Glu Leu Ala Asp Arg Val Leu
            100                 105                 110

Asp Val Val Glu Arg Ser Leu Ser Asn Tyr Pro Phe Asp Phe Gln Gly
        115                 120                 125

Ala Arg Ile Ile Thr Gly Gln Glu Glu Gly Ala Tyr Gly Trp Ile Thr
    130                 135                 140

Ile Asn Tyr Leu Leu Gly Lys Phe Ser Gln Lys Asn Gln Glu Thr Phe
145                 150                 155                 160

Gly Ala Leu Asp Leu Gly Gly Ala Ser Thr Gln Val Thr Phe Val Pro
                165                 170                 175

Gln Asn Gln Thr Ile Glu Ser Pro Asp Asn Ala Leu Gln Phe Arg Leu
```

180 185 190

Tyr Gly Lys Asp Tyr Asn Val Tyr Thr His Ser Phe Leu Cys Tyr Gly
195 200 205

Lys Asp Gln Ala Leu Trp Gln Lys Leu Ala Lys Asp Ile Gln Val Ala
210 215 220

Ser Asn Glu Ile Leu Arg Asp Pro Cys Phe His Pro Gly Tyr Lys Lys
225 230 235 240

Val Val Asn Val Ser Asp Leu Tyr Lys Thr Pro Cys Thr Lys Arg Phe
245 250 255

Glu Met Thr Leu Pro Phe Gln Gln Phe Glu Ile Gln Gly Ile Gly Asn
260 265 270

Tyr Gln Gln Cys His Gln Ser Ile Leu Glu Leu Phe Asn Thr Ser Tyr
275 280 285

Cys Pro Tyr Ser Gln Cys Ala Phe Asn Gly Ile Phe Leu Pro Pro Leu
290 295 300

Gln Gly Asp Phe Gly Ala Phe Ser Ala Phe Tyr Ser Val Met Lys Phe
305 310 315 320

Leu Asn Leu Thr Ser Glu Lys Val Ser Gln Glu Lys Val Thr Glu Met
325 330 335

Met Lys Lys Phe Cys Ala Gln Pro Trp Glu Glu Ile Lys Thr Ser Tyr
340 345 350

Ala Gly Val Lys Glu Lys Tyr Leu Ser Glu Tyr Cys Phe Ser Gly Thr
355 360 365

Tyr Ile Leu Ser Leu Leu Gln Gln Gly Tyr His Phe Thr Ala Asp Ser
370 375 380

Trp Glu His Ile His Phe Ile Gly Lys Ile Gln Gly Ser Asp Ala Gly
385 390 395 400

Trp Thr Leu Gly Tyr Met Leu Asn Leu Thr Asn Met Ile Pro Ala Glu
405 410 415

Gln Pro Leu Ser Thr Pro Leu Ser His Ser Thr
420 425

<210> 65
<211> 1281
<212> DNA
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成多核苷酸"

<400> 65
acccagaaca aggccctgcc cgagaacgtg aagtacggca tcgtgctgga tgccggcagc 60

agccacacca gcctgtacat ctacaagtgg cctgccgaga aagaaaacga caccggcgtg 120

gtgcatcagg tggaagagtg cagagtgaag ggccctggca tcagcaagtt cgtgcagaaa 180

gtgaacgaga tcggcatcta cctgaccgac tgcatggaac gggccaggga agtgatcccc 240

agaagccagc accaggaaac ccccgtgtat ctgggagcca ccgccggcat gagactgctg 300

agaatggaaa gcgaggaact ggccgaccgg gtgctggacg tggtggaaag aagcctgagc 360

aactacccat tcgattttca aggcgccaga atcatcaccg gccaggaaga aggcgcctac 420

ggctggatca ccatcaacta cctgctgggc aagttcagcc agaagaatca ggaaaccttc 480

ggcgccttgg acctgggcgg agcttctacc caagtgacct tcgtgcccca gaatcagacc 540

atcgagagcc ccgacaacgc cctgcagttc cggctgtacg gcaaggacta caatgtgtac 600

acccacagct ttctgtgcta cggaaaggac caggctctgt ggcagaagct ggccaaggac 660

atccaggtgg ccagcaacga gatcctgcgg gacccttgct tccaccccgg ctacaagaaa 720

gtcgtgaacg tgtccgacct gtacaagacc ccctgcacca agagattcga gatgaccctg 780

cccttccagc agttcgagat ccagggcatc ggcaattacc agcagtgcca ccagagcatc 840

ctggaactgt tcaacaccag ctactgcccc tacagccagt gcgccttcaa cggcatcttc 900

ctgccacctc tgcaggggga tttcggcgcc ttcagcgcct tctactccgt gatgaagttc 960

ctgaacctga ccagcgagaa ggtgtcccag gaaaaagtga cagagatgat gaagaagttc 1020

tgcgcccagc cctgggagga aatcaagacc tcctacgctg gcgtgaaaga gaagtacctg 1080

agcgagtact gcttcagcgg cacctacatc ctgagcctgc tgcagcaggg ctaccacttc 1140

accgccgata gctgggagca catccacttc atcggcaaga ttcagggcag cgacgccggc 1200

tggacactgg gttacatgct gaatctgacc aacatgatcc ccgccgagca gcccctgagc 1260

acacctctga gccacagcac c 1281

<210> 66
<211> 442
<212> PRT
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成多肽"

<400> 66

Ala	Pro	Thr	Ser	Ser	Ser	Thr	Lys	Lys	Thr	Gln	Leu	Thr	Ser	Ser	Thr
1				5				10					15	

Gln	Asn	Lys	Ala	Leu	Pro	Glu	Asn	Val	Lys	Tyr	Gly	Ile	Val	Leu	Asp
			20					25					30		

Ala	Gly	Ser	Ser	His	Thr	Ser	Leu	Tyr	Ile	Tyr	Lys	Trp	Pro	Ala	Glu
		35					40					45			

Lys	Glu	Asn	Asp	Thr	Gly	Val	Val	His	Gln	Val	Glu	Glu	Cys	Arg	Val
	50					55					60				

Lys	Gly	Pro	Gly	Ile	Ser	Lys	Phe	Val	Gln	Lys	Val	Asn	Glu	Ile	Gly
65				70				75					80		

Ile	Tyr	Leu	Thr	Asp	Cys	Met	Glu	Arg	Ala	Arg	Glu	Val	Ile	Pro	Arg
				85				90					95		

Ser Gln His Gln Glu Thr Pro Val Tyr Leu Gly Ala Thr Ala Gly Met
100 105 110

Arg Leu Leu Arg Met Glu Ser Glu Glu Leu Ala Asp Arg Val Leu Asp
115 120 125

Val Val Glu Arg Ser Leu Ser Asn Tyr Pro Phe Asp Phe Gln Gly Ala
130 135 140

Arg Ile Ile Thr Gly Gln Glu Glu Gly Ala Tyr Gly Trp Ile Thr Ile
145 150 155 160

Asn Tyr Leu Leu Gly Lys Phe Ser Gln Lys Asn Gln Glu Thr Phe Gly
165 170 175

Ala Leu Asp Leu Gly Gly Ala Ser Thr Gln Val Thr Phe Val Pro Gln
180 185 190

Asn Gln Thr Ile Glu Ser Pro Asp Asn Ala Leu Gln Phe Arg Leu Tyr
195 200 205

Gly Lys Asp Tyr Asn Val Tyr Thr His Ser Phe Leu Cys Tyr Gly Lys
210 215 220

Asp Gln Ala Leu Trp Gln Lys Leu Ala Lys Asp Ile Gln Val Ala Ser
225 230 235 240

Asn Glu Ile Leu Arg Asp Pro Cys Phe His Pro Gly Tyr Lys Lys Val
245 250 255

Val Asn Val Ser Asp Leu Tyr Lys Thr Pro Cys Thr Lys Arg Phe Glu
260 265 270

Met Thr Leu Pro Phe Gln Gln Phe Glu Ile Gln Gly Ile Gly Asn Tyr
275 280 285

Gln Gln Cys His Gln Ser Ile Leu Glu Leu Phe Asn Thr Ser Tyr Cys
290 295 300

Pro Tyr Ser Gln Cys Ala Phe Asn Gly Ile Phe Leu Pro Pro Leu Gln
305 310 315 320

Gly Asp Phe Gly Ala Phe Ser Ala Phe Tyr Phe Val Met Lys Phe Leu
325 330 335

Asn Leu Thr Ser Glu Lys Val Ser Gln Glu Lys Val Thr Glu Met Met
340 345 350

Lys Lys Phe Cys Ala Gln Pro Trp Glu Glu Ile Lys Thr Ser Tyr Ala
355 360 365

Gly Val Lys Glu Lys Tyr Leu Ser Glu Tyr Cys Phe Ser Gly Thr Tyr
370 375 380

Ile Leu Ser Leu Leu Leu Gln Gly Tyr His Phe Thr Ala Asp Ser Trp
385 390 395 400

Glu His Ile His Phe Ile Gly Lys Ile Gln Gly Ser Asp Ala Gly Trp
405 410 415

Thr Leu Gly Tyr Met Leu Asn Leu Thr Asn Met Ile Pro Ala Glu Gln
420 425 430

Pro Leu Ser Thr Pro Leu Ser His Ser Thr
435 440

<210> 67
<211> 1326
<212> DNA
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成多核苷酸"

<400> 67

gcccctacca gcagcagcac caagaaaacc cagctgacca gcagcaccca gaacaaggcc 60

ctgcccgaga acgtgaagta cggcatcgtg ctggatgccg gcagcagcca caccagcctg 120

tacatctaca agtggcctgc cgagaaagaa aacgacaccg gcgtggtgca tcaggtggaa 180

gagtgcagag tgaagggccc tggcatcagc aagttcgtgc agaaagtgaa cgagatcggc 240

atctacctga ccgactgcat ggaacgggcc agggaagtga tccccagaag ccagcaccag 300

gaaaccccccg tgtatctggg agccaccgcc ggcatgagac tgctgagaat ggaaagcgag 360

gaactggccg accgggtgct ggacgtggtg gaaagaagcc tgagcaacta cccattcgat 420

tttcaaggcg ccagaatcat caccggccag gaagaaggcg cctacggctg gatcaccatc 480

aactacctgc tgggcaagtt cagccagaag aatcaggaaa ccttcggcgc cctggacctg 540

ggcggagctt ctacccaagt gaccttcgtg ccccagaatc agaccatcga gagccccgac 600

aacgccctgc agttccggct gtacggcaag gactacaatg tgtacaccca cagctttctg 660

tgctacggaa aggaccaggc tctgtggcag aagctggcca aggacatcca ggtggccagc 720

aacgagatcc tgcgggaccc ttgcttccac cccggctaca agaaagtcgt gaacgtgtcc 780

gacctgtaca agacccccctg caccaagaga ttcgagatga ccctgccctt ccagcagttc 840

gagatccagg gcatcggcaa ttaccagcag tgccaccaga gcatcctgga actgttcaac 900

accagctact gcccctacag ccagtgcgcc ttcaacggca tcttcctgcc acctctgcag 960

ggggatttcg gcgccttcag cgccttctac ttcgtgatga agttcctgaa cctgaccagc 1020

gagaaggtgt cccaggaaaa agtgacagag atgatgaaga agttctgcgc ccagccctgg 1080

gaggaaatca agacctccta cgctggcgtg aaagagaagt acctgagcga gtactgcttc 1140

agcggcacct acatcctgag cctgctgctg cagggctacc acttcaccgc cgatagctgg 1200

gagcacatcc acttcatcgg caagattcag ggcagcgacg ccggctggac actgggctac 1260

atgctgaatc tgaccaacat gatccccgcc gagcagcccc tgagcacacc tctgagccac 1320

agcacc 1326

<210> 68
<211> 427
<212> PRT

<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成多肽"

<400> 68

```
Thr Gln Asn Lys Ala Leu Pro Glu Asn Val Lys Tyr Gly Ile Val Leu
1               5                  10                  15

Asp Ala Gly Ser Ser His Thr Ser Leu Tyr Ile Tyr Lys Trp Pro Ala
            20                  25                  30

Glu Lys Glu Asn Asp Thr Gly Val Val His Gln Val Glu Glu Cys Arg
        35                  40                  45

Val Lys Gly Pro Gly Ile Ser Lys Phe Val Gln Lys Val Asn Glu Ile
    50                  55                  60

Gly Ile Tyr Leu Thr Asp Cys Met Glu Arg Ala Arg Glu Val Ile Pro
65                  70                  75                  80

Arg Ser Gln His Gln Glu Thr Pro Val Tyr Leu Gly Ala Thr Ala Gly
                85                  90                  95

Met Arg Leu Leu Arg Met Glu Ser Glu Glu Leu Ala Asp Arg Val Leu
            100                 105                 110

Asp Val Val Glu Arg Ser Leu Ser Asn Tyr Pro Phe Asp Phe Gln Gly
        115                 120                 125

Ala Arg Ile Ile Thr Gly Gln Glu Glu Gly Ala Tyr Gly Trp Ile Thr
    130                 135                 140

Ile Asn Tyr Leu Leu Gly Lys Phe Ser Gln Lys Asn Gln Glu Thr Phe
145                 150                 155                 160

Gly Ala Leu Asp Leu Gly Gly Ala Ser Thr Gln Val Thr Phe Val Pro
                165                 170                 175
```

Gln Asn Gln Thr Ile Glu Ser Pro Asp Asn Ala Leu Gln Phe Arg Leu
180 185 190

Tyr Gly Lys Asp Tyr Asn Val Tyr Thr His Ser Phe Leu Cys Tyr Gly
195 200 205

Lys Asp Gln Ala Leu Trp Gln Lys Leu Ala Lys Asp Ile Gln Val Ala
210 215 220

Ser Asn Glu Ile Leu Arg Asp Pro Cys Phe His Pro Gly Tyr Lys Lys
225 230 235 240

Val Val Asn Val Ser Asp Leu Tyr Lys Thr Pro Cys Thr Lys Arg Phe
245 250 255

Glu Met Thr Leu Pro Phe Gln Gln Phe Glu Ile Gln Gly Ile Gly Asn
260 265 270

Tyr Gln Gln Cys His Gln Ser Ile Leu Glu Leu Phe Asn Thr Ser Tyr
275 280 285

Cys Pro Tyr Ser Gln Cys Ala Phe Asn Gly Ile Phe Leu Pro Pro Leu
290 295 300

Gln Gly Asp Phe Gly Ala Phe Ser Ala Phe Tyr Phe Val Met Lys Phe
305 310 315 320

Leu Asn Leu Thr Ser Glu Lys Val Ser Gln Glu Lys Val Thr Glu Met
325 330 335

Met Lys Lys Phe Cys Ala Gln Pro Trp Glu Glu Ile Lys Thr Ser Tyr
340 345 350

Ala Gly Val Lys Glu Lys Tyr Leu Ser Glu Phe Cys Phe Ser Gly Thr
355 360 365

Tyr Ile Leu Ser Leu Leu Gln Gln Gly Tyr His Phe Thr Ala Asp Ser

370 375 380

Trp Glu Asp Ile His Phe Ile Gly Lys Ile Gln Gly Ser Asp Ala Gly
385 390 395 400

Trp Thr Leu Gly Tyr Met Leu Asn Leu Thr Asn Met Ile Pro Ala Glu
405 410 415

Gln Pro Leu Ser Thr Pro Leu Ser His Ser Thr
420 425

<210> 69
<211> 1281
<212> DNA
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成多核苷酸"

<400> 69
acccagaaca aggccctgcc cgagaacgtg aagtacggca tcgtgctgga tgccggcagc 60

agccacacca gcctgtacat ctacaagtgg cctgccgaga aagaaaacga caccggcgtg 120

gtgcatcagg tggaagagtg cagagtgaag ggccctggca tcagcaagtt cgtgcagaaa 180

gtgaacgaga tcggcatcta cctgaccgac tgcatggaac gggccaggga agtgatcccc 240

agaagccagc accaggaaac ccccgtgtat ctgggagcca ccgccggcat gagactgctg 300

agaatggaaa gcgaggaact ggccgaccgg gtgctggacg tggtggaaag aagcctgagc 360

aactacccat tcgattttca aggcgccaga atcatcaccg gccaggaaga aggcgcctac 420

ggctggatca ccatcaacta cctgctgggc aagttcagcc agaagaatca ggaaaccttc 480

ggcgccctgg acctgggcgg agcttctacc caagtgacct tcgtgcccca gaatcagacc 540

atcgagagcc ccgacaacgc cctgcagttc cggctgtacg gcaaggacta caatgtgtac 600

acccacagct ttctgtgcta cggaaaggac caggctctgt ggcagaagct ggccaaggac 660

atccaggtgg ccagcaacga gatcctgcgg gacccttgct tccaccccgg ctacaagaaa 720

gtcgtgaacg tgtccgacct gtacaagacc ccctgcacca agagattcga gatgaccctg 780

ccctccagc agttcgagat ccagggcatc ggcaattacc agcagtgcca ccagagcatc 840

ctggaactgt tcaacaccag ctactgcccc tacagccagt gcgccttcaa cggcatcttc 900

ctgccacctc tgcaggggga tttcggcgcc ttcagcgcct tctacttcgt gatgaagttc 960

ctgaacctga ccagcgagaa ggtgtcccag gaaaaagtga cagagatgat gaagaagttc 1020

tgcgcccagc cctgggagga aatcaagacc tcctacgctg gcgtgaaaga gaagtacctg 1080

agcgagtttt gcttcagcgg cacctacatc ctgagcctgc tgcagcaggg ctaccacttc 1140

accgccgata gctgggagga catccacttc atcggcaaga ttcagggcag cgacgccggc 1200

tggacactgg gctacatgct gaatctgacc aacatgatcc ccgccgagca gcccctgagc 1260

acacctctga gccacagcac c 1281

<210> 70
<211> 427
<212> PRT
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成多肽"

<400> 70
Thr Gln Asn Lys Ala Leu Pro Glu Asn Val Lys Tyr Gly Ile Val Leu
1 5 10 15

Asp Ala Gly Ser Ser His Thr Ser Leu Tyr Ile Tyr Lys Trp Pro Ala
20 25 30

Glu Lys Glu Asn Asp Thr Gly Val Val His Gln Val Glu Glu Cys Arg
35 40 45

Val Lys Gly Pro Gly Ile Ser Lys Phe Val Gln Lys Val Asn Glu Ile
50 55 60

Gly Ile Tyr Leu Thr Asp Cys Met Glu Arg Ala Arg Glu Val Ile Pro
65 70 75 80

Arg Ser Gln His Gln Glu Thr Pro Val Tyr Leu Gly Ala Thr Ala Gly
85 90 95

Met Arg Leu Leu Arg Met Glu Ser Glu Glu Leu Ala Asp Arg Val Leu
100 105 110

Asp Val Val Glu Arg Ser Leu Ser Asn Tyr Pro Phe Asp Phe Gln Gly
115 120 125

Ala Arg Ile Ile Thr Gly Gln Glu Glu Gly Ala Tyr Gly Trp Ile Thr
130 135 140

Ile Asn Tyr Leu Leu Gly Lys Phe Ser Gln Lys Asn Gln Glu Thr Phe
145 150 155 160

Gly Ala Leu Asp Leu Gly Gly Ala Ser Thr Gln Val Thr Phe Val Pro
165 170 175

Gln Asn Gln Thr Ile Glu Ser Pro Asp Asn Ala Leu Gln Phe Arg Leu
180 185 190

Tyr Gly Lys Asp Tyr Asn Val Tyr Thr His Ser Phe Leu Cys Tyr Gly
195 200 205

Lys Asp Gln Ala Leu Trp Gln Lys Leu Ala Lys Asp Ile Gln Val Ala
210 215 220

Ser Asn Glu Ile Leu Arg Asp Pro Cys Phe His Pro Gly Tyr Lys Lys
225 230 235 240

Val Val Asn Val Ser Asp Leu Tyr Lys Thr Pro Cys Thr Lys Arg Phe
245 250 255

Glu Met Thr Leu Pro Phe Gln Gln Phe Glu Ile Gln Gly Ile Gly Asn
260 265 270

Tyr Gln Gln Cys His Gln Ser Ile Leu Glu Leu Phe Asn Thr Ser Tyr
275 280 285

Cys Pro Tyr Ser Gln Cys Ala Phe Asn Gly Ile Phe Leu Pro Pro Leu
290 295 300

Gln Gly Asp Phe Gly Ala Phe Ser Ala Phe Tyr Phe Val Met Lys Phe
305 310 315 320

Leu Asn Leu Thr Ser Glu Lys Val Ser Gln Glu Lys Val Thr Glu Met
325 330 335

Met Lys Lys Phe Cys Ala Gln Pro Trp Glu Glu Ile Lys Thr Ser Tyr
340 345 350

Ala Gly Val Lys Glu Lys Tyr Leu Ser Glu Phe Cys Phe Ser Gly Thr
355 360 365

Tyr Ile Leu Ser Leu Leu Gln Gln Gly Tyr His Phe Thr Ala Asp Ser
370 375 380

Trp Glu His Ile His Phe Ile Gly Lys Ile Gln Gly Ser Asp Ala Gly
385 390 395 400

Trp Thr Leu Gly Tyr Met Leu Asn Leu Thr Asn Met Ile Pro Ala Glu
405 410 415

Gln Pro Leu Ser Thr Pro Leu Ser His Ser Thr
420 425

<210> 71
<211> 1281
<212> DNA
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成多核苷酸"

<400> 71
acccagaaca aggccctgcc cgagaacgtg aagtacggca tcgtgctgga tgccggcagc 60

agccacacca gcctgtacat ctacaagtgg cctgccgaga aagaaaacga caccggcgtg 120

gtgcatcagg tggaagagtg cagagtgaag ggccctggca tcagcaagtt cgtgcagaaa 180

gtgaacgaga tcggcatcta cctgaccgac tgcatggaac gggccaggga agtgatcccc 240

agaagccagc accaggaaac ccccgtgtat ctgggagcca ccgccggcat gagactgctg 300

agaatggaaa gcgaggaact ggccgaccgg gtgctggacg tggtggaaag aagcctgagc 360

aactacccat tcgattttca aggcgccaga atcatcaccg gccaggaaga aggcgcctac 420

ggctggatca ccatcaacta cctgctgggc aagttcagcc agaagaatca ggaaaccttc 480

ggcgccctgg acctgggcgg agcttctacc caagtgacct tcgtgcccca gaatcagacc 540

atcgagagcc ccgacaacgc cctgcagttc cggctgtacg gcaaggacta caatgtgtac 600

acccacagct ttctgtgcta cggaaaggac caggctctgt ggcagaagct ggccaaggac 660

atccaggtgg ccagcaacga gatcctgcgg gacccttgct tccaccccgg ctacaagaaa 720

gtcgtgaacg tgtccgacct gtacaagacc ccctgcacca agagattcga gatgaccctg 780

cccttccagc agttcgagat ccagggcatc ggcaattacc agcagtgcca ccagagcatc 840

ctggaactgt tcaacaccag ctactgcccc tacagccagt gcgccttcaa cggcatcttc 900

ctgccacctc tgcaggggga tttcggcgcc ttcagcgcct tctacttcgt gatgaagttc 960

ctgaacctga ccagcgagaa ggtgtcccag gaaaaagtga cagagatgat gaagaagttc 1020

tgcgcccagc cctgggagga aatcaagacc tcctacgctg gcgtgaaaga gaagtacctg 1080

agcgagtttt gcttcagcgg cacctacatc ctgagcctgc tgcagcaggg ctaccacttc 1140

accgccgata gctgggagca catccacttc atcggcaaga ttcagggcag cgacgccggc 1200

tggacactgg gctacatgct gaatctgacc aacatgatcc ccgccgagca gcccctgagc 1260

acacctctga gccacagcac c 1281

<210> 72
<211> 443
<212> PRT
<213> 人工序列

<220>
<221> 來源

<223> /注釋="人工序列的描述：合成多肽"

<400> 72

```
Ala Pro Thr Ser Ser Ser Thr Lys Lys Thr Gln Leu Thr Ser Ser Gly
1               5                  10                  15

Thr Gln Asn Lys Ala Leu Pro Glu Asn Val Lys Tyr Gly Ile Val Leu
            20                  25                  30

Asp Ala Gly Ser Ser His Thr Ser Leu Tyr Ile Tyr Lys Trp Pro Ala
        35                  40                  45

Glu Lys Glu Asn Asp Thr Gly Val Val His Gln Val Glu Glu Cys Arg
    50                  55                  60

Val Lys Gly Pro Gly Ile Ser Lys Phe Val Gln Lys Val Asn Glu Ile
65                  70                  75                  80

Gly Ile Tyr Leu Thr Asp Cys Met Glu Arg Ala Arg Glu Val Ile Pro
                85                  90                  95

Arg Ser Gln His Gln Glu Thr Pro Val Tyr Leu Gly Ala Thr Ala Gly
            100                 105                 110

Met Arg Leu Leu Arg Met Glu Ser Glu Glu Leu Ala Asp Arg Val Leu
        115                 120                 125

Asp Val Val Glu Arg Ser Leu Ser Asn Tyr Pro Phe Asp Phe Gln Gly
    130                 135                 140

Ala Arg Ile Ile Thr Gly Gln Glu Glu Gly Ala Tyr Gly Trp Ile Thr
145                 150                 155                 160

Ile Asn Tyr Leu Leu Gly Lys Phe Ser Gln Lys Asn Gln Glu Thr Phe
                165                 170                 175

Gly Ala Leu Asp Leu Gly Gly Ala Ser Thr Gln Val Thr Phe Val Pro
            180                 185                 190
```

Gln Asn Gln Thr Ile Glu Ser Pro Asp Asn Ala Leu Gln Phe Arg Leu
195 200 205

Tyr Gly Lys Asp Tyr Asn Val Tyr Thr His Ser Phe Leu Cys Tyr Gly
210 215 220

Lys Asp Gln Ala Leu Trp Gln Lys Leu Ala Lys Asp Ile Gln Val Ala
225 230 235 240

Ser Asn Glu Ile Leu Arg Asp Pro Cys Phe His Pro Gly Tyr Lys Lys
245 250 255

Val Val Asn Val Ser Asp Leu Tyr Lys Thr Pro Cys Thr Lys Arg Phe
260 265 270

Glu Met Thr Leu Pro Phe Gln Gln Phe Glu Ile Gln Gly Ile Gly Asn
275 280 285

Tyr Gln Gln Cys His Gln Ser Ile Leu Glu Leu Phe Asn Thr Ser Tyr
290 295 300

Cys Pro Tyr Ser Gln Cys Ala Phe Asn Gly Ile Phe Leu Pro Pro Leu
305 310 315 320

Gln Gly Asp Phe Gly Ala Phe Ser Ala Phe Tyr Phe Val Met Lys Phe
325 330 335

Leu Asn Leu Thr Ser Glu Lys Val Ser Gln Glu Lys Val Thr Glu Met
340 345 350

Met Lys Lys Phe Cys Ala Gln Pro Trp Glu Glu Ile Lys Thr Ser Tyr
355 360 365

Ala Gly Val Lys Glu Lys Tyr Leu Ser Glu Tyr Cys Phe Ser Gly Thr
370 375 380

Tyr Ile Leu Ser Leu Leu Leu Gln Gly Tyr His Phe Thr Ala Asp Ser

385 390 395 400

Trp Glu His Ile His Phe Ile Gly Lys Ile Gln Gly Ser Asp Ala Gly
405 410 415

Trp Thr Leu Gly Tyr Met Leu Asn Leu Thr Asn Met Ile Pro Ala Glu
420 425 430

Gln Pro Leu Ser Thr Pro Leu Ser His Ser Thr
435 440

<210> 73
<211> 1329
<212> DNA
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成多核苷酸"

<400> 73
gcccctacct cctccagcac caagaaaacc cagctgacct ccagcggcac ccagaacaag 60

gccctgcccg agaacgtgaa gtacggcatc gtgctggacg ccggctcctc ccacacctcc 120

ctgtacatct acaagtggcc tgccgagaaa gaaaacgaca ccggcgtggt gcaccaagtg 180

gaagagtgca gagtgaaggg ccccggcatc tccaagttcg tgcagaaagt gaacgagatc 240

ggcatctacc tgaccgactg catggaacgg gccagagaag tgatccctcg gtcccagcac 300

caggaaaccc ctgtctacct gggcgccacc gccggcatgc ggctgctgcg gatggaatcc 360

gaggaactgg ccgaccgggt gctggacgtg gtggaacggt ccctgtccaa ctacccattc 420

gattttcaag gcgccagaat catcaccggc caggaagagg gcgcctacgg ctggatcacc 480

atcaactacc tgctgggcaa gttctcccag aagaatcagg aaaccttcgg cgccctggac 540

ctgggcggag ccagcaccca agtcacattc gtgccccaga accagaccat cgagagcccc 600

gacaacgccc tgcagttccg gctgtacggc aaggactaca acgtgtacac ccacagcttt 660

ctgtgctacg gcaaggacca ggccctgtgg cagaagctgg ccaaggacat ccaagtggcc 720

tccaacgaga tcctgcggga cccctgcttc cacccccggct acaagaaagt ggtcaacgtg 780

tccgacctgt acaagacccc ttgcaccaag agattcgaga tgaccctgcc cttccagcag 840

ttcgagatcc agggcatcgg caactaccag cagtgccacc agtccatcct ggaactgttc 900

aacacctcct actgccccta ctcccagtgc gccttcaacg gcatcttcct gcctccactg 960

cagggcgact tcggcgcctt ctccgccttc tacttcgtga tgaagttcct gaacctgacc 1020

tccgagaaag tgtcccagga aaaagtgacc gagatgatga agaagttctg cgcccagccc 1080

tgggaggaaa tcaagacctc ctacgctggc gtgaaagaga agtacctgtc cgagtactgc 1140

ttctccggca cctacatcct gtccctgctg ctgcagggct accacttcac cgccgacagc 1200

tgggagcaca tccacttcat cggcaagatc cagggatccg acgctggctg gaccctgggc 1260

tacatgctga atctgaccaa catgatcccc gccgagcagc ccctgtccac ccctctgtct 1320

cactccacc 1329

<210> 74
<211> 427
<212> PRT
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述: 合成多肽"

<400> 74
Thr Gln Asn Lys Ala Leu Pro Glu Asn Val Lys Tyr Gly Ile Val Leu
1 5 10 15

Asp Ala Gly Ser Ser His Thr Ser Leu Tyr Ile Tyr Lys Trp Pro Ala
20 25 30

Glu Lys Glu Asn Asp Thr Gly Val Val His Gln Val Glu Glu Cys Arg
35 40 45

Val Lys Gly Pro Gly Ile Ser Lys Phe Val Gln Lys Val Asn Glu Ile
50 55 60

Gly Ile Tyr Leu Thr Asp Cys Met Glu Arg Ala Met Glu Val Ile Pro
65 70 75 80

Arg Ser Gln His Gln Glu Thr Pro Val Tyr Leu Gly Ala Thr Ala Gly
85 90 95

Met Arg Leu Leu Arg Met Glu Ser Glu Glu Leu Ala Asp Arg Val Leu
100 105 110

Asp Val Val Glu Arg Ser Leu Ser Asn Tyr Pro Phe Asp Phe Gln Gly
115 120 125

Ala Arg Ile Ile Thr Gly Gln Glu Glu Gly Ala Tyr Gly Trp Ile Thr
130 135 140

Ile Asn Tyr Leu Leu Gly Lys Phe Ser Gln Lys Asn Gln Glu Thr Phe
145 150 155 160

Gly Ala Leu Asp Leu Gly Gly Ala Ser Thr Gln Val Thr Phe Val Pro
165 170 175

Gln Asn Gln Thr Ile Glu Ser Pro Asp Asn Ala Leu Gln Phe Arg Leu
180 185 190

Tyr Gly Lys Asp Tyr Asn Val Tyr Thr His Ser Phe Leu Cys Tyr Gly
195 200 205

Lys Asp Gln Ala Leu Trp Gln Lys Leu Ala Lys Asp Ile Gln Val Ala
210 215 220

Ser Asn Glu Ile Leu Arg Asp Pro Cys Phe His Pro Gly Tyr Lys Lys
225 230 235 240

Val Val Asn Val Ser Asp Leu Tyr Lys Thr Pro Cys Thr Lys Arg Phe
245 250 255

Glu Met Thr Leu Pro Phe Gln Gln Phe Glu Ile Gln Gly Ile Gly Asn
260 265 270

Tyr Gln Gln Cys His Gln Ser Ile Leu Glu Leu Phe Asn Thr Ser Tyr
275 280 285

Cys Pro Tyr Ser Gln Cys Ala Phe Asn Gly Ile Phe Leu Pro Pro Leu
290 295 300

Gln Gly Asp Phe Gly Ala Phe Ser Ala Phe Tyr Ser Val Met Lys Phe
305 310 315 320

Leu Asn Leu Thr Ser Glu Lys Val Ser Gln Glu Lys Val Thr Glu Met
325 330 335

Met Lys Lys Phe Cys Ala Gln Pro Trp Glu Glu Ile Lys Thr Ser Tyr
340 345 350

Ala Gly Val Lys Glu Lys Tyr Leu Ser Glu Tyr Cys Phe Ser Gly Thr
355 360 365

Tyr Ile Leu Ser Leu Leu Gln Gln Gly Tyr His Phe Thr Ala Asp Ser
370 375 380

Trp Glu His Ile His Phe Ile Gly Lys Ile Gln Gly Ser Asp Ala Gly
385 390 395 400

Trp Thr Leu Gly Tyr Met Leu Asn Leu Thr Asn Met Ile Pro Ala Glu
405 410 415

Gln Pro Leu Ser Thr Pro Leu Ser His Ser Thr
420 425

<210> 75
<211> 1281
<212> DNA
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成多核苷酸"

<400> 75

acccagaaca aggccctgcc cgagaacgtg aagtacggca tcgtgctgga tgccggcagc 60

agccacacca gcctgtacat ctacaagtgg cctgccgaga aagaaaacga caccggcgtg 120

gtgcatcagg tggaagagtg cagagtgaag ggccctggca tcagcaagtt cgtgcagaaa 180

gtgaacgaga tcggcatcta cctgaccgac tgcatggaac gggccatgga agtgatcccc 240

agaagccagc accaggaaac ccccgtgtat ctgggagcca ccgccggcat gagactgctg 300

agaatggaaa gcgaggaact ggccgaccgg gtgctggacg tggtggaaag aagcctgagc 360

aactacccat tcgattttca aggcgccaga atcatcaccg gccaggaaga aggcgcctac 420

ggctggatca ccatcaacta cctgctgggc aagttcagcc agaagaatca ggaaaccttc 480

ggcgccctgg acctgggcgg agcttctacc caagtgacct tcgtgcccca gaatcagacc 540

atcgagagcc ccgacaacgc cctgcagttc cggctgtacg gcaaggacta caatgtgtac 600

acccacagct ttctgtgcta cggaaaggac caggctctgt ggcagaagct ggccaaggac 660

atccaggtgg ccagcaacga gatcctgcgg gacccttgct tccaccccgg ctacaagaaa 720

gtcgtgaacg tgtccgacct gtacaagacc ccctgcacca agagattcga gatgaccctg 780

cccttccagc agttcgagat ccagggcatc ggcaattacc agcagtgcca ccagagcatc 840

ctggaactgt tcaacaccag ctactgcccc tacagccagt gcgccttcaa cggcatcttc 900

ctgccacctc tgcaggggga tttcggcgcc ttcagcgcct tctactccgt gatgaagttc 960

ctgaacctga ccagcgagaa ggtgtcccag gaaaaagtga cagagatgat gaagaagttc 1020

tgcgcccagc cctgggagga aatcaagacc tcctacgctg gcgtgaaaga gaagtacctg 1080

agcgagtact gcttcagcgg cacctacatc ctgagcctgc tgcagcaggg ctaccacttc 1140

accgccgata gctgggagca catccacttc atcggcaaga ttcagggcag cgacgccggc 1200

tggacactgg gctacatgct gaatctgacc aacatgatcc ccgccgagca gcccctgagc 1260

acacctctga gccacagcac c 1281

<210> 76
<211> 427
<212> PRT
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成多肽"

<400> 76

```
Thr Gln Asn Lys Ala Leu Pro Glu Asn Val Lys Tyr Gly Ile Val Leu
1               5                  10                  15

Asp Ala Gly Ser Ser His Thr Ser Leu Tyr Ile Tyr Lys Trp Pro Ala
            20                  25                  30

Glu Lys Glu Asn Asp Thr Gly Val Val His Gln Val Glu Glu Cys Arg
        35                  40                  45

Val Lys Gly Pro Gly Ile Ser Lys Phe Val Gln Lys Val Asn Glu Ile
    50                  55                  60

Gly Ile Tyr Leu Thr Asp Cys Met Glu Arg Ala Met Glu Val Ile Pro
65                  70                  75                  80

Arg Ser Gln His Gln Glu Thr Pro Val Tyr Leu Gly Ala Thr Ala Gly
                85                  90                  95

Met Arg Leu Leu Arg Met Glu Ser Glu Glu Leu Ala Asp Arg Val Leu
            100                 105                 110

Asp Val Val Glu Arg Ser Leu Ser Asn Tyr Pro Phe Asp Phe Gln Gly
        115                 120                 125

Ala Arg Ile Ile Thr Gly Gln Glu Glu Gly Ala Tyr Gly Trp Ile Thr
    130                 135                 140

Ile Asn Tyr Leu Leu Gly Lys Phe Ser Gln Lys Asn Gln Glu Thr Phe
145                 150                 155                 160

Gly Ala Leu Asp Leu Gly Gly Ala Ser Thr Gln Val Thr Phe Val Pro
                165                 170                 175

Gln Asn Gln Thr Ile Glu Ser Pro Asp Asn Ala Leu Gln Phe Arg Leu
```

180 185 190

Tyr Gly Lys Asp Tyr Asn Val Tyr Thr His Ser Phe Leu Cys Tyr Gly
195 200 205

Lys Asp Gln Ala Leu Trp Gln Lys Leu Ala Lys Asp Ile Gln Val Ala
210 215 220

Ser Asn Glu Ile Leu Arg Asp Pro Cys Phe His Pro Gly Tyr Lys Lys
225 230 235 240

Val Val Asn Val Ser Asp Leu Tyr Lys Thr Pro Cys Thr Lys Arg Phe
245 250 255

Glu Met Thr Leu Pro Phe Gln Gln Phe Glu Ile Gln Gly Ile Gly Asn
260 265 270

Tyr Gln Gln Cys His Gln Ser Ile Leu Glu Leu Phe Asn Thr Ser Tyr
275 280 285

Cys Pro Tyr Ser Gln Cys Ala Phe Asn Gly Ile Phe Leu Pro Pro Leu
290 295 300

Gln Gly Asp Phe Gly Ala Phe Ser Ala Phe Tyr Phe Val Met Lys Phe
305 310 315 320

Leu Asn Leu Thr Ser Glu Lys Val Ser Gln Glu Lys Val Thr Glu Met
325 330 335

Met Lys Lys Phe Cys Ala Gln Pro Trp Glu Glu Ile Lys Thr Ser Tyr
340 345 350

Ala Gly Val Lys Glu Lys Tyr Leu Ser Glu Phe Cys Phe Ser Gly Thr
355 360 365

Tyr Ile Leu Ser Leu Leu Gln Gln Gly Tyr His Phe Thr Ala Asp Ser
370 375 380

Trp Glu His Ile His Phe Ile Gly Lys Ile Gln Gly Ser Asp Ala Gly
385 390 395 400

Trp Thr Leu Gly Tyr Met Leu Asn Leu Thr Asn Met Ile Pro Ala Glu
405 410 415

Gln Pro Leu Ser Thr Pro Leu Ser His Ser Thr
420 425

<210> 77
<211> 1281
<212> DNA
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述: 合成多核苷酸"

<400> 77
acccagaaca aggccctgcc cgagaacgtg aagtacggca tcgtgctgga tgccggcagc 60

agccacacca gcctgtacat ctacaagtgg cctgccgaga aagaaaacga caccggcgtg 120

gtgcatcagg tggaagagtg cagagtgaag ggccctggca tcagcaagtt cgtgcagaaa 180

gtgaacgaga tcggcatcta cctgaccgac tgcatggaac gggccatgga agtgatcccc 240

agaagccagc accaggaaac ccccgtgtat ctgggagcca ccgccggcat gagactgctg 300

agaatggaaa gcgaggaact ggccgaccgg gtgctggacg tggtggaaag aagcctgagc 360

aactacccat tcgattttca aggcgccaga atcatcaccg gccaggaaga aggcgcctac 420

ggctggatca ccatcaacta cctgctgggc aagttcagcc agaagaatca ggaaaccttc 480

ggcgccctgg acctgggcgg agcttctacc caagtgacct tcgtgcccca gaatcagacc 540

atcgagagcc ccgacaacgc cctgcagttc cggctgtacg gcaaggacta caatgtgtac 600

acccacagct ttctgtgcta cggaaaggac caggctctgt ggcagaagct ggccaaggac 660

atccaggtgg ccagcaacga gatcctgcgg gacccttgct tccaccccgg ctacaagaaa 720

gtcgtgaacg tgtccgacct gtacaagacc ccctgcacca agagattcga gatgaccctg 780

cccttccagc agttcgagat ccagggcatc ggcaattacc agcagtgcca ccagagcatc 840

ctggaactgt tcaacaccag ctactgcccc tacagccagt gcgccttcaa cggcatcttc 900

ctgccacctc tgcaggggga tttcggcgcc ttcagcgcct tctacttcgt gatgaagttc 960

ctgaacctga ccagcgagaa ggtgtcccag gaaaaagtga cagagatgat gaagaagttc 1020

tgcgcccagc cctgggagga aatcaagacc tcctacgctg gcgtgaaaga gaagtacctg 1080

agcgagttct gcttcagcgg cacctacatc ctgagcctgc tgcagcaggg ctaccacttc 1140

accgccgata gctgggagca catccacttc atcggcaaga ttcagggcag cgacgccggc 1200

tggacactgg gctacatgct gaatctgacc aacatgatcc ccgccgagca gcccctgagc 1260

acacctctga gccacagcac c 1281

<210> 78
<211> 427
<212> PRT
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成多肽"

<400> 78

```
Thr Gln Asn Lys Ala Leu Pro Glu Asn Val Lys Tyr Gly Ile Val Leu
1               5                  10                  15

Asp Ala Gly Ser Ser His Thr Ser Leu Tyr Ile Tyr Lys Trp Pro Ala
            20                  25                  30

Glu Lys Glu Asn Asp Thr Gly Val Val His Gln Val Glu Glu Cys Arg
        35                  40                  45

Val Lys Gly Pro Gly Ile Ser Lys Phe Val Gln Lys Val Asn Glu Ile
    50                  55                  60

Gly Ile Tyr Leu Thr Asp Cys Met Glu Arg Ala Met Glu Val Ile Pro
65                  70                  75                  80

Arg Ser Gln His Gln Glu Thr Pro Val Tyr Leu Gly Ala Thr Ala Gly
                85                  90                  95
```

Met Arg Leu Leu Arg Met Glu Ser Glu Glu Leu Ala Asp Arg Val Leu
100 105 110

Asp Val Val Glu Arg Ser Leu Ser Asn Tyr Pro Phe Asp Phe Gln Gly
115 120 125

Ala Arg Ile Ile Thr Gly Gln Glu Glu Gly Ala Tyr Gly Trp Ile Thr
130 135 140

Ile Asn Tyr Leu Leu Gly Lys Phe Ser Gln Lys Asn Gln Glu Thr Phe
145 150 155 160

Gly Ala Leu Asp Leu Gly Gly Ala Ser Thr Gln Val Thr Phe Val Pro
165 170 175

Gln Asn Gln Thr Ile Glu Ser Pro Asp Asn Ala Leu Gln Phe Arg Leu
180 185 190

Tyr Gly Lys Asp Tyr Asn Val Tyr Thr His Ser Phe Leu Cys Tyr Gly
195 200 205

Lys Asp Gln Ala Leu Trp Gln Lys Leu Ala Lys Asp Ile Gln Val Ala
210 215 220

Ser Asn Glu Ile Leu Arg Asp Pro Cys Phe His Pro Gly Tyr Lys Lys
225 230 235 240

Val Val Asn Val Ser Asp Leu Tyr Lys Thr Pro Cys Thr Lys Arg Phe
245 250 255

Glu Met Thr Leu Pro Phe Gln Gln Phe Glu Ile Gln Gly Ile Gly Asn
260 265 270

Tyr Gln Gln Cys His Gln Ser Ile Leu Glu Leu Phe Asn Thr Ser Tyr
275 280 285

Cys Pro Tyr Ser Gln Cys Ala Phe Asn Gly Ile Phe Leu Pro Pro Leu
290 295 300

Gln Gly Asp Phe Gly Ala Phe Ser Ala Phe Tyr Ser Val Met Lys Phe
305 310 315 320

Leu Asn Leu Thr Ser Glu Lys Val Ser Gln Glu Lys Val Thr Glu Met
325 330 335

Met Lys Lys Phe Cys Ala Gln Pro Trp Glu Glu Ile Lys Thr Ser Tyr
340 345 350

Ala Gly Val Lys Glu Lys Tyr Leu Ser Glu Tyr Cys Phe Ser Gly Thr
355 360 365

Tyr Ile Leu Ser Leu Leu Leu Gln Gly Tyr His Phe Thr Ala Asp Ser
370 375 380

Trp Glu His Ile His Phe Ile Gly Lys Ile Gln Gly Ser Asp Ala Gly
385 390 395 400

Trp Thr Leu Gly Tyr Met Leu Asn Leu Thr Asn Met Ile Pro Ala Glu
405 410 415

Gln Pro Leu Ser Thr Pro Leu Ser His Ser Thr
420 425

<210> 79
<211> 1281
<212> DNA
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述: 合成多核苷酸"

<400> 79
acccagaaca aggccctgcc cgagaacgtg aagtacggca tcgtgctgga tgccggcagc 60

agccacacca gcctgtacat ctacaagtgg cctgccgaga aagaaaacga caccggcgtg 120

gtgcatcagg tggaagagtg cagagtgaag ggccctggca tcagcaagtt cgtgcagaaa 180

gtgaacgaga tcggcatcta cctgaccgac tgcatggaac gggccatgga agtgatcccc 240

agaagccagc accaggaaac ccccgtgtat ctgggagcca ccgccggcat gagactgctg 300

agaatggaaa gcgaggaact ggccgaccgg gtgctggacg tggtggaaag aagcctgagc 360

aactacccat tcgattttca aggcgccaga atcatcaccg gccaggaaga aggcgcctac 420

ggctggatca ccatcaacta cctgctgggc aagttcagcc agaagaatca ggaaaccttc 480

ggcgccttgg acctgggcgg agcttctacc caagtgacct tcgtgcccca gaatcagacc 540

atcgagagcc ccgacaacgc cctgcagttc cggctgtacg gcaaggacta caatgtgtac 600

acccacagct ttctgtgcta cggaaaggac caggctctgt ggcagaagct ggccaaggac 660

atccaggtgg ccagcaacga gatcctgcgg gacccttgct tccaccccgg ctacaagaaa 720

gtcgtgaacg tgtccgacct gtacaagacc ccctgcacca agagattcga gatgaccctg 780

cccttccagc agttcgagat ccagggcatc ggcaattacc agcagtgcca ccagagcatc 840

ctggaactgt tcaacaccag ctactgcccc tacagccagt gcgccttcaa cggcatcttc 900

ctgccacctc tgcaggggga tttcggcgcc ttcagcgcct tctactccgt gatgaagttc 960

ctgaacctga ccagcgagaa ggtgtcccag gaaaaagtga cagagatgat gaagaagttc 1020

tgcgcccagc cctgggagga aatcaagacc tcctacgctg gcgtgaaaga gaagtacctg 1080

agcgagtact gcttcagcgg cacctacatc ctgagcctgc tgctgcaggg ctaccacttc 1140

accgccgata gctgggagca catccacttc atcggcaaga ttcagggcag cgacgccggc 1200

tggacactgg gttacatgct gaatctgacc aacatgatcc ccgccgagca gcccctgagc 1260

acacctctga gccacagcac c 1281

<210> 80
<211> 433
<212> PRT
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成多肽"

<400> 80

Ala Pro Thr Ser Ser Ser Thr Gln Asn Lys Ala Leu Pro Glu Asn Val
1 5 10 15

Lys Tyr Gly Ile Val Leu Asp Ala Gly Ser Ser His Thr Ser Leu Tyr
20 25 30

Ile Tyr Lys Trp Pro Ala Glu Lys Glu Asn Asp Thr Gly Val Val His
35 40 45

Gln Val Glu Glu Cys Arg Val Lys Gly Pro Gly Ile Ser Lys Phe Val
50 55 60

Gln Lys Val Asn Glu Ile Gly Ile Tyr Leu Thr Asp Cys Met Glu Arg
65 70 75 80

Ala Arg Glu Val Ile Pro Arg Ser Gln His Gln Glu Thr Pro Val Tyr
85 90 95

Leu Gly Ala Thr Ala Gly Met Arg Leu Leu Arg Met Glu Ser Glu Glu
100 105 110

Leu Ala Asp Arg Val Leu Asp Val Val Glu Arg Ser Leu Ser Asn Tyr
115 120 125

Pro Phe Asp Phe Gln Gly Ala Arg Ile Ile Thr Gly Gln Glu Glu Gly
130 135 140

Ala Tyr Gly Trp Ile Thr Ile Asn Tyr Leu Leu Gly Lys Phe Ser Gln
145 150 155 160

Lys Asn Gln Glu Thr Phe Gly Ala Leu Asp Leu Gly Gly Ala Ser Thr
165 170 175

Gln Val Thr Phe Val Pro Gln Asn Gln Thr Ile Glu Ser Pro Asp Asn
180 185 190

Ala Leu Gln Phe Arg Leu Tyr Gly Lys Asp Tyr Asn Val Tyr Thr His

195 200 205

Ser Phe Leu Cys Tyr Gly Lys Asp Gln Ala Leu Trp Gln Lys Leu Ala
210 215 220

Lys Asp Ile Gln Val Ala Ser Asn Glu Ile Leu Arg Asp Pro Cys Phe
225 230 235 240

His Pro Gly Tyr Lys Lys Val Val Asn Val Ser Asp Leu Tyr Lys Thr
245 250 255

Pro Cys Thr Lys Arg Phe Glu Met Thr Leu Pro Phe Gln Gln Phe Glu
260 265 270

Ile Gln Gly Ile Gly Asn Tyr Gln Gln Cys His Gln Ser Ile Leu Glu
275 280 285

Leu Phe Asn Thr Ser Tyr Cys Pro Tyr Ser Gln Cys Ala Phe Asn Gly
290 295 300

Ile Phe Leu Pro Pro Leu Gln Gly Asp Phe Gly Ala Phe Ser Ala Phe
305 310 315 320

Tyr Phe Val Met Lys Phe Leu Asn Leu Thr Ser Glu Lys Val Ser Gln
325 330 335

Glu Lys Val Thr Glu Met Met Lys Lys Phe Cys Ala Gln Pro Trp Glu
340 345 350

Glu Ile Lys Thr Ser Tyr Ala Gly Val Lys Glu Lys Tyr Leu Ser Glu
355 360 365

Tyr Cys Phe Ser Gly Thr Tyr Ile Leu Ser Leu Leu Leu Gln Gly Tyr
370 375 380

His Phe Thr Ala Asp Ser Trp Glu His Ile His Phe Ile Gly Lys Ile
385 390 395 400

Gln Gly Ser Asp Ala Gly Trp Thr Leu Gly Tyr Met Leu Asn Leu Thr
405 410 415

Asn Met Ile Pro Ala Glu Gln Pro Leu Ser Thr Pro Leu Ser His Ser
420 425 430

Thr

<210> 81
<211> 1299
<212> DNA
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成多核苷酸"

<400> 81
gcccctacca gcagcagcac ccagaacaag gccctgcccg agaacgtgaa gtacggcatc 60

gtgctggatg ccggcagcag ccacaccagc ctgtacatct acaagtggcc tgccgagaaa 120

gaaaacgaca ccggcgtggt gcatcaggtg gaagagtgca gagtgaaggg ccctggcatc 180

agcaagttcg tgcagaaagt gaacgagatc ggcatctacc tgaccgactg catggaacgg 240

gccagggaag tgatccccag aagccagcac caggaaaccc ccgtgtatct gggagccacc 300

gccggcatga gactgctgag aatggaaagc gaggaactgg ccgaccgggt gctggacgtg 360

gtggaaagaa gcctgagcaa ctacccattc gattttcaag gcgccagaat catcaccggc 420

caggaagaag gcgcctacgg ctggatcacc atcaactacc tgctgggcaa gttcagccag 480

aagaatcagg aaaccttcgg cgccctggac ctgggcggag cttctaccca agtgaccttc 540

gtgccccaga atcagaccat cgagagcccc gacaacgccc tgcagttccg gctgtacggc 600

aaggactaca atgtgtacac ccacagcttt ctgtgctacg gaaaggacca ggctctgtgg 660

cagaagctgg ccaaggacat ccaggtggcc agcaacgaga tcctgcggga cccttgcttc 720

caccccggct acaagaaagt cgtgaacgtg tccgacctgt acaagacccc ctgcaccaag 780

agattcgaga tgaccctgcc cttccagcag ttcgagatcc agggcatcgg caattaccag 840

cagtgccacc agagcatcct ggaactgttc aacaccagct actgccccta cagccagtgc 900

gccttcaacg gcatcttcct gccacctctg caggggggatt tcggcgcctt cagcgccttc 960

tacttcgtga tgaagttcct gaacctgacc agcgagaagg tgtcccagga aaaagtgaca 1020

gagatgatga agaagttctg cgcccagccc tgggaggaaa tcaagacctc ctacgctggc 1080

gtgaaagaga agtacctgag cgagtactgc ttcagcggca cctacatcct gagcctgctg 1140

ctgcagggct accacttcac cgccgatagc tgggagcaca tccacttcat cggcaagatt 1200

cagggcagcg acgccggctg gacactgggc tacatgctga atctgaccaa catgatcccc 1260

gccgagcagc ccctgagcac acctctgagc cacagcacc 1299

<210> 82
<211> 427
<212> PRT
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述: 合成多肽"

<400> 82
Thr Gln Asn Lys Ala Leu Pro Glu Asn Val Lys Tyr Gly Ile Val Leu
1 5 10 15

Asp Ala Gly Ser Ser His Thr Ser Leu Tyr Ile Tyr Lys Trp Pro Ala
20 25 30

Glu Lys Glu Asn Asp Thr Gly Val Val His Gln Val Glu Glu Cys Arg
35 40 45

Val Lys Gly Pro Gly Ile Ser Lys Phe Val Gln Lys Val Asn Glu Ile
50 55 60

Gly Ile Tyr Leu Thr Asp Cys Met Glu Arg Ala Arg Glu Val Ile Pro
65 70 75 80

Arg Ser Gln His Gln Glu Thr Pro Val Tyr Leu Gly Ala Thr Ala Gly
85 90 95

Met Arg Leu Leu Arg Met Glu Ser Glu Glu Leu Ala Asp Arg Val Leu
100 105 110

Asp Val Val Glu Arg Ser Leu Ser Asn Tyr Pro Phe Asp Phe Gln Gly
115 120 125

Ala Arg Ile Ile Thr Gly Gln Glu Ala Gly Ala Tyr Gly Trp Ile Thr
130 135 140

Ile Asn Tyr Leu Leu Gly Lys Phe Ser Gln Lys Asn Gln Glu Thr Phe
145 150 155 160

Gly Ala Leu Asp Leu Gly Gly Ala Ser Thr Gln Val Thr Phe Val Pro
165 170 175

Gln Asn Gln Thr Ile Glu Ser Pro Asp Asn Ala Leu Gln Phe Arg Leu
180 185 190

Tyr Gly Lys Asp Tyr Asn Val Tyr Thr His Ser Phe Leu Cys Tyr Gly
195 200 205

Lys Asp Gln Ala Leu Trp Gln Lys Leu Ala Lys Asp Ile Gln Val Ala
210 215 220

Ser Asn Glu Ile Leu Arg Asp Pro Cys Phe His Pro Gly Tyr Lys Lys
225 230 235 240

Val Val Asn Val Ser Asp Leu Tyr Lys Thr Pro Cys Thr Lys Arg Phe
245 250 255

Glu Met Thr Leu Pro Phe Gln Gln Phe Glu Ile Gln Gly Ile Gly Asn
260 265 270

Tyr Gln Gln Cys His Gln Ser Ile Leu Glu Leu Phe Asn Thr Ser Tyr
275 280 285

Cys Pro Tyr Ser Gln Cys Ala Phe Asn Gly Ile Phe Leu Pro Pro Leu
290 295 300

Gln Gly Asp Phe Gly Ala Phe Ser Ala Phe Tyr Phe Val Met Lys Phe
305 310 315 320

Leu Asn Leu Thr Ser Glu Lys Val Ser Gln Glu Lys Val Thr Glu Met
325 330 335

Met Lys Lys Phe Cys Ala Gln Pro Trp Glu Glu Ile Lys Thr Ser Tyr
340 345 350

Ala Gly Val Lys Glu Lys Tyr Leu Ser Glu Tyr Cys Phe Ser Gly Thr
355 360 365

Tyr Ile Leu Ser Leu Leu Leu Gln Gly Tyr His Phe Thr Ala Asp Ser
370 375 380

Trp Glu His Ile His Phe Ile Gly Lys Ile Gln Gly Ser Asp Ala Gly
385 390 395 400

Trp Thr Leu Gly Tyr Met Leu Asn Leu Thr Asn Met Ile Pro Ala Glu
405 410 415

Gln Pro Leu Ser Thr Pro Leu Ser His Ser Thr
420 425

<210> 83
<211> 1281
<212> DNA
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述: 合成多核苷酸"

<400> 83
acccagaaca aggccctgcc cgagaacgtg aagtacggca tcgtgctgga tgccggcagc 60

agccacacca gcctgtacat ctacaagtgg cctgccgaga aagaaaacga caccggcgtg 120

gtgcatcagg tggaagagtg cagagtgaag ggccctggca tcagcaagtt cgtgcagaaa 180

gtgaacgaga tcggcatcta cctgaccgac tgcatggaac gggccaggga agtgatcccc 240

agaagccagc accaggaaac ccccgtgtat ctgggagcca ccgccggcat gagactgctg 300

agaatggaaa gcgaggaact ggccgaccgg gtgctggacg tggtggaaag aagcctgagc 360

aactacccat tcgattttca aggcgccaga atcatcaccg gccaggaagc cggcgcctac 420

ggctggatca ccatcaacta cctgctgggc aagttcagcc agaagaatca ggaaaccttc 480

ggcgccctgg acctgggcgg agcttctacc caagtgacct tcgtgcccca gaatcagacc 540

atcgagagcc ccgacaacgc cctgcagttc cggctgtacg gcaaggacta caatgtgtac 600

acccacagct ttctgtgcta cggaaaggac caggctctgt ggcagaagct ggccaaggac 660

atccaggtgg ccagcaacga gatcctgcgg gacccttgct tccaccccgg ctacaagaaa 720

gtcgtgaacg tgtccgacct gtacaagacc ccctgcacca agagattcga gatgaccctg 780

cccttccagc agttcgagat ccagggcatc ggcaattacc agcagtgcca ccagagcatc 840

ctggaactgt tcaacaccag ctactgcccc tacagccagt gcgccttcaa cggcatcttc 900

ctgccacctc tgcaggggga tttcggcgcc ttcagcgcct tctacttcgt gatgaagttc 960

ctgaacctga ccagcgagaa ggtgtcccag gaaaaagtga cagagatgat gaagaagttc 1020

tgcgcccagc cctgggagga aatcaagacc tcctacgctg gcgtgaaaga gaagtacctg 1080

agcgagtact gcttcagcgg cacctacatc ctgagcctgc tgctgcaggg ctaccacttc 1140

accgccgata gctgggagca catccacttc atcggcaaga ttcagggcag cgacgccggc 1200

tggacactgg gctacatgct gaatctgacc aacatgatcc ccgccgagca gcccctgagc 1260

acacctctga gccacagcac c 1281

<210> 84
<211> 427
<212> PRT
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成多肽"

<400> 84

Thr Gln Asn Lys Ala Leu Pro Glu Asn Val Lys Tyr Gly Ile Val Leu
1 5 10 15

Asp Ala Gly Ser Ser His Thr Ser Leu Tyr Ile Tyr Lys Trp Pro Ala
20 25 30

Glu Lys Glu Asn Asp Thr Gly Val Val His Gln Val Glu Glu Cys Arg
35 40 45

Val Lys Gly Pro Gly Ile Ser Lys Phe Val Gln Lys Val Asn Glu Ile
50 55 60

Gly Ile Tyr Leu Thr Asp Cys Met Glu Arg Ala Arg Glu Val Ile Pro
65 70 75 80

Arg Ser Gln His Gln Glu Thr Pro Val Tyr Leu Gly Ala Thr Ala Gly
85 90 95

Met Arg Leu Leu Arg Met Glu Ser Glu Glu Leu Ala Asp Arg Val Leu
100 105 110

Asp Val Val Glu Arg Ser Leu Ser Asn Tyr Pro Phe Asp Phe Gln Gly
115 120 125

Ala Arg Ile Ile Thr Gly Gln Glu Ala Gly Ala Tyr Gly Trp Ile Thr
130 135 140

Ile Asn Tyr Leu Leu Gly Lys Phe Ser Gln Lys Asn Gln Glu Thr Phe
145 150 155 160

Gly Ala Leu Asp Leu Gly Gly Ala Ala Thr Gln Val Thr Phe Val Pro
165 170 175

Gln Asn Gln Thr Ile Glu Ser Pro Asp Asn Ala Leu Gln Phe Arg Leu
180 185 190

Tyr Gly Lys Asp Tyr Asn Val Tyr Thr His Ser Phe Leu Cys Tyr Gly

195 200 205

Lys Asp Gln Ala Leu Trp Gln Lys Leu Ala Lys Asp Ile Gln Val Ala
210 215 220

Ser Asn Glu Ile Leu Arg Asp Pro Cys Phe His Pro Gly Tyr Lys Lys
225 230 235 240

Val Val Asn Val Ser Asp Leu Tyr Lys Thr Pro Cys Thr Lys Arg Phe
245 250 255

Glu Met Thr Leu Pro Phe Gln Gln Phe Glu Ile Gln Gly Ile Gly Asn
260 265 270

Tyr Gln Gln Cys His Gln Ser Ile Leu Glu Leu Phe Asn Thr Ser Tyr
275 280 285

Cys Pro Tyr Ser Gln Cys Ala Phe Asn Gly Ile Phe Leu Pro Pro Leu
290 295 300

Gln Gly Asp Phe Gly Ala Phe Ser Ala Phe Tyr Phe Val Met Lys Phe
305 310 315 320

Leu Asn Leu Thr Ser Glu Lys Val Ser Gln Glu Lys Val Thr Glu Met
325 330 335

Met Lys Lys Phe Cys Ala Gln Pro Trp Glu Glu Ile Lys Thr Ser Tyr
340 345 350

Ala Gly Val Lys Glu Lys Tyr Leu Ser Glu Tyr Cys Phe Ser Gly Thr
355 360 365

Tyr Ile Leu Ser Leu Leu Leu Gln Gly Tyr His Phe Thr Ala Asp Ser
370 375 380

Trp Glu His Ile His Phe Ile Gly Lys Ile Gln Gly Ser Asp Ala Gly
385 390 395 400

Trp Thr Leu Gly Tyr Met Leu Asn Leu Thr Asn Met Ile Pro Ala Glu
405 410 415

Gln Pro Leu Ser Thr Pro Leu Ser His Ser Thr
420 425

<210> 85
<211> 1281
<212> DNA
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成多核苷酸"

<400> 85
acccagaaca aggccctgcc cgagaacgtg aagtacggca tcgtgctgga tgccggcagc 60

agccacacca gcctgtacat ctacaagtgg cctgccgaga aagaaaacga caccggcgtg 120

gtgcatcagg tggaagagtg cagagtgaag ggccctggca tcagcaagtt cgtgcagaaa 180

gtgaacgaga tcggcatcta cctgaccgac tgcatggaac gggccaggga agtgatcccc 240

agaagccagc accaggaaac ccccgtgtat ctgggagcca ccgccggcat gagactgctg 300

agaatggaaa gcgaggaact ggccgaccgg gtgctggacg tggtggaaag aagcctgagc 360

aactacccat tcgattttca aggcgccaga atcatcaccg gccaggaagc cggcgcctac 420

ggctggatca ccatcaacta cctgctgggc aagttcagcc agaagaatca ggaaaccttc 480

ggcgccctgg acctgggcgg agctgctacc caagtgacct tcgtgcccca gaatcagacc 540

atcgagagcc ccgacaacgc cctgcagttc cggctgtacg gcaaggacta caatgtgtac 600

acccacagct ttctgtgcta cggaaaggac caggctctgt ggcagaagct ggccaaggac 660

atccaggtgg ccagcaacga gatcctgcgg gacccttgct tccaccccgg ctacaagaaa 720

gtcgtgaacg tgtccgacct gtacaagacc ccctgcacca agagattcga gatgaccctg 780

cccttccagc agttcgagat ccagggcatc ggcaattacc agcagtgcca ccagagcatc 840

ctggaactgt tcaacaccag ctactgcccc tacagccagt gcgccttcaa cggcatcttc 900

ctgccacctc tgcaggggga tttcggcgcc ttcagcgcct tctacttcgt gatgaagttc 960

ctgaacctga ccagcgagaa ggtgtcccag gaaaaagtga cagagatgat gaagaagttc 1020

tgcgcccagc cctgggagga aatcaagacc tcctacgctg gcgtgaaaga gaagtacctg 1080

agcgagtact gcttcagcgg cacctacatc ctgagcctgc tgctgcaggg ctaccacttc 1140

accgccgata gctgggagca catccacttc atcggcaaga ttcagggcag cgacgccggc 1200

tggacactgg gctacatgct gaatctgacc aacatgatcc ccgccgagca gcccctgagc 1260

acacctctga gccacagcac c 1281

<210> 86
<211> 427
<212> PRT
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成多肽"

<400> 86
Thr Gln Asn Lys Ala Leu Pro Glu Asn Val Lys Tyr Gly Ile Val Leu
1 5 10 15

Asp Ala Gly Ser Ser His Thr Ser Leu Tyr Ile Tyr Lys Trp Pro Ala
20 25 30

Glu Lys Glu Gln Asp Thr Gly Val Val His Gln Val Glu Glu Cys Arg
35 40 45

Val Lys Gly Pro Gly Ile Ser Lys Phe Val Gln Lys Val Asn Glu Ile
50 55 60

Gly Ile Tyr Leu Thr Asp Cys Met Glu Arg Ala Arg Glu Val Ile Pro
65 70 75 80

Arg Ser Gln His Gln Glu Thr Pro Val Tyr Leu Gly Ala Thr Ala Gly
85 90 95

Met Arg Leu Leu Arg Met Glu Ser Glu Glu Leu Ala Asp Arg Val Leu
100 105 110

Asp Val Val Glu Arg Ser Leu Ser Asn Tyr Pro Phe Asp Phe Gln Gly
115 120 125

Ala Arg Ile Ile Thr Gly Gln Glu Glu Gly Ala Tyr Gly Trp Ile Thr
130 135 140

Ile Asn Tyr Leu Leu Gly Lys Phe Ser Gln Lys Asn Gln Glu Thr Phe
145 150 155 160

Gly Ala Leu Asp Leu Gly Gly Ala Ser Thr Gln Val Thr Phe Val Pro
165 170 175

Gln Asn Gln Thr Ile Glu Ser Pro Asp Asn Ala Leu Gln Phe Arg Leu
180 185 190

Tyr Gly Lys Asp Tyr Asn Val Tyr Thr His Ser Phe Leu Cys Tyr Gly
195 200 205

Lys Asp Gln Ala Leu Trp Gln Lys Leu Ala Lys Asp Ile Gln Val Ala
210 215 220

Ser Asn Glu Ile Leu Arg Asp Pro Cys Phe His Pro Gly Tyr Lys Lys
225 230 235 240

Val Val Asn Val Ser Asp Leu Tyr Lys Thr Pro Cys Thr Lys Arg Phe
245 250 255

Glu Met Thr Leu Pro Phe Gln Gln Phe Glu Ile Gln Gly Ile Gly Asn
260 265 270

Tyr Gln Gln Cys His Gln Ser Ile Leu Glu Leu Phe Asn Thr Ser Tyr
275 280 285

Cys Pro Tyr Ser Gln Cys Ala Phe Asn Gly Ile Phe Leu Pro Pro Leu
290 295 300

Gln Gly Asp Phe Gly Ala Phe Ser Ala Phe Tyr Ser Val Met Lys Phe
305 310 315 320

Leu Asn Leu Thr Ser Glu Lys Val Ser Gln Glu Lys Val Thr Glu Met
325 330 335

Met Lys Lys Phe Cys Ala Gln Pro Trp Glu Glu Ile Lys Thr Ser Tyr
340 345 350

Ala Gly Val Lys Glu Lys Tyr Leu Ser Glu Tyr Cys Phe Ser Gly Thr
355 360 365

Tyr Ile Leu Ser Leu Leu Leu Gln Gly Tyr His Phe Thr Ala Asp Ser
370 375 380

Trp Glu His Ile His Phe Ile Gly Lys Ile Gln Gly Ser Asp Ala Gly
385 390 395 400

Trp Thr Leu Gly Tyr Met Leu Asn Leu Thr Asn Met Ile Pro Ala Glu
405 410 415

Gln Pro Leu Ser Thr Pro Leu Ser His Ser Thr
420 425

<210> 87
<211> 1281
<212> DNA
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述: 合成多核苷酸"

<400> 87
acccagaaca aggccctgcc cgagaacgtg aagtacggca tcgtgctgga tgccggcagc 60

agccacacca gcctgtacat ctacaagtgg cctgccgaga aagaacagga caccggcgtg 120

gtgcatcagg tggaagagtg cagagtgaag ggccctggca tcagcaagtt cgtgcagaaa 180

gtgaacgaga tcggcatcta cctgaccgac tgcatggaac gggccaggga agtgatcccc 240

agaagccagc accaggaaac ccccgtgtat ctgggagcca ccgccggcat gagactgctg 300

agaatggaaa gcgaggaact ggccgaccgg gtgctggacg tggtggaaag aagcctgagc 360

aactacccat tcgattttca aggcgccaga atcatcaccg gccaggaaga aggcgcctac 420

ggctggatca ccatcaacta cctgctgggc aagttcagcc agaagaatca ggaaaccttc 480

ggcgccctgg acctgggcgg agcttctacc caagtgacct tcgtgcccca gaatcagacc 540

atcgagagcc ccgacaacgc cctgcagttc cggctgtacg gcaaggacta caatgtgtac 600

acccacagct ttctgtgcta cggaaaggac caggctctgt ggcagaagct ggccaaggac 660

atccaggtgg ccagcaacga gatcctgcgg gacccttgct tccaccccgg ctacaagaaa 720

gtcgtgaacg tgtccgacct gtacaagacc ccctgcacca agagattcga gatgaccctg 780

cccttccagc agttcgagat ccagggcatc ggcaattacc agcagtgcca ccagagcatc 840

ctggaactgt tcaacaccag ctactgcccc tacagccagt gcgccttcaa cggcatcttc 900

ctgccacctc tgcaggggga tttcggcgcc ttcagcgcct tctactccgt gatgaagttc 960

ctgaacctga ccagcgagaa ggtgtcccag gaaaaagtga cagagatgat gaagaagttc 1020

tgcgcccagc cctgggagga aatcaagacc tcctacgctg gcgtgaaaga gaagtacctg 1080

agcgagtact gcttcagcgg cacctacatc ctgagcctgc tgctgcaggg ctaccacttc 1140

accgccgata gctgggagca catccacttc atcggcaaga ttcagggcag cgacgccggc 1200

tggacactgg gctacatgct gaatctgacc aacatgatcc ccgccgagca gcccctgagc 1260

acacctctga gccacagcac c 1281

<210> 88
<211> 427
<212> PRT
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成多肽"

<400> 88
Thr Gln Asn Lys Ala Leu Pro Glu Asn Val Lys Tyr Gly Ile Val Leu
1 5 10 15

Asp Ala Gly Ser Ser His Thr Ser Leu Tyr Ile Tyr Lys Trp Pro Ala
20 25 30

Glu Lys Glu Asn Asp Thr Gly Val Val His Gln Val Glu Glu Cys Arg
35 40 45

Val Lys Gly Pro Gly Ile Ser Lys Phe Val Gln Lys Val Asn Glu Ile
50 55 60

Gly Ile Tyr Leu Thr Asp Cys Met Glu Arg Ala Arg Glu Val Ile Pro
65 70 75 80

Arg Ser Gln His Gln Glu Thr Pro Val Tyr Leu Gly Ala Thr Ala Gly
85 90 95

Met Arg Leu Leu Arg Met Glu Ser Glu Glu Leu Ala Asp Arg Val Leu
100 105 110

Asp Val Val Glu Arg Ser Leu Ser Asn Tyr Pro Phe Asp Phe Gln Gly
115 120 125

Ala Arg Ile Ile Thr Gly Gln Glu Glu Gly Ala Tyr Gly Trp Ile Thr
130 135 140

Ile Asn Tyr Leu Leu Gly Lys Phe Ser Gln Lys Asn Gln Glu Thr Phe
145 150 155 160

Gly Ala Leu Asp Leu Gly Gly Ala Ser Thr Gln Val Thr Phe Val Pro
165 170 175

Gln Asn Gln Ala Ile Glu Ser Pro Asp Asn Ala Leu Gln Phe Arg Leu
180 185 190

Tyr Gly Lys Asp Tyr Asn Val Tyr Thr His Ser Phe Leu Cys Tyr Gly
195 200 205

Lys Asp Gln Ala Leu Trp Gln Lys Leu Ala Lys Asp Ile Gln Val Ala

210 215 220

Ser Asn Glu Ile Leu Arg Asp Pro Cys Phe His Pro Gly Tyr Lys Lys
225 230 235 240

Val Val Asn Val Ser Asp Leu Tyr Lys Thr Pro Cys Thr Lys Arg Phe
245 250 255

Glu Met Thr Leu Pro Phe Gln Gln Phe Glu Ile Gln Gly Ile Gly Asn
260 265 270

Tyr Gln Gln Cys His Gln Ser Ile Leu Glu Leu Phe Asn Thr Ser Tyr
275 280 285

Cys Pro Tyr Ser Gln Cys Ala Phe Asn Gly Ile Phe Leu Pro Pro Leu
290 295 300

Gln Gly Asp Phe Gly Ala Phe Ser Ala Phe Tyr Ser Val Met Lys Phe
305 310 315 320

Leu Asn Leu Thr Ser Glu Lys Val Ser Gln Glu Lys Val Thr Glu Met
325 330 335

Met Lys Lys Phe Cys Ala Gln Pro Trp Glu Glu Ile Lys Thr Ser Tyr
340 345 350

Ala Gly Val Lys Glu Lys Tyr Leu Ser Glu Tyr Cys Phe Ser Gly Thr
355 360 365

Tyr Ile Leu Ser Leu Leu Leu Gln Gly Tyr His Phe Thr Ala Asp Ser
370 375 380

Trp Glu His Ile His Phe Ile Gly Lys Ile Gln Gly Ser Asp Ala Gly
385 390 395 400

Trp Thr Leu Gly Tyr Met Leu Asn Leu Thr Asn Met Ile Pro Ala Glu
405 410 415

Gln Pro Leu Ser Thr Pro Leu Ser His Ser Thr
420 425

<210> 89
<211> 1281
<212> DNA
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述: 合成多核苷酸"

<400> 89
acccagaaca aggccctgcc cgagaacgtg aagtacggca tcgtgctgga tgccggcagc 60

agccacacca gcctgtacat ctacaagtgg cctgccgaga aagaaaacga caccggcgtg 120

gtgcatcagg tggaagagtg cagagtgaag ggccctggca tcagcaagtt cgtgcagaaa 180

gtgaacgaga tcggcatcta cctgaccgac tgcatggaac gggccaggga agtgatcccc 240

agaagccagc accaggaaac ccccgtgtat ctgggagcca ccgccggcat gagactgctg 300

agaatggaaa gcgaggaact ggccgaccgg gtgctggacg tggtggaaag aagcctgagc 360

aactacccat tcgattttca aggcgccaga atcatcaccg gccaggaaga aggcgcctac 420

ggctggatca ccatcaacta cctgctgggc aagttcagcc agaagaatca ggaaaccttc 480

ggcgccctgg acctgggcgg agcttctacc caagtgacct tcgtgcccca gaatcaggcc 540

atcgagagcc ccgacaacgc cctgcagttc cggctgtacg gcaaggacta caatgtgtac 600

acccacagct ttctgtgcta cggaaaggac caggctctgt ggcagaagct ggccaaggac 660

atccaggtgg ccagcaacga gatcctgcgg gacccttgct tccaccccgg ctacaagaaa 720

gtcgtgaacg tgtccgacct gtacaagacc ccctgcacca agagattcga gatgaccctg 780

cccttccagc agttcgagat ccagggcatc ggcaattacc agcagtgcca ccagagcatc 840

ctggaactgt tcaacaccag ctactgcccc tacagccagt gcgccttcaa cggcatcttc 900

ctgccacctc tgcaggggga tttcggcgcc ttcagcgcct tctactccgt gatgaagttc 960

ctgaacctga ccagcgagaa ggtgtcccag gaaaaagtga cagagatgat gaagaagttc 1020

tgcgcccagc cctgggagga aatcaagacc tcctacgctg gcgtgaaaga gaagtacctg 1080

agcgagtact gcttcagcgg cacctacatc ctgagcctgc tgctgcaggg ctaccacttc 1140

accgccgata gctgggagca catccacttc atcggcaaga ttcagggcag cgacgccggc 1200

tggacactgg gctacatgct gaatctgacc aacatgatcc ccgccgagca gcccctgagc 1260

acacctctga gccacagcac c 1281

<210> 90
<211> 427
<212> PRT
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成多肽"

<400> 90
Thr Gln Asn Lys Ala Leu Pro Glu Asn Val Lys Tyr Gly Ile Val Leu
1 5 10 15

Asp Ala Gly Ser Ser His Thr Ser Leu Tyr Ile Tyr Lys Trp Pro Ala
20 25 30

Glu Lys Glu Asn Asp Thr Gly Val Val His Gln Val Glu Glu Cys Arg
35 40 45

Val Lys Gly Pro Gly Ile Ser Lys Phe Val Gln Lys Val Asn Glu Ile
50 55 60

Gly Ile Tyr Leu Thr Asp Cys Met Glu Arg Ala Arg Glu Val Ile Pro
65 70 75 80

Arg Ser Gln His Gln Glu Thr Pro Val Tyr Leu Gly Ala Thr Ala Gly
85 90 95

Met Arg Leu Leu Arg Met Glu Ser Glu Glu Leu Ala Asp Arg Val Leu
100 105 110

Asp Val Val Glu Arg Ser Leu Ser Asn Tyr Pro Phe Asp Phe Gln Gly
115 120 125

Ala Arg Ile Ile Thr Gly Gln Glu Glu Gly Ala Tyr Gly Trp Ile Thr
130 135 140

Ile Asn Tyr Leu Leu Gly Lys Phe Ser Gln Lys Asn Gln Glu Thr Phe
145 150 155 160

Gly Ala Leu Asp Leu Gly Gly Ala Ser Thr Gln Val Thr Phe Val Pro
165 170 175

Gln Asn Gln Thr Ile Glu Ser Pro Asp Asn Ala Leu Gln Phe Arg Leu
180 185 190

Tyr Gly Lys Asp Tyr Asn Val Tyr Thr His Ser Phe Leu Cys Tyr Gly
195 200 205

Lys Asp Gln Ala Leu Trp Gln Lys Leu Ala Lys Asp Ile Gln Val Ala
210 215 220

Ser Asn Glu Ile Leu Arg Asp Pro Cys Phe His Pro Gly Tyr Lys Lys
225 230 235 240

Val Val Gln Val Ser Asp Leu Tyr Lys Thr Pro Cys Thr Lys Arg Phe
245 250 255

Glu Met Thr Leu Pro Phe Gln Gln Phe Glu Ile Gln Gly Ile Gly Asn
260 265 270

Tyr Gln Gln Cys His Gln Ser Ile Leu Glu Leu Phe Asn Thr Ser Tyr
275 280 285

Cys Pro Tyr Ser Gln Cys Ala Phe Asn Gly Ile Phe Leu Pro Pro Leu
290 295 300

Gln Gly Asp Phe Gly Ala Phe Ser Ala Phe Tyr Ser Val Met Lys Phe
305 310 315 320

Leu Asn Leu Thr Ser Glu Lys Val Ser Gln Glu Lys Val Thr Glu Met
325 330 335

Met Lys Lys Phe Cys Ala Gln Pro Trp Glu Glu Ile Lys Thr Ser Tyr
340 345 350

Ala Gly Val Lys Glu Lys Tyr Leu Ser Glu Tyr Cys Phe Ser Gly Thr
355 360 365

Tyr Ile Leu Ser Leu Leu Leu Gln Gly Tyr His Phe Thr Ala Asp Ser
370 375 380

Trp Glu His Ile His Phe Ile Gly Lys Ile Gln Gly Ser Asp Ala Gly
385 390 395 400

Trp Thr Leu Gly Tyr Met Leu Asn Leu Thr Asn Met Ile Pro Ala Glu
405 410 415

Gln Pro Leu Ser Thr Pro Leu Ser His Ser Thr
420 425

<210> 91
<211> 1281
<212> DNA
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成多核苷酸"

<400> 91
acccagaaca aggccctgcc cgagaacgtg aagtacggca tcgtgctgga tgccggcagc 60

agccacacca gcctgtacat ctacaagtgg cctgccgaga aagaaaacga caccggcgtg 120

gtgcatcagg tggaagagtg cagagtgaag ggccctggca tcagcaagtt cgtgcagaaa 180

gtgaacgaga tcggcatcta cctgaccgac tgcatggaac gggccaggga agtgatcccc 240

agaagccagc accaggaaac ccccgtgtat ctgggagcca ccgccggcat gagactgctg 300

agaatggaaa gcgaggaact ggccgaccgg gtgctggacg tggtggaaag aagcctgagc 360

aactacccat tcgattttca aggcgccaga atcatcaccg gccaggaaga aggcgcctac 420

ggctggatca ccatcaacta cctgctgggc aagttcagcc agaagaatca ggaaaccttc 480

ggcgccctgg acctgggcgg agcttctacc caagtgacct tcgtgcccca gaatcagacc 540

atcgagagcc ccgacaacgc cctgcagttc cggctgtacg gcaaggacta caatgtgtac 600

acccacagct ttctgtgcta cggaaaggac caggctctgt ggcagaagct ggccaaggac 660

atccaggtgg ccagcaacga gatcctgcgg gacccttgct tccaccccgg ctacaagaaa 720

gtcgtgcagg tgtccgacct gtacaagacc ccctgcacca agagattcga gatgaccctg 780

cccttccagc agttcgagat ccagggcatc ggcaattacc agcagtgcca ccagagcatc 840

ctggaactgt tcaacaccag ctactgcccc tacagccagt gcgccttcaa cggcatcttc 900

ctgccacctc tgcaggggga tttcggcgcc ttcagcgcct tctactccgt gatgaagttc 960

ctgaacctga ccagcgagaa ggtgtcccag gaaaaagtga cagagatgat gaagaagttc 1020

tgcgcccagc cctgggagga aatcaagacc tcctacgctg gcgtgaaaga gaagtacctg 1080

agcgagtact gcttcagcgg cacctacatc ctgagcctgc tgctgcaggg ctaccacttc 1140

accgccgata gctgggagca catccacttc atcggcaaga ttcagggcag cgacgccggc 1200

tggacactgg gctacatgct gaatctgacc aacatgatcc ccgccgagca gcccctgagc 1260

acacctctga gccacagcac c 1281

<210> 92
<211> 427
<212> PRT
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成多肽"

<400> 92
Thr Gln Asn Lys Ala Leu Pro Glu Asn Val Lys Tyr Gly Ile Val Leu
1 5 10 15

Asp Ala Gly Ser Ser His Thr Ser Leu Tyr Ile Tyr Lys Trp Pro Ala
20 25 30

Glu Lys Glu Asn Asp Thr Gly Val Val His Gln Val Glu Glu Cys Arg
35 40 45

Val Lys Gly Pro Gly Ile Ser Lys Phe Val Gln Lys Val Asn Glu Ile
50 55 60

Gly Ile Tyr Leu Thr Asp Cys Met Glu Arg Ala Arg Glu Val Ile Pro
65 70 75 80

Arg Ser Gln His Gln Glu Thr Pro Val Tyr Leu Gly Ala Thr Ala Gly
85 90 95

Met Arg Leu Leu Arg Met Glu Ser Glu Glu Leu Ala Asp Arg Val Leu
100 105 110

Asp Val Val Glu Arg Ser Leu Ser Asn Tyr Pro Phe Asp Phe Gln Gly
115 120 125

Ala Arg Ile Ile Thr Gly Gln Glu Glu Gly Ala Tyr Gly Trp Ile Thr
130 135 140

Ile Asn Tyr Leu Leu Gly Lys Phe Ser Gln Lys Asn Gln Glu Thr Phe
145 150 155 160

Gly Ala Leu Asp Leu Gly Gly Ala Ser Thr Gln Val Thr Phe Val Pro
165 170 175

Gln Asn Gln Thr Ile Glu Ser Pro Asp Asn Ala Leu Gln Phe Arg Leu
180 185 190

Tyr Gly Lys Asp Tyr Asn Val Tyr Thr His Ser Phe Leu Cys Tyr Gly
195 200 205

Lys Asp Gln Ala Leu Trp Gln Lys Leu Ala Lys Asp Ile Gln Val Ala
210 215 220

Ser Asn Glu Ile Leu Arg Asp Pro Cys Phe His Pro Gly Tyr Lys Lys

225 230 235 240

Val Val Asn Val Ser Asp Leu Tyr Lys Thr Pro Cys Thr Lys Arg Phe
245 250 255

Glu Met Thr Leu Pro Phe Gln Gln Phe Glu Ile Gln Gly Ile Gly Asn
260 265 270

Tyr Gln Gln Cys His Gln Ser Ile Leu Glu Leu Phe Gln Thr Ser Tyr
275 280 285

Cys Pro Tyr Ser Gln Cys Ala Phe Asn Gly Ile Phe Leu Pro Pro Leu
290 295 300

Gln Gly Asp Phe Gly Ala Phe Ser Ala Phe Tyr Ser Val Met Lys Phe
305 310 315 320

Leu Asn Leu Thr Ser Glu Lys Val Ser Gln Glu Lys Val Thr Glu Met
325 330 335

Met Lys Lys Phe Cys Ala Gln Pro Trp Glu Glu Ile Lys Thr Ser Tyr
340 345 350

Ala Gly Val Lys Glu Lys Tyr Leu Ser Glu Tyr Cys Phe Ser Gly Thr
355 360 365

Tyr Ile Leu Ser Leu Leu Leu Gln Gly Tyr His Phe Thr Ala Asp Ser
370 375 380

Trp Glu His Ile His Phe Ile Gly Lys Ile Gln Gly Ser Asp Ala Gly
385 390 395 400

Trp Thr Leu Gly Tyr Met Leu Asn Leu Thr Asn Met Ile Pro Ala Glu
405 410 415

Gln Pro Leu Ser Thr Pro Leu Ser His Ser Thr
420 425

<210> 93
<211> 1281
<212> DNA
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成多核苷酸"

<400> 93
acccagaaca aggccctgcc cgagaacgtg aagtacggca tcgtgctgga tgccggcagc 60

agccacacca gcctgtacat ctacaagtgg cctgccgaga aagaaaacga caccggcgtg 120

gtgcatcagg tggaagagtg cagagtgaag ggccctggca tcagcaagtt cgtgcagaaa 180

gtgaacgaga tcggcatcta cctgaccgac tgcatggaac gggccaggga agtgatcccc 240

agaagccagc accaggaaac ccccgtgtat ctgggagcca ccgccggcat gagactgctg 300

agaatggaaa gcgaggaact ggccgaccgg gtgctggacg tggtggaaag aagcctgagc 360

aactacccat tcgattttca aggcgccaga atcatcaccg gccaggaaga aggcgcctac 420

ggctggatca ccatcaacta cctgctgggc aagttcagcc agaagaatca ggaaaccttc 480

ggcgccctgg acctgggcgg agcttctacc caagtgacct tcgtgcccca gaatcagacc 540

atcgagagcc ccgacaacgc cctgcagttc cggctgtacg gcaaggacta caatgtgtac 600

acccacagct ttctgtgcta cggaaaggac caggctctgt ggcagaagct ggccaaggac 660

atccaggtgg ccagcaacga gatcctgcgg gacccttgct tccaccccgg ctacaagaaa 720

gtcgtgaacg tgtccgacct gtacaagacc ccctgcacca agagattcga gatgaccctg 780

cccttccagc agttcgagat ccagggcatc ggcaattacc agcagtgcca ccagagcatc 840

ctggaactgt tccagaccag ctactgcccc tacagccagt gcgccttcaa cggcatcttc 900

ctgccacctc tgcaggggga tttcggcgcc ttcagcgcct tctactccgt gatgaagttc 960

ctgaacctga ccagcgagaa ggtgtcccag gaaaaagtga cagagatgat gaagaagttc 1020

tgcgcccagc cctgggagga aatcaagacc tcctacgctg gcgtgaaaga gaagtacctg 1080

agcgagtact gcttcagcgg cacctacatc ctgagcctgc tgctgcaggg ctaccacttc 1140

accgccgata gctgggagca catccacttc atcggcaaga ttcagggcag cgacgccggc 1200

tggacactgg gctacatgct gaatctgacc aacatgatcc ccgccgagca gcccctgagc 1260

acacctctga gccacagcac c 1281

<210> 94
<211> 427
<212> PRT
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成多肽"

<400> 94
Thr Gln Asn Lys Ala Leu Pro Glu Asn Val Lys Tyr Gly Ile Val Leu
1 5 10 15

Asp Ala Gly Ser Ser His Thr Ser Leu Tyr Ile Tyr Lys Trp Pro Ala
20 25 30

Glu Lys Glu Asn Asp Thr Gly Val Val His Gln Val Glu Glu Cys Arg
35 40 45

Val Lys Gly Pro Gly Ile Ser Lys Phe Val Gln Lys Val Asn Glu Ile
50 55 60

Gly Ile Tyr Leu Thr Asp Cys Met Glu Arg Ala Arg Glu Val Ile Pro
65 70 75 80

Arg Ser Gln His Gln Glu Thr Pro Val Tyr Leu Gly Ala Thr Ala Gly
85 90 95

Met Arg Leu Leu Arg Met Glu Ser Glu Glu Leu Ala Asp Arg Val Leu
100 105 110

Asp Val Val Glu Arg Ser Leu Ser Asn Tyr Pro Phe Asp Phe Gln Gly
115 120 125

Ala Arg Ile Ile Thr Gly Gln Glu Glu Gly Ala Tyr Gly Trp Ile Thr
130 135 140

Ile Asn Tyr Leu Leu Gly Lys Phe Ser Gln Lys Asn Gln Glu Thr Phe
145 150 155 160

Gly Ala Leu Asp Leu Gly Gly Ala Ser Thr Gln Val Thr Phe Val Pro
165 170 175

Gln Asn Gln Thr Ile Glu Ser Pro Asp Asn Ala Leu Gln Phe Arg Leu
180 185 190

Tyr Gly Lys Asp Tyr Asn Val Tyr Thr His Ser Phe Leu Cys Tyr Gly
195 200 205

Lys Asp Gln Ala Leu Trp Gln Lys Leu Ala Lys Asp Ile Gln Val Ala
210 215 220

Ser Asn Glu Ile Leu Arg Asp Pro Cys Phe His Pro Gly Tyr Lys Lys
225 230 235 240

Val Val Asn Val Ser Asp Leu Tyr Lys Thr Pro Cys Thr Lys Arg Phe
245 250 255

Glu Met Thr Leu Pro Phe Gln Gln Phe Glu Ile Gln Gly Ile Gly Asn
260 265 270

Tyr Gln Gln Cys His Gln Ser Ile Leu Glu Leu Phe Asn Thr Ser Tyr
275 280 285

Cys Pro Tyr Ser Gln Cys Ala Phe Asn Gly Ile Phe Leu Pro Pro Leu
290 295 300

Gln Gly Asp Phe Gly Ala Phe Ser Ala Phe Tyr Ser Val Met Lys Phe
305 310 315 320

Leu Gln Leu Thr Ser Glu Lys Val Ser Gln Glu Lys Val Thr Glu Met
325 330 335

Met Lys Lys Phe Cys Ala Gln Pro Trp Glu Glu Ile Lys Thr Ser Tyr
340 345 350

Ala Gly Val Lys Glu Lys Tyr Leu Ser Glu Tyr Cys Phe Ser Gly Thr
355 360 365

Tyr Ile Leu Ser Leu Leu Leu Gln Gly Tyr His Phe Thr Ala Asp Ser
370 375 380

Trp Glu His Ile His Phe Ile Gly Lys Ile Gln Gly Ser Asp Ala Gly
385 390 395 400

Trp Thr Leu Gly Tyr Met Leu Asn Leu Thr Asn Met Ile Pro Ala Glu
405 410 415

Gln Pro Leu Ser Thr Pro Leu Ser His Ser Thr
420 425

<210> 95
<211> 1281
<212> DNA
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成多核苷酸"

<400> 95
acccagaaca aggccctgcc cgagaacgtg aagtacggca tcgtgctgga tgccggcagc 60

agccacacca gcctgtacat ctacaagtgg cctgccgaga aagaaaacga caccggcgtg 120

gtgcatcagg tggaagagtg cagagtgaag ggccctggca tcagcaagtt cgtgcagaaa 180

gtgaacgaga tcggcatcta cctgaccgac tgcatggaac gggccaggga agtgatcccc 240

agaagccagc accaggaaac ccccgtgtat ctgggagcca ccgccggcat gagactgctg 300

agaatggaaa gcgaggaact ggccgaccgg gtgctggacg tggtggaaag aagcctgagc 360

aactacccat tcgattttca aggcgccaga atcatcaccg gccaggaaga aggcgcctac 420

ggctggatca ccatcaacta cctgctgggc aagttcagcc agaagaatca ggaaaccttc 480

ggcgccctgg acctgggcgg agcttctacc caagtgacct tcgtgcccca gaatcagacc 540

atcgagagcc ccgacaacgc cctgcagttc cggctgtacg gcaaggacta caatgtgtac 600

acccacagct ttctgtgcta cggaaaggac caggctctgt ggcagaagct ggccaaggac 660

atccaggtgg ccagcaacga gatcctgcgg gacccttgct tccaccccgg ctacaagaaa 720

gtcgtgaacg tgtccgacct gtacaagacc ccctgcacca agagattcga gatgaccctg 780

cccttccagc agttcgagat ccagggcatc ggcaattacc agcagtgcca ccagagcatc 840

ctggaactgt tcaacaccag ctactgcccc tacagccagt gcgccttcaa cggcatcttc 900

ctgccacctc tgcaggggga tttcggcgcc ttcagcgcct tctactccgt gatgaagttc 960

ctgcagctga ccagcgagaa ggtgtcccag gaaaaagtga cagagatgat gaagaagttc 1020

tgcgcccagc cctgggagga aatcaagacc tcctacgctg gcgtgaaaga gaagtacctg 1080

agcgagtact gcttcagcgg cacctacatc ctgagcctgc tgctgcaggg ctaccacttc 1140

accgccgata gctgggagca catccacttc atcggcaaga ttcagggcag cgacgccggc 1200

tggacactgg gctacatgct gaatctgacc aacatgatcc ccgccgagca gcccctgagc 1260

acacctctga gccacagcac c 1281

<210> 96
<211> 427
<212> PRT
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述: 合成多肽"

<400> 96

```
Thr Gln Asn Lys Ala Leu Pro Glu Asn Val Lys Tyr Gly Ile Val Leu
1               5                  10                  15

Asp Ala Gly Ser Ser His Thr Ser Leu Tyr Ile Tyr Lys Trp Pro Ala
            20                  25                  30

Glu Lys Glu Asn Asp Thr Gly Val Val His Gln Val Glu Glu Cys Arg
        35                  40                  45
```

Val Lys Gly Pro Gly Ile Ser Lys Phe Val Gln Lys Val Asn Glu Ile
50 55 60

Gly Ile Tyr Leu Thr Asp Cys Met Glu Arg Ala Arg Glu Val Ile Pro
65 70 75 80

Arg Ser Gln His Gln Glu Thr Pro Val Tyr Leu Gly Ala Thr Ala Gly
85 90 95

Met Arg Leu Leu Arg Met Glu Ser Glu Glu Leu Ala Asp Arg Val Leu
100 105 110

Asp Val Val Glu Arg Ser Leu Ser Asn Tyr Pro Phe Asp Phe Gln Gly
115 120 125

Ala Arg Ile Ile Thr Gly Gln Glu Glu Gly Ala Tyr Gly Trp Ile Thr
130 135 140

Ile Asn Tyr Leu Leu Gly Lys Phe Ser Gln Lys Asn Gln Glu Thr Phe
145 150 155 160

Gly Ala Leu Asp Leu Gly Gly Ala Ser Thr Gln Val Thr Phe Val Pro
165 170 175

Gln Asn Gln Thr Ile Glu Ser Pro Asp Asn Ala Leu Gln Phe Arg Leu
180 185 190

Tyr Gly Lys Asp Tyr Asn Val Tyr Thr His Ser Phe Leu Cys Tyr Gly
195 200 205

Lys Asp Gln Ala Leu Trp Gln Lys Leu Ala Lys Asp Ile Gln Val Ala
210 215 220

Ser Asn Glu Ile Leu Arg Asp Pro Cys Phe His Pro Gly Tyr Lys Lys
225 230 235 240

Val Val Asn Val Ser Asp Leu Tyr Lys Thr Pro Cys Thr Lys Arg Phe

245 250 255

Glu Met Thr Leu Pro Phe Gln Gln Phe Glu Ile Gln Gly Ile Gly Asn
260 265 270

Tyr Gln Gln Cys His Gln Ser Ile Leu Glu Leu Phe Asn Thr Ser Tyr
275 280 285

Cys Pro Tyr Ser Gln Cys Ala Phe Asn Gly Ile Phe Leu Pro Pro Leu
290 295 300

Gln Gly Asp Phe Gly Ala Phe Ser Ala Phe Tyr Ser Val Met Lys Phe
305 310 315 320

Leu Asn Leu Thr Ser Glu Lys Val Ser Gln Glu Lys Val Thr Glu Met
325 330 335

Met Lys Lys Phe Cys Ala Gln Pro Trp Glu Glu Ile Lys Thr Ser Tyr
340 345 350

Ala Gly Val Lys Glu Lys Tyr Leu Ser Glu Tyr Cys Phe Ser Gly Thr
355 360 365

Tyr Ile Leu Ser Leu Leu Leu Gln Gly Tyr His Phe Thr Ala Asp Ser
370 375 380

Trp Glu His Ile His Phe Ile Gly Lys Ile Gln Gly Ser Asp Ala Gly
385 390 395 400

Trp Thr Leu Gly Tyr Met Leu Gln Leu Thr Asn Met Ile Pro Ala Glu
405 410 415

Gln Pro Leu Ser Thr Pro Leu Ser His Ser Thr
420 425

<210> 97
<211> 1281
<212> DNA

<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成多核苷酸"

<400> 97
acccagaaca aggccctgcc cgagaacgtg aagtacggca tcgtgctgga tgccggcagc 60

agccacacca gcctgtacat ctacaagtgg cctgccgaga aagaaaacga caccggcgtg 120

gtgcatcagg tggaagagtg cagagtgaag ggccctggca tcagcaagtt cgtgcagaaa 180

gtgaacgaga tcggcatcta cctgaccgac tgcatggaac gggccaggga agtgatcccc 240

agaagccagc accaggaaac ccccgtgtat ctgggagcca ccgccggcat gagactgctg 300

agaatggaaa gcgaggaact ggccgaccgg gtgctggacg tggtggaaag aagcctgagc 360

aactacccat tcgattttca aggcgccaga atcatcaccg gccaggaaga aggcgcctac 420

ggctggatca ccatcaacta cctgctgggc aagttcagcc agaagaatca ggaaaccttc 480

ggcgccctgg acctgggcgg agcttctacc caagtgacct tcgtgcccca gaatcagacc 540

atcgagagcc ccgacaacgc cctgcagttc cggctgtacg gcaaggacta caatgtgtac 600

acccacagct ttctgtgcta cggaaaggac caggctctgt ggcagaagct ggccaaggac 660

atccaggtgg ccagcaacga gatcctgcgg gacccttgct tccaccccgg ctacaagaaa 720

gtcgtgaacg tgtccgacct gtacaagacc ccctgcacca agagattcga gatgaccctg 780

cccttccagc agttcgagat ccagggcatc ggcaattacc agcagtgcca ccagagcatc 840

ctggaactgt tcaacaccag ctactgcccc tacagccagt gcgccttcaa cggcatcttc 900

ctgccacctc tgcaggggga tttcggcgcc ttcagcgcct tctactccgt gatgaagttc 960

ctgaacctga ccagcgagaa ggtgtcccag gaaaaagtga cagagatgat gaagaagttc 1020

tgcgcccagc cctgggagga aatcaagacc tcctacgctg gcgtgaaaga gaagtacctg 1080

agcgagtact gcttcagcgg cacctacatc ctgagcctgc tgctgcaggg ctaccacttc 1140

accgccgata gctgggagca catccacttc atcggcaaga ttcagggcag cgacgccggc 1200

tggacactgg gctacatgct gcagctgacc aacatgatcc ccgccgagca gcccctgagc 1260

acacctctga gccacagcac c 1281

<210> 98
<211> 69
<212> DNA
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成引物"

<400> 98
tgccctacga gacaaacaat caggaaacct tcggcgccct ggacctgggc ggagcttcta 60

cccaagtga 69

<210> 99
<211> 431
<212> PRT
<213> 智人

<400> 99
Gln Asn Lys Ala Leu Pro Glu Asn Val Lys Tyr Gly Ile Val Leu Asp
1 5 10 15

Ala Gly Ser Ser His Thr Ser Leu Tyr Ile Tyr Lys Trp Pro Ala Glu
20 25 30

Lys Glu Asn Asp Thr Gly Val Val His Gln Val Glu Glu Cys Arg Val
35 40 45

Lys Gly Pro Gly Ile Ser Lys Phe Val Gln Lys Val Asn Glu Ile Gly
50 55 60

Ile Tyr Leu Thr Asp Cys Met Glu Arg Ala Arg Glu Val Ile Pro Arg
65 70 75 80

Ser Gln His Gln Glu Thr Pro Val Tyr Leu Gly Ala Thr Ala Gly Met
85 90 95

Arg Leu Leu Arg Met Glu Ser Glu Glu Leu Ala Asp Arg Val Leu Asp
100 105 110

Val Val Glu Arg Ser Leu Ser Asn Tyr Pro Phe Asp Phe Gln Gly Ala
115 120 125

Arg Ile Ile Thr Gly Gln Glu Glu Gly Ala Tyr Gly Trp Ile Thr Ile
130 135 140

Asn Tyr Leu Leu Gly Lys Phe Ser Gln Lys Thr Arg Trp Phe Ser Ile
145 150 155 160

Val Pro Tyr Glu Thr Asn Asn Gln Glu Thr Phe Gly Ala Leu Asp Leu
165 170 175

Gly Gly Ala Ser Thr Gln Val Thr Phe Val Pro Gln Asn Gln Thr Ile
180 185 190

Glu Ser Pro Asp Asn Ala Leu Gln Phe Arg Leu Tyr Gly Lys Asp Tyr
195 200 205

Asn Val Tyr Thr His Ser Phe Leu Cys Tyr Gly Lys Asp Gln Ala Leu
210 215 220

Trp Gln Lys Leu Ala Lys Asp Ile Gln Val Ala Ser Asn Glu Ile Leu
225 230 235 240

Arg Asp Pro Cys Phe His Pro Gly Tyr Lys Lys Val Val Asn Val Ser
245 250 255

Asp Leu Tyr Lys Thr Pro Cys Thr Lys Arg Phe Glu Met Thr Leu Pro
260 265 270

Phe Gln Gln Phe Glu Ile Gln Gly Ile Gly Asn Tyr Gln Gln Cys His
275 280 285

Gln Ser Ile Leu Glu Leu Phe Asn Thr Ser Tyr Cys Pro Tyr Ser Gln
290 295 300

Cys Ala Phe Asn Gly Ile Phe Leu Pro Pro Leu Gln Gly Asp Phe Gly

305 310 315 320

Ala Phe Ser Ala Phe Tyr Phe Val Met Lys Phe Leu Asn Leu Thr Ser
325 330 335

Glu Lys Val Ser Gln Glu Lys Val Thr Glu Met Met Lys Lys Phe Cys
340 345 350

Ala Gln Pro Trp Glu Glu Ile Lys Thr Ser Tyr Ala Gly Val Lys Glu
355 360 365

Lys Tyr Leu Ser Glu Tyr Cys Phe Ser Gly Thr Tyr Ile Leu Ser Leu
370 375 380

Leu Leu Gln Gly Tyr His Phe Thr Ala Asp Ser Trp Glu His Ile His
385 390 395 400

Phe Ile Gly Lys Ile Gln Gly Ser Asp Ala Gly Trp Thr Leu Gly Tyr
405 410 415

Met Leu Asn Leu Thr Asn Met Ile Pro Ala Glu Gln Pro Leu Ser
420 425 430

<210> 100
<211> 1293
<212> DNA
<213> 智人

<400> 100
cagaacaaag ccctgcccga gaacgtgaag tacggcatcg tgctggatgc cggcagcagc 60

cacaccagcc tgtacatcta caagtggcct gccgagaaag aaaacgatac cggtgtcgtg 120

caccaggtgg aagagtgcag agtgaagggc cctggcatca gcaagttcgt gcagaaagtg 180

aacgagatcg gcatctacct gaccgactgc atggaacggg ccagagaagt gatccccaga 240

agccagcacc aggaaacccc cgtgtacctg ggagccacag ccggcatgag actgctgcgg 300

atggaaagcg aggaactggc cgacagagtg ctggacgtgg tggaaagaag cctgagcaac 360

tacccattcg attttcaagg ggccagaatc atcaccggcc aggaagaggg cgcttacggc 420

tggatcacca tcaactacct gctgggcaag ttcagccaga aaacccggtg gttcagcatc 480

gtgccctacg agacaaacaa tcaggaaacc ttcggagccc tggacctggg cggagcctct 540

acccaagtga ccttcgtgcc ccagaatcag accatcgaga gccccgacaa cgccctgcag 600

ttccggctgt acggcaagga ctacaatgtg tacacccaca gctttctgtg ctacggaaag 660

gaccaggccc tgtggcagaa gctggccaag gacatccagg tggccagcaa cgagatcctg 720

cgggaccctt gcttccaccc cggctacaag aaagtcgtga acgtgtccga cctgtacaag 780

acccccctgca ccaagagatt cgagatgacc ctgcccttcc agcagttcga gatccagggc 840

atcggcaact accagcagtg ccaccagagc atcctggaac tgttcaacac cagctactgc 900

ccctacagcc agtgcgcctt caacggcatc ttcctgccac ctctgcaggg ggacttcggc 960

gctttcagcg ccttctactt cgtgatgaag ttcctgaacc tgaccagcga gaaggtgtcc 1020

caggaaaaag tgacagagat gatgaagaag ttctgcgccc agccctggga ggaaatcaag 1080

acctcctacg ctggcgtgaa agagaagtac ctgagcgagt actgcttcag cggtacctac 1140

atcctgagcc tgctgctgca gggctaccac ttcaccgccg atagctggga gcacatccac 1200

ttcatcggca agattcaggg cagcgacgcc ggctggacac tgggctacat gctgaatctg 1260

accaacatga tccccgccga gcagcccctg agc 1293

<210> 101
<211> 431
<212> PRT
<213> 智人

<400> 101
Asn Val Lys Tyr Gly Ile Val Leu Asp Ala Gly Ser Ser His Thr Ser
1 5 10 15

Leu Tyr Ile Tyr Lys Trp Pro Ala Glu Lys Glu Asn Asp Thr Gly Val
20 25 30

Val His Gln Val Glu Glu Cys Arg Val Lys Gly Pro Gly Ile Ser Lys
35 40 45

```
Phe Val Gln Lys Val Asn Glu Ile Gly Ile Tyr Leu Thr Asp Cys Met
    50                  55                  60

Glu Arg Ala Arg Glu Val Ile Pro Arg Ser Gln His Gln Glu Thr Pro
65                  70                  75                  80

Val Tyr Leu Gly Ala Thr Ala Gly Met Arg Leu Leu Arg Met Glu Ser
                85                  90                  95

Glu Glu Leu Ala Asp Arg Val Leu Asp Val Val Glu Arg Ser Leu Ser
            100                 105                 110

Asn Tyr Pro Phe Asp Phe Gln Gly Ala Arg Ile Ile Thr Gly Gln Glu
        115                 120                 125

Glu Gly Ala Tyr Gly Trp Ile Thr Ile Asn Tyr Leu Leu Gly Lys Phe
    130                 135                 140

Ser Gln Lys Thr Arg Trp Phe Ser Ile Val Pro Tyr Glu Thr Asn Asn
145                 150                 155                 160

Gln Glu Thr Phe Gly Ala Leu Asp Leu Gly Gly Ala Ser Thr Gln Val
                165                 170                 175

Thr Phe Val Pro Gln Asn Gln Thr Ile Glu Ser Pro Asp Asn Ala Leu
            180                 185                 190

Gln Phe Arg Leu Tyr Gly Lys Asp Tyr Asn Val Tyr Thr His Ser Phe
        195                 200                 205

Leu Cys Tyr Gly Lys Asp Gln Ala Leu Trp Gln Lys Leu Ala Lys Asp
    210                 215                 220

Ile Gln Val Ala Ser Asn Glu Ile Leu Arg Asp Pro Cys Phe His Pro
225                 230                 235                 240

Gly Tyr Lys Lys Val Val Asn Val Ser Asp Leu Tyr Lys Thr Pro Cys
                245                 250                 255
```

Thr Lys Arg Phe Glu Met Thr Leu Pro Phe Gln Gln Phe Glu Ile Gln
260 265 270

Gly Ile Gly Asn Tyr Gln Gln Cys His Gln Ser Ile Leu Glu Leu Phe
275 280 285

Asn Thr Ser Tyr Cys Pro Tyr Ser Gln Cys Ala Phe Asn Gly Ile Phe
290 295 300

Leu Pro Pro Leu Gln Gly Asp Phe Gly Ala Phe Ser Ala Phe Tyr Phe
305 310 315 320

Val Met Lys Phe Leu Asn Leu Thr Ser Glu Lys Val Ser Gln Glu Lys
325 330 335

Val Thr Glu Met Met Lys Lys Phe Cys Ala Gln Pro Trp Glu Glu Ile
340 345 350

Lys Thr Ser Tyr Ala Gly Val Lys Glu Lys Tyr Leu Ser Glu Tyr Cys
355 360 365

Phe Ser Gly Thr Tyr Ile Leu Ser Leu Leu Leu Gln Gly Tyr His Phe
370 375 380

Thr Ala Asp Ser Trp Glu His Ile His Phe Ile Gly Lys Ile Gln Gly
385 390 395 400

Ser Asp Ala Gly Trp Thr Leu Gly Tyr Met Leu Asn Leu Thr Asn Met
405 410 415

Ile Pro Ala Glu Gln Pro Leu Ser Thr Pro Leu Ser His Ser Thr
420 425 430

<210> 102
<211> 1293
<212> DNA
<213> 智人

<400> 102

aacgtgaagt acggcatcgt gctggatgcc ggcagcagcc acaccagcct gtacatctac 60

aagtggcctg ccgagaaaga aaacgatacc ggtgtcgtgc accaggtgga agagtgcaga 120

gtgaagggcc ctggcatcag caagttcgtg cagaaagtga acgagatcgg catctacctg 180

accgactgca tggaacgggc cagagaagtg atccccagaa gccagcacca ggaaaccccc 240

gtgtacctgg gagccacagc cggcatgaga ctgctgcgga tggaaagcga ggaactggcc 300

gacagagtgc tggacgtggt ggaaagaagc ctgagcaact acccattcga ttttcaaggg 360

gccagaatca tcaccggcca ggaagagggc gcttacggct ggatcaccat caactacctg 420

ctgggcaagt tcagccagaa aacccggtgg ttcagcatcg tgccctacga gacaaacaat 480

caggaaacct tcggagcccc ggacctgggc ggagcctcta cccaagtgac cttcgtgccc 540

cagaatcaga ccatcgagag ccccgacaac gccctgcagt tccggctgta cggcaaggac 600

tacaatgtgt acacccacag ctttctgtgc tacggaaagg accaggccct gtggcagaag 660

ctggccaagg acatccaggt ggccagcaac gagatcctgc gggacccttg cttccacccc 720

ggctacaaga aagtcgtgaa cgtgtccgac ctgtacaaga ccccctgcac caagagattc 780

gagatgaccc tgcccttcca gcagttcgag atccagggca tcggcaacta ccagcagtgc 840

caccagagca tcctggaact gttcaacacc agctactgcc cctacagcca gtgcgccttc 900

aacggcatct tcctgccacc tctgcagggg gacttcggcg ctttcagcgc cttctacttc 960

gtgatgaagt tcctgaacct gaccagcgag aaggtgtccc aggaaaaagt gacagagatg 1020

atgaagaagt tctgcgccca gccctgggag gaaatcaaga cctcctacgc tggcgtgaaa 1080

gagaagtacc tgagcgagta ctgcttcagc ggtacctaca tcctgagcct gctgctgcag 1140

ggctaccact tcaccgccga tagctgggag cacatccact tcatcggcaa gattcagggc 1200

agcgacgccg gctggacact gggctacatg ctgaatctga ccaacatgat ccccgccgag 1260

cagcccctga gcacacctct gtctcacagc acc 1293

<210> 103
<211> 416
<212> PRT

<213> 智人

<400> 103

Asn Val Lys Tyr Gly Ile Val Leu Asp Ala Gly Ser Ser His Thr Ser
1 5 10 15

Leu Tyr Ile Tyr Lys Trp Pro Ala Glu Lys Glu Asn Asp Thr Gly Val
20 25 30

Val His Gln Val Glu Glu Cys Arg Val Lys Gly Pro Gly Ile Ser Lys
35 40 45

Phe Val Gln Lys Val Asn Glu Ile Gly Ile Tyr Leu Thr Asp Cys Met
50 55 60

Glu Arg Ala Arg Glu Val Ile Pro Arg Ser Gln His Gln Glu Thr Pro
65 70 75 80

Val Tyr Leu Gly Ala Thr Ala Gly Met Arg Leu Leu Arg Met Glu Ser
85 90 95

Glu Glu Leu Ala Asp Arg Val Leu Asp Val Val Glu Arg Ser Leu Ser
100 105 110

Asn Tyr Pro Phe Asp Phe Gln Gly Ala Arg Ile Ile Thr Gly Gln Glu
115 120 125

Glu Gly Ala Tyr Gly Trp Ile Thr Ile Asn Tyr Leu Leu Gly Lys Phe
130 135 140

Ser Gln Lys Thr Arg Trp Phe Ser Ile Val Pro Tyr Glu Thr Asn Asn
145 150 155 160

Gln Glu Thr Phe Gly Ala Leu Asp Leu Gly Gly Ala Ser Thr Gln Val
165 170 175

Thr Phe Val Pro Gln Asn Gln Thr Ile Glu Ser Pro Asp Asn Ala Leu
180 185 190

Gln Phe Arg Leu Tyr Gly Lys Asp Tyr Asn Val Tyr Thr His Ser Phe
195 200 205

Leu Cys Tyr Gly Lys Asp Gln Ala Leu Trp Gln Lys Leu Ala Lys Asp
210 215 220

Ile Gln Val Ala Ser Asn Glu Ile Leu Arg Asp Pro Cys Phe His Pro
225 230 235 240

Gly Tyr Lys Lys Val Val Asn Val Ser Asp Leu Tyr Lys Thr Pro Cys
245 250 255

Thr Lys Arg Phe Glu Met Thr Leu Pro Phe Gln Gln Phe Glu Ile Gln
260 265 270

Gly Ile Gly Asn Tyr Gln Gln Cys His Gln Ser Ile Leu Glu Leu Phe
275 280 285

Asn Thr Ser Tyr Cys Pro Tyr Ser Gln Cys Ala Phe Asn Gly Ile Phe
290 295 300

Leu Pro Pro Leu Gln Gly Asp Phe Gly Ala Phe Ser Ala Phe Tyr Phe
305 310 315 320

Val Met Lys Phe Leu Asn Leu Thr Ser Glu Lys Val Ser Gln Glu Lys
325 330 335

Val Thr Glu Met Met Lys Lys Phe Cys Ala Gln Pro Trp Glu Glu Ile
340 345 350

Lys Thr Ser Tyr Ala Gly Val Lys Glu Lys Tyr Leu Ser Glu Tyr Cys
355 360 365

Phe Ser Gly Thr Tyr Ile Leu Ser Leu Leu Leu Gln Gly Tyr His Phe
370 375 380

Thr Ala Asp Ser Trp Glu His Ile His Phe Ile Gly Lys Ile Gln Gly

385 390 395 400

Ser Asp Ala Gly Trp Thr Leu Gly Tyr Met Leu Asn Leu Thr Asn Met
405 410 415

<210> 104
<211> 1248
<212> DNA
<213> 智人

<400> 104
aacgtgaagt acggcatcgt gctggatgcc ggcagcagcc acaccagcct gtacatctac 60

aagtggcctg ccgagaaaga aaacgatacc ggtgtcgtgc accaggtgga agagtgcaga 120

gtgaagggcc ctggcatcag caagttcgtg cagaaagtga acgagatcgg catctacctg 180

accgactgca tggaacgggc cagagaagtg atccccagaa gccagcacca ggaaaccccc 240

gtgtacctgg gagccacagc cggcatgaga ctgctgcgga tggaaagcga ggaactggcc 300

gacagagtgc tggacgtggt ggaaagaagc ctgagcaact acccattcga ttttcaaggg 360

gccagaatca tcaccggcca ggaagagggc gcttacggct ggatcaccat caactacctg 420

ctgggcaagt tcagccagaa aacccggtgg ttcagcatcg tgccctacga gacaaacaat 480

caggaaacct tcggagccct ggacctgggc ggagcctcta cccaagtgac cttcgtgccc 540

cagaatcaga ccatcgagag ccccgacaac gccctgcagt tccggctgta cggcaaggac 600

tacaatgtgt acacccacag ctttctgtgc tacggaaagg accaggccct gtggcagaag 660

ctggccaagg acatccaggt ggccagcaac gagatcctgc gggacccttg cttccacccc 720

ggctacaaga aagtcgtgaa cgtgtccgac ctgtacaaga ccccctgcac caagagattc 780

gagatgaccc tgcccttcca gcagttcgag atccagggca tcggcaacta ccagcagtgc 840

caccagagca tcctggaact gttcaacacc agctactgcc cctacagcca gtgcgccttc 900

aacggcatct tcctgccacc tctgcagggg gacttcggcg ctttcagcgc cttctacttc 960

gtgatgaagt tcctgaacct gaccagcgag aaggtgtccc aggaaaaagt gacagagatg 1020

atgaagaagt tctgcgccca gccctgggag gaaatcaaga cctcctacgc tggcgtgaaa 1080

gagaagtacc tgagcgagta ctgcttcagc ggtacctaca tcctgagcct gctgctgcag 1140

ggctaccact tcaccgccga tagctgggag cacatccact tcatcggcaa gattcagggc 1200

agcgacgccg gctggacact gggctacatg ctgaatctga ccaacatg 1248

<210> 105
<211> 404
<212> PRT
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成多肽"

<400> 105
Asn Val Lys Tyr Gly Ile Val Leu Asp Ala Gly Ser Ser His Thr Ser
1 5 10 15

Leu Tyr Ile Tyr Lys Trp Pro Ala Glu Lys Glu Asn Asp Thr Gly Val
20 25 30

Val His Gln Val Glu Glu Cys Arg Val Lys Gly Pro Gly Ile Ser Lys
35 40 45

Phe Val Gln Lys Val Asn Glu Ile Gly Ile Tyr Leu Thr Asp Cys Met
50 55 60

Glu Arg Ala Arg Glu Val Ile Pro Arg Ser Gln His Gln Glu Thr Pro
65 70 75 80

Val Tyr Leu Gly Ala Thr Ala Gly Met Arg Leu Leu Arg Met Glu Ser
85 90 95

Glu Glu Leu Ala Asp Arg Val Leu Asp Val Val Glu Arg Ser Leu Ser
100 105 110

Asn Tyr Pro Phe Asp Phe Gln Gly Ala Arg Ile Ile Thr Gly Gln Glu
115 120 125

Glu Gly Ala Tyr Gly Trp Ile Thr Ile Asn Tyr Leu Leu Gly Lys Phe
130 135 140

Ser Gln Lys Asn Gln Glu Thr Phe Gly Ala Leu Asp Leu Gly Gly Ala
145 150 155 160

Ser Thr Gln Val Thr Phe Val Pro Gln Asn Gln Thr Ile Glu Ser Pro
165 170 175

Asp Asn Ala Leu Gln Phe Arg Leu Tyr Gly Lys Asp Tyr Asn Val Tyr
180 185 190

Thr His Ser Phe Leu Cys Tyr Gly Lys Asp Gln Ala Leu Trp Gln Lys
195 200 205

Leu Ala Lys Asp Ile Gln Val Ala Ser Asn Glu Ile Leu Arg Asp Pro
210 215 220

Cys Phe His Pro Gly Tyr Lys Lys Val Val Asn Val Ser Asp Leu Tyr
225 230 235 240

Lys Thr Pro Cys Thr Lys Arg Phe Glu Met Thr Leu Pro Phe Gln Gln
245 250 255

Phe Glu Ile Gln Gly Ile Gly Asn Tyr Gln Gln Cys His Gln Ser Ile
260 265 270

Leu Glu Leu Phe Asn Thr Ser Tyr Cys Pro Tyr Ser Gln Cys Ala Phe
275 280 285

Asn Gly Ile Phe Leu Pro Pro Leu Gln Gly Asp Phe Gly Ala Phe Ser
290 295 300

Ala Phe Tyr Phe Val Met Lys Phe Leu Asn Leu Thr Ser Glu Lys Val
305 310 315 320

Ser Gln Glu Lys Val Thr Glu Met Met Lys Lys Phe Cys Ala Gln Pro
325 330 335

Trp Glu Glu Ile Lys Thr Ser Tyr Ala Gly Val Lys Glu Lys Tyr Leu
340 345 350

Ser Glu Tyr Cys Phe Ser Gly Thr Tyr Ile Leu Ser Leu Leu Leu Gln
355 360 365

Gly Tyr His Phe Thr Ala Asp Ser Trp Glu His Ile His Phe Ile Gly
370 375 380

Lys Ile Gln Gly Ser Asp Ala Gly Trp Thr Leu Gly Tyr Met Leu Asn
385 390 395 400

Leu Thr Asn Met

<210> 106
<211> 1212
<212> DNA
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成多核苷酸"

<400> 106
aacgtgaagt acggcatcgt gctggatgcc ggcagcagcc acaccagcct gtacatctac 60

aagtggcctg ccgagaaaga aaacgatacc ggtgtcgtgc accaggtgga agagtgcaga 120

gtgaagggcc ctggcatcag caagttcgtg cagaaagtga acgagatcgg catctacctg 180

accgactgca tggaacgggc cagagaagtg atccccagaa gccagcacca ggaaaccccc 240

gtgtacctgg gagccacagc cggcatgaga ctgctgcgga tggaaagcga ggaactggcc 300

gacagagtgc tggacgtggt ggaaagaagc ctgagcaact acccattcga ttttcaaggg 360

gccagaatca tcaccggcca ggaagagggc gcttacggct ggatcaccat caactacctg 420

ctgggcaagt tcagccagaa aaatcaggaa accttcggag ccctggacct gggcggagcc 480

tctacccaag tgaccttcgt gccccagaat cagaccatcg agagccccga caacgccctg 540

cagttccggc tgtacggcaa ggactacaat gtgtacaccc acagctttct gtgctacgga 600

aaggaccagg ccctgtggca gaagctggcc aaggacatcc aggtggccag caacgagatc 660

ctgcgggacc cttgcttcca ccccggctac aagaaagtcg tgaacgtgtc cgacctgtac 720

aagacccccc gcaccaagag attcgagatg accctgcccc tccagcagtt cgagatccag 780

ggcatcggca actaccagca gtgccaccag agcatcctgg aactgttcaa caccagctac 840

tgcccctaca gccagtgcgc cttcaacggc atcttcctgc cacctctgca gggggacttc 900

ggcgctttca gcgccttcta cttcgtgatg aagttcctga acctgaccag cgagaaggtg 960

tcccaggaaa aagtgacaga gatgatgaag aagttctgcg cccagccctg ggaggaaatc 1020

aagacctcct acgctggcgt gaaagagaag tacctgagcg agtactgctt cagcggtacc 1080

tacatcctga gcctgctgct gcagggctac cacttcaccg ccgatagctg ggagcacatc 1140

cacttcatcg gcaagattca gggcagcgac gccggctgga cactgggcta catgctgaat 1200

ctgaccaaca tg 1212

<210> 107
<211> 416
<212> PRT
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成多肽"

<400> 107

```
Asn Val Lys Tyr Gly Ile Val Leu Asp Ala Gly Ser Ser His Thr Ser
1               5                  10                  15

Leu Tyr Ile Tyr Lys Trp Pro Ala Glu Lys Glu Asn Asp Thr Gly Val
            20                  25                  30

Val His Gln Val Glu Glu Ala Arg Val Lys Gly Pro Gly Ile Ser Lys
        35                  40                  45

Phe Val Gln Lys Val Asn Glu Ile Gly Ile Tyr Leu Thr Asp Ala Met
    50                  55                  60

Glu Arg Ala Arg Glu Val Ile Pro Arg Ser Gln His Gln Glu Thr Pro
```

65 70 75 80

Val Tyr Leu Gly Ala Thr Ala Gly Met Arg Leu Leu Arg Met Glu Ser
85 90 95

Glu Glu Leu Ala Asp Arg Val Leu Asp Val Val Glu Arg Ser Leu Ser
100 105 110

Asn Tyr Pro Phe Asp Phe Gln Gly Ala Arg Ile Ile Thr Gly Gln Glu
115 120 125

Glu Gly Ala Tyr Gly Trp Ile Thr Ile Asn Tyr Leu Leu Gly Lys Phe
130 135 140

Ser Gln Lys Thr Arg Trp Phe Ser Ile Val Pro Tyr Glu Thr Asn Asn
145 150 155 160

Gln Glu Thr Phe Gly Ala Leu Asp Leu Gly Gly Ala Ser Thr Gln Val
165 170 175

Thr Phe Val Pro Gln Asn Gln Thr Ile Glu Ser Pro Asp Asn Ala Leu
180 185 190

Gln Phe Arg Leu Tyr Gly Lys Asp Tyr Asn Val Tyr Thr His Ser Phe
195 200 205

Leu Cys Tyr Gly Lys Asp Gln Ala Leu Trp Gln Lys Leu Ala Lys Asp
210 215 220

Ile Gln Val Ala Ser Asn Glu Ile Leu Arg Asp Pro Cys Phe His Pro
225 230 235 240

Gly Tyr Lys Lys Val Val Asn Val Ser Asp Leu Tyr Lys Thr Pro Cys
245 250 255

Thr Lys Arg Phe Glu Met Thr Leu Pro Phe Gln Gln Phe Glu Ile Gln
260 265 270

Gly Ile Gly Asn Tyr Gln Gln Cys His Gln Ser Ile Leu Glu Leu Phe
275 280 285

Asn Thr Ser Tyr Cys Pro Tyr Ser Gln Cys Ala Phe Asn Gly Ile Phe
290 295 300

Leu Pro Pro Leu Gln Gly Asp Phe Gly Ala Phe Ser Ala Phe Tyr Phe
305 310 315 320

Val Met Lys Phe Leu Asn Leu Thr Ser Glu Lys Val Ser Gln Glu Lys
325 330 335

Val Thr Glu Met Met Lys Lys Phe Cys Ala Gln Pro Trp Glu Glu Ile
340 345 350

Lys Thr Ser Tyr Ala Gly Val Lys Glu Lys Tyr Leu Ser Glu Tyr Cys
355 360 365

Phe Ser Gly Thr Tyr Ile Leu Ser Leu Leu Leu Gln Gly Tyr His Phe
370 375 380

Thr Ala Asp Ser Trp Glu His Ile His Phe Ile Gly Lys Ile Gln Gly
385 390 395 400

Ser Asp Ala Gly Trp Thr Leu Gly Tyr Met Leu Asn Leu Thr Asn Met
405 410 415

<210> 108
<211> 1248
<212> DNA
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成多核苷酸"

<400> 108
aacgtgaagt acggcatcgt gctggatgcc ggcagcagcc acaccagcct gtacatctac 60

aagtggcctg ccgagaaaga aaacgatacc ggtgtcgtgc accaggtgga agaggccaga 120

gtgaagggcc ctggcatcag caagttcgtg cagaaagtga acgagatcgg catctacctg 180

accgacgcca tggaacgggc cagagaagtg atccccagaa gccagcacca ggaaaccccc 240

gtgtacctgg gagccacagc cggcatgaga ctgctgcgga tggaaagcga ggaactggcc 300

gacagagtgc tggacgtggt ggaaagaagc ctgagcaact acccattcga ttttcaaggg 360

gccagaatca tcaccggcca ggaagagggc gcttacggct ggatcaccat caactacctg 420

ctgggcaagt tcagccagaa aacccggtgg ttcagcatcg tgccctacga gacaaacaat 480

caggaaacct tcggagcccc ggacctgggc ggagcctcta cccaagtgac cttcgtgccc 540

cagaatcaga ccatcgagag ccccgacaac gccctgcagt tccggctgta cggcaaggac 600

tacaatgtgt acacccacag ctttctgtgc tacggaaagg accaggccct gtggcagaag 660

ctggccaagg acatccaggt ggccagcaac gagatcctgc gggacccttg cttccacccc 720

ggctacaaga aagtcgtgaa cgtgtccgac ctgtacaaga ccccctgcac caagagattc 780

gagatgaccc tgcccttcca gcagttcgag atccagggca tcggcaacta ccagcagtgc 840

caccagagca tcctggaact gttcaacacc agctactgcc cctacagcca gtgcgccttc 900

aacggcatct tcctgccacc tctgcagggg gacttcggcg ctttcagcgc cttctacttc 960

gtgatgaagt tcctgaacct gaccagcgag aaggtgtccc aggaaaaagt gacagagatg 1020

atgaagaagt tctgcgccca gccctgggag gaaatcaaga cctcctacgc tggcgtgaaa 1080

gagaagtacc tgagcgagta ctgcttcagc ggtacctaca tcctgagcct gctgctgcag 1140

ggctaccact tcaccgccga tagctgggag cacatccact tcatcggcaa gattcagggc 1200

agcgacgccg gctggacact gggctacatg ctgaatctga ccaacatg 1248

<210> 109
<211> 416
<212> PRT
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成多肽"

<400> 109

```
Asn Val Lys Tyr Gly Ile Val Leu Asp Ala Gly Ser Ser His Thr Ser
1               5                  10                  15

Leu Tyr Ile Tyr Lys Trp Pro Ala Glu Lys Glu Asn Asp Thr Gly Val
            20                  25                  30

Val His Gln Val Glu Glu Cys Arg Val Lys Gly Pro Gly Ile Ser Lys
        35                  40                  45

Phe Val Gln Lys Val Asn Glu Ile Gly Ile Tyr Leu Thr Asp Cys Met
    50                  55                  60

Glu Arg Ala Arg Glu Val Ile Pro Arg Ser Gln His Gln Glu Thr Pro
65                  70                  75                  80

Val Tyr Leu Gly Ala Thr Ala Gly Met Arg Leu Leu Arg Met Glu Ser
                85                  90                  95

Glu Glu Leu Ala Asp Arg Val Leu Asp Val Val Glu Arg Ser Leu Ser
            100                 105                 110

Asn Tyr Pro Phe Asp Phe Gln Gly Ala Arg Ile Ile Thr Gly Gln Glu
        115                 120                 125

Glu Gly Ala Tyr Gly Trp Ile Thr Ile Asn Tyr Leu Leu Gly Lys Phe
    130                 135                 140

Ser Gln Lys Thr Arg Trp Phe Ser Ile Val Pro Tyr Glu Thr Asn Asn
145                 150                 155                 160

Gln Glu Thr Phe Gly Ala Leu Asp Leu Gly Gly Ala Ser Thr Gln Val
                165                 170                 175

Thr Phe Val Pro Gln Asn Gln Thr Ile Glu Ser Pro Asp Asn Ala Leu
            180                 185                 190

Gln Phe Arg Leu Tyr Gly Lys Asp Tyr Asn Val Tyr Thr His Ser Phe
        195                 200                 205
```

Leu Cys Tyr Gly Lys Asp Gln Ala Leu Trp Gln Lys Leu Ala Lys Asp
210 215 220

Ile Gln Val Ala Ser Asn Glu Ile Leu Arg Asp Pro Ala Phe His Pro
225 230 235 240

Gly Tyr Lys Lys Val Val Asn Val Ser Asp Leu Tyr Lys Thr Pro Cys
245 250 255

Thr Lys Arg Phe Glu Met Thr Leu Pro Phe Gln Gln Phe Glu Ile Gln
260 265 270

Gly Ile Gly Asn Tyr Gln Gln Ala His Gln Ser Ile Leu Glu Leu Phe
275 280 285

Asn Thr Ser Tyr Cys Pro Tyr Ser Gln Cys Ala Phe Asn Gly Ile Phe
290 295 300

Leu Pro Pro Leu Gln Gly Asp Phe Gly Ala Phe Ser Ala Phe Tyr Phe
305 310 315 320

Val Met Lys Phe Leu Asn Leu Thr Ser Glu Lys Val Ser Gln Glu Lys
325 330 335

Val Thr Glu Met Met Lys Lys Phe Cys Ala Gln Pro Trp Glu Glu Ile
340 345 350

Lys Thr Ser Tyr Ala Gly Val Lys Glu Lys Tyr Leu Ser Glu Tyr Cys
355 360 365

Phe Ser Gly Thr Tyr Ile Leu Ser Leu Leu Leu Gln Gly Tyr His Phe
370 375 380

Thr Ala Asp Ser Trp Glu His Ile His Phe Ile Gly Lys Ile Gln Gly
385 390 395 400

Ser Asp Ala Gly Trp Thr Leu Gly Tyr Met Leu Asn Leu Thr Asn Met
405 410 415

<210> 110
<211> 1248
<212> DNA
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成多核苷酸"

<400> 110
aacgtgaagt acggcatcgt gctggatgcc ggcagcagcc acaccagcct gtacatctac 60

aagtggcctg ccgagaaaga aaacgatacc ggtgtcgtgc accaggtgga agagtgcaga 120

gtgaagggcc ctggcatcag caagttcgtg cagaaagtga acgagatcgg catctacctg 180

accgactgca tggaacgggc cagagaagtg atccccagaa gccagcacca ggaaaccccc 240

gtgtacctgg gagccacagc cggcatgaga ctgctgcgga tggaaagcga ggaactggcc 300

gacagagtgc tggacgtggt ggaaagaagc ctgagcaact acccattcga ttttcaaggg 360

gccagaatca tcaccggcca ggaagagggc gcttacggct ggatcaccat caactacctg 420

ctgggcaagt tcagccagaa aacccggtgg ttcagcatcg tgccctacga gacaaacaat 480

caggaaacct tcggagcccc ggacctgggc ggagcctcta cccaagtgac cttcgtgccc 540

cagaatcaga ccatcgagag ccccgacaac gccctgcagt tccggctgta cggcaaggac 600

tacaatgtgt acacccacag ctttctgtgc tacggaaagg accaggccct gtggcagaag 660

ctggccaagg acatccaggt ggccagcaac gagatcctgc gggaccctgc cttccacccc 720

ggctacaaga aagtcgtgaa cgtgtccgac ctgtacaaga ccccctgcac caagagattc 780

gagatgaccc tgcccttcca gcagttcgag atccagggca tcggcaacta ccagcaggcc 840

caccagagca tcctggaact gttcaacacc agctactgcc cctacagcca gtgcgccttc 900

aacggcatct tcctgccacc tctgcagggg gacttcggcg ctttcagcgc cttctacttc 960

gtgatgaagt tcctgaacct gaccagcgag aaggtgtccc aggaaaaagt gacagagatg 1020

atgaagaagt tctgcgccca gccctgggag gaaatcaaga cctcctacgc tggcgtgaaa 1080

gagaagtacc tgagcgagta ctgcttcagc ggtacctaca tcctgagcct gctgctgcag 1140

ggctaccact tcaccgccga tagctgggag cacatccact tcatcggcaa gattcagggc 1200

agcgacgccg gctggacact gggctacatg ctgaatctga ccaacatg 1248

<210> 111
<211> 416
<212> PRT
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述: 合成多肽"

<400> 111
Asn Val Lys Tyr Gly Ile Val Leu Asp Ala Gly Ser Ser His Thr Ser
1 5 10 15

Leu Tyr Ile Tyr Lys Trp Pro Ala Glu Lys Glu Asn Asp Thr Gly Val
20 25 30

Val His Gln Val Glu Glu Cys Arg Val Lys Gly Pro Gly Ile Ser Lys
35 40 45

Phe Val Gln Lys Val Asn Glu Ile Gly Ile Tyr Leu Thr Asp Cys Met
50 55 60

Glu Arg Ala Arg Glu Val Ile Pro Arg Ser Gln His Gln Glu Thr Pro
65 70 75 80

Val Tyr Leu Gly Ala Thr Ala Gly Met Arg Leu Leu Arg Met Glu Ser
85 90 95

Glu Glu Leu Ala Asp Arg Val Leu Asp Val Val Glu Arg Ser Leu Ser
100 105 110

Asn Tyr Pro Phe Asp Phe Gln Gly Ala Arg Ile Ile Thr Gly Gln Glu
115 120 125

Glu Gly Ala Tyr Gly Trp Ile Thr Ile Asn Tyr Leu Leu Gly Lys Phe

130 135 140

Ser Gln Lys Thr Arg Trp Phe Ser Ile Val Pro Tyr Glu Thr Asn Asn
145 150 155 160

Gln Glu Thr Phe Gly Ala Leu Asp Leu Gly Gly Ala Ser Thr Gln Val
165 170 175

Thr Phe Val Pro Gln Asn Gln Thr Ile Glu Ser Pro Asp Asn Ala Leu
180 185 190

Gln Phe Arg Leu Tyr Gly Lys Asp Tyr Asn Val Tyr Thr His Ser Phe
195 200 205

Leu Ala Tyr Gly Lys Asp Gln Ala Leu Trp Gln Lys Leu Ala Lys Asp
210 215 220

Ile Gln Val Ala Ser Asn Glu Ile Leu Arg Asp Pro Cys Phe His Pro
225 230 235 240

Gly Tyr Lys Lys Val Val Asn Val Ser Asp Leu Tyr Lys Thr Pro Ala
245 250 255

Thr Lys Arg Phe Glu Met Thr Leu Pro Phe Gln Gln Phe Glu Ile Gln
260 265 270

Gly Ile Gly Asn Tyr Gln Gln Cys His Gln Ser Ile Leu Glu Leu Phe
275 280 285

Asn Thr Ser Tyr Cys Pro Tyr Ser Gln Cys Ala Phe Asn Gly Ile Phe
290 295 300

Leu Pro Pro Leu Gln Gly Asp Phe Gly Ala Phe Ser Ala Phe Tyr Phe
305 310 315 320

Val Met Lys Phe Leu Asn Leu Thr Ser Glu Lys Val Ser Gln Glu Lys
325 330 335

Val Thr Glu Met Met Lys Lys Phe Cys Ala Gln Pro Trp Glu Glu Ile
340 345 350

Lys Thr Ser Tyr Ala Gly Val Lys Glu Lys Tyr Leu Ser Glu Tyr Cys
355 360 365

Phe Ser Gly Thr Tyr Ile Leu Ser Leu Leu Leu Gln Gly Tyr His Phe
370 375 380

Thr Ala Asp Ser Trp Glu His Ile His Phe Ile Gly Lys Ile Gln Gly
385 390 395 400

Ser Asp Ala Gly Trp Thr Leu Gly Tyr Met Leu Asn Leu Thr Asn Met
405 410 415

<210> 112
<211> 1248
<212> DNA
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成多核苷酸"

<400> 112
aacgtgaagt acggcatcgt gctggatgcc ggcagcagcc acaccagcct gtacatctac 60

aagtggcctg ccgagaaaga aaacgatacc ggtgtcgtgc accaggtgga agagtgcaga 120

gtgaagggcc ctggcatcag caagttcgtg cagaaagtga acgagatcgg catctacctg 180

accgactgca tggaacgggc cagagaagtg atccccagaa gccagcacca ggaaaccccc 240

gtgtacctgg gagccacagc cggcatgaga ctgctgcgga tggaaagcga ggaactggcc 300

gacagagtgc tggacgtggt ggaaagaagc ctgagcaact acccattcga ttttcaaggg 360

gccagaatca tcaccggcca ggaagagggc gcttacggct ggatcaccat caactacctg 420

ctgggcaagt tcagccagaa aacccggtgg ttcagcatcg tgccctacga gacaaacaat 480

caggaaacct tcggagccct ggacctgggc ggagcctcta cccaagtgac cttcgtgccc 540

cagaatcaga ccatcgagag ccccgacaac gccctgcagt tccggctgta cggcaaggac 600

tacaatgtgt acacccacag ctttctggcc tacggaaagg accaggccct gtggcagaag 660

ctggccaagg acatccaggt ggccagcaac gagatcctgc gggacccttg cttccacccc 720

ggctacaaga aagtcgtgaa cgtgtccgac ctgtacaaga cccccgccac caagagattc 780

gagatgaccc tgcccttcca gcagttcgag atccagggca tcggcaacta ccagcagtgc 840

caccagagca tcctggaact gttcaacacc agctactgcc cctacagcca gtgcgccttc 900

aacggcatct tcctgccacc tctgcagggg gacttcggcg ctttcagcgc cttctacttc 960

gtgatgaagt tcctgaacct gaccagcgag aaggtgtccc aggaaaaagt gacagagatg 1020

atgaagaagt tctgcgccca gccctgggag gaaatcaaga cctcctacgc tggcgtgaaa 1080

gagaagtacc tgagcgagta ctgcttcagc ggtacctaca tcctgagcct gctgctgcag 1140

ggctaccact tcaccgccga tagctgggag cacatccact tcatcggcaa gattcagggc 1200

agcgacgccg gctggacact gggctacatg ctgaatctga ccaacatg 1248

<210> 113
<211> 416
<212> PRT
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述: 合成多肽"

<400> 113
Asn Val Lys Tyr Gly Ile Val Leu Asp Ala Gly Ser Ser His Thr Ser
1 5 10 15

Leu Tyr Ile Tyr Lys Trp Pro Ala Glu Lys Glu Asn Asp Thr Gly Val
20 25 30

Val His Gln Val Glu Glu Cys Arg Val Lys Gly Pro Gly Ile Ser Lys
35 40 45

Phe Val Gln Lys Val Asn Glu Ile Gly Ile Tyr Leu Thr Asp Cys Met
50 55 60

Glu Arg Ala Arg Glu Val Ile Pro Arg Ser Gln His Gln Glu Thr Pro
65 70 75 80

Val Tyr Leu Gly Ala Thr Ala Gly Met Arg Leu Leu Arg Met Glu Ser
85 90 95

Glu Glu Leu Ala Asp Arg Val Leu Asp Val Val Glu Arg Ser Leu Ser
100 105 110

Asn Tyr Pro Phe Asp Phe Gln Gly Ala Arg Ile Ile Thr Gly Gln Glu
115 120 125

Glu Gly Ala Tyr Gly Trp Ile Thr Ile Asn Tyr Leu Leu Gly Lys Phe
130 135 140

Ser Gln Lys Thr Arg Trp Phe Ser Ile Val Pro Tyr Glu Thr Asn Asn
145 150 155 160

Gln Glu Thr Phe Gly Ala Leu Asp Leu Gly Gly Ala Ser Thr Gln Val
165 170 175

Thr Phe Val Pro Gln Asn Gln Thr Ile Glu Ser Pro Asp Asn Ala Leu
180 185 190

Gln Phe Arg Leu Tyr Gly Lys Asp Tyr Asn Val Tyr Thr His Ser Phe
195 200 205

Leu Cys Tyr Gly Lys Asp Gln Ala Leu Trp Gln Lys Leu Ala Lys Asp
210 215 220

Ile Gln Val Ala Ser Asn Glu Ile Leu Arg Asp Pro Cys Phe His Pro
225 230 235 240

Gly Tyr Lys Lys Val Val Asn Val Ser Asp Leu Tyr Lys Thr Pro Cys
245 250 255

Thr Lys Arg Phe Glu Met Thr Leu Pro Phe Gln Gln Phe Glu Ile Gln
260 265 270

Gly Ile Gly Asn Tyr Gln Gln Cys His Gln Ser Ile Leu Glu Leu Phe
275 280 285

Asn Thr Ser Tyr Ala Pro Tyr Ser Gln Ala Ala Phe Asn Gly Ile Phe
290 295 300

Leu Pro Pro Leu Gln Gly Asp Phe Gly Ala Phe Ser Ala Phe Tyr Phe
305 310 315 320

Val Met Lys Phe Leu Asn Leu Thr Ser Glu Lys Val Ser Gln Glu Lys
325 330 335

Val Thr Glu Met Met Lys Lys Phe Cys Ala Gln Pro Trp Glu Glu Ile
340 345 350

Lys Thr Ser Tyr Ala Gly Val Lys Glu Lys Tyr Leu Ser Glu Tyr Cys
355 360 365

Phe Ser Gly Thr Tyr Ile Leu Ser Leu Leu Leu Gln Gly Tyr His Phe
370 375 380

Thr Ala Asp Ser Trp Glu His Ile His Phe Ile Gly Lys Ile Gln Gly
385 390 395 400

Ser Asp Ala Gly Trp Thr Leu Gly Tyr Met Leu Asn Leu Thr Asn Met
405 410 415

<210> 114
<211> 1248
<212> DNA
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成多核苷酸"

<400> 114
aacgtgaagt acggcatcgt gctggatgcc ggcagcagcc acaccagcct gtacatctac 60

aagtggcctg ccgagaaaga aaacgatacc ggtgtcgtgc accaggtgga agagtgcaga 120

gtgaagggcc ctggcatcag caagttcgtg cagaaagtga acgagatcgg catctacctg 180

accgactgca tggaacgggc cagagaagtg atccccagaa gccagcacca ggaaaccccc 240

gtgtacctgg gagccacagc cggcatgaga ctgctgcgga tggaaagcga ggaactggcc 300

gacagagtgc tggacgtggt ggaaagaagc ctgagcaact acccattcga ttttcaaggg 360

gccagaatca tcaccggcca ggaagagggc gcttacggct ggatcaccat caactacctg 420

ctgggcaagt tcagccagaa aacccggtgg ttcagcatcg tgccctacga gacaaacaat 480

caggaaacct tcggagcccc ggacctgggc ggagcctcta cccaagtgac cttcgtgccc 540

cagaatcaga ccatcgagag ccccgacaac gccctgcagt tccggctgta cggcaaggac 600

tacaatgtgt acacccacag ctttctgtgc tacggaaagg accaggcccc gtggcagaag 660

ctggccaagg acatccaggt ggccagcaac gagatcctgc gggacccttg cttccacccc 720

ggctacaaga aagtcgtgaa cgtgtccgac ctgtacaaga ccccctgcac caagagattc 780

gagatgaccc tgcccttcca gcagttcgag atccagggca tcggcaacta ccagcagtgc 840

caccagagca tcctggaact gttcaacacc agctacgccc cctacagcca ggccgccttc 900

aacggcatct tcctgccacc tctgcagggg gacttcggcg ctttcagcgc cttctacttc 960

gtgatgaagt tcctgaacct gaccagcgag aaggtgtccc aggaaaaagt gacagagatg 1020

atgaagaagt tctgcgccca gccctgggag gaaatcaaga cctcctacgc tggcgtgaaa 1080

gagaagtacc tgagcgagta ctgcttcagc ggtacctaca tcctgagcct gctgctgcag 1140

ggctaccact tcaccgccga tagctgggag cacatccact tcatcggcaa gattcagggc 1200

agcgacgccg gctggacact gggctacatg ctgaatctga ccaacatg 1248

<210> 115
<211> 416
<212> PRT
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成多肽"

<400> 115

Asn Val Lys Tyr Gly Ile Val Leu Asp Ala Gly Ser Ser His Thr Ser
1 5 10 15

Leu Tyr Ile Tyr Lys Trp Pro Ala Glu Lys Glu Asn Asp Thr Gly Val
20 25 30

Val His Gln Val Glu Glu Cys Arg Val Lys Gly Pro Gly Ile Ser Lys
35 40 45

Phe Val Gln Lys Val Asn Glu Ile Gly Ile Tyr Leu Thr Asp Cys Met
50 55 60

Glu Arg Ala Arg Glu Val Ile Pro Arg Ser Gln His Gln Glu Thr Pro
65 70 75 80

Val Tyr Leu Gly Ala Thr Ala Gly Met Arg Leu Leu Arg Met Glu Ser
85 90 95

Glu Glu Leu Ala Asp Arg Val Leu Asp Val Val Glu Arg Ser Leu Ser
100 105 110

Asn Tyr Pro Phe Asp Phe Gln Gly Ala Arg Ile Ile Thr Gly Gln Glu
115 120 125

Glu Gly Ala Tyr Gly Trp Ile Thr Ile Asn Tyr Leu Leu Gly Lys Phe
130 135 140

Ser Gln Lys Thr Arg Trp Phe Ser Ile Val Pro Tyr Glu Thr Asn Asn
145 150 155 160

Gln Glu Thr Phe Gly Ala Leu Asp Leu Gly Gly Ala Ser Thr Gln Val
165 170 175

Thr Phe Val Pro Gln Asn Gln Thr Ile Glu Ser Pro Asp Asn Ala Leu
180 185 190

Gln Phe Arg Leu Tyr Gly Lys Asp Tyr Asn Val Tyr Thr His Ser Phe

195 200 205

Leu Cys Tyr Gly Lys Asp Gln Ala Leu Trp Gln Lys Leu Ala Lys Asp
210 215 220

Ile Gln Val Ala Ser Asn Glu Ile Leu Arg Asp Pro Cys Phe His Pro
225 230 235 240

Gly Tyr Lys Lys Val Val Asn Val Ser Asp Leu Tyr Lys Thr Pro Cys
245 250 255

Thr Lys Arg Phe Glu Met Thr Leu Pro Phe Gln Gln Phe Glu Ile Gln
260 265 270

Gly Ile Gly Asn Tyr Gln Gln Cys His Gln Ser Ile Leu Glu Leu Phe
275 280 285

Asn Thr Ser Tyr Cys Pro Tyr Ser Gln Cys Ala Phe Asn Gly Ile Phe
290 295 300

Leu Pro Pro Leu Gln Gly Asp Phe Gly Ala Phe Ser Ala Phe Tyr Phe
305 310 315 320

Val Met Lys Phe Leu Asn Leu Thr Ser Glu Lys Val Ser Gln Glu Lys
325 330 335

Val Thr Glu Met Met Lys Lys Phe Ala Ala Gln Pro Trp Glu Glu Ile
340 345 350

Lys Thr Ser Tyr Ala Gly Val Lys Glu Lys Tyr Leu Ser Glu Tyr Ala
355 360 365

Phe Ser Gly Thr Tyr Ile Leu Ser Leu Leu Leu Gln Gly Tyr His Phe
370 375 380

Thr Ala Asp Ser Trp Glu His Ile His Phe Ile Gly Lys Ile Gln Gly
385 390 395 400

Ser Asp Ala Gly Trp Thr Leu Gly Tyr Met Leu Asn Leu Thr Asn Met
405 410 415

<210> 116
<211> 1248
<212> DNA
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成多核苷酸"

<400> 116
aacgtgaagt acggcatcgt gctggatgcc ggcagcagcc acaccagcct gtacatctac 60

aagtggcctg ccgagaaaga aaacgatacc ggtgtcgtgc accaggtgga agagtgcaga 120

gtgaagggcc ctggcatcag caagttcgtg cagaaagtga acgagatcgg catctacctg 180

accgactgca tggaacgggc cagagaagtg atccccagaa gccagcacca ggaaaccccc 240

gtgtacctgg gagccacagc cggcatgaga ctgctgcgga tggaaagcga ggaactggcc 300

gacagagtgc tggacgtggt ggaaagaagc ctgagcaact acccattcga ttttcaaggg 360

gccagaatca tcaccggcca ggaagagggc gcttacggct ggatcaccat caactacctg 420

ctgggcaagt tcagccagaa aacccggtgg ttcagcatcg tgccctacga gacaaacaat 480

caggaaacct tcggagcccc ggacctgggc ggagcctcta cccaagtgac cttcgtgccc 540

cagaatcaga ccatcgagag ccccgacaac gccctgcagt tccggctgta cggcaaggac 600

tacaatgtgt acacccacag ctttctgtgc tacggaaagg accaggccct gtggcagaag 660

ctggccaagg acatccaggt ggccagcaac gagatcctgc gggacccttg cttccacccc 720

ggctacaaga aagtcgtgaa cgtgtccgac ctgtacaaga ccccctgcac caagagattc 780

gagatgaccc tgcccttcca gcagttcgag atccagggca tcggcaacta ccagcagtgc 840

caccagagca tcctggaact gttcaacacc agctactgcc cctacagcca gtgcgccttc 900

aacggcatct tcctgccacc tctgcagggg gacttcggcg ctttcagcgc cttctacttc 960

gtgatgaagt tcctgaacct gaccagcgag aaggtgtccc aggaaaaagt gacagagatg 1020

atgaagaagt tcgccgccca gccctgggag gaaatcaaga cctcctacgc tggcgtgaaa 1080

gagaagtacc tgagcgagta cgccttcagc ggtacctaca tcctgagcct gctgctgcag 1140

ggctaccact tcaccgccga tagctgggag cacatccact tcatcggcaa gattcagggc 1200

agcgacgccg gctggacact gggctacatg ctgaatctga ccaacatg 1248

<210> 117
<211> 404
<212> PRT
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述: 合成多肽"

<400> 117
Asn Val Lys Tyr Gly Ile Val Leu Asp Ala Gly Ser Ser His Thr Ser
1 5 10 15

Leu Tyr Ile Tyr Lys Trp Pro Ala Glu Lys Glu Asn Asp Thr Gly Val
20 25 30

Val His Gln Val Glu Glu Ala Arg Val Lys Gly Pro Gly Ile Ser Lys
35 40 45

Phe Val Gln Lys Val Asn Glu Ile Gly Ile Tyr Leu Thr Asp Ala Met
50 55 60

Glu Arg Ala Arg Glu Val Ile Pro Arg Ser Gln His Gln Glu Thr Pro
65 70 75 80

Val Tyr Leu Gly Ala Thr Ala Gly Met Arg Leu Leu Arg Met Glu Ser
85 90 95

Glu Glu Leu Ala Asp Arg Val Leu Asp Val Val Glu Arg Ser Leu Ser
100 105 110

Asn Tyr Pro Phe Asp Phe Gln Gly Ala Arg Ile Ile Thr Gly Gln Glu
115 120 125

Glu Gly Ala Tyr Gly Trp Ile Thr Ile Asn Tyr Leu Leu Gly Lys Phe
130 135 140

Ser Gln Lys Asn Gln Glu Thr Phe Gly Ala Leu Asp Leu Gly Gly Ala
145 150 155 160

Ser Thr Gln Val Thr Phe Val Pro Gln Asn Gln Thr Ile Glu Ser Pro
165 170 175

Asp Asn Ala Leu Gln Phe Arg Leu Tyr Gly Lys Asp Tyr Asn Val Tyr
180 185 190

Thr His Ser Phe Leu Cys Tyr Gly Lys Asp Gln Ala Leu Trp Gln Lys
195 200 205

Leu Ala Lys Asp Ile Gln Val Ala Ser Asn Glu Ile Leu Arg Asp Pro
210 215 220

Cys Phe His Pro Gly Tyr Lys Lys Val Val Asn Val Ser Asp Leu Tyr
225 230 235 240

Lys Thr Pro Cys Thr Lys Arg Phe Glu Met Thr Leu Pro Phe Gln Gln
245 250 255

Phe Glu Ile Gln Gly Ile Gly Asn Tyr Gln Gln Cys His Gln Ser Ile
260 265 270

Leu Glu Leu Phe Asn Thr Ser Tyr Cys Pro Tyr Ser Gln Cys Ala Phe
275 280 285

Asn Gly Ile Phe Leu Pro Pro Leu Gln Gly Asp Phe Gly Ala Phe Ser
290 295 300

Ala Phe Tyr Phe Val Met Lys Phe Leu Asn Leu Thr Ser Glu Lys Val
305 310 315 320

Ser Gln Glu Lys Val Thr Glu Met Met Lys Lys Phe Cys Ala Gln Pro
325 330 335

Trp Glu Glu Ile Lys Thr Ser Tyr Ala Gly Val Lys Glu Lys Tyr Leu
340 345 350

Ser Glu Tyr Cys Phe Ser Gly Thr Tyr Ile Leu Ser Leu Leu Leu Gln
355 360 365

Gly Tyr His Phe Thr Ala Asp Ser Trp Glu His Ile His Phe Ile Gly
370 375 380

Lys Ile Gln Gly Ser Asp Ala Gly Trp Thr Leu Gly Tyr Met Leu Asn
385 390 395 400

Leu Thr Asn Met

<210> 118
<211> 1212
<212> DNA
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述: 合成多核苷酸"

<400> 118
aacgtgaagt acggcatcgt gctggatgcc ggcagcagcc acaccagcct gtacatctac 60

aagtggcctg ccgagaaaga aaacgatacc ggtgtcgtgc accaggtgga agaggccaga 120

gtgaagggcc ctggcatcag caagttcgtg cagaaagtga acgagatcgg catctacctg 180

accgacgcca tggaacgggc cagagaagtg atccccagaa gccagcacca ggaaaccccc 240

gtgtacctgg gagccacagc cggcatgaga ctgctgcgga tggaaagcga ggaactggcc 300

gacagagtgc tggacgtggt ggaaagaagc ctgagcaact acccattcga ttttcaaggg 360

gccagaatca tcaccggcca ggaagagggc gcttacggct ggatcaccat caactacctg 420

ctgggcaagt tcagccagaa aaatcaggaa accttcggag ccctggacct gggcggagcc 480

tctacccaag tgaccttcgt gccccagaat cagaccatcg agagccccga caacgccctg 540

cagttccggc tgtacggcaa ggactacaat gtgtacaccc acagctttct gtgctacgga 600

aaggaccagg ccctgtggca gaagctggcc aaggacatcc aggtggccag caacgagatc 660

ctgcgggacc cttgcttcca ccccggctac aagaaagtcg tgaacgtgtc cgacctgtac 720

aagacccccct gcaccaagag attcgagatg accctgccct tccagcagtt cgagatccag 780

ggcatcggca actaccagca gtgccaccag agcatcctgg aactgttcaa caccagctac 840

tgcccctaca gccagtgcgc cttcaacggc atcttcctgc cacctctgca gggggacttc 900

ggcgctttca gcgccttcta cttcgtgatg aagttcctga acctgaccag cgagaaggtg 960

tcccaggaaa aagtgacaga gatgatgaag aagttctgcg cccagccctg ggaggaaatc 1020

aagacctcct acgctggcgt gaaagagaag tacctgagcg agtactgctt cagcggtacc 1080

tacatcctga gcctgctgct gcagggctac cacttcaccg ccgatagctg ggagcacatc 1140

cacttcatcg gcaagattca gggcagcgac gccggctgga cactgggcta catgctgaat 1200

ctgaccaaca tg 1212

<210> 119
<211> 404
<212> PRT
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述: 合成多肽"

<400> 119
Asn Val Lys Tyr Gly Ile Val Leu Asp Ala Gly Ser Ser His Thr Ser
1 5 10 15

Leu Tyr Ile Tyr Lys Trp Pro Ala Glu Lys Glu Asn Asp Thr Gly Val
20 25 30

Val His Gln Val Glu Glu Cys Arg Val Lys Gly Pro Gly Ile Ser Lys
35 40 45

Phe Val Gln Lys Val Asn Glu Ile Gly Ile Tyr Leu Thr Asp Cys Met
50 55 60

Glu Arg Ala Arg Glu Val Ile Pro Arg Ser Gln His Gln Glu Thr Pro
65 70 75 80

Val Tyr Leu Gly Ala Thr Ala Gly Met Arg Leu Leu Arg Met Glu Ser
85 90 95

Glu Glu Leu Ala Asp Arg Val Leu Asp Val Val Glu Arg Ser Leu Ser
100 105 110

Asn Tyr Pro Phe Asp Phe Gln Gly Ala Arg Ile Ile Thr Gly Gln Glu
115 120 125

Glu Gly Ala Tyr Gly Trp Ile Thr Ile Asn Tyr Leu Leu Gly Lys Phe
130 135 140

Ser Gln Lys Asn Gln Glu Thr Phe Gly Ala Leu Asp Leu Gly Gly Ala
145 150 155 160

Ser Thr Gln Val Thr Phe Val Pro Gln Asn Gln Thr Ile Glu Ser Pro
165 170 175

Asp Asn Ala Leu Gln Phe Arg Leu Tyr Gly Lys Asp Tyr Asn Val Tyr
180 185 190

Thr His Ser Phe Leu Cys Tyr Gly Lys Asp Gln Ala Leu Trp Gln Lys
195 200 205

Leu Ala Lys Asp Ile Gln Val Ala Ser Asn Glu Ile Leu Arg Asp Pro
210 215 220

Ala Phe His Pro Gly Tyr Lys Lys Val Val Asn Val Ser Asp Leu Tyr
225 230 235 240

Lys Thr Pro Cys Thr Lys Arg Phe Glu Met Thr Leu Pro Phe Gln Gln
245 250 255

Phe Glu Ile Gln Gly Ile Gly Asn Tyr Gln Gln Ala His Gln Ser Ile

260 265 270

Leu Glu Leu Phe Asn Thr Ser Tyr Cys Pro Tyr Ser Gln Cys Ala Phe
275 280 285

Asn Gly Ile Phe Leu Pro Pro Leu Gln Gly Asp Phe Gly Ala Phe Ser
290 295 300

Ala Phe Tyr Phe Val Met Lys Phe Leu Asn Leu Thr Ser Glu Lys Val
305 310 315 320

Ser Gln Glu Lys Val Thr Glu Met Met Lys Lys Phe Cys Ala Gln Pro
325 330 335

Trp Glu Glu Ile Lys Thr Ser Tyr Ala Gly Val Lys Glu Lys Tyr Leu
340 345 350

Ser Glu Tyr Cys Phe Ser Gly Thr Tyr Ile Leu Ser Leu Leu Leu Gln
355 360 365

Gly Tyr His Phe Thr Ala Asp Ser Trp Glu His Ile His Phe Ile Gly
370 375 380

Lys Ile Gln Gly Ser Asp Ala Gly Trp Thr Leu Gly Tyr Met Leu Asn
385 390 395 400

Leu Thr Asn Met

<210> 120
<211> 1212
<212> DNA
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成多核苷酸"

<400> 120
aacgtgaagt acggcatcgt gctggatgcc ggcagcagcc acaccagcct gtacatctac 60

aagtggcctg ccgagaaaga aaacgatacc ggtgtcgtgc accaggtgga agagtgcaga 120

gtgaagggcc ctggcatcag caagttcgtg cagaaagtga acgagatcgg catctacctg 180

accgactgca tggaacgggc cagagaagtg atccccagaa gccagcacca ggaaaccccc 240

gtgtacctgg gagccacagc cggcatgaga ctgctgcgga tggaaagcga ggaactggcc 300

gacagagtgc tggacgtggt ggaaagaagc ctgagcaact acccattcga ttttcaaggg 360

gccagaatca tcaccggcca ggaagagggc gcttacggct ggatcaccat caactacctg 420

ctgggcaagt tcagccagaa aaatcaggaa accttcggag ccctggacct gggcggagcc 480

tctacccaag tgaccttcgt gccccagaat cagaccatcg agagccccga caacgccctg 540

cagttccggc tgtacggcaa ggactacaat gtgtacaccc acagctttct gtgctacgga 600

aaggaccagg ccctgtggca gaagctggcc aaggacatcc aggtggccag caacgagatc 660

ctgcgggacc ctgccttcca ccccggctac aagaaagtcg tgaacgtgtc cgacctgtac 720

aagacccccc gcaccaagag attcgagatg accctgccct tccagcagtt cgagatccag 780

ggcatcggca actaccagca ggcccaccag agcatcctgg aactgttcaa caccagctac 840

tgcccctaca gccagtgcgc cttcaacggc atcttcctgc cacctctgca gggggacttc 900

ggcgctttca gcgccttcta cttcgtgatg aagttcctga acctgaccag cgagaaggtg 960

tcccaggaaa aagtgacaga gatgatgaag aagttctgcg cccagccctg ggaggaaatc 1020

aagacctcct acgctggcgt gaaagagaag tacctgagcg agtactgctt cagcggtacc 1080

tacatcctga gcctgctgct gcagggctac cacttcaccg ccgatagctg ggagcacatc 1140

cacttcatcg gcaagattca gggcagcgac gccggctgga cactgggcta catgctgaat 1200

ctgaccaaca tg 1212

<210> 121
<211> 404
<212> PRT
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成多肽"

<400> 121

```
Asn Val Lys Tyr Gly Ile Val Leu Asp Ala Gly Ser Ser His Thr Ser
1               5                  10                  15

Leu Tyr Ile Tyr Lys Trp Pro Ala Glu Lys Glu Asn Asp Thr Gly Val
            20                  25                  30

Val His Gln Val Glu Glu Cys Arg Val Lys Gly Pro Gly Ile Ser Lys
        35                  40                  45

Phe Val Gln Lys Val Asn Glu Ile Gly Ile Tyr Leu Thr Asp Cys Met
    50                  55                  60

Glu Arg Ala Arg Glu Val Ile Pro Arg Ser Gln His Gln Glu Thr Pro
65                  70                  75                  80

Val Tyr Leu Gly Ala Thr Ala Gly Met Arg Leu Leu Arg Met Glu Ser
                85                  90                  95

Glu Glu Leu Ala Asp Arg Val Leu Asp Val Val Glu Arg Ser Leu Ser
            100                 105                 110

Asn Tyr Pro Phe Asp Phe Gln Gly Ala Arg Ile Ile Thr Gly Gln Glu
        115                 120                 125

Glu Gly Ala Tyr Gly Trp Ile Thr Ile Asn Tyr Leu Leu Gly Lys Phe
    130                 135                 140

Ser Gln Lys Asn Gln Glu Thr Phe Gly Ala Leu Asp Leu Gly Gly Ala
145                 150                 155                 160

Ser Thr Gln Val Thr Phe Val Pro Gln Asn Gln Thr Ile Glu Ser Pro
                165                 170                 175

Asp Asn Ala Leu Gln Phe Arg Leu Tyr Gly Lys Asp Tyr Asn Val Tyr
            180                 185                 190
```

Thr His Ser Phe Leu Ala Tyr Gly Lys Asp Gln Ala Leu Trp Gln Lys
195 200 205

Leu Ala Lys Asp Ile Gln Val Ala Ser Asn Glu Ile Leu Arg Asp Pro
210 215 220

Cys Phe His Pro Gly Tyr Lys Lys Val Val Asn Val Ser Asp Leu Tyr
225 230 235 240

Lys Thr Pro Ala Thr Lys Arg Phe Glu Met Thr Leu Pro Phe Gln Gln
245 250 255

Phe Glu Ile Gln Gly Ile Gly Asn Tyr Gln Gln Cys His Gln Ser Ile
260 265 270

Leu Glu Leu Phe Asn Thr Ser Tyr Cys Pro Tyr Ser Gln Cys Ala Phe
275 280 285

Asn Gly Ile Phe Leu Pro Pro Leu Gln Gly Asp Phe Gly Ala Phe Ser
290 295 300

Ala Phe Tyr Phe Val Met Lys Phe Leu Asn Leu Thr Ser Glu Lys Val
305 310 315 320

Ser Gln Glu Lys Val Thr Glu Met Met Lys Lys Phe Cys Ala Gln Pro
325 330 335

Trp Glu Glu Ile Lys Thr Ser Tyr Ala Gly Val Lys Glu Lys Tyr Leu
340 345 350

Ser Glu Tyr Cys Phe Ser Gly Thr Tyr Ile Leu Ser Leu Leu Leu Gln
355 360 365

Gly Tyr His Phe Thr Ala Asp Ser Trp Glu His Ile His Phe Ile Gly
370 375 380

Lys Ile Gln Gly Ser Asp Ala Gly Trp Thr Leu Gly Tyr Met Leu Asn
385 390 395 400

Leu Thr Asn Met

<210> 122
<211> 1212
<212> DNA
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成多核苷酸"

<400> 122
aacgtgaagt acggcatcgt gctggatgcc ggcagcagcc acaccagcct gtacatctac 60

aagtggcctg ccgagaaaga aaacgatacc ggtgtcgtgc accaggtgga agagtgcaga 120

gtgaagggcc ctggcatcag caagttcgtg cagaaagtga acgagatcgg catctacctg 180

accgactgca tggaacgggc cagagaagtg atccccagaa gccagcacca ggaaaccccc 240

gtgtacctgg gagccacagc cggcatgaga ctgctgcgga tggaaagcga ggaactggcc 300

gacagagtgc tggacgtggt ggaaagaagc ctgagcaact acccattcga ttttcaaggg 360

gccagaatca tcaccggcca ggaagagggc gcttacggct ggatcaccat caactacctg 420

ctgggcaagt tcagccagaa aaatcaggaa accttcggag ccctggacct gggcggagcc 480

tctacccaag tgaccttcgt gccccagaat cagaccatcg agagccccga caacgccctg 540

cagttccggc tgtacggcaa ggactacaat gtgtacaccc acagctttct ggcctacgga 600

aaggaccagg ccctgtggca gaagctggcc aaggacatcc aggtggccag caacgagatc 660

ctgcgggacc cttgcttcca ccccggctac aagaaagtcg tgaacgtgtc cgacctgtac 720

aagacccccg ccaccaagag attcgagatg accctgccct tccagcagtt cgagatccag 780

ggcatcggca actaccagca gtgccaccag agcatcctgg aactgttcaa caccagctac 840

tgcccctaca gccagtgcgc cttcaacggc atcttcctgc cacctctgca gggggacttc 900

ggcgctttca gcgccttcta cttcgtgatg aagttcctga acctgaccag cgagaaggtg 960

tcccaggaaa aagtgacaga gatgatgaag aagttctgcg cccagccctg ggaggaaatc 1020

aagacctcct acgctggcgt gaaagagaag tacctgagcg agtactgctt cagcggtacc 1080

tacatcctga gcctgctgct gcagggctac cacttcaccg ccgatagctg ggagcacatc 1140

cacttcatcg gcaagattca gggcagcgac gccggctgga cactgggcta catgctgaat 1200

ctgaccaaca tg 1212

<210> 123
<211> 404
<212> PRT
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成多肽"

<400> 123

Asn	Val	Lys	Tyr	Gly	Ile	Val	Leu	Asp	Ala	Gly	Ser	Ser	His	Thr	Ser
1				5					10					15	

Leu	Tyr	Ile	Tyr	Lys	Trp	Pro	Ala	Glu	Lys	Glu	Asn	Asp	Thr	Gly	Val
		20					25					30			

Val	His	Gln	Val	Glu	Glu	Cys	Arg	Val	Lys	Gly	Pro	Gly	Ile	Ser	Lys
	35					40					45				

Phe	Val	Gln	Lys	Val	Asn	Glu	Ile	Gly	Ile	Tyr	Leu	Thr	Asp	Cys	Met
	50					55					60				

Glu	Arg	Ala	Arg	Glu	Val	Ile	Pro	Arg	Ser	Gln	His	Gln	Glu	Thr	Pro
65				70					75					80	

Val	Tyr	Leu	Gly	Ala	Thr	Ala	Gly	Met	Arg	Leu	Leu	Arg	Met	Glu	Ser
				85					90					95	

Glu	Glu	Leu	Ala	Asp	Arg	Val	Leu	Asp	Val	Val	Glu	Arg	Ser	Leu	Ser
				100					105					110	

Asn	Tyr	Pro	Phe	Asp	Phe	Gln	Gly	Ala	Arg	Ile	Ile	Thr	Gly	Gln	Glu
			115					120					125		

Glu Gly Ala Tyr Gly Trp Ile Thr Ile Asn Tyr Leu Leu Gly Lys Phe
130 135 140

Ser Gln Lys Asn Gln Glu Thr Phe Gly Ala Leu Asp Leu Gly Gly Ala
145 150 155 160

Ser Thr Gln Val Thr Phe Val Pro Gln Asn Gln Thr Ile Glu Ser Pro
165 170 175

Asp Asn Ala Leu Gln Phe Arg Leu Tyr Gly Lys Asp Tyr Asn Val Tyr
180 185 190

Thr His Ser Phe Leu Cys Tyr Gly Lys Asp Gln Ala Leu Trp Gln Lys
195 200 205

Leu Ala Lys Asp Ile Gln Val Ala Ser Asn Glu Ile Leu Arg Asp Pro
210 215 220

Cys Phe His Pro Gly Tyr Lys Lys Val Val Asn Val Ser Asp Leu Tyr
225 230 235 240

Lys Thr Pro Cys Thr Lys Arg Phe Glu Met Thr Leu Pro Phe Gln Gln
245 250 255

Phe Glu Ile Gln Gly Ile Gly Asn Tyr Gln Gln Cys His Gln Ser Ile
260 265 270

Leu Glu Leu Phe Asn Thr Ser Tyr Ala Pro Tyr Ser Gln Ala Ala Phe
275 280 285

Asn Gly Ile Phe Leu Pro Pro Leu Gln Gly Asp Phe Gly Ala Phe Ser
290 295 300

Ala Phe Tyr Phe Val Met Lys Phe Leu Asn Leu Thr Ser Glu Lys Val
305 310 315 320

Ser Gln Glu Lys Val Thr Glu Met Met Lys Lys Phe Cys Ala Gln Pro

325 330 335

Trp Glu Glu Ile Lys Thr Ser Tyr Ala Gly Val Lys Glu Lys Tyr Leu
340 345 350

Ser Glu Tyr Cys Phe Ser Gly Thr Tyr Ile Leu Ser Leu Leu Leu Gln
355 360 365

Gly Tyr His Phe Thr Ala Asp Ser Trp Glu His Ile His Phe Ile Gly
370 375 380

Lys Ile Gln Gly Ser Asp Ala Gly Trp Thr Leu Gly Tyr Met Leu Asn
385 390 395 400

Leu Thr Asn Met

<210> 124
<211> 1212
<212> DNA
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成多核苷酸"

<400> 124
aacgtgaagt acggcatcgt gctggatgcc ggcagcagcc acaccagcct gtacatctac 60

aagtggcctg ccgagaaaga aaacgatacc ggtgtcgtgc accaggtgga agagtgcaga 120

gtgaagggcc ctggcatcag caagttcgtg cagaaagtga acgagatcgg catctacctg 180

accgactgca tggaacgggc cagagaagtg atccccagaa gccagcacca ggaaaccccc 240

gtgtacctgg gagccacagc cggcatgaga ctgctgcgga tggaaagcga ggaactggcc 300

gacagagtgc tggacgtggt ggaaagaagc ctgagcaact acccattcga ttttcaaggg 360

gccagaatca tcaccggcca ggaagagggc gcttacggct ggatcaccat caactacctg 420

ctgggcaagt tcagccagaa aaatcaggaa accttcggag ccctggacct gggcggagcc 480

tctacccaag tgaccttcgt gccccagaat cagaccatcg agagccccga caacgccctg 540

cagttccggc tgtacggcaa ggactacaat gtgtacaccc acagctttct gtgctacgga 600

aaggaccagg ccctgtggca gaagctggcc aaggacatcc aggtggccag caacgagatc 660

ctgcgggacc cttgcttcca ccccggctac aagaaagtcg tgaacgtgtc cgacctgtac 720

aagacccccct gcaccaagag attcgagatg accctgccct tccagcagtt cgagatccag 780

ggcatcggca actaccagca gtgccaccag agcatcctgg aactgttcaa caccagctac 840

gccccctaca gccaggccgc cttcaacggc atcttcctgc cacctctgca gggggacttc 900

ggcgctttca gcgccttcta cttcgtgatg aagttcctga acctgaccag cgagaaggtg 960

tcccaggaaa aagtgacaga gatgatgaag aagttctgcg cccagccctg ggaggaaatc 1020

aagacctcct acgctggcgt gaaagagaag tacctgagcg agtactgctt cagcggtacc 1080

tacatcctga gcctgctgct gcagggctac cacttcaccg ccgatagctg ggagcacatc 1140

cacttcatcg gcaagattca gggcagcgac gccggctgga cactgggcta catgctgaat 1200

ctgaccaaca tg 1212

<210> 125
<211> 404
<212> PRT
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述: 合成多肽"

<400> 125
Asn Val Lys Tyr Gly Ile Val Leu Asp Ala Gly Ser Ser His Thr Ser
1 5 10 15

Leu Tyr Ile Tyr Lys Trp Pro Ala Glu Lys Glu Asn Asp Thr Gly Val
20 25 30

Val His Gln Val Glu Glu Cys Arg Val Lys Gly Pro Gly Ile Ser Lys
35 40 45

Phe Val Gln Lys Val Asn Glu Ile Gly Ile Tyr Leu Thr Asp Cys Met
50 55 60

Glu Arg Ala Arg Glu Val Ile Pro Arg Ser Gln His Gln Glu Thr Pro
65 70 75 80

Val Tyr Leu Gly Ala Thr Ala Gly Met Arg Leu Leu Arg Met Glu Ser
85 90 95

Glu Glu Leu Ala Asp Arg Val Leu Asp Val Val Glu Arg Ser Leu Ser
100 105 110

Asn Tyr Pro Phe Asp Phe Gln Gly Ala Arg Ile Ile Thr Gly Gln Glu
115 120 125

Glu Gly Ala Tyr Gly Trp Ile Thr Ile Asn Tyr Leu Leu Gly Lys Phe
130 135 140

Ser Gln Lys Asn Gln Glu Thr Phe Gly Ala Leu Asp Leu Gly Gly Ala
145 150 155 160

Ser Thr Gln Val Thr Phe Val Pro Gln Asn Gln Thr Ile Glu Ser Pro
165 170 175

Asp Asn Ala Leu Gln Phe Arg Leu Tyr Gly Lys Asp Tyr Asn Val Tyr
180 185 190

Thr His Ser Phe Leu Cys Tyr Gly Lys Asp Gln Ala Leu Trp Gln Lys
195 200 205

Leu Ala Lys Asp Ile Gln Val Ala Ser Asn Glu Ile Leu Arg Asp Pro
210 215 220

Cys Phe His Pro Gly Tyr Lys Lys Val Val Asn Val Ser Asp Leu Tyr
225 230 235 240

Lys Thr Pro Cys Thr Lys Arg Phe Glu Met Thr Leu Pro Phe Gln Gln
245 250 255

Phe Glu Ile Gln Gly Ile Gly Asn Tyr Gln Gln Cys His Gln Ser Ile
260 265 270

Leu Glu Leu Phe Asn Thr Ser Tyr Cys Pro Tyr Ser Gln Cys Ala Phe
275 280 285

Asn Gly Ile Phe Leu Pro Pro Leu Gln Gly Asp Phe Gly Ala Phe Ser
290 295 300

Ala Phe Tyr Phe Val Met Lys Phe Leu Asn Leu Thr Ser Glu Lys Val
305 310 315 320

Ser Gln Glu Lys Val Thr Glu Met Met Lys Lys Phe Ala Ala Gln Pro
325 330 335

Trp Glu Glu Ile Lys Thr Ser Tyr Ala Gly Val Lys Glu Lys Tyr Leu
340 345 350

Ser Glu Tyr Ala Phe Ser Gly Thr Tyr Ile Leu Ser Leu Leu Leu Gln
355 360 365

Gly Tyr His Phe Thr Ala Asp Ser Trp Glu His Ile His Phe Ile Gly
370 375 380

Lys Ile Gln Gly Ser Asp Ala Gly Trp Thr Leu Gly Tyr Met Leu Asn
385 390 395 400

Leu Thr Asn Met

<210> 126
<211> 1212
<212> DNA
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成多核苷酸"

<400> 126

aacgtgaagt acggcatcgt gctggatgcc ggcagcagcc acaccagcct gtacatctac 60

aagtggcctg ccgagaaaga aaacgatacc ggtgtcgtgc accaggtgga agagtgcaga 120

gtgaagggcc ctggcatcag caagttcgtg cagaaagtga acgagatcgg catctacctg 180

accgactgca tggaacgggc cagagaagtg atccccagaa gccagcacca ggaaaccccc 240

gtgtacctgg gagccacagc cggcatgaga ctgctgcgga tggaaagcga ggaactggcc 300

gacagagtgc tggacgtggt ggaaagaagc ctgagcaact acccattcga ttttcaaggg 360

gccagaatca tcaccggcca ggaagagggc gcttacggct ggatcaccat caactacctg 420

ctgggcaagt tcagccagaa aaatcaggaa accttcggag ccctggacct gggcggagcc 480

tctacccaag tgaccttcgt gccccagaat cagaccatcg agagccccga caacgccctg 540

cagttccggc tgtacggcaa ggactacaat gtgtacaccc acagctttct gtgctacgga 600

aaggaccagg ccctgtggca gaagctggcc aaggacatcc aggtggccag caacgagatc 660

ctgcgggacc cttgcttcca ccccggctac aagaaagtcg tgaacgtgtc cgacctgtac 720

aagacccccct gcaccaagag attcgagatg accctgccct tccagcagtt cgagatccag 780

ggcatcggca actaccagca gtgccaccag agcatcctgg aactgttcaa caccagctac 840

tgcccctaca gccagtgcgc cttcaacggc atcttcctgc cacctctgca gggggacttc 900

ggcgctttca gcgccttcta cttcgtgatg aagttcctga acctgaccag cgagaaggtg 960

tcccaggaaa aagtgacaga gatgatgaag aagttcgccg cccagccctg ggaggaaatc 1020

aagacctcct acgctggcgt gaaagagaag tacctgagcg agtacgcctt cagcggtacc 1080

tacatcctga gcctgctgct gcagggctac cacttcaccg ccgatagctg ggagcacatc 1140

cacttcatcg gcaagattca gggcagcgac gccggctgga cactgggcta catgctgaat 1200

ctgaccaaca tg 1212

<210> 127
<211> 431
<212> PRT
<213> 人工序列

<220>
<221> 來源

<223> /注釋="人工序列的描述：合成多肽"

<400> 127

```
Thr Gln Asn Lys Ala Leu Pro Glu Asn Val Lys Tyr Gly Ile Val Leu
1               5                  10                  15

Asp Ala Gly Ser Ser His Thr Ser Leu Tyr Ile Tyr Lys Trp Pro Ala
            20                  25                  30

Glu Lys Glu Asn Asp Thr Gly Val Val His Gln Val Glu Glu Cys Arg
        35                  40                  45

Val Lys Gly Pro Gly Ile Ser Lys Phe Val Gln Lys Val Asn Glu Ile
    50                  55                  60

Gly Ile Tyr Leu Thr Asp Cys Met Glu Arg Ala Arg Glu Val Ile Pro
65                  70                  75                  80

Arg Ser Gln His Gln Glu Thr Pro Val Tyr Leu Gly Ala Thr Ala Gly
                85                  90                  95

Met Arg Leu Leu Arg Met Glu Ser Glu Glu Leu Ala Asp Arg Val Leu
            100                 105                 110

Asp Val Val Glu Arg Ser Leu Ser Asn Tyr Pro Phe Asp Phe Gln Gly
        115                 120                 125

Ala Arg Ile Ile Thr Gly Gln Glu Glu Gly Ala Tyr Gly Trp Ile Thr
    130                 135                 140

Ile Asn Tyr Leu Leu Gly Lys Phe Ser Gln Lys Thr Arg Trp Phe Ser
145                 150                 155                 160

Ile Val Pro Tyr Glu Thr Asn Asn Gln Glu Thr Phe Gly Ala Leu Asp
                165                 170                 175

Leu Gly Gly Ala Ser Thr Gln Val Thr Phe Val Pro Gln Asn Gln Thr
            180                 185                 190
```

Ile Glu Ser Pro Asp Asn Ala Leu Gln Phe Arg Leu Tyr Gly Lys Asp
195 200 205

Tyr Asn Val Tyr Thr His Ser Phe Leu Cys Tyr Gly Lys Asp Gln Ala
210 215 220

Leu Trp Gln Lys Leu Ala Lys Asp Ile Gln Val Ala Ser Asn Glu Ile
225 230 235 240

Leu Arg Asp Pro Cys Phe His Pro Gly Tyr Lys Lys Val Val Asn Val
245 250 255

Ser Asp Leu Tyr Lys Thr Pro Cys Thr Lys Arg Phe Glu Met Thr Leu
260 265 270

Pro Phe Gln Gln Phe Glu Ile Gln Gly Ile Gly Asn Tyr Gln Gln Cys
275 280 285

His Gln Ser Ile Leu Glu Leu Phe Asn Thr Ser Phe Asn Gly Ile Phe
290 295 300

Leu Pro Pro Leu Gln Gly Asp Phe Gly Ala Phe Ser Ala Phe Tyr Phe
305 310 315 320

Val Met Lys Phe Leu Asn Leu Thr Ser Glu Lys Val Ser Gln Glu Lys
325 330 335

Val Thr Glu Met Met Lys Lys Phe Cys Ala Gln Pro Trp Glu Glu Ile
340 345 350

Lys Thr Ser Tyr Ala Gly Val Lys Glu Lys Tyr Leu Ser Glu Tyr Cys
355 360 365

Phe Ser Gly Thr Tyr Ile Leu Ser Leu Leu Leu Gln Gly Tyr His Phe
370 375 380

Thr Ala Asp Ser Trp Glu His Ile His Phe Ile Gly Lys Ile Gln Gly

385 390 395 400

Ser Asp Ala Gly Trp Thr Leu Gly Tyr Met Leu Asn Leu Thr Asn Met
405 410 415

Ile Pro Ala Glu Gln Pro Leu Ser Thr Pro Leu Ser His Ser Thr
420 425 430

<210> 128
<211> 1293
<212> DNA
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述: 合成多核苷酸"

<400> 128
acacagaaca aagccctgcc cgagaacgtg aagtacggca tcgtgctgga tgccggcagc 60

agccacacca gcctgtacat ctacaagtgg cctgccgaga aagaaaacga taccggtgtc 120

gtgcaccagg tggaagagtg cagagtgaag ggccctggca tcagcaagtt cgtgcagaaa 180

gtgaacgaga tcggcatcta cctgaccgac tgcatggaac gggccagaga agtgatcccc 240

agaagccagc accaggaaac ccccgtgtac ctgggagcca cagccggcat gagactgctg 300

cggatggaaa gcgaggaact ggccgacaga gtgctggacg tggtggaaag aagcctgagc 360

aactacccat tcgattttca aggggccaga atcatcaccg gccaggaaga gggcgcttac 420

ggctggatca ccatcaacta cctgctgggc aagttcagcc agaaaacccg gtggttcagc 480

atcgtgccct acgagacaaa caatcaggaa accttcggag ccctggacct gggcggagcc 540

tctacccaag tgaccttcgt gccccagaat cagaccatcg agagccccga caacgccctg 600

cagttccggc tgtacggcaa ggactacaat gtgtacaccc acagctttct gtgctacgga 660

aaggaccagg ccctgtggca gaagctggcc aaggacatcc aggtggccag caacgagatc 720

ctgcgggacc cttgcttcca ccccggctac aagaaagtcg tgaacgtgtc cgacctgtac 780

aagacccccc gcaccaagag attcgagatg accctgccct tccagcagtt cgagatccag 840

ggcatcggca actaccagca gtgccaccag agcatcctgg aactgttcaa caccagcttc 900

aacggcatct tcctgccacc tctgcagggg gacttcggcg ctttcagcgc cttctacttc 960

gtgatgaagt tcctgaacct gaccagcgag aaggtgtccc aggaaaaagt gacagagatg 1020

atgaagaagt tctgcgccca gccctgggag gaaatcaaga cctcctacgc tggcgtgaaa 1080

gagaagtacc tgagcgagta ctgcttcagc ggtacctaca tcctgagcct gctgctgcag 1140

ggctaccact tcaccgccga tagctgggag cacatccact tcatcggcaa gattcagggc 1200

agcgacgccg gctggacact gggctacatg ctgaatctga ccaacatgat ccccgccgag 1260

cagcccctga gcacacctct gtctcacagc acc 1293

<210> 129
<211> 439
<212> PRT
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成多肽"

<400> 129

Thr Gln Asn Lys Ala Leu Pro Glu Asn Val Lys Tyr Gly Ile Val Leu
1 5 10 15

Asp Ala Gly Ser Ser His Thr Ser Leu Tyr Ile Tyr Lys Trp Pro Ala
20 25 30

Glu Lys Glu Asn Asp Thr Gly Val Val His Gln Val Glu Glu Cys Arg
35 40 45

Val Lys Gly Pro Gly Ile Ser Lys Phe Val Gln Lys Val Asn Glu Ile
50 55 60

Gly Ile Tyr Leu Thr Asp Cys Met Glu Arg Ala Arg Glu Val Ile Pro
65 70 75 80

Arg Ser Gln His Gln Glu Thr Pro Val Tyr Leu Gly Ala Thr Ala Gly
85 90 95

Met Arg Leu Leu Arg Met Glu Ser Glu Glu Leu Ala Asp Arg Val Leu
100 105 110

Asp Val Val Glu Arg Ser Leu Ser Asn Tyr Pro Phe Asp Phe Gln Gly
115 120 125

Ala Arg Ile Ile Thr Gly Gln Glu Glu Gly Ala Tyr Gly Trp Ile Thr
130 135 140

Ile Asn Tyr Leu Leu Gly Lys Phe Ser Gln Lys Thr Arg Trp Phe Ser
145 150 155 160

Ile Val Pro Tyr Glu Thr Asn Asn Gln Glu Thr Phe Gly Ala Leu Asp
165 170 175

Leu Gly Gly Ala Ser Thr Gln Val Thr Phe Val Pro Gln Asn Gln Thr
180 185 190

Ile Glu Ser Pro Asp Asn Ala Leu Gln Phe Arg Leu Tyr Gly Lys Asp
195 200 205

Tyr Asn Val Tyr Thr His Ser Phe Leu Cys Tyr Gly Lys Asp Gln Ala
210 215 220

Leu Trp Gln Lys Leu Ala Lys Asp Ile Gln Val Ala Ser Asn Glu Ile
225 230 235 240

Leu Arg Asp Pro Cys Phe His Pro Gly Tyr Lys Lys Val Val Asn Val
245 250 255

Ser Asp Leu Tyr Lys Thr Pro Cys Thr Lys Arg Phe Glu Met Thr Leu
260 265 270

Pro Phe Gln Gln Phe Glu Ile Gln Gly Ile Gly Asn Tyr Gln Gln Cys
275 280 285

His Gln Ser Ile Leu Glu Leu Phe Asn Thr Ser Tyr Ala Pro Tyr Ser
290 295 300

Gln Ala Ala Phe Asn Gly Ile Phe Leu Pro Pro Leu Gln Gly Asp Phe
305 310 315 320

Gly Ala Phe Ser Ala Phe Tyr Phe Val Met Lys Phe Leu Asn Leu Thr
325 330 335

Ser Glu Lys Val Ser Gln Glu Lys Val Thr Glu Met Met Lys Lys Phe
340 345 350

Cys Ala Gln Pro Trp Glu Glu Ile Lys Thr Ser Tyr Ala Gly Val Lys
355 360 365

Glu Lys Tyr Leu Ser Glu Tyr Cys Phe Ser Gly Thr Tyr Ile Leu Ser
370 375 380

Leu Leu Leu Gln Gly Tyr His Phe Thr Ala Asp Ser Trp Glu His Ile
385 390 395 400

His Phe Ile Gly Lys Ile Gln Gly Ser Asp Ala Gly Trp Thr Leu Gly
405 410 415

Tyr Met Leu Asn Leu Thr Asn Met Ile Pro Ala Glu Gln Pro Leu Ser
420 425 430

Thr Pro Leu Ser His Ser Thr
435

<210> 130
<211> 1317
<212> DNA
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成多核苷酸"

<400> 130
acacagaaca aagccctgcc cgagaacgtg aagtacggca tcgtgctgga tgccggcagc 60

agccacacca gcctgtacat ctacaagtgg cctgccgaga aagaaaacga taccggtgtc 120

gtgcaccagg tggaagagtg cagagtgaag ggccctggca tcagcaagtt cgtgcagaaa 180

gtgaacgaga tcggcatcta cctgaccgac tgcatggaac gggccagaga agtgatcccc 240

agaagccagc accaggaaac ccccgtgtac ctgggagcca cagccggcat gagactgctg 300

cggatggaaa gcgaggaact ggccgacaga gtgctggacg tggtggaaag aagcctgagc 360

aactacccat tcgattttca aggggccaga atcatcaccg gccaggaaga gggcgcttac 420

ggctggatca ccatcaacta cctgctgggc aagttcagcc agaaaacccg gtggttcagc 480

atcgtgccct acgagacaaa caatcaggaa accttcggag ccctggacct gggcggagcc 540

tctacccaag tgaccttcgt gccccagaat cagaccatcg agagccccga caacgccctg 600

cagttccggc tgtacggcaa ggactacaat gtgtacaccc acagctttct gtgctacgga 660

aaggaccagg ccctgtggca gaagctggcc aaggacatcc aggtggccag caacgagatc 720

ctgcgggacc cttgcttcca ccccggctac aagaaagtcg tgaacgtgtc cgacctgtac 780

aagacccccc gcaccaagag attcgagatg accctgccct tccagcagtt cgagatccag 840

ggcatcggca actaccagca gtgccaccag agcatcctgg aactgttcaa caccagctac 900

gccccctaca gccaggccgc cttcaacggc atcttcctgc cacctctgca gggggacttc 960

ggcgctttca gcgccttcta cttcgtgatg aagttcctga acctgaccag cgagaaggtg 1020

tcccaggaaa aagtgacaga gatgatgaag aagttctgcg cccagccctg ggaggaaatc 1080

aagacctcct acgctggcgt gaaagagaag tacctgagcg agtactgctt cagcggtacc 1140

tacatcctga gcctgctgct gcagggctac cacttcaccg ccgatagctg ggagcacatc 1200

cacttcatcg gcaagattca gggcagcgac gccggctgga cactgggcta catgctgaat 1260

ctgaccaaca tgatccccgc cgagcagccc ctgagcacac ctctgtctca cagcacc 1317

<210> 131
<211> 16
<212> PRT
<213> 人工序列

<220>
<221> 來源

<223> /注釋="人工序列的描述：合成肽"

<400> 131
Ala Pro Thr Ser Ser Ser Thr Lys Lys Thr Gln Leu Thr Ser Ser Gly
1 5 10 15

<210> 132
<211> 48
<212> DNA
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成寡核苷酸"

<400> 132
gcccccacca gcagcagcac caagaagacc cagctgacca gcagcggc 48

<210> 133
<211> 15
<212> PRT
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成肽"

<400> 133
Ala Pro Thr Ser Ser Ser Thr Lys Lys Thr Gln Leu Thr Ser Ser
1 5 10 15

<210> 134
<211> 45
<212> DNA
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成寡核苷酸"

<400> 134
gcccctacca gcagcagcac caagaaaacc cagctgacca gcagc 45

<210> 135
<211> 6
<212> PRT

<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述: 合成肽"

<400> 135
Ala Pro Thr Ser Ser Ser
1 5

<210> 136
<211> 18
<212> DNA
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述: 合成寡核苷酸"

<400> 136
gcccctacca gcagcagc 18

<210> 137
<211> 3
<212> PRT
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述: 合成肽"

<400> 137
Ala Pro Thr
1

<210> 138
<211> 9
<212> DNA
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述: 合成寡核苷酸"

<400> 138
gcccctacc 9

<210> 139
<211> 9
<212> PRT
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述: 合成肽"

<400> 139
Ala Pro Thr Ser Ser Ser Thr Lys Lys
1 5

<210> 140
<211> 27
<212> DNA
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述: 合成寡核苷酸"

<400> 140
gcccctacca gcagcagcac caagaaa 27

<210> 141
<211> 12
<212> PRT
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述: 合成肽"

<400> 141
Ala Pro Thr Ser Ser Ser Thr Lys Lys Thr Gln Leu
1 5 10

<210> 142
<211> 36
<212> DNA
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述: 合成寡核苷酸"

<400> 142
gcccctacca gcagcagcac caagaaaacc cagctg 36

<210> 143
<211> 9
<212> PRT
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述: 合成肽"

<400> 143
Ser Ser Ser Thr Lys Lys Thr Gln Leu
1 5

<210> 144
<211> 27
<212> DNA
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述: 合成寡核苷酸"

<400> 144
agcagcagca ccaagaaaac ccagctg 27

<210> 145
<211> 426
<212> PRT
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述: 合成多肽"

<400> 145
Thr Gln Asn Lys Ala Leu Pro Glu Asn Val Lys Tyr Gly Ile Val Leu
1 5 10 15

Asp Ala Gly Ser Ser His Thr Ser Leu Tyr Ile Tyr Lys Trp Pro Ala
20 25 30

Glu Lys Glu Asn Asp Thr Gly Val Val His Gln Val Glu Glu Cys Arg
35 40 45

Val Lys Gly Pro Gly Ile Ser Lys Phe Val Gln Lys Val Asn Glu Ile
50 55 60

Gly Ile Tyr Leu Thr Asp Cys Met Glu Arg Ala Arg Glu Val Ile Pro
65 70 75 80

Arg Ser Gln His Gln Glu Thr Pro Val Tyr Leu Gly Ala Thr Ala Gly
85 90 95

Met Arg Leu Leu Arg Met Glu Ser Glu Glu Leu Ala Asp Arg Val Leu
100 105 110

Asp Val Val Glu Arg Ser Leu Ser Asn Tyr Pro Phe Asp Phe Gln Gly
115 120 125

Ala Arg Ile Ile Thr Gly Gln Asp Glu Gly Ala Tyr Gly Trp Ile Thr
130 135 140

Ile Asn Tyr Leu Leu Gly Lys Phe Ser Gln Lys Asn Gln Glu Thr Phe
145 150 155 160

Gly Ala Leu Asp Leu Gly Gly Ala Ser Thr Gln Val Thr Phe Val Pro
165 170 175

Gln Asn Gln Thr Ile Glu Ser Pro Asp Asn Ala Leu Gln Phe Arg Leu
180 185 190

Tyr Gly Lys Asp Tyr Asn Val Tyr Thr His Ser Phe Leu Cys Tyr Gly
195 200 205

Arg Asp Gln Ala Leu Trp Gln Lys Leu Ala Lys Asp Ile Gln Val Ala
210 215 220

Ser Asn Glu Ile Leu Arg Asp Pro Cys Phe His Pro Gly Tyr Lys Lys
225 230 235 240

Val Val Asn Val Ser Asp Leu Tyr Lys Thr Pro Cys Thr Lys Arg Phe
245 250 255

Glu Met Thr Leu Pro Phe Gln Gln Phe Glu Ile Gln Gly Ile Gly Asn
260 265 270

Tyr Gln Gln Cys His Gln Ser Ile Leu Glu Leu Phe Asn Thr Ser Tyr
275 280 285

Cys Pro Tyr Ser Gln Cys Ala Phe Asn Gly Ile Phe Leu Pro Pro Leu
290 295 300

Gln Gly Asp Phe Gly Ala Phe Ser Asn Phe Tyr Tyr Val Met Lys Phe
305 310 315 320

Leu Asn Leu Thr Ser Glu Lys Val Ser Gln Glu Lys Val Thr Glu Met
325 330 335

Met Lys Lys Phe Cys Ala Gln Pro Trp Glu Glu Ile Lys Thr Ser Tyr
340 345 350

Ala Gly Gln Glu Arg Trp Leu Arg Asp Tyr Cys Phe Ser Gly Thr Tyr
355 360 365

Ile Leu Ser Leu Leu Leu Gln Gly Tyr His Phe Thr Ala Asp Ser Trp
370 375 380

Glu His Ile His Phe Ile Gly Lys Ile Gln Gly Ser Asp Ala Gly Trp
385 390 395 400

Thr Leu Gly Tyr Met Leu Asn Leu Thr Asn Met Ile Pro Ala Glu Gln
405 410 415

Pro Leu Ser Thr Pro Leu Ser His Ser Thr
420 425

<210> 146
<211> 1278
<212> DNA
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成多核苷酸"

<400> 146
acccagaaca aggccctgcc cgagaacgtg aagtacggca tcgtgctgga tgccggcagc 60

agccacacca gcctgtacat ctacaagtgg cctgccgaga aagaaaacga caccggcgtg 120

gtgcatcagg tggaagagtg cagagtgaag ggccctggca tcagcaagtt cgtgcagaaa 180

gtgaacgaga tcggcatcta cctgaccgac tgcatggaac gggccagaga agtgatcccc 240

agaagccagc accaggaaac ccccgtgtat ctgggagcca ccgccggcat gagactgctg 300

agaatggaaa gcgaggaact ggccgaccgg gtgctggacg tggtggaaag aagcctgagc 360

aactacccat tcgattttca aggcgccaga atcatcaccg gccaggacga gggcgcctac 420

ggctggatca ccatcaacta cctgctgggc aagttcagcc agaagaatca ggaaaccttc 480

ggcgccctgg acctgggcgg agcttctacc caagtgacct tcgtgcccca gaatcagacc 540

atcgagagcc ccgacaacgc cctgcagttc cggctgtacg gcaaggacta caatgtgtac 600

acccacagct ttctgtgcta cggccgggac caggctctgt ggcagaagct ggccaaggac 660

atccaggtgg ccagcaacga gatcctgcgg gacccttgct tccaccccgg ctacaagaaa 720

gtcgtgaacg tgtccgacct gtacaagacc ccctgcacca agagattcga gatgaccctg 780

cccttccagc agttcgagat ccagggcatc ggcaactacc agcagtgcca ccagagcatc 840

ctggaactgt tcaacaccag ctactgcccc tacagccagt gcgccttcaa cggcatcttc 900

ctgccacctc tgcaggggga tttcggcgcc ttcagcaact tctactacgt gatgaagttc 960

ctgaacctga ccagcgagaa ggtgtcccag gaaaaagtga cagagatgat gaagaagttc 1020

tgcgcccagc cctgggagga aatcaagacc tcttacgccg gacaggaacg gtggctgcgg 1080

gactactgtt tcagcggcac ctacatcctg tccctgctgc tgcagggcta ccacttcacc 1140

gccgatagct gggagcacat ccacttcatc ggcaagattc agggcagcga cgccggctgg 1200

acactgggct acatgctgaa tctgaccaac atgatccccg ccgagcagcc cctgagcaca 1260

cctctgtctc acagcacc 1278

<210> 147
<211> 537
<212> PRT
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成多肽"

<400> 147

Thr Val Ala Ala Pro Ser Val Phe Ile Phe Pro Pro Ser Asp Glu Gln
1 5 10 15

Leu Lys Ser Gly Thr Ala Ser Val Val Cys Leu Leu Asn Asn Phe Tyr
20 25 30

Pro Arg Glu Ala Lys Val Gln Trp Lys Val Asp Asn Ala Leu Gln Ser
35 40 45

Gly Asn Ser Gln Glu Ser Val Thr Glu Gln Asp Ser Lys Asp Ser Thr
50 55 60

Tyr Ser Leu Ser Ser Thr Leu Thr Leu Ser Lys Ala Asp Tyr Glu Lys
65 70 75 80

His Lys Val Tyr Ala Cys Glu Val Thr His Gln Gly Leu Ser Ser Pro
85 90 95

Val Thr Lys Ser Phe Asn Arg Gly Glu Gly Gly Gly Gly Ser Thr Gln
100 105 110

Asn Lys Ala Leu Pro Glu Asn Val Lys Tyr Gly Ile Val Leu Asp Ala
115 120 125

Gly Ser Ser His Thr Ser Leu Tyr Ile Tyr Lys Trp Pro Ala Glu Lys
130 135 140

```
Glu Asn Asp Thr Gly Val Val His Gln Val Glu Glu Cys Arg Val Lys
145                 150                 155                 160

Gly Pro Gly Ile Ser Lys Phe Val Gln Lys Val Asn Glu Ile Gly Ile
                165                 170                 175

Tyr Leu Thr Asp Cys Met Glu Arg Ala Arg Glu Val Ile Pro Arg Ser
            180                 185                 190

Gln His Gln Glu Thr Pro Val Tyr Leu Gly Ala Thr Ala Gly Met Arg
        195                 200                 205

Leu Leu Arg Met Glu Ser Glu Glu Leu Ala Asp Arg Val Leu Asp Val
    210                 215                 220

Val Glu Arg Ser Leu Ser Asn Tyr Pro Phe Asp Phe Gln Gly Ala Arg
225                 230                 235                 240

Ile Ile Thr Gly Gln Glu Glu Gly Ala Tyr Gly Trp Ile Thr Ile Asn
                245                 250                 255

Tyr Leu Leu Gly Lys Phe Ser Gln Lys Asn Gln Glu Thr Phe Gly Ala
            260                 265                 270

Leu Asp Leu Gly Gly Ala Ser Thr Gln Val Thr Phe Val Pro Gln Asn
        275                 280                 285

Gln Thr Ile Glu Ser Pro Asp Asn Ala Leu Gln Phe Arg Leu Tyr Gly
    290                 295                 300

Lys Asp Tyr Asn Val Tyr Thr His Ser Phe Leu Cys Tyr Gly Lys Asp
305                 310                 315                 320

Gln Ala Leu Trp Gln Lys Leu Ala Lys Asp Ile Gln Val Ala Ser Asn
                325                 330                 335

Glu Ile Leu Arg Asp Pro Cys Phe His Pro Gly Tyr Lys Lys Val Val
```

340 345 350

Asn Val Ser Asp Leu Tyr Lys Thr Pro Cys Thr Lys Arg Phe Glu Met
355 360 365

Thr Leu Pro Phe Gln Gln Phe Glu Ile Gln Gly Ile Gly Asn Tyr Gln
370 375 380

Gln Cys His Gln Ser Ile Leu Glu Leu Phe Asn Thr Ser Tyr Cys Pro
385 390 395 400

Tyr Ser Gln Cys Ala Phe Asn Gly Ile Phe Leu Pro Pro Leu Gln Gly
405 410 415

Asp Phe Gly Ala Phe Ser Ala Phe Tyr Phe Val Met Lys Phe Leu Asn
420 425 430

Leu Thr Ser Glu Lys Val Ser Gln Glu Lys Val Thr Glu Met Met Lys
435 440 445

Lys Phe Cys Ala Gln Pro Trp Glu Glu Ile Lys Thr Ser Tyr Ala Gly
450 455 460

Val Lys Glu Lys Tyr Leu Ser Glu Tyr Cys Phe Ser Gly Thr Tyr Ile
465 470 475 480

Leu Ser Leu Leu Leu Gln Gly Tyr His Phe Thr Ala Asp Ser Trp Glu
485 490 495

His Ile His Phe Ile Gly Lys Ile Gln Gly Ser Asp Ala Gly Trp Thr
500 505 510

Leu Gly Tyr Met Leu Asn Leu Thr Asn Met Ile Pro Ala Glu Gln Pro
515 520 525

Leu Ser Thr Pro Leu Ser His Ser Thr
530 535

<210> 148
<211> 1611
<212> DNA
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成多核苷酸"

<400> 148
acggtggccg ctcccagcgt gttcatcttc ccccccagcg acgagcagct gaagagcggc 60

accgccagcg tggtgtgcct gctgaacaac ttctaccccc gggaggccaa ggtgcagtgg 120

aaggtggaca acgccctgca gagcggcaac agccaggaaa gcgtcaccga gcaggacagc 180

aaggactcca cctacagcct gagcagcacc ctgaccctga gcaaggccga ctacgagaag 240

cacaaggtgt acgcctgcga ggtgacccac cagggcctgt ccagccccgt gaccaagagc 300

ttcaaccggg gcgagggagg cggaggatct acccagaaca aggccctgcc cgagaacgtg 360

aagtacggca tcgtgctgga tgccggcagc agccacacca gcctgtacat ctacaagtgg 420

cctgccgaga aagaaaacga caccggcgtg gtgcatcagg tggaagagtg cagagtgaag 480

ggccctggca tcagcaagtt cgtgcagaaa gtgaacgaga tcggcatcta cctgaccgac 540

tgcatggaac gggccaggga agtgatcccc agaagccagc accaggaaac ccccgtgtat 600

ctgggagcca ccgccggcat gagactgctg agaatggaaa gcgaggaact ggccgaccgg 660

gtgctggacg tggtggaaag aagcctgagc aactacccat tcgattttca aggcgccaga 720

atcatcaccg gccaggaaga aggcgcctac ggctggatca ccatcaacta cctgctgggc 780

aagttcagcc agaagaatca ggaaaccttc ggcgccctgg acctgggcgg agcttctacc 840

caagtgacct tcgtgcccca gaatcagacc atcgagagcc ccgacaacgc cctgcagttc 900

cggctgtacg gcaaggacta caatgtgtac acccacagct ttctgtgcta cggaaaggac 960

caggctctgt ggcagaagct ggccaaggac atccaggtgg ccagcaacga gatcctgcgg 1020

gacccttgct tccaccccgg ctacaagaaa gtcgtgaacg tgtccgacct gtacaagacc 1080

ccctgcacca agagattcga gatgaccctg cccttccagc agttcgagat ccagggcatc 1140

ggcaattacc agcagtgcca ccagagcatc ctggaactgt tcaacaccag ctactgcccc 1200

tacagccagt gcgccttcaa cggcatcttc ctgccacctc tgcaggggga tttcggcgcc 1260

ttcagcgcct tctacttcgt gatgaagttc ctgaacctga ccagcgagaa ggtgtcccag 1320

gaaaaagtga cagagatgat gaagaagttc tgcgcccagc cctgggagga aatcaagacc 1380

tcctacgctg gcgtgaaaga gaagtacctg agcgagtact gcttcagcgg cacctacatc 1440

ctgagcctgc tgctgcaggg ctaccacttc accgccgata gctgggagca catccacttc 1500

atcggcaaga ttcagggcag cgacgccggc tggacactgg gctacatgct gaatctgacc 1560

aacatgatcc ccgccgagca gcccctgagc acacctctga gccacagcac c 1611

<210> 149
<211> 508
<212> PRT
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成多肽"

<400> 149
Met Gln Ile Phe Val Lys Thr Leu Thr Gly Lys Thr Ile Thr Leu Glu
1 5 10 15

Val Glu Pro Ser Asp Thr Ile Glu Asn Val Lys Ala Lys Ile Gln Asp
20 25 30

Lys Glu Gly Ile Pro Pro Asp Gln Gln Arg Leu Ile Phe Ala Gly Lys
35 40 45

Gln Leu Glu Asp Gly Arg Thr Leu Ser Asp Tyr Asn Ile Gln Lys Glu
50 55 60

Ser Thr Leu His Leu Val Leu Arg Leu Arg Gly Gly Gly Gly Gly Gly
65 70 75 80

Ser Thr Gln Asn Lys Ala Leu Pro Glu Asn Val Lys Tyr Gly Ile Val
85 90 95

Leu Asp Ala Gly Ser Ser His Thr Ser Leu Tyr Ile Tyr Lys Trp Pro
100 105 110

Ala Glu Lys Glu Asn Asp Thr Gly Val Val His Gln Val Glu Glu Cys
115 120 125

Arg Val Lys Gly Pro Gly Ile Ser Lys Phe Val Gln Lys Val Asn Glu
130 135 140

Ile Gly Ile Tyr Leu Thr Asp Cys Met Glu Arg Ala Arg Glu Val Ile
145 150 155 160

Pro Arg Ser Gln His Gln Glu Thr Pro Val Tyr Leu Gly Ala Thr Ala
165 170 175

Gly Met Arg Leu Leu Arg Met Glu Ser Glu Glu Leu Ala Asp Arg Val
180 185 190

Leu Asp Val Val Glu Arg Ser Leu Ser Asn Tyr Pro Phe Asp Phe Gln
195 200 205

Gly Ala Arg Ile Ile Thr Gly Gln Glu Glu Gly Ala Tyr Gly Trp Ile
210 215 220

Thr Ile Asn Tyr Leu Leu Gly Lys Phe Ser Gln Lys Asn Gln Glu Thr
225 230 235 240

Phe Gly Ala Leu Asp Leu Gly Gly Ala Ser Thr Gln Val Thr Phe Val
245 250 255

Pro Gln Asn Gln Thr Ile Glu Ser Pro Asp Asn Ala Leu Gln Phe Arg
260 265 270

Leu Tyr Gly Lys Asp Tyr Asn Val Tyr Thr His Ser Phe Leu Cys Tyr
275 280 285

Gly Lys Asp Gln Ala Leu Trp Gln Lys Leu Ala Lys Asp Ile Gln Val
290 295 300

Ala Ser Asn Glu Ile Leu Arg Asp Pro Cys Phe His Pro Gly Tyr Lys
305 310 315 320

Lys Val Val Asn Val Ser Asp Leu Tyr Lys Thr Pro Cys Thr Lys Arg
325 330 335

Phe Glu Met Thr Leu Pro Phe Gln Gln Phe Glu Ile Gln Gly Ile Gly
340 345 350

Asn Tyr Gln Gln Cys His Gln Ser Ile Leu Glu Leu Phe Asn Thr Ser
355 360 365

Tyr Cys Pro Tyr Ser Gln Cys Ala Phe Asn Gly Ile Phe Leu Pro Pro
370 375 380

Leu Gln Gly Asp Phe Gly Ala Phe Ser Ala Phe Tyr Phe Val Met Lys
385 390 395 400

Phe Leu Asn Leu Thr Ser Glu Lys Val Ser Gln Glu Lys Val Thr Glu
405 410 415

Met Met Lys Lys Phe Cys Ala Gln Pro Trp Glu Glu Ile Lys Thr Ser
420 425 430

Tyr Ala Gly Val Lys Glu Lys Tyr Leu Ser Glu Tyr Cys Phe Ser Gly
435 440 445

Thr Tyr Ile Leu Ser Leu Leu Leu Gln Gly Tyr His Phe Thr Ala Asp
450 455 460

Ser Trp Glu His Ile His Phe Ile Gly Lys Ile Gln Gly Ser Asp Ala
465 470 475 480

Gly Trp Thr Leu Gly Tyr Met Leu Asn Leu Thr Asn Met Ile Pro Ala
485 490 495

Glu Gln Pro Leu Ser Thr Pro Leu Ser His Ser Thr
500 505

<210> 150
<211> 1524
<212> DNA
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成多核苷酸"

<400> 150
atgcaaatct tcgtgaagac cctgactggt aagaccatca ccctcgaggt ggagcccagt 60

gacaccatcg agaatgtcaa ggcaaagatc caagataagg aaggcatccc tcctgatcag 120

cagaggttga tctttgctgg gaaacagctg gaagatggac gcaccctgtc tgactacaac 180

atccagaaag agtccactct gcacttggtc ctgcgcttga gggggggtgg aggcggagga 240

tctacccaga acaaggccct gcccgagaac gtgaagtacg gcatcgtgct ggatgccggc 300

agcagccaca ccagcctgta catctacaag tggcctgccg agaaagaaaa cgacaccggc 360

gtggtgcatc aggtggaaga gtgcagagtg aagggccctg gcatcagcaa gttcgtgcag 420

aaagtgaacg agatcggcat ctacctgacc gactgcatgg aacgggccag ggaagtgatc 480

cccagaagcc agcaccagga aacccccgtg tatctgggag ccaccgccgg catgagactg 540

ctgagaatgg aaagcgagga actggccgac cgggtgctgg acgtggtgga aagaagcctg 600

agcaactacc cattcgattt tcaaggcgcc agaatcatca ccggccagga agaaggcgcc 660

tacggctgga tcaccatcaa ctacctgctg ggcaagttca gccagaagaa tcaggaaacc 720

ttcggcgccc tggacctggg cggagcttct acccaagtga ccttcgtgcc ccagaatcag 780

accatcgaga gccccgacaa cgccctgcag ttccggctgt acggcaagga ctacaatgtg 840

tacacccaca gctttctgtg ctacggaaag gaccaggctc tgtggcagaa gctggccaag 900

gacatccagg tggccagcaa cgagatcctg cgggaccctt gcttccaccc cggctacaag 960

aaagtcgtga acgtgtccga cctgtacaag acccccctgca ccaagagatt cgagatgacc 1020

ctgcccttcc agcagttcga gatccagggc atcggcaatt accagcagtg ccaccagagc 1080

atcctggaac tgttcaacac cagctactgc ccctacagcc agtgcgcctt caacggcatc 1140

ttcctgccac ctctgcaggg ggatttcggc gccttcagcg ccttctactt cgtgatgaag 1200

ttcctgaacc tgaccagcga gaaggtgtcc caggaaaaag tgacagagat gatgaagaag 1260

ttctgcgccc agccctggga ggaaatcaag acctcctacg ctggcgtgaa agagaagtac 1320

ctgagcgagt actgcttcag cggcacctac atcctgagcc tgctgctgca gggctaccac 1380

ttcaccgccg atagctggga gcacatccac ttcatcggca agattcaggg cagcgacgcc 1440

ggctggacac tgggctacat gctgaatctg accaacatga tccccgccga gcagcccctg 1500

agcacacctc tgagccacag cacc 1524

<210> 151
<211> 618
<212> PRT
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述: 合成多肽"

<400> 151
Asp Ala His Lys Ser Glu Val Ala His Arg Phe Lys Asp Leu Gly Glu
1 5 10 15

Glu Asn Phe Lys Ala Leu Val Leu Ile Ala Phe Ala Gln Tyr Leu Gln
20 25 30

Gln Ser Pro Phe Glu Asp His Val Lys Leu Val Asn Glu Val Thr Glu
35 40 45

Phe Ala Lys Thr Cys Val Ala Asp Glu Ser Ala Glu Asn Cys Asp Lys
50 55 60

Ser Leu His Thr Leu Phe Gly Asp Lys Leu Cys Thr Val Ala Thr Leu
65 70 75 80

Arg Glu Thr Tyr Gly Glu Met Ala Asp Cys Cys Ala Lys Gln Glu Pro
85 90 95

Glu Arg Asn Glu Cys Phe Leu Gln His Lys Asp Asp Asn Pro Asn Leu
100 105 110

Pro Arg Leu Val Arg Pro Glu Val Asp Val Met Cys Thr Ala Phe His
115 120 125

Asp Asn Glu Glu Thr Phe Leu Lys Lys Tyr Leu Tyr Glu Ile Ala Arg
130 135 140

Arg His Pro Tyr Phe Tyr Ala Pro Glu Leu Leu Phe Phe Ala Lys Arg
145 150 155 160

Tyr Lys Ala Ala Phe Thr Glu Cys Cys Gln Ala Ala Asp Lys Ala Ala
165 170 175

Cys Leu Leu Pro Lys Leu Asp Glu Leu Arg Gly Gly Gly Gly Ser Thr
180 185 190

Gln Asn Lys Ala Leu Pro Glu Asn Val Lys Tyr Gly Ile Val Leu Asp
195 200 205

Ala Gly Ser Ser His Thr Ser Leu Tyr Ile Tyr Lys Trp Pro Ala Glu
210 215 220

Lys Glu Asn Asp Thr Gly Val Val His Gln Val Glu Glu Cys Arg Val
225 230 235 240

Lys Gly Pro Gly Ile Ser Lys Phe Val Gln Lys Val Asn Glu Ile Gly
245 250 255

Ile Tyr Leu Thr Asp Cys Met Glu Arg Ala Arg Glu Val Ile Pro Arg
260 265 270

Ser Gln His Gln Glu Thr Pro Val Tyr Leu Gly Ala Thr Ala Gly Met
275 280 285

Arg Leu Leu Arg Met Glu Ser Glu Glu Leu Ala Asp Arg Val Leu Asp

290 295 300

Val Val Glu Arg Ser Leu Ser Asn Tyr Pro Phe Asp Phe Gln Gly Ala
305 310 315 320

Arg Ile Ile Thr Gly Gln Glu Glu Gly Ala Tyr Gly Trp Ile Thr Ile
325 330 335

Asn Tyr Leu Leu Gly Lys Phe Ser Gln Lys Asn Gln Glu Thr Phe Gly
340 345 350

Ala Leu Asp Leu Gly Gly Ala Ser Thr Gln Val Thr Phe Val Pro Gln
355 360 365

Asn Gln Thr Ile Glu Ser Pro Asp Asn Ala Leu Gln Phe Arg Leu Tyr
370 375 380

Gly Lys Asp Tyr Asn Val Tyr Thr His Ser Phe Leu Cys Tyr Gly Lys
385 390 395 400

Asp Gln Ala Leu Trp Gln Lys Leu Ala Lys Asp Ile Gln Val Ala Ser
405 410 415

Asn Glu Ile Leu Arg Asp Pro Cys Phe His Pro Gly Tyr Lys Lys Val
420 425 430

Val Asn Val Ser Asp Leu Tyr Lys Thr Pro Cys Thr Lys Arg Phe Glu
435 440 445

Met Thr Leu Pro Phe Gln Gln Phe Glu Ile Gln Gly Ile Gly Asn Tyr
450 455 460

Gln Gln Cys His Gln Ser Ile Leu Glu Leu Phe Asn Thr Ser Tyr Cys
465 470 475 480

Pro Tyr Ser Gln Cys Ala Phe Asn Gly Ile Phe Leu Pro Pro Leu Gln
485 490 495

Gly Asp Phe Gly Ala Phe Ser Ala Phe Tyr Phe Val Met Lys Phe Leu
500 505 510

Asn Leu Thr Ser Glu Lys Val Ser Gln Glu Lys Val Thr Glu Met Met
515 520 525

Lys Lys Phe Cys Ala Gln Pro Trp Glu Glu Ile Lys Thr Ser Tyr Ala
530 535 540

Gly Val Lys Glu Lys Tyr Leu Ser Glu Tyr Cys Phe Ser Gly Thr Tyr
545 550 555 560

Ile Leu Ser Leu Leu Leu Gln Gly Tyr His Phe Thr Ala Asp Ser Trp
565 570 575

Glu His Ile His Phe Ile Gly Lys Ile Gln Gly Ser Asp Ala Gly Trp
580 585 590

Thr Leu Gly Tyr Met Leu Asn Leu Thr Asn Met Ile Pro Ala Glu Gln
595 600 605

Pro Leu Ser Thr Pro Leu Ser His Ser Thr
610 615

<210> 152
<211> 1854
<212> DNA
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成多核苷酸"

<400> 152
gacgcccaca agagcgaggt ggcccaccgg ttcaaggacc tgggcgagga aaacttcaag 60

gccctggtgc tgatcgcctt cgcccagtac ctgcagcaga gccccttcga agatcacgta 120

aagttagtca acgaggttac ggaattcgca aagacatgcg ttgctgacga atccgctgag 180

aattgtgaca agagtttgca cactttattc ggagataagt tgtgtactgt agctactttg 240

agagagactt acggtgaaat ggctgactgc tgtgcaaaac aggaaccaga acgtaacgaa 300

tgtttccttc agcataagga tgataaccct aaccttccaa ggcttgttag gccagaagtc 360

gacgtgatgt gcaccgcctt ccatgataat gaagagactt ttcttaaaaa gtacctatac 420

gagattgcaa ggcgtcatcc atatttttac gccccagagc tgttgttttt cgcaaagaga 480

tacaaagctg catttactga gtgttgccaa gctgccgaca aggccgcttg tttgctacca 540

aagttggacg aattgagagg aggcggagga tctacccaga acaaggccct gcccgagaac 600

gtgaagtacg gcatcgtgct ggatgccggc agcagccaca ccagcctgta catctacaag 660

tggcctgccg agaaagaaaa cgacaccggc gtggtgcatc aggtggaaga gtgcagagtg 720

aagggccctg gcatcagcaa gttcgtgcag aaagtgaacg agatcggcat ctacctgacc 780

gactgcatgg aacgggccag ggaagtgatc cccagaagcc agcaccagga aacccccgtg 840

tatctgggag ccaccgccgg catgagactg ctgagaatgg aaagcgagga actggccgac 900

cgggtgctgg acgtggtgga aagaagcctg agcaactacc cattcgattt tcaaggcgcc 960

agaatcatca ccggccagga agaaggcgcc tacggctgga tcaccatcaa ctacctgctg 1020

ggcaagttca gccagaagaa tcaggaaacc ttcggcgccc tggacctggg cggagcttct 1080

acccaagtga ccttcgtgcc ccagaatcag accatcgaga gccccgacaa cgccctgcag 1140

ttccggctgt acggcaagga ctacaatgtg tacacccaca gctttctgtg ctacggaaag 1200

gaccaggctc tgtggcagaa gctggccaag gacatccagg tggccagcaa cgagatcctg 1260

cgggaccctt gcttccaccc cggctacaag aaagtcgtga acgtgtccga cctgtacaag 1320

acccccctgca ccaagagatt cgagatgacc ctgcccttcc agcagttcga gatccagggc 1380

atcggcaatt accagcagtg ccaccagagc atcctggaac tgttcaacac cagctactgc 1440

ccctacagcc agtgcgcctt caacggcatc ttcctgccac ctctgcaggg ggatttcggc 1500

gccttcagcg ccttctactt cgtgatgaag ttcctgaacc tgaccagcga gaaggtgtcc 1560

caggaaaaag tgacagagat gatgaagaag ttctgcgccc agccctggga ggaaatcaag 1620

acctcctacg ctggcgtgaa agagaagtac ctgagcgagt actgcttcag cggcacctac 1680

atcctgagcc tgctgctgca gggctaccac ttcaccgccg atagctggga gcacatccac 1740

ttcatcggca agattcaggg cagcgacgcc ggctggacac tgggctacat gctgaatctg 1800

accaacatga tccccgccga gcagcccctg agcacacctc tgagccacag cacc 1854

<210> 153
<211> 625
<212> PRT
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成多肽"

<400> 153
Asp Glu Gly Lys Ala Ser Ser Ala Lys Gln Arg Leu Lys Cys Ala Ser
1 5 10 15

Leu Gln Lys Phe Gly Glu Arg Ala Phe Lys Ala Trp Ala Val Ala Arg
20 25 30

Leu Ser Gln Arg Phe Pro Lys Ala Glu Phe Ala Glu Val Ser Lys Leu
35 40 45

Val Thr Asp Leu Thr Lys Val His Thr Glu Cys Cys His Gly Asp Leu
50 55 60

Leu Glu Cys Ala Asp Asp Arg Ala Asp Leu Ala Lys Tyr Ile Cys Glu
65 70 75 80

Asn Gln Asp Ser Ile Ser Ser Lys Leu Lys Glu Cys Cys Glu Lys Pro
85 90 95

Leu Leu Glu Lys Ser His Cys Ile Ala Glu Val Glu Asn Asp Glu Met
100 105 110

Pro Ala Asp Leu Pro Ser Leu Ala Ala Asp Phe Val Glu Ser Lys Asp
115 120 125

Val Cys Lys Asn Tyr Ala Glu Ala Lys Asp Val Phe Leu Gly Met Phe
130 135 140

Leu Tyr Glu Tyr Ala Arg Arg His Pro Asp Tyr Ser Val Val Leu Leu
145 150 155 160

Leu Arg Leu Ala Lys Thr Tyr Glu Thr Thr Leu Glu Lys Cys Cys Ala
165 170 175

Ala Ala Asp Pro His Glu Cys Tyr Ala Lys Val Phe Asp Glu Phe Lys
180 185 190

Pro Gly Gly Gly Gly Ser Thr Gln Asn Lys Ala Leu Pro Glu Asn Val
195 200 205

Lys Tyr Gly Ile Val Leu Asp Ala Gly Ser Ser His Thr Ser Leu Tyr
210 215 220

Ile Tyr Lys Trp Pro Ala Glu Lys Glu Asn Asp Thr Gly Val Val His
225 230 235 240

Gln Val Glu Glu Cys Arg Val Lys Gly Pro Gly Ile Ser Lys Phe Val
245 250 255

Gln Lys Val Asn Glu Ile Gly Ile Tyr Leu Thr Asp Cys Met Glu Arg
260 265 270

Ala Arg Glu Val Ile Pro Arg Ser Gln His Gln Glu Thr Pro Val Tyr
275 280 285

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

Leu Ala Asp Arg Val Leu Asp Val Val Glu Arg Ser Leu Ser Asn Tyr
305 310 315 320

Pro Phe Asp Phe Gln Gly Ala Arg Ile Ile Thr Gly Gln Glu Glu Gly
325 330 335

Ala Tyr Gly Trp Ile Thr Ile Asn Tyr Leu Leu Gly Lys Phe Ser Gln
340 345 350

Lys Asn Gln Glu Thr Phe Gly Ala Leu Asp Leu Gly Gly Ala Ser Thr
355 360 365

Gln Val Thr Phe Val Pro Gln Asn Gln Thr Ile Glu Ser Pro Asp Asn
370 375 380

Ala Leu Gln Phe Arg Leu Tyr Gly Lys Asp Tyr Asn Val Tyr Thr His
385 390 395 400

Ser Phe Leu Cys Tyr Gly Lys Asp Gln Ala Leu Trp Gln Lys Leu Ala
405 410 415

Lys Asp Ile Gln Val Ala Ser Asn Glu Ile Leu Arg Asp Pro Cys Phe
420 425 430

His Pro Gly Tyr Lys Lys Val Val Asn Val Ser Asp Leu Tyr Lys Thr
435 440 445

Pro Cys Thr Lys Arg Phe Glu Met Thr Leu Pro Phe Gln Gln Phe Glu
450 455 460

Ile Gln Gly Ile Gly Asn Tyr Gln Gln Cys His Gln Ser Ile Leu Glu
465 470 475 480

Leu Phe Asn Thr Ser Tyr Cys Pro Tyr Ser Gln Cys Ala Phe Asn Gly
485 490 495

Ile Phe Leu Pro Pro Leu Gln Gly Asp Phe Gly Ala Phe Ser Ala Phe
500 505 510

Tyr Phe Val Met Lys Phe Leu Asn Leu Thr Ser Glu Lys Val Ser Gln
515 520 525

Glu Lys Val Thr Glu Met Met Lys Lys Phe Cys Ala Gln Pro Trp Glu
530 535 540

Glu Ile Lys Thr Ser Tyr Ala Gly Val Lys Glu Lys Tyr Leu Ser Glu
545 550 555 560

Tyr Cys Phe Ser Gly Thr Tyr Ile Leu Ser Leu Leu Leu Gln Gly Tyr
565 570 575

His Phe Thr Ala Asp Ser Trp Glu His Ile His Phe Ile Gly Lys Ile
580 585 590

Gln Gly Ser Asp Ala Gly Trp Thr Leu Gly Tyr Met Leu Asn Leu Thr
595 600 605

Asn Met Ile Pro Ala Glu Gln Pro Leu Ser Thr Pro Leu Ser His Ser
610 615 620

Thr
625

<210> 154
<211> 1875
<212> DNA
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成多核苷酸"

<400> 154
gacgagggta aggcatcatc tgccaagcag agattaaaat gtgcatcttt gcaaaaattt 60

ggagagagag cttttaaggc atgggctgtt gcccgactaa gccaaagatt cccaaaagcc 120

gaatttgctg aagtatccaa gctggtgact gatttgacta aagtacatac agaatgttgc 180

catggcgacc ttttagaatg tgctgatgac agagcagatt tggctaagta tatctgcgaa 240

aatcaagatt caatcagctc taagctgaag gaatgttgcg agaaaccact gttagaaaaa 300

tcgcattgta ttgctgaagt tgaaaatgat gagatgcctg ctgacttgcc ttctcttgcc 360

gctgattttg ttgagtcgaa ggatgtctgt aagaattatg ctgaagctaa agacgttttc 420

ctgggtatgt tcttatatga gtacgcaaga cgtcacccag attactctgt ggttctgcta 480

ctgagattgg ctaaaacata cgagacaacg ctggagaagt gctgtgctgc cgctgaccct 540

catgagtgct atgcaaaggt ttttgatgaa ttcaaaccag gaggcggagg atctacccag 600

aacaaggccc tgcccgagaa cgtgaagtac ggcatcgtgc tggatgccgg cagcagccac 660

accagcctgt acatctacaa gtggcctgcc gagaaagaaa acgacaccgg cgtggtgcat 720

caggtggaag agtgcagagt gaagggccct ggcatcagca agttcgtgca gaaagtgaac 780

gagatcggca tctacctgac cgactgcatg gaacgggcca gggaagtgat ccccagaagc 840

cagcaccagg aaaccccccgt gtatctggga gccaccgccg gcatgagact gctgagaatg 900

gaaagcgagg aactggccga ccgggtgctg gacgtggtgg aaagaagcct gagcaactac 960

ccattcgatt ttcaaggcgc cagaatcatc accggccagg aagaaggcgc ctacggctgg 1020

atcaccatca actacctgct gggcaagttc agccagaaga atcaggaaac cttcggcgcc 1080

ctggacctgg gcggagcttc tacccaagtg accttcgtgc cccagaatca gaccatcgag 1140

agccccgaca acgccctgca gttccggctg tacggcaagg actacaatgt gtacacccac 1200

agctttctgt gctacggaaa ggaccaggct ctgtggcaga agctggccaa ggacatccag 1260

gtggccagca acgagatcct gcgggaccct tgcttccacc ccggctacaa gaaagtcgtg 1320

aacgtgtccg acctgtacaa gacccccctgc accaagagat tcgagatgac cctgcccttc 1380

cagcagttcg agatccaggg catcggcaat taccagcagt gccaccagag catcctggaa 1440

ctgttcaaca ccagctactg cccctacagc cagtgcgcct tcaacggcat cttcctgcca 1500

cctctgcagg gggatttcgg cgccttcagc gccttctact tcgtgatgaa gttcctgaac 1560

ctgaccagcg agaaggtgtc ccaggaaaaa gtgacagaga tgatgaagaa gttctgcgcc 1620

cagccctggg aggaaatcaa gacctcctac gctggcgtga aagagaagta cctgagcgag 1680

tactgcttca gcggcaccta catcctgagc ctgctgctgc agggctacca cttcaccgcc 1740

gatagctggg agcacatcca cttcatcggc aagattcagg gcagcgacgc cggctggaca 1800

ctgggctaca tgctgaatct gaccaacatg atccccgccg agcagccccct gagcacacct 1860

ctgagccaca gcacc 1875

<210> 155
<211> 439
<212> PRT
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成多肽"

<400> 155

```
Thr Gln Asn Lys Ala Leu Pro Glu Asn Val Lys Tyr Gly Ile Val Leu
1               5                  10                  15

Asp Ala Gly Ser Ser His Thr Ser Leu Tyr Ile Tyr Lys Trp Pro Ala
            20                  25                  30

Glu Lys Glu Asn Asp Thr Gly Val Val His Gln Val Glu Glu Cys Arg
        35                  40                  45

Val Lys Gly Pro Gly Ile Ser Lys Phe Val Gln Lys Val Asn Glu Ile
    50                  55                  60

Gly Ile Tyr Leu Thr Asp Cys Met Glu Arg Ala Arg Glu Val Ile Pro
65                  70                  75                  80

Arg Ser Gln His Gln Glu Thr Pro Val Tyr Leu Gly Ala Thr Ala Gly
                85                  90                  95

Met Arg Leu Leu Arg Met Glu Ser Glu Glu Leu Ala Asp Arg Val Leu
            100                 105                 110

Asp Val Val Glu Arg Ser Leu Ser Asn Tyr Pro Phe Asp Phe Gln Gly
        115                 120                 125

Ala Arg Ile Ile Thr Gly Gln Glu Glu Gly Ala Tyr Gly Trp Ile Thr
    130                 135                 140

Ile Asn Tyr Leu Leu Gly Lys Phe Ser Gln Lys Thr Arg Trp Phe Ser
145                 150                 155                 160
```

Ile Val Pro Tyr Glu Thr Asn Asn Gln Glu Thr Phe Gly Ala Leu Asp
165 170 175

Leu Gly Gly Ala Ser Thr Gln Val Thr Phe Val Pro Gln Asn Gln Thr
180 185 190

Ile Glu Ser Pro Asp Asn Ala Leu Gln Phe Arg Leu Tyr Gly Lys Asp
195 200 205

Tyr Asn Val Tyr Thr His Ser Phe Leu Cys Tyr Gly Lys Asp Gln Ala
210 215 220

Leu Trp Gln Lys Leu Ala Lys Asp Ile Gln Val Ala Ser Asn Glu Ile
225 230 235 240

Leu Arg Asp Pro Cys Phe His Pro Gly Tyr Lys Lys Val Val Asn Val
245 250 255

Ser Asp Leu Tyr Lys Thr Pro Cys Thr Lys Arg Phe Glu Met Thr Leu
260 265 270

Pro Phe Gln Gln Phe Glu Ile Gln Gly Ile Gly Asn Tyr Gln Gln Cys
275 280 285

His Gln Ser Ile Leu Glu Leu Phe Asn Thr Ser Tyr Cys Pro Tyr Ser
290 295 300

Gln Cys Ala Phe Asn Gly Ile Phe Leu Pro Pro Leu Gln Gly Asp Phe
305 310 315 320

Gly Ala Phe Ser Ala Phe Tyr Ser Val Met Lys Phe Leu Asn Leu Thr
325 330 335

Ser Glu Lys Val Ser Gln Glu Lys Val Thr Glu Met Met Lys Lys Phe
340 345 350

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

355 360 365

Glu Lys Tyr Leu Ser Glu Tyr Cys Phe Ser Gly Thr Tyr Ile Leu Ser
370 375 380

Leu Leu Leu Gln Gly Tyr His Phe Thr Ala Asp Ser Trp Glu His Ile
385 390 395 400

His Phe Ile Gly Lys Ile Gln Gly Ser Asp Ala Gly Trp Thr Leu Gly
405 410 415

Tyr Met Leu Asn Leu Thr Asn Met Ile Pro Ala Glu Gln Pro Leu Ser
420 425 430

Thr Pro Leu Ser His Ser Thr
435

<210> 156
<211> 1317
<212> DNA
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成多核苷酸"

<400> 156
acccagaaca aggccctgcc cgagaacgtg aagtacggca tcgtgctgga tgccggcagc 60

agccacacca gcctgtacat ctacaagtgg cctgccgaga aagaaaacga caccggcgtg 120

gtgcatcagg tggaagagtg cagagtgaag ggccctggca tcagcaagtt cgtgcagaaa 180

gtgaacgaga tcggcatcta cctgaccgac tgcatggaac gggccaggga agtgatcccc 240

agaagccagc accaggaaac ccccgtgtat ctgggagcca ccgccggcat gagactgctg 300

agaatggaaa gcgaggaact ggccgaccgg gtgctggacg tggtggaaag aagcctgagc 360

aactacccat tcgattttca aggcgccaga atcatcaccg gccaggaaga aggcgcctac 420

ggctggatca ccatcaacta cctgctgggc aagttcagcc agaagaccag atggttcagc 480

atcgtgccct acgagacaaa caatcaggaa accttcggcg ccctggacct gggcggagct 540

tctacccaag tgaccttcgt gccccagaat cagaccatcg agagccccga caacgccctg 600

cagttccggc tgtacggcaa ggactacaat gtgtacaccc acagctttct gtgctacgga 660

aaggaccagg ctctgtggca gaagctggcc aaggacatcc aggtggccag caacgagatc 720

ctgcgggacc cttgcttcca ccccggctac aagaaagtcg tgaacgtgtc cgacctgtac 780

aagacccccc gcaccaagag attcgagatg accctgccct tccagcagtt cgagatccag 840

ggcatcggca attaccagca gtgccaccag agcatcctgg aactgttcaa caccagctac 900

tgcccctaca gccagtgcgc cttcaacggc atcttcctgc cacctctgca gggggatttc 960

ggcgccttca gcgccttcta ctccgtgatg aagttcctga acctgaccag cgagaaggtg 1020

tcccaggaaa aagtgacaga gatgatgaag aagttctgcg cccagccctg ggaggaaatc 1080

aagacctcct acgctggcgt gaaagagaag tacctgagcg agtactgctt cagcggcacc 1140

tacatcctga gcctgctgct gcagggctac cacttcaccg ccgatagctg ggagcacatc 1200

cacttcatcg gcaagattca gggcagcgac gccggctgga cactgggcta catgctgaat 1260

ctgaccaaca tgatccccgc cgagcagccc ctgagcacac ctctgagcca cagcacc 1317

<210> 157
<211> 90
<212> DNA
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成引物"

<400> 157
tcgcgatcct ggaaggcgtg cactgcgccc ctaccagcag cagcaccaag aaaacccagc 60

tgaccagcag cacccagaac aaggccctgc 90

<210> 158
<211> 18
<212> DNA
<213> 人工序列

<220>
<221> 來源

<223> /注釋="人工序列的描述: 合成引物"

<400> 158
tagaaggcac agtcgagg 18

<210> 159
<211> 66
<212> DNA
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述: 合成引物"

<400> 159
ctggtcgcga tcctggaagg cgtgcactgc gcccctacca gcagcagcac ccagaacaag 60

gccctg 66

<210> 160
<211> 66
<212> DNA
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述: 合成引物"

<400> 160
ctggtcgcga tcctggaagg cgtgcactgc gcccctacca gcagcagcac ccagaacaag 60

gccctg 66

<210> 161
<211> 57
<212> DNA
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述: 合成引物"

<400> 161
ctggtcgcga tcctggaagg cgtgcactgc gcccctacca cccagaacaa ggccctg 57

<210> 162

<211> 75
<212> DNA
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述: 合成引物"

<400> 162
ctggtcgcga tcctggaagg cgtgcactgc gcccctacca gcagcagcac caagaaaacc 60

cagaacaagg ccctg 75

<210> 163
<211> 84
<212> DNA
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述: 合成引物"

<400> 163
ctggtcgcga tcctggaagg cgtgcactgc gcccctacca gcagcagcac caagaaaacc 60

cagctgaccc agaacaaggc cctg 84

<210> 164
<211> 75
<212> DNA
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述: 合成引物"

<400> 164
ctggtcgcga tcctggaagg cgtgcactgc agcagcagca ccaagaaaac ccagctgacc 60

cagaacaagg ccctg 75

<210> 165
<211> 16
<212> DNA
<213> 人工序列

<220>

<221> 來源
<223> /注釋="人工序列的描述：合成引物"

<400> 165
catacgattt aggtga 16

<210> 166
<211> 18
<212> DNA
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成引物"

<400> 166
tagaaggcac agtcgagg 18

<210> 167
<211> 76
<212> PRT
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成多肽"

<400> 167
Met Gln Ile Phe Val Lys Thr Leu Thr Gly Lys Thr Ile Thr Leu Glu
1 5 10 15

Val Glu Pro Ser Asp Thr Ile Glu Asn Val Lys Ala Lys Ile Gln Asp
20 25 30

Lys Glu Gly Ile Pro Pro Asp Gln Gln Arg Leu Ile Phe Ala Gly Lys
35 40 45

Gln Leu Glu Asp Gly Arg Thr Leu Ser Asp Tyr Asn Ile Gln Lys Glu
50 55 60

Ser Thr Leu His Leu Val Leu Arg Leu Arg Gly Gly
65 70 75

<210> 168
<211> 105
<212> PRT
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成多肽"

<400> 168
Thr Val Ala Ala Pro Ser Val Phe Ile Phe Pro Pro Ser Asp Glu Gln
1 5 10 15

Leu Lys Ser Gly Thr Ala Ser Val Val Cys Leu Leu Asn Asn Phe Tyr
20 25 30

Pro Arg Glu Ala Lys Val Gln Trp Lys Val Asp Asn Ala Leu Gln Ser
35 40 45

Gly Asn Ser Gln Glu Ser Val Thr Glu Gln Asp Ser Lys Asp Ser Thr
50 55 60

Tyr Ser Leu Ser Ser Thr Leu Thr Leu Ser Lys Ala Asp Tyr Glu Lys
65 70 75 80

His Lys Val Tyr Ala Cys Glu Val Thr His Gln Gly Leu Ser Ser Pro
85 90 95

Val Thr Lys Ser Phe Asn Arg Gly Glu
100 105

<210> 169
<211> 186
<212> PRT
<213> 智人

<400> 169
Asp Ala His Lys Ser Glu Val Ala His Arg Phe Lys Asp Leu Gly Glu
1 5 10 15

Glu Asn Phe Lys Ala Leu Val Leu Ile Ala Phe Ala Gln Tyr Leu Gln
20 25 30

Gln Ser Pro Phe Glu Asp His Val Lys Leu Val Asn Glu Val Thr Glu
35 40 45

Phe Ala Lys Thr Cys Val Ala Asp Glu Ser Ala Glu Asn Cys Asp Lys
50 55 60

Ser Leu His Thr Leu Phe Gly Asp Lys Leu Cys Thr Val Ala Thr Leu
65 70 75 80

Arg Glu Thr Tyr Gly Glu Met Ala Asp Cys Cys Ala Lys Gln Glu Pro
85 90 95

Glu Arg Asn Glu Cys Phe Leu Gln His Lys Asp Asp Asn Pro Asn Leu
100 105 110

Pro Arg Leu Val Arg Pro Glu Val Asp Val Met Cys Thr Ala Phe His
115 120 125

Asp Asn Glu Glu Thr Phe Leu Lys Lys Tyr Leu Tyr Glu Ile Ala Arg
130 135 140

Arg His Pro Tyr Phe Tyr Ala Pro Glu Leu Leu Phe Phe Ala Lys Arg
145 150 155 160

Tyr Lys Ala Ala Phe Thr Glu Cys Cys Gln Ala Ala Asp Lys Ala Ala
165 170 175

Cys Leu Leu Pro Lys Leu Asp Glu Leu Arg
180 185

<210> 170
<211> 193
<212> PRT
<213> 智人

<400> 170
Asp Glu Gly Lys Ala Ser Ser Ala Lys Gln Arg Leu Lys Cys Ala Ser
1 5 10 15

Leu Gln Lys Phe Gly Glu Arg Ala Phe Lys Ala Trp Ala Val Ala Arg
20 25 30

Leu Ser Gln Arg Phe Pro Lys Ala Glu Phe Ala Glu Val Ser Lys Leu
35 40 45

Val Thr Asp Leu Thr Lys Val His Thr Glu Cys Cys His Gly Asp Leu
50 55 60

Leu Glu Cys Ala Asp Asp Arg Ala Asp Leu Ala Lys Tyr Ile Cys Glu
65 70 75 80

Asn Gln Asp Ser Ile Ser Ser Lys Leu Lys Glu Cys Cys Glu Lys Pro
85 90 95

Leu Leu Glu Lys Ser His Cys Ile Ala Glu Val Glu Asn Asp Glu Met
100 105 110

Pro Ala Asp Leu Pro Ser Leu Ala Ala Asp Phe Val Glu Ser Lys Asp
115 120 125

Val Cys Lys Asn Tyr Ala Glu Ala Lys Asp Val Phe Leu Gly Met Phe
130 135 140

Leu Tyr Glu Tyr Ala Arg Arg His Pro Asp Tyr Ser Val Val Leu Leu
145 150 155 160

Leu Arg Leu Ala Lys Thr Tyr Glu Thr Thr Leu Glu Lys Cys Cys Ala
165 170 175

Ala Ala Asp Pro His Glu Cys Tyr Ala Lys Val Phe Asp Glu Phe Lys
180 185 190

Pro

<210> 171
<211> 30
<212> DNA
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成引物"

<400> 171
ctgccgagaa agaacaggac accggcgtgg 30

<210> 172
<211> 30
<212> DNA
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成引物"

<400> 172
ccacgccggt gtcctgttct ttctcggcag 30

<210> 173
<211> 29
<212> DNA
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成引物"

<400> 173
cgtgccccag aatcaggcca tcgagagcc 29

<210> 174
<211> 29
<212> DNA
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成引物"

<400> 174
ggctctcgat ggcctgattc tggggcacg 29

<210> 175
<211> 41
<212> DNA
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成引物"

<400> 175
ggctacaaga aagtcgtgca ggtgtccgac ctgtacaaga c 41

<210> 176
<211> 41
<212> DNA
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成引物"

<400> 176
gtcttgtaca ggtcggacac ctgcacgact ttcttgtagc c 41

<210> 177
<211> 35
<212> DNA
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成引物"

<400> 177
gcatcctgga actgttccag accagctact gcccc 35

<210> 178
<211> 35
<212> DNA
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成引物"

<400> 178
ggggcagtag ctggtctgga acagttccag gatgc 35

<210> 179
<211> 35
<212> DNA
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述: 合成引物"

<400> 179
ccgtgatgaa gttcctgcag ctgaccagcg agaag 35

<210> 180
<211> 35
<212> DNA
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述: 合成引物"

<400> 180
cttctcgctg gtcagctgca ggaacttcat cacgg 35

<210> 181
<211> 36
<212> DNA
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述: 合成引物"

<400> 181
cactgggcta catgctgcag ctgaccaaca tgatcc 36

<210> 182
<211> 36
<212> DNA
<213> 人工序列

<220>
<221> 來源

<223> /注釋="人工序列的描述：合成引物"

<400> 182
ggatcatgtt ggtcagctgc agcatgtagc ccagtg 36

<210> 183
<211> 39
<212> DNA
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成引物"

<400> 183
ctacatcctg agcctgctgc agcagggcta ccacttcac 39

<210> 184
<211> 39
<212> DNA
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成引物"

<400> 184
gtgaagtggt agccctgctg cagcaggctc aggatgtag 39

<210> 185
<211> 43
<212> DNA
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成引物"

<400> 185
gagaagtacc tgagcgagtt ttgcttcagc ggcacctaca tcc 43

<210> 186
<211> 43
<212> DNA
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成引物"

<400> 186
ggatgtaggt gccgctgaag caaaactcgc tcaggtactt ctc 43

<210> 187
<211> 36
<212> DNA
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成引物"

<400> 187
gttcgagatc cagggcaccg gcaattacca gcagtg 36

<210> 188
<211> 36
<212> DNA
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成引物"

<400> 188
cactgctggt aattgccggt gccctggatc tcgaac 36

<210> 189
<211> 37
<212> DNA
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成引物"

<400> 189
cgccgatagc tgggagcaca tccacttcat cggcaag 37

<210> 190
<211> 37
<212> DNA

<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述: 合成引物"

<400> 190
cttgccgatg aagtggatgt gctcccagct atcggcg 37

<210> 191
<211> 120
<212> DNA
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述: 合成引物"

<400> 191
gagatcggca tctacctgac cgactgcatg gaacgggcca tggaagtgat ccccagaagc 60

cagcaccagg aaaccccccgt gtatctggga gccaccgccg gcatgagact gctgagaatg 120

<210> 192
<211> 25
<212> DNA
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述: 合成引物"

<400> 192
gagatcggca tctacctgac cgact 25

<210> 193
<211> 18
<212> DNA
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述: 合成引物"

<400> 193
cattctcagc agtctcat 18

<210> 194
<211> 120
<212> DNA
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述: 合成引物"

<400> 194
cttcagcgcc ttctactccg tgatgaagtt cctgaacctg accagcgaga aggtgtccca 60

ggaaaaagtg acagagatga tgaagaagtt ctgcgcccag ccctgggagg aaatcaagac 120

<210> 195
<211> 19
<212> DNA
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述: 合成引物"

<400> 195
cttcagcgcc ttctactcc 19

<210> 196
<211> 19
<212> DNA
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述: 合成引物"

<400> 196
ggtcttgatt tcctcccag 19

<210> 197
<211> 119
<212> DNA
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述: 合成引物"

<400> 197
ctgggaggaa atcaagacct cctacgctgg cgtgaaagag aagtacctga gcgagttctg 60

cttcagcggc acctacatcc tgagcctgct gctgcagggc taccacttca ccgccgata 119

<210> 198
<211> 119
<212> DNA
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述: 合成引物"

<400> 198
ctgggaggaa atcaagacct cctacgctgg cgtgaaagag aagtacctga gcgagtactg 60

cttcagcggc acctacatcc tgagcctgct gcagcagggc taccacttca ccgccgata 119

<210> 199
<211> 119
<212> DNA
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述: 合成引物"

<400> 199
ctgggaggaa atcaagacct cctacgctgg cgtgaaagag aagtacctga gcgagttctg 60

cttcagcggc acctacatcc tgagcctgct gcagcagggc taccacttca ccgccgata 119

<210> 200
<211> 19
<212> DNA
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述: 合成引物"

<400> 200
ctgggaggaa atcaagacc 19

<210> 201
<211> 19
<212> DNA
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述: 合成引物"

<400> 201
tatcggcggt gaagtggta 19

<210> 202
<211> 119
<212> DNA
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述: 合成引物"

<400> 202
ctgggaggaa atcaagacct cctacgctgg cgtgaaagag aagtacctga gcgagtactg 60

cttcagcggc acctacatcc tgagcctgct gctgcagggc taccacttca ccgccgata 119

<210> 203
<211> 26
<212> DNA
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述: 合成引物"

<400> 203
caccggccag gaagccggcg cctacg 26

<210> 204
<211> 26
<212> DNA
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述: 合成引物"

<400> 204
cgtaggcgcc ggcttcctgg ccggtg 26

<210> 205
<211> 34
<212> DNA
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成引物"

<400> 205
ggacctgggc ggagctgcta cccaagtgac cttc 34

<210> 206
<211> 34
<212> DNA
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成引物"

<400> 206
gaaggtcact tgggtagcag ctccgcccag gtcc 34

<210> 207
<211> 80
<212> DNA
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成引物"

<400> 207
ctggatcacc atcaactacc tgctgggcaa gttcagccag aagaccagat ggttcagcat 60

cgtgccctac gagacaaaca 80

<210> 208
<211> 69
<212> DNA
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成引物"

<400> 208
tcacttgggt agaagctccg cccaggtcca gggcgccgaa ggtttcctga ttgtttgtct 60

cgtagggca 69

<210> 209
<211> 430
<212> PRT
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成多肽"

<400> 209
Ala Pro Thr Thr Gln Asn Lys Ala Leu Pro Glu Asn Val Lys Tyr Gly
1 5 10 15

Ile Val Leu Asp Ala Gly Ser Ser His Thr Ser Leu Tyr Ile Tyr Lys
20 25 30

Trp Pro Ala Glu Lys Glu Asn Asp Thr Gly Val Val His Gln Val Glu
35 40 45

Glu Cys Arg Val Lys Gly Pro Gly Ile Ser Lys Phe Val Gln Lys Val
50 55 60

Asn Glu Ile Gly Ile Tyr Leu Thr Asp Cys Met Glu Arg Ala Met Glu
65 70 75 80

Val Ile Pro Arg Ser Gln His Gln Glu Thr Pro Val Tyr Leu Gly Ala
85 90 95

Thr Ala Gly Met Arg Leu Leu Arg Met Glu Ser Glu Glu Leu Ala Asp
100 105 110

Arg Val Leu Asp Val Val Glu Arg Ser Leu Ser Asn Tyr Pro Phe Asp
115 120 125

Phe Gln Gly Ala Arg Ile Ile Thr Gly Gln Glu Glu Gly Ala Tyr Gly
130 135 140

Trp Ile Thr Ile Asn Tyr Leu Leu Gly Lys Phe Ser Gln Lys Asn Gln
145 150 155 160

Glu Thr Phe Gly Ala Leu Asp Leu Gly Gly Ala Ser Thr Gln Val Thr
165 170 175

Phe Val Pro Gln Asn Gln Thr Ile Glu Ser Pro Asp Asn Ala Leu Gln
180 185 190

Phe Arg Leu Tyr Gly Lys Asp Tyr Asn Val Tyr Thr His Ser Phe Leu
195 200 205

Cys Tyr Gly Lys Asp Gln Ala Leu Trp Gln Lys Leu Ala Lys Asp Ile
210 215 220

Gln Val Ala Ser Asn Glu Ile Leu Arg Asp Pro Cys Phe His Pro Gly
225 230 235 240

Tyr Lys Lys Val Val Asn Val Ser Asp Leu Tyr Lys Thr Pro Cys Thr
245 250 255

Lys Arg Phe Glu Met Thr Leu Pro Phe Gln Gln Phe Glu Ile Gln Gly
260 265 270

Ile Gly Asn Tyr Gln Gln Cys His Gln Ser Ile Leu Glu Leu Phe Asn
275 280 285

Thr Ser Tyr Cys Pro Tyr Ser Gln Cys Ala Phe Asn Gly Ile Phe Leu
290 295 300

Pro Pro Leu Gln Gly Asp Phe Gly Ala Phe Ser Ala Phe Tyr Phe Val
305 310 315 320

Met Lys Phe Leu Asn Leu Thr Ser Glu Lys Val Ser Gln Glu Lys Val
325 330 335

Thr Glu Met Met Lys Lys Phe Cys Ala Gln Pro Trp Glu Glu Ile Lys
340 345 350

Thr Ser Tyr Ala Gly Val Lys Glu Lys Tyr Leu Ser Glu Tyr Cys Phe
355 360 365

Ser Gly Thr Tyr Ile Leu Ser Leu Leu Leu Gln Gly Tyr His Phe Thr
370 375 380

Ala Asp Ser Trp Glu His Ile His Phe Ile Gly Lys Ile Gln Gly Ser
385 390 395 400

Asp Ala Gly Trp Thr Leu Gly Tyr Met Leu Asn Leu Thr Asn Met Ile
405 410 415

Pro Ala Glu Gln Pro Leu Ser Thr Pro Leu Ser His Ser Thr
420 425 430

<210> 210
<211> 1290
<212> DNA
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成多核苷酸"

<400> 210
gcccctacca cccagaacaa ggccctgccc gagaacgtga agtacggcat cgtgctggat 60

gccggcagca gccacaccag cctgtacatc tacaagtggc ctgccgagaa agaaaacgac 120

accggcgtgg tgcatcaggt ggaagagtgc agagtgaagg gccctggcat cagcaagttc 180

gtgcagaaag tgaacgagat cggcatctac ctgaccgact gcatggaacg ggccatggaa 240

gtgatcccca gaagccagca ccaggaaacc cccgtgtatc tgggagccac cgccggcatg 300

agactgctga gaatggaaag cgaggaactg gccgaccggg tgctggacgt ggtggaaaga 360

agcctgagca actacccatt cgattttcaa ggcgccagaa tcatcaccgg ccaggaagaa 420

ggcgcctacg gctggatcac catcaactac ctgctgggca agttcagcca gaagaatcag 480

gaaaccttcg gcgccctgga cctgggcgga gcttctaccc aagtgacctt cgtgccccag 540

aatcagacca tcgagagccc cgacaacgcc ctgcagttcc ggctgtacgg caaggactac 600

aatgtgtaca cccacagctt tctgtgctac ggaaaggacc aggctctgtg gcagaagctg 660

gccaaggaca tccaggtggc cagcaacgag atcctgcggg acccttgctt ccaccccggc 720

tacaagaaag tcgtgaacgt gtccgacctg tacaagaccc cctgcaccaa gagattcgag 780

atgaccctgc ccttccagca gttcgagatc cagggcatcg gcaattacca gcagtgccac 840

cagagcatcc tggaactgtt caacaccagc tactgccccc acagccagtg cgccttcaac 900

ggcatcttcc tgccacctct gcaggggggat ttcggcgcct tcagcgcctt ctacttcgtg 960

atgaagttcc tgaacctgac cagcgagaag gtgtcccagg aaaaagtgac agagatgatg 1020

aagaagttct gcgcccagcc ctgggaggaa atcaagacct cctacgctgg cgtgaaagag 1080

aagtacctga gcgagtactg cttcagcggc acctacatcc tgagcctgct gctgcagggc 1140

taccacttca ccgccgatag ctgggagcac atccacttca tcggcaagat tcagggcagc 1200

gacgccggct ggacactggg ctacatgctg aatctgacca acatgatccc cgccgagcag 1260

cccctgagca cacctctgag ccacagcacc 1290

<210> 211
<211> 430
<212> PRT
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成多肽"

<400> 211
Ala Pro Thr Thr Gln Asn Lys Ala Leu Pro Glu Asn Val Lys Tyr Gly
1 5 10 15

Ile Val Leu Asp Ala Gly Ser Ser His Thr Ser Leu Tyr Ile Tyr Lys
20 25 30

Trp Pro Ala Glu Lys Glu Asn Asp Thr Gly Val Val His Gln Val Glu
35 40 45

Glu Cys Arg Val Lys Gly Pro Gly Ile Ser Lys Phe Val Gln Lys Val
50 55 60

Asn Glu Ile Gly Ile Tyr Leu Thr Asp Cys Met Glu Arg Ala Met Glu
65 70 75 80

Val Ile Pro Arg Ser Gln His Gln Glu Thr Pro Val Tyr Leu Gly Ala
85 90 95

Thr Ala Gly Met Arg Leu Leu Arg Met Glu Ser Glu Glu Leu Ala Asp
100 105 110

Arg Val Leu Asp Val Val Glu Arg Ser Leu Ser Asn Tyr Pro Phe Asp
115 120 125

Phe Gln Gly Ala Arg Ile Ile Thr Gly Gln Glu Glu Gly Ala Tyr Gly
130 135 140

Trp Ile Thr Ile Asn Tyr Leu Leu Gly Lys Phe Ser Gln Lys Asn Gln
145 150 155 160

Glu Thr Phe Gly Ala Leu Asp Leu Gly Gly Ala Ser Thr Gln Val Thr
165 170 175

Phe Val Pro Gln Asn Gln Thr Ile Glu Ser Pro Asp Asn Ala Leu Gln
180 185 190

Phe Arg Leu Tyr Gly Lys Asp Tyr Asn Val Tyr Thr His Ser Phe Leu
195 200 205

Cys Tyr Gly Lys Asp Gln Ala Leu Trp Gln Lys Leu Ala Lys Asp Ile
210 215 220

Gln Val Ala Ser Asn Glu Ile Leu Arg Asp Pro Cys Phe His Pro Gly

225 230 235 240

Tyr Lys Lys Val Val Asn Val Ser Asp Leu Tyr Lys Thr Pro Cys Thr
245 250 255

Lys Arg Phe Glu Met Thr Leu Pro Phe Gln Gln Phe Glu Ile Gln Gly
260 265 270

Ile Gly Asn Tyr Gln Gln Cys His Gln Ser Ile Leu Glu Leu Phe Asn
275 280 285

Thr Ser Tyr Cys Pro Tyr Ser Gln Cys Ala Phe Asn Gly Ile Phe Leu
290 295 300

Pro Pro Leu Gln Gly Asp Phe Gly Ala Phe Ser Ala Phe Tyr Phe Val
305 310 315 320

Met Lys Phe Leu Asn Leu Thr Ser Glu Lys Val Ser Gln Glu Lys Val
325 330 335

Thr Glu Met Met Lys Lys Phe Cys Ala Gln Pro Trp Glu Glu Ile Lys
340 345 350

Thr Ser Tyr Ala Gly Val Lys Glu Lys Tyr Leu Ser Glu Phe Cys Phe
355 360 365

Ser Gly Thr Tyr Ile Leu Ser Leu Leu Leu Gln Gly Tyr His Phe Thr
370 375 380

Ala Asp Ser Trp Glu His Ile His Phe Ile Gly Lys Ile Gln Gly Ser
385 390 395 400

Asp Ala Gly Trp Thr Leu Gly Tyr Met Leu Asn Leu Thr Asn Met Ile
405 410 415

Pro Ala Glu Gln Pro Leu Ser Thr Pro Leu Ser His Ser Thr
420 425 430

<210> 212
<211> 1290
<212> DNA
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成多核苷酸"

<400> 212
gcccctacca cccagaacaa ggccctgccc gagaacgtga agtacggcat cgtgctggat 60

gccggcagca gccacaccag cctgtacatc tacaagtggc ctgccgagaa agaaaacgac 120

accggcgtgg tgcatcaggt ggaagagtgc agagtgaagg gccctggcat cagcaagttc 180

gtgcagaaag tgaacgagat cggcatctac ctgaccgact gcatggaacg ggccatggaa 240

gtgatcccca gaagccagca ccaggaaacc cccgtgtatc tgggagccac cgccggcatg 300

agactgctga gaatggaaag cgaggaactg gccgaccggg tgctggacgt ggtggaaaga 360

agcctgagca actacccatt cgattttcaa ggcgccagaa tcatcaccgg ccaggaagaa 420

ggcgcctacg gctggatcac catcaactac ctgctgggca agttcagcca gaagaatcag 480

gaaaccttcg gcgccctgga cctgggcgga gcttctaccc aagtgacctt cgtgccccag 540

aatcagacca tcgagagccc cgacaacgcc ctgcagttcc ggctgtacgg caaggactac 600

aatgtgtaca cccacagctt tctgtgctac ggaaaggacc aggctctgtg gcagaagctg 660

gccaaggaca tccaggtggc cagcaacgag atcctgcggg acccttgctt ccaccccggc 720

tacaagaaag tcgtgaacgt gtccgacctg tacaagaccc cctgcaccaa gagattcgag 780

atgaccctgc ccttccagca gttcgagatc cagggcatcg gcaattacca gcagtgccac 840

cagagcatcc tggaactgtt caacaccagc tactgccccc acagccagtg cgccttcaac 900

ggcatcttcc tgccacctct gcaggggggat ttcggcgcct tcagcgcctt ctacttcgtg 960

atgaagttcc tgaacctgac cagcgagaag gtgtcccagg aaaaagtgac agagatgatg 1020

aagaagttct gcgcccagcc ctgggaggaa atcaagacct cctacgctgg cgtgaaagag 1080

aagtacctga gcgagttttg cttcagcggc acctacatcc tgagcctgct gctgcagggc 1140

taccacttca ccgccgatag ctgggagcac atccacttca tcggcaagat tcagggcagc 1200

gacgccggct ggacactggg ctacatgctg aatctgacca acatgatccc cgccgagcag 1260

cccctgagca cacctctgag ccacagcacc 1290

<210> 213
<211> 433
<212> PRT
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成多肽"

<400> 213
Ala Pro Thr Ser Ser Ser Thr Gln Asn Lys Ala Leu Pro Glu Asn Val
1 5 10 15

Lys Tyr Gly Ile Val Leu Asp Ala Gly Ser Ser His Thr Ser Leu Tyr
20 25 30

Ile Tyr Lys Trp Pro Ala Glu Lys Glu Asn Asp Thr Gly Val Val His
35 40 45

Gln Val Glu Glu Cys Arg Val Lys Gly Pro Gly Ile Ser Lys Phe Val
50 55 60

Gln Lys Val Asn Glu Ile Gly Ile Tyr Leu Thr Asp Cys Met Glu Arg
65 70 75 80

Ala Met Glu Val Ile Pro Arg Ser Gln His Gln Glu Thr Pro Val Tyr
85 90 95

Leu Gly Ala Thr Ala Gly Met Arg Leu Leu Arg Met Glu Ser Glu Glu
100 105 110

Leu Ala Asp Arg Val Leu Asp Val Val Glu Arg Ser Leu Ser Asn Tyr
115 120 125

Pro Phe Asp Phe Gln Gly Ala Arg Ile Ile Thr Gly Gln Glu Glu Gly
130 135 140

Ala Tyr Gly Trp Ile Thr Ile Asn Tyr Leu Leu Gly Lys Phe Ser Gln
145 150 155 160

Lys Asn Gln Glu Thr Phe Gly Ala Leu Asp Leu Gly Gly Ala Ser Thr
165 170 175

Gln Val Thr Phe Val Pro Gln Asn Gln Thr Ile Glu Ser Pro Asp Asn
180 185 190

Ala Leu Gln Phe Arg Leu Tyr Gly Lys Asp Tyr Asn Val Tyr Thr His
195 200 205

Ser Phe Leu Cys Tyr Gly Lys Asp Gln Ala Leu Trp Gln Lys Leu Ala
210 215 220

Lys Asp Ile Gln Val Ala Ser Asn Glu Ile Leu Arg Asp Pro Cys Phe
225 230 235 240

His Pro Gly Tyr Lys Lys Val Val Asn Val Ser Asp Leu Tyr Lys Thr
245 250 255

Pro Cys Thr Lys Arg Phe Glu Met Thr Leu Pro Phe Gln Gln Phe Glu
260 265 270

Ile Gln Gly Ile Gly Asn Tyr Gln Gln Cys His Gln Ser Ile Leu Glu
275 280 285

Leu Phe Asn Thr Ser Tyr Cys Pro Tyr Ser Gln Cys Ala Phe Asn Gly
290 295 300

Ile Phe Leu Pro Pro Leu Gln Gly Asp Phe Gly Ala Phe Ser Ala Phe
305 310 315 320

Tyr Phe Val Met Lys Phe Leu Asn Leu Thr Ser Glu Lys Val Ser Gln
325 330 335

Glu Lys Val Thr Glu Met Met Lys Lys Phe Cys Ala Gln Pro Trp Glu
340 345 350

Glu Ile Lys Thr Ser Tyr Ala Gly Val Lys Glu Lys Tyr Leu Ser Glu
355 360 365

Phe Cys Phe Ser Gly Thr Tyr Ile Leu Ser Leu Leu Leu Gln Gly Tyr
370 375 380

His Phe Thr Ala Asp Ser Trp Glu His Ile His Phe Ile Gly Lys Ile
385 390 395 400

Gln Gly Ser Asp Ala Gly Trp Thr Leu Gly Tyr Met Leu Asn Leu Thr
405 410 415

Asn Met Ile Pro Ala Glu Gln Pro Leu Ser Thr Pro Leu Ser His Ser
420 425 430

Thr

<210> 214
<211> 1299
<212> DNA
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成多核苷酸"

<400> 214
gcccctacca gcagcagcac ccagaacaag gccctgcccg agaacgtgaa gtacggcatc 60

gtgctggatg ccggcagcag ccacaccagc ctgtacatct acaagtggcc tgccgagaaa 120

gaaaacgaca ccggcgtggt gcatcaggtg gaagagtgca gagtgaaggg ccctggcatc 180

agcaagttcg tgcagaaagt gaacgagatc ggcatctacc tgaccgactg catggaacgg 240

gccatggaag tgatccccag aagccagcac caggaaaccc ccgtgtatct gggagccacc 300

gccggcatga gactgctgag aatggaaagc gaggaactgg ccgaccgggt gctggacgtg 360

gtggaaagaa gcctgagcaa ctacccattc gattttcaag gcgccagaat catcaccggc 420

caggaagaag gcgcctacgg ctggatcacc atcaactacc tgctgggcaa gttcagccag 480

aagaatcagg aaaccttcgg cgccctggac ctgggcggag cttctaccca agtgaccttc 540

gtgccccaga atcagaccat cgagagcccc gacaacgccc tgcagttccg gctgtacggc 600

aaggactaca atgtgtacac ccacagcttt ctgtgctacg gaaaggacca ggctctgtgg 660

cagaagctgg ccaaggacat ccaggtggcc agcaacgaga tcctgcggga cccttgcttc 720

caccccggct acaagaaagt cgtgaacgtg tccgacctgt acaagacccc ctgcaccaag 780

agattcgaga tgaccctgcc cttccagcag ttcgagatcc agggcatcgg caattaccag 840

cagtgccacc agagcatcct ggaactgttc aacaccagct actgccccta cagccagtgc 900

gccttcaacg gcatcttcct gccacctctg caggggggatt tcggcgcctt cagcgccttc 960

tacttcgtga tgaagttcct gaacctgacc agcgagaagg tgtcccagga aaaagtgaca 1020

gagatgatga agaagttctg cgcccagccc tgggaggaaa tcaagacctc ctacgctggc 1080

gtgaaagaga agtacctgag cgagttctgc ttcagcggca cctacatcct gagcctgctg 1140

ctgcagggct accacttcac cgccgatagc tgggagcaca tccacttcat cggcaagatt 1200

cagggcagcg acgccggctg gacactgggc tacatgctga atctgaccaa catgatcccc 1260

gccgagcagc ccctgagcac acctctgagc cacagcacc 1299

<210> 215
<211> 442
<212> PRT
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成多肽"

<400> 215
Ala Pro Thr Ser Ser Ser Thr Lys Lys Thr Gln Leu Thr Ser Ser Thr
1 5 10 15

Gln Asn Lys Ala Leu Pro Glu Asn Val Lys Tyr Gly Ile Val Leu Asp
20 25 30

Ala Gly Ser Ser His Thr Ser Leu Tyr Ile Tyr Lys Trp Pro Ala Glu
35 40 45

Lys Glu Asn Asp Thr Gly Val Val His Gln Val Glu Glu Cys Arg Val
50 55 60

Lys Gly Pro Gly Ile Ser Lys Phe Val Gln Lys Val Asn Glu Ile Gly
65 70 75 80

Ile Tyr Leu Thr Asp Cys Met Glu Arg Ala Met Glu Val Ile Pro Arg
85 90 95

Ser Gln His Gln Glu Thr Pro Val Tyr Leu Gly Ala Thr Ala Gly Met
100 105 110

Arg Leu Leu Arg Met Glu Ser Glu Glu Leu Ala Asp Arg Val Leu Asp
115 120 125

Val Val Glu Arg Ser Leu Ser Asn Tyr Pro Phe Asp Phe Gln Gly Ala
130 135 140

Arg Ile Ile Thr Gly Gln Glu Glu Gly Ala Tyr Gly Trp Ile Thr Ile
145 150 155 160

Asn Tyr Leu Leu Gly Lys Phe Ser Gln Lys Asn Gln Glu Thr Phe Gly
165 170 175

Ala Leu Asp Leu Gly Gly Ala Ser Thr Gln Val Thr Phe Val Pro Gln
180 185 190

Asn Gln Thr Ile Glu Ser Pro Asp Asn Ala Leu Gln Phe Arg Leu Tyr
195 200 205

Gly Lys Asp Tyr Asn Val Tyr Thr His Ser Phe Leu Cys Tyr Gly Lys
210 215 220

Asp Gln Ala Leu Trp Gln Lys Leu Ala Lys Asp Ile Gln Val Ala Ser

225 230 235 240

Asn Glu Ile Leu Arg Asp Pro Cys Phe His Pro Gly Tyr Lys Lys Val
245 250 255

Val Asn Val Ser Asp Leu Tyr Lys Thr Pro Cys Thr Lys Arg Phe Glu
260 265 270

Met Thr Leu Pro Phe Gln Gln Phe Glu Ile Gln Gly Ile Gly Asn Tyr
275 280 285

Gln Gln Cys His Gln Ser Ile Leu Glu Leu Phe Asn Thr Ser Tyr Cys
290 295 300

Pro Tyr Ser Gln Cys Ala Phe Asn Gly Ile Phe Leu Pro Pro Leu Gln
305 310 315 320

Gly Asp Phe Gly Ala Phe Ser Ala Phe Tyr Phe Val Met Lys Phe Leu
325 330 335

Asn Leu Thr Ser Glu Lys Val Ser Gln Glu Lys Val Thr Glu Met Met
340 345 350

Lys Lys Phe Cys Ala Gln Pro Trp Glu Glu Ile Lys Thr Ser Tyr Ala
355 360 365

Gly Val Asn Glu Lys Tyr Leu Ser Glu Phe Cys Phe Ser Gly Thr Tyr
370 375 380

Ile Leu Ser Leu Leu Leu Gln Gly Tyr His Phe Thr Ala Asp Ser Trp
385 390 395 400

Glu His Ile His Phe Ile Gly Lys Ile Gln Gly Ser Asp Ala Gly Trp
405 410 415

Thr Leu Gly Tyr Met Leu Asn Leu Thr Asn Met Ile Pro Ala Glu Gln
420 425 430

Pro Leu Ser Thr Pro Leu Ser His Ser Thr
435 440

<210> 216
<211> 1326
<212> DNA
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成多核苷酸"

<400> 216
gcccctacca gcagcagcac caagaaaacc cagctgacca gcagcaccca gaacaaggcc 60

ctgcccgaga acgtgaagta cggcatcgtg ctggatgccg gcagcagcca caccagcctg 120

tacatctaca agtggcctgc cgagaaagaa aacgacaccg gcgtggtgca tcaggtggaa 180

gagtgcagag tgaagggccc tggcatcagc aagttcgtgc agaaagtgaa cgagatcggc 240

atctacctga ccgactgcat ggaacgggcc atggaagtga tccccagaag ccagcaccag 300

gaaacccccg tgtatctggg agccaccgcc ggcatgagac tgctgagaat ggaaagcgag 360

gaactggccg accgggtgct ggacgtggtg gaaagaagcc tgagcaacta cccattcgat 420

tttcaaggcg ccagaatcat caccggccag gaagaaggcg cctacggctg gatcaccatc 480

aactacctgc tgggcaagtt cagccagaag aatcaggaaa ccttcggcgc cctggacctg 540

ggcggagctt ctacccaagt gaccttcgtg ccccagaatc agaccatcga gagccccgac 600

aacgccctgc agttccggct gtacggcaag gactacaatg tgtacaccca cagctttctg 660

tgctacggaa aggaccaggc tctgtggcag aagctggcca aggacatcca ggtggccagc 720

aacgagatcc tgcgggaccc ttgcttccac cccggctaca agaaagtcgt gaacgtgtcc 780

gacctgtaca agacccccctg caccaagaga ttcgagatga ccctgccctt ccagcagttc 840

gagatccagg gcatcggcaa ttaccagcag tgccaccaga gcatcctgga actgttcaac 900

accagctact gcccctacag ccagtgcgcc ttcaacggca tcttcctgcc acctctgcag 960

ggggatttcg gcgccttcag cgccttctac ttcgtgatga agttcctgaa cctgaccagc 1020

gagaaggtgt cccaggaaaa agtgacagag atgatgaaga agttctgcgc ccaaccctgg 1080

gaggaaatca agacctccta cgctggcgtg aacgagaagt acctgagcga gttttgcttc 1140

agcggcacct acatcctgag cctgctgctg cagggctacc acttcaccgc cgatagctgg 1200

gagcacatcc acttcatcgg caagattcag ggcagcgacg ccggctggac actgggctac 1260

atgctgaatc tgaccaacat gatccccgcc gagcagcccc tgagcacacc tctgagccac 1320

agcacc 1326

<210> 217
<211> 430
<212> PRT
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述: 合成多肽"

<400> 217
Ala Pro Thr Thr Gln Asn Lys Ala Leu Pro Glu Asn Val Lys Tyr Gly
1 5 10 15

Ile Val Leu Asp Ala Gly Ser Ser His Thr Ser Leu Tyr Ile Tyr Lys
20 25 30

Trp Pro Ala Glu Lys Glu Asn Asp Thr Gly Val Val His Gln Val Glu
35 40 45

Glu Cys Arg Val Lys Gly Pro Gly Ile Ser Lys Phe Val Gln Lys Val
50 55 60

Asn Glu Ile Gly Ile Tyr Leu Thr Asp Cys Met Glu Arg Ala Met Glu
65 70 75 80

Val Ile Pro Arg Ser Gln His Gln Glu Thr Pro Val Tyr Leu Gly Ala
85 90 95

Thr Ala Gly Met Arg Leu Leu Arg Met Glu Ser Glu Glu Leu Ala Asp
100 105 110

Arg Val Leu Asp Val Val Glu Arg Ser Leu Ser Asn Tyr Pro Phe Asp
115 120 125

Phe Gln Gly Ala Arg Ile Ile Thr Gly Gln Glu Glu Gly Ala Tyr Gly
130 135 140

Trp Ile Thr Ile Asn Tyr Leu Leu Gly Lys Phe Ser Gln Lys Asn Gln
145 150 155 160

Glu Thr Phe Gly Ala Leu Asp Leu Gly Gly Ala Ser Thr Gln Val Thr
165 170 175

Phe Val Pro Gln Asn Gln Thr Ile Glu Ser Pro Asp Asn Ala Leu Gln
180 185 190

Phe Arg Leu Tyr Gly Lys Asp Tyr Asn Val Tyr Thr His Ser Phe Leu
195 200 205

Cys Tyr Gly Lys Asp Gln Ala Leu Trp Gln Lys Leu Ala Lys Asp Ile
210 215 220

Gln Val Ala Ser Asn Glu Ile Leu Arg Asp Pro Cys Phe His Pro Gly
225 230 235 240

Tyr Lys Lys Val Val Asn Val Ser Asp Leu Tyr Lys Thr Pro Cys Thr
245 250 255

Lys Arg Phe Glu Met Thr Leu Pro Phe Gln Gln Phe Glu Ile Gln Gly
260 265 270

Ile Gly Asn Tyr Gln Gln Cys His Gln Ser Ile Leu Glu Leu Phe Asn
275 280 285

Thr Ser Tyr Cys Pro Tyr Ser Gln Cys Ala Phe Asn Gly Ile Phe Leu
290 295 300

Pro Pro Leu Gln Gly Asp Phe Gly Ala Phe Ser Ala Phe Tyr Phe Val
305 310 315 320

Met Lys Phe Leu Asn Leu Thr Ser Glu Lys Val Ser Gln Glu Lys Val
325 330 335

Thr Glu Met Met Lys Lys Phe Cys Ala Gln Pro Trp Glu Glu Ile Lys
340 345 350

Thr Ser Tyr Ala Gly Val Lys Glu Lys Tyr Leu Ser Glu Phe Cys Phe
355 360 365

Ser Gly Thr Tyr Ile Leu Ser Leu Leu Gln Gln Gly Tyr His Phe Thr
370 375 380

Ala Asp Ser Trp Glu His Ile His Phe Ile Gly Lys Ile Gln Gly Ser
385 390 395 400

Asp Ala Gly Trp Thr Leu Gly Tyr Met Leu Asn Leu Thr Asn Met Ile
405 410 415

Pro Ala Glu Gln Pro Leu Ser Thr Pro Leu Ser His Ser Thr
420 425 430

<210> 218
<211> 1290
<212> DNA
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成多核苷酸"

<400> 218
gcccctacca cccagaacaa ggccctgccc gagaacgtga agtacggcat cgtgctggat 60

gccggcagca gccacaccag cctgtacatc tacaagtggc ctgccgagaa agaaaacgac 120

accggcgtgg tgcatcaggt ggaagagtgc agagtgaagg gccctggcat cagcaagttc 180

gtgcagaaag tgaacgagat cggcatctac ctgaccgact gcatggaacg ggccatggaa 240

gtgatcccca gaagccagca ccaggaaacc cccgtgtatc tgggagccac cgccggcatg 300

agactgctga gaatggaaag cgaggaactg gccgaccggg tgctggacgt ggtggaaaga 360

agcctgagca actacccatt cgattttcaa ggcgccagaa tcatcaccgg ccaggaagaa 420

ggcgcctacg gctggatcac catcaactac ctgctgggca agttcagcca gaagaatcag 480

gaaaccttcg gcgccctgga cctgggcgga gcttctaccc aagtgacctt cgtgccccag 540

aatcagacca tcgagagccc cgacaacgcc ctgcagttcc ggctgtacgg caaggactac 600

aatgtgtaca cccacagctt tctgtgctac ggaaaggacc aggctctgtg gcagaagctg 660

gccaaggaca tccaggtggc cagcaacgag atcctgcggg acccttgctt ccaccccggc 720

tacaagaaag tcgtgaacgt gtccgacctg tacaagaccc cctgcaccaa gagattcgag 780

atgaccctgc ccttccagca gttcgagatc cagggcatcg gcaattacca gcagtgccac 840

cagagcatcc tggaactgtt caacaccagc tactgccccc acagccagtg cgccttcaac 900

ggcatcttcc tgccacctct gcaggggggat ttcggcgcct tcagcgcctt ctacttcgtg 960

atgaagttcc tgaacctgac cagcgagaag gtgtcccagg aaaaagtgac agagatgatg 1020

aagaagttct gcgcccagcc ctgggaggaa atcaagacct cctacgctgg cgtgaaagag 1080

aagtacctga gcgagttctg cttcagcggc acctacatcc tgagcctgct gcagcagggc 1140

taccacttca ccgccgatag ctgggagcac atccacttca tcggcaagat tcagggcagc 1200

gacgccggct ggacactggg ctacatgctg aatctgacca acatgatccc cgccgagcag 1260

cccctgagca cacctctgag ccacagcacc 1290

<210> 219
<211> 433
<212> PRT
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成多肽"

<400> 219
Ala Pro Thr Ser Ser Ser Thr Gln Asn Lys Ala Leu Pro Glu Asn Val
1 5 10 15

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

20 25 30

Ile Tyr Lys Trp Pro Ala Glu Lys Glu Asn Asp Thr Gly Val Val His
35 40 45

Gln Val Glu Glu Cys Arg Val Lys Gly Pro Gly Ile Ser Lys Phe Val
50 55 60

Gln Lys Val Asn Glu Ile Gly Ile Tyr Leu Thr Asp Cys Met Glu Arg
65 70 75 80

Ala Met Glu Val Ile Pro Arg Ser Gln His Gln Glu Thr Pro Val Tyr
85 90 95

Leu Gly Ala Thr Ala Gly Met Arg Leu Leu Arg Met Glu Ser Glu Glu
100 105 110

Leu Ala Asp Arg Val Leu Asp Val Val Glu Arg Ser Leu Ser Asn Tyr
115 120 125

Pro Phe Asp Phe Gln Gly Ala Arg Ile Ile Thr Gly Gln Glu Glu Gly
130 135 140

Ala Tyr Gly Trp Ile Thr Ile Asn Tyr Leu Leu Gly Lys Phe Ser Gln
145 150 155 160

Lys Asn Gln Glu Thr Phe Gly Ala Leu Asp Leu Gly Gly Ala Ser Thr
165 170 175

Gln Val Thr Phe Val Pro Gln Asn Gln Thr Ile Glu Ser Pro Asp Asn
180 185 190

Ala Leu Gln Phe Arg Leu Tyr Gly Lys Asp Tyr Asn Val Tyr Thr His
195 200 205

Ser Phe Leu Cys Tyr Gly Lys Asp Gln Ala Leu Trp Gln Lys Leu Ala
210 215 220

Lys Asp Ile Gln Val Ala Ser Asn Glu Ile Leu Arg Asp Pro Cys Phe
225 230 235 240

His Pro Gly Tyr Lys Lys Val Val Asn Val Ser Asp Leu Tyr Lys Thr
245 250 255

Pro Cys Thr Lys Arg Phe Glu Met Thr Leu Pro Phe Gln Gln Phe Glu
260 265 270

Ile Gln Gly Ile Gly Asn Tyr Gln Gln Cys His Gln Ser Ile Leu Glu
275 280 285

Leu Phe Asn Thr Ser Tyr Cys Pro Tyr Ser Gln Cys Ala Phe Asn Gly
290 295 300

Ile Phe Leu Pro Pro Leu Gln Gly Asp Phe Gly Ala Phe Ser Ala Phe
305 310 315 320

Tyr Phe Val Met Lys Phe Leu Asn Leu Thr Ser Glu Lys Val Ser Gln
325 330 335

Glu Lys Val Thr Glu Met Met Lys Lys Phe Cys Ala Gln Pro Trp Glu
340 345 350

Glu Ile Lys Thr Ser Tyr Ala Gly Val Lys Glu Lys Tyr Leu Ser Glu
355 360 365

Phe Cys Phe Ser Gly Thr Tyr Ile Leu Ser Leu Leu Gln Gln Gly Tyr
370 375 380

His Phe Thr Ala Asp Ser Trp Glu His Ile His Phe Ile Gly Lys Ile
385 390 395 400

Gln Gly Ser Asp Ala Gly Trp Thr Leu Gly Tyr Met Leu Asn Leu Thr
405 410 415

Asn Met Ile Pro Ala Glu Gln Pro Leu Ser Thr Pro Leu Ser His Ser

420 425 430

Thr

<210> 220
<211> 1299
<212> DNA
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成多核苷酸"

<400> 220
gcccctacca gcagcagcac ccagaacaag gccctgcccg agaacgtgaa gtacggcatc 60

gtgctggatg ccggcagcag ccacaccagc ctgtacatct acaagtggcc tgccgagaaa 120

gaaaacgaca ccggcgtggt gcatcaggtg gaagagtgca gagtgaaggg ccctggcatc 180

agcaagttcg tgcagaaagt gaacgagatc ggcatctacc tgaccgactg catggaacgg 240

gccatggaag tgatccccag aagccagcac caggaaaccc ccgtgtatct gggagccacc 300

gccggcatga gactgctgag aatggaaagc gaggaactgg ccgaccgggt gctggacgtg 360

gtggaaagaa gcctgagcaa ctacccattc gattttcaag gcgccagaat catcaccggc 420

caggaagaag gcgcctacgg ctggatcacc atcaactacc tgctgggcaa gttcagccag 480

aagaatcagg aaaccttcgg cgccctggac ctgggcggag cttctaccca agtgaccttc 540

gtgccccaga atcagaccat cgagagcccc gacaacgccc tgcagttccg gctgtacggc 600

aaggactaca atgtgtacac ccacagcttt ctgtgctacg gaaaggacca ggctctgtgg 660

cagaagctgg ccaaggacat ccaggtggcc agcaacgaga tcctgcggga cccttgcttc 720

caccccggct acaagaaagt cgtgaacgtg tccgacctgt acaagacccc ctgcaccaag 780

agattcgaga tgaccctgcc cttccagcag ttcgagatcc agggcatcgg caattaccag 840

cagtgccacc agagcatcct ggaactgttc aacaccagct actgccccta cagccagtgc 900

gccttcaacg gcatcttcct gccacctctg caggggggatt tcggcgcctt cagcgccttc 960

tacttcgtga tgaagttcct gaacctgacc agcgagaagg tgtcccagga aaaagtgaca 1020

gagatgatga agaagttctg cgcccagccc tgggaggaaa tcaagacctc ctacgctggc 1080

gtgaaagaga agtacctgag cgagttctgc ttcagcggca cctacatcct gagcctgctg 1140

cagcagggct accacttcac cgccgatagc tgggagcaca tccacttcat cggcaagatt 1200

cagggcagcg acgccggctg gacactgggc tacatgctga atctgaccaa catgatcccc 1260

gccgagcagc ccctgagcac acctctgagc cacagcacc 1299

<210> 221
<211> 430
<212> PRT
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成多肽"

<400> 221
Ala Pro Thr Thr Gln Asn Lys Ala Leu Pro Glu Asn Val Lys Tyr Gly
1 5 10 15

Ile Val Leu Asp Ala Gly Ser Ser His Thr Ser Leu Tyr Ile Tyr Lys
20 25 30

Trp Pro Ala Glu Lys Glu Asn Asp Thr Gly Val Val His Gln Val Glu
35 40 45

Glu Cys Arg Val Lys Gly Pro Gly Ile Ser Lys Phe Val Gln Lys Val
50 55 60

Asn Glu Ile Gly Ile Tyr Leu Thr Asp Cys Met Glu Arg Ala Met Glu
65 70 75 80

Val Ile Pro Arg Ser Gln His Gln Glu Thr Pro Val Tyr Leu Gly Ala
85 90 95

Thr Ala Gly Met Arg Leu Leu Arg Met Glu Ser Glu Glu Leu Ala Asp
100 105 110

Arg Val Leu Asp Val Val Glu Arg Ser Leu Ser Asn Tyr Pro Phe Asp
115 120 125

Phe Gln Gly Ala Arg Ile Ile Thr Gly Gln Glu Glu Gly Ala Tyr Gly
130 135 140

Trp Ile Thr Ile Asn Tyr Leu Leu Gly Lys Phe Ser Gln Lys Asn Gln
145 150 155 160

Glu Thr Phe Gly Ala Leu Asp Leu Gly Gly Ala Ser Thr Gln Val Thr
165 170 175

Phe Val Pro Gln Asn Gln Thr Ile Glu Ser Pro Asp Asn Ala Leu Gln
180 185 190

Phe Arg Leu Tyr Gly Lys Asp Tyr Asn Val Tyr Thr His Ser Phe Leu
195 200 205

Cys Tyr Gly Lys Asp Gln Ala Leu Trp Gln Lys Leu Ala Lys Asp Ile
210 215 220

Gln Val Ala Ser Asn Glu Ile Leu Arg Asp Pro Cys Phe His Pro Gly
225 230 235 240

Tyr Lys Lys Val Val Asn Val Ser Asp Leu Tyr Lys Thr Pro Cys Thr
245 250 255

Lys Arg Phe Glu Met Thr Leu Pro Phe Gln Gln Phe Glu Ile Gln Gly
260 265 270

Ile Gly Asn Tyr Gln Gln Cys His Gln Ser Ile Leu Glu Leu Phe Asn
275 280 285

Thr Ser Tyr Cys Pro Tyr Ser Gln Cys Ala Phe Asn Gly Ile Phe Leu
290 295 300

Pro Pro Leu Gln Gly Asp Phe Gly Ala Phe Ser Ala Phe Tyr Ser Val
305 310 315 320

Met Lys Phe Leu Asn Leu Thr Ser Glu Lys Val Ser Gln Glu Lys Val
325 330 335

Thr Glu Met Met Lys Lys Phe Cys Ala Gln Pro Trp Glu Glu Ile Lys
340 345 350

Thr Ser Tyr Ala Gly Val Lys Glu Lys Tyr Leu Ser Glu Tyr Cys Phe
355 360 365

Ser Gly Thr Tyr Ile Leu Ser Leu Leu Leu Gln Gly Tyr His Phe Thr
370 375 380

Ala Asp Ser Trp Glu His Ile His Phe Ile Gly Lys Ile Gln Gly Ser
385 390 395 400

Asp Ala Gly Trp Thr Leu Gly Tyr Met Leu Asn Leu Thr Asn Met Ile
405 410 415

Pro Ala Glu Gln Pro Leu Ser Thr Pro Leu Ser His Ser Thr
420 425 430

<210> 222
<211> 1290
<212> DNA
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成多核苷酸"

<400> 222
gcccctacca cccagaacaa ggccctgccc gagaacgtga agtacggcat cgtgctggat 60

gccggcagca gccacaccag cctgtacatc tacaagtggc ctgccgagaa agaaaacgac 120

accggcgtgg tgcatcaggt ggaagagtgc agagtgaagg gccctggcat cagcaagttc 180

gtgcagaaag tgaacgagat cggcatctac ctgaccgact gcatggaacg ggccatggaa 240

gtgatcccca gaagccagca ccaggaaacc cccgtgtatc tgggagccac cgccggcatg 300

agactgctga gaatggaaag cgaggaactg gccgaccggg tgctggacgt ggtggaaaga 360

agcctgagca actacccatt cgattttcaa ggcgccagaa tcatcaccgg ccaggaagaa 420

ggcgcctacg gctggatcac catcaactac ctgctgggca agttcagcca gaagaatcag 480

gaaaccttcg gcgccttgga cctgggcgga gcttctaccc aagtgacctt cgtgccccag 540

aatcagacca tcgagagccc cgacaacgcc ctgcagttcc ggctgtacgg caaggactac 600

aatgtgtaca cccacagctt tctgtgctac ggaaaggacc aggctctgtg gcagaagctg 660

gccaaggaca tccaggtggc cagcaacgag atcctgcggg acccttgctt ccaccccggc 720

tacaagaaag tcgtgaacgt gtccgacctg tacaagaccc cctgcaccaa gagattcgag 780

atgaccctgc ccttccagca gttcgagatc cagggcatcg gcaattacca gcagtgccac 840

cagagcatcc tggaactgtt caacaccagc tactgccccc acagccagtg cgccttcaac 900

ggcatcttcc tgccacctct gcaggggggat ttcggcgcct tcagcgcctt ctactccgtg 960

atgaagttcc tgaacctgac cagcgagaag gtgtcccagg aaaaagtgac agagatgatg 1020

aagaagttct gcgcccagcc ctgggaggaa atcaagacct cctacgctgg cgtgaaagag 1080

aagtacctga gcgagtactg cttcagcggc acctacatcc tgagcctgct gctgcagggc 1140

taccacttca ccgccgatag ctgggagcac atccacttca tcggcaagat tcagggcagc 1200

gacgccggct ggacactggg ttacatgctg aatctgacca acatgatccc cgccgagcag 1260

cccctgagca cacctctgag ccacagcacc 1290

<210> 223
<211> 433
<212> PRT
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成多肽"

<400> 223
Ala Pro Thr Ser Ser Ser Thr Gln Asn Lys Ala Leu Pro Glu Asn Val
1 5 10 15

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

20 25 30

Ile Tyr Lys Trp Pro Ala Glu Lys Glu Asn Asp Thr Gly Val Val His
35 40 45

Gln Val Glu Glu Cys Arg Val Lys Gly Pro Gly Ile Ser Lys Phe Val
50 55 60

Gln Lys Val Asn Glu Ile Gly Ile Tyr Leu Thr Asp Cys Met Glu Arg
65 70 75 80

Ala Met Glu Val Ile Pro Arg Ser Gln His Gln Glu Thr Pro Val Tyr
85 90 95

Leu Gly Ala Thr Ala Gly Met Arg Leu Leu Arg Met Glu Ser Glu Glu
100 105 110

Leu Ala Asp Arg Val Leu Asp Val Val Glu Arg Ser Leu Ser Asn Tyr
115 120 125

Pro Phe Asp Phe Gln Gly Ala Arg Ile Ile Thr Gly Gln Glu Glu Gly
130 135 140

Ala Tyr Gly Trp Ile Thr Ile Asn Tyr Leu Leu Gly Lys Phe Ser Gln
145 150 155 160

Lys Asn Gln Glu Thr Phe Gly Ala Leu Asp Leu Gly Gly Ala Ser Thr
165 170 175

Gln Val Thr Phe Val Pro Gln Asn Gln Thr Ile Glu Ser Pro Asp Asn
180 185 190

Ala Leu Gln Phe Arg Leu Tyr Gly Lys Asp Tyr Asn Val Tyr Thr His
195 200 205

Ser Phe Leu Cys Tyr Gly Lys Asp Gln Ala Leu Trp Gln Lys Leu Ala
210 215 220

Lys Asp Ile Gln Val Ala Ser Asn Glu Ile Leu Arg Asp Pro Cys Phe
225 230 235 240

His Pro Gly Tyr Lys Lys Val Val Asn Val Ser Asp Leu Tyr Lys Thr
245 250 255

Pro Cys Thr Lys Arg Phe Glu Met Thr Leu Pro Phe Gln Gln Phe Glu
260 265 270

Ile Gln Gly Ile Gly Asn Tyr Gln Gln Cys His Gln Ser Ile Leu Glu
275 280 285

Leu Phe Asn Thr Ser Tyr Cys Pro Tyr Ser Gln Cys Ala Phe Asn Gly
290 295 300

Ile Phe Leu Pro Pro Leu Gln Gly Asp Phe Gly Ala Phe Ser Ala Phe
305 310 315 320

Tyr Ser Val Met Lys Phe Leu Asn Leu Thr Ser Glu Lys Val Ser Gln
325 330 335

Glu Lys Val Thr Glu Met Met Lys Lys Phe Cys Ala Gln Pro Trp Glu
340 345 350

Glu Ile Lys Thr Ser Tyr Ala Gly Val Lys Glu Lys Tyr Leu Ser Glu
355 360 365

Tyr Cys Phe Ser Gly Thr Tyr Ile Leu Ser Leu Leu Leu Gln Gly Tyr
370 375 380

His Phe Thr Ala Asp Ser Trp Glu His Ile His Phe Ile Gly Lys Ile
385 390 395 400

Gln Gly Ser Asp Ala Gly Trp Thr Leu Gly Tyr Met Leu Asn Leu Thr
405 410 415

Asn Met Ile Pro Ala Glu Gln Pro Leu Ser Thr Pro Leu Ser His Ser

420 425 430

Thr

<210> 224
<211> 1299
<212> DNA
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成多核苷酸"

<400> 224
gcccctacca gcagcagcac ccagaacaag gccctgcccg agaacgtgaa gtacggcatc 60

gtgctggatg ccggcagcag ccacaccagc ctgtacatct acaagtggcc tgccgagaaa 120

gaaaacgaca ccggcgtggt gcatcaggtg gaagagtgca gagtgaaggg ccctggcatc 180

agcaagttcg tgcagaaagt gaacgagatc ggcatctacc tgaccgactg catggaacgg 240

gccatggaag tgatccccag aagccagcac caggaaaccc ccgtgtatct gggagccacc 300

gccggcatga gactgctgag aatggaaagc gaggaactgg ccgaccgggt gctggacgtg 360

gtggaaagaa gcctgagcaa ctacccattc gattttcaag gcgccagaat catcaccggc 420

caggaagaag gcgcctacgg ctggatcacc atcaactacc tgctgggcaa gttcagccag 480

aagaatcagg aaaccttcgg cgccttggac ctgggcggag cttctaccca agtgaccttc 540

gtgccccaga atcagaccat cgagagcccc gacaacgccc tgcagttccg gctgtacggc 600

aaggactaca atgtgtacac ccacagcttt ctgtgctacg gaaaggacca ggctctgtgg 660

cagaagctgg ccaaggacat ccaggtggcc agcaacgaga tcctgcggga cccttgcttc 720

caccccggct acaagaaagt cgtgaacgtg tccgacctgt acaagacccc ctgcaccaag 780

agattcgaga tgaccctgcc cttccagcag ttcgagatcc agggcatcgg caattaccag 840

cagtgccacc agagcatcct ggaactgttc aacaccagct actgccccta cagccagtgc 900

gccttcaacg gcatcttcct gccacctctg caggggggatt tcggcgcctt cagcgccttc 960

tactccgtga tgaagttcct gaacctgacc agcgagaagg tgtcccagga aaaagtgaca 1020

gagatgatga agaagttctg cgcccagccc tgggaggaaa tcaagacctc ctacgctggc 1080

gtgaaagaga agtacctgag cgagtactgc ttcagcggca cctacatcct gagcctgctg 1140

ctgcagggct accacttcac cgccgatagc tgggagcaca tccacttcat cggcaagatt 1200

cagggcagcg acgccggctg gacactgggt tacatgctga atctgaccaa catgatcccc 1260

gccgagcagc ccctgagcac acctctgagc cacagcacc 1299

<210> 225
<211> 430
<212> PRT
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成多肽"

<400> 225
Ala Pro Thr Thr Gln Asn Lys Ala Leu Pro Glu Asn Val Lys Tyr Gly
1 5 10 15

Ile Val Leu Asp Ala Gly Ser Ser His Thr Ser Leu Tyr Ile Tyr Lys
20 25 30

Trp Pro Ala Glu Lys Glu Asn Asp Thr Gly Val Val His Gln Val Glu
35 40 45

Glu Cys Arg Val Lys Gly Pro Gly Ile Ser Lys Phe Val Gln Lys Val
50 55 60

Asn Glu Ile Gly Ile Tyr Leu Thr Asp Cys Met Glu Arg Ala Arg Glu
65 70 75 80

Val Ile Pro Arg Ser Gln His Gln Glu Thr Pro Val Tyr Leu Gly Ala
85 90 95

Thr Ala Gly Met Arg Leu Leu Arg Met Glu Ser Glu Glu Leu Ala Asp
100 105 110

Arg Val Leu Asp Val Val Glu Arg Ser Leu Ser Asn Tyr Pro Phe Asp
115 120 125

Phe Gln Gly Ala Arg Ile Ile Thr Gly Gln Glu Glu Gly Ala Tyr Gly
130 135 140

Trp Ile Thr Ile Asn Tyr Leu Leu Gly Lys Phe Ser Gln Lys Asn Gln
145 150 155 160

Glu Thr Phe Gly Ala Leu Asp Leu Gly Gly Ala Ser Thr Gln Val Thr
165 170 175

Phe Val Pro Gln Asn Gln Thr Ile Glu Ser Pro Asp Asn Ala Leu Gln
180 185 190

Phe Arg Leu Tyr Gly Lys Asp Tyr Asn Val Tyr Thr His Ser Phe Leu
195 200 205

Cys Tyr Gly Lys Asp Gln Ala Leu Trp Gln Lys Leu Ala Lys Asp Ile
210 215 220

Gln Val Ala Ser Asn Glu Ile Leu Arg Asp Pro Cys Phe His Pro Gly
225 230 235 240

Tyr Lys Lys Val Val Asn Val Ser Asp Leu Tyr Lys Thr Pro Cys Thr
245 250 255

Lys Arg Phe Glu Met Thr Leu Pro Phe Gln Gln Phe Glu Ile Gln Gly
260 265 270

Ile Gly Asn Tyr Gln Gln Cys His Gln Ser Ile Leu Glu Leu Phe Asn
275 280 285

Thr Ser Tyr Cys Pro Tyr Ser Gln Cys Ala Phe Asn Gly Ile Phe Leu
290 295 300

Pro Pro Leu Gln Gly Asp Phe Gly Ala Phe Ser Ala Phe Tyr Phe Val
305 310 315 320

Met Lys Phe Leu Asn Leu Thr Ser Glu Lys Val Ser Gln Glu Lys Val
325 330 335

Thr Glu Met Met Lys Lys Phe Cys Ala Gln Pro Trp Glu Glu Ile Lys
340 345 350

Thr Ser Tyr Ala Gly Val Lys Glu Lys Tyr Leu Ser Glu Phe Cys Phe
355 360 365

Ser Gly Thr Tyr Ile Leu Ser Leu Leu Gln Gln Gly Tyr His Phe Thr
370 375 380

Ala Asp Ser Trp Glu His Ile His Phe Ile Gly Lys Ile Gln Gly Ser
385 390 395 400

Asp Ala Gly Trp Thr Leu Gly Tyr Met Leu Asn Leu Thr Asn Met Ile
405 410 415

Pro Ala Glu Gln Pro Leu Ser Thr Pro Leu Ser His Ser Thr
420 425 430

<210> 226
<211> 1290
<212> DNA
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成多核苷酸"

<400> 226
gcccctacca cccagaacaa ggccctgccc gagaacgtga agtacggcat cgtgctggat 60

gccggcagca gccacaccag cctgtacatc tacaagtggc ctgccgagaa agaaaacgac 120

accggcgtgg tgcatcaggt ggaagagtgc agagtgaagg gccctggcat cagcaagttc 180

gtgcagaaag tgaacgagat cggcatctac ctgaccgact gcatggaacg ggccagggaa 240

gtgatcccca gaagccagca ccaggaaacc cccgtgtatc tgggagccac cgccggcatg 300

agactgctga gaatggaaag cgaggaactg gccgaccggg tgctggacgt ggtggaaaga 360

agcctgagca actacccatt cgattttcaa ggcgccagaa tcatcaccgg ccaggaagaa 420

ggcgcctacg gctggatcac catcaactac ctgctgggca agttcagcca gaagaatcag 480

gaaaccttcg gcgccctgga cctgggcgga gcttctaccc aagtgacctt cgtgccccag 540

aatcagacca tcgagagccc cgacaacgcc ctgcagttcc ggctgtacgg caaggactac 600

aatgtgtaca cccacagctt tctgtgctac ggaaaggacc aggctctgtg gcagaagctg 660

gccaaggaca tccaggtggc cagcaacgag atcctgcggg acccttgctt ccaccccggc 720

tacaagaaag tcgtgaacgt gtccgacctg tacaagaccc cctgcaccaa gagattcgag 780

atgaccctgc ccttccagca gttcgagatc cagggcatcg gcaattacca gcagtgccac 840

cagagcatcc tggaactgtt caacaccagc tactgccccc acagccagtg cgccttcaac 900

ggcatcttcc tgccacctct gcaggggggat ttcggcgcct tcagcgcctt ctacttcgtg 960

atgaagttcc tgaacctgac cagcgagaag gtgtcccagg aaaaagtgac agagatgatg 1020

aagaagttct gcgcccagcc ctgggaggaa atcaagacct cctacgctgg cgtgaaagag 1080

aagtacctga gcgagttttg cttcagcggc acctacatcc tgagcctgct gcagcagggc 1140

taccacttca ccgccgatag ctgggagcac atccacttca tcggcaagat tcagggcagc 1200

gacgccggct ggacactggg ctacatgctg aatctgacca acatgatccc cgccgagcag 1260

cccctgagca cacctctgag ccacagcacc 1290

<210> 227
<211> 433
<212> PRT
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成多肽"

<400> 227
Ala Pro Thr Ser Ser Ser Thr Gln Asn Lys Ala Leu Pro Glu Asn Val
1 5 10 15

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

20 25 30

Ile Tyr Lys Trp Pro Ala Glu Lys Glu Asn Asp Thr Gly Val Val His
35 40 45

Gln Val Glu Glu Cys Arg Val Lys Gly Pro Gly Ile Ser Lys Phe Val
50 55 60

Gln Lys Val Asn Glu Ile Gly Ile Tyr Leu Thr Asp Cys Met Glu Arg
65 70 75 80

Ala Arg Glu Val Ile Pro Arg Ser Gln His Gln Glu Thr Pro Val Tyr
85 90 95

Leu Gly Ala Thr Ala Gly Met Arg Leu Leu Arg Met Glu Ser Glu Glu
100 105 110

Leu Ala Asp Arg Val Leu Asp Val Val Glu Arg Ser Leu Ser Asn Tyr
115 120 125

Pro Phe Asp Phe Gln Gly Ala Arg Ile Ile Thr Gly Gln Glu Glu Gly
130 135 140

Ala Tyr Gly Trp Ile Thr Ile Asn Tyr Leu Leu Gly Lys Phe Ser Gln
145 150 155 160

Lys Asn Gln Glu Thr Phe Gly Ala Leu Asp Leu Gly Gly Ala Ser Thr
165 170 175

Gln Val Thr Phe Val Pro Gln Asn Gln Thr Ile Glu Ser Pro Asp Asn
180 185 190

Ala Leu Gln Phe Arg Leu Tyr Gly Lys Asp Tyr Asn Val Tyr Thr His
195 200 205

Ser Phe Leu Cys Tyr Gly Lys Asp Gln Ala Leu Trp Gln Lys Leu Ala
210 215 220

Lys Asp Ile Gln Val Ala Ser Asn Glu Ile Leu Arg Asp Pro Cys Phe
225 230 235 240

His Pro Gly Tyr Lys Lys Val Val Asn Val Ser Asp Leu Tyr Lys Thr
245 250 255

Pro Cys Thr Lys Arg Phe Glu Met Thr Leu Pro Phe Gln Gln Phe Glu
260 265 270

Ile Gln Gly Ile Gly Asn Tyr Gln Gln Cys His Gln Ser Ile Leu Glu
275 280 285

Leu Phe Asn Thr Ser Tyr Cys Pro Tyr Ser Gln Cys Ala Phe Asn Gly
290 295 300

Ile Phe Leu Pro Pro Leu Gln Gly Asp Phe Gly Ala Phe Ser Ala Phe
305 310 315 320

Tyr Phe Val Met Lys Phe Leu Asn Leu Thr Ser Glu Lys Val Ser Gln
325 330 335

Glu Lys Val Thr Glu Met Met Lys Lys Phe Cys Ala Gln Pro Trp Glu
340 345 350

Glu Ile Lys Thr Ser Tyr Ala Gly Val Lys Glu Lys Tyr Leu Ser Glu
355 360 365

Phe Cys Phe Ser Gly Thr Tyr Ile Leu Ser Leu Leu Gln Gln Gly Tyr
370 375 380

His Phe Thr Ala Asp Ser Trp Glu His Ile His Phe Ile Gly Lys Ile
385 390 395 400

Gln Gly Ser Asp Ala Gly Trp Thr Leu Gly Tyr Met Leu Asn Leu Thr
405 410 415

Asn Met Ile Pro Ala Glu Gln Pro Leu Ser Thr Pro Leu Ser His Ser

420 425 430

Thr

<210> 228
<211> 1299
<212> DNA
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成多核苷酸"

<400> 228
gcccctacca gcagcagcac ccagaacaag gccctgcccg agaacgtgaa gtacggcatc 60

gtgctggatg ccggcagcag ccacaccagc ctgtacatct acaagtggcc tgccgagaaa 120

gaaaacgaca ccggcgtggt gcatcaggtg gaagagtgca gagtgaaggg ccctggcatc 180

agcaagttcg tgcagaaagt gaacgagatc ggcatctacc tgaccgactg catggaacgg 240

gccagggaag tgatccccag aagccagcac caggaaaccc ccgtgtatct gggagccacc 300

gccggcatga gactgctgag aatggaaagc gaggaactgg ccgaccgggt gctggacgtg 360

gtggaaagaa gcctgagcaa ctacccattc gattttcaag gcgccagaat catcaccggc 420

caggaagaag gcgcctacgg ctggatcacc atcaactacc tgctgggcaa gttcagccag 480

aagaatcagg aaaccttcgg cgccctggac ctgggcggag cttctaccca agtgaccttc 540

gtgccccaga atcagaccat cgagagcccc gacaacgccc tgcagttccg gctgtacggc 600

aaggactaca atgtgtacac ccacagcttt ctgtgctacg gaaaggacca ggctctgtgg 660

cagaagctgg ccaaggacat ccaggtggcc agcaacgaga tcctgcggga cccttgcttc 720

caccccggct acaagaaagt cgtgaacgtg tccgacctgt acaagacccc ctgcaccaag 780

agattcgaga tgaccctgcc cttccagcag ttcgagatcc agggcatcgg caattaccag 840

cagtgccacc agagcatcct ggaactgttc aacaccagct actgccccta cagccagtgc 900

gccttcaacg gcatcttcct gccacctctg caggggggatt tcggcgcctt cagcgccttc 960

tacttcgtga tgaagttcct gaacctgacc agcgagaagg tgtcccagga aaaagtgaca 1020

gagatgatga agaagttctg cgcccagccc tgggaggaaa tcaagacctc ctacgctggc 1080

gtgaaagaga agtacctgag cgagttttgc ttcagcggca cctacatcct gagcctgctg 1140

cagcagggct accacttcac cgccgatagc tgggagcaca tccacttcat cggcaagatt 1200

cagggcagcg acgccggctg gacactgggc tacatgctga atctgaccaa catgatcccc 1260

gccgagcagc ccctgagcac acctctgagc cacagcacc 1299

<210> 229
<211> 430
<212> PRT
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述: 合成多肽"

<400> 229
Ala Pro Thr Thr Gln Asn Lys Ala Leu Pro Glu Asn Val Lys Tyr Gly
1 5 10 15

Ile Val Leu Asp Ala Gly Ser Ser His Thr Ser Leu Tyr Ile Tyr Lys
20 25 30

Trp Pro Ala Glu Lys Glu Asn Asp Thr Gly Val Val His Gln Val Glu
35 40 45

Glu Cys Arg Val Lys Gly Pro Gly Ile Ser Lys Phe Val Gln Lys Val
50 55 60

Asn Glu Ile Gly Ile Tyr Leu Thr Asp Cys Met Glu Arg Ala Arg Glu
65 70 75 80

Val Ile Pro Arg Ser Gln His Gln Glu Thr Pro Val Tyr Leu Gly Ala
85 90 95

Thr Ala Gly Met Arg Leu Leu Arg Met Glu Ser Glu Glu Leu Ala Asp
100 105 110

Arg Val Leu Asp Val Val Glu Arg Ser Leu Ser Asn Tyr Pro Phe Asp
115 120 125

Phe Gln Gly Ala Arg Ile Ile Thr Gly Gln Glu Glu Gly Ala Tyr Gly
130 135 140

Trp Ile Thr Ile Asn Tyr Leu Leu Gly Lys Phe Ser Gln Lys Asn Gln
145 150 155 160

Glu Thr Phe Gly Ala Leu Asp Leu Gly Gly Ala Ser Thr Gln Val Thr
165 170 175

Phe Val Pro Gln Asn Gln Thr Ile Glu Ser Pro Asp Asn Ala Leu Gln
180 185 190

Phe Arg Leu Tyr Gly Lys Asp Tyr Asn Val Tyr Thr His Ser Phe Leu
195 200 205

Cys Tyr Gly Lys Asp Gln Ala Leu Trp Gln Lys Leu Ala Lys Asp Ile
210 215 220

Gln Val Ala Ser Asn Glu Ile Leu Arg Asp Pro Cys Phe His Pro Gly
225 230 235 240

Tyr Lys Lys Val Val Asn Val Ser Asp Leu Tyr Lys Thr Pro Cys Thr
245 250 255

Lys Arg Phe Glu Met Thr Leu Pro Phe Gln Gln Phe Glu Ile Gln Gly
260 265 270

Ile Gly Asn Tyr Gln Gln Cys His Gln Ser Ile Leu Glu Leu Phe Asn
275 280 285

Thr Ser Tyr Cys Pro Tyr Ser Gln Cys Ala Phe Asn Gly Ile Phe Leu
290 295 300

Pro Pro Leu Gln Gly Asp Phe Gly Ala Phe Ser Ala Phe Tyr Ser Val
305 310 315 320

Met Lys Phe Leu Asn Leu Thr Ser Glu Lys Val Ser Gln Glu Lys Val
325 330 335

Thr Glu Met Met Lys Lys Phe Cys Ala Gln Pro Trp Glu Glu Ile Lys
340 345 350

Thr Ser Tyr Ala Gly Val Lys Glu Lys Tyr Leu Ser Glu Tyr Cys Phe
355 360 365

Ser Gly Thr Tyr Ile Leu Ser Leu Leu Leu Gln Gly Tyr His Phe Thr
370 375 380

Ala Asp Ser Trp Glu His Ile His Phe Ile Gly Lys Ile Gln Gly Ser
385 390 395 400

Asp Ala Gly Trp Thr Leu Gly Tyr Met Leu Asn Leu Thr Asn Met Ile
405 410 415

Pro Ala Glu Gln Pro Leu Ser Thr Pro Leu Ser His Ser Thr
420 425 430

<210> 230
<211> 1290
<212> DNA
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成多核苷酸"

<400> 230
gcccctacca cccagaacaa ggccctgccc gagaacgtga agtacggcat cgtgctggac 60

gccggctcct cccacacctc cctgtacatc tacaagtggc ctgccgagaa agaaaacgac 120

accggcgtgg tgcaccaagt ggaagagtgc agagtgaagg gccccggcat ctccaagttc 180

gtgcagaaag tgaacgagat cggcatctac ctgaccgact gcatggaacg ggccagagaa 240

gtgatccctc ggtcccagca ccaggaaacc cctgtctacc tgggcgccac cgccggcatg 300

cggctgctgc ggatggaatc cgaggaactg gccgaccggg tgctggacgt ggtggaacgg 360

tccctgtcca actacccatt cgattttcaa ggcgccagaa tcatcaccgg ccaggaagag 420

ggcgcctacg gctggatcac catcaactac ctgctgggca agttctccca gaagaatcag 480

gaaaccttcg gcgccctgga cctgggcgga gccagcaccc aagtcacatt cgtgccccag 540

aaccagacca tcgagagccc cgacaacgcc ctgcagttcc ggctgtacgg caaggactac 600

aacgtgtaca cccacagctt tctgtgctac ggcaaggacc aggccctgtg gcagaagctg 660

gccaaggaca tccaagtggc ctccaacgag atcctgcggg acccctgctt ccaccccggc 720

tacaagaaag tggtcaacgt gtccgacctg tacaagaccc cttgcaccaa gagattcgag 780

atgaccctgc ccttccagca gttcgagatc cagggcatcg gcaactacca gcagtgccac 840

cagtccatcc tggaactgtt caacacctcc tactgccccc actcccagtg cgccttcaac 900

ggcatcttcc tgcctccact gcagggcgac ttcggcgcct tctccgcctt ctactccgtg 960

atgaagttcc tgaacctgac ctccgagaaa gtgtcccagg aaaaagtgac cgagatgatg 1020

aagaagttct gcgcccagcc ctgggaggaa atcaagacct cctacgctgg cgtgaaagag 1080

aagtacctgt ccgagtactg cttctccggc acctacatcc tgtccctgct gctgcagggc 1140

taccacttca ccgccgacag ctgggagcac atccacttca tcggcaagat ccagggatcc 1200

gacgctggct ggaccctggg ctacatgctg aatctgacca acatgatccc cgccgagcag 1260

cccctgtcca cccctctgtc tcactccacc 1290

<210> 231
<211> 433
<212> PRT
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成多肽"

<400> 231
Ala Pro Thr Ser Ser Ser Thr Gln Asn Lys Ala Leu Pro Glu Asn Val
1 5 10 15

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

20 25 30

Ile Tyr Lys Trp Pro Ala Glu Lys Glu Asn Asp Thr Gly Val Val His
35 40 45

Gln Val Glu Glu Cys Arg Val Lys Gly Pro Gly Ile Ser Lys Phe Val
50 55 60

Gln Lys Val Asn Glu Ile Gly Ile Tyr Leu Thr Asp Cys Met Glu Arg
65 70 75 80

Ala Arg Glu Val Ile Pro Arg Ser Gln His Gln Glu Thr Pro Val Tyr
85 90 95

Leu Gly Ala Thr Ala Gly Met Arg Leu Leu Arg Met Glu Ser Glu Glu
100 105 110

Leu Ala Asp Arg Val Leu Asp Val Val Glu Arg Ser Leu Ser Asn Tyr
115 120 125

Pro Phe Asp Phe Gln Gly Ala Arg Ile Ile Thr Gly Gln Glu Glu Gly
130 135 140

Ala Tyr Gly Trp Ile Thr Ile Asn Tyr Leu Leu Gly Lys Phe Ser Gln
145 150 155 160

Lys Asn Gln Glu Thr Phe Gly Ala Leu Asp Leu Gly Gly Ala Ser Thr
165 170 175

Gln Val Thr Phe Val Pro Gln Asn Gln Thr Ile Glu Ser Pro Asp Asn
180 185 190

Ala Leu Gln Phe Arg Leu Tyr Gly Lys Asp Tyr Asn Val Tyr Thr His
195 200 205

Ser Phe Leu Cys Tyr Gly Lys Asp Gln Ala Leu Trp Gln Lys Leu Ala
210 215 220

Lys Asp Ile Gln Val Ala Ser Asn Glu Ile Leu Arg Asp Pro Cys Phe
225 230 235 240

His Pro Gly Tyr Lys Lys Val Val Asn Val Ser Asp Leu Tyr Lys Thr
245 250 255

Pro Cys Thr Lys Arg Phe Glu Met Thr Leu Pro Phe Gln Gln Phe Glu
260 265 270

Ile Gln Gly Ile Gly Asn Tyr Gln Gln Cys His Gln Ser Ile Leu Glu
275 280 285

Leu Phe Asn Thr Ser Tyr Cys Pro Tyr Ser Gln Cys Ala Phe Asn Gly
290 295 300

Ile Phe Leu Pro Pro Leu Gln Gly Asp Phe Gly Ala Phe Ser Ala Phe
305 310 315 320

Tyr Ser Val Met Lys Phe Leu Asn Leu Thr Ser Glu Lys Val Ser Gln
325 330 335

Glu Lys Val Thr Glu Met Met Lys Lys Phe Cys Ala Gln Pro Trp Glu
340 345 350

Glu Ile Lys Thr Ser Tyr Ala Gly Val Lys Glu Lys Tyr Leu Ser Glu
355 360 365

Tyr Cys Phe Ser Gly Thr Tyr Ile Leu Ser Leu Leu Leu Gln Gly Tyr
370 375 380

His Phe Thr Ala Asp Ser Trp Glu His Ile His Phe Ile Gly Lys Ile
385 390 395 400

Gln Gly Ser Asp Ala Gly Trp Thr Leu Gly Tyr Met Leu Asn Leu Thr
405 410 415

Asn Met Ile Pro Ala Glu Gln Pro Leu Ser Thr Pro Leu Ser His Ser

420 425 430

Thr

<210> 232
<211> 1299
<212> DNA
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成多核苷酸"

<400> 232
gcccctacca gcagcagcac ccagaacaag gccctgcccg agaacgtgaa gtacggcatc 60

gtgctggatg ccggcagcag ccacaccagc ctgtacatct acaagtggcc tgccgagaaa 120

gaaaacgaca ccggcgtggt gcatcaggtg gaagagtgca gagtgaaggg ccctggcatc 180

agcaagttcg tgcagaaagt gaacgagatc ggcatctacc tgaccgactg catggaacgg 240

gccagggaag tgatccccag aagccagcac caggaaaccc ccgtgtatct gggagccacc 300

gccggcatga gactgctgag aatggaaagc gaggaactgg ccgaccgggt gctggacgtg 360

gtggaaagaa gcctgagcaa ctacccattc gattttcaag gcgccagaat catcaccggc 420

caggaagaag gcgcctacgg ctggatcacc atcaactacc tgctgggcaa gttcagccag 480

aagaatcagg aaaccttcgg cgccttggac ctgggcggag cttctaccca agtgaccttc 540

gtgccccaga atcagaccat cgagagcccc gacaacgccc tgcagttccg gctgtacggc 600

aaggactaca atgtgtacac ccacagcttt ctgtgctacg gaaaggacca ggctctgtgg 660

cagaagctgg ccaaggacat ccaggtggcc agcaacgaga tcctgcggga cccttgcttc 720

caccccggct acaagaaagt cgtgaacgtg tccgacctgt acaagacccc ctgcaccaag 780

agattcgaga tgaccctgcc cttccagcag ttcgagatcc agggcatcgg caattaccag 840

cagtgccacc agagcatcct ggaactgttc aacaccagct actgccccta cagccagtgc 900

gccttcaacg gcatcttcct gccacctctg caggggggatt tcggcgcctt cagcgccttc 960

tactccgtga tgaagttcct gaacctgacc agcgagaagg tgtcccagga aaaagtgaca 1020

gagatgatga agaagttctg cgcccagccc tgggaggaaa tcaagacctc ctacgctggc 1080

gtgaaagaga agtacctgag cgagtactgc ttcagcggca cctacatcct gagcctgctg 1140

ctgcagggct accacttcac cgccgatagc tgggagcaca tccacttcat cggcaagatt 1200

cagggcagcg acgccggctg gacactgggt tacatgctga atctgaccaa catgatcccc 1260

gccgagcagc ccctgagcac acctctgagc cacagcacc 1299

<210> 233
<211> 430
<212> PRT
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成多肽"

<400> 233
Ala Pro Thr Thr Gln Asn Lys Ala Leu Pro Glu Asn Val Lys Tyr Gly
1 5 10 15

Ile Val Leu Asp Ala Gly Ser Ser His Thr Ser Leu Tyr Ile Tyr Lys
20 25 30

Trp Pro Ala Glu Lys Glu Asn Asp Thr Gly Val Val His Gln Val Glu
35 40 45

Glu Cys Arg Val Lys Gly Pro Gly Ile Ser Lys Phe Val Gln Lys Val
50 55 60

Asn Glu Ile Gly Ile Tyr Leu Thr Asp Cys Met Glu Arg Ala Met Glu
65 70 75 80

Val Ile Pro Arg Ser Gln His Gln Glu Thr Pro Val Tyr Leu Gly Ala
85 90 95

Thr Ala Gly Met Arg Leu Leu Arg Met Glu Ser Glu Glu Leu Ala Asp
100 105 110

Arg Val Leu Asp Val Val Glu Arg Ser Leu Ser Asn Tyr Pro Phe Asp
115 120 125

Phe Gln Gly Ala Arg Ile Ile Thr Gly Gln Glu Glu Gly Ala Tyr Gly
130 135 140

Trp Ile Thr Ile Asn Tyr Leu Leu Gly Lys Phe Ser Gln Lys Asn Gln
145 150 155 160

Glu Thr Phe Gly Ala Leu Asp Leu Gly Gly Ala Ser Thr Gln Val Thr
165 170 175

Phe Val Pro Gln Asn Gln Thr Ile Glu Ser Pro Asp Asn Ala Leu Gln
180 185 190

Phe Arg Leu Tyr Gly Lys Asp Tyr Asn Val Tyr Thr His Ser Phe Leu
195 200 205

Cys Tyr Gly Lys Asp Gln Ala Leu Trp Gln Lys Leu Ala Lys Asp Ile
210 215 220

Gln Val Ala Ser Asn Glu Ile Leu Arg Asp Pro Cys Phe His Pro Gly
225 230 235 240

Tyr Lys Lys Val Val Asn Val Ser Asp Leu Tyr Lys Thr Pro Cys Thr
245 250 255

Lys Arg Phe Glu Met Thr Leu Pro Phe Gln Gln Phe Glu Ile Gln Gly
260 265 270

Ile Gly Asn Tyr Gln Gln Cys His Gln Ser Ile Leu Glu Leu Phe Asn
275 280 285

Thr Ser Tyr Cys Pro Tyr Ser Gln Cys Ala Phe Asn Gly Ile Phe Leu
290 295 300

Pro Pro Leu Gln Gly Asp Phe Gly Ala Phe Ser Ala Phe Tyr Ser Val
305 310 315 320

Met Lys Phe Leu Asn Leu Thr Ser Glu Lys Val Ser Gln Glu Lys Val
325 330 335

Thr Glu Met Met Lys Lys Phe Cys Ala Gln Pro Trp Glu Glu Ile Lys
340 345 350

Thr Ser Tyr Ala Gly Val Lys Glu Lys Tyr Leu Ser Glu Tyr Cys Phe
355 360 365

Ser Gly Thr Tyr Ile Leu Ser Leu Leu Gln Gln Gly Tyr His Phe Thr
370 375 380

Ala Asp Ser Trp Glu His Ile His Phe Ile Gly Lys Ile Gln Gly Ser
385 390 395 400

Asp Ala Gly Trp Thr Leu Gly Tyr Met Leu Asn Leu Thr Asn Met Ile
405 410 415

Pro Ala Glu Gln Pro Leu Ser Thr Pro Leu Ser His Ser Thr
420 425 430

<210> 234
<211> 1290
<212> DNA
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成多核苷酸"

<400> 234
gcccctacca cccagaacaa ggccctgccc gagaacgtga agtacggcat cgtgctggat 60

gccggcagca gccacaccag cctgtacatc tacaagtggc ctgccgagaa agaaaacgac 120

accggcgtgg tgcatcaggt ggaagagtgc agagtgaagg gccctggcat cagcaagttc 180

gtgcagaaag tgaacgagat cggcatctac ctgaccgact gcatggaacg ggccatggaa 240

gtgatcccca gaagccagca ccaggaaacc cccgtgtatc tgggagccac cgccggcatg 300

agactgctga gaatggaaag cgaggaactg gccgaccggg tgctggacgt ggtggaaaga 360

agcctgagca actacccatt cgattttcaa ggcgccagaa tcatcaccgg ccaggaagaa 420

ggcgcctacg gctggatcac catcaactac ctgctgggca agttcagcca gaagaatcag 480

gaaaccttcg gcgccctgga cctgggcgga gcttctaccc aagtgacctt cgtgccccag 540

aatcagacca tcgagagccc cgacaacgcc ctgcagttcc ggctgtacgg caaggactac 600

aatgtgtaca cccacagctt tctgtgctac ggaaaggacc aggctctgtg gcagaagctg 660

gccaaggaca tccaggtggc cagcaacgag atcctgcggg acccttgctt ccaccccggc 720

tacaagaaag tcgtgaacgt gtccgacctg tacaagaccc cctgcaccaa gagattcgag 780

atgaccctgc ccttccagca gttcgagatc cagggcatcg gcaattacca gcagtgccac 840

cagagcatcc tggaactgtt caacaccagc tactgccccc acagccagtg cgccttcaac 900

ggcatcttcc tgccacctct gcaggggggat ttcggcgcct tcagcgcctt ctactccgtg 960

atgaagttcc tgaacctgac cagcgagaag gtgtcccagg aaaaagtgac agagatgatg 1020

aagaagttct gcgcccagcc ctgggaggaa atcaagacct cctacgctgg cgtgaaagag 1080

aagtacctga gcgagtactg cttcagcggc acctacatcc tgagcctgct gcagcagggc 1140

taccacttca ccgccgatag ctgggagcac atccacttca tcggcaagat tcagggcagc 1200

gacgccggct ggacactggg ctacatgctg aatctgacca acatgatccc cgccgagcag 1260

cccctgagca cacctctgag ccacagcacc 1290

<210> 235
<211> 433
<212> PRT
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成多肽"

<400> 235
Ala Pro Thr Ser Ser Ser Thr Gln Asn Lys Ala Leu Pro Glu Asn Val
1 5 10 15

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

20 25 30

Ile Tyr Lys Trp Pro Ala Glu Lys Glu Asn Asp Thr Gly Val Val His
35 40 45

Gln Val Glu Glu Cys Arg Val Lys Gly Pro Gly Ile Ser Lys Phe Val
50 55 60

Gln Lys Val Asn Glu Ile Gly Ile Tyr Leu Thr Asp Cys Met Glu Arg
65 70 75 80

Ala Met Glu Val Ile Pro Arg Ser Gln His Gln Glu Thr Pro Val Tyr
85 90 95

Leu Gly Ala Thr Ala Gly Met Arg Leu Leu Arg Met Glu Ser Glu Glu
100 105 110

Leu Ala Asp Arg Val Leu Asp Val Val Glu Arg Ser Leu Ser Asn Tyr
115 120 125

Pro Phe Asp Phe Gln Gly Ala Arg Ile Ile Thr Gly Gln Glu Glu Gly
130 135 140

Ala Tyr Gly Trp Ile Thr Ile Asn Tyr Leu Leu Gly Lys Phe Ser Gln
145 150 155 160

Lys Asn Gln Glu Thr Phe Gly Ala Leu Asp Leu Gly Gly Ala Ser Thr
165 170 175

Gln Val Thr Phe Val Pro Gln Asn Gln Thr Ile Glu Ser Pro Asp Asn
180 185 190

Ala Leu Gln Phe Arg Leu Tyr Gly Lys Asp Tyr Asn Val Tyr Thr His
195 200 205

Ser Phe Leu Cys Tyr Gly Lys Asp Gln Ala Leu Trp Gln Lys Leu Ala
210 215 220

Lys Asp Ile Gln Val Ala Ser Asn Glu Ile Leu Arg Asp Pro Cys Phe
225 230 235 240

His Pro Gly Tyr Lys Lys Val Val Asn Val Ser Asp Leu Tyr Lys Thr
245 250 255

Pro Cys Thr Lys Arg Phe Glu Met Thr Leu Pro Phe Gln Gln Phe Glu
260 265 270

Ile Gln Gly Ile Gly Asn Tyr Gln Gln Cys His Gln Ser Ile Leu Glu
275 280 285

Leu Phe Asn Thr Ser Tyr Cys Pro Tyr Ser Gln Cys Ala Phe Asn Gly
290 295 300

Ile Phe Leu Pro Pro Leu Gln Gly Asp Phe Gly Ala Phe Ser Ala Phe
305 310 315 320

Tyr Ser Val Met Lys Phe Leu Asn Leu Thr Ser Glu Lys Val Ser Gln
325 330 335

Glu Lys Val Thr Glu Met Met Lys Lys Phe Cys Ala Gln Pro Trp Glu
340 345 350

Glu Ile Lys Thr Ser Tyr Ala Gly Val Lys Glu Lys Tyr Leu Ser Glu
355 360 365

Tyr Cys Phe Ser Gly Thr Tyr Ile Leu Ser Leu Leu Gln Gln Gly Tyr
370 375 380

His Phe Thr Ala Asp Ser Trp Glu His Ile His Phe Ile Gly Lys Ile
385 390 395 400

Gln Gly Ser Asp Ala Gly Trp Thr Leu Gly Tyr Met Leu Asn Leu Thr
405 410 415

Asn Met Ile Pro Ala Glu Gln Pro Leu Ser Thr Pro Leu Ser His Ser

420 425 430

Thr

<210> 236
<211> 1299
<212> DNA
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成多核苷酸"

<400> 236
gcccctacca gcagcagcac ccagaacaag gccctgcccg agaacgtgaa gtacggcatc 60

gtgctggatg ccggcagcag ccacaccagc ctgtacatct acaagtggcc tgccgagaaa 120

gaaaacgaca ccggcgtggt gcatcaggtg gaagagtgca gagtgaaggg ccctggcatc 180

agcaagttcg tgcagaaagt gaacgagatc ggcatctacc tgaccgactg catggaacgg 240

gccatggaag tgatccccag aagccagcac caggaaaccc ccgtgtatct gggagccacc 300

gccggcatga gactgctgag aatggaaagc gaggaactgg ccgaccgggt gctggacgtg 360

gtggaaagaa gcctgagcaa ctacccattc gattttcaag gcgccagaat catcaccggc 420

caggaagaag gcgcctacgg ctggatcacc atcaactacc tgctgggcaa gttcagccag 480

aagaatcagg aaaccttcgg cgccctggac ctgggcggag cttctaccca agtgaccttc 540

gtgccccaga atcagaccat cgagagcccc gacaacgccc tgcagttccg gctgtacggc 600

aaggactaca atgtgtacac ccacagcttt ctgtgctacg gaaaggacca ggctctgtgg 660

cagaagctgg ccaaggacat ccaggtggcc agcaacgaga tcctgcggga cccttgcttc 720

caccccggct acaagaaagt cgtgaacgtg tccgacctgt acaagacccc ctgcaccaag 780

agattcgaga tgaccctgcc cttccagcag ttcgagatcc agggcatcgg caattaccag 840

cagtgccacc agagcatcct ggaactgttc aacaccagct actgccccta cagccagtgc 900

gccttcaacg gcatcttcct gccacctctg caggggggatt tcggcgcctt cagcgccttc 960

tactccgtga tgaagttcct gaacctgacc agcgagaagg tgtcccagga aaaagtgaca 1020

gagatgatga agaagttctg cgcccagccc tgggaggaaa tcaagacctc ctacgctggc 1080

gtgaaagaga agtacctgag cgagtactgc ttcagcggca cctacatcct gagcctgctg 1140

cagcagggct accacttcac cgccgatagc tgggagcaca tccacttcat cggcaagatt 1200

cagggcagcg acgccggctg gacactgggc tacatgctga atctgaccaa catgatcccc 1260

gccgagcagc ccctgagcac acctctgagc cacagcacc 1299

<210> 237
<211> 430
<212> PRT
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成多肽"

<400> 237
Ala Pro Thr Thr Gln Asn Lys Ala Leu Pro Glu Asn Val Lys Tyr Gly
1 5 10 15

Ile Val Leu Asp Ala Gly Ser Ser His Thr Ser Leu Tyr Ile Tyr Lys
20 25 30

Trp Pro Ala Glu Lys Glu Asn Asp Thr Gly Val Val His Gln Val Glu
35 40 45

Glu Cys Arg Val Lys Gly Pro Gly Ile Ser Lys Phe Val Gln Lys Val
50 55 60

Asn Glu Ile Gly Ile Tyr Leu Thr Asp Cys Met Glu Arg Ala Arg Glu
65 70 75 80

Val Ile Pro Arg Ser Gln His Gln Glu Thr Pro Val Tyr Leu Gly Ala
85 90 95

Thr Ala Gly Met Arg Leu Leu Arg Met Glu Ser Glu Glu Leu Ala Asp
100 105 110

Arg Val Leu Asp Val Val Glu Arg Ser Leu Ser Asn Tyr Pro Phe Asp
115 120 125

Phe Gln Gly Ala Arg Ile Ile Thr Gly Gln Glu Glu Gly Ala Tyr Gly
130 135 140

Trp Ile Thr Ile Asn Tyr Leu Leu Gly Lys Phe Ser Gln Lys Asn Gln
145 150 155 160

Glu Thr Phe Gly Ala Leu Asp Leu Gly Gly Ala Ser Thr Gln Val Thr
165 170 175

Phe Val Pro Gln Asn Gln Thr Ile Glu Ser Pro Asp Asn Ala Leu Gln
180 185 190

Phe Arg Leu Tyr Gly Lys Asp Tyr Asn Val Tyr Thr His Ser Phe Leu
195 200 205

Cys Tyr Gly Lys Asp Gln Ala Leu Trp Gln Lys Leu Ala Lys Asp Ile
210 215 220

Gln Val Ala Ser Asn Glu Ile Leu Arg Asp Pro Cys Phe His Pro Gly
225 230 235 240

Tyr Lys Lys Val Val Asn Val Ser Asp Leu Tyr Lys Thr Pro Cys Thr
245 250 255

Lys Arg Phe Glu Met Thr Leu Pro Phe Gln Gln Phe Glu Ile Gln Gly
260 265 270

Ile Gly Asn Tyr Gln Gln Cys His Gln Ser Ile Leu Glu Leu Phe Asn
275 280 285

Thr Ser Tyr Cys Pro Tyr Ser Gln Cys Ala Phe Asn Gly Ile Phe Leu
290 295 300

Pro Pro Leu Gln Gly Asp Phe Gly Ala Phe Ser Ala Phe Tyr Phe Val
305 310 315 320

Met Lys Phe Leu Asn Leu Thr Ser Glu Lys Val Ser Gln Glu Lys Val
325 330 335

Thr Glu Met Met Lys Lys Phe Cys Ala Gln Pro Trp Glu Glu Ile Lys
340 345 350

Thr Ser Tyr Ala Gly Val Asn Glu Lys Tyr Leu Ser Glu Phe Cys Phe
355 360 365

Ser Gly Thr Tyr Ile Leu Ser Leu Leu Leu Gln Gly Tyr His Phe Thr
370 375 380

Ala Asp Ser Trp Glu His Ile His Phe Ile Gly Lys Ile Gln Gly Ser
385 390 395 400

Asp Ala Gly Trp Thr Leu Gly Tyr Met Leu Asn Leu Thr Asn Met Ile
405 410 415

Pro Ala Glu Gln Pro Leu Ser Thr Pro Leu Ser His Ser Thr
420 425 430

<210> 238
<211> 1290
<212> DNA
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成多核苷酸"

<400> 238
gcccctacca cccagaacaa ggccctgccc gagaacgtga agtacggcat cgtgctggat 60

gccggcagca gccacaccag cctgtacatc tacaagtggc ctgccgagaa agaaaacgac 120

accggcgtgg tgcatcaggt ggaagagtgc agagtgaagg gccctggcat cagcaagttc 180

gtgcagaaag tgaacgagat cggcatctac ctgaccgact gcatggaacg ggccagggaa 240

gtgatcccca gaagccagca ccaggaaacc cccgtgtatc tgggagccac cgccggcatg 300

agactgctga gaatggaaag cgaggaactg gccgaccggg tgctggacgt ggtggaaaga 360

agcctgagca actacccatt cgattttcaa ggcgccagaa tcatcaccgg ccaggaagaa 420

ggcgcctacg gctggatcac catcaactac ctgctgggca agttcagcca gaagaatcag 480

gaaaccttcg gcgccctgga cctgggcgga gcttctaccc aagtgacctt cgtgccccag 540

aatcagacca tcgagagccc cgacaacgcc ctgcagttcc ggctgtacgg caaggactac 600

aatgtgtaca cccacagctt tctgtgctac ggaaaggacc aggctctgtg gcagaagctg 660

gccaaggaca tccaggtggc cagcaacgag atcctgcggg acccttgctt ccaccccggc 720

tacaagaaag tcgtgaacgt gtccgacctg tacaagaccc cctgcaccaa gagattcgag 780

atgaccctgc ccttccagca gttcgagatc cagggcatcg gcaattacca gcagtgccac 840

cagagcatcc tggaactgtt caacaccagc tactgccccc acagccagtg cgccttcaac 900

ggcatcttcc tgccacctct gcaggggggat ttcggcgcct tcagcgcctt ctacttcgtg 960

atgaagttcc tgaacctgac cagcgagaag gtgtcccagg aaaaagtgac agagatgatg 1020

aagaagttct gcgcccaacc ctgggaggaa atcaagacct cctacgctgg cgtgaacgag 1080

aagtacctga gcgagttttg cttcagcggc acctacatcc tgagcctgct gctgcagggc 1140

taccacttca ccgccgatag ctgggagcac atccacttca tcggcaagat tcagggcagc 1200

gacgccggct ggacactggg ctacatgctg aatctgacca acatgatccc cgccgagcag 1260

cccctgagca cacctctgag ccacagcacc 1290

<210> 239
<211> 433
<212> PRT
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成多肽"

<400> 239
Ala Pro Thr Ser Ser Ser Thr Gln Asn Lys Ala Leu Pro Glu Asn Val
1 5 10 15

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

20 25 30

Ile Tyr Lys Trp Pro Ala Glu Lys Glu Asn Asp Thr Gly Val Val His
35 40 45

Gln Val Glu Glu Cys Arg Val Lys Gly Pro Gly Ile Ser Lys Phe Val
50 55 60

Gln Lys Val Asn Glu Ile Gly Ile Tyr Leu Thr Asp Cys Met Glu Arg
65 70 75 80

Ala Arg Glu Val Ile Pro Arg Ser Gln His Gln Glu Thr Pro Val Tyr
85 90 95

Leu Gly Ala Thr Ala Gly Met Arg Leu Leu Arg Met Glu Ser Glu Glu
100 105 110

Leu Ala Asp Arg Val Leu Asp Val Val Glu Arg Ser Leu Ser Asn Tyr
115 120 125

Pro Phe Asp Phe Gln Gly Ala Arg Ile Ile Thr Gly Gln Glu Glu Gly
130 135 140

Ala Tyr Gly Trp Ile Thr Ile Asn Tyr Leu Leu Gly Lys Phe Ser Gln
145 150 155 160

Lys Asn Gln Glu Thr Phe Gly Ala Leu Asp Leu Gly Gly Ala Ser Thr
165 170 175

Gln Val Thr Phe Val Pro Gln Asn Gln Thr Ile Glu Ser Pro Asp Asn
180 185 190

Ala Leu Gln Phe Arg Leu Tyr Gly Lys Asp Tyr Asn Val Tyr Thr His
195 200 205

Ser Phe Leu Cys Tyr Gly Lys Asp Gln Ala Leu Trp Gln Lys Leu Ala
210 215 220

Lys Asp Ile Gln Val Ala Ser Asn Glu Ile Leu Arg Asp Pro Cys Phe
225 230 235 240

His Pro Gly Tyr Lys Lys Val Val Asn Val Ser Asp Leu Tyr Lys Thr
245 250 255

Pro Cys Thr Lys Arg Phe Glu Met Thr Leu Pro Phe Gln Gln Phe Glu
260 265 270

Ile Gln Gly Ile Gly Asn Tyr Gln Gln Cys His Gln Ser Ile Leu Glu
275 280 285

Leu Phe Asn Thr Ser Tyr Cys Pro Tyr Ser Gln Cys Ala Phe Asn Gly
290 295 300

Ile Phe Leu Pro Pro Leu Gln Gly Asp Phe Gly Ala Phe Ser Ala Phe
305 310 315 320

Tyr Phe Val Met Lys Phe Leu Asn Leu Thr Ser Glu Lys Val Ser Gln
325 330 335

Glu Lys Val Thr Glu Met Met Lys Lys Phe Cys Ala Gln Pro Trp Glu
340 345 350

Glu Ile Lys Thr Ser Tyr Ala Gly Val Asn Glu Lys Tyr Leu Ser Glu
355 360 365

Phe Cys Phe Ser Gly Thr Tyr Ile Leu Ser Leu Leu Leu Gln Gly Tyr
370 375 380

His Phe Thr Ala Asp Ser Trp Glu His Ile His Phe Ile Gly Lys Ile
385 390 395 400

Gln Gly Ser Asp Ala Gly Trp Thr Leu Gly Tyr Met Leu Asn Leu Thr
405 410 415

Asn Met Ile Pro Ala Glu Gln Pro Leu Ser Thr Pro Leu Ser His Ser

420 425 430

Thr

<210> 240
<211> 1299
<212> DNA
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成多核苷酸"

<400> 240
gcccctacca gcagcagcac ccagaacaag gccctgcccg agaacgtgaa gtacggcatc 60

gtgctggatg ccggcagcag ccacaccagc ctgtacatct acaagtggcc tgccgagaaa 120

gaaaacgaca ccggcgtggt gcatcaggtg gaagagtgca gagtgaaggg ccctggcatc 180

agcaagttcg tgcagaaagt gaacgagatc ggcatctacc tgaccgactg catggaacgg 240

gccagggaag tgatccccag aagccagcac caggaaaccc ccgtgtatct gggagccacc 300

gccggcatga gactgctgag aatggaaagc gaggaactgg ccgaccgggt gctggacgtg 360

gtggaaagaa gcctgagcaa ctacccattc gattttcaag gcgccagaat catcaccggc 420

caggaagaag gcgcctacgg ctggatcacc atcaactacc tgctgggcaa gttcagccag 480

aagaatcagg aaaccttcgg cgccctggac ctgggcggag cttctaccca agtgaccttc 540

gtgccccaga atcagaccat cgagagcccc gacaacgccc tgcagttccg gctgtacggc 600

aaggactaca atgtgtacac ccacagcttt ctgtgctacg gaaaggacca ggctctgtgg 660

cagaagctgg ccaaggacat ccaggtggcc agcaacgaga tcctgcggga cccttgcttc 720

caccccggct acaagaaagt cgtgaacgtg tccgacctgt acaagacccc ctgcaccaag 780

agattcgaga tgaccctgcc cttccagcag ttcgagatcc agggcatcgg caattaccag 840

cagtgccacc agagcatcct ggaactgttc aacaccagct actgccccta cagccagtgc 900

gccttcaacg gcatcttcct gccacctctg caggggggatt tcggcgcctt cagcgccttc 960

tacttcgtga tgaagttcct gaacctgacc agcgagaagg tgtcccagga aaaagtgaca 1020

gagatgatga agaagttctg cgcccaaccc tgggaggaaa tcaagacctc ctacgctggc 1080

gtgaacgaga agtacctgag cgagttttgc ttcagcggca cctacatcct gagcctgctg 1140

ctgcagggct accacttcac cgccgatagc tgggagcaca tccacttcat cggcaagatt 1200

cagggcagcg acgccggctg gacactgggc tacatgctga atctgaccaa catgatcccc 1260

gccgagcagc ccctgagcac acctctgagc cacagcacc 1299

<210> 241
<211> 442
<212> PRT
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成多肽"

<400> 241

Ala Pro Thr Ser Ser Ser Thr Lys Lys Thr Gln Leu Thr Ser Ser Thr
1 5 10 15

Gln Asn Lys Ala Leu Pro Glu Asn Val Lys Tyr Gly Ile Val Leu Asp
20 25 30

Ala Gly Ser Ser His Thr Ser Leu Tyr Ile Tyr Lys Trp Pro Ala Glu
35 40 45

Lys Glu Asn Asp Thr Gly Val Val His Gln Val Glu Glu Cys Arg Val
50 55 60

Lys Gly Pro Gly Ile Ser Lys Phe Val Gln Lys Val Asn Glu Ile Gly
65 70 75 80

Ile Tyr Leu Thr Asp Cys Met Glu Arg Ala Arg Glu Val Ile Pro Arg
85 90 95

Ser Gln His Gln Glu Thr Pro Val Tyr Leu Gly Ala Thr Ala Gly Met
100 105 110

Arg Leu Leu Arg Met Glu Ser Glu Glu Leu Ala Asp Arg Val Leu Asp
115 120 125

Val Val Glu Arg Ser Leu Ser Asn Tyr Pro Phe Asp Phe Gln Gly Ala
130 135 140

Arg Ile Ile Thr Gly Gln Glu Glu Gly Ala Tyr Gly Trp Ile Thr Ile
145 150 155 160

Asn Tyr Leu Leu Gly Lys Phe Ser Gln Lys Asn Gln Glu Thr Phe Gly
165 170 175

Ala Leu Asp Leu Gly Gly Ala Ser Thr Gln Val Thr Phe Val Pro Gln
180 185 190

Asn Gln Thr Ile Glu Ser Pro Asp Asn Ala Leu Gln Phe Arg Leu Tyr
195 200 205

Gly Lys Asp Tyr Asn Val Tyr Thr His Ser Phe Leu Cys Tyr Gly Lys
210 215 220

Asp Gln Ala Leu Trp Gln Lys Leu Ala Lys Asp Ile Gln Val Ala Ser
225 230 235 240

Asn Glu Ile Leu Arg Asp Pro Cys Phe His Pro Gly Tyr Lys Lys Val
245 250 255

Val Asn Val Ser Asp Leu Tyr Lys Thr Pro Cys Thr Lys Arg Phe Glu
260 265 270

Met Thr Leu Pro Phe Gln Gln Phe Glu Ile Gln Gly Ile Gly Asn Tyr
275 280 285

Gln Gln Cys His Gln Ser Ile Leu Glu Leu Phe Asn Thr Ser Tyr Cys
290 295 300

Pro Tyr Ser Gln Cys Ala Phe Asn Gly Ile Phe Leu Pro Pro Leu Gln
305 310 315 320

Gly Asp Phe Gly Ala Phe Ser Ala Phe Tyr Phe Val Met Lys Phe Leu
325 330 335

Asn Leu Thr Ser Glu Lys Val Ser Gln Glu Lys Val Thr Glu Met Met
340 345 350

Lys Lys Phe Cys Ala Gln Pro Trp Glu Glu Ile Lys Thr Ser Tyr Ala
355 360 365

Gly Val Asn Glu Lys Tyr Leu Ser Glu Phe Cys Phe Ser Gly Thr Tyr
370 375 380

Ile Leu Ser Leu Leu Leu Gln Gly Tyr His Phe Thr Ala Asp Ser Trp
385 390 395 400

Glu His Ile His Phe Ile Gly Lys Ile Gln Gly Ser Asp Ala Gly Trp
405 410 415

Thr Leu Gly Tyr Met Leu Asn Leu Thr Asn Met Ile Pro Ala Glu Gln
420 425 430

Pro Leu Ser Thr Pro Leu Ser His Ser Thr
435 440

<210> 242
<211> 1326
<212> DNA
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成多核苷酸"

<400> 242
gcccctacca gcagcagcac caagaaaacc cagctgacca gcagcaccca gaacaaggcc 60

ctgcccgaga acgtgaagta cggcatcgtg ctggatgccg gcagcagcca caccagcctg 120

tacatctaca agtggcctgc cgagaaagaa aacgacaccg gcgtggtgca tcaggtggaa 180

gagtgcagag tgaagggccc tggcatcagc aagttcgtgc agaaagtgaa cgagatcggc 240

atctacctga ccgactgcat ggaacgggcc agggaagtga tccccagaag ccagcaccag 300

gaaacccccg tgtatctggg agccaccgcc ggcatgagac tgctgagaat ggaaagcgag 360

gaactggccg accgggtgct ggacgtggtg gaaagaagcc tgagcaacta cccattcgat 420

tttcaaggcg ccagaatcat caccggccag gaagaaggcg cctacggctg gatcaccatc 480

aactacctgc tgggcaagtt cagccagaag aatcaggaaa ccttcggcgc cctggacctg 540

ggcggagctt ctacccaagt gaccttcgtg ccccagaatc agaccatcga gagccccgac 600

aacgccctgc agttccggct gtacggcaag gactacaatg tgtacaccca cagctttctg 660

tgctacggaa aggaccaggc tctgtggcag aagctggcca aggacatcca ggtggccagc 720

aacgagatcc tgcgggaccc ttgcttccac cccggctaca agaaagtcgt gaacgtgtcc 780

gacctgtaca agacccccctg caccaagaga ttcgagatga ccctgccctt ccagcagttc 840

gagatccagg gcatcggcaa ttaccagcag tgccaccaga gcatcctgga actgttcaac 900

accagctact gcccctacag ccagtgcgcc ttcaacggca tcttcctgcc acctctgcag 960

ggggatttcg gcgccttcag cgccttctac ttcgtgatga agttcctgaa cctgaccagc 1020

gagaaggtgt cccaggaaaa agtgacagag atgatgaaga agttctgcgc ccaaccctgg 1080

gaggaaatca agacctccta cgctggcgtg aacgagaagt acctgagcga gttttgcttc 1140

agcggcacct acatcctgag cctgctgctg cagggctacc acttcaccgc cgatagctgg 1200

gagcacatcc acttcatcgg caagattcag ggcagcgacg ccggctggac actgggctac 1260

atgctgaatc tgaccaacat gatccccgcc gagcagcccc tgagcacacc tctgagccac 1320

agcacc 1326

<210> 243
<211> 430
<212> PRT
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成多肽"

<400> 243

Ala Pro Thr Thr Gln Asn Lys Ala Leu Pro Glu Asn Val Lys Tyr Gly
1 5 10 15

Ile Val Leu Asp Ala Gly Ser Ser His Thr Ser Leu Tyr Ile Tyr Lys
20 25 30

Trp Pro Ala Glu Lys Glu Asn Asp Thr Gly Val Val His Gln Val Glu
35 40 45

Glu Cys Arg Val Lys Gly Pro Gly Ile Ser Lys Phe Val Gln Lys Val
50 55 60

Asn Glu Ile Gly Ile Tyr Leu Thr Asp Cys Met Glu Arg Ala Arg Glu
65 70 75 80

Val Ile Pro Arg Ser Gln His Gln Glu Thr Pro Val Tyr Leu Gly Ala
85 90 95

Thr Ala Gly Met Arg Leu Leu Arg Met Glu Ser Glu Glu Leu Ala Asp
100 105 110

Arg Val Leu Asp Val Val Glu Arg Ser Leu Ser Asn Tyr Pro Phe Asp
115 120 125

Phe Gln Gly Ala Arg Ile Ile Thr Gly Gln Glu Glu Gly Ala Tyr Gly
130 135 140

Trp Ile Thr Ile Asn Tyr Leu Leu Gly Lys Phe Ser Gln Lys Asn Gln
145 150 155 160

Glu Thr Phe Gly Ala Leu Asp Leu Gly Gly Ala Ser Thr Gln Val Thr
165 170 175

Phe Val Pro Gln Asn Gln Thr Ile Glu Ser Pro Asp Asn Ala Leu Gln
180 185 190

Phe Arg Leu Tyr Gly Lys Asp Tyr Asn Val Tyr Thr His Ser Phe Leu

195 200 205

Cys Tyr Gly Lys Asp Gln Ala Leu Trp Gln Lys Leu Ala Lys Asp Ile
210 215 220

Gln Val Ala Ser Asn Glu Ile Leu Arg Asp Pro Cys Phe His Pro Gly
225 230 235 240

Tyr Lys Lys Val Val Asn Val Ser Asp Leu Tyr Lys Thr Pro Cys Thr
245 250 255

Lys Arg Phe Glu Met Thr Leu Pro Phe Gln Gln Phe Glu Ile Gln Gly
260 265 270

Ile Gly Asn Tyr Gln Gln Cys His Gln Ser Ile Leu Glu Leu Phe Asn
275 280 285

Thr Ser Tyr Cys Pro Tyr Ser Gln Cys Ala Phe Asn Gly Ile Phe Leu
290 295 300

Pro Pro Leu Gln Gly Asp Phe Gly Ala Phe Ser Ala Phe Tyr Phe Val
305 310 315 320

Met Lys Phe Leu Asn Leu Thr Ser Glu Lys Val Ser Gln Glu Lys Val
325 330 335

Thr Glu Met Met Lys Lys Phe Cys Ala Gln Pro Trp Glu Glu Ile Lys
340 345 350

Thr Ser Tyr Ala Gly Val Lys Glu Lys Tyr Leu Ser Glu Tyr Cys Phe
355 360 365

Ser Gly Thr Tyr Ile Leu Ser Leu Leu Gln Gln Gly Tyr His Phe Thr
370 375 380

Ala Asp Ser Trp Glu Asp Ile His Phe Ile Gly Lys Ile Gln Gly Ser
385 390 395 400

Asp Ala Gly Trp Thr Leu Gly Tyr Met Leu Asn Leu Thr Asn Met Ile
405 410 415

Pro Ala Glu Gln Pro Leu Ser Thr Pro Leu Ser His Ser Thr
420 425 430

<210> 244
<211> 1290
<212> DNA
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成多核苷酸"

<400> 244
gcccctacca cccagaacaa ggccctgccc gagaacgtga agtacggcat cgtgctggat 60

gccggcagca gccacaccag cctgtacatc tacaagtggc ctgccgagaa agaaaacgac 120

accggcgtgg tgcatcaggt ggaagagtgc agagtgaagg gccctggcat cagcaagttc 180

gtgcagaaag tgaacgagat cggcatctac ctgaccgact gcatggaacg ggccagggaa 240

gtgatcccca gaagccagca ccaggaaacc cccgtgtatc tgggagccac cgccggcatg 300

agactgctga gaatggaaag cgaggaactg gccgaccggg tgctggacgt ggtggaaaga 360

agcctgagca actacccatt cgattttcaa ggcgccagaa tcatcaccgg ccaggaagaa 420

ggcgcctacg gctggatcac catcaactac ctgctgggca agttcagcca gaagaatcag 480

gaaaccttcg gcgccctgga cctgggcgga gcttctaccc aagtgacctt cgtgccccag 540

aatcagacca tcgagagccc cgacaacgcc ctgcagttcc ggctgtacgg caaggactac 600

aatgtgtaca cccacagctt tctgtgctac ggaaaggacc aggctctgtg gcagaagctg 660

gccaaggaca tccaggtggc cagcaacgag atcctgcggg acccttgctt ccaccccggc 720

tacaagaaag tcgtgaacgt gtccgacctg tacaagaccc cctgcaccaa gagattcgag 780

atgaccctgc ccttccagca gttcgagatc cagggcatcg gcaattacca gcagtgccac 840

cagagcatcc tggaactgtt caacaccagc tactgccccc acagccagtg cgccttcaac 900

ggcatcttcc tgccacctct gcaggggggat ttcggcgcct tcagcgcctt ctacttcgtg 960

atgaagttcc tgaacctgac cagcgagaag gtgtcccagg aaaaagtgac agagatgatg 1020

aagaagttct gcgcccagcc ctgggaggaa atcaagacct cctacgctgg cgtgaaagag 1080

aagtacctga gcgagtactg cttcagcggc acctacatcc tgagcctgct gcagcagggc 1140

taccacttca ccgccgatag ctgggaggac atccacttca tcggcaagat tcagggcagc 1200

gacgccggct ggacactggg ctacatgctg aatctgacca acatgatccc cgccgagcag 1260

cccctgagca cacctctgag ccacagcacc 1290

<210> 245
<211> 433
<212> PRT
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成多肽"

<400> 245
Ala Pro Thr Ser Ser Ser Thr Gln Asn Lys Ala Leu Pro Glu Asn Val
1 5 10 15

Lys Tyr Gly Ile Val Leu Asp Ala Gly Ser Ser His Thr Ser Leu Tyr
20 25 30

Ile Tyr Lys Trp Pro Ala Glu Lys Glu Asn Asp Thr Gly Val Val His
35 40 45

Gln Val Glu Glu Cys Arg Val Lys Gly Pro Gly Ile Ser Lys Phe Val
50 55 60

Gln Lys Val Asn Glu Ile Gly Ile Tyr Leu Thr Asp Cys Met Glu Arg
65 70 75 80

Ala Arg Glu Val Ile Pro Arg Ser Gln His Gln Glu Thr Pro Val Tyr
85 90 95

Leu Gly Ala Thr Ala Gly Met Arg Leu Leu Arg Met Glu Ser Glu Glu
100 105 110

Leu Ala Asp Arg Val Leu Asp Val Val Glu Arg Ser Leu Ser Asn Tyr
115 120 125

Pro Phe Asp Phe Gln Gly Ala Arg Ile Ile Thr Gly Gln Glu Glu Gly
130 135 140

Ala Tyr Gly Trp Ile Thr Ile Asn Tyr Leu Leu Gly Lys Phe Ser Gln
145 150 155 160

Lys Asn Gln Glu Thr Phe Gly Ala Leu Asp Leu Gly Gly Ala Ser Thr
165 170 175

Gln Val Thr Phe Val Pro Gln Asn Gln Thr Ile Glu Ser Pro Asp Asn
180 185 190

Ala Leu Gln Phe Arg Leu Tyr Gly Lys Asp Tyr Asn Val Tyr Thr His
195 200 205

Ser Phe Leu Cys Tyr Gly Lys Asp Gln Ala Leu Trp Gln Lys Leu Ala
210 215 220

Lys Asp Ile Gln Val Ala Ser Asn Glu Ile Leu Arg Asp Pro Cys Phe
225 230 235 240

His Pro Gly Tyr Lys Lys Val Val Asn Val Ser Asp Leu Tyr Lys Thr
245 250 255

Pro Cys Thr Lys Arg Phe Glu Met Thr Leu Pro Phe Gln Gln Phe Glu
260 265 270

Ile Gln Gly Ile Gly Asn Tyr Gln Gln Cys His Gln Ser Ile Leu Glu
275 280 285

Leu Phe Asn Thr Ser Tyr Cys Pro Tyr Ser Gln Cys Ala Phe Asn Gly
290 295 300

Ile Phe Leu Pro Pro Leu Gln Gly Asp Phe Gly Ala Phe Ser Ala Phe
305 310 315 320

Tyr Phe Val Met Lys Phe Leu Asn Leu Thr Ser Glu Lys Val Ser Gln
325 330 335

Glu Lys Val Thr Glu Met Met Lys Lys Phe Cys Ala Gln Pro Trp Glu
340 345 350

Glu Ile Lys Thr Ser Tyr Ala Gly Val Lys Glu Lys Tyr Leu Ser Glu
355 360 365

Tyr Cys Phe Ser Gly Thr Tyr Ile Leu Ser Leu Leu Gln Gln Gly Tyr
370 375 380

His Phe Thr Ala Asp Ser Trp Glu Asp Ile His Phe Ile Gly Lys Ile
385 390 395 400

Gln Gly Ser Asp Ala Gly Trp Thr Leu Gly Tyr Met Leu Asn Leu Thr
405 410 415

Asn Met Ile Pro Ala Glu Gln Pro Leu Ser Thr Pro Leu Ser His Ser
420 425 430

Thr

<210> 246
<211> 1299
<212> DNA
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述: 合成多核苷酸"

<400> 246
gcccctacca gcagcagcac ccagaacaag gccctgcccg agaacgtgaa gtacggcatc 60

gtgctggatg ccggcagcag ccacaccagc ctgtacatct acaagtggcc tgccgagaaa 120

gaaaacgaca ccggcgtggt gcatcaggtg gaagagtgca gagtgaaggg ccctggcatc 180

agcaagttcg tgcagaaagt gaacgagatc ggcatctacc tgaccgactg catggaacgg 240

gccagggaag tgatccccag aagccagcac caggaaaccc ccgtgtatct gggagccacc 300

gccggcatga gactgctgag aatggaaagc gaggaactgg ccgaccgggt gctggacgtg 360

gtggaaagaa gcctgagcaa ctacccattc gattttcaag gcgccagaat catcaccggc 420

caggaagaag gcgcctacgg ctggatcacc atcaactacc tgctgggcaa gttcagccag 480

aagaatcagg aaaccttcgg cgccctggac ctgggcggag cttctaccca agtgaccttc 540

gtgccccaga atcagaccat cgagagcccc gacaacgccc tgcagttccg gctgtacggc 600

aaggactaca atgtgtacac ccacagcttt ctgtgctacg gaaaggacca ggctctgtgg 660

cagaagctgg ccaaggacat ccaggtggcc agcaacgaga tcctgcggga cccttgcttc 720

caccccggct acaagaaagt cgtgaacgtg tccgacctgt acaagacccc ctgcaccaag 780

agattcgaga tgaccctgcc cttccagcag ttcgagatcc agggcatcgg caattaccag 840

cagtgccacc agagcatcct ggaactgttc aacaccagct actgccccta cagccagtgc 900

gccttcaacg gcatcttcct gccacctctg caggggggatt tcggcgcctt cagcgccttc 960

tacttcgtga tgaagttcct gaacctgacc agcgagaagg tgtcccagga aaaagtgaca 1020

gagatgatga agaagttctg cgcccagccc tgggaggaaa tcaagacctc ctacgctggc 1080

gtgaaagaga agtacctgag cgagtactgc ttcagcggca cctacatcct gagcctgctg 1140

cagcagggct accacttcac cgccgatagc tgggaggaca tccacttcat cggcaagatt 1200

cagggcagcg acgccggctg gacactgggc tacatgctga atctgaccaa catgatcccc 1260

gccgagcagc ccctgagcac acctctgagc cacagcacc 1299

<210> 247
<211> 6
<212> PRT
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成肽"

<400> 247
Glu Phe Arg His Asp Ser
1 5

<210> 248
<211> 18
<212> DNA
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成寡核苷酸"

<400> 248
gaattccggc acgacagc 18

<210> 249
<211> 6
<212> PRT
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成6xHis標籤"

<400> 249
His His His His His His
1 5

<210> 250
<211> 18
<212> DNA
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成寡核苷酸"

<400> 250
catcatcatc atcatcac 18

<210> 251
<211> 5
<212> PRT
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成肽"

<400> 251
Gly Gly Gly Gly Ser
1 5

<210> 252
<211> 8
<212> PRT
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成肽"

<400> 252
Val Lys Glu Lys Tyr Leu Ser Glu
1 5

<210> 253
<211> 7
<212> PRT
<213> 人工序列

<220>
<221> 來源
<223> /注釋="人工序列的描述：合成肽"

<400> 253
Gln Glu Arg Trp Leu Arg Asp
1 5

【發明申請專利範圍】

【第 1 項】一種溶解的人腺三磷雙磷酸酶，該溶解的人腺三磷雙磷酸酶包含序列，該序列選自由以下組成之群組：SEQ ID NO: 213、SEQ ID NO: 227、SEQ ID NO: 219、SEQ ID NO: 225、SEQ ID NO: 217、SEQ ID NO: 209、SEQ ID NO: 221、SEQ ID NO: 72、SEQ ID NO: 215、SEQ ID NO: 223、SEQ ID NO: 211、SEQ ID NO: 58 及 SEQ ID NO: 229。

【第 2 項】如請求項 1 之溶解的人腺三磷雙磷酸酶，該溶解的人腺三磷雙磷酸酶由序列組成，該序列選自由以下組成之群組：SEQ ID NO: 58、SEQ ID NO: 72 及 SEQ ID NO: 229。

【第 3 項】一種藥物組成物，該藥物組成物包含治療有效劑量的如請求項 1 或 2 之腺三磷雙磷酸酶、及一種或多種藥學上可接受的運載體。

【第 4 項】如請求項 3 之藥物組成物，該藥物組成物進一步包含一種或多種另外的活性成分。

【第 5 項】一種如請求項 1 或 2 之溶解的人腺三磷雙磷酸酶之用途，其係用於製造用於治療人個體的組織損傷的藥物。

【第 6 項】如請求項 5 之用途，其中該組織損傷係急性腦損傷；急性多器官衰竭；腎臟或其他實體器官移植後移植物功能延遲；燒傷；輻射損傷；由於創傷及/或缺氧引起的急性損傷；急性腎損傷；急性心肌損傷。

【第 7 項】一種如請求項 1 或 2 之溶解的人腺三磷雙磷酸酶之用途，其係用於製造用於治療心臟手術相關的急性腎損傷的藥物。

【第 8 項】一種如請求項 1 或 2 之溶解的人腺三磷雙磷酸酶之用途，其係用於製造用於治療移植物功能延遲（DGF）、急性呼吸窘迫症候群（ARDS）、急

性心肌梗塞（AMI）、外傷性腦損傷（TBI）/急性缺血性中風（AIS）、缺血再灌注損傷（IRI）、或通常被稱為多器官衰竭（MOF）的其組合的藥物。

【第 9 項】一種如請求項 1 或 2 之溶解的人腺三磷雙磷酸酶之用途，其係用於製造用於治療敗血症相關的急性腎損傷的藥物。

【第 10 項】 一種分離的核酸分子，該分離的核酸分子編碼如請求項 1 或 2 之任何腺三磷雙磷酸酶。

【第 11 項】 一種選殖載體或表現載體，該選殖載體或表現載體包含一種或多種如請求項 10 之核酸序列，其中該載體適用於分離的如請求項 1 或 2 之腺三磷雙磷酸酶的重組產生。

【第 12 項】一種宿主細胞，該宿主細胞包含一種或多種如請求項 11 之選殖載體或表現載體。

【第 13 項】 一種用於生產如請求項 1 或 2 之腺三磷雙磷酸酶之方法，該方法包括培養如請求項 12 之宿主細胞，純化及回收該腺三磷雙磷酸酶。

【發明圖式】

```
wtCD39          1 MEDTKESNVKTFCSKNILAILGFSSIIAVIALLAVGLTQNKALPENVKYG     50
                                                  ||||||||||||
CD39δMIL        1 ------------------------------------TQNKALPENVKYG     13

wtCD39         51 IVLDAGSSHTSLYIYKWPAEKENDTGVVHQVEECRVKGPGISKFVQKVNE    100
                  ||||||||||||||||||||||||||||||||||||||||||||||||||||
CD39δMIL       14 IVLDAGSSHTSLYIYKWPAEKENDTGVVHQVEECRVKGPGISKFVQKVNE     63

wtCD39        101 IGIYLTDCMERAREVIPRSQHQETPVYLGATAGMRLLRMESEELADRVLD    150
                  ||||||||||||||||||||||||||||||||||||||||||||||||||||
CD39δMIL       64 IGIYLTDCMERAREVIPRSQHQETPVYLGATAGMRLLRMESEELADRVLD    113

wtCD39        151 VVERSLSNYPFDFQGARIITGQEEGAYGWITINYLLGKFSQKTRWFSIVP    200
                  ||||||||||||||||||||||||||||||||||||||||
CD39δMIL      114 VVERSLSNYPFDFQGARIITGQEEGAYGWITINYLLGKFSQK--------    155

wtCD39        201 YETNNQETFGALDLGGASTQVTFVPQNQTIESPDNALQFRLYGKDYNVYT    250
                      ||||||||||||||||||||||||||||||||||||||||||||||||||
CD39δMIL      156 ----NQETFGALDLGGASTQVTFVPQNQTIESPDNALQFRLYGKDYNVYT    201

wtCD39        251 HSFLCYGKDQALWQKLAKDIQVASNEILRDPCFHPGYKKVVNVSDLYKTP    300
                  ||||||||||||||||||||||||||||||||||||||||||||||||||||
CD39δMIL      202 HSFLCYGKDQALWQKLAKDIQVASNEILRDPCFHPGYKKVVNVSDLYKTP    251

wtCD39        301 CTKRFEMTLPFQQFEIQGIGNYQQCHQSILELFNTSYCPYSQCAFNGIFL    350
                  ||||||||||||||||||||||||||||||||||||||||||||||||||||
CD39δMIL      252 CTKRFEMTLPFQQFEIQGIGNYQQCHQSILELFNTSYCPYSQCAFNGIFL    301

wtCD39        351 PPLQGDFGAFSAFYFVMKFLNLTSEKVSQEKVTEMMKKFCAQPWEEIKTS    400
                  ||||||||||||||||||||||||||||||||||||||||||||||||||||
CD39δMIL      302 PPLQGDFGAFSAFYFVMKFLNLTSEKVSQEKVTEMMKKFCAQPWEEIKTS    351

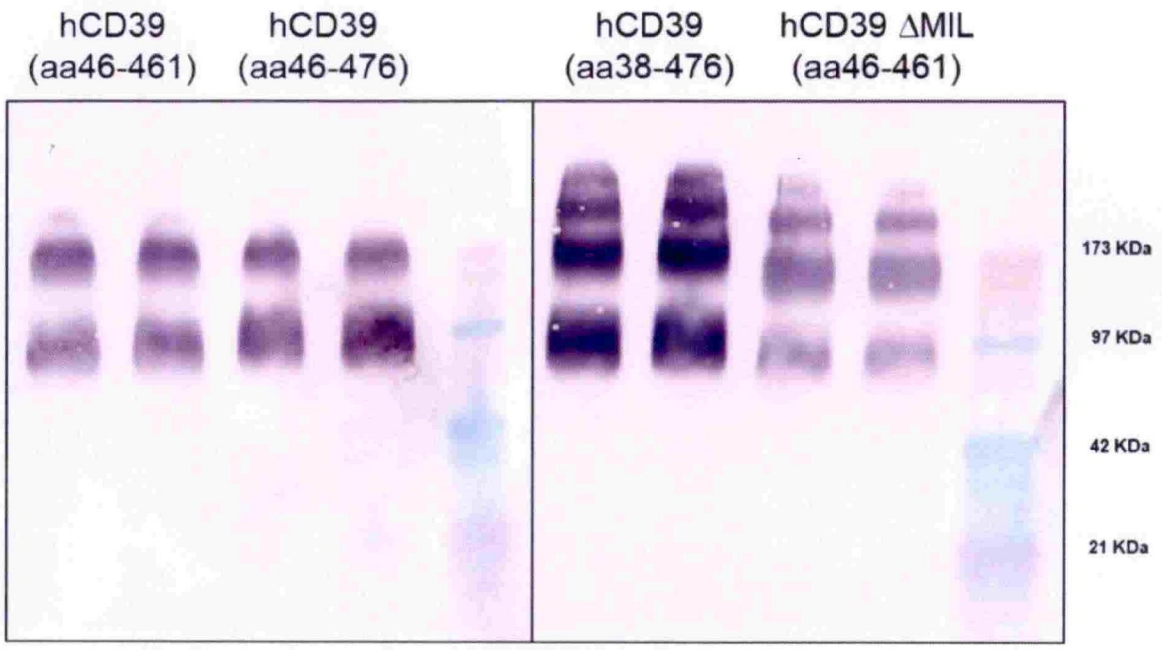
wtCD39        401 YAGVKEKYLSEYCFSGTYILSLLLQGYHFTADSWEHIHFIGKIQGSDAGW    450
                  ||||||||||||||||||||||||||||||||||||||||||||||||||||
CD39δMIL      352 YAGVKEKYLSEYCFSGTYILSLLLQGYHFTADSWEHIHFIGKIQGSDAGW    401

wtCD39        451 TLGYMLNLTNMIPAEQPLSTPLSHSTYVFLMVLFSLVLFTVAIIGLLIFH    500
                  ||||||||||||||||||||||||
CD39δMIL      402 TLGYMLNLTNMIPAEQPLSTPLSHST------------------------    427

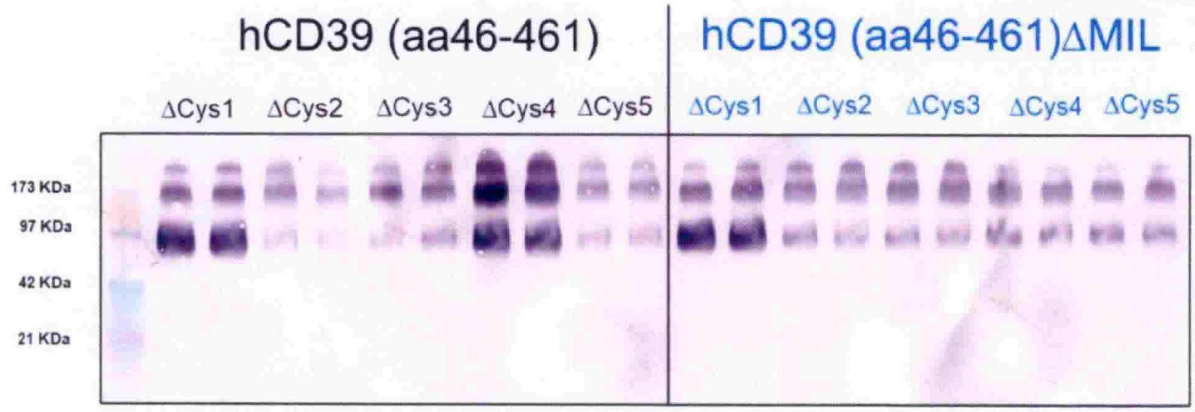
wtCD39        501 KPSYFWKDMV    510

CD39δMIL      427 ----------    427
```

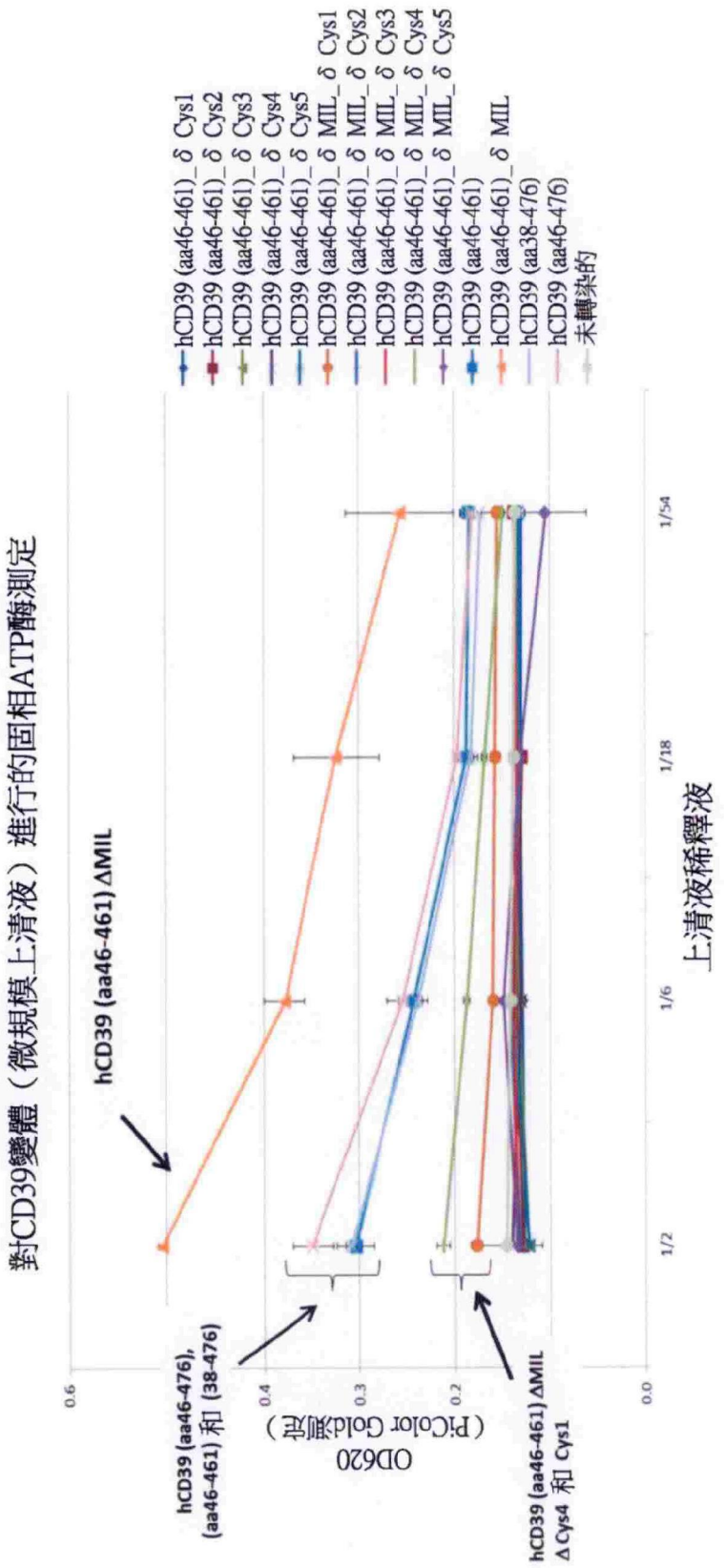
【圖 1】


hCD39
(aa46-461)
hCD39
(aa46-476)
hCD39
(aa38-476)
hCD39 ΔMIL
(aa46-461)
173 KDa
97 KDa
42 KDa
21 KDa

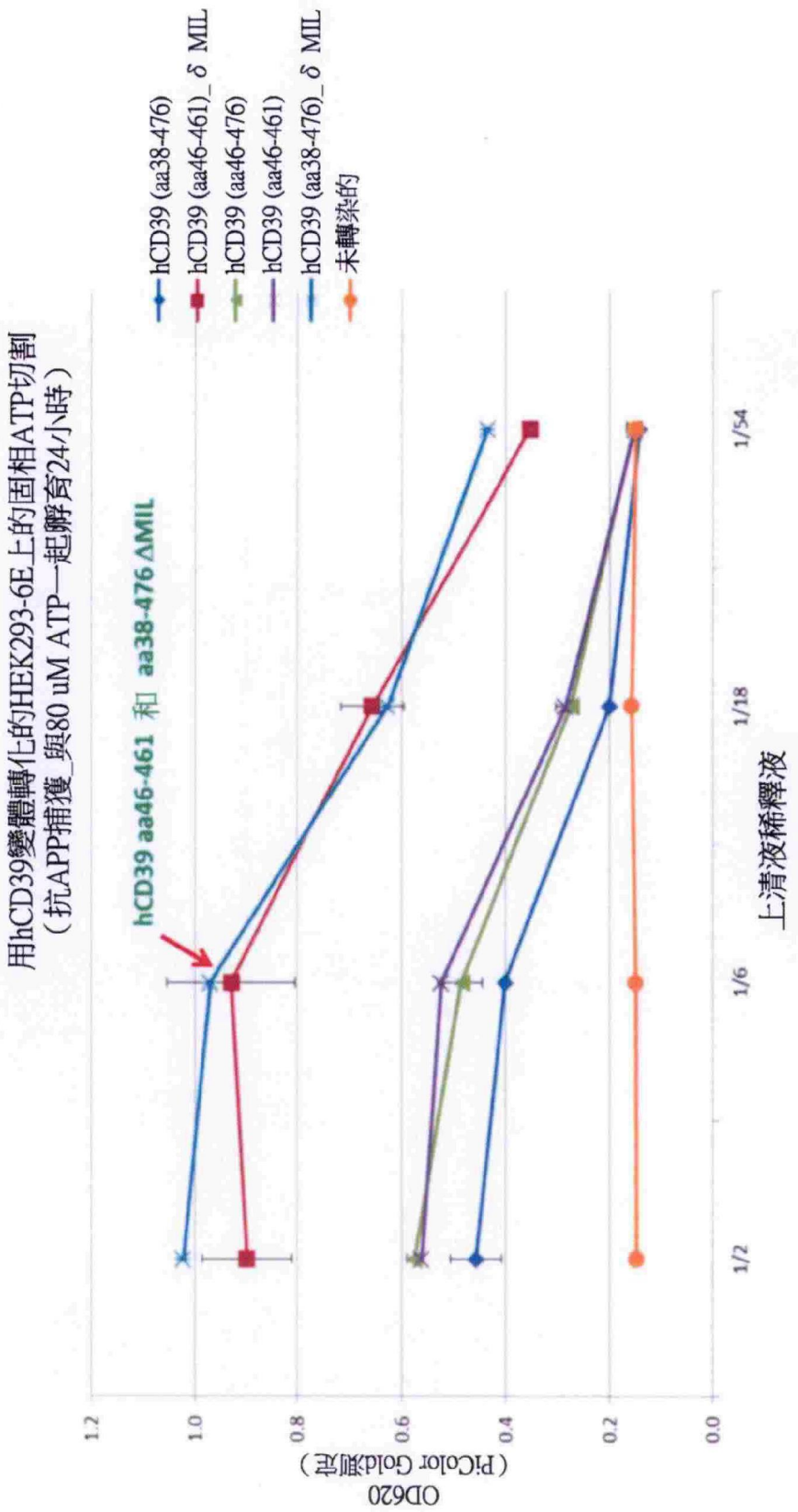
【圖 2A】


hCD39 (aa46-461)
hCD39 (aa46-461)ΔMIL
ΔCys1
ΔCys2
ΔCys3
ΔCys4
ΔCys5
ΔCys1
ΔCys2
ΔCys3
ΔCys4
ΔCys5
173 KDa
97 KDa
42 KDa
21 KDa

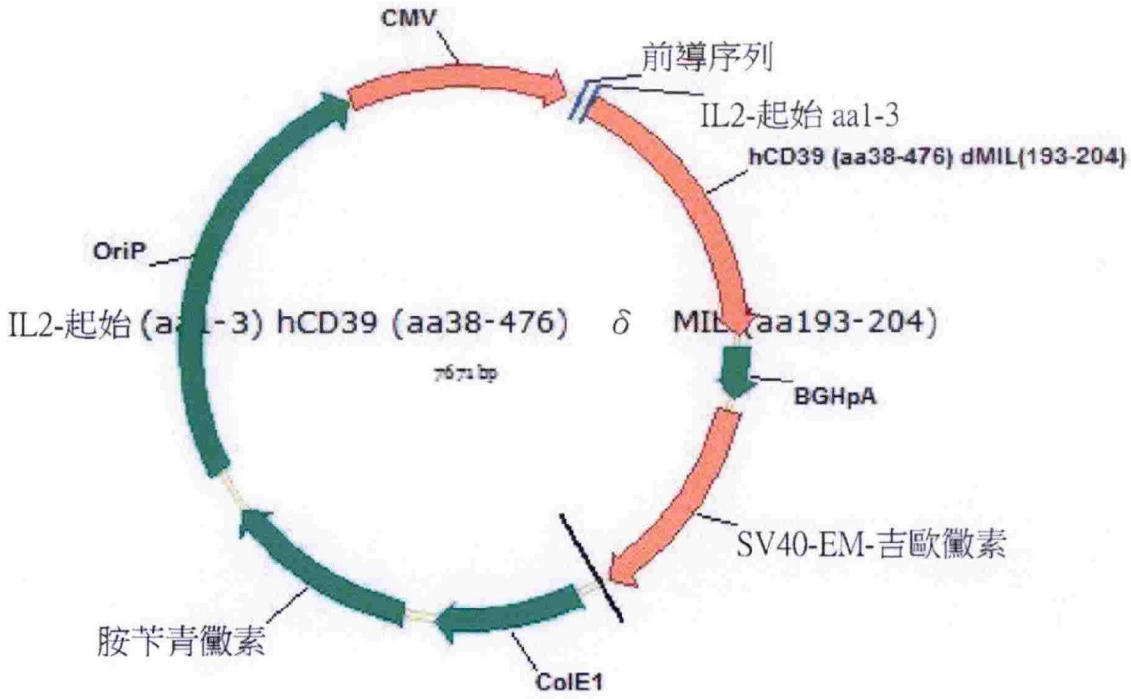
【圖 2B】


對CD39變體（微規模上清液）進行的固相ATP酶測定
hCD39 (aa46-461) ΔMIL
hCD39 (aa46-476), (aa46-461) 和 (38-476)
hCD39 (aa46-461) ΔMIL Δ Cys4 和 Cys1
OD620 (PiColor Gold測定)
上清液稀釋液
0.6
0.4
0.3
0.2
0.0
1/2
1/6
1/18
1/54
hCD39 (aa46-461)_δ Cys1
hCD39 (aa46-461)_δ Cys2
hCD39 (aa46-461)_δ Cys3
hCD39 (aa46-461)_δ Cys4
hCD39 (aa46-461)_δ Cys5
hCD39 (aa46-461)_δ MIL_δ Cys1
hCD39 (aa46-461)_δ MIL_δ Cys2
hCD39 (aa46-461)_δ MIL_δ Cys3
hCD39 (aa46-461)_δ MIL_δ Cys4
hCD39 (aa46-461)_δ MIL_δ Cys5
hCD39 (aa46-461)
hCD39 (aa46-461)_δ MIL
hCD39 (aa38-476)
hCD39 (aa46-476)
未轉染的

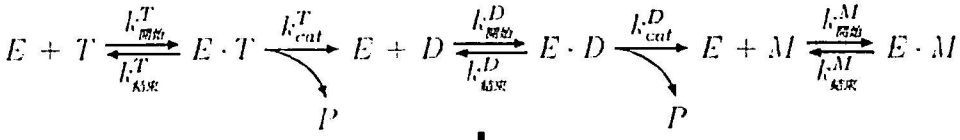
【圖 3】


用hCD39變體轉化的HEK293-6E上的固相ATP切割
（抗APP捕獲_與80 uM ATP一起孵育24小時）
hCD39 (aa38-476)
hCD39 (aa46-461)_δ MIL
hCD39 (aa46-476)
hCD39 (aa46-461)
hCD39 (aa38-476)_δ MIL
未轉染的
hCD39 aa46-461 和 aa38-476 ΔMIL
OD620
（PiColor Gold測定）
1.2
1.0
0.8
0.6
0.4
0.2
0.0
1/2
1/6
1/18
1/54
上清液稀釋液

【圖 4】


CMV
前導序列
IL2-起始 aa1-3
hCD39 (aa38-476) dMIL(193-204)
OriP
IL2-起始 (a -3) hCD39 (aa38-476) δ MIL (aa193-204)
BGHpA
SV40-EM-吉歐黴素
胺苄青黴素
ColE1

【圖 5】



$$\frac{d[T]}{dt} = -k^{T}_{開始}[E][T] + k^{T}_{結束}[E\cdot T] = -\frac{k^{T}_{cat}}{K^{T}_{M}}[E][T]$$

$$\frac{d[D]}{dt} = +k^{T}_{cat}[E\cdot T] \quad -k^{D}_{開始}[E][D] + k^{D}_{結束}[E\cdot D] = \frac{k^{T}_{cat}}{K^{T}_{M}}[E][T] - \frac{k^{D}_{cat}}{K^{D}_{M}}[E][D]$$

$$\frac{d[M]}{dt} = +k^{D}_{cat}[E\cdot D] \quad -k^{M}_{開始}[E][M] + k^{M}_{結束}[E\cdot M] = \frac{k^{D}_{cat}}{K^{D}_{M}}[E][D]$$

其中

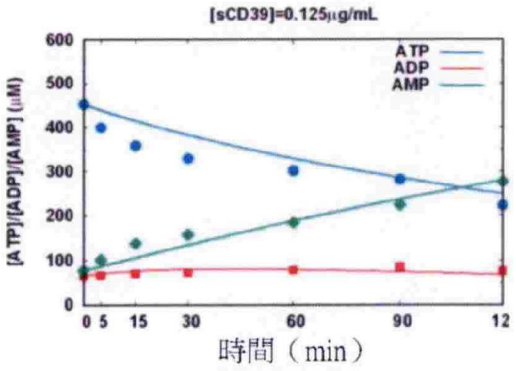
E: sCD39
T: ATP
D: ADP
M: AMP

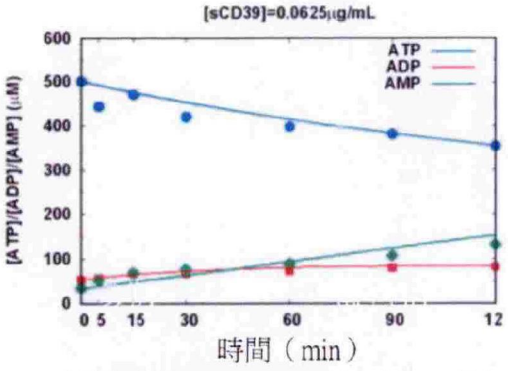
$$K^{T}_{M} = \frac{k^{T}_{結束} + k^{T}_{cat}}{k^{T}_{開始}} \qquad K^{D}_{M} = \frac{k^{D}_{結束} + k^{D}_{cat}}{k^{D}_{開始}} \qquad K^{M}_{d} = \frac{k^{M}_{結束}}{k^{M}_{開始}}$$

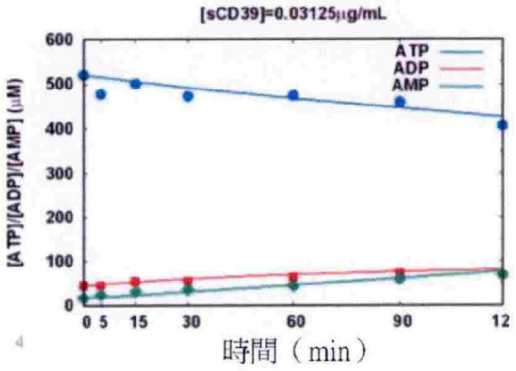
$$[E]_t \equiv [E] + [E\cdot T] + [E\cdot D] + [E\cdot M] = \left(1 + \frac{[T]}{K^{T}_{M}} + \frac{[D]}{K^{D}_{M}} + \frac{[M]}{K^{M}_{d}}\right)[E]$$

【圖 6】

野生型sCD39(EP28)的擬合酶活性數據



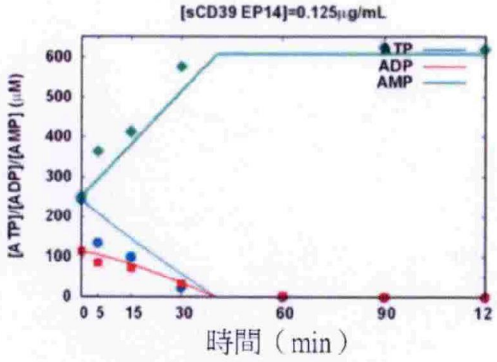


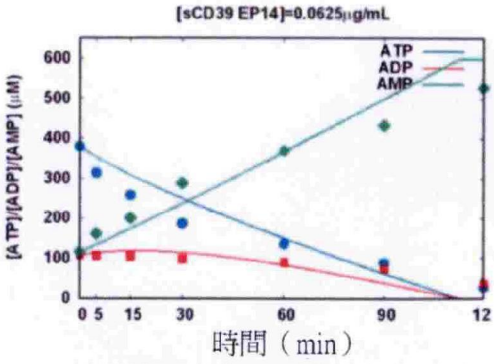


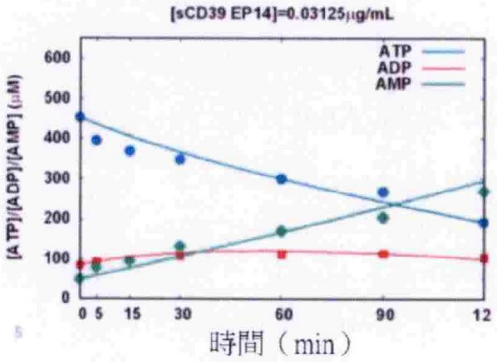
參數	擬合值
K^{M}_{d} (uM)	0.2
k^{T}_{cat} (1/s)	65.3
K^{T}_{M} (uM)	0.7
k^{D}_{cat} (1/s)	40.0
K^{D}_{M} (uM)	0.1

【圖 7】

sCD39突變體EP14的擬合酶活性數據



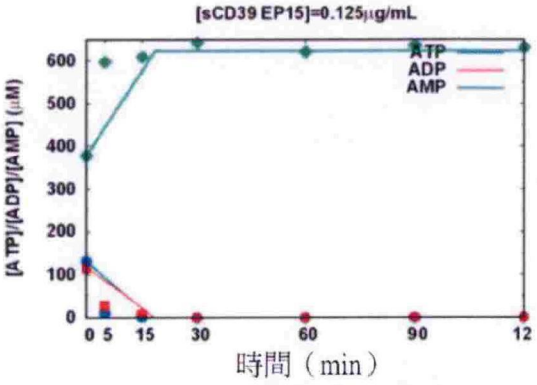


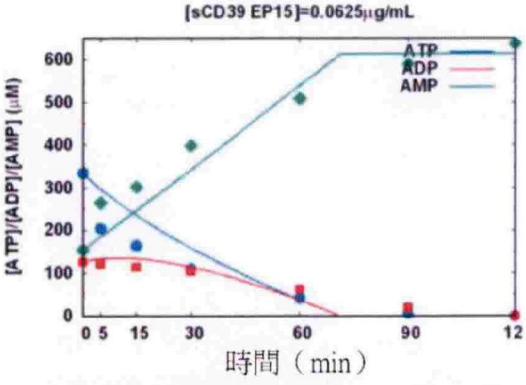


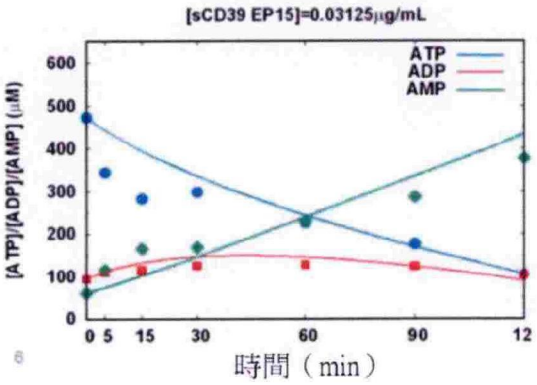
參數	擬合值
K^M_d (uM)	556.8
k^T_{cat} (1/s)	380.2
K^T_M (uM)	1.1
k^D_{cat} (1/s)	90.3
K^D_M (uM)	固定為 0.1

【圖 8】

sCD39突變體EP15的擬合酶活性數據

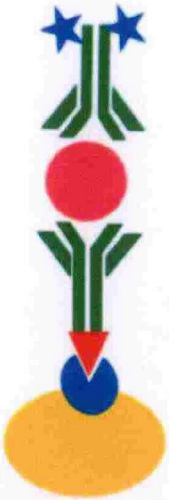






參數	擬合值
K^M_d (uM)	584.9
k^T_{cat} (1/s)	734.9
K^T_M (uM)	1.1
k^D_{cat} (1/s)	128.7
K^D_M (uM)	0.1

【圖 9】



用AlexaFluor650標記的抗
APP檢測抗體

CD39

生物素化的抗CD39（40035）
捕獲抗體

鏈黴親和素包被的珠

【圖 10A】



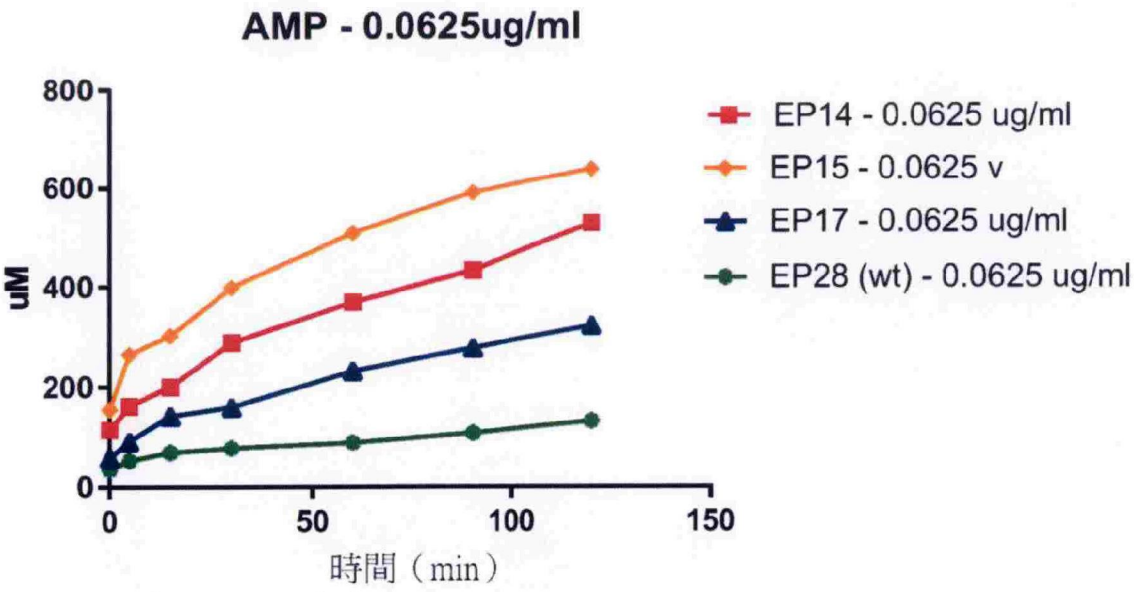
用AlexaFluor650標記的抗Fc/抗CD39（40044）
檢測抗體預混合物

CD39

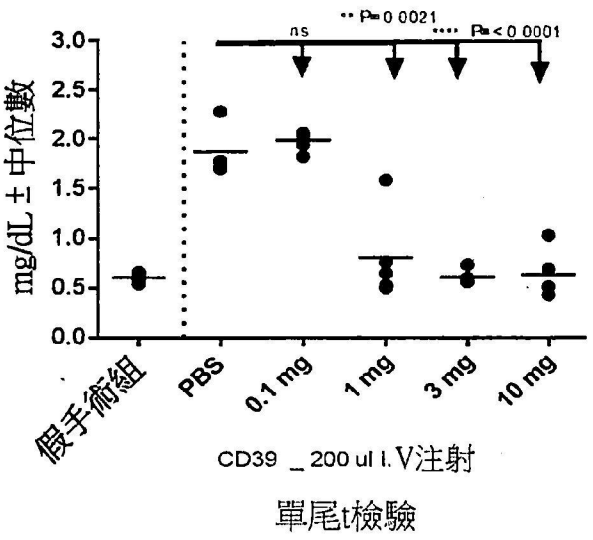
生物素化的Fab（40035）
捕獲分子

鏈黴親和素包被的珠

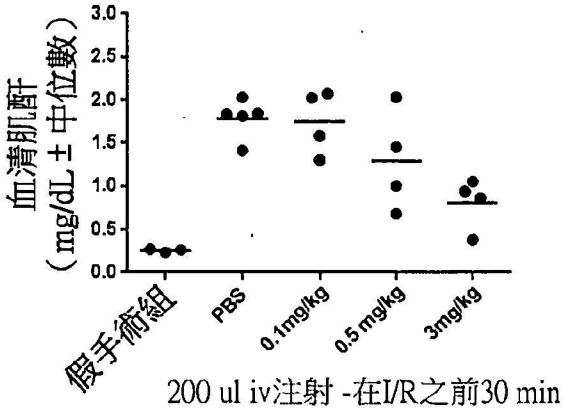
【圖 10B】


AMP - 0.0625ug/ml
800
600
400
200
0
uM
0
50
100
150
時間（min）
EP14 - 0.0625 ug/ml
EP15 - 0.0625 v
EP17 - 0.0625 ug/ml
EP28 (wt) - 0.0625 ug/ml

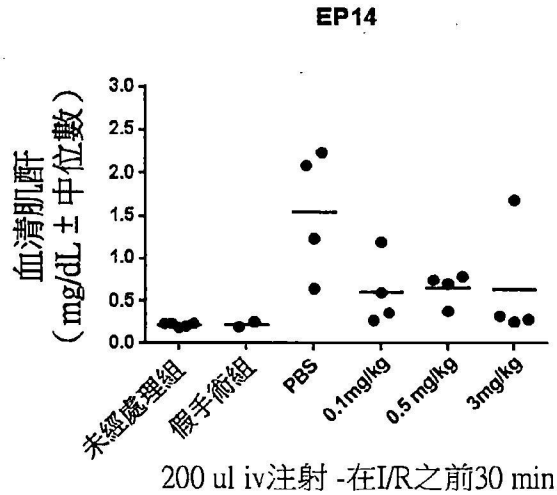
【圖 11】



【圖 12A】



【圖 12B】



【圖 12C】