

**(12) STANDARD PATENT**  
**(19) AUSTRALIAN PATENT OFFICE**

**(11) Application No. AU 2016353547 B9**

(54) Title  
**Cyclic peptides targeting #4#7 integrin**

(51) International Patent Classification(s)  
**C07K 7/06** (2006.01)      **A61P 29/00** (2006.01)  
**A61K 38/08** (2006.01)      **A61P 37/06** (2006.01)  
**A61P 1/00** (2006.01)      **C07K 14/705** (2006.01)

(21) Application No: **2016353547**      (22) Date of Filing: **2016.11.14**

(87) WIPO No: **WO17/079820**

(30) Priority Data

(31) Number **62/254,003**      (32) Date **2015.11.11**      (33) Country **US**

(43) Publication Date: **2017.05.18**  
(44) Accepted Journal Date: **2020.08.06**  
(48) Corrigenda Journal Date: **2020.12.03**

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(56) Related Art  
**US 20140193465 A1**



## (51) International Patent Classification:

<i>C07K 7/06</i> (2006.01)	<i>A61P 29/00</i> (2006.01)
<i>A61K 38/08</i> (2006.01)	<i>A61P 37/06</i> (2006.01)
<i>A61P 1/00</i> (2006.01)	<i>C07K 14/705</i> (2006.01)

## (21) International Application Number:

PCT/CA2016/000274

## (22) International Filing Date:

14 November 2016 (14.11.2016)

## (25) Filing Language:

English

## (26) Publication Language:

English

## (30) Priority Data:

62/254,003 11 November 2015 (11.11.2015) US

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(81) **Designated States** (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DJ, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IR, IS, JP, KE, KG, KN, KP, KR, KW, KZ, LA, LC, LK, LR, LS, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

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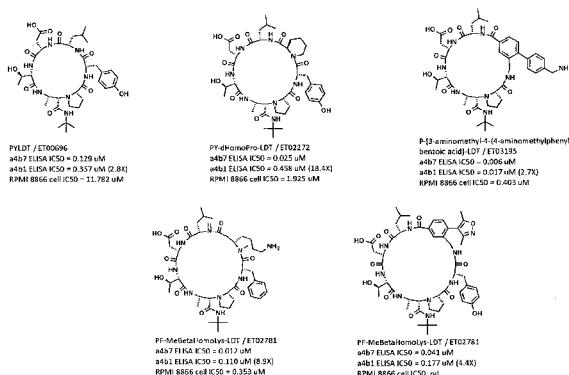
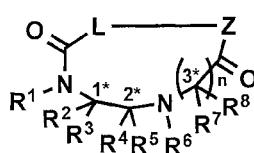
(54) Title: CYCLIC PEPTIDES TARGETING  $\alpha 4\beta 7$  INTEGRIN

Figure 1

(57) **Abstract:** There is described herein antagonists of  $\alpha 4\beta 7$  integrin, and more particularly to cyclic peptide antagonists. Accordingly, there is described herein a compound of formula (I) wherein  $\text{R}^1$ ,  $\text{R}^2$ ,  $\text{R}^3$ ,  $\text{R}^4$ ,  $\text{R}^5$ ,  $\text{R}^6$ ,  $\text{R}^7$  and  $\text{R}^8$  are various substituents; stereocentres  $1^*$ ,  $2^*$  and  $3^*$  are each independently selected from R and S; n is 1, 2, 3, or 4 and where n is 2-4, Z is an amino terminus of an amino acid; -C=O- adjacent L is the carboxy terminus of an amino acid; and L along with Z and -C=O- is a peptide.



(I)



(84) **Designated States** (*unless otherwise indicated, for every kind of regional protection available*): ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, ST, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE,

SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, KM, ML, MR, NE, SN, TD, TG).

**Published:**

— *with international search report (Art. 21(3))*

## CYCLIC PEPTIDES TARGETING $\alpha 4\beta 7$ INTEGRIN

### RELATED APPLICATIONS

This application claims priority from U.S. Provisional Application No. 62/254003 filed on  
5 November 11, 2015, incorporated by reference in its entirety.

### FIELD OF THE INVENTION

The invention relates to antagonists of  $\alpha 4\beta 7$  integrin, and more particularly to cyclic peptide antagonists.

10

### BACKGROUND OF THE INVENTION

Integrins are transmembrane receptors that are the bridges for cell-cell and cell-extracellular matrix (ECM) interactions. When triggered, integrins trigger chemical pathways to the interior (signal transduction), such as the chemical composition and  
15 mechanical status of the ECM.

Integrins are obligate heterodimers, having two different chains: the  $\alpha$  (alpha) and  $\beta$  (beta) subunits.

The  $\alpha 4\beta 7$  integrin is expressed on lymphocytes and is responsible for T-cell homing into gut-associated lymphoid tissues through its binding to mucosal addressin cell adhesion  
20 molecule (MAdCAM), which is present on high endothelial venules of mucosal lymphoid organs.

Inhibitors of specific integrin-ligand interactions have been shown effective as anti-inflammatory agents for the treatment of various autoimmune diseases. For example, monoclonal antibodies displaying high binding affinity for  $\alpha 4\beta 7$  have displayed therapeutic  
25 benefits for gastrointestinal auto-inflammatory/autoimmune diseases, such as Crohn's disease, and ulcerative colitis.

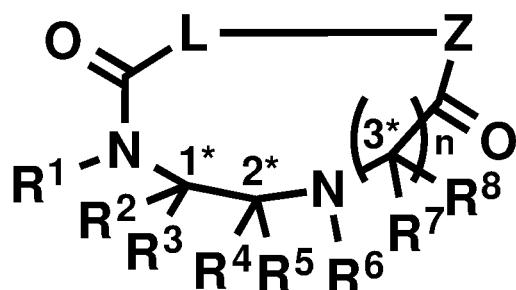
There is a need to develop alternative or improved  $\alpha 4\beta 7$  antagonists to prevent or treat inflammatory conditions and/or autoimmune diseases.

Certain methods of making cyclic peptides (nacellins) are described in Applicant's PCT Publication No. WO 2010/105363.

- 5 Any discussion of documents, acts, materials, devices, articles or the like which has been included in the present specification is solely for the purpose of providing a context for the present invention. It is not to be taken as an admission that any or all of these matters form part of the prior art base or were common general knowledge in the field relevant to the present invention as it existed before the priority date of each claim of this application.
- 10 Throughout this specification the word "comprise", or variations such as "comprises" or "comprising", will be understood to imply the inclusion of a stated element, integer or step, or group of elements, integers or steps, but not the exclusion of any other element, integer or step, or group of elements, integers or steps.

## 15 SUMMARY OF THE INVENTION

In one aspect, there is provided a compound of formula (I):



(I)

wherein

- 20  $R^1$  is H; C1-6 alkyl; aryl; heteroaryl; alkenyl; or heterocycle; all of which are optionally substituted at one or more substitutable positions with one or more substituents selected

from the group consisting of hydroxyl; cyano; alkyl, alkoxy, vinyl; alkenyl, alkynyl; formyl; haloalkyl, halide; aryl, heteroaryl, amide; acyl; ester, ether, thioether, thioalkoxy; phosphino; and  $-NR_aR_b$ , where  $R_a$  and  $R_b$  are independently selected from C1-6 alkyl, aryl or benzyl;

5  $R^2$  and  $R^3$  are each independently an amino acid side chain of a proteinogenic or a non-proteinogenic alpha-amino acid,

provided that  $R^2$  and  $R^3$  may be covalently linked to each other to form a ring;

10  $R^4$  and  $R^5$  are each independently H; C1-6 alkyl; aryl; heteroaryl; alkenyl; heterocycle; acids of the formula  $-C(O)OH$ ; esters of the formula  $-C(O)OR^*$  wherein  $R^*$  is selected from alkyl and aryl; amides of the formula  $-C(O)NR^{**}R^{***}$ , wherein  $R^{**}$  and  $R^{***}$  are independently selected from H, alkyl and aryl;  $-CH_2C(O)R$ , wherein R is selected from  $-OH$ , C1-6 alkyl, aryl, - C1-6 alkyl-aryl, or  $-NR_aR_b$ , where  $R_a$  and  $R_b$  are independently selected from H, C1-6 alkyl, aryl or - C1-6 alkyl-aryl; or  $-C(O)R_c$ , wherein  $R_c$  is selected from C1-6 alkyl, aryl or - C1-6 alkyl-aryl; or - C1-6 alkyl-OR<sub>d</sub>, wherein  $R_d$  is a suitable 15 protecting group or OH group; all of which are optionally substituted at one or more substitutable positions with one or more substituents selected from the group consisting of hydroxyl; cyano; alkyl, alkoxy, vinyl; alkenyl, alkynyl; formyl; haloalkyl, halide; aryl, heteroaryl, amide; acyl; ester, ether, thioether, thioalkoxy; phosphino; and  $-NR_aR_b$ , where  $R_a$  and  $R_b$  are independently selected from C1-6 alkyl, aryl or benzyl;

20 provided that  $R^2$  or  $R^3$  can be covalently linked to  $R^1$  to form a cyclic secondary amine, and /or to  $R^4$  or  $R^5$  to form a ring,  $R^4$  and  $R^5$  may also be covalently linked to each other to form a ring;

25  $R^6$  is H, C1-6 alkyl, benzyl, alkenyl, C1-6 alkyloxy; aryl; heteroaryl; heterocycle;  $-C(O)R^{****}$ , wherein  $R^{****}$  is independently selected from alkyl, aryl, heteroaryl, amino, aminoalkyl, aminoaryl, aminoheteroaryl, alkoxy, aryloxy, heteroaryloxy;  $-CH_2C(O)R$ ; or  $-C(O)R_c$ ; all of which are optionally substituted at one or more substitutable positions with one or more substituents selected from the group consisting of hydroxyl; cyano; alkyl, alkoxy, vinyl; alkenyl, alkynyl; formyl; haloalkyl, halide; aryl, heteroaryl, amide; acyl; ester,

ether, thioether, thioalkoxy; phosphino; and  $-NR_aR_b$ , where  $R_a$  and  $R_b$  are independently selected from C1-6 alkyl, aryl or benzyl,

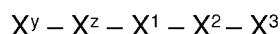
or along with  $R^7$  or  $R^8$ , a cyclic side chain of a proteinogenic or a non-proteinogenic amino acid having, the N-terminus thereof being the  $N-R^6$ , wherein  
5 the proteinogenic or a non-proteinogenic amino acid can be substituted with a substituent selected from the group consisting of hydroxyl; cyano; alkyl, alkoxy, vinyl; alkenyl, alkynyl; formyl; haloalkyl, halide; aryl, heteroaryl, amide; acyl; ester, ether, thioether, thioalkoxy; phosphino; and  $-NR_aR_b$ , where  $R_a$  and  $R_b$  are independently selected from C1-6 alkyl, aryl or benzyl;

10  $R^7$  and  $R^8$  are independently selected from the amino acid side chains of a proteinogenic or a non-proteinogenic alpha-amino acid having the N-terminus thereof being the  $N-R^6$ , or may form a cyclic side chain with  $R^6$ ;

stereocentres  $1^*$ ,  $2^*$  and  $3^*$  are each independently selected from R and S;

15 n is 1, 2, 3, or 4 and where n is 2-4, each  $R^7$  and each  $R^8$  are independent of each other; and

wherein Z is an amino terminus of an amino acid;  $-C=O-$  adjacent L is the carboxy terminus of an amino acid; and L along with Z and  $-C=O-$  is a peptide having the following formula:



20 wherein  $X^y$  and  $X^z$  are each independently a proteinogenic or non-proteinogenic amino acid, or  $X^z$  is absent;

$X^1$  is Leucine or tert-butyl-Ala;

$X^2$  is Asp; and

25  $X^3$  is an amino acid selected from the group consisting of Thr, Thr(OBn), Thr(OEt), Pen, MeThr, alloThr, Abu, Val, Ile and allolle.

In another aspect, there is provided a pharmaceutical composition comprising the compound as defined herein along with the pharmaceutically acceptable carrier.

In another aspect, there is provided a method for treating a condition or disease in a patient associated with a biological function of an  $\alpha 4\beta 7$  integrin, the method comprising

- 5 administering to the patient a therapeutically effective amount of the compound as defined herein, or a pharmaceutical composition as defined herein, wherein the condition or disease is Inflammatory Bowel Disease (IBD), ulcerative colitis, Crohn's disease, Celiac disease (nontropical Sprue), microscopic colitis, collagenous colitis, eosinophilic gastroenteritis, pouchitis resulting after proctocolectomy and ileoanal anastomosis,
- 10 cholangitis, pericholangitis, primary sclerosing cholangitis, human immunodeficiency virus (HIV) infection in the GI tract, colitis, microscopic colitis, or graft versus host disease.

In another aspect, there is provided a method for treating a condition or disease in a patient associated with a biological function of an  $\alpha 4\beta 7$  integrin, the method comprising administering to the patient a therapeutically effective amount of the compound as defined

- 15 herein or a pharmaceutical composition as defined herein, wherein the condition or disease is pancreatitis, cholangitis, pericholangitis, or graft versus host disease.

In another aspect, there is provided a method for treating a disease or condition in a patient comprising administering to the patient a therapeutically effective amount of the compound as defined herein, or a pharmaceutical composition as defined herein, wherein

- 20 the disease or condition is a local or systemic infection of a virus or retrovirus, wherein the virus or retrovirus is human immunodeficiency virus type 1.

In another aspect, there is provided a method for treating a disease or condition in a patient comprising administering to the patient a therapeutically effective amount of the compound as defined herein, or a pharmaceutical composition as defined herein, wherein

- 25 the disease or condition is non-alcoholic steatohepatitis, cirrhosis, primary biliary sclerosis, biliary tract disease, or autoimmune hepatitis.

In another aspect, there is provided a use of the compound as defined herein, or a pharmaceutical composition as defined herein, in the manufacture of a medicament for treating a condition or disease associated with a biological function of an  $\alpha 4\beta 7$  integrin,

wherein the condition or disease is Inflammatory Bowel Disease (IBD), ulcerative colitis, Crohn's disease, Celiac disease (nontropical Sprue), microscopic colitis, collagenous colitis, eosinophilic gastroenteritis, pouchitis resulting after proctocolectomy and ileoanal anastomosis, cholangitis, pericholangitis, primary sclerosing cholangitis, human

5 immunodeficiency virus (HIV) infection in the GI tract, colitis, microscopic colitis, pancreatitis, cholangitis, pericholangitis, or graft versus host disease.

In another aspect, there is provided a use of the compound as defined herein, or a pharmaceutical composition as defined herein, in the manufacture of a medicament for treating a condition or disease associated with a biological function of an  $\alpha 4\beta 7$  integrin,

10 wherein the condition or disease is pancreatitis, cholangitis, pericholangitis, or graft versus host disease.

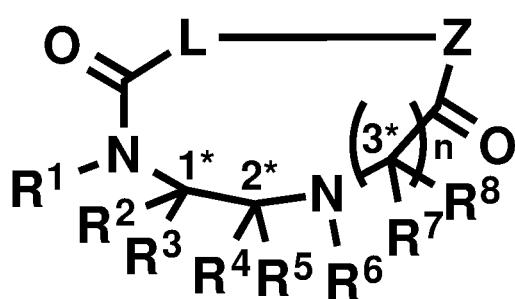
In another aspect, there is provided a use of the compound as defined herein, or a pharmaceutical composition as defined herein, in the manufacture of a medicament for treating a disease or condition, wherein the disease or condition is a local or systemic

15 infection of a virus or retrovirus, wherein the virus or retrovirus is human immunodeficiency virus type 1.

In another aspect, there is provided a use of the compound as defined herein, or a pharmaceutical composition as defined herein, in the manufacture of a medicament for treating a disease or condition, wherein the disease or condition is non-alcoholic

20 steatohepatitis, cirrhosis, primary biliary sclerosis, biliary tract disease, or autoimmune hepatitis.

In a further aspect, there is provided, a compound of formula (I):



(I)

wherein

$R^1$  is H; lower alkyl; aryl; heteroaryl; alkenyl; or heterocycle; all of which are optionally substituted at one or more substitutable positions with one or more suitable substituents;

5  $R^2$  and  $R^3$  are each independently an amino acid chain of a proteinogenic or a non-proteinogenic alpha-amino acid,

provided that  $R^2$  and  $R^3$  may be covalently linked to each other to form a ring;

10  $R^4$  and  $R^5$  are each independently H; lower alkyl; aryl; heteroaryl; alkenyl; heterocycle; acids of the formula  $-C(O)OH$ ; esters of the formula  $-C(O)OR^*$  wherein  $R^*$  is selected from alkyl and aryl; amides of the formula  $-C(O)NR^{**}R^{***}$ , wherein  $R^{**}$  and  $R^{***}$  are independently selected from H, alkyl and aryl;  $-CH_2C(O)R$ , wherein R is selected from  $-OH$ , lower alkyl, aryl, -loweralkyl-aryl, or  $-NRaRb$ , where Ra and Rb are independently

selected from H, lower alkyl, aryl or -loweralkyl-aryl; or -C(O)Rc, wherein Rc is selected from lower alkyl, aryl or -lower alkyl-aryl; or -lower alkyl-ORd, wherein Rd is a suitable protecting group or OH group; all of which are optionally substituted at one or more substitutable positions with one or more suitable substituents;

5 provided that R<sup>2</sup> or R<sup>3</sup> can be covalently linked to R<sup>1</sup> to form a cyclic secondary amine, and /or to R<sup>4</sup> or R<sup>5</sup> to form a ring, R<sup>4</sup> and R<sup>5</sup> may also be covalently linked to each other to form a ring;

10 R<sup>6</sup> is H, lower alkyl, benzyl, alkenyl, lower alkyloxy; aryl; heteroaryl; heterocycle; -C(O)R\*\*\*\*, wherein R\*\*\*\* is independently selected from alkyl, aryl, heteroaryl, amino, aminoalkyl, aminoaryl, aminoheteroaryl, alkoxy, aryloxy, heteroaryloxy; -CH<sub>2</sub>C(O)R; or -C(O)Rc; all of which are optionally substituted at one or more substitutable positions with one or more suitable substituents,

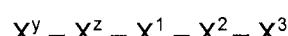
15 or along with R<sup>7</sup> or R<sup>8</sup>, a cyclic side chain of a proteinogenic or a non-proteinogenic amino acid having, the N-terminus thereof being the N-R<sup>6</sup>, wherein the proteinogenic or a non-proteinogenic amino acid can be substituted with a suitable substituent;

R<sup>7</sup> and R<sup>8</sup> are independently selected from the amino acid side chains of a proteinogenic or a non-proteinogenic alpha-amino acid having the N-terminus thereof being the N-R<sup>6</sup>, or may form a cyclic side chain with R<sup>6</sup>;

20 stereocentres 1\*, 2\* and 3\* are each independently selected from R and S;

n is 1, 2, 3, or 4 and where n is 2-4, each R<sup>7</sup> and each R<sup>8</sup> are independent of each other; and

wherein Z is an amino terminus of an amino acid; -C=O- adjacent L is the carboxy terminus of an amino acid; and L along with Z and -C=O- is a peptide having the following formula:



wherein  $X^y$  and  $X^z$  are each independently a proteinogenic or non-proteinogenic amino acid;

$X^1$  is Leucine or tert-butyl-Ala;

$X^2$  is Asp; and

5  $X^3$  is any amino acid listed under column  $X^3$  of Table 1B.

In an aspect, there is provided, a pharmaceutical composition comprising a compound described herein along with the pharmaceutically acceptable carrier. The pharmaceutical composition may be formulated for any one of oral delivery, topical delivery and parenteral delivery.

10 In an aspect, there is provided, a method of treating inflammation or an autoimmune disease in a patient, comprising administering to the patient a therapeutically effective amount of the compound described herein. Preferably the inflammation or an autoimmune disease is gastrointestinal.

15 In an aspect, there is provided, a method for treating a condition in a patient associated with a biological function of an  $\alpha 4\beta 7$  integrin, the method comprising administering to the patient a therapeutically effective amount of the compound described herein.

20 In an aspect, there is provided, a method for treating a disease or condition in a patient comprising administering to the patient a therapeutically effective amount of the compound described herein, wherein the disease or condition is a local or systemic infection of a virus or retrovirus.

25 In an aspect, there is provided, a method for treating a disease or condition in a patient comprising administering to the patient a therapeutically effective amount of the compound described herein, wherein the hepatitis A, B or C, hepatic encephalopathy, non-alcoholic steatohepatitis, cirrhosis, variceal bleeding, hemochromatosis, Wilson disease, tyrosinemia, alpha-1-antitrypsin deficiency, glycogen storage disease, hepatocellular carcinoma, liver cancer, primary biliary cholangitis, primary sclerosing

cholangitis, primary biliary sclerosis, biliary tract disease, autoimmune hepatitis, or graft-versus-host disease.

#### BRIEF DESCRIPTION OF FIGURES AND TABLES

5 These and other features of the preferred embodiments of the invention will become more apparent in the following detailed description in which reference is made to the appended drawings and tables wherein:

10 **Figure 1** shows representative compounds of the present application, namely from the following classes, 18-membered ring, 21-membered ring, 21-membered ring (non-canonical, i.e. having a delta amino acid), 22-membered ring, and 24-membered ring.

**Figure 2** shows a representative 18-membered ring compound along with variations made at certain positions with corresponding  $\alpha 4\beta 7$  integrin ELISA IC50 binding values associated with those variations.

15 **Figure 3** shows a representative 21-membered ring compound along with variations made at certain positions with corresponding  $\alpha 4\beta 7$  integrin ELISA IC50 binding values associated with those variations.

**Figure 4** shows a representative 21-membered ring (non-canonical, i.e. having a delta amino acid) compound along with variations made at certain positions with corresponding  $\alpha 4\beta 7$  integrin ELISA IC50 binding values associated with those variations.

20 **Figure 5** shows a representative 22-membered ring compound along with variations made at certain positions with corresponding  $\alpha 4\beta 7$  integrin ELISA IC50 binding values associated with those variations.

**Figure 6** shows results of T lymphocyte trafficking studies (from peripheral blood to mesenteric lymph nodes) following single doses of various compounds.

25 **Figure 7** shows the pharmacokinetic profile for a test article (ET1792) via one and two oral doses in naïve mice.

**Figure 8** shows the pharmacokinetic profile for a test article (ET1792) after a single oral dose.

**Figure 9** shows the exposure of ET2451 in the liver of naïve mice that have received the test compound as a single oral or intravenous dose.

5 **Figure 10** shows the disease activity index score for the various treatment groups at day 5 and day 8 following the initiation of dextran sulfate sodium treatment in mice.

**Figure 11** shows data from ex vivo assessments of the colon taken from mice exposed to DSS and treated with various test compounds.

10 **Figure 12** shows further detail on the colon injury following DSS exposure and test nacellin treatment in mice.

**Figure 13** shows the outcome of FACS analyses of T lymphocyte content in peripheral lymph nodes, mesenteric lymph nodes and peripheral blood taken from mice exposed to DSS irritant and treated for three days with various test nacellins or control.

15 **Table 1** shows compounds exhibiting  $\alpha 4\beta 7$  integrin affinity, selectivity and/or activity; and specifically with respect to these compounds: (A) the structure of the linker portion; (B) the structure of the peptide portion; and (C) the affinity, selectivity and activity values.

To aid reading of the table, the following is noted:

Table 1A:

If R2 is H and R3 is CH<sub>3</sub>, the carbon atom bearing R2 and R3 has S-configuration.

20 If R2 is CH<sub>3</sub> and R3 is H, the carbon atom bearing R2 and R3 has R-configuration.

If R2 is H and R3 is CH<sub>2</sub>-S-Ph, the carbon atom bearing R2 and R3 has S-configuration.

If R4 is H and R5 is C(O)-NH-tert-Butyl, the carbon atom bearing R4 and R5 has S-configuration.

If R4 is C(O)-NH-tert-Butyl and R5 is H, the carbon atom bearing R4 and R5 has R-configuration.

If R1 and R2 are both Pro-, the R1 and R2 substituents are covalently bound and form the pyrrolidine ring of Pro.

5 Table 1B

If R6 and R7 are both Pro, the R6 and R7 substituents are covalently bound and form the pyrrolidine ring of Pro.

If R6 and R8 are both dPro, the R6 and R8 substituents are covalently bound and form the pyrrolidine ring of dPro.

10 If R6 and R7 are both [(4S)-fluoro-Pro], the R6 and R7 substituents are covalently bound and form the pyrrolidine ring of [(4S)-fluoro-Pro].

If R7 is Nva and R8 is H, the carbon atom bearing R7 and R8 has S-configuration.

If R6 and R7 are both Hyp, the R6 and R7 substituents are covalently bound and form the pyrrolidine ring of Hyp.

15 If no entry exists under column Xz, the residue is absent.

Table 1C

If no entry exists under any of the columns, no data was collected.

20 **Table 2** shows compounds exhibiting less  $\alpha 4\beta 7$  integrin affinity, selectivity and/or activity; and specifically with respect to these compounds: (A) the structure of the linker portion; (B) the structure of the peptide portion; and (C) the affinity, selectivity and activity values.

To aid reading of the table, the following is noted:

Table 2A

If R2 is H and R3 is CH<sub>3</sub>, the carbon atom bearing R2 and R3 has S-configuration.

If R2 is CH3 and R3 is H, the carbon atom bearing R2 and R3 has R-configuration.

If R4 is H and R5 is C(O)-NH-tert-Butyl, the carbon atom bearing R4 and R5 has S-configuration.

If R4 is C(O)-NH-tert-Butyl and R5 is H, the carbon atom bearing R4 and R5 has R-configuration.

If R1 and R2 are both Pro-, the R1 and R2 substituents are covalently bound and form the pyrrolidine ring of Pro.

Table 2B

If R6 and R7 are both Pro, the R6 and R7 substituents are covalently bound and form the pyrrolidine ring of Pro.

If R6 and R8 are both dPro, the R6 and R8 substituents are covalently bound and form the pyrrolidine ring of dPro.

If no entry exists under column Xz, the residue is absent.

Table 2C

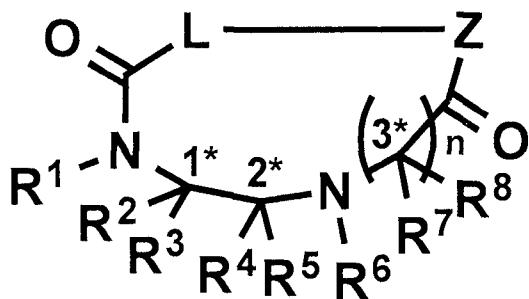
If no entry exists under any of the columns, no data was collected.

**Table S1** is a correspondence table linking the compounds described herein with the synthesis protocols outlined in the methods and materials.

## DETAILED DESCRIPTION

In the following description, numerous specific details are set forth to provide a thorough understanding of the invention. However, it is understood that the invention may be practiced without these specific details.

In an aspect, there is provided, a compound of formula (I):



(I)

wherein

R<sup>1</sup> is H; lower alkyl; aryl; heteroaryl; alkenyl; or heterocycle; all of which are optionally substituted at one or more substitutable positions with one or more suitable substituents;

R<sup>2</sup> and R<sup>3</sup> are each independently an amino acid chain of a proteinogenic or a non-proteinogenic alpha-amino acid,

provided that R<sup>2</sup> and R<sup>3</sup> may be covalently linked to each other to form a ring;

R<sup>4</sup> and R<sup>5</sup> are each independently H; lower alkyl; aryl; heteroaryl; alkenyl; heterocycle; acids of the formula -C(O)OH; esters of the formula -C(O)OR\* wherein R\* is selected from alkyl and aryl; amides of the formula -C(O)NR\*\*R\*\*\*, wherein R\*\* and R\*\*\* are independently selected from H, alkyl and aryl; -CH<sub>2</sub>C(O)R, wherein R is selected from -OH, lower alkyl, aryl, -loweralkyl-aryl, or -NRaRb, where Ra and Rb are independently selected from H, lower alkyl, aryl or -loweralkyl-aryl; or -C(O)Rc, wherein Rc is selected from lower alkyl, aryl or -lower alkyl-aryl; or -lower alkyl-ORd, wherein Rd is a suitable protecting group or OH group; all of which are optionally substituted at one or more substitutable positions with one or more suitable substituents;

provided that R<sup>2</sup> or R<sup>3</sup> can be covalently linked to R<sup>1</sup> to form a cyclic secondary amine, and /or to R<sup>4</sup> or R<sup>5</sup> to form a ring, R<sup>4</sup> and R<sup>5</sup> may also be covalently linked to each other to form a ring;

R<sup>6</sup> is H, lower alkyl, benzyl, alkenyl, lower alkyloxy; aryl; heteroaryl; heterocycle; -C(O)R\*\*\*\*, wherein R\*\*\*\* is independently selected from alkyl, aryl, heteroaryl, amino,

aminoalkyl, aminoaryl, aminoheteraryl, alkoxy, aryloxy, heteroaryloxy; -CH<sub>2</sub>C(O)R; or -C(O)Rc; all of which are optionally substituted at one or more substitutable positions with one or more suitable substituents,

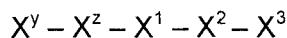
5 or along with R<sup>7</sup> or R<sup>8</sup>, a cyclic side chain of a proteinogenic or a non-proteinogenic amino acid having, the N-terminus thereof being the N-R<sup>6</sup>, wherein the proteinogenic or a non-proteinogenic amino acid can be substituted with a suitable substituent;

10 R<sup>7</sup> and R<sup>8</sup> are independently selected from the amino acid side chains of a proteinogenic or a non-proteinogenic alpha-amino acid having the N-terminus thereof being the N-R<sup>6</sup>, or may form a cyclic side chain with R<sup>6</sup>;

stereocentres 1\*, 2\* and 3\* are each independently selected from R and S;

n is 1, 2, 3, or 4 and where n is 2-4, each R<sup>7</sup> and each R<sup>8</sup> are independent of each other; and

15 wherein Z is an amino terminus of an amino acid; -C=O- adjacent L is the carboxy terminus of an amino acid; and L along with Z and -C=O- is a peptide having the following formula:



wherein X<sup>y</sup> and X<sup>z</sup> are each independently a proteinogenic or non-proteinogenic amino acid;

20 X<sup>1</sup> is Leucine or tert-butyl-Ala;

X<sup>2</sup> is Asp; and

X<sup>3</sup> is any amino acid listed under column X<sup>3</sup> of Table 1B.

25 The compounds shown in Tables 1A, 1B and 1C exhibit antagonistic activity against  $\alpha 4\beta 7$  integrin and having selectivity over  $\alpha 4\beta 1$  integrin. A person skilled in the art would expect

that substituents R<sup>1</sup>-R<sup>8</sup> and amino acids X<sup>y</sup>, X<sup>z</sup>, X<sup>1</sup>, X<sup>2</sup>, and X<sup>3</sup> outlined in -Tables 1A and 1B with respect to different compounds could be combined in any manner and would likely result in a compound that would exhibit  $\alpha 4\beta 7$  integrin activity and selectivity.

As used herein, the term "amino acid" refers to molecules containing an amine group, a carboxylic acid group and a side chain that varies. Amino acid is meant to include not only the twenty amino acids commonly found in proteins but also non-standard amino acids and unnatural amino acid derivatives known to those of skill in the art, and therefore includes, but is not limited to, alpha, beta and gamma amino acids. Peptides are polymers of at least two amino acids and may include standard, non-standard, and unnatural amino acids. A peptide is a polymer of two or more amino acids.

The following abbreviations are used herein:

Abbreviation	Description
1,2-cis-ACHC	cis-2-aminocyclohexanecarboxylic acid
1,2-trans-ACHC	trans-2-aminocyclohexanecarboxylic acid
1Nal	1-naphthylalanine
2Abz	anthranilic acid, 2-aminobenzoic acid
2Igl	2-indanylglycine
2Nal	2-naphthylalanine
Abu	2-aminobutyric acid
Aic	aminoindan-2-carboxylic acid
alloIle	allo-sioleucine, (2S,3R)-2-amino-3-methylpentanoic acid
alloThr	allo-threonine, (2S,3S)-2-amino-3-hydroxybutyric acid
alphaMePhe	$\alpha$ -methyl-phenylalanine, (S)-(-)-2-amino-2-methyl-3-phenylpropionic acid
Asp(ethyl ester)	aspartic acid $\beta$ -ethyl ester
Atc	2-aminotetraline-2-carboxylic acid
Aze	azetidine-2-carboxylic acid
BHT	butylated hydroxytoluene
Bip	biphenylalanine
C10	sebacic acid
C12	dodecanedioic
C7	pimelic acid
C8	suberic acid
C9	azelaic acid
Cha	$\beta$ -cyclohexyl alanine, (S)-2-amino-3-cyclohexylpropionic acid
Chg	cyclohexyl glycine

cis-dhyp	cis-D-4-Hydroxyproline, (2R,4R)-4-Hydroxypyrrolidine-2-carboxylic acid
cycloLeu	cyclo leucine, 1-Aminocyclopentane-1-carboxylic acid
cyclopropylAla	$\beta$ -cyclopropyl alanine, (S)-2-amino-3-cyclopropyl-propionic acid
d2Igl	2-indanyl-D-glycine
Dap(Cbz)	N $\beta$ -Z-2,3-diaminopropionic acid
DBU	1,8-diazabicyclo[5.4.0]undec-7-ene
DEPBT	3-(diethoxyphosphoryloxy)-1,2,3-benzotriazin-4(3H)-one
dHyp	trans-D-4-hydroxyproline, (2R,4S)-4-hydroxypyrrolidine-2-carboxylic acid
DIAD	diisopropyl azodicarboxylate
DIG	diglycolic acid
DIPEA	N,N-diisopropylethylamine
DMAP	4-(Dimethylamino)pyridine
dMeArg	N-methyl-D-arginine
dMebetaHomoLys	N-methyl-D- $\beta$ -homoLys
dMeLys	N-methyl-D-Lysine
DMF	N,N-dimethylformamide
DMSO	dimethyl sulfoxide
dNle	D-norleucine
dOrn	D-ornithine
dOrn(dimethyl)	N $\delta$ -dimethyl-D-ornithine
dPip	D-pipecolic acid, D-homoPro
dSer(OBn)	O-benzyl-D-serine
dTic	(3R)-1,2,3,4-tetrahydroisoquinoline-3-carboxylic acid
dTiq	D-1,2,3,4-tetrahydroisoquinoline-1-carboxylic acid
dTyr(OAllyl)	O-allyl-D-tyrosine
dTyr(OBn)	O-benzyl-D-tyrosine
EDC	N-(3-Dimethylaminopropyl)-N'-ethylcarbodiimide hydrochloride
Fmoc	9-fluorenylmethoxycarbonyl
HATU	O-(7-azabenzotriazol-1-yl)-N,N,N',N'-tetramethyluronium hexafluorophosphate
HCTU	2-(6-chloro-1H-benzotriazole-1-yl)-1,1,3,3-tetramethylaminium hexafluorophosphate
HFIP	1,1,1,3,3-hexafluoro-2-propanol
His(Bn)	N $\epsilon$ -benzyl-histidine
HomocycloLeu	homocyclo leucine, 1-Aminocyclohexanecarboxylic acid
Hyp	trans-4-hydroxyproline, (2S,4R)-4-hydroxypyrrolidine-2-carboxylic acid
Hyp(OBn)	O-benzyl-trans-4-hydroxyproline
MeAsp	N-methyl aspartic acid
MebetaHomoLys	N-methyl $\beta$ -homoLysine
MebetaHomoLys(Me)2	N $\alpha$ -methyl-N $\epsilon$ -dimethyl- $\beta$ -homoLysine
MeLeu	N-methyl leucine

MeMet	N-methyl methionine
MePhe	N-methyl phenylalanine
metaY(Opr)	metaTyrosine
MeThr	N-methyl threonine
MeTyr	N-methyl tyrosine
NMP	N-methylpyrrolidone
Nosyl chloride	2-nitrobenzenesulfonyl chloride
Nva	norvaline
Orn(acetamide)	N $\delta$ -acetamide-ornithine
Orn(benzamide)	N $\delta$ -benzamide-ornithine
Orn(ethylcarbamate)	N $\delta$ -ethylcarbamate-ornithine
Orn(methanesulfonamide)	N $\delta$ -methanesulfonamide-ornithine
Orn(pentyl amide)	N $\delta$ -pentyl amide-ornithine
PDA	1,4-phenyldiacetic acid
Pen	penicillamine, $\beta$ , $\beta$ -dimethyl-cysteine
Pip	pipecolic acid, homoPro
Sar	sarcosine, N-methyl glycine
tertbutylAla	$\beta$ -tert-butyl alanine, neopentylglycine
TFA	trifluoroacetic acid
TFE	2,2,2-Trifluoroethanol
THF	tetrahydrofuran
Thr(OBn)	O-benzyl-threonine
Thr(OEt)	O-ethyl-threonine
Thr(OMe)	O-methyl-threonine
Tic	(3S)-1,2,3,4-tetrahydroisoquinoline-3-carboxylic acid
TIS	trisopropylsilane
Tyr(2-methoxy diaryl ether)	O-2-methoxy-phenyl-tyrosine
Tyr(2-tolyl diaryl ether)	O-2-methyl-phenyl-tyrosine
Tyr(3,4-difluoro diaryl ether)	O-3,4-difluoro-phenyl-tyrosine
Tyr(3,4-dimethyl diaryl ether)	O-3,4-dimethyl-phenyl-tyrosine
Tyr(3-CO <sub>2</sub> Me diaryl ether)	O-3-methylester-phenyl-tyrosine
Tyr(3-fluoro diaryl ether)	O-3-fluoro-phenyl-tyrosine
Tyr(3-methoxy diaryl ether)	O-3-methoxy-phenyl-tyrosine
Tyr(3-methyl diaryl ether)	O-3-methyl-phenyl-tyrosine
Tyr(4-CF <sub>3</sub> diaryl ether)	O-4-trifluoromethyl-phenyl-tyrosine
Tyr(4-CO <sub>2</sub> H diaryl ether)	O-4-carboxylate-phenyl-tyrosine
Tyr(4-CO <sub>2</sub> Me diaryl ether)	O-4-methylester-phenyl-tyrosine
Tyr(4-fluoro diaryl ether)	O-4-fluoro-phenyl-tyrosine

Tyr(4-methoxy diaryl ether)	O-4-methoxy-phenyl-tyrosine
Tyr(OAllyl)	O-allyl-tyrosine
Tyr(OPh)	O-phenyl-tyrosine
vinyl-Br-Leu	2-amino-4-bromo-4-pentenoic acid

The term "suitable substituent" as used in the context of the present invention is meant to include independently H; hydroxyl; cyano; alkyl, such as lower alkyl, such as methyl, ethyl, propyl, n-butyl, t-butyl, hexyl and the like; alkoxy, such as lower alkoxy such as methoxy, 5 ethoxy, and the like; aryloxy, such as phenoxy and the like; vinyl; alkenyl, such as hexenyl and the like; alkynyl; formyl; haloalkyl, such as lower haloalkyl which includes  $CF_3$ ,  $CCl_3$  and the like; halide; aryl, such as phenyl and napthyl; heteroaryl, such as thienyl and furanyl and the like; amide such as  $C(O)NR_aR_b$ , where  $R_a$  and  $R_b$  are independently selected from lower alkyl, aryl or benzyl, and the like; acyl, such as  $C(O)-C_6H_5$ , and the 10 like; ester such as  $-C(O)OCH_3$  the like; ethers and thioethers, such as O-Bn and the like; thioalkoxy; phosphino; and  $-NR_aR_b$ , where  $R_a$  and  $R_b$  are independently selected from lower alkyl, aryl or benzyl, and the like. It is to be understood that a suitable substituent as 15 used in the context of the present invention is meant to denote a substituent that does not interfere with the formation of the desired product by the processes of the present invention.

As used in the context of the present invention, the term "lower alkyl" as used herein either alone or in combination with another substituent means acyclic, straight or branched chain alkyl substituent containing from one to six carbons and includes for example, methyl, ethyl, 1-methylethyl, 1-methylpropyl, 2-methylpropyl, and the like. A 20 similar use of the term is to be understood for "lower alkoxy", "lower thioalkyl", "lower alkenyl" and the like in respect of the number of carbon atoms. For example, "lower alkoxy" as used herein includes methoxy, ethoxy, t-butoxy.

The term "alkyl" encompasses lower alkyl, and also includes alkyl groups having more than six carbon atoms, such as, for example, acyclic, straight or branched chain alkyl 25 substituents having seven to ten carbon atoms.

The term "aryl" as used herein, either alone or in combination with another substituent, means an aromatic monocyclic system or an aromatic polycyclic system. For example, the term "aryl" includes a phenyl or a naphthyl ring, and may also include larger aromatic polycyclic systems, such as fluorescent (eg. anthracene) or radioactive labels and their 5 derivatives.

The term "heteroaryl" as used herein, either alone or in combination with another substituent means a 5, 6, or 7-membered unsaturated heterocycle containing from one to 10 4 heteroatoms selected from nitrogen, oxygen, and sulphur and which form an aromatic system. The term "heteroaryl" also includes a polycyclic aromatic system comprising a 5, 6, or 7-membered unsaturated heterocycle containing from one to 4 heteroatoms selected from nitrogen, oxygen, and sulphur.

The term "cycloalkyl" as used herein, either alone or in combination with another substituent, means a cycloalkyl substituent that includes for example, but is not limited to, cyclopropyl, cyclobutyl, cyclopentyl, cyclohexyl and cycloheptyl.

15 The term "cycloalkyl-alkyl-" as used herein means an alkyl radical to which a cycloalkyl radical is directly linked; and includes, but is not limited to, cyclopropylmethyl, cyclobutylmethyl, cyclopentylmethyl, 1-cyclopentylethyl, 2-cyclopentylethyl, cyclohexylmethyl, 1-cyclohexylethyl and 2-cyclohexylethyl. A similar use of the "alkyl" or "lower alkyl" terms is to be understood for aryl-alkyl-, aryl-loweralkyl- (eg. benzyl), -lower 20 alkyl-alkenyl (eg. allyl), heteroaryl-alkyl-, and the like as used herein. For example, the term "aryl-alkyl-" means an alkyl radical, to which an aryl is bonded. Examples of aryl-alkyl- include, but are not limited to, benzyl (phenylmethyl), 1-phenylethyl, 2-phenylethyl and phenylpropyl.

As used herein, the term "heterocycle", either alone or in combination with another radical, 25 means a monovalent radical derived by removal of a hydrogen from a three- to seven-membered saturated or unsaturated (including aromatic) cyclic compound containing from one to four heteroatoms selected from nitrogen, oxygen and sulfur. Examples of such heterocycles include, but are not limited to, aziridine, epoxide, azetidine, pyrrolidine, tetrahydrofuran, thiazolidine, pyrrole, thiophene, hydantoin, 30 diazepine, imidazole, isoxazole, thiazole, tetrazole, piperidine, piperazine, homopiperidine,

homopiperazine, 1,4-dioxane, 4-morpholine, 4-thiomorpholine, pyridine, pyridine-N-oxide or pyrimidine, and the like.

The term "alkenyl", as used herein, either alone or in combination with another radical, is intended to mean an unsaturated, acyclic straight chain radical containing two or more carbon atoms, at least two of which are bonded to each other by a double bond. Examples of such radicals include, but are not limited to, ethenyl (vinyl), 1-propenyl, 2-propenyl, and 1-but enyl.

The term "alkynyl", as used herein is intended to mean an unsaturated, acyclic straight chain radical containing two or more carbon atoms, at least two of which are bonded to each other by a triple bond. Examples of such radicals include, but are not limited to, ethynyl, 1-propynyl, 2-propynyl, and 1-butynyl.

The term "alkoxy" as used herein, either alone or in combination with another radical, means the radical  $-O-(C_{1-n})alkyl$  wherein alkyl is as defined above containing 1 or more carbon atoms, and includes for example methoxy, ethoxy, propoxy, 1-methylethoxy, 15 butoxy and 1,1-dimethylethoxy. Where n is 1 to 6, the term "lower alkoxy" applies, as noted above, whereas the term "alkoxy" encompasses "lower alkoxy" as well as alkoxy groups where n is greater than 6 (for example, n = 7 to 10). The term "aryloxy" as used herein alone or in combination with another radical means  $-O-aryl$ , wherein aryl is defined as noted above.

20 A protecting group or protective group is a substituent introduced into a molecule to obtain chemoselectivity in a subsequent chemical reaction. Many protecting groups are known in the art and a skilled person would understand the kinds of protecting groups that would be incorporated and could be used in connection with the methods described herein. In "protecting group based peptide synthesis", typically solid phase peptide synthesis, the 25 desired peptide is prepared by the step-wise addition of amino acid moieties to a building peptide chain. The two most widely used protocols, in solid-phase synthesis, employ tert-butyloxycarbonyl (Boc) or 9-fluorenylmethoxycarbonyl (Fmoc) as amino protecting groups. Amino protecting groups generally protect an amino group against undesirable reactions during synthetic procedures and which can later be removed to reveal the amine.

30 Commonly used amino protecting groups are disclosed in Greene, T. W. et al., Protective

Groups in Organic Synthesis, 3rd Edition, John Wiley & Sons (1999). Amino protecting groups include acyl groups such as formyl, acetyl, propionyl, pivaloyl, t-butylacetyl, 2-chloroacetyl, 2-bromoacetyl, trifluoroacetyl, trichloroacetyl, o-nitrophenoxyacetyl, .alpha.-chlorobutyryl, benzoyl, 4-chlorobenzoyl, 4-bromobenzoyl, 4-nitrobenzoyl, and the like; 5 sulfonyl groups such as benzenesulfonyl, p-toluenesulfonyl and the like; alkoxy- or aryloxy-carbonyl groups (which form urethanes with the protected amine) such as benzyloxycarbonyl (Cbz), p-chlorobenzyloxycarbonyl, p-methoxybenzyloxycarbonyl, p-nitrobenzyloxycarbonyl, 2-nitrobenzyloxycarbonyl, p-bromobenzyloxycarbonyl, 3,4-dimethoxybenzyloxycarbonyl, 3,5-dimethoxybenzyloxycarbonyl, 2,4-10 dimethoxybenzyloxycarbonyl, 4-methoxybenzyloxycarbonyl, 2-nitro-4,5-dimethoxybenzyloxycarbonyl, 3,4,5-trimethoxybenzyloxycarbonyl, 1-(p-biphenyl)-1-methylethoxycarbonyl, .alpha.-, .alpha.-dimethyl-3,5-dimethoxybenzyloxycarbonyl, benzhydryloxycarbonyl, t-butyloxycarbonyl (Boc), diisopropylmethoxycarbonyl, isopropylmethoxycarbonyl, ethoxycarbonyl, methoxycarbonyl, allyloxycarbonyl (Alloc), 2,2,2-15 trichloroethoxycarbonyl, 2-trimethylsilylethoxycarbonyl (Teoc), phenoxy carbonyl, 4-nitrophenoxy carbonyl, fluorenyl-9-methoxycarbonyl (Fmoc), cyclopentyloxycarbonyl, adamantlyloxycarbonyl, cyclohexyloxycarbonyl, phenylthiocarbonyl and the like; aralkyl groups such as benzyl, triphenylmethyl, benzyloxymethyl and the like; and silyl groups such as trimethylsilyl and the like. Amine protecting groups also include cyclic amino 20 protecting groups such as phthaloyl and dithiosuccinimidyl, which incorporate the amino nitrogen into a heterocycle. Typically, amino protecting groups include formyl, acetyl, benzoyl, pivaloyl, t-butylacetyl, phenylsulfonyl, Alloc, Teoc, benzyl, Fmoc, Boc and Cbz. It is well within the skill of the ordinary artisan to select and use the appropriate amino protecting group for the synthetic task at hand.

25 In some embodiments, R<sup>1</sup> is H.

In some embodiments, R<sup>2</sup> or R<sup>3</sup> is covalently linked to R<sup>1</sup> to form proline having NR<sup>1</sup> as the N-terminus.

In some embodiments, R<sup>2</sup> and R<sup>3</sup> are not both H.

In some embodiments, R<sup>2</sup> and R<sup>3</sup> are each independently selected from the group consisting of amino acid chains of a proteinogenic or a non-proteinogenic alpha-amino acids.

In some embodiments, R<sup>2</sup> and R<sup>3</sup> are H and CH<sub>3</sub> respectively or vice versa.

- 5 In some embodiments, R<sup>2</sup> or R<sup>3</sup> is -CH<sub>2</sub>-S-R<sup>s</sup>, wherein R<sup>s</sup> is selected from lower alkyl; lower amino alkyl; aryl; heteroaryl; alkenyl; or heterocycle; all of which are optionally substituted at one or more substitutable positions with one or more suitable substituents; preferably R<sup>s</sup> is phenyl or phenyl substituted with lower alkyl, halogen; or lower amino alkyl.
- 10 In some embodiments, R<sup>4</sup> and R<sup>5</sup> are not both H.

In some embodiments, R<sup>\*\*</sup> and R<sup>\*\*\*</sup> are not both H.

In some embodiments, R<sup>4</sup> and R<sup>5</sup> are each independently H, or C(O)-NHR<sup>t</sup>, wherein R<sup>t</sup> is H or a lower alkyl. Preferably, R<sup>t</sup> is tert-butyl or H.

In some embodiments, R<sup>6</sup> is H.

- 15 In some embodiments, R<sup>6</sup> and either R<sup>8</sup> or R<sup>9</sup> form a ring resulting in a proline residue having N-R<sup>6</sup> as its N-terminus.

In some embodiments, n is 1.

In some embodiments, Z along with L and -C=O is any one of SEQ ID NOs. 1-380.

In some embodiments, X<sup>1</sup> is Leu.

- 20 In some embodiments, X<sup>2</sup> is Asp.

In some embodiments, X<sup>3</sup> is Thr.

In some embodiments, X<sup>3</sup> is Val.

In some embodiments, X<sup>3</sup> is Ile.

In some embodiments,  $X^y$  and  $X^z$  are each independently a proteinogenic or non-proteinogenic alpha-amino acid.

In some embodiments,  $X^z$  is a proteinogenic or non-proteinogenic beta-amino acid.

In some embodiments,  $X^z$  is betaHomoLys or MethylbetaHomoLys.

5 In some embodiments,  $X^y$  and  $X^z$  are each a primary amino acid.

In some embodiments,  $X^y$  and  $X^z$  are each any amino acid listed under column  $X^y$  and column  $X^z$  respectively of Table 1B.

In various embodiments, the compound is any one of compounds 1-397.

In certain embodiments, there is provided pharmaceutically acceptable salts of the 10 compounds described herein. The term "pharmaceutically acceptable salt," as used herein, represents salts or zwitterionic forms of the compounds of the present invention which are water or oil-soluble or dispersible, which are suitable for treatment of diseases without undue toxicity, irritation, and allergic response; which are commensurate with a reasonable benefit/risk ratio, and which are effective for their intended use. The salts can 15 be prepared during the final isolation and purification of the compounds or separately by treatment of an amino group with a suitable acid. Representative acid addition salts include acetate, adipate, alginic, citrate, aspartate, benzoate, benzenesulfonate, bisulfate, butyrate, camphorate, camphorsulfonate, digluconate, glycerophosphate, hemisulfate, heptanoate, hexanoate, formate, fumarate, hydrochloride, hydrobromide, 20 hydroiodide, 2-hydroxyethansulfonate (isethionate), lactate, maleate, mesitylenesulfonate, methanesulfonate, naphthalenesulfonate, nicotinate, 2- naphthalenesulfonate, oxalate, pamoate, pectinate, persulfate, 3-phenylpropionate, picrate, pivalate, propionate, succinate, tartrate, trichloroacetate, trifluoroacetate, phosphate, glutamate, bicarbonate, para-toluenesulfonate, and undecanoate. Also, amino groups in the compounds of the 25 present invention can be quaternized with methyl, ethyl, propyl, and butyl chlorides, bromides, and iodides; dimethyl, diethyl, dibutyl, and diethyl sulfates; decyl, lauryl, myristyl, and steryl chlorides, bromides, and iodides; and benzyl and phenethyl bromides. Examples of acids which can be employed to form therapeutically acceptable addition salts include inorganic acids such as hydrochloric, hydrobromic, sulfuric, and phosphoric,

and organic acids such as oxalic, maleic, succinic, and citric. In certain embodiments, any of the peptide compounds described herein are salt forms, e.g., acetate salts.

In an aspect, there is provided, a pharmaceutical composition comprising a compound described herein along with the pharmaceutically acceptable carrier. The pharmaceutical 5 composition may be formulated for any one of oral delivery, topical delivery and parenteral delivery.

As used herein, "pharmaceutically acceptable carrier" means any and all solvents, dispersion media, coatings, antibacterial and antifungal agents, isotonic and absorption delaying agents, and the like that are physiologically compatible. Examples of 10 pharmaceutically acceptable carriers include one or more of water, saline, phosphate buffered saline, dextrose, glycerol, ethanol and the like, as well as combinations thereof. In many cases, it will be preferable to include isotonic agents, for example, sugars, polyalcohols such as mannitol, sorbitol, or sodium chloride in the composition. Pharmaceutically acceptable carriers may further comprise minor amounts of auxiliary 15 substances such as wetting or emulsifying agents, preservatives or buffers, which enhance the shelf life or effectiveness of the pharmacological agent.

In an aspect, there is provided, a method of treating inflammation or an autoimmune disease in a patient, comprising administering to the patient a therapeutically effective amount of the compound described herein. Preferably the inflammation or an autoimmune 20 disease is gastrointestinal.

In an aspect, there is provided, a method for treating a condition in a patient associated with a biological function of an  $\alpha 4\beta 7$  integrin, the method comprising administering to the patient a therapeutically effective amount of the compound described herein.

In some embodiments, the condition or disease is Inflammatory Bowel Disease (IBD), 25 ulcerative colitis, Crohn's disease, Celiac disease (nontropical Sprue), enteropathy associated with seronegative arthropathies, microscopic colitis, collagenous colitis, eosinophilic gastroenteritis, radiotherapy, chemotherapy, pouchitis resulting after proctocolectomy and ileoanal anastomosis, gastrointestinal cancer, pancreatitis, insulin-dependent diabetes mellitus, mastitis, cholecystitis, cholangitis, pericholangitis, chronic

bronchitis, chronic sinusitis, asthma, primary sclerosing cholangitis, human immunodeficiency virus (HIV) infection in the GI tract, eosinophilic asthma, eosinophilic esophagitis, gastritis, colitis, microscopic colitis, graft versus host disease, colitis associated with radio- or chemo-therapy, colitis associated with disorders of innate 5 immunity as in leukocyte adhesion deficiency-1, chronic granulomatous disease, glycogen storage disease type 1b, Hermansky-Pudlak syndrome, Chediak-Higashi syndrome, and Wiskott-Aldrich Syndrome, or pouchitis resulting after proctocolectomy and ileoanal anastomosis and various forms of gastrointestinal cancer, osteoporosis, arthritis, multiple sclerosis, chronic pain, weight gain, and depression. In another embodiment, the condition 10 is pancreatitis, insulin-dependent diabetes mellitus, mastitis, cholecystitis, cholangitis, pericholangitis, chronic bronchitis, chronic sinusitis, asthma or graft versus host disease.

In preferable embodiments, is an inflammatory bowel disease, such as ulcerative colitis or Crohn's disease.

In an aspect, there is provided, a method for treating a disease or condition in a patient 15 comprising administering to the patient a therapeutically effective amount of the compound described herein, wherein the disease or condition is a local or systemic infection of a virus or retrovirus.

In some embodiments, the a virus or retrovirus is echovirus 1 and 8, echovirus 9/Barty Strain, human papilloma viruses, hantaviruses, rotaviruses, adenoviruses, foot and mouth 20 disease virus, coxsackievirus A9, human parechovirus 1 or human immunodeficiency virus type 1.

In an aspect, there is provided, a method for treating a disease or condition in a patient comprising administering to the patient a therapeutically effective amount of the compound described herein, wherein the hepatitis A, B or C, hepatic encephalopathy, 25 non-alcoholic steatohepatitis, cirrhosis, variceal bleeding, hemochromatosis, Wilson disease, tyrosinemia, alpha-1-antitrypsin deficiency, glycogen storage disease, hepatocellular carcinoma, liver cancer, primary biliary cholangitis, primary sclerosing cholangitis, primary biliary sclerosis, biliary tract disease, autoimmune hepatitis, or graft-versus-host disease.

In some embodiments, the compound inhibits binding of  $\alpha 4\beta 7$  integrin to MAdCAM. Preferably, the compound selectively inhibits binding of  $\alpha 4\beta 7$  integrin to MAdCAM.

In any embodiment, the patient is preferably a human.

As used herein, the terms "disease", "disorder", and "condition" may be used  
5 interchangeably.

As used herein, "inhibition," "treatment," "treating," and "ameliorating" are used interchangeably and refer to, e.g., stasis of symptoms, prolongation of survival, partial or full amelioration of symptoms, and partial or full eradication of a condition, disease or disorder in a subject, e.g., a mammal.

10 As used herein, "prevent" or "prevention" includes (i) preventing or inhibiting the disease, injury, or condition from occurring in a subject, e.g., a mammal, in particular, when such subject is predisposed to the condition but has not yet been diagnosed as having it; or (ii) reducing the likelihood that the disease, injury, or condition will occur in the subject.

15 As used herein, "therapeutically effective amount" refers to an amount effective, at dosages and for a particular period of time necessary, to achieve the desired therapeutic result. A therapeutically effective amount of the pharmacological agent may vary according to factors such as the disease state, age, sex, and weight of the individual, and the ability of the pharmacological agent to elicit a desired response in the individual. A therapeutically effective amount is also one in which any toxic or detrimental effects of the  
20 pharmacological agent are outweighed by the therapeutically beneficial effects.

In some embodiments, the compound is administered by a form of administration selected from the group consisting of oral, intravenous, peritoneal, intradermal, subcutaneous, intramuscular, intrathecal, inhalation, vaporization, nebulization, sublingual, buccal, parenteral, rectal, vaginal, and topical.

25 In some embodiments, the compound is administered as an initial dose followed by one or more subsequent doses and the minimum interval between any two doses is a period of less than 1 day, and wherein each of the doses comprises an effective amount of the compound.

In some embodiments, the effective amount of the compound is the amount sufficient to achieve at least one of the following selected from the group consisting of: a) about 50% or greater saturation of MAdCAM binding sites on  $\alpha 4\beta 7$  integrin molecules; b) about 50% or greater inhibition of  $\alpha 4\beta 7$  integrin expression on the cell surface; and c) about 50% or  
5 greater saturation of MAdCAM binding sites on  $\alpha 4\beta 7$  molecules and about 50% or greater inhibition of  $\alpha 4\beta 7$  integrin expression on the cell surface, wherein i) the saturation is maintained for a period consistent with a dosing frequency of no more than twice daily; ii) the inhibition is maintained for a period consistent with a dosing frequency of no more than twice daily; or iii) the saturation and the inhibition are each maintained for a period  
10 consistent with a dosing frequency of no more than twice daily.

In some embodiments, the compound is administered at an interval selected from the group consisting of around the clock, hourly, every four hours, once daily, twice daily, three times daily, four times daily, every other day, weekly, bi-weekly, and monthly.

The advantages of the present invention are further illustrated by the following examples.  
15 The examples and their particular details set forth herein are presented for illustration only and should not be construed as a limitation on the claims of the present invention.

## EXAMPLES

### **Methods and Materials**

#### 20 Synthesis

Methods applicable for making the cyclic peptides described herein can be found generally in Applicant's PCT Publication No. WO 2010/105363 and in an application filed on the same day herewith titled "Fragment Synthesis of Cyclic Peptides" (Attorney Docket No. 55813832-6PCT) and claiming common priority to U.S. Provisional Application No.  
25 62/254003 filed on November 11, 2015.

More specifically, the below protocols were used to synthesize each of the compounds as indicated in Table S1.

Protocol A: General nacellin synthesis

1. *Preparation of resin:* Fmoc amino acid (1.1 eq. with respect to resin) was dissolved in CH<sub>2</sub>Cl<sub>2</sub> (10 mL/g of resin). If the amino acid did not dissolve completely, DMF was added slowly dropwise until a homogeneous mixture persisted upon stirring/sonication. The 2-chlorotriyl resin was allowed to swell in CH<sub>2</sub>Cl<sub>2</sub> (5 mL/g of resin) for 15 minutes. The CH<sub>2</sub>Cl<sub>2</sub> was then drained and the Fmoc amino acid solution was added to the vessel containing the 2-Cl Trt resin. DIPEA was added (2 eq. with respect to the amino acid) and the vessel was agitated for five minutes. Another 2 eq. of DIPEA was then added and the vessel was left to agitate for an additional 60 minutes. The resin was then treated with methanol (1 mL/g of resin) to endcap any remaining reactive 2-Cl Trt groups. The solution was mixed for 15 minutes, drained and then rinsed with CH<sub>2</sub>Cl<sub>2</sub> (x3), DMF (x3), CH<sub>2</sub>Cl<sub>2</sub> (x2), and MeOH (x3). The resin was then dried under vacuum and weighed to determine the estimated loading of Fmoc amino acid.

2. *Preparation of linear peptide sequence via manual or automated synthesis:* Fully protected resin-bound peptides were synthesized via standard Fmoc solid-phase peptide chemistry manually or using an automated peptide synthesizer. All N-Fmoc amino acids were employed.

a. *Fmoc deprotection:* the resin was treated with 20% piperidine in NMP twice, for 5 and 10 minutes respectively, with consecutive DMF and NMP washes after each addition.

b. *Fmoc amino acid coupling:* the resin was treated with 3 eq. of Fmoc amino acid, 3 eq. of HATU and 6 eq. of DIPEA in NMP for 60 minutes. For difficult couplings, a second treatment with 3 eq. of Fmoc amino acid, 3 eq. of HATU and 6 eq. of DIPEA in NMP for 40 minutes was employed.

3. *General cleavage with retention of protecting groups:* Once the desired linear sequence was synthesized, the resin was treated with either 1.) 1:3, HFIP:CH<sub>2</sub>Cl<sub>2</sub> or 2.) 5% TFA in CH<sub>2</sub>Cl<sub>2</sub>, twice for 30 minutes each, to afford cleavage from the solid support. The solvent was then removed, followed by trituration twice with chilled *tert*-butyl methyl ether (or diethyl ether/hexanes) to give the desired product. The purity was then analyzed by reverse-phase LCMS.

Protocol B: Preparation of N-alkylated Fmoc amino acid building blocks

1. *Resin prep: see protocol A, step 1*

2. *Fmoc deprotection: see protocol A, step 2a*

3. *Nosyl protection: The deprotected resin was stirred in CH<sub>2</sub>Cl<sub>2</sub> (5 mL/mmol of resin) and*

5 DIPEA (6.5 eq.). A solution of Nosyl chloride (4.0 eq.) was added slowly, dropwise, over 30 minutes, to avoid a rapid exothermic reaction. After the addition was complete, stirring was continued at room temperature for three hours. The resulting nosyl-protected resin was filtered and washed with CH<sub>2</sub>Cl<sub>2</sub>, MeOH, CH<sub>2</sub>Cl<sub>2</sub>, and THF.

4. *N-Methylation: To a suspension of resin in THF (10 mL/mmol of resin) was added a*

10 *solution of triphenylphosphine (5 eq.) in THF (2 M) and MeOH (10 eq.). The stirring suspension was cooled in an ice bath. A solution of DIAD (5 eq.) in THF (1 M) was added dropwise, via addition funnel. After addition was complete the bath was removed and the reaction was stirred at room temperature for an additional 90 minutes. The resin was filtered, washed with THF (x4), CH<sub>2</sub>Cl<sub>2</sub> (x3), and THF (x2).*

15 5. *Nosyl-deprotection: To a suspension of resin in NMP (10 mL/mmol of resin) was added 2-mercaptoethanol (10.1 eq.) and DBU (5.0 eq.). The solution became a dark green colour. After five minutes, the resin was filtered, washed with DMF until washes ran colourless. This procedure was repeated a second time, and the resin was then washed a final time with CH<sub>2</sub>Cl<sub>2</sub>.*

20 6. *Fmoc protection: To a suspension of resin in CH<sub>2</sub>Cl<sub>2</sub> (7 mL/mmol of resin) was added a solution of Fmoc-Cl (4 eq.) in CH<sub>2</sub>Cl<sub>2</sub> (7 mL), and DIPEA (6.1 eq.). The suspension was stirred at room temperature for four hours then filtered and washed with CH<sub>2</sub>Cl<sub>2</sub> (x2), MeOH (x2), CH<sub>2</sub>Cl<sub>2</sub> (x2), and Et<sub>2</sub>O (x2).*

7. *Cleavage from resin: see protocol A, step 3*

25 Protocol C: Reductive amination

1. *Fmoc Weinreb amide formation: a mixture of Fmoc amino acid (1 mmol), N,O-dimethylhydroxylamine·HCl (1.2 eq.), and HCTU (1.2 eq.) in CH<sub>2</sub>Cl<sub>2</sub> (6.5 mL), was cooled*

to 0 °C. DIPEA (3 eq.) was then slowly added to the stirring mixture. The cooling bath was removed and the reaction was stirred at room temperature for 16 h. A 10% solution of HCl (4 mL) was added resulting in the formation of a precipitate, which was removed through filtration. The filtrate was washed with 10% HCl (3 x 4 mL) and brine (2 x 4 mL). The 5 organic phase was then dried over Na<sub>2</sub>SO<sub>4</sub>. The solvent was removed under reduced pressure to give crude Fmoc Weinreb amide, which was used in the next reaction without purification.

2. *Fmoc amino aldehyde formation*: lithium aluminum hydride powder (3 eq.) was placed in a dry flask. THF (Sigma-Aldrich, 250 ppm of BHT, ACS reagent > 99.0 %, 6.5 mL) was 10 added, and the resulting slurry was cooled to -78 °C, with stirring. To the slurry was added a solution of the Fmoc Weinreb amide in THF (10 mL). The reaction vessel was transferred to an ice/water bath, and maintained at 0 °C for 1 h. To the reaction at 0 °C, was added dropwise acetone (1.5 mL), then H<sub>2</sub>O (0.25 mL) and then the reaction was left to stir for an additional hour at room temperature. The mixture was filtered through Celite, 15 washed with EtOAc (10 mL) and MeOH (10 mL), and the filtrate was concentrated. The crude material was dissolved in CHCl<sub>3</sub> (6.5 mL) and washed with brine (2 x 3 mL) and the organic phase was then dried over Na<sub>2</sub>SO<sub>4</sub>, filtered and concentrated to give the Fmoc amino aldehyde.

3. *Reductive amination on-resin*: the linear peptide on-resin was placed in a solid-phase 20 peptide synthesis reaction vessel and diluted with DMF (22 mL/g of resin). The Fmoc aldehyde (4.0 eq.) was added and the reaction was left to shake overnight. The solution was then drained and the resin was washed with CH<sub>2</sub>Cl<sub>2</sub> (x3) and DMF (x3). The resin was then diluted with a mixture of MeOH/CH<sub>2</sub>Cl<sub>2</sub> (22 mL/g of resin, 1:3 ratio) and NaBH<sub>4</sub> (7 eq.) was subsequently added. The mixture was left to shake for four hours, then the 25 solution was drained and the resin was washed with CH<sub>2</sub>Cl<sub>2</sub> (x3) and DMF (x3).

Protocol D: Fragment-based macrocyclization

In a two-dram vial, 0.1 mmol of the linear peptide and DEPBT (1.5 eq.) were dissolved in 30 5 mL of freshly distilled THF (0.02 M). DIPEA (3 eq.) was then added and the reaction mixture was left to stir overnight at room temperature (16 h). Tetraalkylammonium carbonate resin (6 eq.) was then added to the reaction mixture and stirring was continued

for an additional 24 h. The reaction was then filtered through a solid-phase extraction vessel and rinsed with  $\text{CH}_2\text{Cl}_2$  (2 mL). The filtrate and washes were combined and the solvent was removed under reduced pressure.

Protocol E: Aziridine aldehyde-based macrocyclization

5 The linear peptide was dissolved in TFE (if solubility problems were encountered, a 50:50 mixture of TFE: $\text{CH}_2\text{Cl}_2$  was used for the cyclization). Then 0.6 eq. of (S)-aziridine-2-carboxaldehyde dimer (prepared as per literature protocol: *J. Am. Chem. Soc.* **2006**, 128 (46), 14772–14773 and *Nat. Protoc.* **2010**, 5 (11), 1813–1822) as a TFE stock solution (0.2 M) was added, giving a final reaction mixture concentration of 0.1 M. *tert*-Butyl 10 isocyanide (1.2 eq.) was then added and the reaction mixture was stirred for four hours. Progress was analyzed along the way via LC-MS.

Protocol F: Nucleophilic ring-opening of acyl aziridine, post macrocyclization

a.) *Thioacetic acid/thiobenzoic acid*: thio acid (4 eq.) was added to the crude reaction mixture. Reaction progress was monitored by LC-MS, and was generally complete after 1-15 2 hours.

Or alternatively, b.) *Thiophenol*: thiophenol (4 eq.) and DIPEA (4 eq.) were added to the crude cyclization mixture. Reaction progress was monitored by LC-MS, and was generally complete after 1-2 hours. Solvent was removed under reduced pressure and dried under vacuum. Crude material was either triturated with  $\text{Et}_2\text{O}$ /hexanes or TBME, or alternatively, 20 diluted with  $\text{H}_2\text{O}$ , frozen and lyophilized.

Protocol G: General Suzuki coupling, post macrocyclization

An iodo-Phe-containing macrocycle (0.1 mmol),  $\text{Na}_2\text{CO}_3$  (2 eq.), substituted boronic acid (1.1 eq.) and 4 mL of water:acetonitrile (1:1 ratio) were combined in a microwave vial. The mixture was degassed via  $\text{N}_2$  flow for 10 minutes. While under  $\text{N}_2$ , silicon based Pd-catalyst (Siliacat-DPP Pd heterogenous catalyst, 0.05 eq.) was added. The reaction vial 25 was sealed and placed in the microwave for 10 minutes at 150 °C. Reaction progress was monitored by LCMS. Once complete, the reaction was filtered through a Celite plug and the solvent was removed under reduced pressure.

Protocol H: General Ullmann coupling, post macrocyclization

Under inert atmosphere, the peptide macrocycle (0.018 mmol) was placed in a 2-dram vial containing 2 mL of dry  $\text{CH}_2\text{Cl}_2$ .  $\text{Cu}(\text{OAc})_2$  (1 eq.), benzene boronic acid (2 eq.) and 4  $\text{\AA}$  (oven-dried) molecular sieves were then added to the vial followed by DIPEA (4 eq.). The 5 contents of the vial were stirred at room temperature overnight. The reaction progress was assessed by LCMS. Once the reaction was deemed complete, the mixture was filtered through a Celite plug and the solvent was removed under reduced pressure.

Protocol I: General global deprotection and cleavage

Deprotection of the side chain protecting groups was achieved by dissolving the peptides 10 in 2 mL of a cleavage cocktail consisting of TFA: $\text{H}_2\text{O}$ :TIS (95:2.5:2.5) for two hours. Subsequently, the cleavage mixture was evaporated under reduced pressure and the peptides were precipitated twice from chilled diethyl ether/hexanes (or *tert*-butyl methyl ether).

Protocol J: General cleavage of reductively-labile protecting groups

15 a.) *Pd/C and formic acid debenzylation*: the benzyl protected macrocycle (0.35 mmol) was dissolved in MeOH (8 mL) with 10% formic acid, 50% wt. Pd/C (1 mg) and heated to 55  $^{\circ}\text{C}$ . Once the reaction was deemed complete, the mixture was filtered through a Celite plug, washed with MeOH and the solvent was removed under reduced pressure.

Or alternatively, b.) *Raney Ni desulfurization/debenzylation*: Raney Ni slurry (1-2 mL) was 20 added directly to the cyclization reaction mixture and stirred vigorously overnight. The vial was then centrifuged and the liquid was transferred using a pipette to a tared vial. MeOH was added to the vial containing Raney Ni. The vial was then sonicated, vortexed, and centrifuged. Again, the liquid was transferred to a tared vial. This process was repeated with EtOAc and then a final time with MeOH. The combined washes were then removed 25 under reduced pressure and the residue dried under vacuum.

Protocol K: Amidation of side chain, post macrocyclization

Macrocycle (0.021 mmol) was dissolved in 1 mL of CH<sub>3</sub>CN. K<sub>2</sub>CO<sub>3</sub> (5 eq.) and acid chloride (2 eq.) were then added and the reaction mixture was left to stir at room temperature overnight. Reaction progress was checked by LC-MS in the morning. Upon completion, the solvent was removed by reduced pressure.

5 Protocol L: Fluorescent dye attachment

The macrocycle (4  $\mu$ mol) was dissolved in DMSO (200  $\mu$ L). DIPEA (5 eq.) was then added. In a separate vial, 5 mg of fluorescent dye as the NHS ester was dissolved in 200  $\mu$ L of DMSO. The macrocycle solution was then added to the solution of the fluorescent label. The reaction mixture was stirred overnight. Reaction progress was checked by LC-  
10 MS in the morning and then the solvent was removed by lyophilization.

Protocol M: Purification methods

All macrocycles were purified using reverse-phase flash column chromatography using a 30 g RediSep C18 Gold Column. The gradient consisted of eluents A (0.1% formic acid in double distilled water) and B (0.1% formic acid in HPLC-grade acetonitrile) at a flow rate  
15 of 35 mL/min.

**Integrin  $\alpha$ 4 $\beta$ 7 - MAdCAM-1 competition assay**

A 96-well Microlon 200 plate (Greiner, 655001) was coated with 100  $\mu$ l per well of a solution of 1  $\mu$ g/ml recombinant integrin  $\alpha$ 4 $\beta$ 7 (R&D Systems, 5397-A3-050) in carbonate buffer (50 mM, pH 9.6). The plate was incubated at 4°C overnight. The solution was  
20 removed and 250  $\mu$ l blocking buffer (50 mM Tris, 150 mM NaCl, 1 mM MnCl<sub>2</sub>, 1 % bovine serum albumin (BSA), 0,05% Tween) was added per well. The plate was then incubated for 1 hour at room temperature. The plate was washed three times with wash buffer (50 mM Tris, 100 mM NaCl, 1 mM MnCl<sub>2</sub>, 0,05% Tween). To each well, 50  $\mu$ l of compound diluted in assay buffer was added by transfer from a compound serial dilution plate. Fifty  
25  $\mu$ l recombinant MAdCAM -FC (R&D systems, 6056-MC-050) at a concentration of 1 mg/ml in assay buffer (50 mM Tris, 150 mM NaCl, 1 mM MnCl<sub>2</sub>, 0,1 % BSA, 0,05% Tween) was added to each well. The plate was incubated at room temperature with shaking for 2 hours to reach binding equilibrium. Then the plate was washed three times

in wash buffer and 100  $\mu$ l anti-human IgG Fc specific-horseradish peroxidase (HRP) (Abcam, Ab97225) diluted at 1:2000 in assay buffer was added to each well. The plate was incubated at room temperature for 1 hour under agitation. The plates were then washed three times and 100  $\mu$ l of 1,3',5,5'-tetramethylbenzidine (TMB) was then added to 5 each well. The reaction was stopped after 2 minute-incubation by adding 50  $\mu$ l of 1M  $H_2SO_4$  and optical absorbance was read at 450 nM.

#### **Integrin $\alpha 4\beta 1$ - VCAM-1 competition assay**

A 96-well Microlon 200 plate (Greiner, 655001) was coated with 100  $\mu$ l per well of a solution of 0.5  $\mu$ g/ml recombinant integrin  $\alpha 4\beta 1$  (R&D Systems, 5397-A3-050) in 10 carbonate buffer (50 mM, pH 9.6). The plate was incubated at 4°C overnight. The solution was removed and 250  $\mu$ l blocking buffer (50 mM Tris, 150 mM NaCl, 1 mM MnCl<sub>2</sub>, 1 % BSA, 0,05% Tween) was added per well. The plate was then incubated for 1 hour at room temperature. The plate was washed three times with wash buffer (50 mM Tris, 100 mM NaCl, 1 mM MnCl<sub>2</sub>, 0,05% Tween). To each well, 50  $\mu$ l of compound diluted in assay 15 buffer was added by transfer from a compound serial dilution plate. Fifty  $\mu$ l recombinant VCAM-FC (R&D systems, 862-VC-100) at a concentration of 1 mg/ml in assay buffer (50 mM Tris, 150 mM NaCl, 1 mM MnCl<sub>2</sub>, 0,1 % BSA, 0,05% Tween) was added to each well. The plate was incubated at room temperature with shaking for 2 hours to reach binding equilibrium. Then the plate was washed three times in wash buffer and 100  $\mu$ l anti-human 20 IgG Fc specific-HRP (Abcam, Ab97225) diluted at 1:2000 in assay buffer was added to each well. The plate was incubated at room temperature for 1 hour under agitation. The plates were then washed three times and 100  $\mu$ l of 1,3',5,5'-TMB was then added to each well. The reaction was stopped after 2 minute-incubation by adding 50  $\mu$ l of 1M  $H_2SO_4$  and optical absorbance was read at 450 nM.

#### **25 RPMI8866 cell adhesion competition assay**

RPMI8866 human cells (Sigma #95041316) were cultured in RPMI 1640 medium (Wisent, 350-000-CL) supplemented with 10% Fetal Bovine Serum (FBS) (Wisent, 081-105) and 1% Penicillin-Streptomycin A MaxiSorp plate (Nunc, 442404) was coated with 100 ml/well of recombinant human MAdCAM-1 Fc Chimera (R&D Systems, 6056-MC-050) solution at

0.25 mg/ml in coating buffer (50mM sodium carbonate, pH 9.6). The plate was incubated overnight at 4°C and washed twice with 150 µl per well wash buffer (0.05% Tween 20 in phosphate buffered saline (PBS), blocked with 250 µl per well blocking buffer (1% non-fat dry milk in PBS), and incubated for 1 hour at room temperature. RPMI8866 cells were  
5 resuspended at 10 million cells/ml in PBS containing 5 mM calcein and incubated at 37°C for 30 min in a 50 ml tube. PBS was added to fill the tube, cells were spun down and resuspended in RPMI 1640 medium to 2 million/ml. Compounds were diluted by serial dilution in binding buffer (1.5 mM CaCl<sub>2</sub>, 0.5 mM MnCl<sub>2</sub>, 50 mM Tris-HCl, pH 7.5) to a final volume of 50 µl per well at 2x concentration. The plate was washed once with 300 µl of  
10 PBS, 50 µl of compound and 50 µl of cells (100,000 cells) were transferred to each well and the plate was incubated in the dark at 37°C, 5% CO<sub>2</sub> for 45 min to allow cell adhesion. The plate was emptied by inverting and blotting on paper towels and washed manually twice with PBS. One hundred µl PBS was then added to each well. The plate was read on a Bitek Neo instrument using FITC 96 bottom read. To calculate the dose response, the  
15 fluorescence value of control wells not containing cells was subtracted from each test well.

## Buffers

### Coating buffer (50mM carbonate)

Dissolve 420mg sodium bicarbonate in 100ml water (Soln 1). Dissolve 270mb sodium  
20 carbonate in 50ml water (Soln 2). Add Soln 2 to Soln 1 to a pH of 9.6

### Wash buffer

0.05% Tween 20 in PBS

Blocking buffer

1% Nonfat Dry Milk in PBS

### 25 Binding buffer

1.5 mM CaCl<sub>2</sub>

0.5 mM MnCl<sub>2</sub>

50 mM Tris-HCl, pH to 7.5 with HCl

*Plasma protein binding determination*

An equilibrium dialysis (HTDialysis) method was used employing 50% plasma collected  
5 from CD-1 mice or Sprague-Dawley rats and incubated with K2EDTA. Test articles were  
assessed at 1 microM concentration in three replicates. Incubation time as 5 hours and  
plasma and buffer standards were assessed using LC/MS/MS. Percentage recovery was  
calculated as  $(C_{\text{buffer}} + C_{\text{plasma}})/[\text{average}]C_{\text{initial}}$ , [average]C<sub>initial</sub> being measured in triplicate  
from the test samples prior to dialysis. Percentage of compound unbound was calculated  
10 as  $C_{\text{buffer}}/C_{\text{plasma}}$ .

*Aqueous solubility assay*

Aqueous solubility was determined by using 1, 0.5 or 0.2 mM (maximum) of test  
compound in phosphate buffered saline with pH of 7.4. Solutions were incubated for four  
hours at room temperature and stirred at 600 rpm and run in triplicate. Centrifugation was  
15 performed for 15 minutes at 6000 rpm and solution concentration was determined using  
HPLC-UV (photodiode array detector acquiring between 220 nm, and 300 nm  
wavelengths).

*Cytochrome P450 inhibition assay*

Human liver microsomes (at 0.25 mg/ml, except for CYP1A2, where a concentration of 0.5  
20 mg/ml was employed) were used to assess the IC<sub>50</sub> (in duplicate; concentration range of  
0.25 nM to 15 microM) for test compounds on the activity four isoforms of cytochrome  
P450 ("CYP"): CYP2D6, CYP3A4, CYP2C9 and CYP1A2. The following substrates were  
employed: dextromethorphan (15 microM, CYP2D6), testosterone (50 microM, CYP3A4),  
diclofenac (10 microM, CYP2C9) and phenacetin (100 microM, CYP1A2). Control  
25 inhibitors were quinidine (0.03 nM to 1.5 microM, CYP2D6), ketoconazole (0.08 nM to 5  
microM, CYP3A4), miconazole (0.25 nM to 15 microM, CYP2C9) and alpha-naphoflavone  
(0.03 nM to 1.5 microM, CYP1A2). Incubation time was 10-20 minutes and metabolites  
assessed were dextrorphan (CYP2D6), 6-beta-OH-testosterone (CYP3A4), 4'-OH-

diclofenac (CYP2C9) and acetaminophen (CYP1A2). Internal standards were labetalol (CYP2D6), loratadine (CYP3A4), carbamazepine (CYP2C9) and metoprolol (CYP1A2). Analyses were performed using standard LC/MS/MS protocols.

*In vivo T lymphocyte trafficking analyses*

5 *Animal care committee.* The animal care facility employed is accredited by the Canadian Council on Animal Care (CCAC). This study was approved by a certified Animal Care Committee and complied with CACC standards and regulations governing the use of animals for research.

10 *Animals.* Female C57Bl/6 mice (Charles River, St-Constant, Qc), weighting 16-19g at delivery were used for this study. Following arrival in the animal facility, all animals were subjected to a general health evaluation. An acclimation period of 7-14 days was allowed before the beginning of the study.

15 *Housing environment.* The animals were housed under standardized environmental conditions. The mice were housed in auto-ventilated cages, 2-3 per cage. Each cage was equipped with a manual water distribution system. A standard certified commercial rodent diet was provided *ad libitum*. Tap water was provided *ad libitum* at all times. It is considered that there are no known contaminants in the diet and water that would interfere with the objectives of the study. Each cage was identified for the corresponding group, indicating the treatment and the identity of the animals housed in the cage. Mice 20 from different treatment groups were not mixed.

The animal room was maintained at a controlled temperature of  $21.5 \pm 1^\circ\text{C}$  and a relative humidity of  $40 \pm 10\%$ . A controlled lighting system assured 12 hours light, 12 hours dark per day to the animals. Adequate ventilation of 8-10 air changes per hour was maintained.

25 *Administration of DSS.* Dextran sulfate sodium (DSS) was administered to C57Bl/6 mice through addition to their drinking water at 2-3%. Mice accessed the DSS-treated water *ad libitum* over a 5-day period. Body weight and disease activity index ("DAI") were measured on Day 5 in order to distribute DSS-treated animals in two uniform groups prior to dosing. Specific symptoms associated with colitis were scored based on the severity of each particular symptoms: 1- blood in stool (negative hemoccult, positive hemoccult,

blood traces in stool visible, rectal bleeding); 2- stool consistency (normal, soft but still formed, very soft, diarrhea); 3- posture and fur (normal; ruffled fur; ruffled fur combined to slight hunched posture and slight dehydration; ruffled fur combined to hunched posture, dehydration and altered walking; moribund (euthanasia is mandatory before the animal 5 reach this point). The overall DAI score was the sum of the three parameters (maximum score of 9). DAI assessment was performed on Day 5 only (prior to dosing).

*Oral dosing of the test article and vehicle.* On day 6, the test articles were administered in the morning, as a single slow bolus (over approximately 5 seconds) via oral route, according to the procedure of administration of solution by gavage: the animal was firmly 10 restrained. A bulb-tipped gastric gavage needle of 22G was passed through the side of the mouth and was advanced towards the oesophagus. The test articles and the vehicle were dosed orally at 10 mL/kg. Dosing volume was individually adjusted according to the body weight of each animal to reach the target dose.

*Intravenous dosing of the test article and the vehicle.* On day 6, the test article, DATK32 15 antibody, and the vehicle were administered in the morning, as a single slow bolus injection (over approximately 5 seconds) via the tail vein, according to the procedure of administration of solution by intravenous administration: the animal was restrained and its tail was warmed prior to dosing. A needle of 30G was used to inject the test article, or the vehicle, through the median tail vein at a dosing volume of 5 mL/kg. Dosing volume was 20 individually adjusted according to the body weight of each animal to reach the target dose of DATK32 control antibody.

*Collection of samples.* On Day 6, five hours after test article or vehicle dosing, the animals were euthanized by cardiac puncture under general anesthesia, according to the "Guide to the Care and Use of Experimental Animals" published by the CCAC. Blood was 25 transferred in a Sarstedt tube containing EDTA. Mesenteric and peripheral (inguinal, auxiliary and brachial) lymph nodes were collected and transferred on ice to corresponding tubes containing cold PBS. Nodes were kept on ice until tissue preparation.

*Cell population labeling.* Blood was withdrawn by cardiac puncture and collected on EDTA-coated tubes. Mensenteric lymph nodes (MLN) and peripheral lymph nodes (PLN) 30 were also collected. Mononuclear cells from the tissues were isolated using density

gradient (Lympholyte) and they were stained with fluorescent antibodies. The cells (5 x 104) were first incubated 15 minutes with BD mouse FcBlock (Fcγ III/II Receptor) followed by a 30-minute incubation with specific antibodies. After washes, cells were fixed using BD Fix Solution.

5 Specific antibodies used:

Antibodies	Company	Catalog #
CD3 FITC	BD Biosciences	555274
CD4 APC	BD Biosciences	553051
CD11a PE	BD Biosciences	553121
CD45 PE	BD Biosciences	553081
α4β7 PE	eBiosciences	12-5887
CD34 PE	BD Biosciences	551387

Percentage of different subpopulations of T lymphocytes were then analyzed using FACS-Calibur cytometer.

*In vivo pharmacokinetic assessments in rodents*

10 Oral bioavailability of test compounds was conducted by assessing plasma exposure of following one or two oral doses in mice and, in some cases, comparing said plasma exposure with that following a single intravenous dose of the same compound.

More detail on experimental design follows:

Group ID	Test article ID	Route	No. & sex of animals	Dosing Frequency	Dose (mg/kg)	Concentration (mg/mL)	Volume (mL/kg)	Sample Collection
1		p.o.	18 M	once	40	4	10	Terminal blood (3 mice/time-point)
2		p.o.	18 M	twice*	40	4	10	

\*Dosing will occur 8 hours apart.

15 In all cases, formulation of test compound was 30% Labrasol in PBS (v/v) for oral dosing and 25% PEG-400 in PBS (v/v) for intravenous dosing.

Collection of peripheral blood proceeded as follows:

Group ID	Blood collection time (h)	Volume/animal/time-point
1 &2*	0.0833, 0.5, 1, 2, 3 & 5	~0.6 mL

\*For Group 2, sample collection will be conducted following the second dose.

In some cases, collections proceeded up to 24 hours. Also note that in a few studies, liver and colon were also collected from mice concomitantly with peripheral blood and on a terminal (and serial) basis.

5 Other study details include:

Animals: Male CD-1 mice (20 - 25 g) from Charles River Labs were acclimatized for a minimum of 5 days prior to dosing. Body weights were recorded on the day of dosing.

Food restriction: Animals dosed p.o. were deprived of food overnight and fed ~2 h following dosing.

10 Clinical observations: Animals were observed at the time of dosing and each sample collection. Any abnormalities were documented.

Dosing: The formulation containing the test compound were administered p.o. by gavage with disposable feeding needles.

15 Sample collection: Terminal blood and tissue samples were collected under O<sub>2</sub>/CO<sub>2</sub> anesthesia by cardiac puncture. The colon samples (a 0.5 cm section, 2.5 cm distal to the cecum) will be excised, rinsed with ice cold PBS, blotted and weighed (as applicable). The livers will be blotted and weighed. Plasma, liver and colon samples will be stored frozen at -80 degrees centigrade until bioanalysis.

20 Sample processing/storage: All blood samples were transferred into K2EDTA tubes on wet ice and centrifuged within 5 min (3200 x g for 5 min at 4oC) to obtain plasma. Samples were stored frozen at -80°C until bioanalysis.

Sample retention: Plasma samples were analyzed and any remaining samples were stored frozen at -80°C until the study is completed. Remaining sample were discarded.

Bioanalytical method qualification and sample analysis:

Matrix: mouse plasma

Instrumentation: AB Sciex API 4000 Q-TRAP MS/MS system equipped with an Agilent LC system with a binary pump, a solvent degasser, a thermostatted column compartment, a CTC autosampler and a divert valve installed between the column and mass spectrometer

5 inlet.

Method qualification:

The determination of the quantification dynamic range using non-zero calibration standards (STDs) in singlet. The STDs will consist of a blank matrix sample (without IS), a zero sample (with IS), and at least 6 non-zero STDs covering the expected range and

10 including the lower level of quantitation (LLOQ).

Three injections of a system suitability sample (neat solution containing the analytes and IS) bracketing the batch.

Method acceptance criteria:

At least 75% of non-zero STDs must be included in the calibration curve with all back-calculated concentrations within  $\pm 20\%$  deviation from nominal concentrations ( $\pm 25\%$  for the lower level of quantification, LLOQ).

The correlation coefficient (*r*) of the calibration curve must be greater than or equal to 0.99.

The area ratio variation between the pre-and post-run injections of the system suitability samples is within  $\pm 25\%$ .

Samples which are  $>1$ -fold the highest calibration standard, will be diluted and re-assayed along with a corresponding dilution quality control standard.

Sample analysis batch:

Three injections of a system suitability sample bracketing the batch

25 The STDs in ascending order bracketing the study samples and dosing solutions

1. The study samples

2. The dosing solutions diluted as 3 independent dilutions into blank matrix (mouse plasma)

8-day efficacy study in DSS model (therapeutic) with ET02451-01 (Compound No. 340)  
5 and ET02452-01 (Compound No. 341)

*Study design*

Cohort	Group	N	Model	Treatment	Dose	Volume
1		5	DSS	vehicle	0 mg/kg	5 mL/kg (p.o.)
2		5	DSS	ET02451-01	40 mg/kg	5 mL/kg (p.o.)
3		5	DSS	ET02452-01	40 mg/kg	5 mL/kg (p.o.)
4		5	DSS	ET02452-01	65 mg/kg	5 mL/kg (i.p.)
5		5	DSS	DATK32	15 mg/kg	6 mL/kg (i.p.)

Description of tested compounds

Name: Vehicle Labrasol/PBS

10 Volume: 8.0 mL

Solution: Labrasol (30 %)/PBS (70 %)

Storage: 4 °C

Name: ET02451 (Compound No. 340)

Volume: 3.7 mL

15 Solution: 8 mg/mL in Labrasol (30 %)/PBS (70 %)

Storage: 4 °C

Name: ET02452 (Compound No. 341)

Volume: 3.45 mL

Solution: 8 mg/mL in Labrasol (30 %)/PBS (70 %)

Storage: 4 °C

Name: ET02452 (Compound No. 341)

Volume: 3.40 mL

5 Solution: 13 mg/mL in PEG400 (40 %)/PBS (60 %)

Storage: 4 °C

Name: DATK32 Antibody (eBiosciences # 14-5887-85, lot# 4282190)

Volume: 5 mL

Solution: 0.5 mg/mL concentrated to 2.5 mg/mL following concentration step

10 Storage: 4 °C

Name: Vehicle PEG/PBS

Volume: 8.0 mL

Solution: PEG400 (40 %)/PBS (60 %)

Storage: 4 °C

15 *Animal care committee.* The animal care facility employed is accredited by the Canadian Council on Animal Care (CCAC). This study was approved by a certified Animal Care Committee and complied with CACC standards and regulations governing the use of animals for research.

20 *Animals.* Female C57Bl/6 mice (Charles River, St-Constant, Qc), weighting 16-19g at delivery were used for this study. Following arrival in the animal facility, all animals were subjected to a general health evaluation. An acclimation period of 7-14 days was allowed before the beginning of the study.

*Housing environment.* The animals were housed under standardized environmental conditions. The mice were housed in auto-ventilated cages, 2-3 per cage. Each cage was equipped with a manual water distribution system. A standard certified commercial rodent diet was provided *ad libitum*. Tap water was provided *ad libitum* at all times. It is 5 considered that there are no known contaminants in the diet and water that would interfere with the objectives of the study. Each cage was identified for the corresponding group, indicating the treatment and the identity of the animals housed in the cage. Mice from different treatment groups were not mixed.

10 The animal room was maintained at a controlled temperature of  $21.5 \pm 1^\circ\text{C}$  and a relative humidity of  $40 \pm 10\%$ . A controlled lighting system assured 12 hours light, 12 hours dark per day to the animals. Adequate ventilation of 8-10 air changes per hour was maintained.

15 *Oral dosing of the test article and the vehicle.* From Day 5 to Day 8, nacellins and the vehicle were administered as a single slow bolus (over approximately 5 seconds) via oral route (p.o.), according to the procedure of administration of solution by gavage: the animal was firmly restrained. A bulb-tipped gastric gavage needle of 22G was passed through the side of the mouth and was advanced towards the oesophagus. The test articles and the vehicle were dosed orally at 5 mL/kg. Dosing volume was individually adjusted according to the body weight of each animal to reach the target dose of ET02451 and ET02452 (40 mg/kg).

20 *Intraperitoneal dosing of the test articles and the vehicle.* On day 5, DATK32 antibody was administered in only on Day 5, as a single slow bolus (over approximately 5 seconds) via the i.p. route. ET02452 prepared in PEG400 (40 %)/PBS (60%) and the i.p. vehicle (PEG400 (40%)/PBS (60%)) were administered from Day 5 to Day 8. Intraperitoneal administration was performed accordingly to the following procedure: the mouse was 25 restrained manually and held with the head and body tilted downward. The tip of the needle (27 G) was inserted through the skin and just past the abdominal wall. A short pull back of the plunger of the syringe was done prior to administration of the solution to make sure that the syringe was not inserted in any abdominal organ (fluid would be pulled back into the syringe in this case). Dosing volume was individually adjusted according to the 30 body weight of each animal to reach the target dose of DATK32 antibody (15 mg/kg) and of ET02452 (65 mg/kg).

*Inflammation Score.* Once the mouse was euthanized, the colon was collected and its length was measured. Lesion length was also measured. Colon inflammation was scored based on severity of oedema and ulceration.

*Disease Activity Index (DAI) assessment.* Body weight and DAI were measured on Day 5 in order to distribute DSS-treated animals in two uniform groups prior dosing. Specific symptoms associated to UC were scored based on the severity of each particular symptoms: 1- blood in stool (negative hemoccult, positive hemoccult, blood traces in stool visible, rectal bleeding); 2- stool consistency (normal, soft but still formed, very soft, diarrhea); 3- posture and fur (normal; ruffled fur; ruffled fur combined to slight hunched posture and slight dehydration; ruffled fur combined to hunched posture, dehydration and altered walking; moribund (euthanasia is mandatory before the animal reach this point). The overall DAI score was the sum of the three parameters (maximum score 9). Body weight measurement and DAI assessment were performed also on Day 8 to evaluate the effect of the treatments.

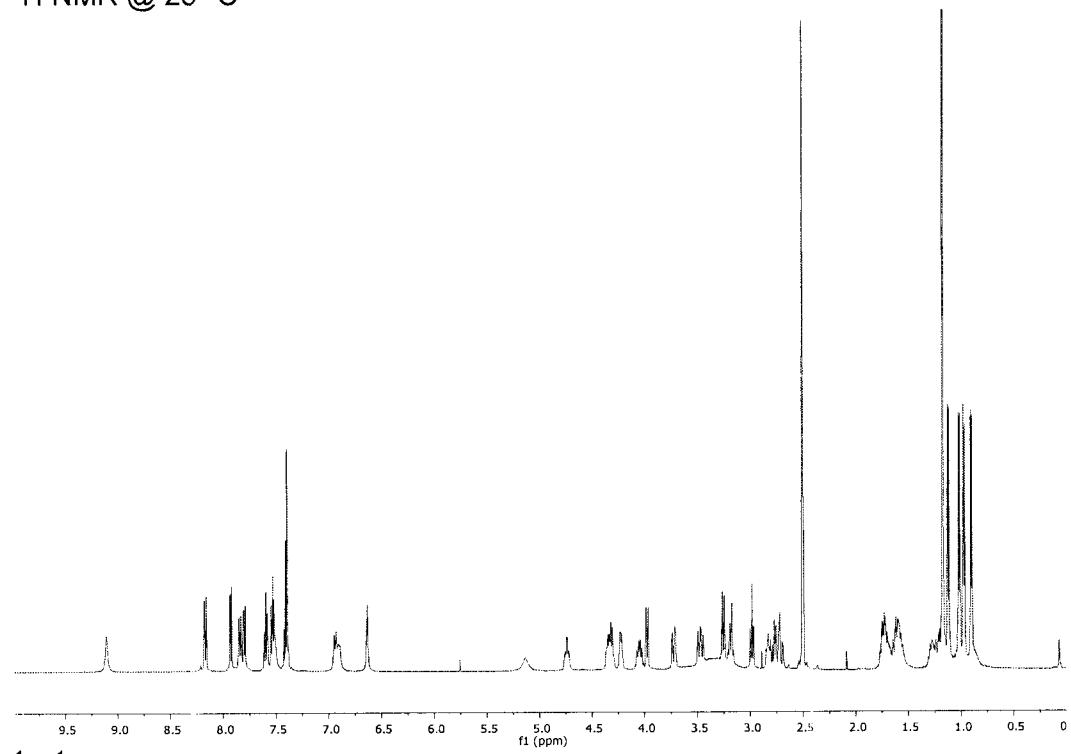
15 *Collection of samples.* On Day 8, five hours after ET02451-01, ET02452-01 and vehicle dosing, the animals were euthanized by cardiac puncture under general anesthesia, according to the "Guide to the Care and Use of Experimental Animals" published by the CCAC. Blood was transferred in a Sarstedt tube containing EDTA. Mesenteric and peripheral (inguinal, auxiliary and brachial) lymph nodes were collected and transferred on 20 ice in corresponding tubes containing cold PBS. Nodes were kept on ice until tissue preparation.

25 *Cell population labeling.* Blood was withdrawn by cardiac puncture and collected on EDTA-coated tubes. Mensenteric lymph nodes (MLN) and peripheral lymph nodes (PLN) were also collected. Mononuclear cells from the tissues will be isolated using density gradient (Lympholyte) and they were stained with fluorescent antibodies. The cells (5 x 10<sup>4</sup>) were first incubated 15 minutes with BD mouse FcBlock (Fcγ III/II Receptor) followed by a 30-minute incubation with specific antibodies. After washes, cells were fixed using BD Fix Solution. Percentage of different subpopulations of T lymphocytes were then analysed using FACSCalibur cytometer. Antibodies employed were the same as listed for 30 the single-dose PD studies above.

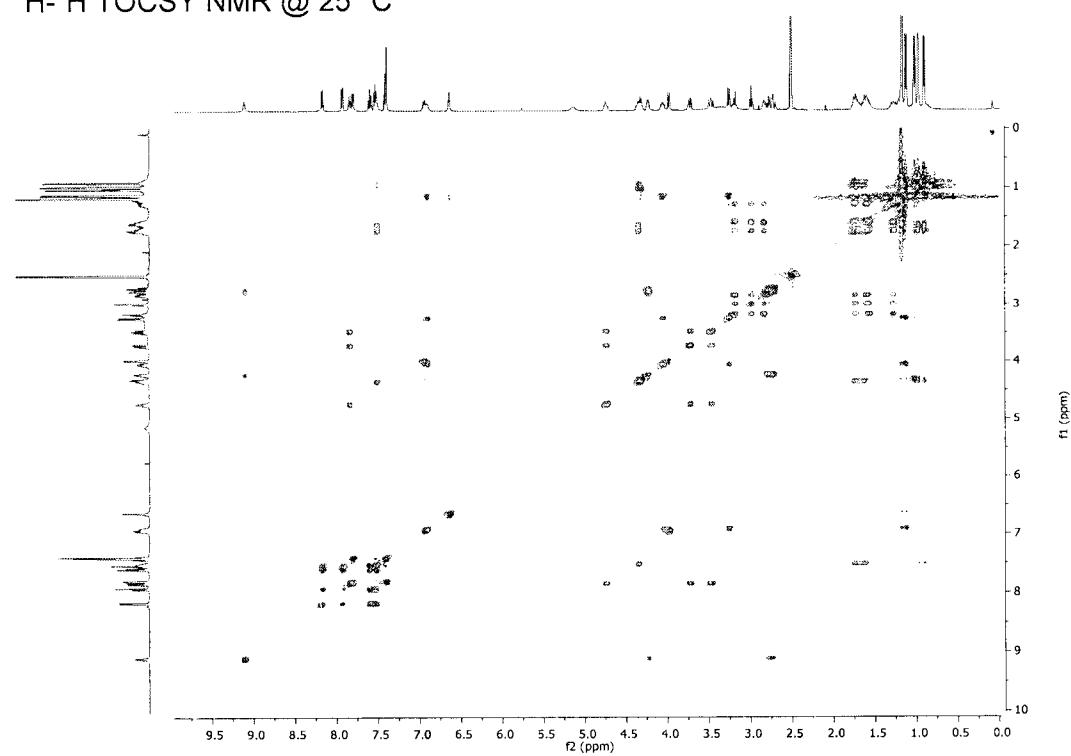
## Results and Discussion

Compounds were synthesized in accordance with the above-noted methods. A selection of compounds were characterized using NMR (not all data shown). A subset of NMR data 5 is provided below for select compounds.

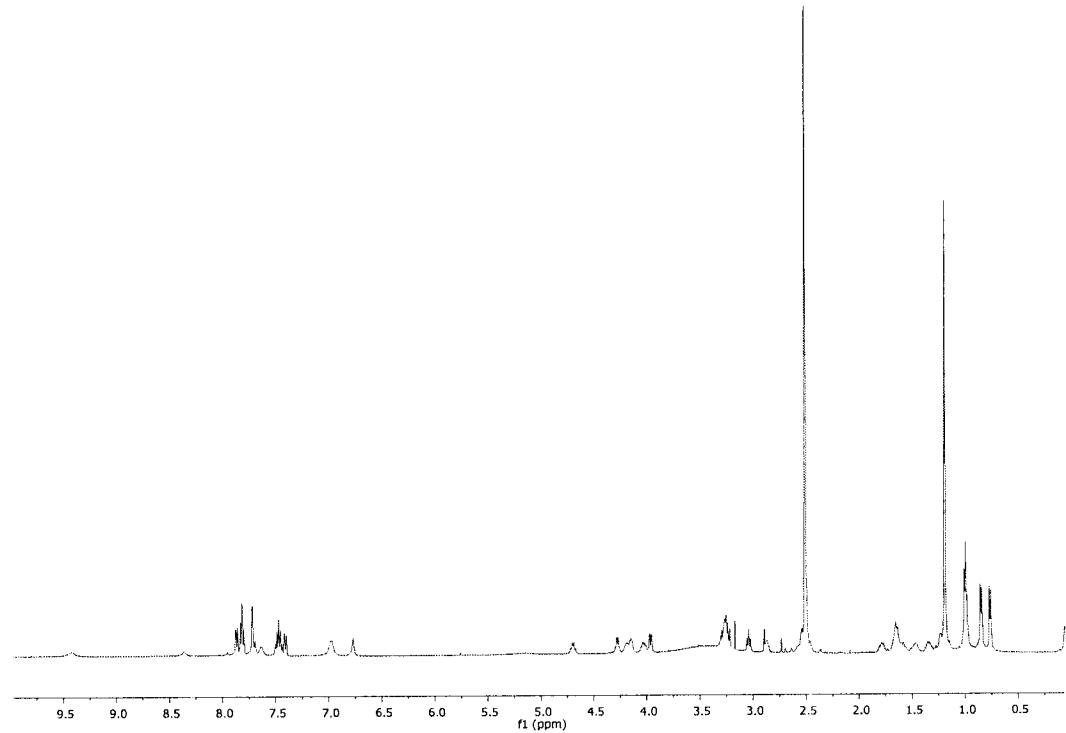
**Compound No. 9**  
 $^1\text{H}$  NMR @ 25 °C



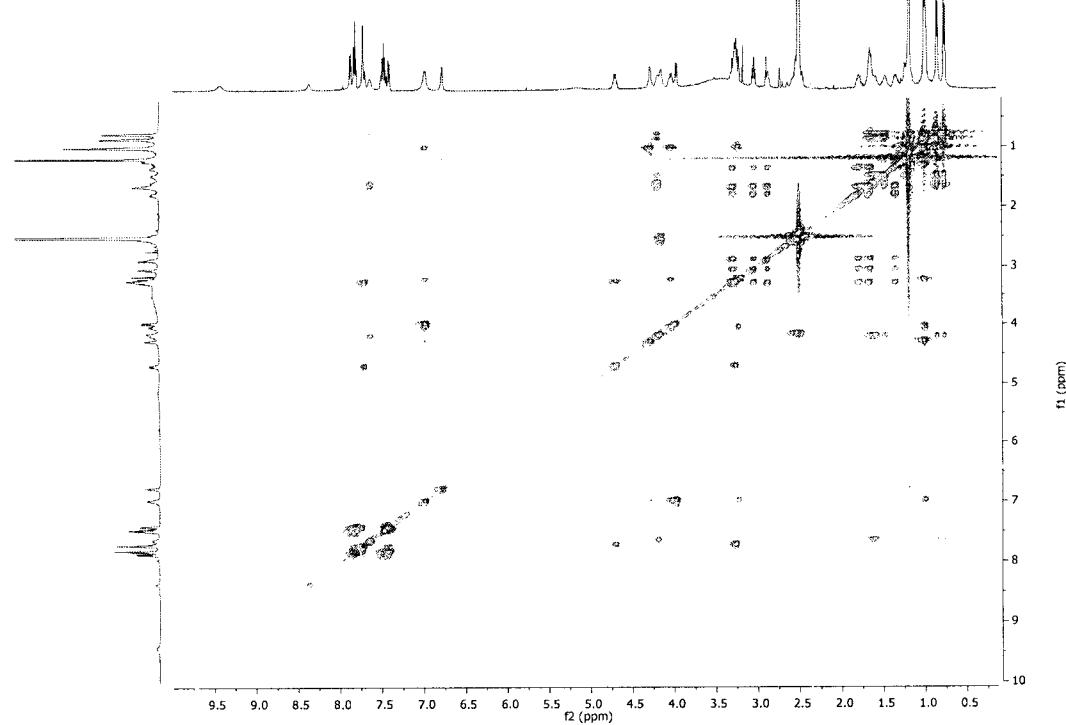
$^1\text{H}$ - $^1\text{H}$  TOCSY NMR @ 25 °C



**Compound No. 10**  
 $^1\text{H}$  NMR @ 25 °C

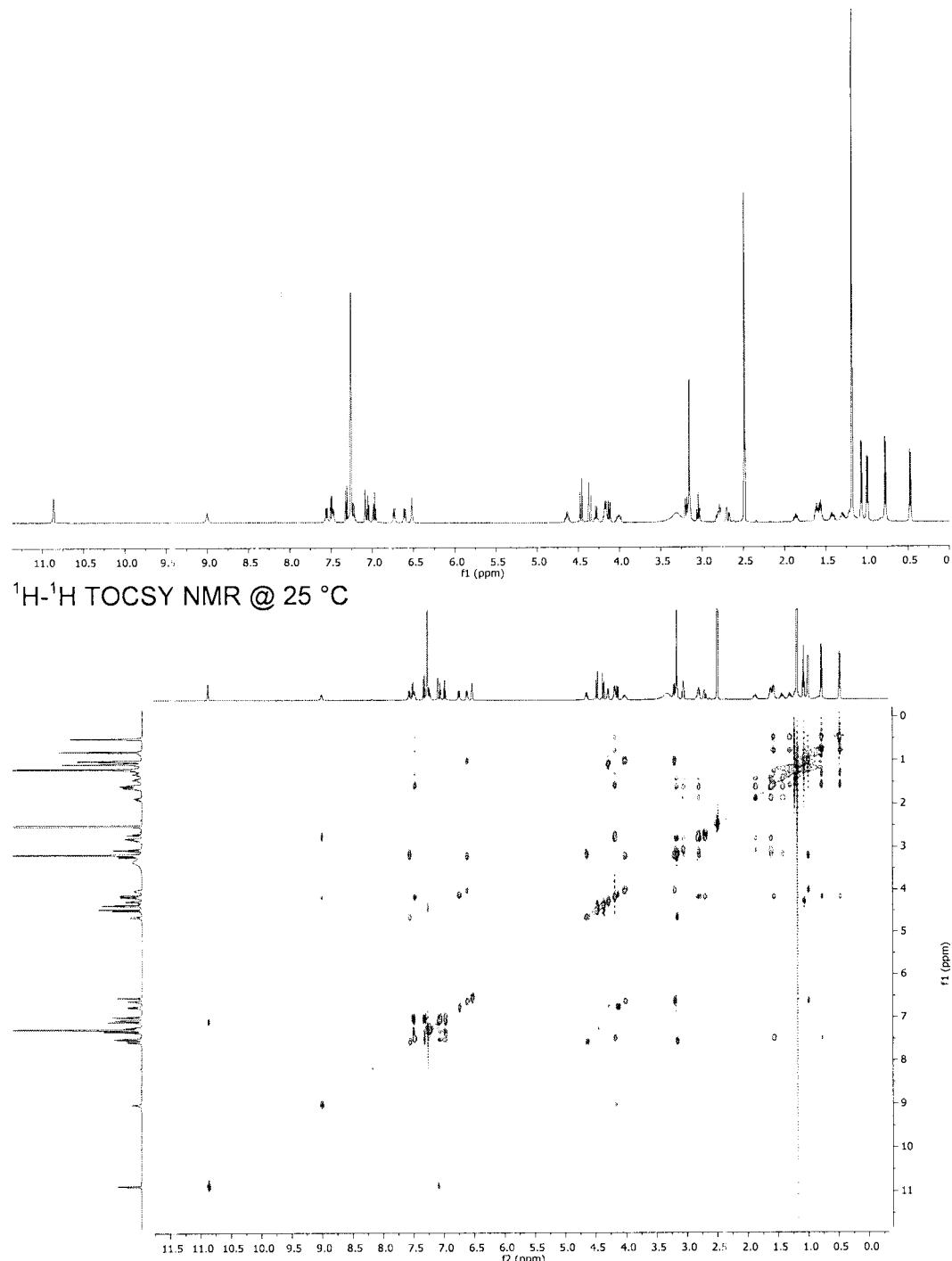


$^1\text{H}$ - $^1\text{H}$  TOCSY NMR @ 25 °C



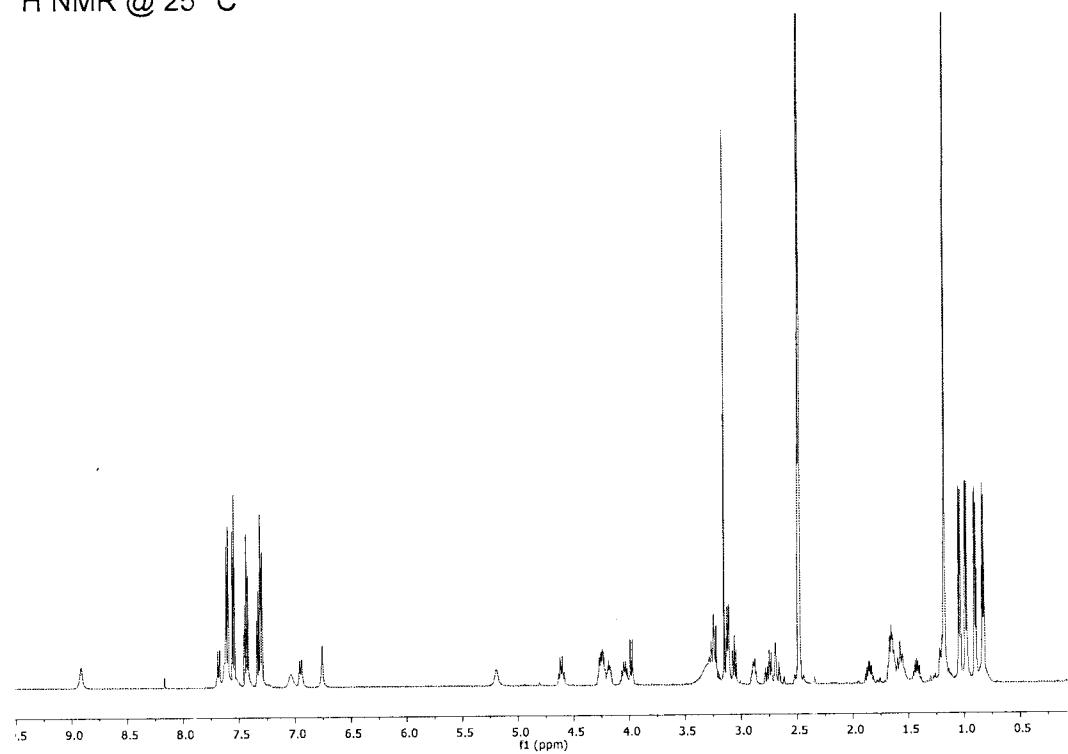
5

**Compound No. 11**  
 $^1\text{H}$  NMR @ 25 °C

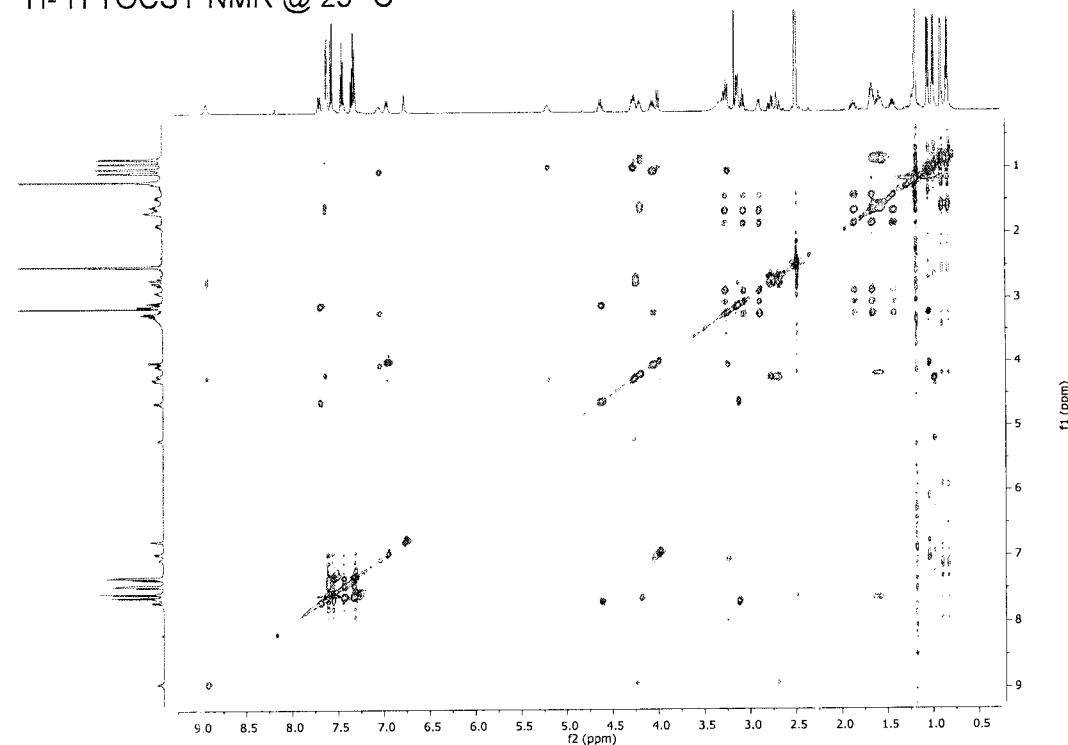


5

**Compound No. 12**  
 $^1\text{H}$  NMR @ 25 °C

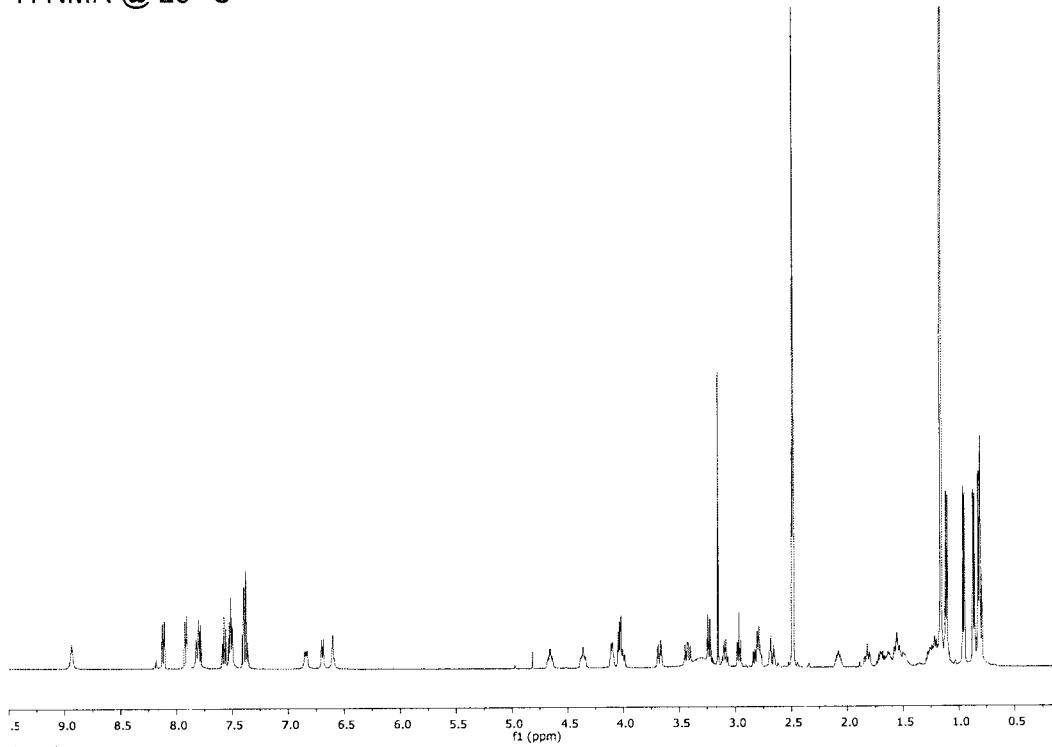


$^1\text{H}$ - $^1\text{H}$  TOCSY NMR @ 25 °C

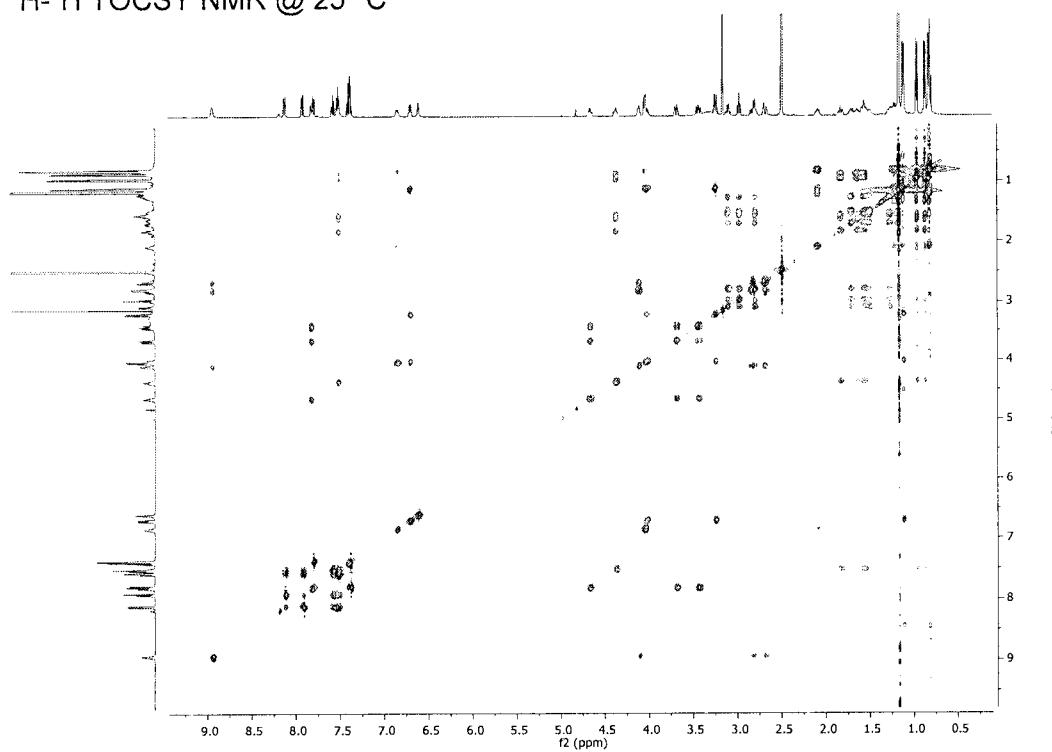


5

**Compound No. 14**  
 $^1\text{H}$  NMR @ 25 °C

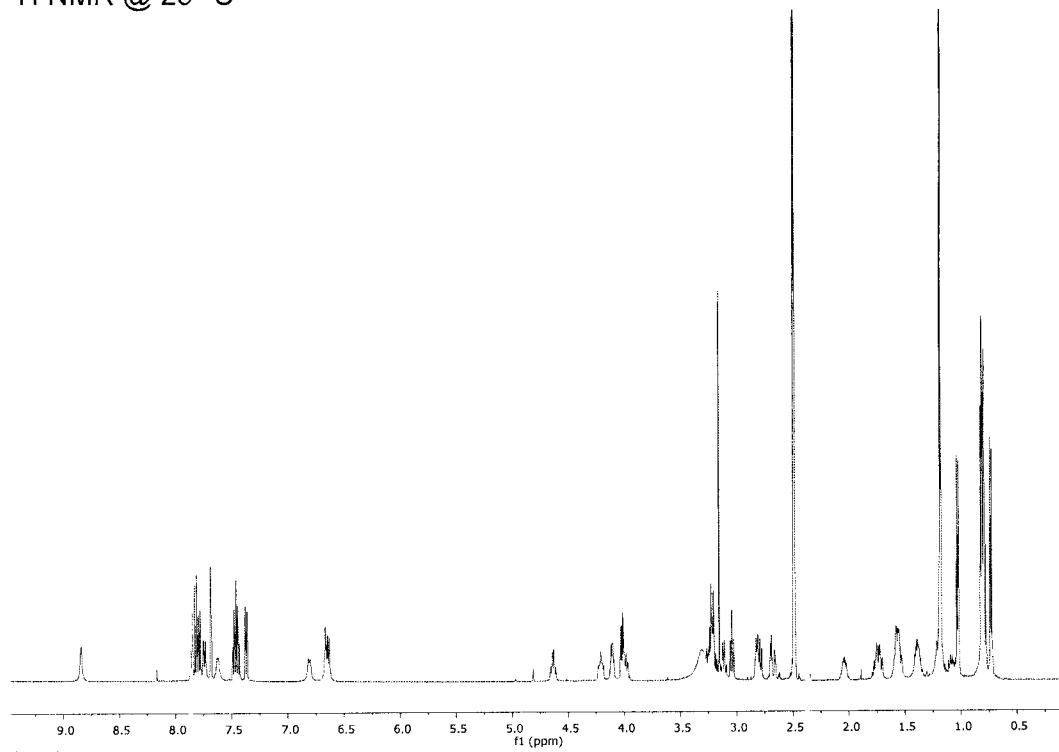


$^1\text{H}$ - $^1\text{H}$  TOCSY NMR @ 25 °C

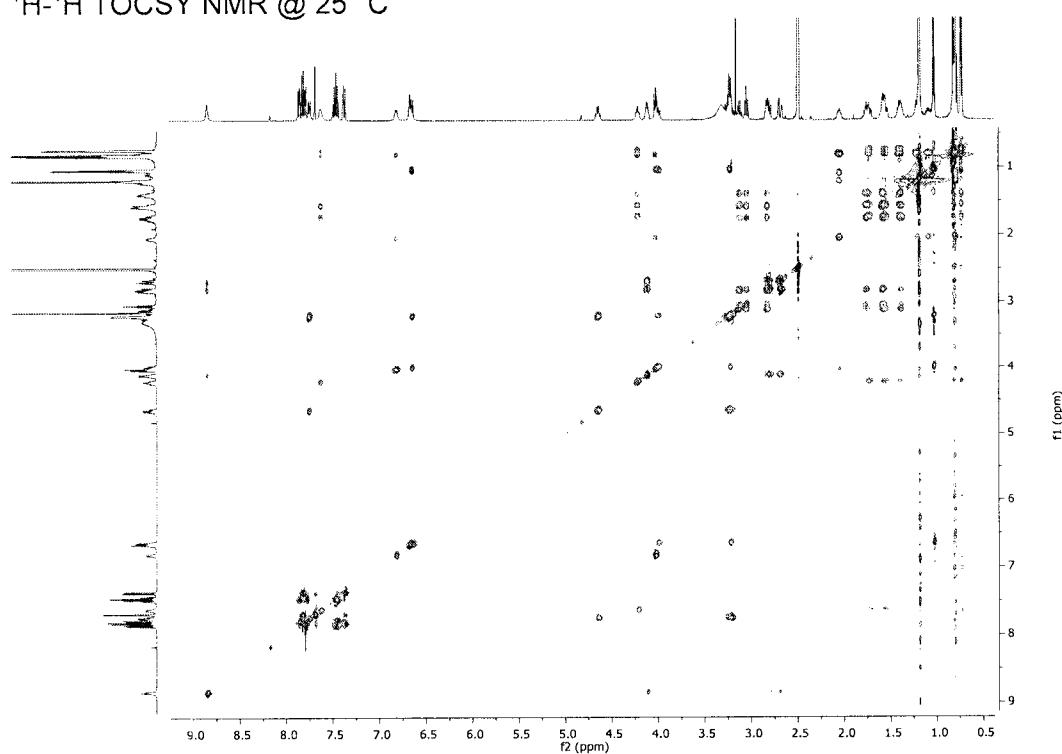


5

**Compound No. 15**  
 $^1\text{H}$  NMR @ 25 °C

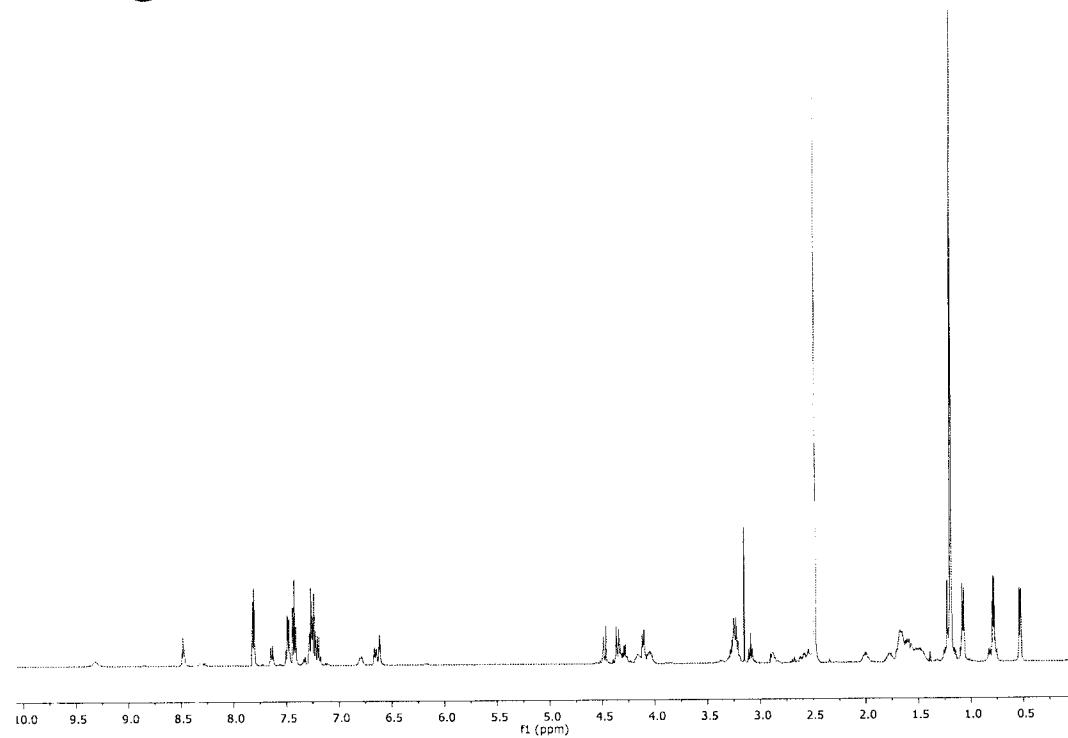


$^1\text{H}$ - $^1\text{H}$  TOCSY NMR @ 25 °C

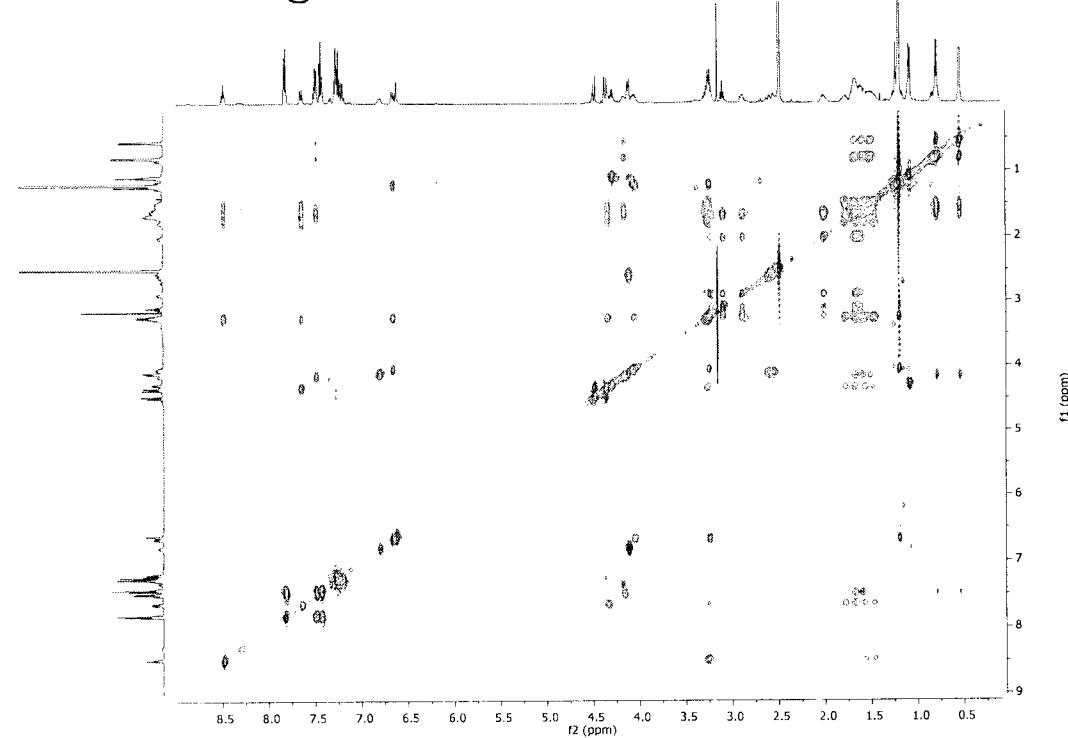


5

**Compound No. 34**  
 $^1\text{H}$  NMR @ 25 °C

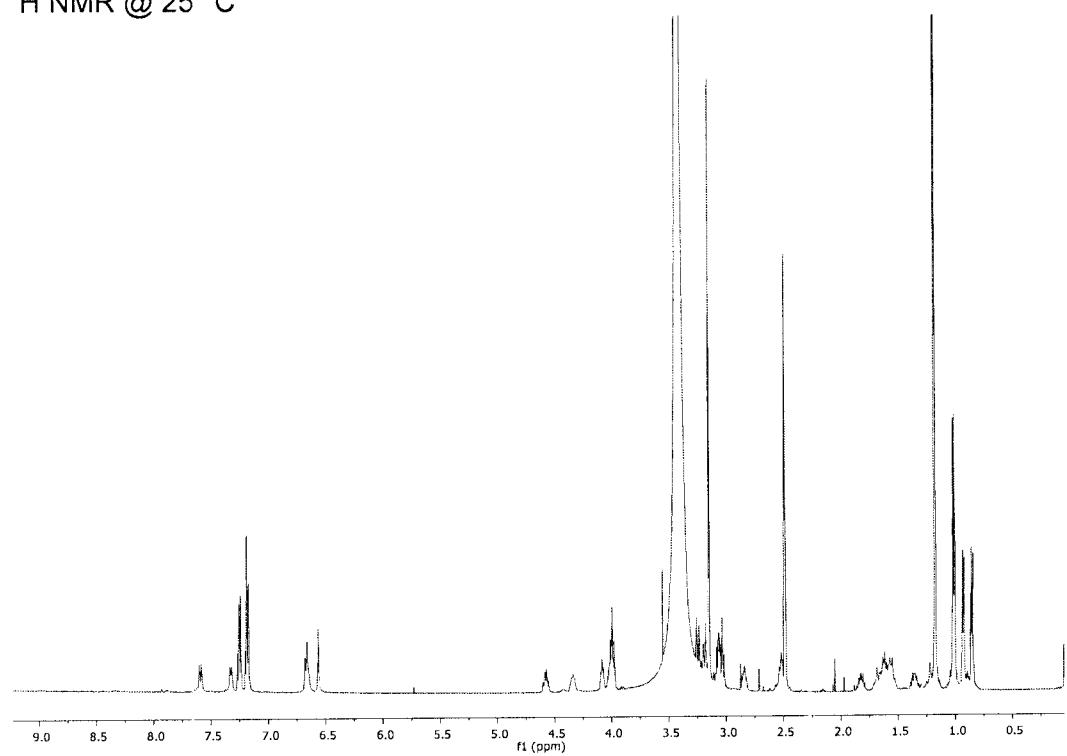


$^1\text{H}$ - $^1\text{H}$  TOCSY NMR @ 25 °C

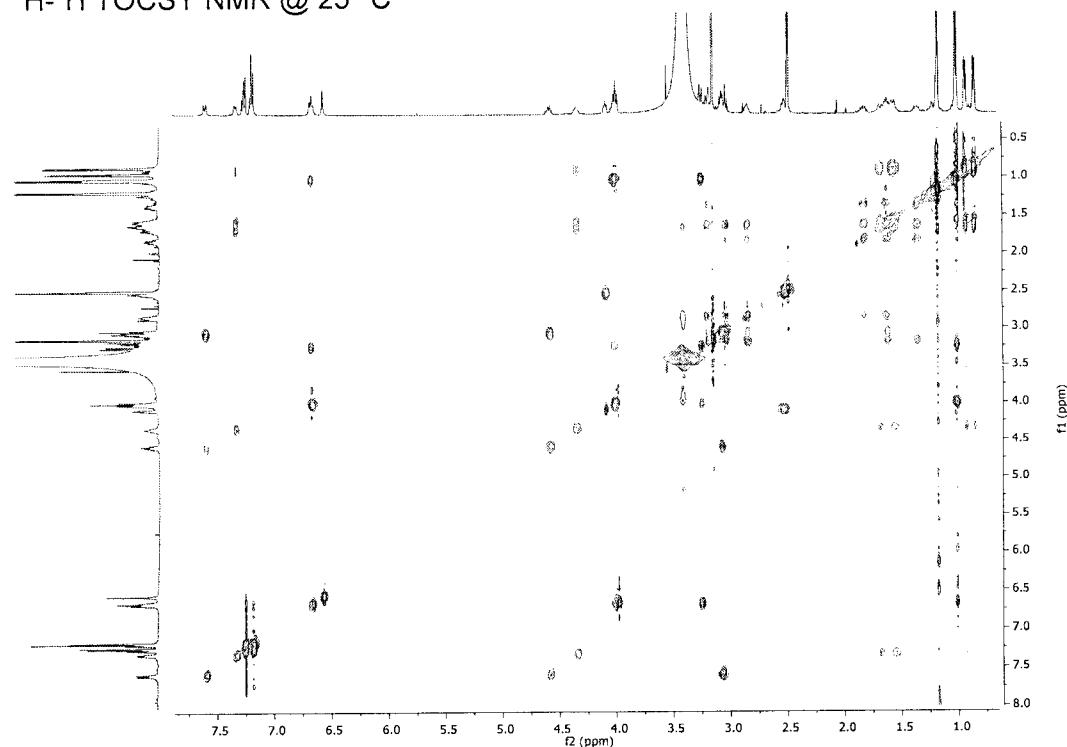


5

**Compound No. 40**  
 $^1\text{H}$  NMR @ 25 °C

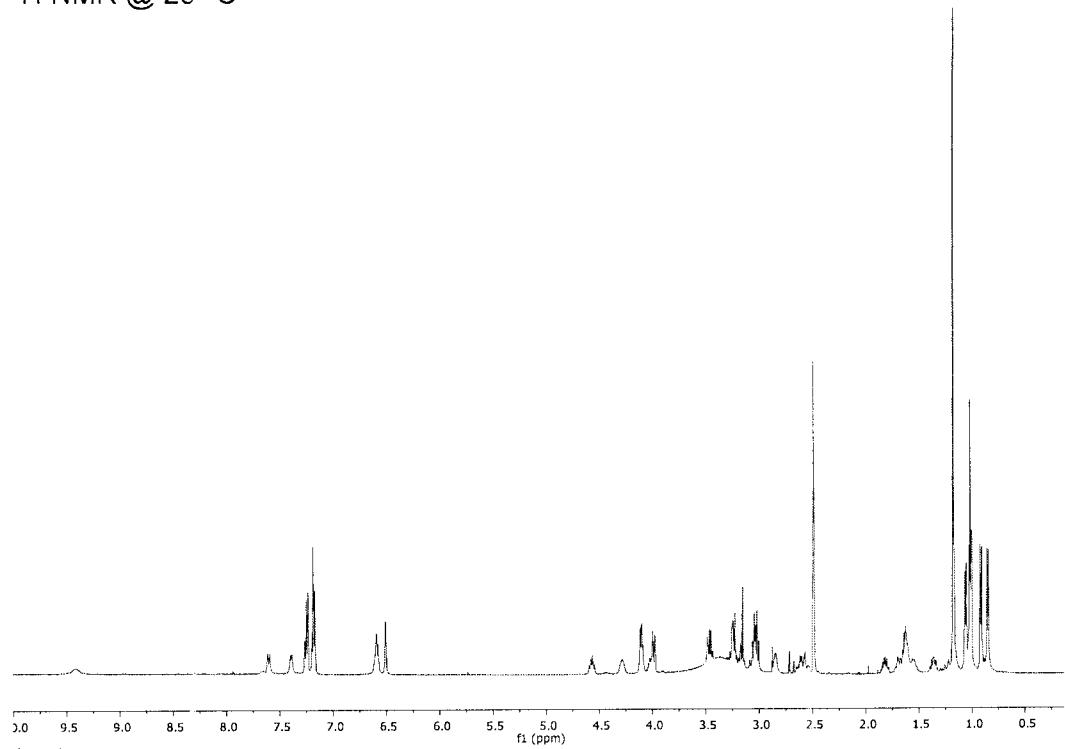


$^1\text{H}$ - $^1\text{H}$  TOCSY NMR @ 25 °C

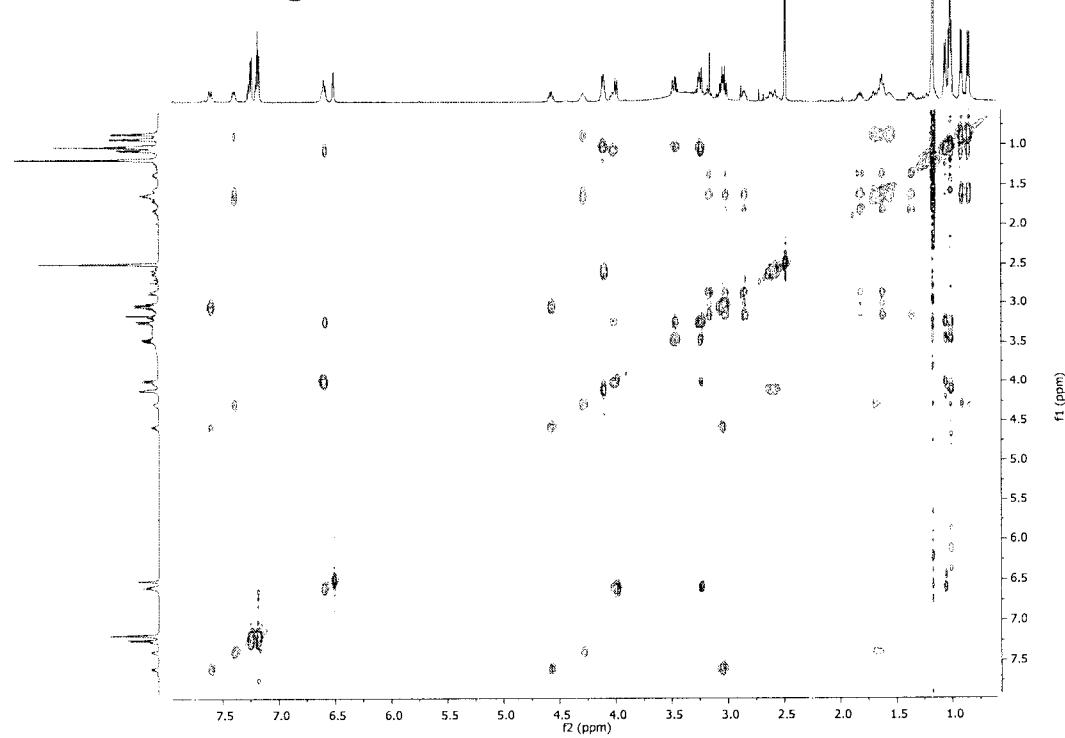


5

**Compound No. 41**  
 $^1\text{H}$  NMR @ 25 °C

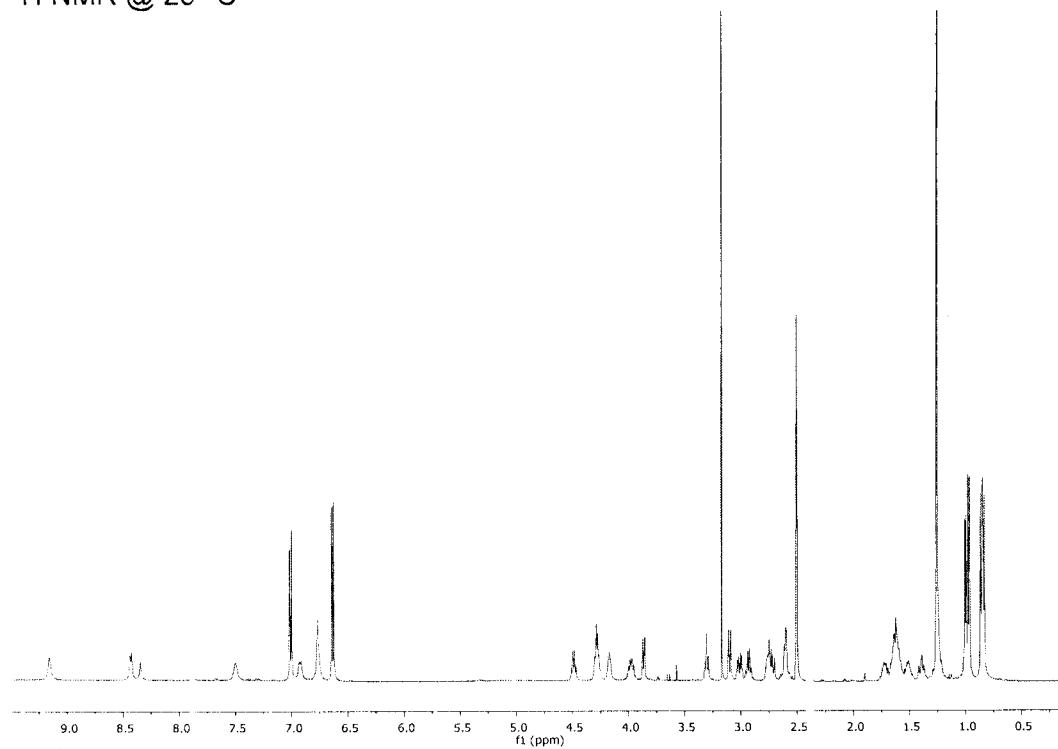


$^1\text{H}$ - $^1\text{H}$  TOCSY NMR @ 25 °C

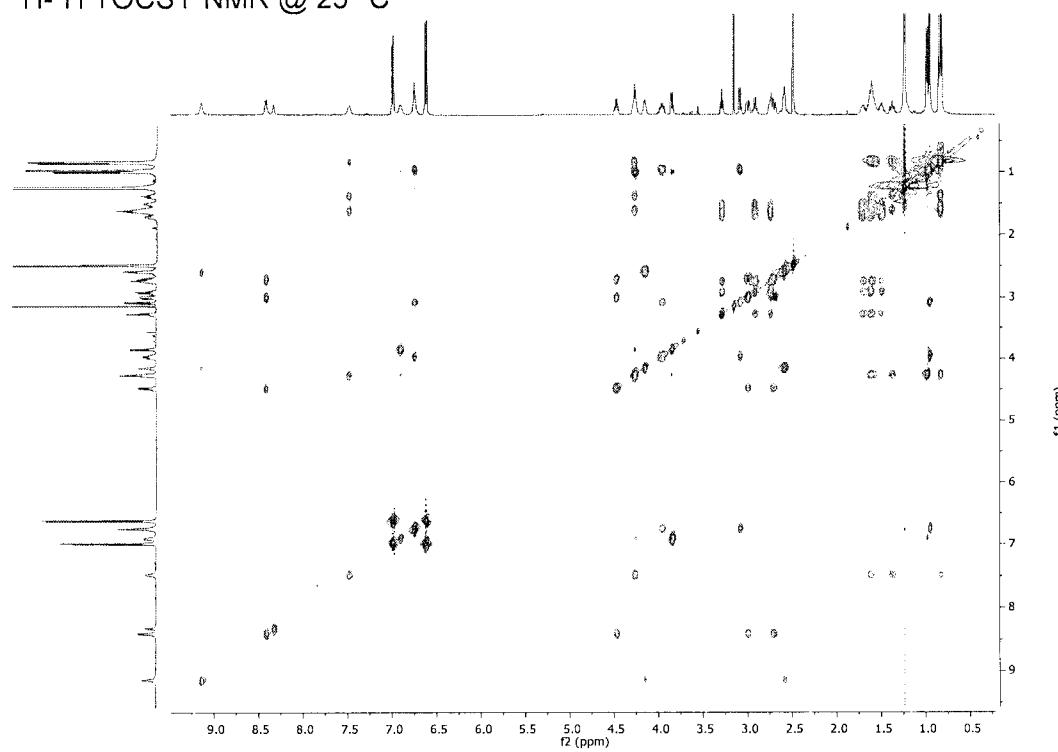


5

**Compound No. 42**  
 $^1\text{H}$  NMR @ 25 °C

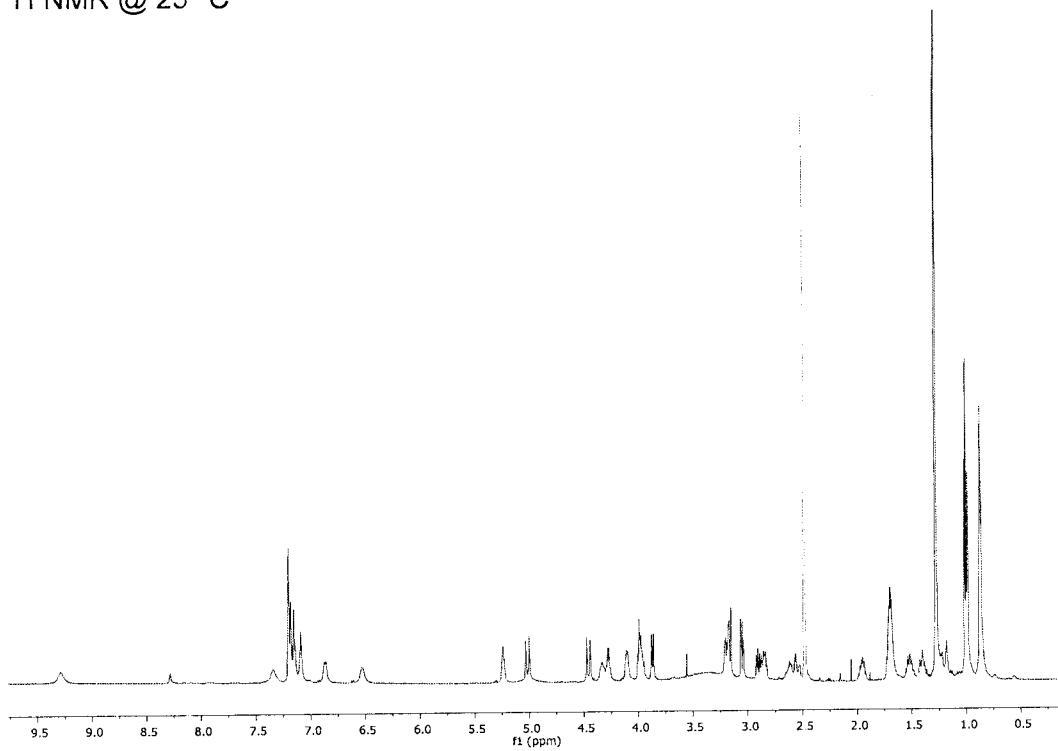


$^1\text{H}$ - $^1\text{H}$  TOCSY NMR @ 25 °C

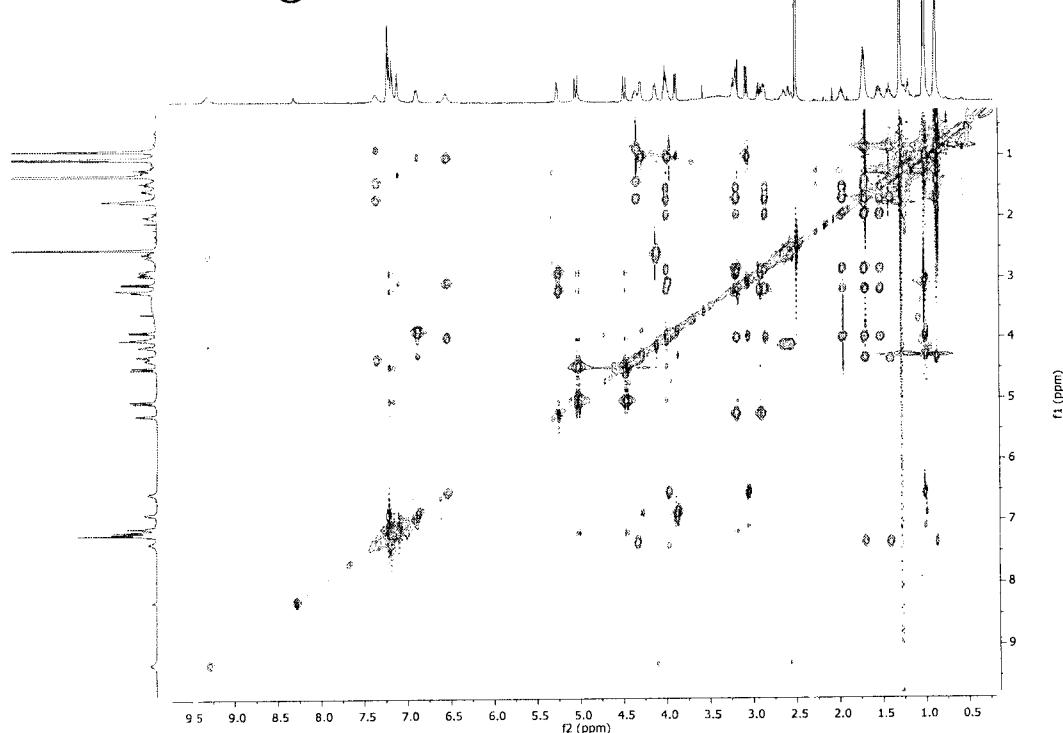


5

**Compound No. 43**  
 $^1\text{H}$  NMR @ 25 °C

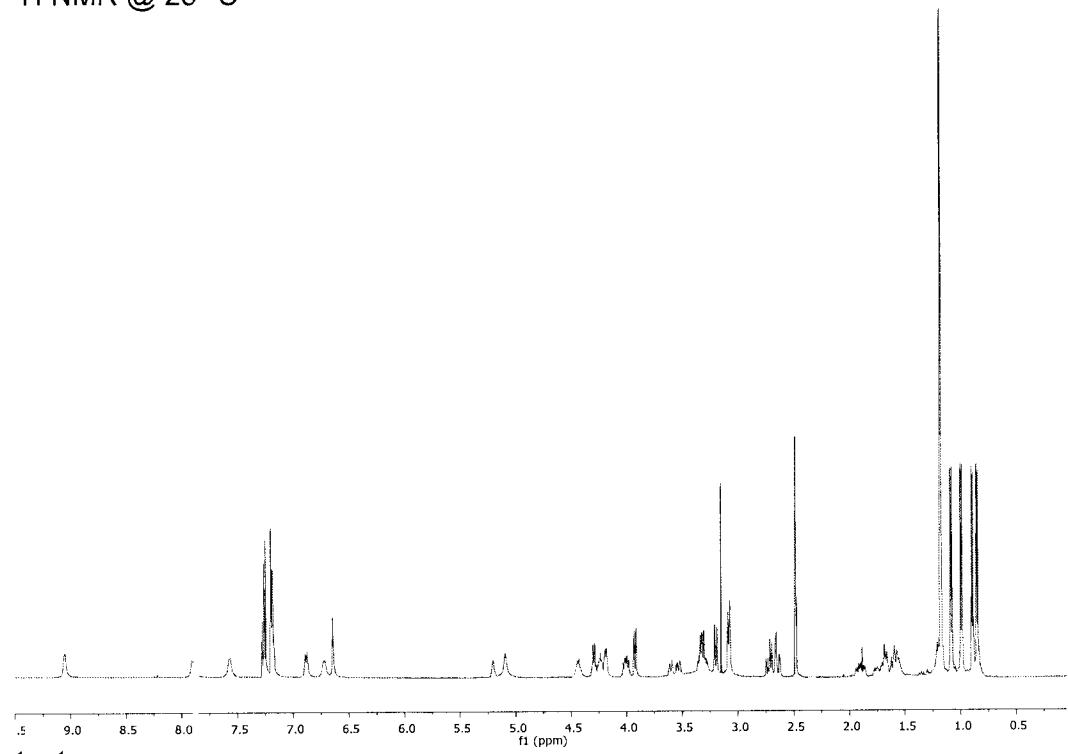


$^1\text{H}$ - $^1\text{H}$  TOCSY NMR @ 25 °C

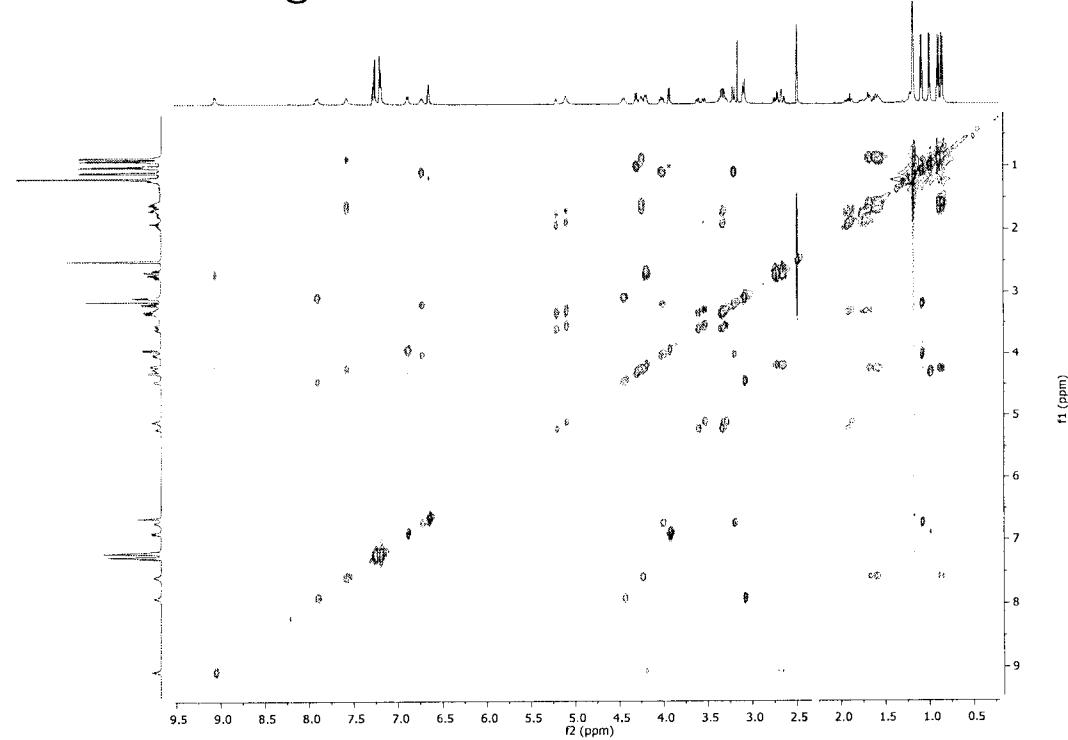


5

**Compound No. 45**  
 $^1\text{H}$  NMR @ 25 °C

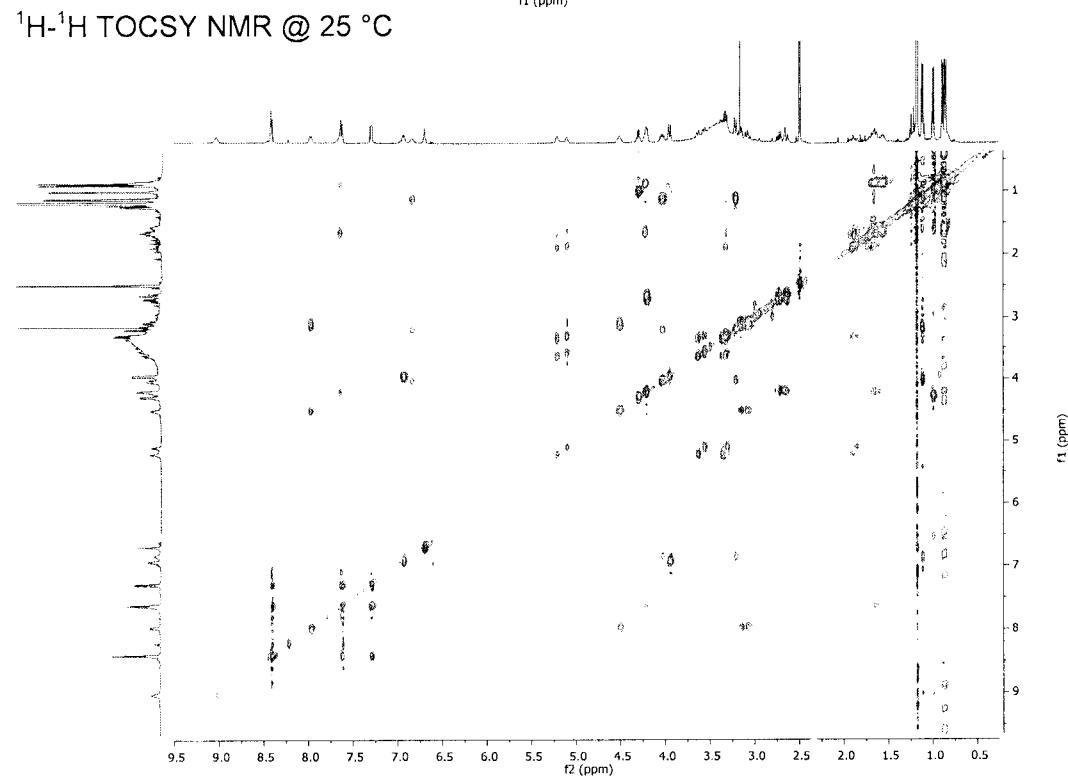
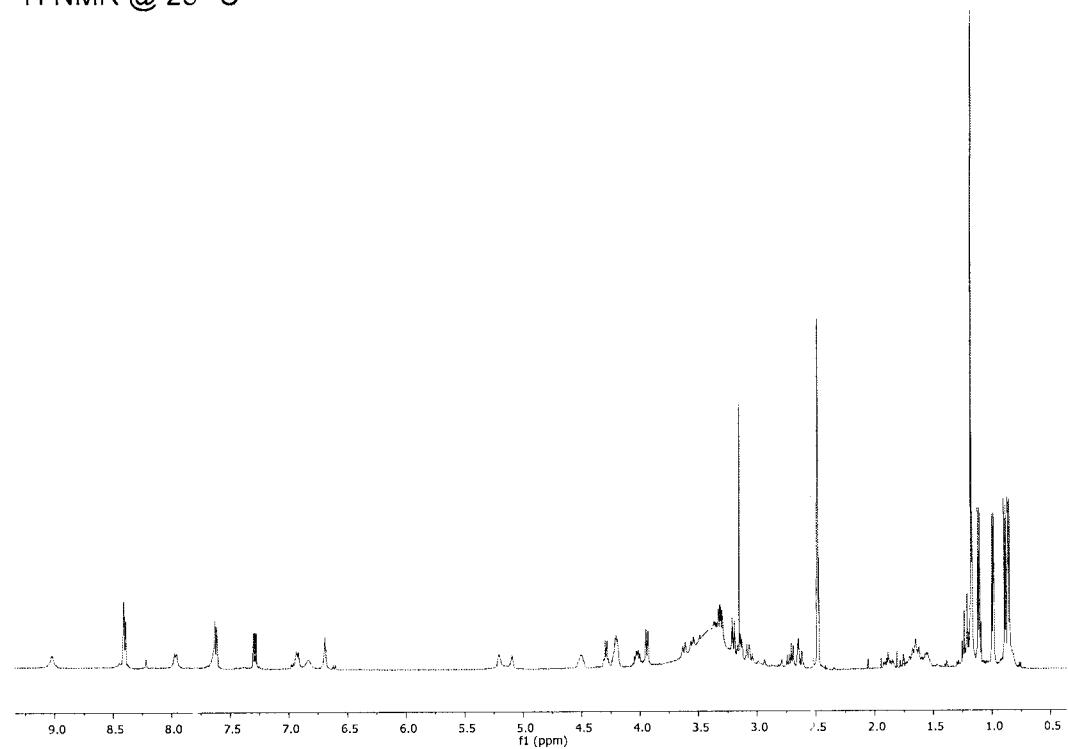


$^1\text{H}$ - $^1\text{H}$  TOCSY NMR @ 25 °C

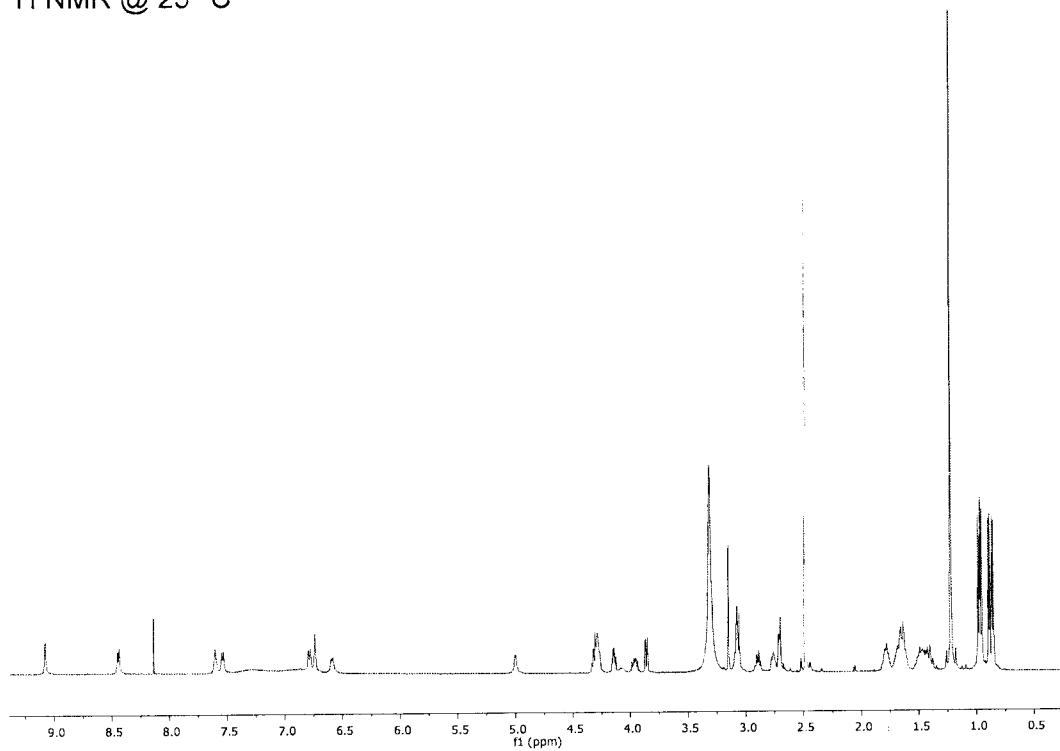


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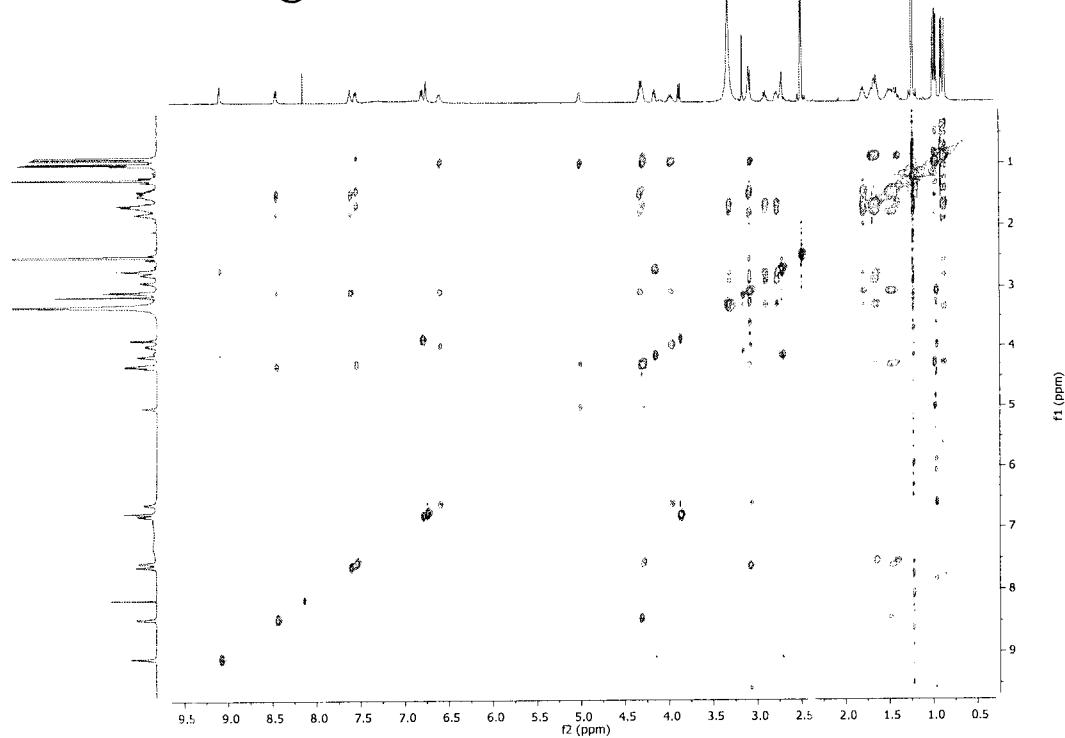
**Compound No. 47**  
 $^1\text{H}$  NMR @ 25 °C



**Compound No. 50**  
 $^1\text{H}$  NMR @ 25 °C

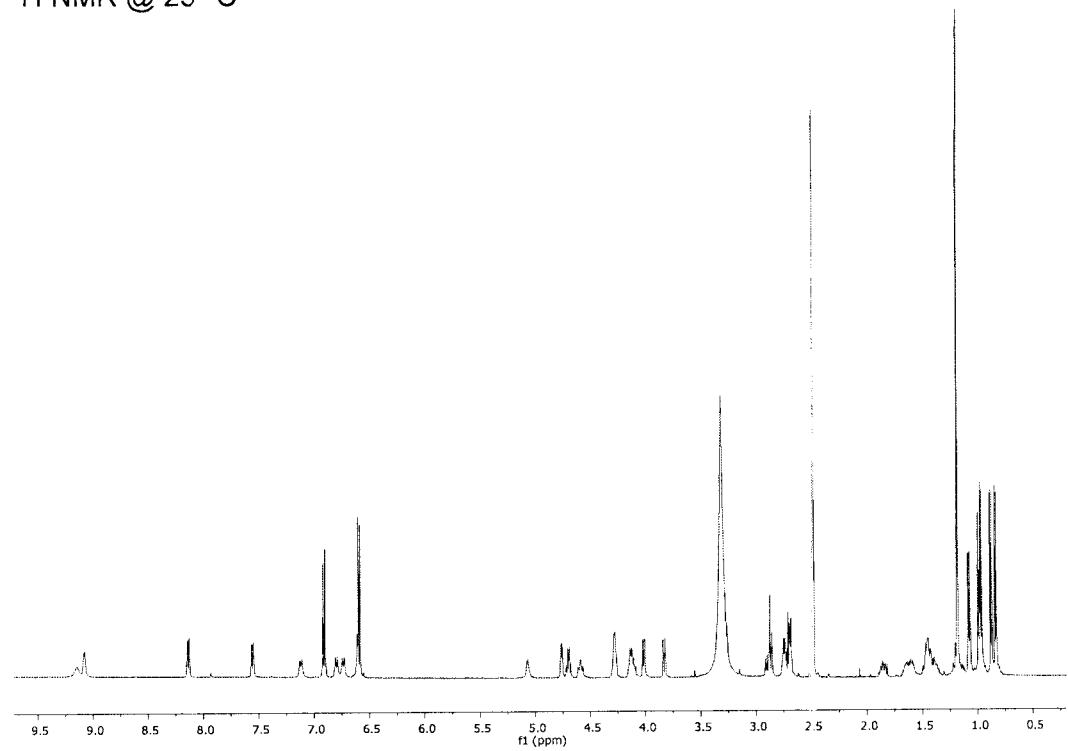


$^1\text{H}$ - $^1\text{H}$  TOCSY NMR @ 25 °C

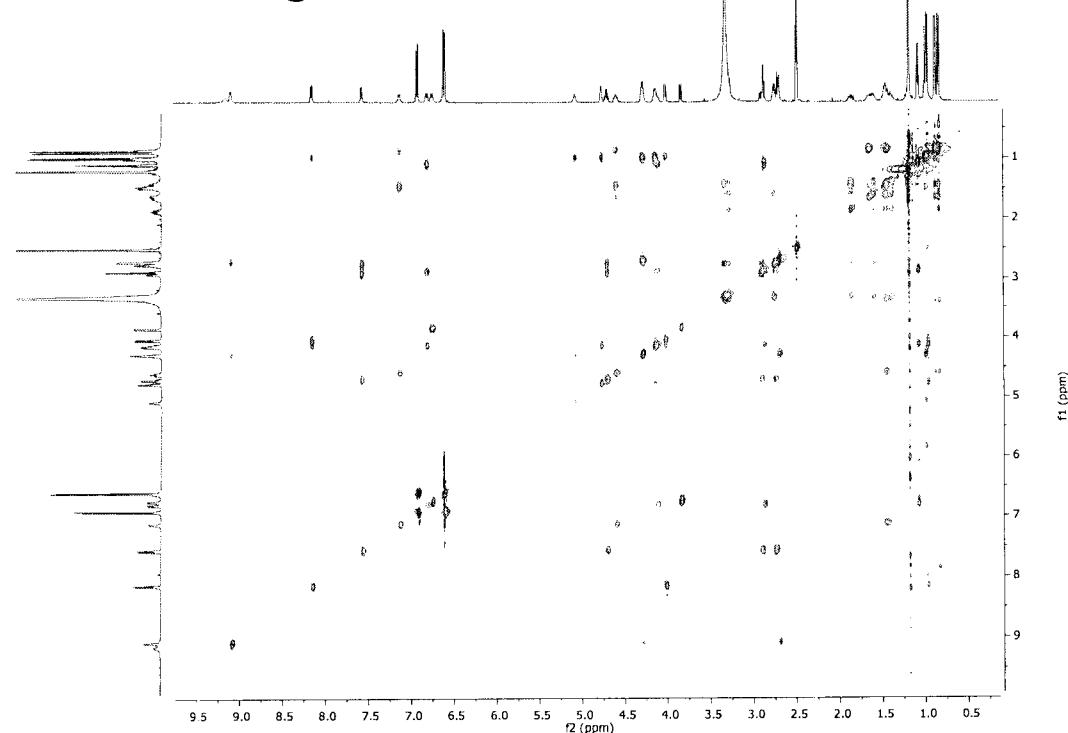


5

**Compound No. 100**  
 $^1\text{H}$  NMR @ 25 °C

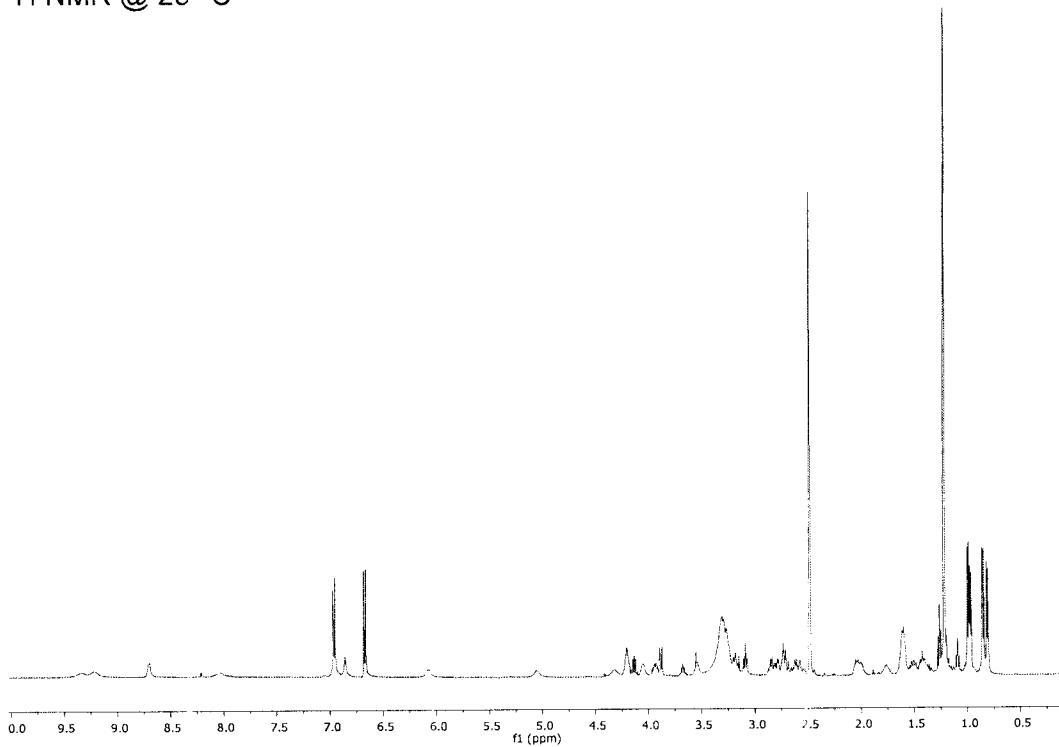


$^1\text{H}$ - $^1\text{H}$  TOCSY NMR @ 25 °C

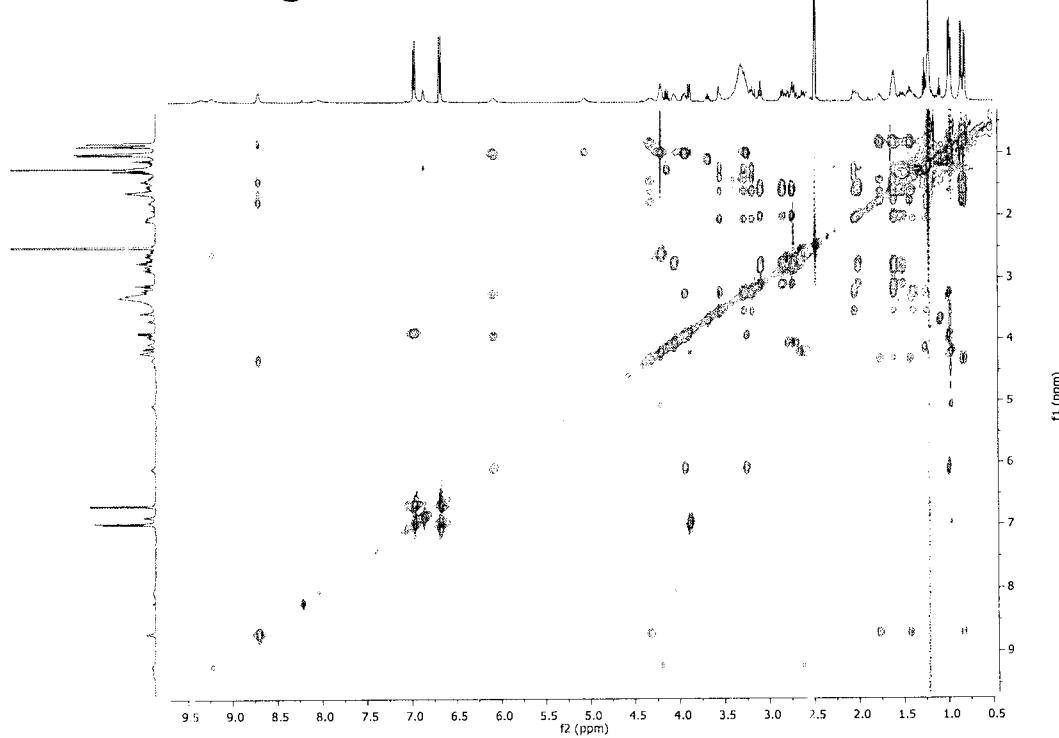


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**Compound No. 101**  
 $^1\text{H}$  NMR @ 25 °C

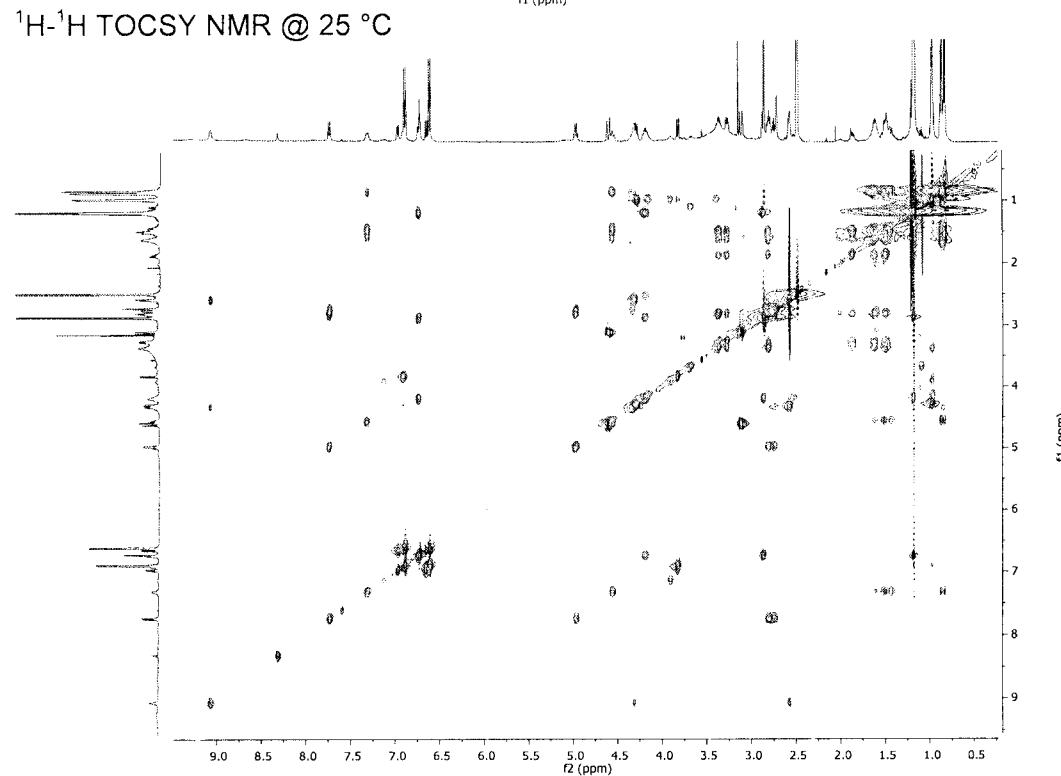
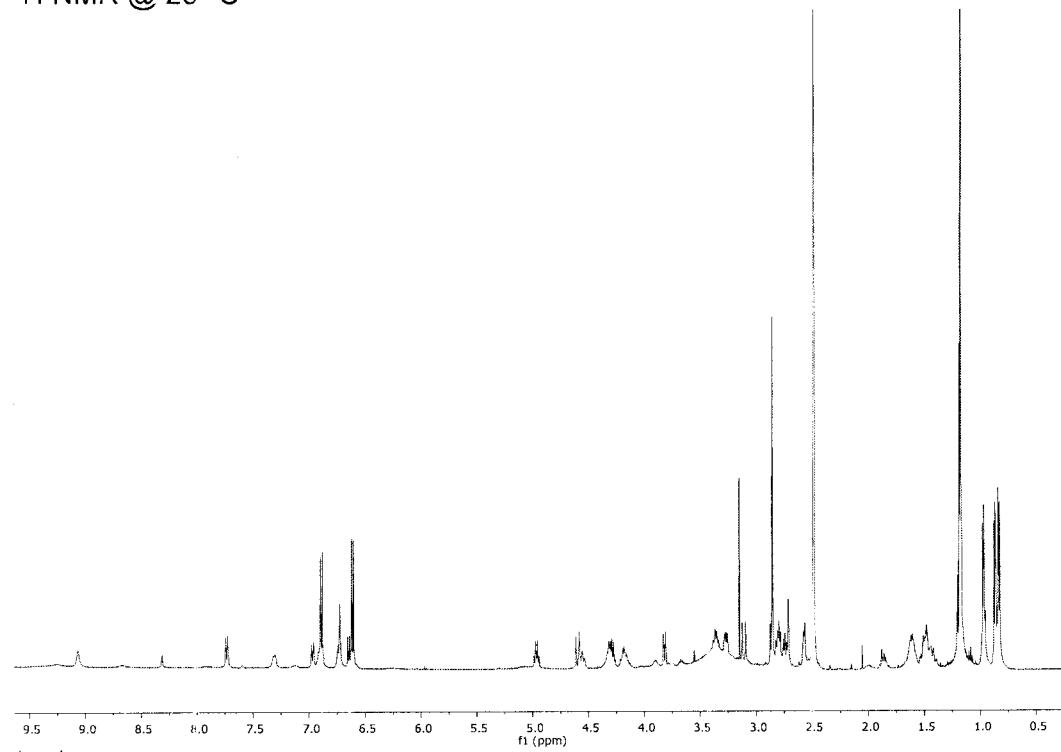


$^1\text{H}$ - $^1\text{H}$  TOCSY NMR @ 25 °C



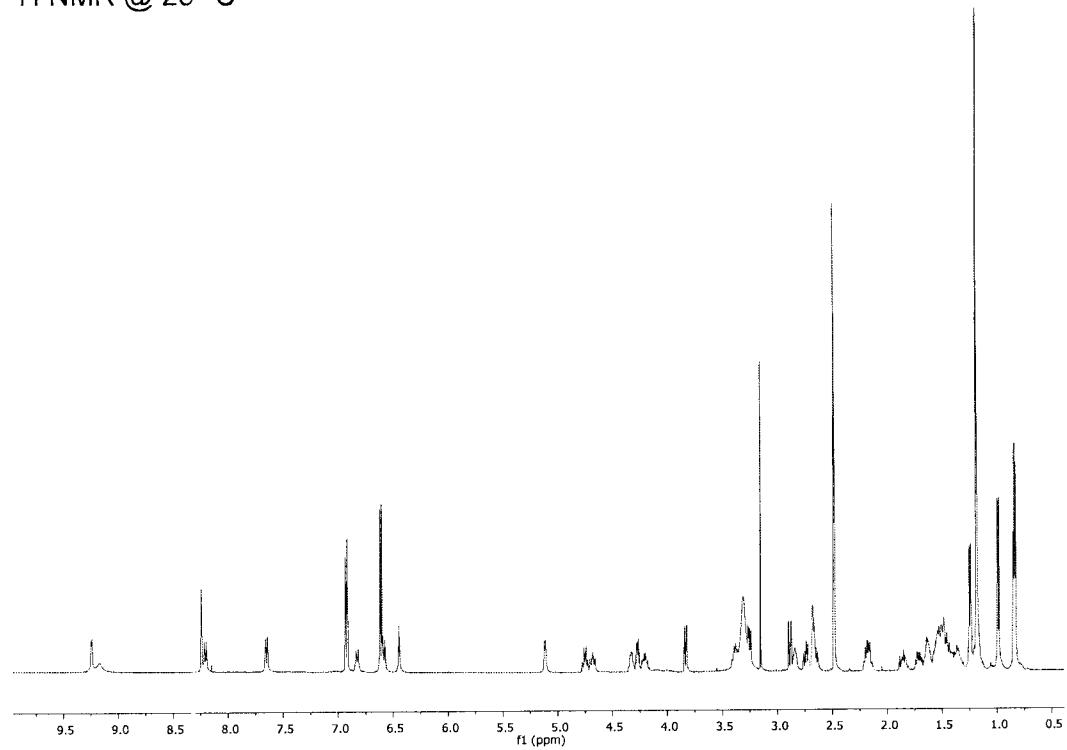
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**Compound No. 103**  
 $^1\text{H}$  NMR @ 25 °C

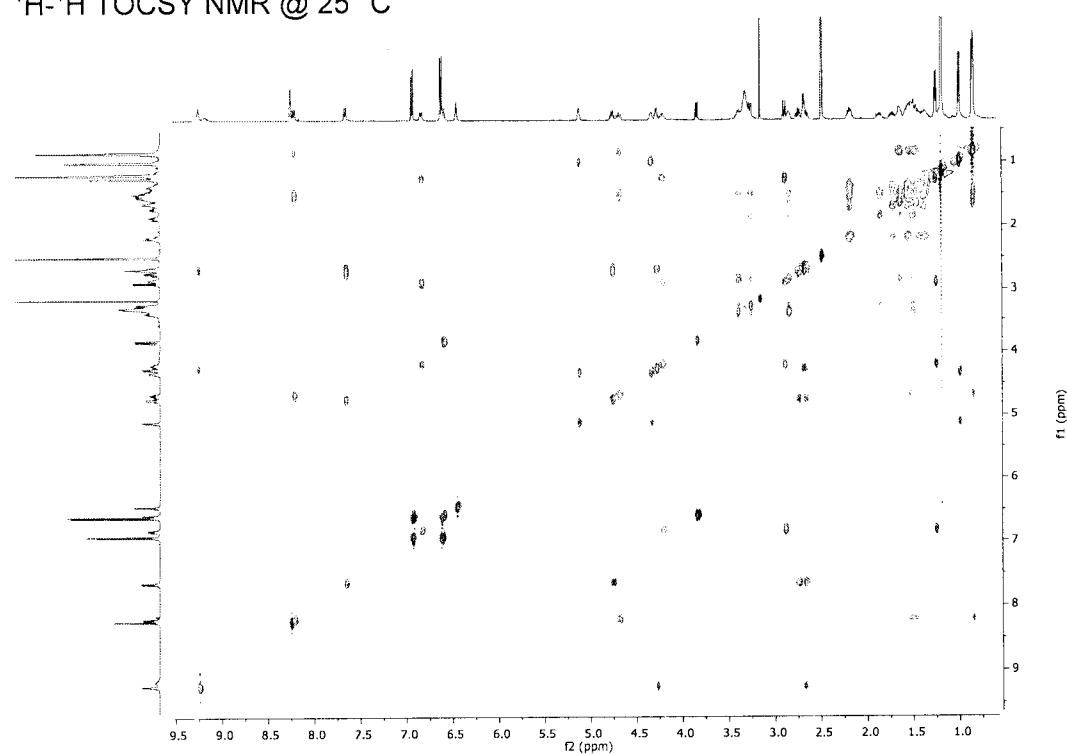


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**Compound No. 104**  
 $^1\text{H}$  NMR @ 25 °C

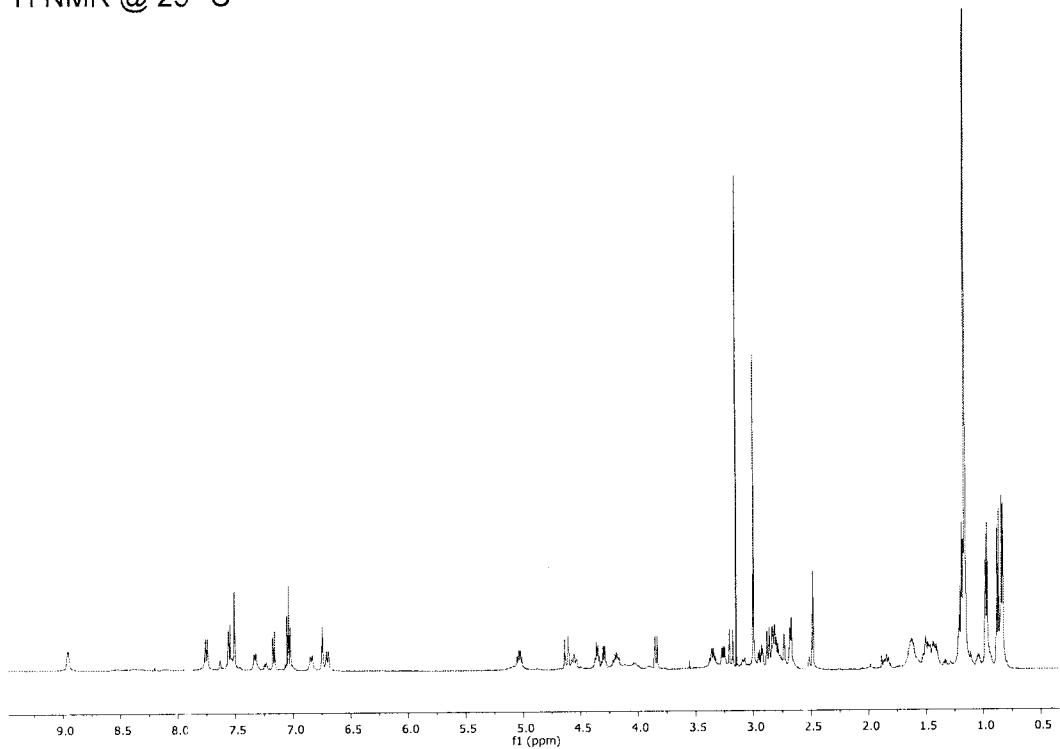


$^1\text{H}$ - $^1\text{H}$  TOCSY NMR @ 25 °C

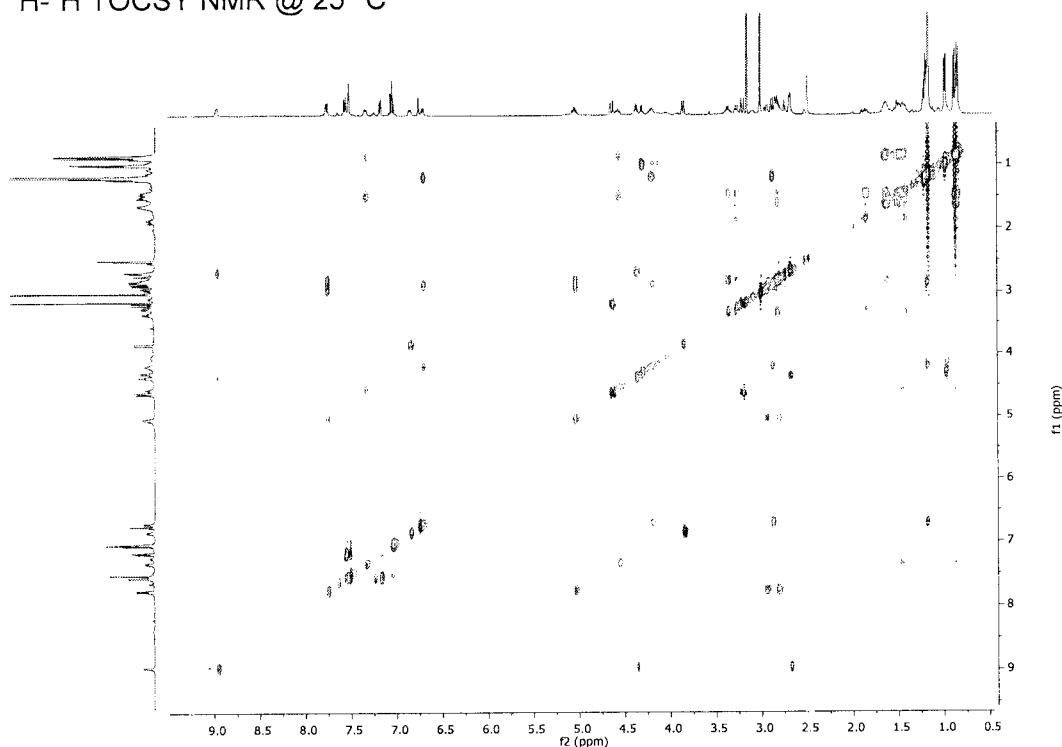


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**Compound No. 106**  
 $^1\text{H}$  NMR @ 25 °C

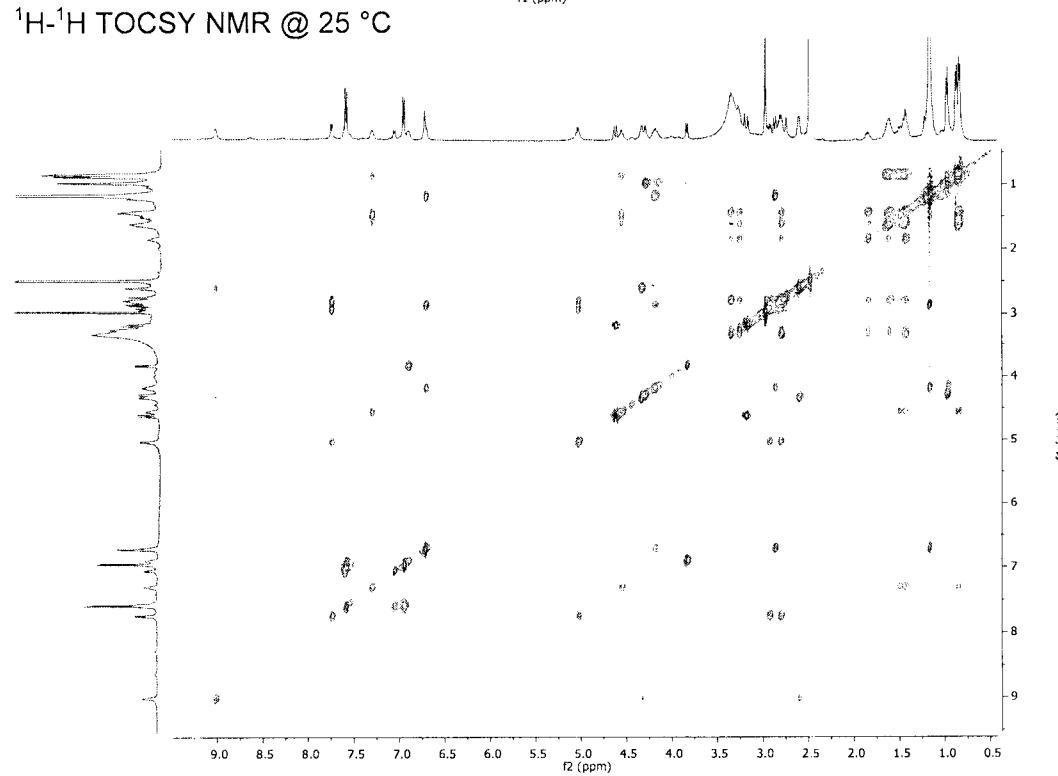
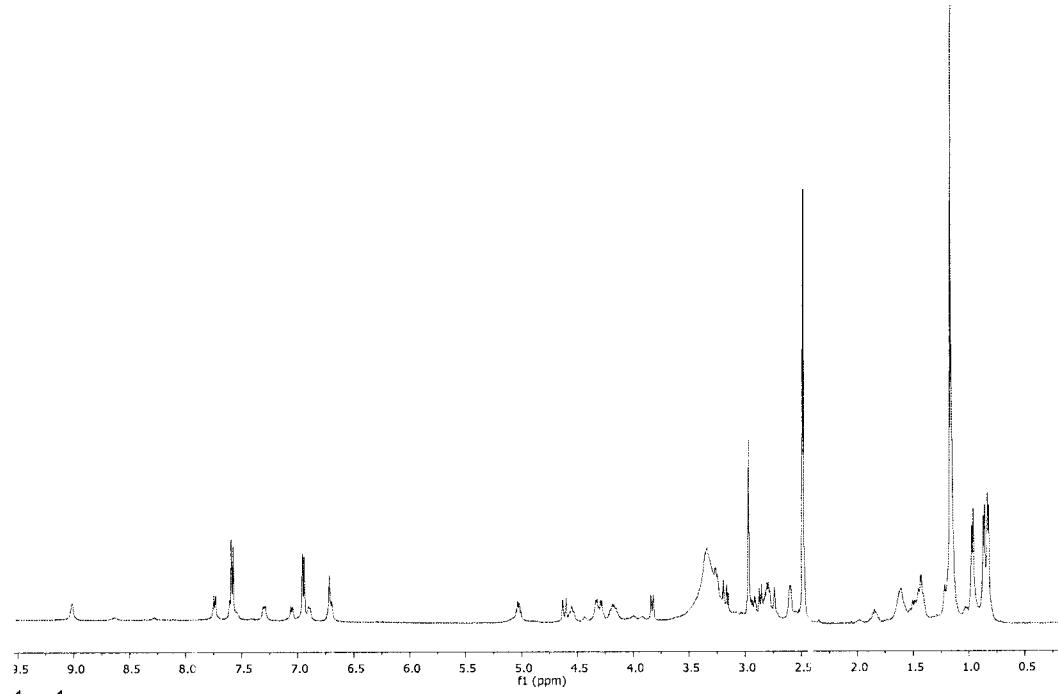


$^1\text{H}$ - $^1\text{H}$  TOCSY NMR @ 25 °C



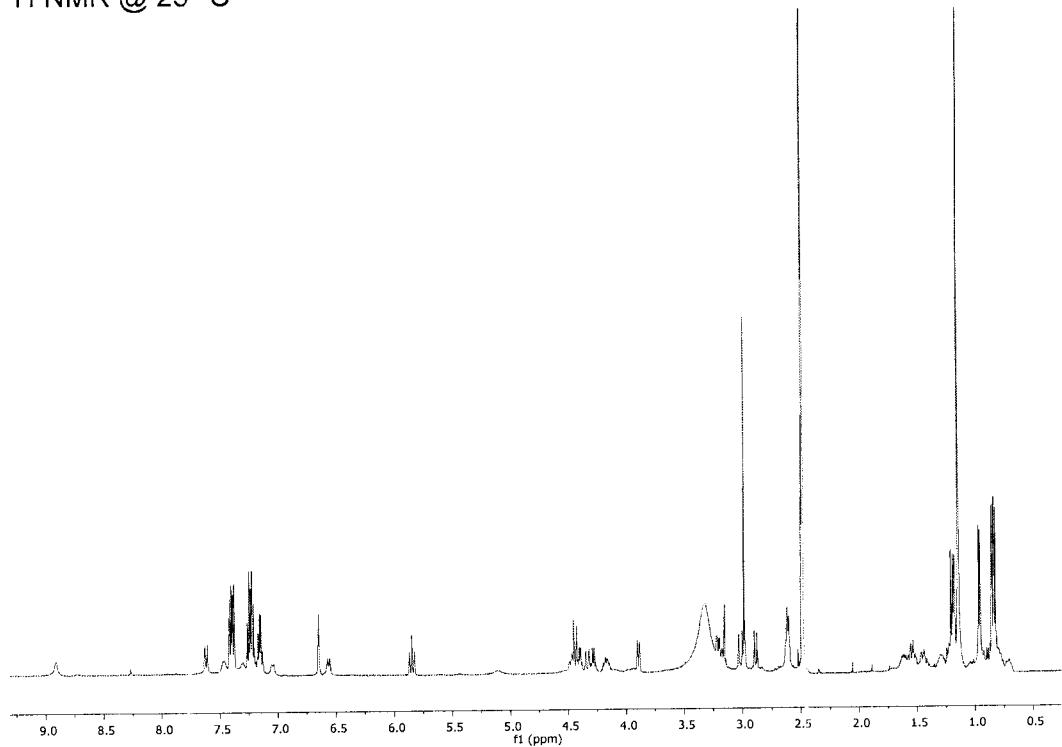
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**Compound No. 107**  
 $^1\text{H}$  NMR @ 25 °C

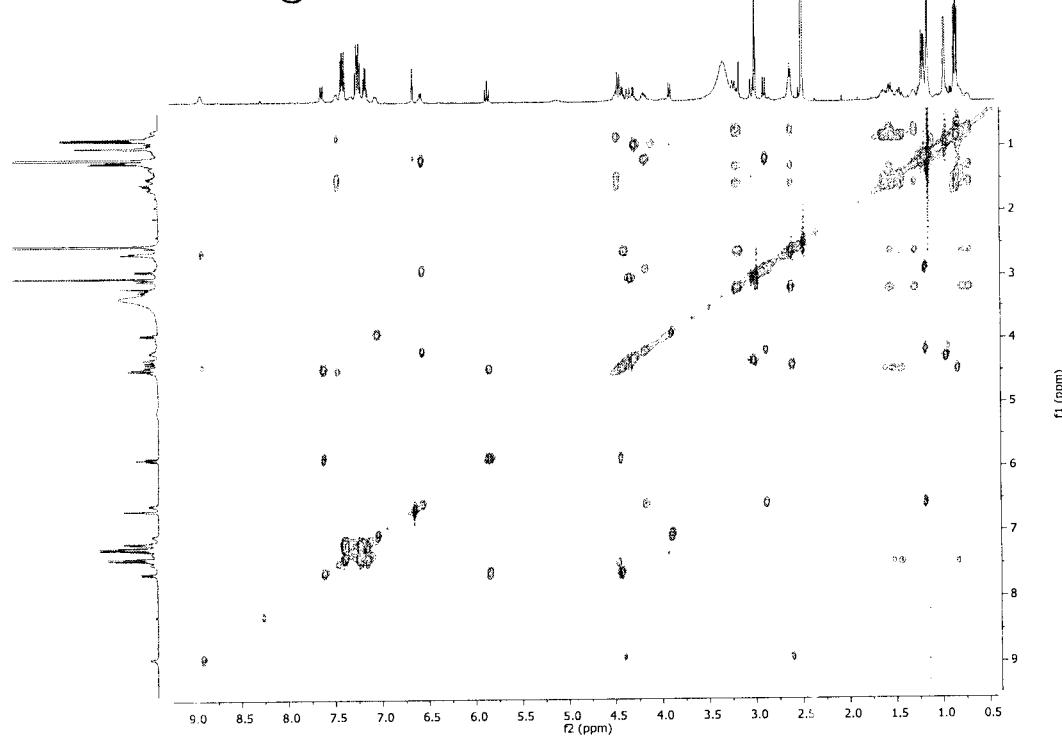


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**Compound No. 108**  
 $^1\text{H}$  NMR @ 25 °C

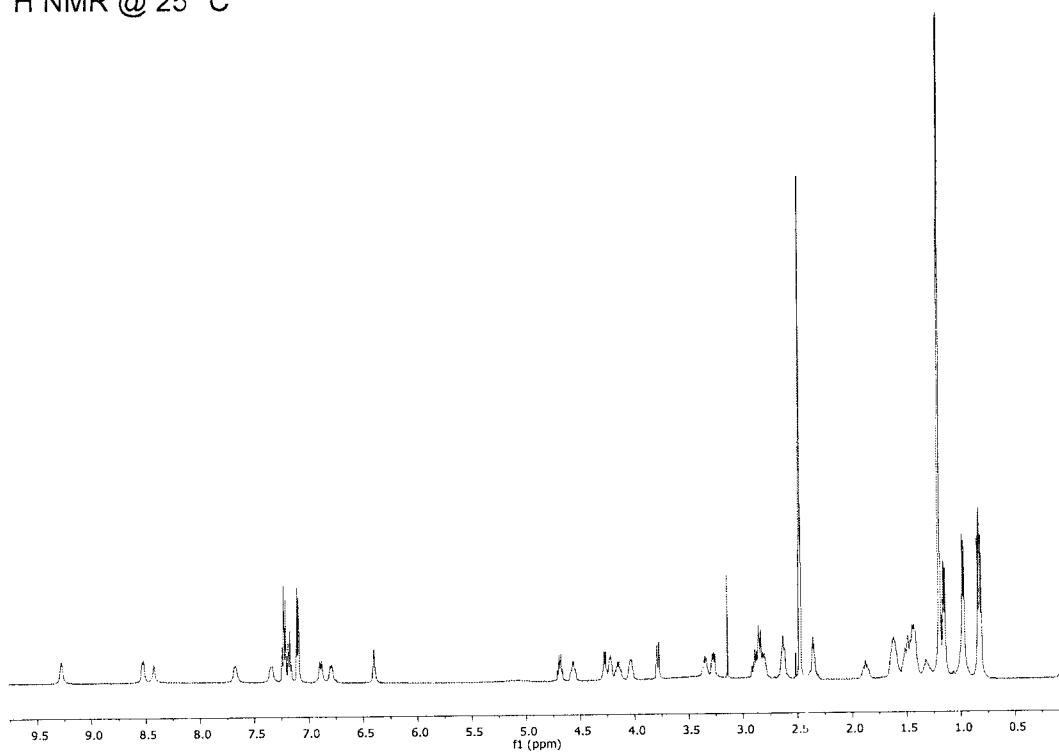


$^1\text{H}$ - $^1\text{H}$  TOCSY NMR @ 25 °C

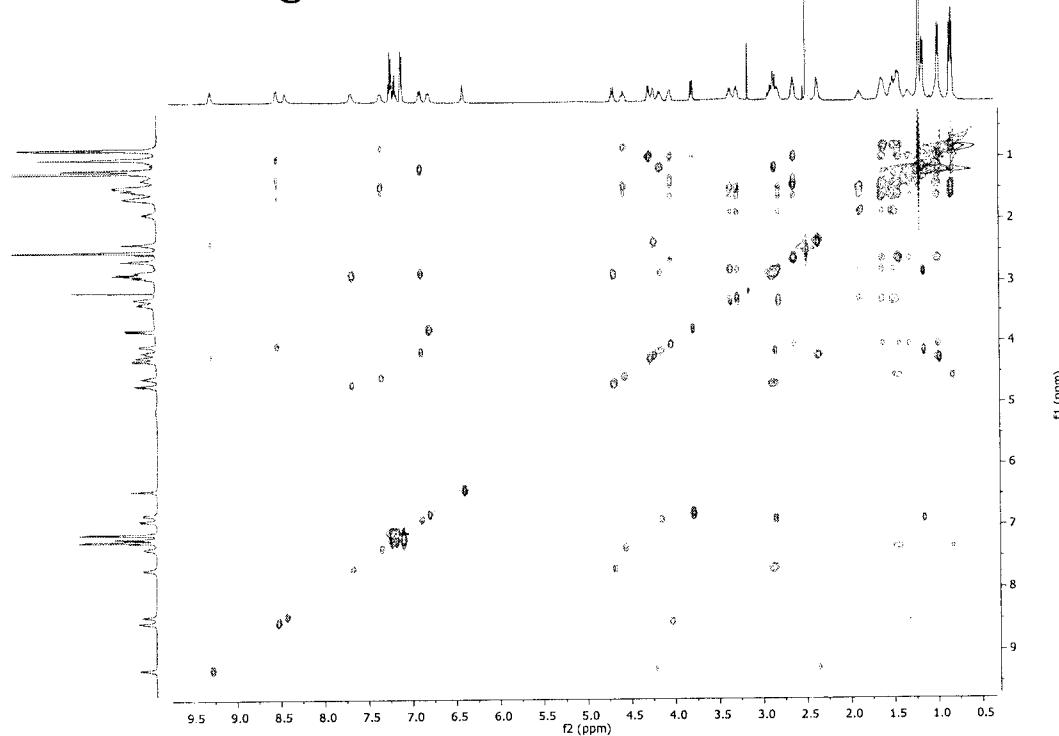


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**Compound No. 109**  
 $^1\text{H}$  NMR @ 25 °C

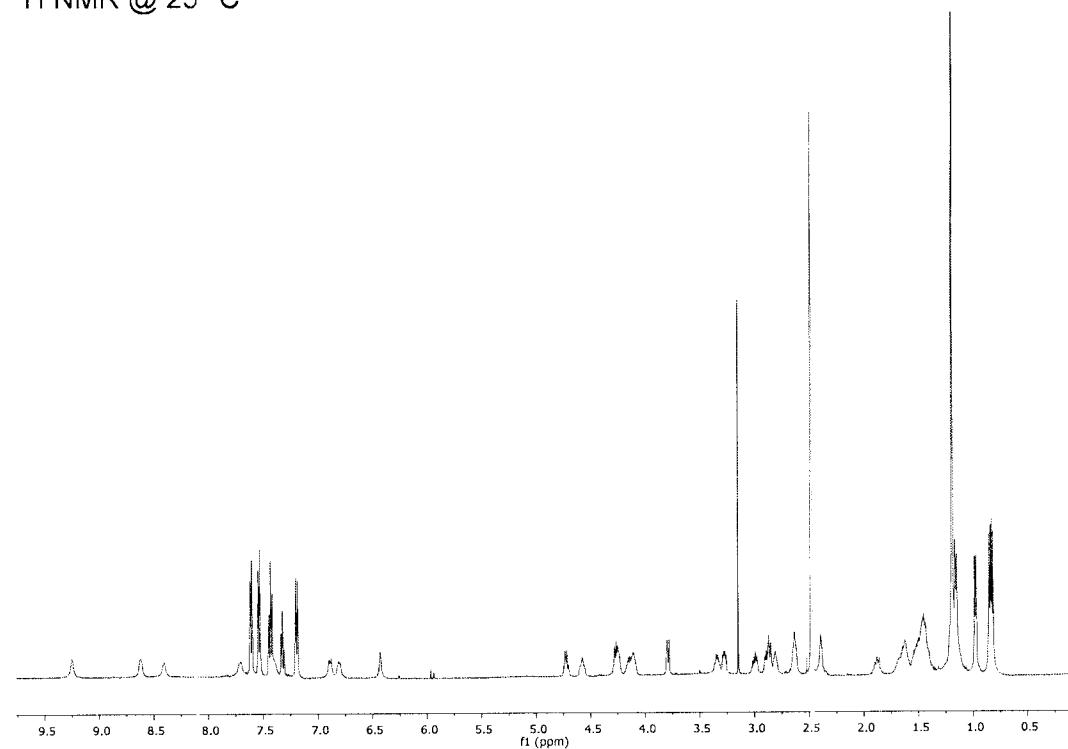


$^1\text{H}$ - $^1\text{H}$  TOCSY NMR @ 25 °C

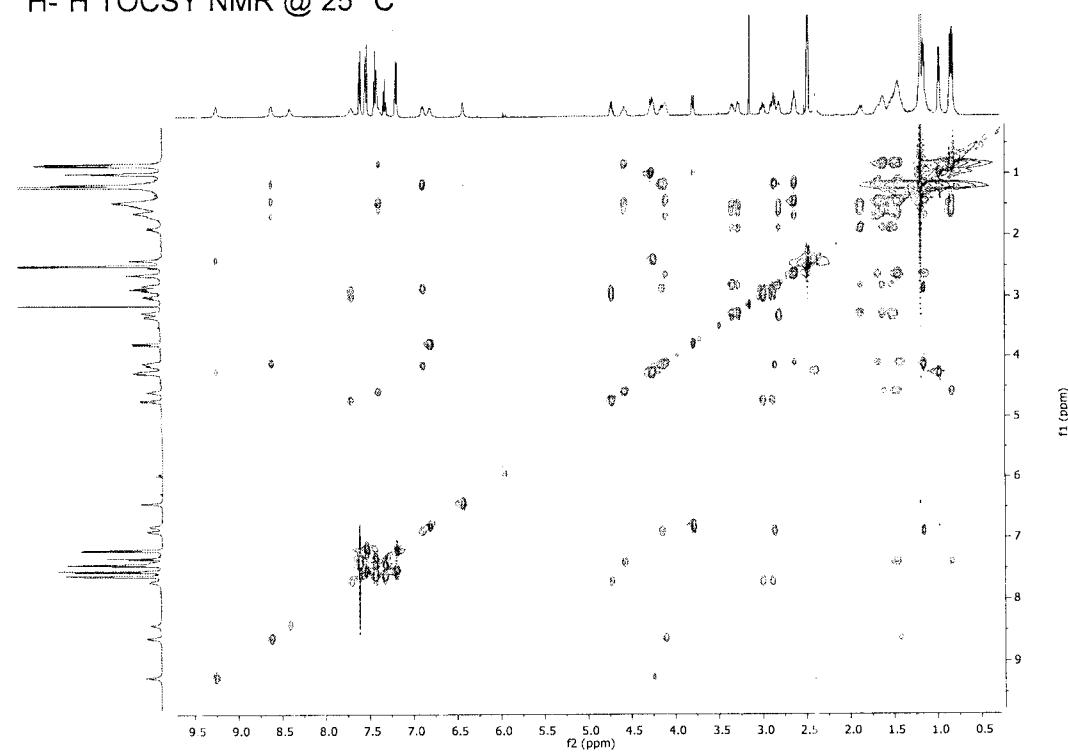


5

**Compound No. 110**  
 **$^1\text{H}$  NMR @ 25 °C**

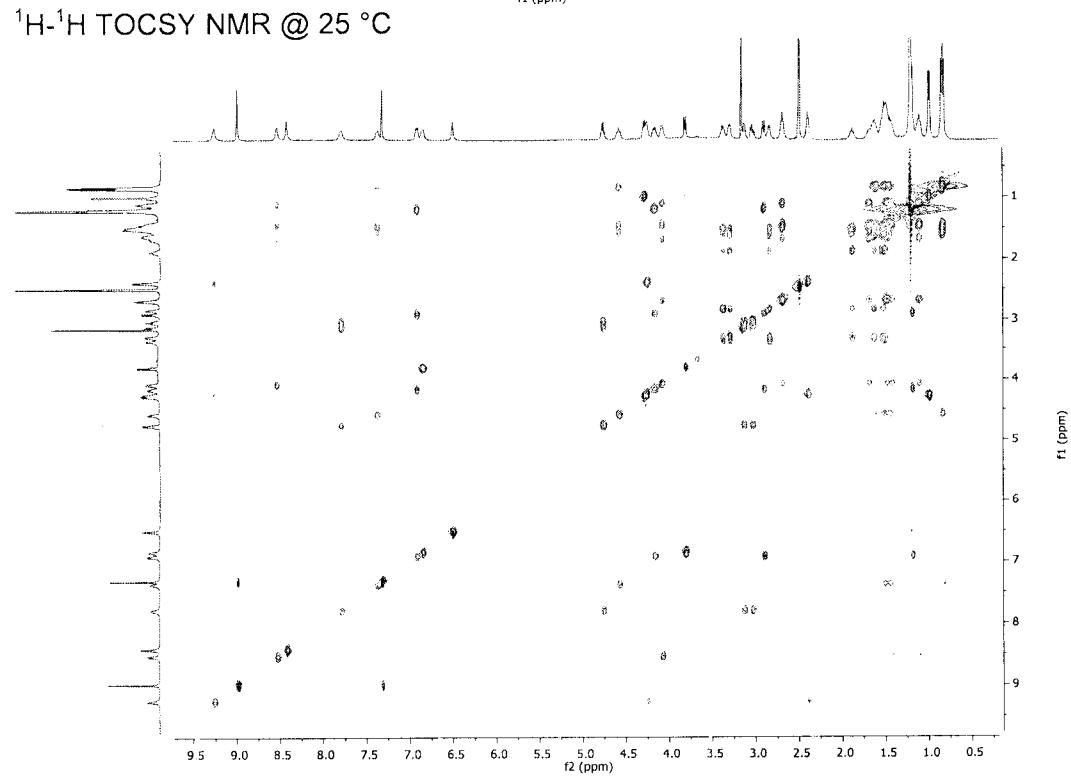
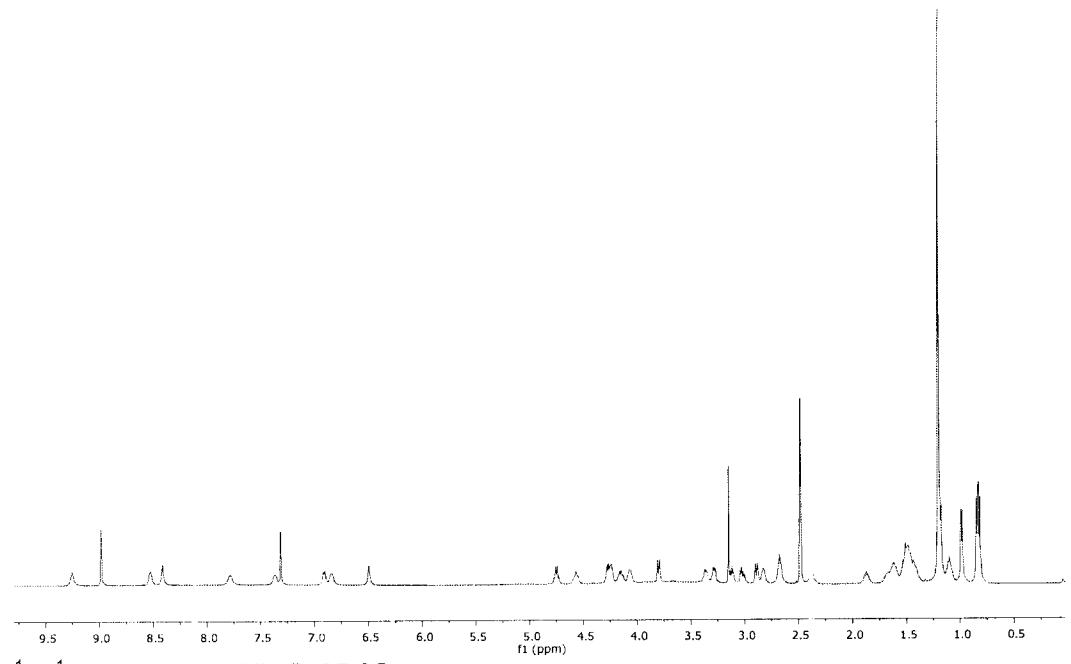


**$^1\text{H}$ - $^1\text{H}$  TOCSY NMR @ 25 °C**



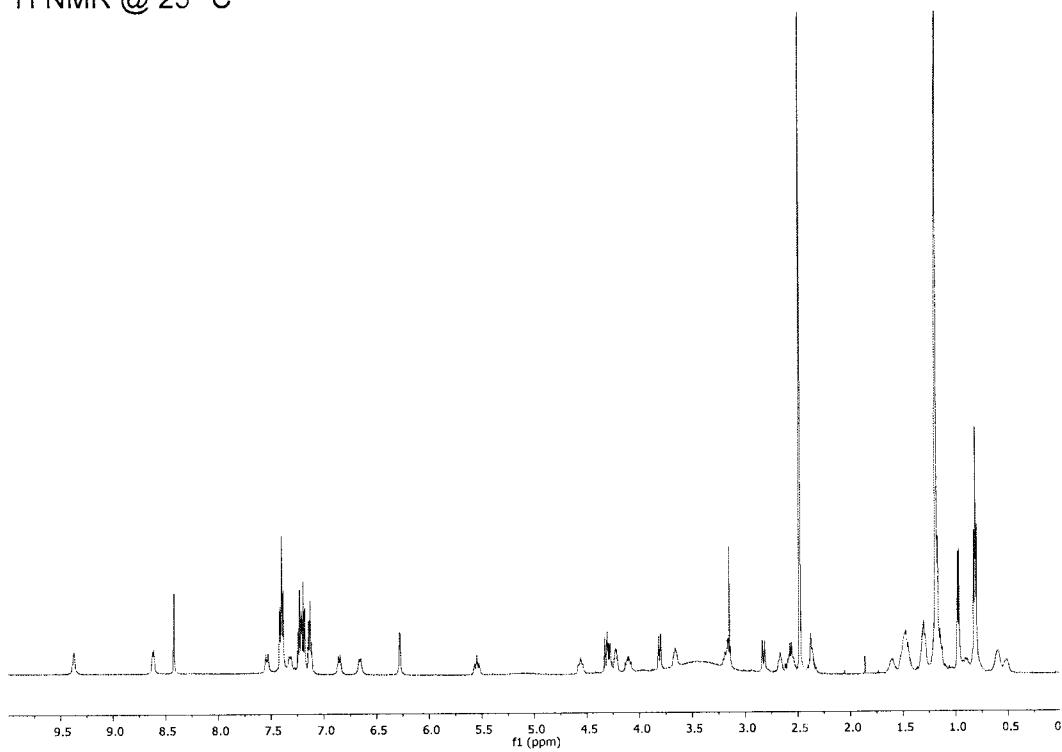
5

**Compound No. 111**  
 $^1\text{H}$  NMR @ 25 °C

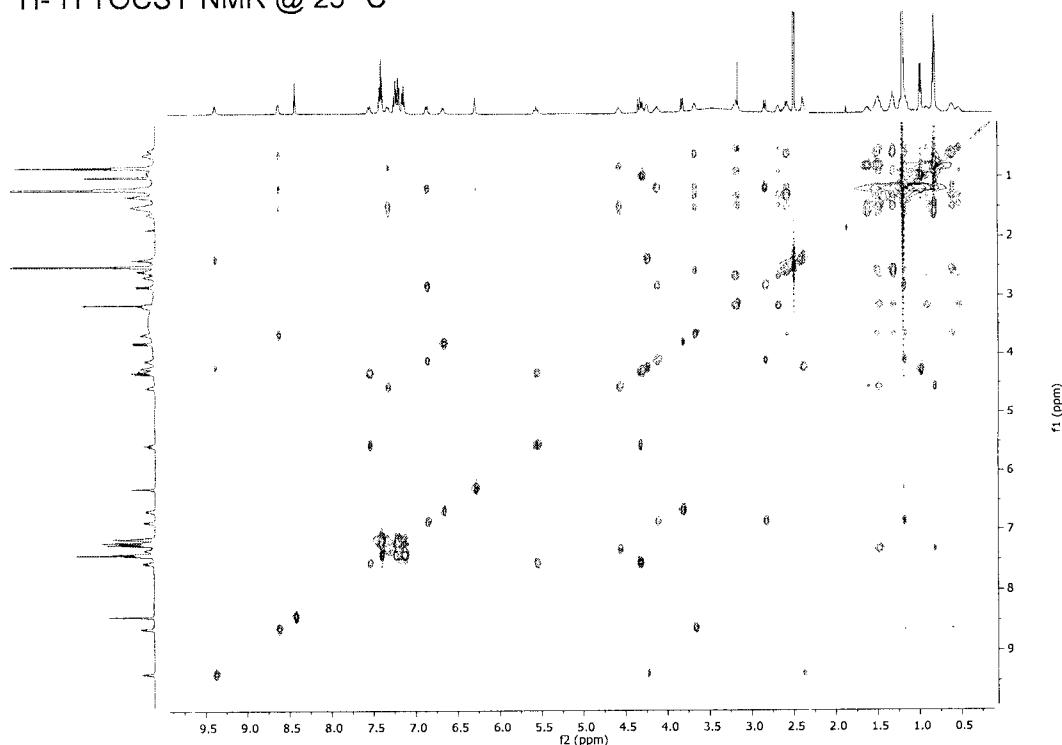


5

**Compound No. 112**  
 $^1\text{H}$  NMR @ 25 °C

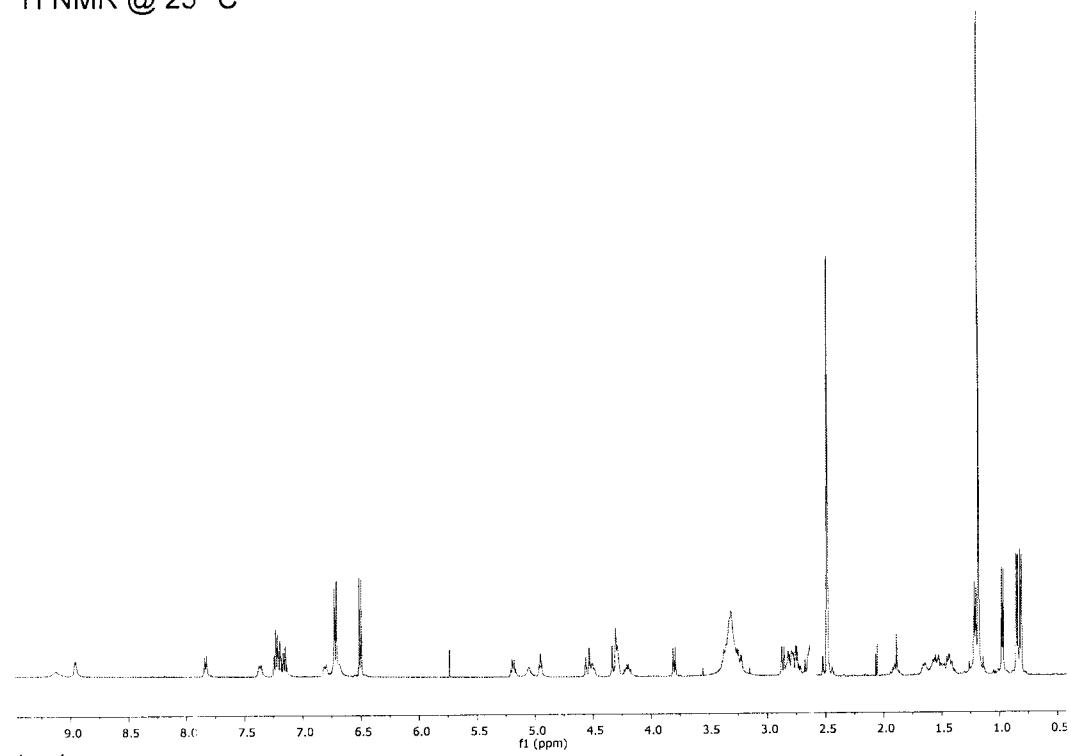


$^1\text{H}$ - $^1\text{H}$  TOCSY NMR @ 25 °C

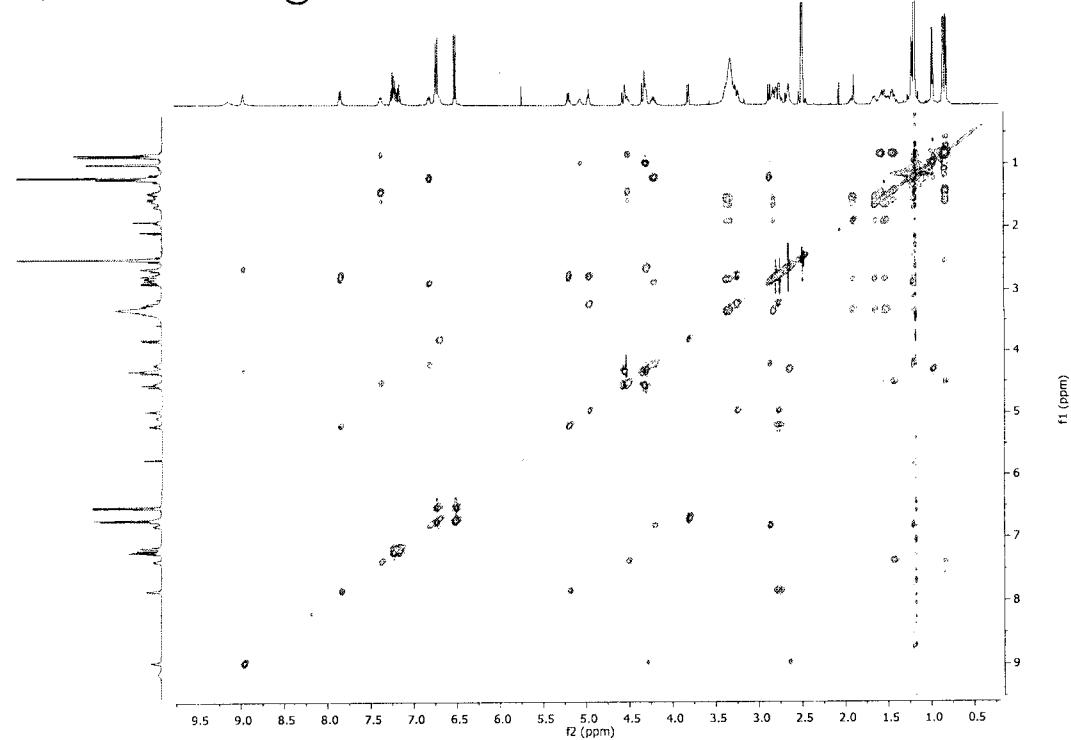


5

**Compound No. 123**  
 $^1\text{H}$  NMR @ 25 °C

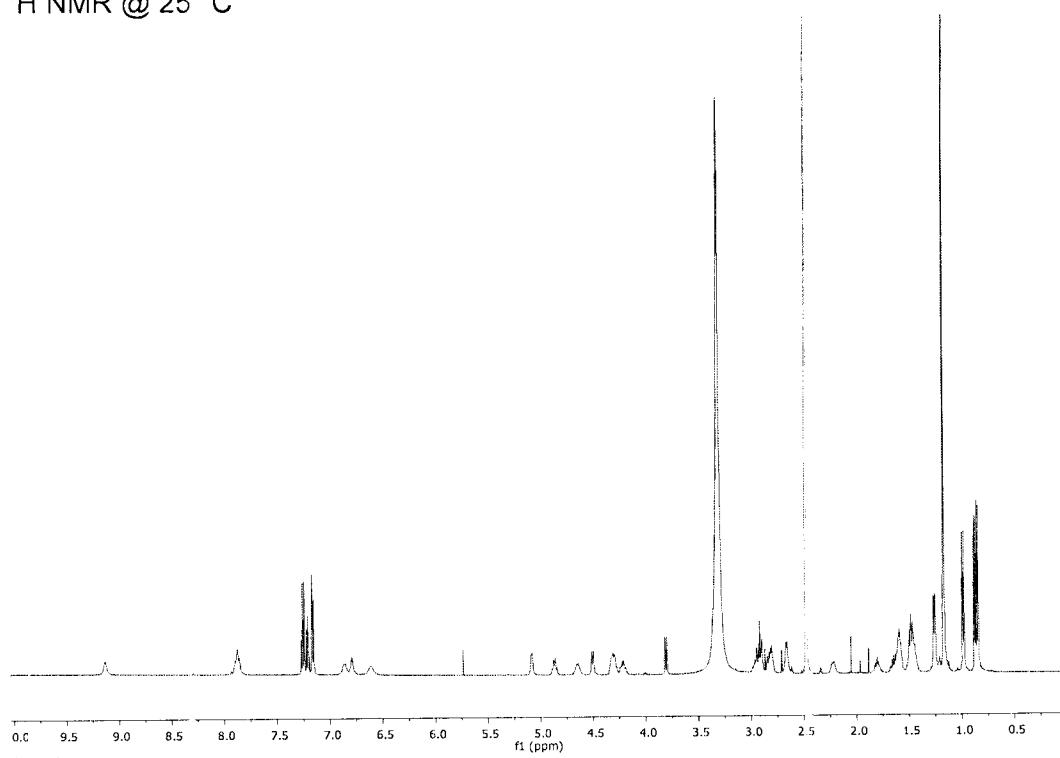


$^1\text{H}$ - $^1\text{H}$  TOCSY NMR @ 25 °C

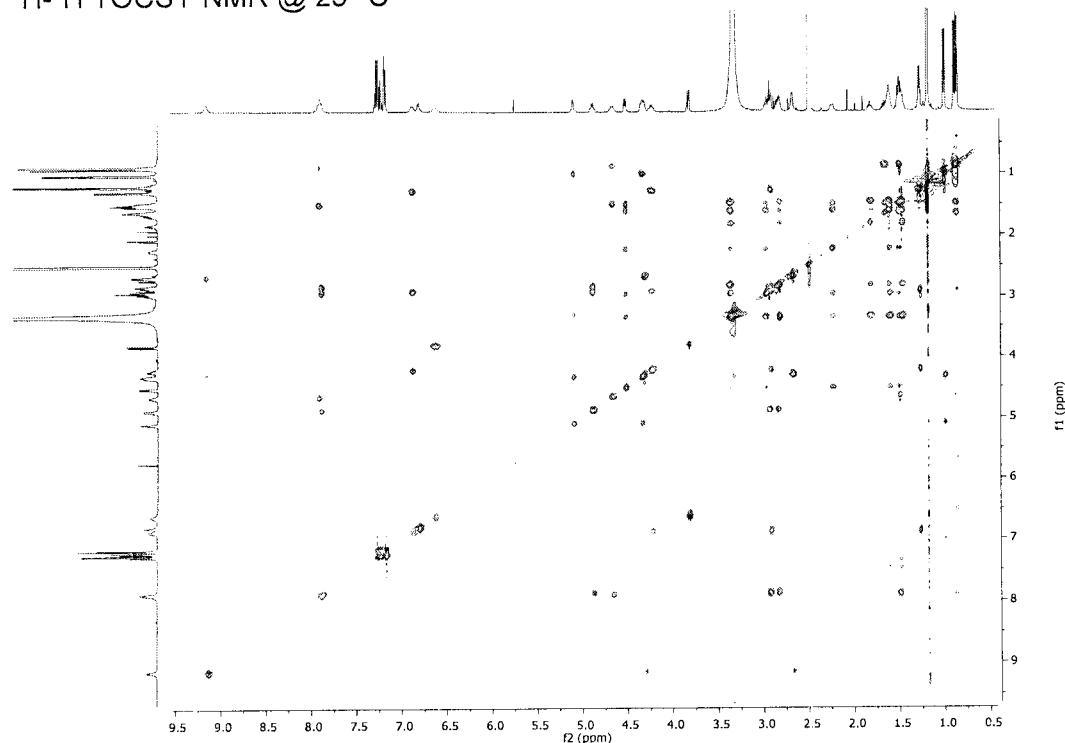


5

**Compound No. 126**  
 $^1\text{H}$  NMR @ 25 °C

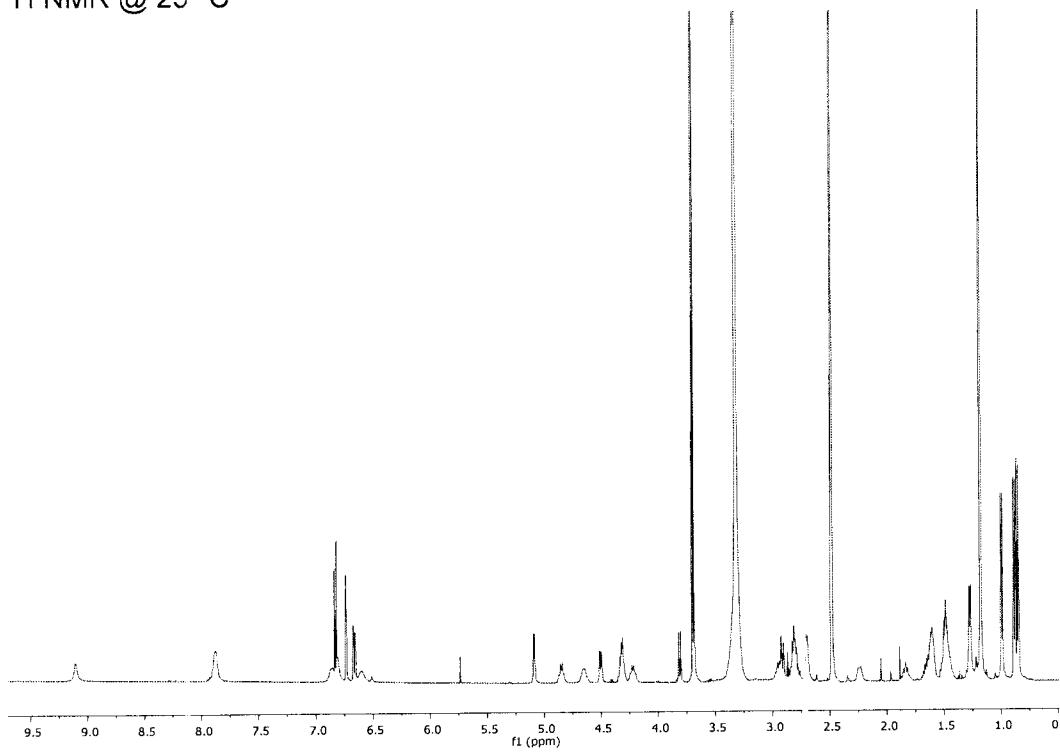


$^1\text{H}$ - $^1\text{H}$  TOCSY NMR @ 25 °C

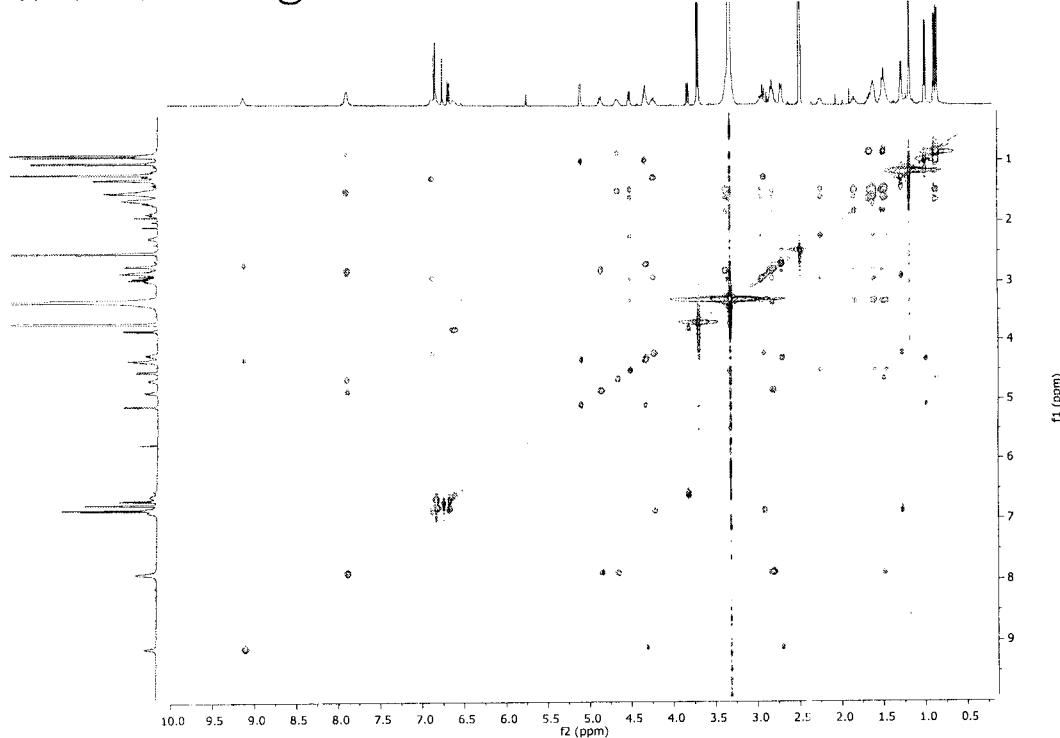


5

**Compound No. 127**  
 $^1\text{H}$  NMR @ 25 °C

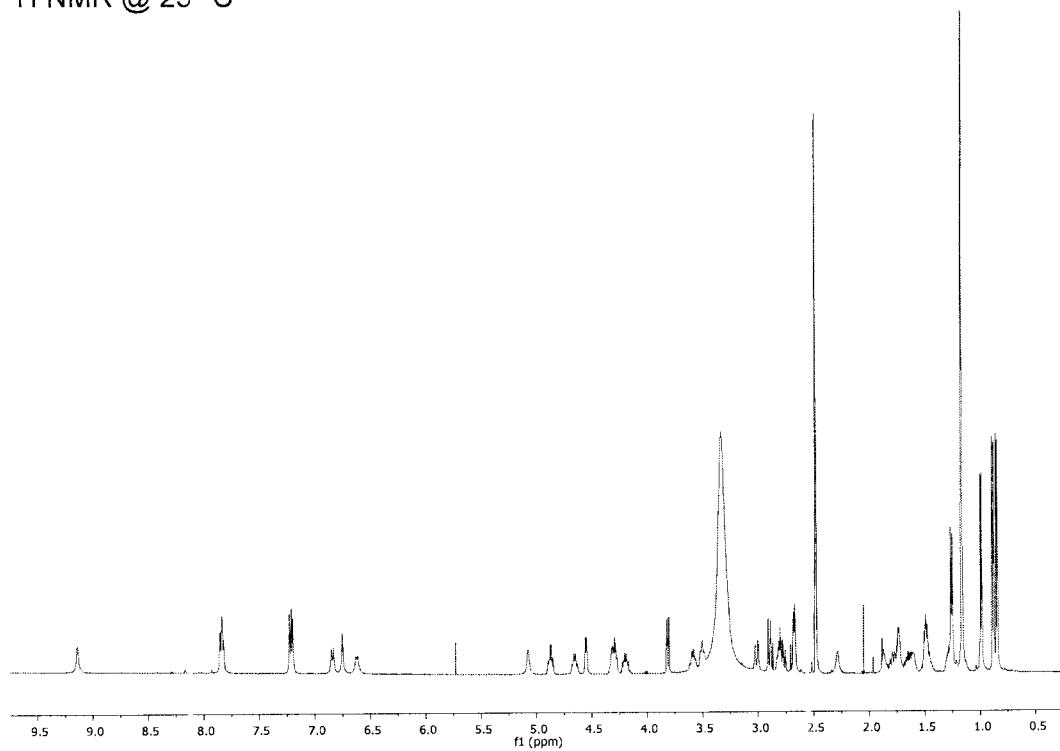


$^1\text{H}$ - $^1\text{H}$  TOCSY NMR @ 25 °C

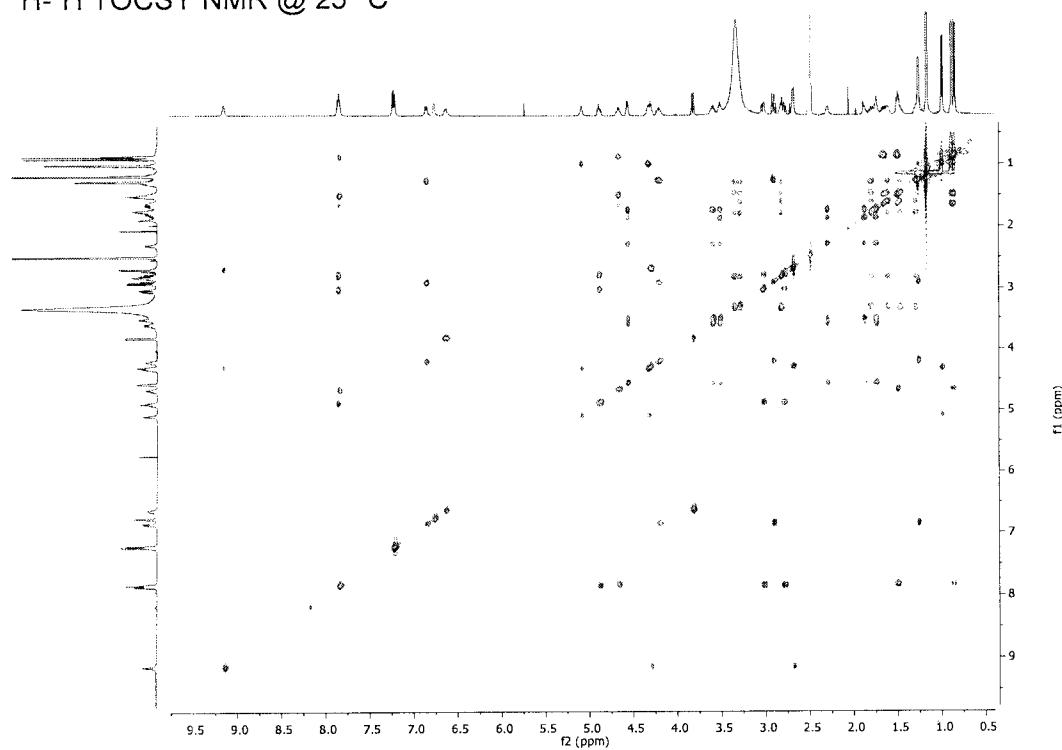


5

**Compound No. 128**  
 $^1\text{H}$  NMR @ 25 °C

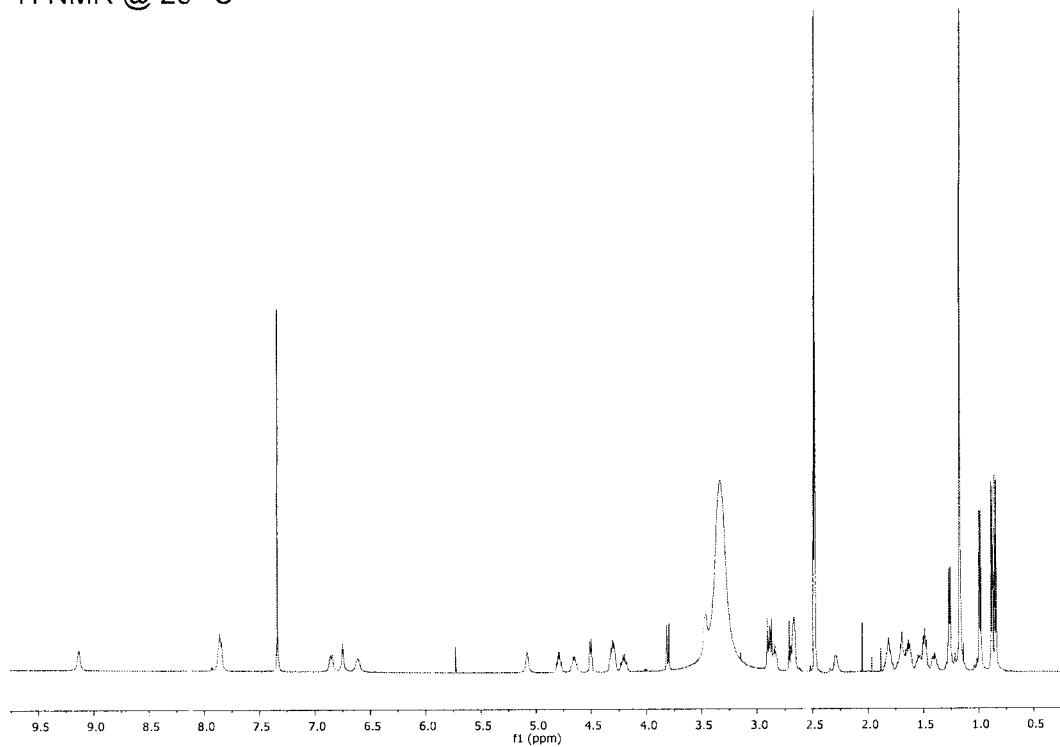


$^1\text{H}$ - $^1\text{H}$  TOCSY NMR @ 25 °C

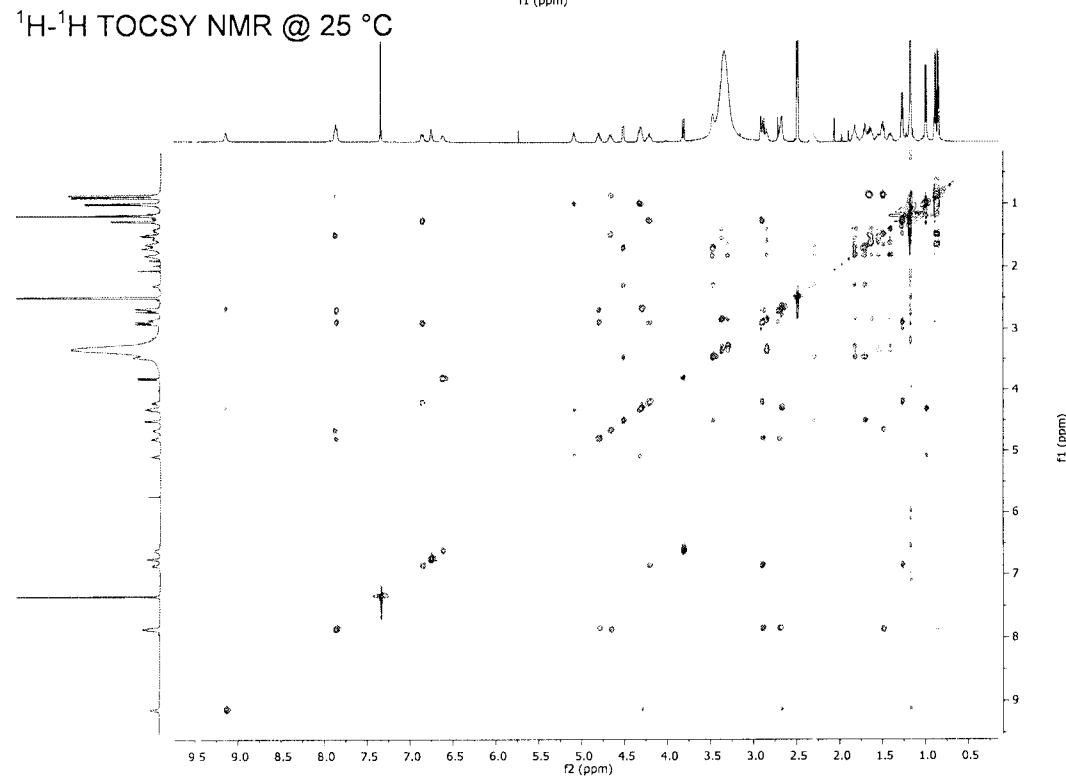


5

**Compound No. 129**  
 $^1\text{H}$  NMR @ 25 °C

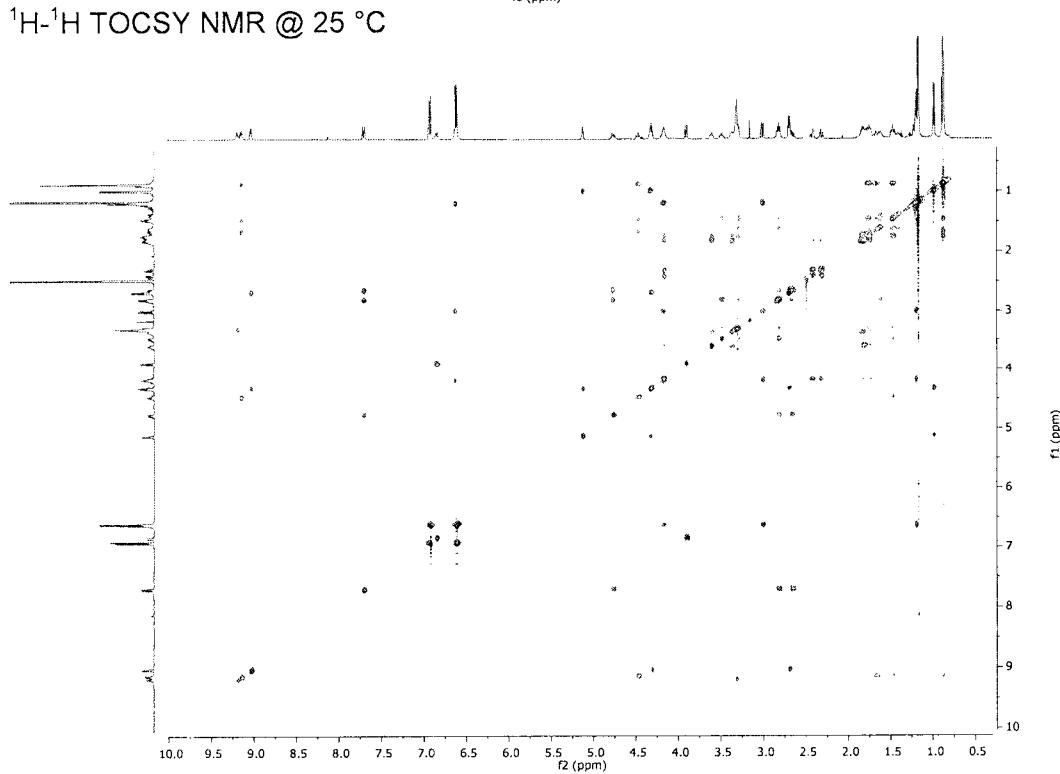
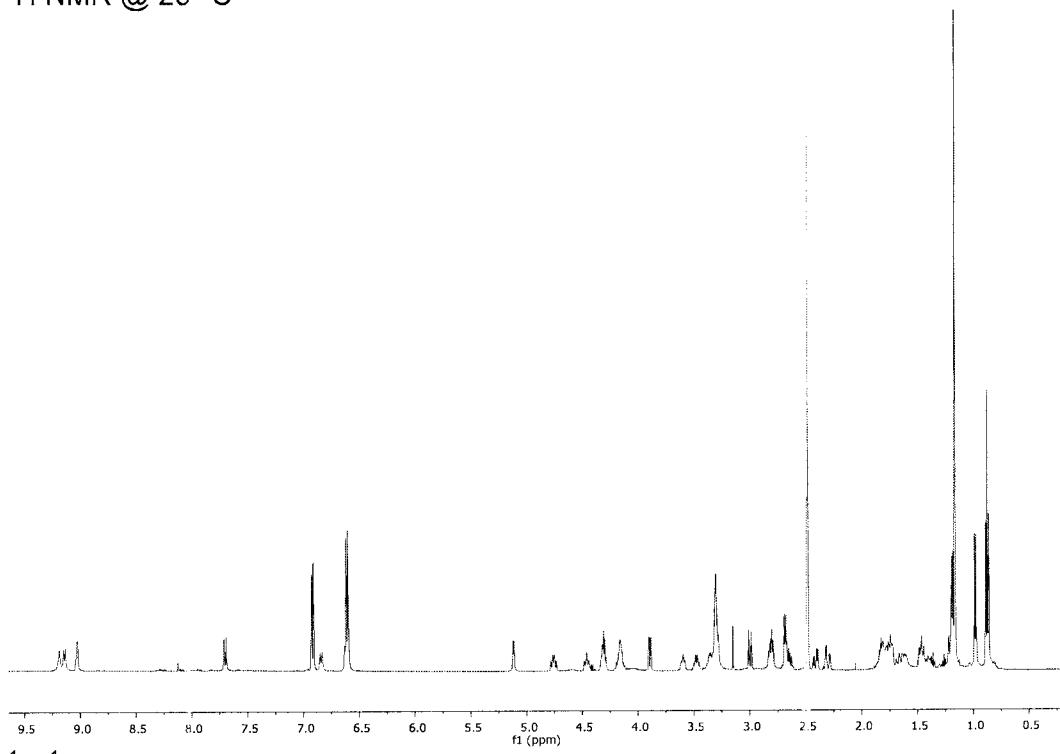


$^1\text{H}$ - $^1\text{H}$  TOCSY NMR @ 25 °C



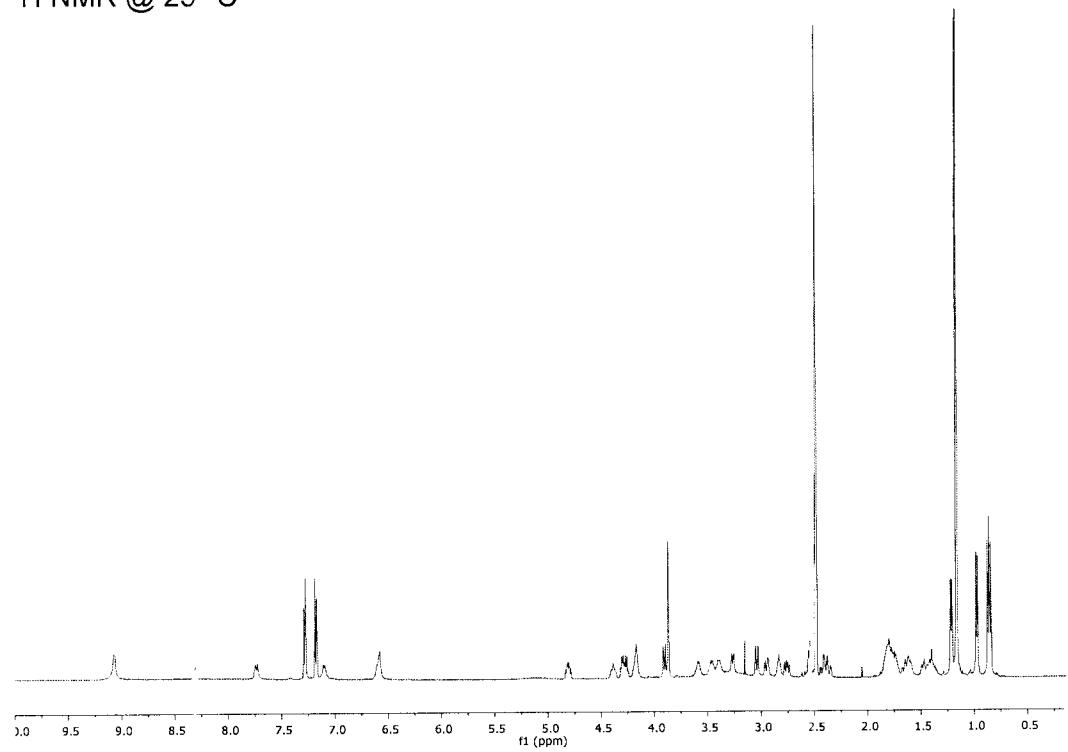
5

**Compound No. 229**  
 $^1\text{H}$  NMR @ 25 °C

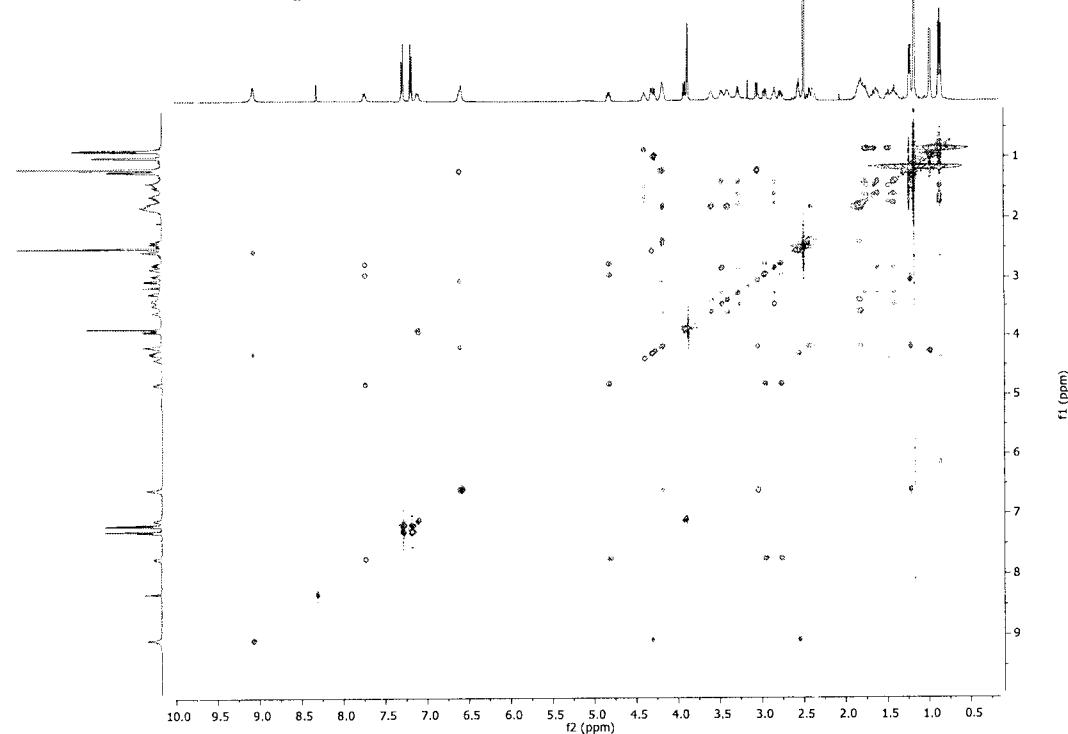


5

**Compound No. 230**  
 $^1\text{H}$  NMR @ 25 °C

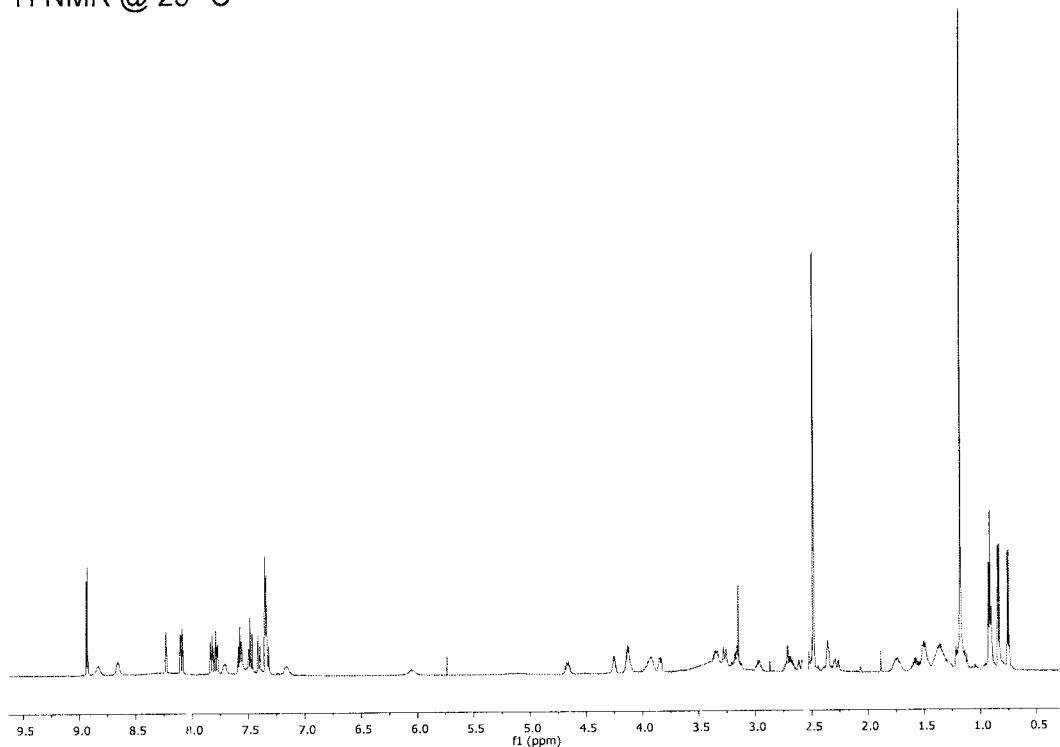


$^1\text{H}$ - $^1\text{H}$  TOCSY NMR @ 25 °C

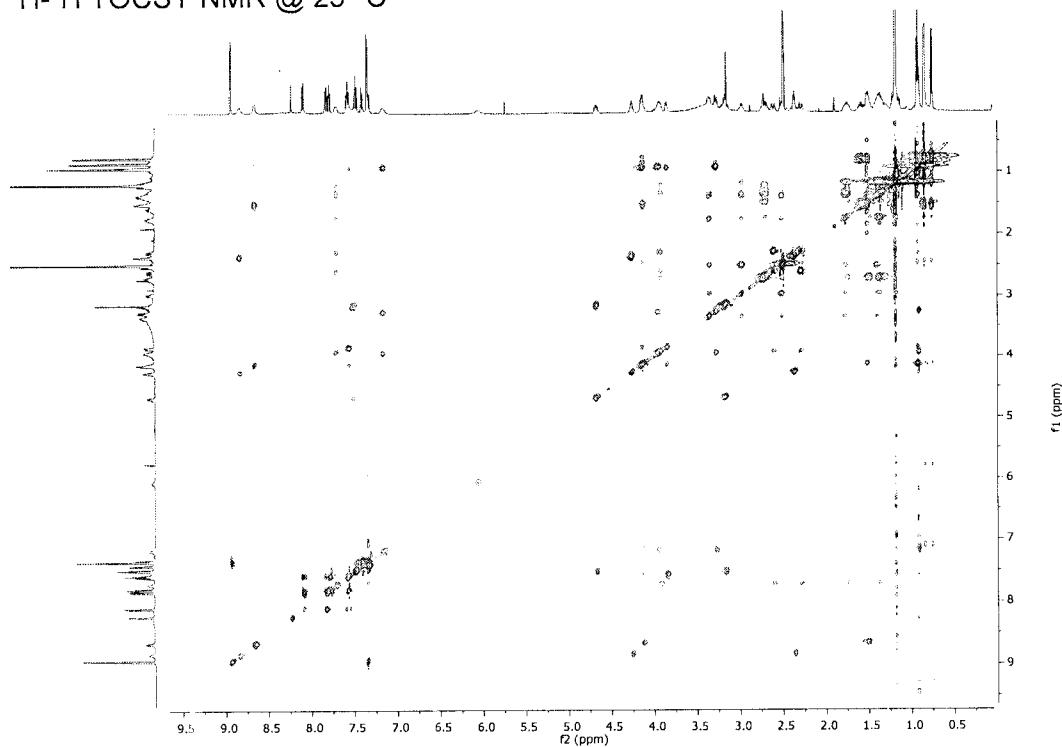


5

**Compound No. 266**  
 $^1\text{H}$  NMR @ 25 °C

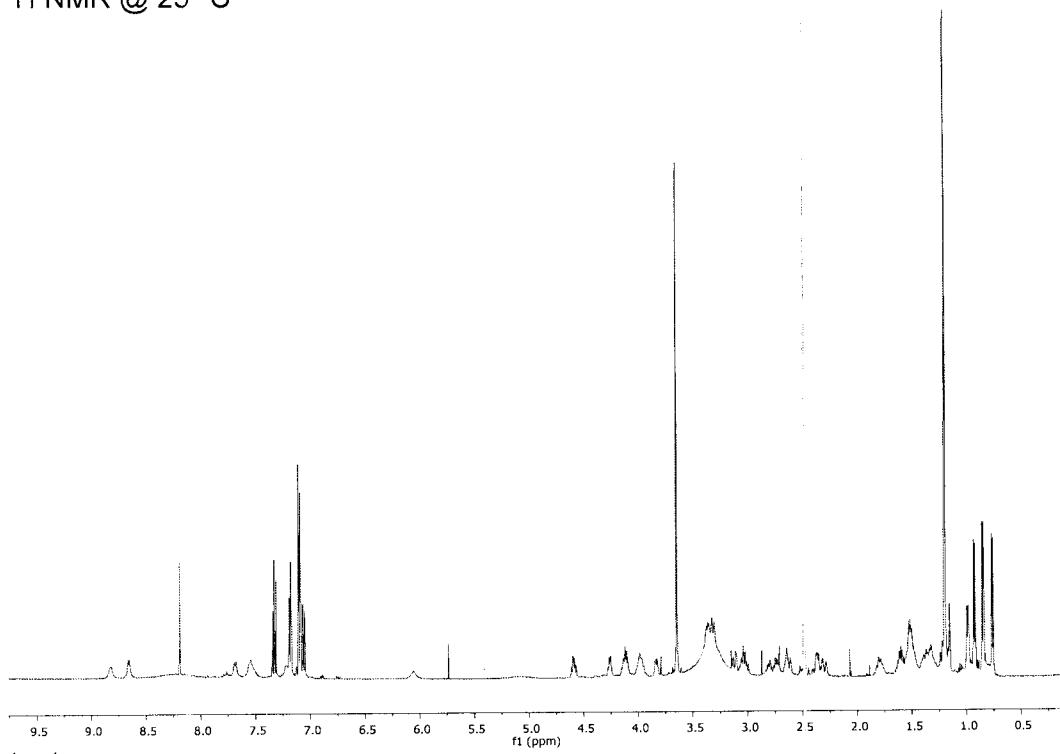


$^1\text{H}$ - $^1\text{H}$  TOCSY NMR @ 25 °C

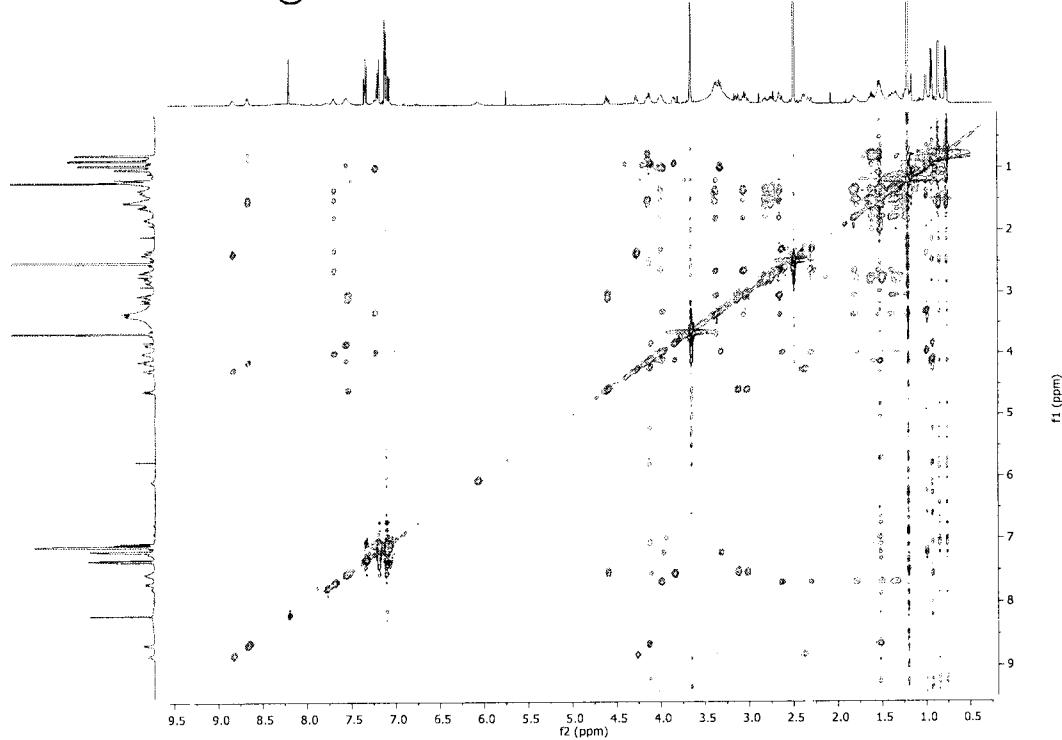


5

**Compound No. 269**  
 $^1\text{H}$  NMR @ 25 °C



$^1\text{H}$ - $^1\text{H}$  TOCSY NMR @ 25 °C



5

Plasma protein binding determination

The sequestration of nacellins by plasma proteins was relatively low. In rat plasma, free fraction (% unbound) ranged from an 9.5% to 76.9% (mean of 42.6%), whereas in mouse plasma, free fraction ranged from 15.7% to 79.9% (mean of 47.8%). Plasma protein binding for the small molecule positive control, propranolol, was in the normal range of ~21% (free fraction) in mouse plasma and ~15% (free fraction) in rat plasma. The compounds assessed include:

ET01792 (Compound No. 5)

ET00762 (an analog of Compound No. 5, in which the phenylalanine residue has been replaced by a tryptophan residue)

ET01813 (Compound No. 12)

ET01827 (Compound No. 15)

List of compounds	% unbound ( $C_{\text{buffer}}/C_{\text{plasma}}$ ) Mouse plasma				sd	%RSD	% recovery	Control buffer/Buffer at 0.1 $\mu\text{M}$	
	1	2	3	Average				Recovery	Cdonor/Creceiver
ET01792	64.8	52.9	67.9	61.9	7.9	13%	130%	108%	80%
ET00762	80.6	74.4	75.7	76.9	3.3	4%	150%	99%	79%
ET01813	24.7	22.2	18.8	21.9	3.0	14%	113%	128%	94%
ET01827	10.0	9.3	9.3	9.5	0.4	4%	103%	70%	86%
Propranolol	22.8	20.1	20.1	21.0	1.6	7%	93%		

List of compounds	% unbound ( $C_{\text{buffer}}/C_{\text{plasma}}$ ) Rat plasma				sd	%RSD	% recovery
	1	2	3	Average			
ET01792	82.9	77.3	79.5	79.9	2.8	4%	97%
ET00762	83.3	76.1	70.2	76.5	6.6	9%	94%
ET01813	15.8	20.1	21.7	19.2	3.1	16%	89%
ET01827	16.2	17.4	13.6	15.7	1.9	12%	143%
Propranolol	14.6	14.7	14.7	14.7	0.1	0%	79%

Aqueous solubility assay

As shown in the table below, the aqueous solubility of integrin alpha-4-beta-7-inhibiting nacellins was relatively high, with a mean solubility of 715 microM. The range of solubilities measured in triplicate for 15 distinct compounds was 183 microM to greater

than 1000 microM. Note that the maximum concentration evaluated was different for different test articles based on the presumed aqueous solubility. The compounds assessed include:

- UM0131995-05 (Compound No. 4)
- 5 UM0132366-01 (Compound No. 87)
- UM0132368-01 (Compound No. 88)
- UM0132369-01 (Compound No. 89)
- UM0132370-01 (Compound No. 52)
- UM0132371-01 (Compound No. 90)
- 10 UM0132374-01 (Compound No. 65)
- UM0132375-02 (Compound No. 42)
- UM0132376-01 (Compound No. 92)
  - UM0132377-01 (an analog of Compound No. 92, in which the lysine residue has been replaced by an ornithine residue)
- 15 UM0134839-01 (an analog of Compound No. 455, in which the phenylalanine and betaHomoLys residues have been replaced by a tyrosine residue)
  - UM0134690-01 (Compound No. 358)
  - UM0134830-01 (an analog of Compound No. 159, in which the tyrosine and alanine residues have been exchanged with respect to position within the sequence)
- 20 UM0134677-01 (Compound No. 158)
- UM0134700-01 (Compound No. 62)

List of compounds	Maximal solubility evaluated (μM)	Determined concentration (μM)			Mean	SD	RSD (%)
		Rep 1	Rep 2	Rep 3			
UM0131995-C5	1000	883.9	897.3	914.7	898.6	15.4	1.7
UM0132366-C1	500	474.2	477.4	451.9	467.8	13.9	3.0
UM0132368-C1	1000	926.3	917.9	934.8	926.3	8.4	0.9
UM0132369-C1	1000	874.4	885.9	887.3	882.5	7.1	0.8
UM0132370-C1	200	187.0	182.4	180.2	183.2	3.5	1.9
UM0132371-C1	1000	786.7	837.3	879.6	834.5	46.6	5.6
UM0132374-C1	200	179.4	184.0	185.9	183.1	3.3	1.8
UM0132375-C2	1000	966.6	960.0	936.8	954.5	15.6	1.6
UM0132376-C1	1000	990.7	958.6	939.5	962.9	25.9	2.7
UM0132377-C1	200	225.7	218.9	211.2	218.6	7.3	3.3
UM0134839-C1	1000	1038.0	1000.1	1004.0	1014.0	20.8	2.1
UM0134690-C1	1000	957.3	950.5	920.8	942.9	19.4	2.1
UM0134830-C1	1000	1012.0	1016.4	971.7	1000.0	24.7	2.5
UM0134677-C1	200	225.4	230.6	217.8	224.6	6.4	2.9
UM0134700-C1	1000	1044.8	988.2	950.6	994.5	47.4	4.8

#### Cytochrome P450 inhibition assay

The inhibitory activity of various nacellins against four isoforms of cytochrome P450 was assessed using human liver microsomes. The four isoforms evaluated were: CYP2D5,

5 CYP3A4, CYP2C9, and CYP1A2. As shown below, for the seven nacellins evaluated in this experiment, 85% of the results of the assays showed an  $IC_{50} > 15$  microM (above the limit of detection). However,  $IC_{50}$ s of <10 microM, and in one case, <1 microM, were recorded for a few compounds. These compounds were subjected to a structural analysis so as to understand the functional groups contributing to this mild CYP450-inhibiting 10 activity. The compounds assessed include:

ET01792 (Compound No. 5)

ET00762-02 (an analog of Compound No. 5, in which the phenylalanine residue has been replaced by a tryptophan residue)

ET01813 (Compound No. 12)

15 ET00328-01 (an analog of Compound No. 4, in which the tyrosine, leucine, aspartic acid and threonine residues have been replaced by threonine, methyl leucine, valine and phenylalanine residues)

ET01827 (Compound No. 15)

ET01842-01 (Compound No. 413)

List of compounds	IC50 (mM)			
	CYP2D6	CYP3A4	CYP2C9	CYP1A2
ET01792-01	>15	> 15	>15	>15
ET00762-02	>15	>15	>15	>15
ET01813-01	>15	>15	>15	>15
ET00328-01	>15	9.7	>15	>15
ET01827-01	>15	>15	>15	>15
ET01838-01	11	3.7	>15	>15
ET01842-01	>15	0.84	>15	>15
Quinidine	0.17	---	---	---
Ketoconazole	---	0.023	---	---
Miconazole	---	---	0.32	---
α-naphthoflavone	---	---	---	0.05

In vivo T lymphocyte trafficking analyses

The ability of several integrin alpha-4-beta-7-inhibiting nacellins to attenuate the trafficking of integrin alpha-4-beta-7-expressing T lymphocytes was demonstrated in *in vivo* pharmacodynamics studies in DSS-treated mice. As shown in Figure 6, this study was conducted in mice exposed for 5 days to dextran sulfate in their drinking water. On day 6, single doses of test articles were administered and, 5-6 hours later, peripheral blood, mesenteric lymph nodes and other tissues were collected and assessed.

As shown, the murine anti-alpha-4-beta-7 monoclonal antibody (DATK32; 25 mg/kg) substantially reduces homing of integrin a4b7+ T lymphocytes to the mesenteric lymph nodes ("MLN"), but did not affect the counts of CD11a+ T lymphocytes in the peripheral blood. As for the nacellins, at 100 mg/kg, the high oral bioavailability nacellin, ET1792 (Compound No. 5), but not the low oral bioavailability nacellin, ET2154 (Compound No. 105), evoked a significant reduction of homing to the MLN following oral dosing. When the dose of ET2154 was increased to 200 mg/kg, it evoked a significant and robust attenuation of homing to the MLN. These results demonstrate the importance of oral bioavailability (and the concomitant systemic exposure) to attenuate trafficking of T lymphocytes via an integrin alpha-4-beta-7 – MAdCAM facilitated extravasation event from high endothelial venules in gut-associated lymphoid tissues. Under no circumstances did test nacellins produce a significant change in the content of CD11a+ T cells in peripheral blood (similarly, no changes in the CD34 and CD45 T lymphocyte content in peripheral blood was recorded for any nacellin; data not shown).

In vivo pharmacokinetic assessments in rodents

We assessed the pharmacokinetic profile of several integrin alpha-4-beta-7-inhibiting nacellins following oral doses, and in some cases, intravenous doses for naïve mice.

As shown in the Figure 7 below, one and two oral doses of ET1792 (Compound No. 5) at 5 48 mg/kg to naïve mice produced significant absorption and systemic exposure. The exposure (AUC-0-tlast) following the first dose was 1,475 h\*ng/ml, whereas following the second dose, the exposure was 2,188 h\*ng/ml. The maximum plasma concentration recorded after the first dose was nearly 1,600 ng/ml.

Referring to Figure 8, in a second study of orally administered ET1792 (at 40 mg/kg), a 10 similar profile was recorded, with an exposure (AUC0-tlast) of 589 h\*ng/ml. The biphasic absorption and delayed Tmax is likely indicative of an initial transcellular perfusion of enterocytes followed by a more prolonged transcellular perfusion.

In a subsequent study of ET1813 (Compound No. 12), single doses were administered via 15 oral gavage (40 mg/kg) and intravenous injection (5 mg/kg). The absorption of this compound was less than that of ET1792, with a calculated oral bioavailability of ~1%, despite a significant terminal half-life of nearly 2 hours.

PK parameter summary for *i.v.* dosing.

Parameter	Parameter estimate for each animal				
	R01	R02	R03 <sup>a</sup>	Mean (n=2)	SD
$C_0$ (ng/mL)	6330	7590	9980	6960	n/a
Apparent $t_{1/2}$ (h)	1.45	2.79	0.225	2.12	n/a
$AUC_{0-\infty}$ (h*ng/mL)	741	711	1290	726	n/a
$CL_s$ (mL/h/kg)	6740	7030	3880	6885	n/a
$MRT_{0-\infty}$ (h)	0.253	0.136	0.166	0.195	n/a
$V_{ss}$ (mL/kg)	1700	957	645	1329	n/a

PK parameter summary for *p.o.* dosing

Parameter	Parameter estimate for each animal				
	R04	R05	R06	Mean	SD
$t_{max}$ (h)	0.0833	0.0833	0.0833	0.0833	0.000
$C_{max}$ (ng/mL)	387	28.0	22.9	146	209
Apparent $t_{1/2}$ (h)	4.47	0.638	0.466	1.86	2.26
$AUC_{0-\infty}$ (h*ng/mL)	166	3.77	3.74	57.8	93.7
$MRT_{0-\infty}$ (h)	1.48	0.449	0.409	0.779	0.607
F (%)	2.86	0.0649	0.0644	0.996	1.61

Another set of pharmacokinetic studies were performed on ET2451 (Compound No. 340) in naïve mice. In this study, compound exposure in plasma, colon and liver were measured following both single oral doses (40 mg/kg) and single intravenous doses (5 mg/kg). As illustrated in the Figure 9 and in the tables below, ET2451 was found to have an oral bioavailability of approximately 11% in plasma, and closer to 100% in colon. Also noteworthy is the difference in elimination half-life: in plasma the half-life was found to be ~30 minutes following oral dosing, whereas the half-life in colon was greater than 21 hours. We also assessed bioavailability in the liver (figure below), which was similar to that measured in the plasma (~8%) but half-life was significantly longer at ~8 hours following oral dosing. It is clear from this study and others that the main route of elimination of ET2451 and other nacellins is through hepatobiliary clearance.

Summary of Plasma PK Parameters for ET02451

Parameter	Unit	Estimate	
		i.v.	p.o.
$C_0$	ng/mL	1408	n/a
$t_{max}$	h	0.083	0.0833
$C_{max}$	ng/mL	1326	4638
Apparent $t_{1/2}$	h	2.00	0.537
$AUC_{0-tlast}$	h*ng/mL	778	686
$AUC_{0-inf}$	h*ng/mL	778	690
CL	mL/kg/h	6426	n/a
$MRT_{0-inf}$	h	0.698	0.689
$V_{ss}$	mL/kg	4487	n/a
F	%	100	11.0

n/a denotes not applicable.

Summary of Colon PK Parameters for ET02451

Parameter	Unit	Estimate	
		i.v.	p.o.
$t_{max}$	h	2.00	2.00
$C_{max}$	ng/mL	8210	49115
Apparent $t_{1/2}$	h	3.40	21.5
$AUC_{0-tlast}$	h*ng/mL	17109	130746
$AUC_{0-inf}$	h*ng/mL	17140	145327
$MRT_{0-inf}$	h	3.43	4.59
AUC Ratio (Colon/Plasma)		22.0	211

Summary of Liver PK Parameters for ET02451

Parameter	Unit	Estimate	
		i.v.	p.o.
$t_{max}$	h	0.0833	2.00
$C_{max}$	ng/mL	16613	4792
Apparent $t_{1/2}$	h	9.60	7.94
$AUC_{0-tlast}$	h*ng/mL	8289	6024
$AUC_{0-inf}$	h*ng/mL	8460	6054
$MRT_{0-inf}$	h	2.00	2.11
AUC Ratio (Liver/Plasma)		10.9	8.78

$C_0$	concentration extrapolated to time zero following an i.v. dose
$t_{max}$	time at which maximum concentration is observed
$C_{max}$	maximum observed concentration
Apparent $t_{1/2}$	apparent terminal half-life
$AUC_{0-tlast}$	area under the concentration vs time curve from time 0 to the time of the last measurable concentration
$AUC_{0-inf}$	area under the concentration vs time curve from time 0 to infinity
CL	systemic clearance
$MRT_{0-inf}$	mean residence time from time zero to the time of the last measurable concentration
$V_{ss}$	steady-state volume of distribution
F	oral bioavailability = (Dose * AUC <sup>o</sup> )/(Dose <sup>o</sup> * AUC <sup>o</sup> ) * 100

#### 8-day efficacy study in DSS model (therapeutic)

We assessed the efficacy of two distinct nacellins in the DSS experimental model of ulcerative colitis: ET2451 (Compound No. 340) and ET2452 (Compound No. 341). As shown above, ET2451 demonstrates significant absorption from the gut and systemic exposure following oral dosing, whereas ET2452 is a low oral bioavailability entity. Both test compounds were administered b.i.d. to mice over the course of three days - following an initial 5-days exposure to DSS (2-3%) in their drinking water. The efficacy and

pharmacodynamics effect of the nacellins was compared to the mouse anti-integrin alpha-4-beta-7 mAb, DATK32. ET2452 was administered both orally and, to another group, via i.p. injection. The objective of this experimental design was to demonstrate that, although it may not be efficacious when administered orally, it produced substantial efficacy with 5 i.p. dosing.

Disease activity index ("DAI") score was assessed individually based on the severity of three specific symptoms: blood in stool, stool consistency and general health assessment (posture, fur and dehydration), on Day 5 and 8. As shown in Figure 10, DAI score increased significantly from Day 5 to Day 8 in DSS+vehicle control group. Oral 10 administration of ET02451-01 and i.p. administration of DATK32 led to a reduction of 15 % and 19 % respectively, but only the ET02451-01-evoked effect proved statistically significant. Oral administration of ET02452-01 did not have any beneficial effect on DAI. In contrast, intraperitoneal ET02452-01 treatment led to a significant reduction of DAI 15 score on Day 8, by 46 %, in comparison to DSS+vehicle control group ( $p < 0.05$ ). In fact, ET02452-01 i.p. treatment prevented the increased severity of UC symptoms observed in the control vehicle-treated group, from day 5 to day 8.

Ulcerative colitis is associated with inflammatory changes of the intestinal tract with reduction of the length of the mice colon (raw data in Annex IV). DSS+vehicle control group showed a mean colon length of  $4.3 \pm 0.3$  cm and a lesion length of  $1.7 \pm 0.3$  cm 20 corresponding to a lesion/colon length of 40% (Figure 11). Treatments did not have any effect on colon length (Figure 11). However, ET02451-01 significantly reduced the lesion length of this group ( $p < 0.05$ ), leading to a significant improvement of the lesion/colon length ratio, by reaching a value of lesion/colon length of 12% ( $p < 0.05$ ). Oral and i.p. administration of ET02452-01 led to a reduction of lesion length by 53 % and 20 % 25 respectively, in comparison to the control vehicle treated-group, but these reductions were not statistically significant (Figure 11B). Beside, DATK32, administered on Day 5 by i.p. route, led to a reduction, not statistically significant, of 45% in comparison to the control vehicle treated-group.

Whether treatments would have been compared in separate experiments, a Student t-test 30 would have been used for statistical comparison of each test article treated-group with the control vehicle treated-group. In that case, by a separated Student t-test, a statistical

significant effect by oral ET02452-01 and i.p. DATK32 would have been obtained on lesion length and lesion/colon length.

The final score of colon inflammation was calculated by multiplying macroscopic score x lesion/colon length ratio for each mouse. Referring to Figure 12, the measurement of this 5 parameter shows a significant reduction of lesion inflammation by the oral administration of ET02451-01 (by 77 %) and ET02452-01 (by 76 %) in comparison to the control vehicle-treated group. Intraperitoneal administration of ET02452-01 and DATK32 led to a reduction of 39 % and 53 % respectively, but this effect was not statistically significant.

#### Cell populations

10 There are no statistical differences between the percentage of CD3+CD4+CD11a+ T cell populations in vehicle mice and compound-treated ones in the three tissues tested (see Figure 13). In all tissues, the population of CD34+ cells is the same in vehicle- and – nacellin-treated mice. However, a significant increase ( $p<0.01$ ) of CD34+ cells is observed in the mice receiving the anti-  $\alpha 4\beta 7$  antibody (DATK32). For the CD3+CD4+ $\alpha 4\beta 7$ + cell 15 population, no difference was observed in blood neither in peripheral lymph nodes. However, a significant decrease of this population was observed in mesenteric lymph nodes in mice receiving ET02452 (Compound No. 341) i.p. or ET02451 (Compound No. 340) p.o. Intraperitoneal administration of DATK32 also significantly decreased the percentage of CD3+CD4+ $\alpha 4\beta 7$ + T lymphocytes.

20 It is of note that over 600 macrocycles were made that exhibited less activity than those summarized in Tables 1A, 1B and 1C. A selection of the macrocycles with less or little activity are summarized in Tables 2A, 2B and 2C.

25 Although preferred embodiments of the invention have been described herein, it will be understood by those skilled in the art that variations may be made thereto without departing from the spirit of the invention or the scope of the appended claims. All documents disclosed herein, including those in the following reference list, are incorporated by reference.

TABLE 1A  
Compound No.

	R <sup>1</sup>	R <sup>2</sup>	R <sup>3</sup>	R <sup>4</sup>	R <sup>5</sup>
1	H	H	CH <sub>2</sub> -S-Ph	H	C(O)-NH- <i>tert</i> -Butyl
2	H	H	CH <sub>2</sub> -S-Ph	H	C(O)-NH- <i>tert</i> -Butyl
3	H	H	CH <sub>2</sub> -S-Ph	H	C(O)-NH- <i>tert</i> -Butyl
4	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
5	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
6	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
7	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
8	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
9	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
10	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
11	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
12	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
13	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
14	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
15	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
16	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
17	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
18	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
19	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
20	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
21	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
22	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
23	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
24	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
25	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
26	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
27	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
28	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
29	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
30					

TABLE 1A  
Compound

No.	R <sup>5</sup>	R <sup>4</sup>	R <sup>3</sup>	R <sup>2</sup>	R <sup>1</sup>
31	C(O)-NH- <i>tert</i> -Butyl	H	CH <sub>3</sub>	H	H
32	C(O)-NH- <i>tert</i> -Butyl	H	CH <sub>3</sub>	H	H
33	C(O)-NH- <i>tert</i> -Butyl	H	CH <sub>3</sub>	H	H
34	C(O)-NH- <i>tert</i> -Butyl	H	CH <sub>3</sub>	H	H
35	C(O)-NH- <i>tert</i> -Butyl	H	CH <sub>3</sub>	H	H
36	C(O)-NH- <i>tert</i> -Butyl	H	CH <sub>3</sub>	H	H
37	C(O)-NH- <i>tert</i> -Butyl	H	CH <sub>3</sub>	H	H
38	C(O)-NH- <i>tert</i> -Butyl	H	CH <sub>3</sub>	H	H
39	C(O)-NH- <i>tert</i> -Butyl	H	CH <sub>3</sub>	H	H
40	C(O)-NH- <i>tert</i> -Butyl	H	CH <sub>3</sub>	H	H
41	C(O)-NH- <i>tert</i> -Butyl	H	CH <sub>3</sub>	H	H
42	C(O)-NH- <i>tert</i> -Butyl	H	CH <sub>3</sub>	H	H
43	C(O)-NH- <i>tert</i> -Butyl	H	CH <sub>3</sub>	H	H
44	C(O)-NH- <i>tert</i> -Butyl	H	CH <sub>3</sub>	H	H
45	C(O)-NH- <i>tert</i> -Butyl	H	CH <sub>3</sub>	H	H
46	C(O)-NH- <i>tert</i> -Butyl	H	CH <sub>3</sub>	H	H
47	C(O)-NH- <i>tert</i> -Butyl	H	CH <sub>3</sub>	H	H
48	C(O)-NH- <i>tert</i> -Butyl	H	CH <sub>3</sub>	H	H
49	C(O)-NH- <i>tert</i> -Butyl	H	CH <sub>3</sub>	H	H
50	C(O)-NH- <i>tert</i> -Butyl	H	CH <sub>3</sub>	H	H
51	C(O)-NH- <i>tert</i> -Butyl	H	CH <sub>3</sub>	H	H
52	C(O)-NH- <i>tert</i> -Butyl	H	CH <sub>3</sub>	H	H
53	C(O)-NH- <i>tert</i> -Butyl	H	CH <sub>3</sub>	H	H
54	C(O)-NH- <i>tert</i> -Butyl	H	CH <sub>3</sub>	H	H
55	C(O)-NH- <i>tert</i> -Butyl	H	CH <sub>3</sub>	H	H
56	C(O)-NH- <i>tert</i> -Butyl	H	CH <sub>3</sub>	H	H
57	C(O)-NH- <i>tert</i> -Butyl	H	CH <sub>3</sub>	H	H
58	C(O)-NH- <i>tert</i> -Butyl	H	CH <sub>3</sub>	H	H
59	C(O)-NH- <i>tert</i> -Butyl	H	CH <sub>3</sub>	H	H
60	C(O)-NH- <i>tert</i> -Butyl	H	CH <sub>3</sub>	H	H

TABLE 1A  
Compound

No.	R <sup>1</sup>	R <sup>2</sup>	R <sup>3</sup>	R <sup>4</sup>	R <sup>5</sup>
61	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
62	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
63	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
64	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
65	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
66	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
67	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
68	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
69	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
70	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
71	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
72	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
73	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
74	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
75	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
76	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
77	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
78	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
79	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
80	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
81	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
82	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
83	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
84	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
85	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
86	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
87	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
88	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
89	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
90	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl

TABLE 1A

Compound No.	R <sup>1</sup>	R <sup>2</sup>	R <sup>3</sup>	R <sup>4</sup>	R <sup>5</sup>
91	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
92	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
93	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
94	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
95	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
96	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
97	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
98	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
99	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
100	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
101	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
102	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
103	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
104	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
105	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
106	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
107	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
108	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
109	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
110	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
111	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
112	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
113	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
114	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
115	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
116	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
117	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
118	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
119	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
120	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl

TABLE 1A  
Compound

No.	$R^1$	$R^2$	$R^3$	$R^4$	$R^5$
121	H	H	$CH_3$	$CH_3$	$C(O)-NH-tert-Butyl$
122	H	H	$CH_3$	$CH_3$	$C(O)-NH-tert-Butyl$
123	H	H	$CH_3$	$CH_3$	$C(O)-NH-tert-Butyl$
124	H	$CH_3$	H	$CH_3$	$C(O)-NH-tert-Butyl$
125	H	H	$CH_3$	$CH_3$	$C(O)-NH-tert-Butyl$
126	H	H	$CH_3$	$CH_3$	$C(O)-NH-tert-Butyl$
127	H	H	$CH_3$	$CH_3$	$C(O)-NH-tert-Butyl$
128	H	H	$CH_3$	$CH_3$	$C(O)-NH-tert-Butyl$
129	H	H	$CH_3$	$CH_3$	$C(O)-NH-tert-Butyl$
130	H	H	$CH_3$	$CH_3$	$C(O)-NH-tert-Butyl$
131	H	H	$CH_3$	$CH_3$	$C(O)-NH-tert-Butyl$
132	H	H	$CH_3$	$CH_3$	$C(O)-NH-tert-Butyl$
133	H	H	$CH_3$	$CH_3$	$C(O)-NH-tert-Butyl$
134	H	H	$CH_3$	$CH_3$	$C(O)-NH-tert-Butyl$
135	H	H	$CH_3$	$CH_3$	$C(O)-NH-tert-Butyl$
136	H	H	$CH_3$	$CH_3$	$C(O)-NH-tert-Butyl$
137	H	H	$CH_3$	$CH_3$	$C(O)-NH-tert-Butyl$
138	H	H	$CH_3$	$CH_3$	$C(O)-NH-tert-Butyl$
139	H	H	$CH_3$	$CH_3$	$C(O)-NH-tert-Butyl$
140	H	H	$CH_3$	$CH_3$	$C(O)-NH-tert-Butyl$
141	H	H	$CH_3$	H	$C(O)-NH-tert-Butyl$
142	H	$CH_3$	H	H	
143	H	$CH_3$	H	H	$C(O)-NH-tert-Butyl$
144	H	$CH_3$	H	H	$C(O)-NH-tert-Butyl$
145	H	$CH_3$	H	H	$C(O)-NH-tert-Butyl$
146	H	$CH_3$	H	H	$C(O)-NH-tert-Butyl$
147	H	$CH_3$	H	H	$C(O)-NH-tert-Butyl$
148	H	$CH_3$	H	H	$C(O)-NH-tert-Butyl$
149	H	$CH_3$	H	H	$C(O)-NH-tert-Butyl$
150					

TABLE 1A  
Compound

No.	R <sup>1</sup>	R <sup>2</sup>	R <sup>3</sup>	R <sup>4</sup>	R <sup>5</sup>
151	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
152	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
153	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
154	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
155	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
156	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
157	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
158	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
159	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
160	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
161	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
162	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
163	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
164	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
165	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
166	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
167	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
168	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
169	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
170	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
171	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
172	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
173	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
174	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
175	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
176	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
177	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
178	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
179	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
180	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl

TABLE 1A  
Compound  
No.

	$R^1$	$R^2$	$R^3$	$R^4$	$R^5$
181	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
182	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
183	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
184	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
185	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
186	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
187	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
188	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
189	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
190	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
191	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
192	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
193	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
194	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
195	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
196	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
197	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
198	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
199	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
200	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
201	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
202	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
203	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
204	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
205	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
206	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
207	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
208	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
209	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
210			CH <sub>3</sub>		

TABLE 1A

Compound No.	R <sup>1</sup>	R <sup>2</sup>	R <sup>3</sup>	R <sup>4</sup>	R <sup>5</sup>
211	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
212	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
213	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
214	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
215	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
216	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
217	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
218	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
219	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
220	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
221	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
222	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
223	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
224	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
225	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
226	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
227	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
228	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
229	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
230	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
231	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
232	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
233	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
234	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
235	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
236	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
237	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
238	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
239	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
240	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl

TABLE 1A  
Compound

No.	R <sup>1</sup>	R <sup>2</sup>	R <sup>3</sup>	R <sup>4</sup>	R <sup>5</sup>
241	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
242	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
243	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
244	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
245	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
246	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
247	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
248	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
249	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
250	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
251	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
252	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
253	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
254	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
255	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
256	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
257	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
258	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
259	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
260	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
261	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
262	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
263	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
264	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
265	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
266	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
267	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
268	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
269	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
270	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl

TABLE 1A  
Compound

No.	R <sup>1</sup>	R <sup>2</sup>	R <sup>3</sup>	R <sup>4</sup>	R <sup>5</sup>
271	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
272	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
273	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
274	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
275	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
276	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
277	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
278	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
279	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
280	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
281	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
282	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
283	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
284	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
285	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
286	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
287	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
288	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
289	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
290	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
291	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
292	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
293	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
294	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
295	PRO-			H	C(O)-NH- <i>tert</i> -Butyl
296	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
297	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
298	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
299	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
300					

TABLE 1A  
Compound

No.	R <sup>1</sup>	R <sup>2</sup>	R <sup>3</sup>	R <sup>4</sup>	R <sup>5</sup>
301	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
302	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
303	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
304	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
305	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
306	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
307	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
308	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
309	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
310	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
311	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
312	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
313	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
314	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
315	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
316	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
317	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
318	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
319	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
320	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
321	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
322	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
323	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
324	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
325	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
326	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
327	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
328	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
329	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
330	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl

TABLE 1A  
Compound

No.	$R^1$	$R^2$	$R^3$	$R^4$	$R^5$
331	H	CH <sub>3</sub>	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
332	H	CH <sub>3</sub>	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
333	H	CH <sub>3</sub>	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
334	H	CH <sub>3</sub>	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
335	H	CH <sub>3</sub>	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
336	H	CH <sub>3</sub>	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
337	H	CH <sub>3</sub>	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
338	H	CH <sub>3</sub>	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
339	H	CH <sub>3</sub>	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
340	H	CH <sub>3</sub>	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
341	H	CH <sub>3</sub>	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
342	H	CH <sub>3</sub>	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
343	H	CH <sub>3</sub>	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
344	H	CH <sub>3</sub>	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
345	H	CH <sub>3</sub>	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
346	H	CH <sub>3</sub>	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
347	H	CH <sub>3</sub>	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
348	H	CH <sub>3</sub>	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
349	H	CH <sub>3</sub>	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
350	H	CH <sub>3</sub>	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
351	H	CH <sub>3</sub>	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
352	H	CH <sub>3</sub>	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
353	H	CH <sub>3</sub>	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
354	H	CH <sub>3</sub>	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
355	H	CH <sub>3</sub>	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
356	H	CH <sub>3</sub>	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
357	H	CH <sub>3</sub>	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
358	H	CH <sub>3</sub>	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
359	H	CH <sub>3</sub>	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
360	H	CH <sub>3</sub>	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl

TABLE 1A  
Compound

No.	R <sup>1</sup>	R <sup>2</sup>	R <sup>3</sup>	R <sup>4</sup>	R <sup>5</sup>
361	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
362	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
363	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
364	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
365	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
366	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
367	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
368	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
369	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
370	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
371	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
372	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
373	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
374	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
375	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
376	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
377	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
378	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
379	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
380	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
381	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
382	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
383	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
384	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
385	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
386	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
387	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
388	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
389	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
390	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl

TABLE 1A  
Compound

No.	$R^1$	$R^2$	$R^3$	$R^4$	$R^5$
391	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
392	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
393	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
394	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
395	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
396	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
397	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl

Compound No.	Seq. ID. No.	R <sup>6</sup>	R <sup>7</sup>	X <sup>1</sup>	X <sup>2</sup>	X <sup>3</sup>
1	1	PRO	PRO	H	V	V
2	2	PRO	PRO	H	D	D
3	3	PRO	PRO	H	D	D
4	3	PRO	PRO	H	D	D
5	4	PRO	PRO	H	D	D
6	5	PRO	PRO	H	D	D
7	6	PRO	PRO	H	D	D
8	7	PRO	PRO	H	D	D
9	8	PRO	PRO	H	D	D
10	9	PRO	PRO	H	D	D
11	10	PRO	PRO	H	D	D
12	11	PRO	PRO	H	D	D
13	12	PRO	PRO	H	D	D
14	13	PRO	PRO	H	D	D
15	14	PRO	PRO	H	D	D
16	15	PRO	PRO	H	D	D
17	16	[4S]-fluoro-Pro	[4S]-fluoro-Pro]	H	W	W
18	17	PRO	PRO	H	Bip	Tyr(OPh)
19	18	PRO	PRO	H	Tyr(2-tolyl diaryl ether)	Thr(OBn)
20	19	PRO	PRO	H	Tyr(4-CF <sub>3</sub> diaryl ether)	Thr(OBn)
21	20	PRO	PRO	H	Tyr(4-methoxy diaryl ether)	Thr(OBn)
22	21	PRO	PRO	H	Tyr(4-fluoro diaryl ether)	Thr(OBn)
23	22	PRO	PRO	H	Tyr(2-methoxy diaryl ether)	Thr(OBn)
24	23	PRO	PRO	H	Tyr(3-methoxy diaryl ether)	Thr(OBn)
25	24	PRO	PRO	H	Tyr(3-fluoro diaryl ether)	Thr(OBn)
26	25	PRO	PRO	H	Tyr(3,4-difluoro diaryl ether)	Thr(OBn)
27	26	PRO	PRO	H	Tyr(3-methyl diaryl ether)	Thr(OBn)
28	27	PRO	PRO	H	Tyr(3,4-dimethyl diaryl ether)	Thr(OBn)
29	28	PRO	PRO	H	Tyr(4-CO <sub>2</sub> Me diaryl ether)	Thr(OBn)
30	29	PRO	PRO	H	Tyr(3-CO <sub>2</sub> Me diaryl ether)	Thr(OBn)
31	30	PRO	PRO	H	Tyr(4-CO <sub>2</sub> H diaryl ether)	Thr(OMe)
32	31	HYP	HYP	H	F	
33	32	PRO	PRO	H	meta'(Opr)	
34	33	PRO	PRO	H	Orn(benzamide)	
35	34	PRO	PRO	H	Orn(acetamide)	
36	35	PRO	PRO	H	Orn(methanesulfonamide)	
37	36	PRO	PRO	H	Orn(ethylcarbamate)	
38	37	PRO	PRO	H	Orn(pentyl amide)	
39	38	PRO	PRO	H	R	
40	39	PRO	PRO	H	F	

TABLE 1B

Compound No.	Seq. ID. No.	R <sup>6</sup>	R <sup>7</sup>	R <sup>8</sup>	X <sup>1</sup>	X <sup>2</sup>	X <sup>3</sup>	X <sup>4</sup>
41	40	PRO	PRO	H	D	D	Thr(OEt)	
42	41	PRO	PRO	H	D	D		
43	42	PRO	PRO	H	D	D		
44	43	HYP	HYP	H	D	D		
45	44	[(4R)-Fluoro-Pro]	[(4R)-fluoro-Pro]	H	D	D		
46	45	[(4R)-Fluoro-Pro]	[(4R)-fluoro-Pro]	H	D	D		
47	46	[(4R)-Fluoro-Pro]	[(4R)-fluoro-Pro]	H	D	D		
48	47	[(4R)-Fluoro-Pro]	[(4R)-fluoro-Pro]	H	D	D		
49	48	[(4S)-Fluoro-Pro]	[(4S)-fluoro-Pro]	H	D	D		
50	49	PRO	PRO	H	D	D		
51	50	PRO	PRO	H	D	D		
52	51	PRO	PRO	H	D	D		
53	52	PRO	PRO	H	D	D		
54	53	PRO	PRO	H	D	D		
55	54	PRO	PRO	H	D	D		
56	55	PRO	PRO	H	D	D		
57	56	PRO	PRO	H	D	D		
58	56	PRO	PRO	H	D	D		
59	57	PRO	PRO	H	D	D		
60	58	PRO	PRO	H	D	D		
61	59	PRO	PRO	H	D	D		
62	60	PRO	PRO	H	D	D		
63	61	PRO	PRO	H	D	D		
64	62	PRO	PRO	H	D	D		
65	63	PRO	PRO	H	D	D		
66	64	PRO	PRO	H	D	D		
67	65	PRO	PRO	H	D	D		
68	66	PRO	PRO	H	D	D		
69	42	PRO	PRO	H	D	D		
70	67	PRO	PRO	H	D	D		
71	68	PRO	PRO	H	D	D		
72	69	PRO	PRO	H	D	D		
73	70	PRO	PRO	H	D	D		
74	71	PRO	PRO	H	D	D		
75	72	PRO	PRO	H	D	D		
76	73	PRO	PRO	H	D	D		
77	74	PRO	PRO	H	D	D		
78	75	PRO	PRO	H	D	D		
79	76	PRO	PRO	H	D	D		
80	77	PRO	PRO	H	D	D		

TABLE 1B

Compound No.	Seq. ID. No.	R <sup>6</sup>	R <sup>7</sup>	R <sup>8</sup>	X <sup>1</sup>	X <sup>2</sup>	X <sup>3</sup>	X <sup>4</sup>
81	78	PRO	PRO	PRO	[3-(2-thienyl)-dAla (4-aminomethyl-Phe) dOrn(dimethyl) (4-amino-dPhe) (4-aminomethyl-dHe)	T	T	T
82	79	PRO	PRO	PRO	[4-aminomethyl-Phe] dOrn(dimethyl)	D	D	D
83	80	PRO	PRO	PRO	[4-aminomethyl-dHe] (4-aminomethyl-dHe)	D	D	D
84	81	PRO	PRO	PRO	[4-aminomethyl-dHe] (4-aminomethyl-dHe)	D	D	D
85	82	PRO	PRO	PRO	[4-aminomethyl-dHe] dTyr(OBn)	D	D	D
86	83	PRO	PRO	PRO	[4-aminomethyl-dHe] P	D	D	D
87	84	PRO	PRO	PRO	cycloLeu	D	D	D
88	85	PRO	PRO	PRO	Aic	D	D	D
89	86	PRO	PRO	PRO	Tyr(OAllyl)	D	D	D
90	87	PRO	PRO	PRO	Chg	D	D	D
91	88	PRO	PRO	PRO	K	D	D	D
92	89	PRO	PRO	PRO	(2-aza-dPhe)	D	D	D
93	90	PRO	PRO	PRO	(2-aza-Phe)	D	D	D
94	91	PRO	PRO	PRO	[2-(2-pyridyl)-4-thiazolyl-dAla]	D	D	D
95	92	PRO	PRO	PRO	[2-(3-pyridyl)-4-thiazolyl-dAla]	D	D	D
96	93	PRO	PRO	PRO	[2-(4-pyridyl)-4-thiazolyl-dAla]	D	D	D
97	94	PRO	PRO	PRO	dTiq	D	D	D
98	95	PRO	PRO	PRO	[1-(S)-isoindoline-carboxylic acid]	D	D	D
99	96	PRO	PRO	PRO	dThr	D	D	D
100	97	PRO	PRO	PRO	Y	D	D	D
101	98	PRO	PRO	PRO	P	D	D	D
102	99	PRO	PRO	PRO	dPro	D	D	D
103	100	PRO	PRO	PRO	Sar	D	D	D
104	101	PRO	PRO	PRO	cycloLeu	D	D	D
105	100	PRO	PRO	PRO	Sar	D	D	D
106	102	PRO	PRO	PRO	Sar	D	D	D
107	103	PRO	PRO	PRO	Sar	D	D	D
108	104	PRO	PRO	PRO	Sar	D	D	D
109	105	PRO	PRO	PRO	dLys	D	D	D
110	106	PRO	PRO	PRO	dLys	D	D	D
111	107	PRO	PRO	PRO	dLys	D	D	D
112	108	PRO	PRO	PRO	dLys	D	D	D
113	109	PRO	PRO	PRO	dLys	D	D	D
114	110	PRO	PRO	PRO	dArg	D	D	D
115	111	PRO	PRO	PRO	dSer	D	D	D
116	112	PRO	PRO	PRO	Sar	D	D	D
117	113	PRO	PRO	PRO	Sar	D	D	D
118	114	PRO	PRO	PRO	Pip	D	D	D
119	115	PRO	PRO	PRO	Sar	D	D	D
120	116	PRO	PRO	PRO	dLys	D	D	D

TABLE 1B

Compound No.	Seq. ID. No.	R <sup>6</sup>	R <sup>7</sup>	R <sup>8</sup>	X <sup>1</sup>	X <sup>2</sup>	X <sup>3</sup>
121	117	PRO	PRO	H	Y	D	MeThr
122	118	PRO	PRO	H	F	D	T
123	119	PRO	PRO	H	Y	D	T
124	99	PRO	PRO	H	Y	D	T
125	120	PRO	PRO	H	Y	D	T
126	121	PRO	PRO	H	F	D	T
127	122	PRO	PRO	H	(3,4-dimethoxy-Phe) (3,4,5-trifluoro-Phe)	D	T
128	123	PRO	PRO	H	(3,5-dibromo-Tyr)	D	T
129	124	PRO	PRO	H	F	D	T
130	125	PRO	PRO	H	[3-(4-thiazolyl)-Ala] (4-aminomethyl-Phe)	D	T
131	126	PRO	PRO	H	[2-(2-iodo-Phe)]	D	T
132	127	PRO	PRO	H	[2-(2-phenyl-Phe)]	D	T
133	128	PRO	PRO	H	[2-(2-methoxy-phenyl)-Phe] [2-(3-methoxy-phenyl)-Phe] [2-(4-methoxy-phenyl)-Phe]	D	T
134	129	PRO	PRO	H	[2-(2-phenyl-Phe)]	D	T
135	130	PRO	PRO	H	[2-(2-phenyl-Phe)]	D	T
136	131	PRO	PRO	H	[2-(2-phenyl-Phe)]	D	T
137	132	PRO	PRO	H	[2-(2-phenyl-Phe)]	D	T
138	133	PRO	PRO	H	Bip	D	T
139	134	PRO	PRO	H	Y	D	T
140	135	PRO	PRO	H	Y	D	T
141	136	PRO	PRO	H	Y	D	T
142	137	dPRO	H	dPRO	dTyr	D	T
143	138	PRO	PRO	H	1Nal	D	T
144	139	PRO	PRO	H	2Nal	D	T
145	140	PRO	PRO	H	(4-aminomethyl-Phe) (3-aminomethyl-Phe) (3-aminomethyl-dPhe)	D	T
146	141	PRO	PRO	H	MeTyr	D	T
147	142	PRO	PRO	H	Y	D	T
148	143	PRO	PRO	H	Y	D	T
149	144	PRO	PRO	H	Y	D	T
150	145	PRO	PRO	H	Y	D	T
151	146	PRO	PRO	H	[3-(4-thiazolyl)-Ala] (4-aminomethyl-Phe)	D	T
152	147	PRO	PRO	H	F	D	T
153	148	PRO	PRO	H	F	D	T
154	149	PRO	PRO	H	F	D	T
155	150	PRO	PRO	H	F	D	T
156	151	PRO	PRO	H	F	D	T
157	152	PRO	PRO	H	F	D	T
158	153	PRO	PRO	H	F	D	T
159	154	PRO	PRO	H	F	D	T
160	155	PRO	PRO	H	F	D	T

TABLE 1B

TABLE 1B

Compound No.	Seq. ID. No.	R <sup>6</sup>	R <sup>7</sup>	R <sup>8</sup>	X <sup>1</sup>	X <sup>2</sup>	X <sup>3</sup>	X <sup>4</sup>	X <sup>5</sup>	X <sup>6</sup>	X <sup>7</sup>	X <sup>8</sup>	
201	196	PRO	PRO	PRO	H	D	L	T	T	T	T	T	T
202	197	PRO	PRO	PRO	H	D	L	T	T	T	T	T	T
203	198	PRO	PRO	PRO	H	D	L	T	T	T	T	T	T
204	199	PRO	PRO	PRO	H	D	L	T	T	T	T	T	T
205	200	PRO	PRO	PRO	H	D	L	T	T	T	T	T	T
206	201	PRO	PRO	PRO	H	D	L	T	T	T	T	T	T
207	202	PRO	PRO	PRO	H	D	L	T	T	T	T	T	T
208	202	PRO	PRO	PRO	H	D	L	T	T	T	T	T	T
209	203	PRO	PRO	PRO	H	D	L	T	T	T	T	T	T
210	204	PRO	PRO	PRO	H	D	L	T	T	T	T	T	T
211	205	PRO	PRO	PRO	H	D	L	T	T	T	T	T	T
212	206	PRO	PRO	PRO	H	D	L	T	T	T	T	T	T
213	207	PRO	PRO	PRO	H	D	L	T	T	T	T	T	T
214	208	PRO	PRO	PRO	H	D	L	T	T	T	T	T	T
215	209	PRO	PRO	PRO	H	D	L	T	T	T	T	T	T
216	210	PRO	PRO	PRO	H	D	L	T	T	T	T	T	T
217	211	PRO	PRO	PRO	H	D	L	T	T	T	T	T	T
218	212	PRO	PRO	PRO	H	D	L	T	T	T	T	T	T
219	213	PRO	PRO	PRO	H	D	L	T	T	T	T	T	T
220	214	PRO	PRO	PRO	H	D	L	T	T	T	T	T	T
221	215	PRO	PRO	PRO	H	D	L	T	T	T	T	T	T
222	216	PRO	PRO	PRO	H	D	L	T	T	T	T	T	T
223	217	PRO	PRO	PRO	H	D	L	T	T	T	T	T	T
224	218	PRO	PRO	PRO	H	D	L	T	T	T	T	T	T
225	219	PRO	PRO	PRO	H	D	L	T	T	T	T	T	T
226	220	PRO	PRO	PRO	H	D	L	T	T	T	T	T	T
227	221	PRO	PRO	PRO	H	D	L	T	T	T	T	T	T
228	222	PRO	PRO	PRO	H	D	L	T	T	T	T	T	T
229	223	PRO	PRO	PRO	H	D	L	T	T	T	T	T	T
230	224	PRO	PRO	PRO	H	D	L	T	T	T	T	T	T
231	225	PRO	PRO	PRO	H	D	L	T	T	T	T	T	T
232	226	PRO	PRO	PRO	H	D	L	T	T	T	T	T	T
233	227	PRO	PRO	PRO	H	D	L	T	T	T	T	T	T
234	228	PRO	PRO	PRO	H	D	L	T	T	T	T	T	T
235	229	PRO	PRO	PRO	H	D	L	T	T	T	T	T	T
236	230	PRO	PRO	PRO	H	D	L	T	T	T	T	T	T
237	231	PRO	PRO	PRO	H	D	L	T	T	T	T	T	T
238	232	PRO	PRO	PRO	H	D	L	T	T	T	T	T	T
239	233	PRO	PRO	PRO	H	D	L	T	T	T	T	T	T
240	234	PRO	PRO	PRO	H	D	L	T	T	T	T	T	T

TABLE 1B

Compound No.	Seq. ID. No.	R <sup>6</sup>	R <sup>7</sup>	R <sup>8</sup>	X <sup>1</sup>	X <sup>2</sup>	X <sup>3</sup>	X <sup>4</sup>	X <sup>5</sup>	X <sup>6</sup>
241	235	PRO	PRO	H	(2,4-dichloro-Phe) (2-aminomethyl-Phe)	D	T	T	T	T
242	236	PRO	PRO	H	[2-(4-quinoliny)-Phe]	T	T	T	T	D
243	237	PRO	PRO	H	[2-(4-quinoliny)-Phe]	T	T	T	T	D
244	238	PRO	PRO	H	[2-(5-quinoliny)-Phe]	T	T	T	T	D
245	239	PRO	PRO	H	[2-(3-quinoliny)-Phe]	T	T	T	T	D
246	240	PRO	PRO	H	dihomoPhe	T	T	T	T	D
247	241	PRO	PRO	H	(2-iodo-dPhe)	T	T	T	T	D
248	242	PRO	PRO	H	(2-phenyl-dPhe)	T	T	T	T	D
249	243	PRO	PRO	H	(2-piperaziney-2-Phenyl)-dPhe]	T	T	T	T	D
250	244	PRO	PRO	H	Y	T	T	T	T	V
251	245	PRO	PRO	H	Y	T	T	T	T	V
252	246	PRO	PRO	H	dTyr	T	T	T	T	V
253	247	PRO	PRO	H	(4-aminomethyl-dPhe) (4-aminomethyl-Phe)	T	T	T	T	D
254	248	PRO	PRO	H	(3-iodo-Phe)	T	T	T	T	D
255	249	PRO	PRO	H	(3-phenyl-Phe)	T	T	T	T	D
256	250	PRO	PRO	H	[3-(2-methoxy-phenyl)-Phe] [3-(2,6-dimethoxy-phenyl)-Phe]	T	T	T	T	D
257	251	PRO	PRO	H	[3-(2-methoxy-phenyl)-Phe] [3-(2,6-dimethoxy-phenyl)-Phe]	T	T	T	T	D
258	252	PRO	PRO	H	[3-(2-trifluoromethoxy-phenyl)-Phe]	T	T	T	T	D
259	253	PRO	PRO	H	[3-(2-trifluoromethoxy-phenyl)-Phe] (4-iodo-Phe)	T	T	T	T	D
260	254	PRO	PRO	H	[4-(2-methoxy-phenyl)-Phe] [4-(2-trifluoromethoxy-phenyl)-Phe]	T	T	T	T	D
261	255	PRO	PRO	H	[4-(2-methoxy-phenyl)-Phe] alphaMphe	T	T	T	T	D
262	256	PRO	PRO	H	Mphe	T	T	T	T	D
263	257	PRO	PRO	H	[3-(2,6-dimethyl-phenyl)-Phe]	T	T	T	T	D
264	258	PRO	PRO	H	[3-(2,6-dimethyl-phenyl)-Phe] [3-(4-quinolin-4-yl)-Phe]	T	T	T	T	D
265	259	PRO	PRO	H	[3-(4-quinolin-4-yl)-Phe]	T	T	T	T	D
266	260	PRO	PRO	H	[3-(3,4-difluoro-phenyl)-Phe]	T	T	T	T	D
267	261	PRO	PRO	H	[4-(2,6-dimethyl-phenyl)-Phe]	T	T	T	T	D
268	262	PRO	PRO	H	[4-(2-chloro-6-methoxy-phenyl)-Phe]	T	T	T	T	D
269	263	PRO	PRO	H	[3-(4-thiazolyl)-A1a]-reduced	T	T	T	T	D
270	264	PRO	PRO	H	[2-[4-(1-piperazinyl)phenyl]-Phe]	T	T	T	T	D
271	265	PRO	PRO	H	[2-(2,6-dimethyl-phenyl)-Phe]	T	T	T	T	D
272	266	PRO	PRO	H	[2-(benzothiazol-5-yl)-Phe] Homophe	T	T	T	T	D
273	267	PRO	PRO	H	(piperidine-4-amino-4-carboxylic acid)	T	T	T	T	D
274	268	PRO	PRO	H	[2-(2,5-dimethyl-isoxazol-5-yl)-dPhe] dTyr	T	T	T	T	D
275	269	PRO	PRO	H	(4-aminomethyl-dPhe)	T	T	T	T	D
276	270	PRO	PRO	H	[2-(2-chloro-6-methoxyphenyl)-Phe]	T	T	T	T	D
277	271	PRO	PRO	H	2g]	T	T	T	T	D
278	272	PRO	PRO	H	V	T	T	T	T	D
279	273	PRO	PRO	H	T	T	T	T	T	D
280	274	PRO	PRO	H	T	T	T	T	T	D

TABLE 1B

Compound No.	Seq. ID. No.	R <sup>6</sup>	R <sup>7</sup>	R <sup>8</sup>	X <sup>1</sup>	X <sup>2</sup>	X <sup>3</sup>
281	275	PRO	PRO	H	d2lg	D	T
282	276	PRO	PRO	H	Atc	D	T
283	277	PRO	PRO	H	Y	D	allole
284	278	PRO	PRO	H	dTyr	D	allole
285	279	PRO	PRO	H	(4-aminomethyl)-Phe	D	allole
286	280	PRO	PRO	H	[2-[2,5-Bis(trifluoromethyl)phenyl]-Phe]	D	T
287	281	PRO	PRO	H	[2-[2,5-Bis(trifluoromethyl)phenyl]-Phe]	D	T
288	282	PRO	PRO	H	betaHomolys	D	T
289	283	PRO	PRO	H	betaHomolys	D	T
290	284	PRO	PRO	H	betaHomolys	D	T
291	285	PRO	PRO	H	betaHomolys	D	T
292	286	PRO	PRO	H	betaHomolys	D	T
293	287	PRO	PRO	H	betaHomolys	D	T
294	288	PRO	PRO	H	betaHomolys	D	T
295	289	PRO	PRO	H	betaHomolys	D	T
296	290	PRO	PRO	H	betaHomolys	D	T
297	291	PRO	PRO	H	betaHomolys	D	T
298	292	PRO	PRO	H	betaHomolys	D	T
299	293	PRO	PRO	H	betaHomolys	D	T
300	294	PRO	PRO	H	MebetaHomolys	D	T
301	295	PRO	PRO	H	MebetaHomolys	D	T
302	296	PRO	PRO	H	MebetaHomolys	D	T
303	297	PRO	PRO	H	MebetaHomolys	D	T
304	298	PRO	PRO	H	MebetaHomolys	D	T
305	299	PRO	PRO	H	MebetaHomolys	D	T
306	300	PRO	PRO	H	MebetaHomolys	D	T
307	301	PRO	PRO	H	MebetaHomolys	D	T
308	302	PRO	PRO	H	MebetaHomolys	D	T
309	303	PRO	PRO	H	MebetaHomolys	D	T
310	304	PRO	PRO	H	MebetaHomolys	D	T
311	305	PRO	PRO	H	MebetaHomolys	D	T
312	306	PRO	PRO	H	MebetaHomolys	D	T
313	307	PRO	PRO	H	(2-fluoro-Phe)	D	T
314	308	PRO	PRO	H	(2-fluoro-Mphe)	D	T
315	309	PRO	PRO	H	(2,4-dichloro-Phe)	D	T
316	310	PRO	PRO	H	(2,4-dichloro-Mphe)	D	T
317	311	PRO	PRO	H	(2-aminomethyl-Mphe)	D	T
318	312	PRO	PRO	H	[3-(2,6-dimethoxy-phenyl)-dPhe]	D	T
319	313	PRO	PRO	H	[3-(4-Quinoliny)-dPhe]	D	T
320	314	PRO	PRO	H	(3-phenyl-dPhe)	D	T

TABLE 1B

Compound No.	Seq. ID. No.	R <sup>6</sup>	R <sup>7</sup>	R <sup>8</sup>	X <sup>Y</sup>	X <sup>1</sup>	X <sup>2</sup>	X <sup>3</sup>
321	315	PRO	PRO	H	[3-(2-trifluoromethoxy-phenyl)-d-Phe]	betaHomolys	L	D
322	316	PRO	PRO	H	[3-(2-methoxy-phenyl)-d-Phe]	betaHomolys	D	D
323	317	PRO	PRO	H	[2-(5-quinoliny)-Meth]	MebetaHomolys	D	D
324	318	PRO	PRO	H	F	betaHomolys	D	D
325	319	PRO	PRO	H	F	MebetaHomolys(Me) <sup>2</sup>	D	D
326	320	PRO	PRO	H	Mephe	MebetaHomolys(Me) <sup>2</sup>	D	D
327	321	PRO	PRO	H	M	MebetaHomolys	D	D
328	322	PRO	PRO	H	Igl	MebetaHomolys	D	D
329	323	PRO	PRO	H	Homophe	MebetaHomolys	D	D
330	324	PRO	PRO	H	Hyp(OBn)	MebetaHomolys	D	D
331	325	PRO	PRO	H	(1,2-dis-ACHC)	MebetaHomolys	D	D
332	326	PRO	PRO	H	MeMet	MebetaHomolys	D	D
333	327	PRO	PRO	H	betaHomolys	betaHomolys	D	D
334	328	PRO	PRO	H	BetaHomophe	MebetaHomolys	D	D
335	329	PRO	PRO	H	betaHomomet	MebetaHomolys	D	D
336	330	PRO	PRO	H	Y	aminomethyl-4-bromo-benzoic acid	D	D
337	331	PRO	PRO	H	Y	aminomethyl-4-(4-aza-phenyl)-benzoic acid	D	D
338	332	PRO	PRO	H	Y	aminomethyl-4-(2,5-dimethyl-isoxazole)-benzoic acid	D	D
339	333	PRO	PRO	H	Y	ethyl-4-(3-aminomethyl-phenyl)-benzoic acid	D	D
340	334	PRO	PRO	H	Y	ethyl-4-(3-(3-aminomethyl-phenyl)-benzoic acid)	D	D
341	335	PRO	PRO	H	Y	omethyl-4-[4-(1-piperazinyl)-phenyl]-benzoic acid]	D	D
342	336	PRO	PRO	H	Y	omethyl-4-[4-(4-piperidinyl)-phenyl]-benzoic acid]	D	D
343	337	PRO	PRO	H	Y	omethyl-4-[2-(5-dimethyl-isoxazole)-benzoic acid]	D	D
344	338	dPRO	PRO	H	Y	dPRO [3-aminomethyl-4-(4-pyridyl)-benzoic acid]	D	D
345	339	PRO	PRO	H	Y	PRO [3-aminomethyl-4-(4-methyl-pyrazole-3-yl)-benzoic acid]	D	D
346	340	PRO	PRO	H	Y	PRO [3-aminomethyl-4-(3-quinoliny)-benzoic acid]	D	D
347	341	PRO	PRO	H	Y	PRO [3-aminomethyl-4-(5-quinoliny)-benzoic acid]	D	D
348	342	PRO	PRO	H	Y	PRO [3-aminomethyl-4-[2-(1-piperazinyl)phenyl]-benzoic acid]	D	D
349	343	PRO	PRO	H	Y	PRO [3-aminomethyl-4-[3-(1-piperazinyl)phenyl]-benzoic acid]	D	D
350	344	PRO	PRO	H	Y	PRO [3-aminomethyl-4-[2-(3-(3-piperidinyl)-phenyl]-benzoic acid]	D	D
351	345	PRO	PRO	H	Y	PRO [3-aminomethyl-4-(4-pyridyl)-benzoic acid]	D	D
352	346	PRO	PRO	H	Y	PRO [3-aminomethyl-4-(4-pyridyl)-benzoic acid]	D	D
353	347	PRO	PRO	H	Y	PRO [3-aminomethyl-4-(4-quinoliny)-benzoic acid]	D	D
354	348	PRO	PRO	H	Y	PRO [3-aminomethyl-4-(1-piperazinyl)-phenyl]-benzoic acid]	D	D
355	349	PRO	PRO	H	Y	PRO [3-aminomethyl-4-(4-quinoliny)-benzoic acid]	D	D
356	334	PRO	PRO	H	Y	PRO [3-aminomethyl-4-(4-pyridyl)-benzoic acid]	D	D
357	350	PRO	PRO	H	Y	PRO [3-aminomethyl-4-(4-piperidinyl)-benzoic acid]	D	D
358	351	PRO	PRO	H	Y	PRO [3-aminomethyl-5-bromo-benzoic acid]	D	D
359	352	PRO	PRO	H	Y	PRO [3-aminomethyl-6-bromo-benzoic acid]	D	D
360	353	PRO	PRO	H	Y	PRO [3-aminomethyl-3-aminomethyl-benzoic acid]	D	D

TABLE 1B

Compound No.	Seq. ID. No.	R <sup>6</sup>	R <sup>7</sup>	X <sup>Y</sup>	X <sup>Z</sup>	X <sup>2</sup>	X <sup>2</sup>
361	336	PRO	PRO	H (3-aminomethyl-4-bromo-benzoic acid)	D	T	T
362	354	PRO	PRO	H -aminomethyl-5-(4-aza-phenyl)-benzoic acid]	D	T	T
363	355	PRO	PRO	H -aminomethyl-4-(3-thiophenyl)-benzoic acid]	D	T	T
364	356	PRO	PRO	H -yl-4-(4-N,N-dimethyl-carboxamido-phenyl)-benzoic acid]	D	T	T
365	357	PRO	PRO	H -aminomethyl-4-(4-aza-phenyl)-benzoic acid]	D	T	T
366	358	PRO	PRO	H -aminomethyl-4-(3-aza-phenyl)-benzoic acid]	D	T	T
367	359	PRO	PRO	H ninomethyl-4-(4-hydroxy-phenyl)-benzoic acid]	D	T	T
368	360	PRO	PRO	H ometyl-4-[5-(2,4-dimethyl)thiazole]benzoic acid]	D	T	T
369	361	PRO	PRO	H nomethyl-4-(3-N,N-dimethyl-aniline)-benzoic acid]	D	T	T
370	362	PRO	PRO	H iminomethyl-4-(2-fluoro-pyridyl)-benzoic acid]	D	T	T
371	363	PRO	PRO	H aminomethyl-4-(5-pyrimidinyl)-benzoic acid]	D	T	T
372	364	PRO	PRO	H nehy-4-(3-N,N-dimethyl-diaryl-ether)-benzoic acid]	D	T	T
373	365	PRO	PRO	H aminomethyl-4-(3-CF <sub>3</sub> -phenyl)-benzoic acid]	D	T	T
374	366	PRO	PRO	H iminomethyl-4-(2,5-dimethoxy-phenyl)-benzoic acid]	D	T	T
375	367	PRO	PRO	H methyl-4-[(2,3,4-tri-methoxy)-phenyl]-benzoic acid]	D	T	T
376	368	PRO	PRO	H ninomethyl-4-(4-carboxy)-phenyl)-benzoic acid]	D	T	T
377	369	PRO	PRO	H -3-aminomethyl-4-(4-piperonyl)-benzoic acid]	D	T	T
378	370	PRO	PRO	H (3-aminomethyl-4-piperidinyl)-benzoic acid]	D	T	T
379	371	PRO	PRO	H -3-aminomethyl-4-(4-morpholinyl)-benzoic acid]	D	T	T
380	372	PRO	PRO	H -aminomethyl-4-(N,N-dimethyl)-benzoic acid]	D	T	T
381	373	PRO	PRO	H -aminomethyl-4-(2-aminomethyl-phenyl)-benzoic acid]	D	T	T
382	374	PRO	PRO	H -aminomethyl-4-(3-aminomethyl-phenyl)-benzoic acid]	D	T	T
383	375	PRO	PRO	H -aminomethyl-4-(4-aminomethyl-phenyl)-benzoic acid]	D	T	T
384	376	PRO	PRO	H -aminomethyl-4-(4-aminomethyl-phenyl)-benzoic acid]	D	T	T
385	377	H	Nva	H -aminomethyl-4-(4-aminomethyl-phenyl)-benzoic acid]	D	T	T
386	334	PRO	PRO	H -4-[4-(1-piperazinyl-4-AlexaFluor 647)phenyl]-benzoic acid]	D	T	T
387	378	PRO	PRO	H (N-methyl-3-aminomethyl-phenyl)-benzoic acid]	D	T	T
388	379	PRO	PRO	H thyl-3-aminomethyl-4-(4-quinolonyl)-benzoic acid]	D	T	T
389	380	PRO	PRO	H [2-(5-quinolonyl)-Phel]-reduced betaHomolys	D	T	T
390	334	PRO	PRO	H omethyl-4-(4-(1-piperazinyl)-phenyl)-benzoic acid]	D	T	T
391	334	PRO	PRO	H omethyl-4-(4-(1-piperazinyl)-phenyl)-benzoic acid]	D	T	T
392	334	PRO	PRO	H omethyl-4-(4-(1-piperazinyl)-phenyl)-benzoic acid]	D	T	T
393	31	HYP	HYP	F	F	T	T
394	31	HYP	HYP	F	F	T	T
395	31	HYP	HYP	F	F	T	T
396	31	HYP	HYP	F	F	T	T
397	31	HYP	HYP	F	F	T	T

TABLE 1C  
Compound No. a4b7 ELISA IC<sub>50</sub> (mM) a4b1 ELISA IC<sub>50</sub> (mM) Selectivity ELISA RPMI 8866 cell IC<sub>50</sub> (mM)

1	0.164	0.162	0.988
2	0.109	0.185	1.697
3	0.192	0.475	2.474
4	0.129	0.357	25.000
5	0.087	0.062	11.782
6	0.103	0.200	0.7
7	0.117	0.190	7.916
8	0.103	0.096	1.9
9	0.061	0.106	23.000
10	0.052	0.070	1.6
11	0.051	0.094	1.3
12	0.063	0.113	3.602
13	0.097	0.171	0.9
14	0.026	0.025	1.8
15	0.040	0.026	8.885
16	0.086	0.053	19.520
17	0.173	0.120	2.6
18	0.120	0.114	2.6
19	0.114	0.114	12.664
20	0.146	0.100	3.071
21	0.092	0.176	1.624
22	0.100	0.176	0.6
23	0.176	0.458	26.923
24	0.087	0.192	15.044
25	0.096	0.209	8.716
26	0.088	0.236	9.466
27	0.067	0.161	11.556
28	0.117	0.264	18.880
29	0.073	0.167	7.632

TABLE 1C  
Compound No.

	a4b7 ELISA  C <sub>50</sub> (mM)	a4b1 ELISA  C <sub>50</sub> (mM)	Selectivity ELISA	RPMI 8866 cell  C <sub>50</sub> (mM)
30	0.058	0.162	2.8	9.277
31	0.057	0.215	3.7	7.950
32	0.100	0.311	3.1	11.161
33	0.090	0.324	3.6	13.059
34	0.043	0.083	1.9	1.153
35	0.039	0.096	2.5	1.230
36	0.112	0.215	1.9	2.392
37	0.036	0.063	1.8	0.856
38	0.065	0.120	1.9	1.899
39	0.152	0.595	3.9	7.576
40	0.063	0.119	1.9	
41	0.042	0.106	2.5	
42	0.079	0.232	2.9	
43	0.026	0.072	2.8	
44	0.083	0.188	2.3	
45	0.074	0.238	3.2	
46	0.106	0.258	2.4	
47	0.061	0.135	2.2	6.777
48	0.094	0.332	3.5	20.686
49	0.137	0.326	2.4	17.374
50	0.023	0.290	12.6	3.709
51	0.031	0.102	3.3	
52	0.075	0.367	4.9	14.719
53	0.182			21.956
54	0.190			23.916
55	0.113	0.119	1.1	
56	0.058	0.200	3.5	4.203
57	0.059	0.148	2.5	
58	0.156	0.445	2.9	

TABLE 1C

Compound No.	a4b7 ELISA IC <sub>50</sub> (mM)	a4b1 ELISA IC <sub>50</sub> (mM)	Selectivity ELISA	RPMI 8866 cell IC <sub>50</sub> (mM)
59	0.197	0.610	3.1	6.554
60	0.066	0.214	3.3	
61	0.063	0.223	3.6	
62	0.027	0.115	4.3	2.548
63	0.107	0.251	2.3	
64	0.046	0.268	5.8	5.367
65	0.005	0.095	18.1	1.033
66	0.093	0.326	3.5	6.348
67	0.075	0.341	4.5	5.093
68	0.067	0.280	4.2	4.158
69	0.022	0.060	2.7	2.646
70	0.035	0.099	2.9	1.163
71	0.184	0.816	4.4	
72	0.151	0.409	2.7	7.284
73	0.144	1.247	8.6	17.304
74	0.100	0.763	7.6	15.503
75	0.171	1.209	7.1	13.166
76	0.114	0.466	4.1	6.267
77	0.036	0.185	5.1	5.633
78	0.069	0.272	3.9	6.479
79	0.110	0.552	5.0	13.217
80	0.053	0.556	10.6	3.599
81	0.054	0.241	4.5	5.405
82	0.073	0.213	2.9	5.716
83	0.179	1.226	6.9	32.316
84	0.035	0.218	6.2	6.143
85	0.052	0.206	3.9	4.229
86	0.050	0.167	3.3	4.074
87	0.019	0.269	14.1	

TABLE 1C  
Compound No. a4b7 ELISA IC<sub>50</sub> (mM) a4b1 ELISA IC<sub>50</sub> (mM) Selectivity ELISA / RPMI 8866 cell IC<sub>50</sub> (mM)

No.	a4b7 ELISA IC <sub>50</sub> (mM)	a4b1 ELISA IC <sub>50</sub> (mM)	Selectivity ELISA / RPMI 8866 cell IC <sub>50</sub> (mM)
88	0.011	0.166	14.9
89	0.016	0.232	14.4
90	0.009	0.317	35.0
91	0.126	1.824	14.5
92	0.053	1.063	19.9
93	0.078	0.311	4.0
94	0.080	0.250	3.1
95	0.125	0.303	2.4
96	0.138	0.321	2.3
97	0.124	0.311	2.5
98	0.021	0.058	2.7
99	0.057	0.154	2.7
100	0.132	0.453	3.4
101	0.129	0.609	4.7
102	0.021	0.136	6.6
103	0.108	1.631	15.1
104	0.120	0.506	4.2
105	0.110	1.734	15.8
106	0.059	1.109	18.7
107	0.150	2.390	16.0
108	0.077	0.814	10.5
109	0.133	3.312	24.9
110	0.185	3.923	21.3
111	0.100	3.923	39.3
112	0.138	3.008	21.7
113	0.052	0.709	13.7
114	0.083	1.889	22.8
115	0.125	1.121	9.0
116	0.166	1.385	8.4

TABLE 1C

Compound No.	a4b7 ELISA IC <sub>50</sub> (mM)	a4b1 ELISA IC <sub>50</sub> (mM)	Selectivity ELISA / RPMI 8866 cell / IC <sub>50</sub> (mM)
117	0.158	1.381	8.7
118	0.112	0.132	1.2
119	0.079	1.688	21.5
120	0.157	3.000	19.1
121	0.192	2.187	11.4
122	0.090	1.666	18.6
123	0.007	0.019	2.5
124	0.013	0.104	8.3
125	0.025	0.458	18.4
126	0.024	0.135	5.6
127	0.025	0.196	7.8
128	0.026	0.296	11.4
129	0.065	0.636	9.7
130	0.022	0.125	5.6
131	0.026	0.080	3.1
132	0.029	0.309	10.8
133	0.015	0.080	5.3
134	0.023	0.178	7.6
135	0.024	0.119	4.9
136	0.032	0.209	6.6
137	0.033	0.254	7.8
138	0.024	0.118	5.0
139	0.100	0.073	0.7
140	0.053	0.512	9.6
141	0.019	0.036	2.0
142	0.164	0.084	0.5
143	0.033	0.068	2.1
144	0.043	0.027	0.6
145	0.023	0.045	2.0
			6.083
			3.268

TABLE 1C

Compound No.	a4b7 ELISA IC <sub>50</sub> (mM)	a4b1 ELISA IC <sub>50</sub> (mM)	Selectivity ELISA / RPMI 8866 cell / IC <sub>50</sub> (mM)
146	0.016	0.012	0.7 0.672
147	0.052	0.039	0.8
148	0.086	0.105	1.2
149	0.046	0.546	12.0 12.600
150	0.054	0.447	8.2
151	0.053	0.218	4.1
152	0.102	1.347	13.2 0.125
153	0.006	0.017	2.8
154	0.117	2.664	22.8
155	0.054	1.085	20.3 1.412
156	0.019	0.258	13.3
157	0.067	3.707	55.3
158	0.110	1.537	14.0 15.746
159	0.053	0.467	8.9 41.275
160	0.141	1.349	9.5 8.794
161	0.135	2.035	15.1 6.662
162	0.107	1.875	17.5 16.696
163	0.126	1.389	11.0 22.489
164	0.127	3.288	25.8 30.192
165	0.128	2.918	22.8 30.337
166	0.179	1.382	7.7
167	0.147	1.997	13.6 17.847
168	0.077	1.051	13.6
169	0.176	0.488	2.8
170	0.013	0.104	8.0 1.033
171	0.128	0.658	5.1 14.357
172	0.096	1.030	10.7 9.922
173	0.054	0.719	13.4 12.042
174	0.160	0.619	3.9

TABLE 1C

Compound No.	a4b7 ELISA IC <sub>50</sub> (mM)	a4b1 ELISA IC <sub>50</sub> (mM)	Selectivity ELISA / RPMI 8866 cell (IC <sub>50</sub> (mM))
175	0.018	0.130	7.2 0.986
176	0.189	1.202	6.3
177	0.019	0.463	24.0 2.853
178	0.027	0.113	4.1 2.710
179	0.174	2.656	15.2
180	0.013	0.068	5.1 0.841
181	0.180	2.272	12.6
182	0.017	0.083	5.0 1.128
183	0.014	0.105	7.5 1.070
184	0.099	0.953	9.6
185	0.018	0.095	5.4 0.662
186	0.062	0.027	0.4
187	0.083	0.404	4.9
188	0.027	0.189	7.0 7.308
189	0.018	0.019	1.0 2.251
190	0.021	0.145	7.0 2.470
191	0.083	4.020	48.4
192	0.118	6.823	57.8
193	0.092	0.303	3.3 5.621
194	0.038	0.207	5.4 4.617
195	0.049	1.917	38.9 7.931
196	0.158	0.275	1.7
197	0.044	1.327	30.2 7.441
198	0.041	1.223	29.9 5.089
199	0.069	3.138	45.2 19.350
200	0.134	0.352	2.6
201	0.061	0.695	11.4
202	0.086	0.680	8.0
203	0.055	0.534	9.8

TABLE 1C

Compound No.	a4b7 ELISA IC <sub>50</sub> (mM)	a4b1 ELISA IC <sub>50</sub> (mM)	RPML 8866 cell IC <sub>50</sub> (mM)	Selectivity ELISA
204	0.063	0.429	6.8	2.231
205	0.047	1.517	32.2	27.621
206	0.046	2.890	63.0	
207	0.025	0.460	18.5	
208	0.019	0.522	28.1	4.679
209	0.035	1.977	56.9	16.508
210	0.072	1.148	16.0	
211	0.060	2.511	42.2	8.101
212	0.068	2.190	32.1	
213	0.055	2.247	41.2	10.605
214	0.059	4.222	60.8	72.055
215	0.033	0.413	12.4	
216	0.123	2.509	20.4	
217	0.034	1.088	31.8	
218	0.190	3.135	16.5	
219	0.147	3.253	22.1	
220	0.096	1.740	18.2	
221	0.015	0.165	11.1	0.248
222	0.013	0.212	16.1	0.325
223	0.015	0.122	8.2	0.549
224	0.055	2.978	53.9	10.962
225	0.099	4.523	45.6	18.130
226	0.094	10.797	115.0	4.076
227	0.034	0.047	1.4	1.491
228	0.034	0.503	14.7	
229	0.058	0.075	1.3	
230	0.120	0.131	1.1	
231	0.031	0.993	32.0	
232	0.012	0.110	8.9	0.353

TABLE 1C

Compound No.	a4b7 ELISA [ $C_{50}$ (mM)]	a4b1 ELISA [ $C_{50}$ (mM)]	Selectivity ELISA RPMI 8866 cell [ $C_{50}$ (mM)]
233	0.094	3.861	41.0
234	0.099	3.203	32.3
235	0.025	1.553	62.6
236	0.060	6.203	104.2
237	0.020	0.870	43.9
238	0.025	1.049	42.3
239	0.020	0.641	32.3
240	0.027	0.905	33.2
241	0.031	3.207	103.4
242	0.067	5.307	79.0
243	0.026	0.767	29.4
244	0.016	0.753	46.7
245	0.024	0.414	17.5
246	0.120	17.702	147.1
247	0.035	4.614	132.8
248	0.045	3.088	69.2
249	0.045	4.233	94.8
250	0.017	0.150	8.7
251	0.024	0.349	14.8
252	0.032	0.390	12.1
253	0.069	1.087	15.6
254	0.055	1.803	33.0
255	0.043	3.024	69.7
256	0.072	3.246	45.1
257	0.058	1.604	27.5
258	0.056	1.584	28.4
259	0.058	5.995	102.8
260	0.165	9.562	58.1
261	0.096	23.155	241.0

TABLE 1C  
Compound No. a4b7 ELISA IC<sub>50</sub> (mM) a4b1 ELISA IC<sub>50</sub> (mM) Selectivity ELISA RPMI 8866 cell IC<sub>50</sub> (mM)

No.	a4b7 ELISA IC <sub>50</sub> (mM)	a4b1 ELISA IC <sub>50</sub> (mM)	Selectivity ELISA RPMI 8866 cell IC <sub>50</sub> (mM)
262	0.080	3.740	47.0
263	0.102	2.345	23.1
264	0.117	5.560	47.5
265	0.039	1.818	46.2
266	0.037	1.206	33.0
267	0.044	1.936	44.1
268	0.076	1.868	24.6
269	0.056	1.764	31.6
270	0.160	17.562	109.8
271	0.033	1.151	34.6
272	0.041	2.383	58.1
273	0.012	0.303	24.6
274	0.026	0.454	17.5
275	0.101	0.779	7.7
276	0.134	14.235	106.2
277	0.052	0.357	6.9
278	0.104	1.062	10.2
279	0.100	5.847	58.2
280	0.010	0.400	39.7
281	0.144	3.161	21.9
282	0.119	0.626	5.2
283	0.128	1.495	11.7
284	0.046	0.228	5.0
285	0.089	0.553	6.2
286	0.064	5.236	81.9
287	0.084	3.553	42.1
288	0.136	1.664	12.2
289	0.038	0.349	9.3
290	0.067	1.894	28.4

TABLE 1C

Compound No.	a4b7 ELISA IC <sub>50</sub> (mM)	a4b1 ELISA IC <sub>50</sub> (mM)	Selectivity ELISA / RPMI 8866 cell / IC <sub>50</sub> (mM)
291	0.035	0.777	22.4
292	0.030	0.374	12.4
293	0.019	0.198	10.6
294	0.045	0.937	20.7
295	0.094	20.950	222.7
296	0.155	14.698	94.8
297	0.037	0.786	21.3
298	0.076	4.349	57.2
299	0.002	0.090	41.5
300	0.022	0.225	10.4
301	0.018	0.846	47.6
302	0.012	0.598	51.6
303	0.020	0.497	24.8
304	0.015	0.293	19.0
305	0.008	0.221	26.6
306	0.104	2.763	26.5
307	0.091	4.343	47.8
308	0.039	0.480	12.3
309	0.008	0.023	3.0
310	0.017	0.300	17.6
311	0.007	0.198	27.6
312	0.011	0.145	13.4
313	0.011	0.206	19.2
314	0.011	0.138	12.8
315	0.013	0.312	24.9
316	0.022	0.349	16.2
317	0.047	0.685	14.5
318	0.091	1.513	16.6
319	0.065	0.309	4.8

TABLE 1C  
Compound No. a4b7 ELISA IC<sub>50</sub> (mM) a4b1 ELISA IC<sub>50</sub> (mM) Selectivity ELISA / RPMI 8866 cell IC<sub>50</sub> (mM)

320	0.163	0.127	0.8
321	0.101	7.368	72.7
322	0.093	4.166	44.7
323	0.025	0.297	11.8
324	0.110	1.058	9.6
325	0.020	0.170	8.6
326	0.017	0.476	28.4
327	0.010	0.128	13.2
328	0.010	0.234	24.1
329	0.005	0.050	10.6
330	0.005	0.179	32.9
331	0.016	0.093	6.0
332	0.010	0.120	12.5
333	0.046	0.757	16.5
334			5.061
335			4.956
336	0.162	0.917	5.6
337	0.061	0.177	2.9
338	0.041	0.177	4.4
339	0.051	0.299	5.8
340	0.019	0.048	2.5
341	0.012	0.026	2.1
342	0.041	0.139	3.4
343	0.018	0.029	1.6
344	0.052	0.107	2.1
345	0.039	0.052	1.3
346	0.028	0.011	0.4
347	0.023	0.030	1.3
348	0.027	0.041	1.5

TABLE 1C  
Compound No. a4b7 ELISA IC<sub>50</sub> (mM) a4b1 ELISA IC<sub>50</sub> (mM) Selectivity ELISA RPMI 8866 cell IC<sub>50</sub> (mM)

Compound No.	a4b7 ELISA IC <sub>50</sub> (mM)	a4b1 ELISA IC <sub>50</sub> (mM)	Selectivity ELISA RPMI 8866 cell IC <sub>50</sub> (mM)
349	0.023	0.043	1.9
350	0.027	0.055	2.0
351	0.160	0.184	1.2
352	0.024	0.005	0.2
353	0.031	0.103	3.3
354	0.050	0.175	3.5
355	0.048	0.069	1.4
356	0.017	0.027	1.6
357	0.102	0.406	4.0
358	0.127	1.108	8.7
359	0.053	0.450	8.5
360	0.125	0.779	6.2
361	0.049	0.288	5.9
362	0.043	0.238	5.6
363	0.022	0.105	4.8
364	0.018	0.074	4.0
365	0.017	0.064	3.7
366	0.023	0.059	2.6
367	0.018	0.053	3.0
368	0.010	0.024	2.4
369	0.024	0.069	2.9
370	0.015	0.047	3.1
371	0.016	0.055	3.4
372	0.024	0.104	4.3
373	0.018	0.074	4.1
374	0.018	0.081	4.5
375	0.015	0.067	4.5
376	0.019	0.078	4.1
377	0.013	0.045	3.6
			0.839

TABLE 1C

Compound No.	a4b7 ELISA IC <sub>50</sub> (mM)	a4b1 ELISA IC <sub>50</sub> (mM)	Selectivity ELISA	RPMI 8866 cell IC <sub>50</sub> (mM)
378	0.042	0.182	4.3	
379	0.033	0.161	4.9	
380	0.041	0.217	5.3	
381	0.010	0.010	1.1	0.323
382	0.012	0.025	2.0	
383	0.005	0.017	2.7	0.403
384	0.020	0.049	2.5	2.260
385	0.039	0.023	0.6	1.548
386	0.044	0.034	0.8	2.604
387	0.063	6.133	96.7	16.142
388	0.009	0.102	12.0	0.336
389	0.042	0.234	5.535	6.664
390	0.010	0.017	1.749	0.019
391	0.011	0.025	2.138	0.022
392	0.011	0.062	5.427	0.056
393	0.035	0.109	3.137	0.635
394	0.039	0.133	3.429	0.860
395	0.042	0.126	2.998	1.521
396	0.044	0.063	1.424	1.953
397	0.079	0.158	1.987	2.061

TABLE 2A

Compound No.	R <sup>1</sup>	R <sup>2</sup>	R <sup>3</sup>	R <sup>4</sup>	R <sup>5</sup>
5	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
398	H	H	H	H	H
399	H	H	CH <sub>3</sub>	H	C(O)-NH <sub>2</sub>
4	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
400	H	H	H	H	H
401	H	H	H	H	C(O)-NH- <i>tert</i> -Butyl
402	H	H	CH <sub>3</sub>	H	H
403	H	H	CH <sub>3</sub>	C(O)-NH- <i>tert</i> -Butyl	H
404	H	H	CH <sub>3</sub>	C(O)-NH- <i>tert</i> -Butyl	H
405	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
406	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
407	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
408	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
409	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
410	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
411	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
412	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
413	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
414	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
415	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
416	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
417	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
418	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
419			CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl

TABLE 2A

Compound No.	R <sup>1</sup>	R <sup>2</sup>	R <sup>3</sup>	R <sup>4</sup>	R <sup>5</sup>
420	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
125	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
421	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
422	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
423	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
424	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
425	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
426	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
427	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
428	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
429	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
430	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
431	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
432	PRO-	PRO-	H	H	C(O)-NH- <i>tert</i> -Butyl
341	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
433	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
434	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
435	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
436	PRO-	PRO-	H	H	C(O)-NH- <i>tert</i> -Butyl
437	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
232	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
438	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
439	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
440	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
441	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
442	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
443			CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl

TABLE 2A

Compound No.	R <sup>1</sup>	R <sup>2</sup>	R <sup>3</sup>	R <sup>4</sup>	R <sup>5</sup>
444	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	H
445	PRO-	PRO-	H	C(O)-NH- <i>tert</i> -Butyl	H
446	PRO-	PRO-	H	H	C(O)-NH- <i>tert</i> -Butyl
447	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
448	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
449	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
450	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
270	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
451	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
452	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
453	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
454	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl
455	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl

TABLE 2B  
Compound No. Seq. ID. No.

	R <sup>6</sup>	R <sup>7</sup>	R <sup>8</sup>	X <sup>1</sup>	X <sup>2</sup>	X <sup>3</sup>
5	4	PRO	PRO	F	T	T
398	4	PRO	PRO	F	D	D
399	4	PRO	PRO	F	D	D
4	3	PRO	PRO	Y	D	D
400	3	PRO	PRO	Y	D	D
401	3	PRO	PRO	Y	D	D
402	3	PRO	PRO	Y	D	D
403	3	PRO	PRO	Y	D	D
404	3	PRO	PRO	Y	D	D
405	381	PRO	PRO	Y	T	T
406	382	PRO	PRO	D	D	T
407	383	PRO	PRO	D	D	T
408	384	PRO	PRO	D	D	T
409	385	PRO	PRO	Y	L	L
410	386	PRO	PRO	Y	D	D
411	387	PRO	PRO	Y	D	D
412	388	PRO	PRO	Y	L	L
413	389	PRO	PRO	Y	D	D
414	390	PRO	PRO	Y	D	D
415	391	PRO	PRO	Y	L	L
416	392	PRO	PRO	Y	D	D
417	393	PRO	PRO	Y	D	D
418	394	dPro	dPro	dTyr	dAsp	H
419	395	dPro	dPro	dThr	dLeu	(2- <i>aza</i> -Phe)
420	396	PRO	PRO	dThr	dLeu	betaHomoThr
125	120	PRO	PRO	Y	D	T
421	397	dPro	dPro	Y	D	T
422	398	PRO	PRO	dTic	D	T
423	399	PRO	PRO	dAla	D	T
424	400	PRO	PRO	dAla	D	T
425	401	PRO	PRO	dAla	D	T
426	402	PRO	PRO	dAla	D	T
427	403	PRO	PRO	dAla	D	T

TABLE 2B

Compound No.	Seq. ID. No.	R <sup>6</sup>	R <sup>7</sup>	R <sup>8</sup>	X <sup>Y</sup>	X <sup>Z</sup>	X <sup>1</sup>	X <sup>2</sup>	X <sup>3</sup>
428	404	PRO	PRO	H	Y	Sar	D	T	
429	405	PRO	PRO	H	Y	dLys	D		dThr
430	406	PRO	PRO	H	Y	dPip	D		betaHomolys
431	407	PRO	PRO	H	Y	L	D	T	dAla
432	120	PRO	PRO	H	Y	dPip	L	D	T
341	335	PRO	PRO	H	l-aminomethyl-4-(4-quinolinyl)-benzoic acid]		D	T	
433	408	PRO	PRO	H	l-aminomethyl-4-(4-quinolinyl)-benzoic acid]		D	T	
434	409	PRO	PRO	H	l-aminomethyl-4-(4-quinolinyl)-benzoic acid]		D	T	
435	410	PRO	PRO	H	l-aminomethyl-4-(4-quinolinyl)-benzoic acid]		D	T	
436	335	PRO	PRO	H	l-aminomethyl-4-(4-quinolinyl)-benzoic acid]		D	T	
437	411	PRO	PRO	H	l-aminomethyl-4-(4-quinolinyl)-benzoic acid]	K	L		
232	226	PRO	PRO	H			L	D	
438	412	PRO	PRO	H			L	D	
439	413	PRO	PRO	H			L	D	
440	414	PRO	PRO	H			L	D	
441	415	PRO	PRO	H			L	D	
442	416	PRO	PRO	H			L	D	
443	190	PRO	PRO	H			L	D	
444	417	dPro	dPro	H			L	D	
445	190	PRO	PRO	H			L	D	
446	190	PRO	PRO	H			L	D	
447	418	PRO	PRO	H			L	D	
448	419	PRO	PRO	H	Y	G	D	T	
449	420	PRO	PRO	H	L	T	A	P	
450	421	PRO	PRO	H	Y	D	T	A	
270	264	PRO	PRO	H	[3-(4-thiazolyl)-Ala]-reduced	L	D	T	
451	422	PRO	PRO	H	[3-(4-thiazolyl)-Ala]	L	D	T	
452	423	PRO	PRO	H	[3-(4-thiazolyl)-Ala]	L	D	T	
453	424	PRO	PRO	H	[3-(4-thiazolyl)-Ala]	L	D	T	
454	425	PRO	PRO	H	[3-(4-thiazolyl)-Ala]	L	D	T	Thr-reduced
455	426	PRO	PRO	H		L	D	T	

TABLE 2C

Compound No.	a4b7 ELISA IC <sub>50</sub> (mM)	a4b1 ELISA IC <sub>50</sub> (mM)	Selectivity ELISA	RPMI 8866 cell IC <sub>50</sub> (mM)
5	0.087	0.062	0.7	7.916
398	39.605	38.211		
399			47	
4	0.129	0.357	2.8	11.782
400	7.348	4.904		
401	1.27	3.843		
402	6.45	2.842		
403	6.45	2.842		
404	6.45	2.842		
405	40.313			
406	3.832			
407	3.664	3.727		
408	3.22	19.216		
409	3.025			
410	3.817			
411	40			
412	7.633			
413	27.726			
414	50			
415	45.263			
416	56.579			
417	6.515			
418		15.5		
		28.42		

TABLE 2C

Compound No.	a4b7 ELISA IC <sub>50</sub> (mM)	a4b1 ELISA IC <sub>50</sub> (mM)	Selectivity ELISA RPMI 8866 cell IC <sub>50</sub> (mM)
419	15.5	28.42	
420	3.116	3	
125	0.025	0.458	18.4
421	0.462	0.726	1.925
422	1.273	2.122	
423	10		
424	1.0		
425	1.575	3.717	
426	3.665	3.727	
427	1.04	1.2	
428	3.665	1.012	
429	3.116	3.00	
430	2.933	8.59	
431	10		
432	4.33	2.905	
341	0.012	0.026	2.1
433	7.904	37.5	0.306
434	3.746	29.919	
435	0.231	0.342	
436	4.82	13.377	
437	5.305	7.302	
232	0.012	0.110	8.9
438	0.941	21.709	0.353
439	1.579	1.902	
440	1.833	9.679	
441	0.994	4.095	

TABLE 2C

Compound No.	a4b7 ELISA IC <sub>50</sub> (mM)	a4b1 ELISA IC <sub>50</sub> (mM)	Selectivity ELISA RPMI 8866 cell IC <sub>50</sub> (mM)
442	2.281	4.701	
443	7.442	28.424	
444	7.566	28.424	
445	10.492	1.123	
446	10.541	26.869	
447	8.109	8.859	
448	50		
449	6.494	4.658	
450	0.400	2.007	
			18.900
270	0.160	17.562	109.8
451	41.17	86.84	
452	2.009	110	
453	2.251	36.125	
454	8.274	43.01	
455	20.512	96.78	

Table S1

Compound No.	LC-MS (m/z)	Experimental Protocol
1		A,E,Fb,I,M
2		A,E,Fb,I,M
3		A,E,Fb,I,M
4		A,E,Fa,Jb,I,M
5		A,E,Fa,Jb,I,M
6		A,E,Fa,Jb,I,M
7		A,E,Fa,Jb,I,M
8		A,E,Fa,Jb,I,M
9	780.4	A,E,Fa,Jb,I,M
10	780.4	A,E,Fa,Jb,I,M
11	859.4	A,E,Fa,Jb,I,M
12	806.4	A,E,Fa,Jb,I,M
13		A,E,Fa,Jb,H,I,M
14	792.4	A,E,Fa,Jb,I,M
15	792.4	A,E,Fa,Jb,I,M
16		A,E,Fa,Jb,I,M
17		A,E,Fa,Jb,I,M
18		A,E,Fa,Jb,I,M
19		A,E,Fa,Jb,H,I,M
20		A,E,Fa,Jb,H,I,M
21		A,E,Fa,Jb,H,I,M
22		A,E,Fa,Jb,H,I,M
23		A,E,Fa,Jb,H,I,M
24		A,E,Fa,Jb,H,I,M
25		A,E,Fa,Jb,H,I,M
26		A,E,Fa,Jb,H,I,M
27	836.4	A,E,Fa,Jb,H,I,M
28		A,E,Fa,Jb,H,I,M
29	880.4	A,E,Fa,Jb,H,I,M
30	880.4	A,E,Fa,Jb,H,I,M
31	866.4	A,E,Fa,Jb,H,I,M
32		A,E,Fa,Jb,I,M
33		A,E,Fa,Jb,H,I,M
34	891.4	A,E,Fa,Jb,K,I,M
35	829.4	A,E,Fa,Jb,K,I,M
36		A,E,Fa,Jb,K,I,M
37	859.4	A,E,Fa,Jb,K,I,M
38	871.4	A,E,Fa,Jb,K,I,M
39		A,E,Fa,Jb,I,M
40	744.4	A,E,Fa,Jb,I,M
41	758.4	A,E,Fa,Jb,I,M
42	746.4	A,D,I,M
43	742.4	A,D,I,M
44		A,E,Fa,Jb,I,M
45	748.4	A,E,Fa,Jb,I,M
46		A,E,Fa,Jb,I,M
47	749.3	A,E,Fa,Jb,I,M
48		A,E,Fa,Jb,I,M
49		A,E,Fa,Jb,I,M

Table S1

Compound No.	LC-MS (m/z)	Experimental Protocol
50	739.4	A,D,I,M
51		A,D,I,M
52		A,D,I,M
53		A,D,I,M
54		A,D,I,M
55		A,D,I,M
56		A,D,I,M
57		A,D,I,M
58		A,D,I,M
59		A,D,I,M
60		A,D,I,M
61		A,D,I,M
62		A,D,I,M
63		A,D,I,M
64		A,D,I,M
65		A,D,I,M
66		A,D,I,M
67		A,D,I,M
68		A,D,I,M
69		A,D,I,M
70		A,D,I,M
71		A,D,I,M
72		A,D,I,M
73		A,D,I,M
74		A,D,I,M
75		A,D,I,M
76		A,D,I,M
77		A,D,I,M
78		A,D,I,M
79		A,D,I,M
80		A,D,I,M
81		A,D,I,M
82		A,D,I,M
83		A,D,I,M
84		A,D,I,M
85		A,D,I,M
86		A,D,I,M
87		A,D,I,M
88		A,D,I,M
89		A,D,I,M
90		A,D,I,M
91		A,D,I,M
92		A,D,I,M
93		A,D,I,M
94		A,D,I,M
95		A,D,G,I,M
96		A,D,G,I,M
97		A,D,G,I,M
98		A,D,I,M

Table S1

Compound No.	LC-MS (m/z)	Experimental Protocol
99		A,D,I,M
100	847.4	A,D,I,M
101	843.6	A,D,I,M
102	843.6	A,D,I,M
103	817.4	A,D,I,M
104	857.4	A,D,I,M
105	817.4	A,D,I,M
106	927.2	A,D,I,M
107	927.2	A,D,I,M
108	877.4	A,D,I,M
109	858.4	A,D,I,M
110	934.4	A,D,I,M
111	865.4	A,D,I,M
112	934.4	A,D,I,M
113	886.4	A,D,I,M
114	902.4	A,D,I,M
115	833.4	A,D,I,M
116	877.4	A,D,I,M
117	851.4	A,D,I,M
118	857.4	A,D,I,M
119	927.2	A,D,I,M
120	908.4	A,D,I,M
121	888.4	A,D,I,M
122	801.4	A,D,I,M
123	905.4	A,D,I,M
124	843.4	A,D,I,M
125	857.4	A,D,I,M
126	827.4	A,D,I,M
127	887.4	A,D,I,M
128	881.4	A,D,I,M
129	1001.2	A,D,I,M
130		A,D,I,M
131		A,D,I,M
132		A,D,I,M
133		A,D,I,M
134		A,D,G,I,M
135		A,D,G,I,M
136		A,D,G,I,M
137		A,D,G,I,M
138		A,D,I,M
139		A,D,I,M
140		A,D,I,M
141		A,D,I,M
142		A,D,I,M
143	891.1	A,D,I,M
144	891.1	A,D,I,M
145	918.1	A,D,I,M
146	918.1	A,D,I,M
147	918.1	A,D,I,M

Table S1

Compound No.	LC-MS (m/z)	Experimental Protocol
148	871.1	A,D,I,M
149	857.1	A,D,I,M
150	871.1	A,D,I,M
151	850.0	A,D,I,M
152	872.1	A,D,I,M
153	869.2	A,D,I,M
154	900.2	A,D,I,M
155	859.4	A,D,I,M
156	843.4	A,D,I,M
157	916.2	A,D,I,M
158		A,D,I,M
159		A,D,I,M
160		A,D,I,M
161		A,D,I,M
162		A,D,I,M
163		A,D,I,M
164		A,D,I,M
165		A,D,I,M
166		A,D,I,M
167		A,D,I,M
168		A,D,I,M
169		A,D,I,M
170		A,D,I,M
171		A,D,I,M
172		A,D,I,M
173		A,D,I,M
174		A,D,I,M
175		A,D,I,M
176		A,D,I,M
177		A,D,I,M
178		A,D,I,M
179		A,D,G,I,M
180		A,D,G,I,M
181		A,D,G,I,M
182		A,D,G,I,M
183		A,D,G,I,M
184		A,D,G,I,M
185		A,D,G,I,M
186	869.3	A,D,I,M
187	842.4	A,D,I,M
188	842.1	A,D,I,M
189	902.1	A,D,I,M
190	909.1	A,D,I,M
191	948.4	A,D,G,I,M
192	968.4	A,D,G,I,M
193	861.4	A,D,I,M
194	857.4	A,D,I,M
195	888.4	A,D,I,M
196	702.4	A,D,I,M

Table S1

Compound No.	LC-MS (m/z)	Experimental Protocol
197		A,D,I,M
198		A,D,I,M
199		A,D,I,M
200		A,D,I,M
201		A,D,I,M
202		A,D,I,M
203		A,D,I,M
204		A,D,I,M
205		A,D,I,M
206	967.2	A,D,G,I,M
207	948.2	A,D,G,I,M
208	948.2	A,D,G,I,M
209		A,D,G,I,M
210		A,D,I,M
211		A,D,I,M
212		A,D,I,M
213		A,D,I,M
214		A,D,I,M
215		A,D,I,M
216	900.4	A,D,I,M
217		A,D,I,M
218		A,C,D,I,M
219		A,D,I,M
220		A,D,I,M
221	893.1	A,B,D,I,M
222	915.2	A,B,D,I,M
223	891.1	A,D,I,M
224		A,D,I,M
225		A,D,I,M
226		A,D,I,M
227		A,D,I,M
228		A,D,I,M
229	857.4	A,D,I,M
230	870.4	A,D,I,M
231		A,D,I,M
232	886.2	A,B,D,I,M
233		A,C,D,I,M
234		A,D,I,M
235		A,D,G,I,M
236		A,D,I,M
237	952.0	A,D,I,M
238		A,D,I,M
239	890.2	A,D,I,M
240		A,D,I,M
241		A,D,I,M
242		A,D,I,M
243		A,D,G,I,M
244	999.3	A,D,G,I,M
245		A,D,G,I,M

Table S1

Compound No.	LC-MS (m/z)	Experimental Protocol
246		A,D,I,M
247		A,D,I,M
248		A,D,G,I,M
249		A,D,G,I,M
250	900.2	A,D,I,M
251	886.1	A,D,I,M
252		A,D,I,M
253		A,D,I,M
254		A,D,I,M
255	998.4	A,D,I,M
256	948.6	A,D,G,I,M
257	978.6	A,D,G,I,M
258	1008.6	A,D,G,I,M
259	1032.6	A,D,G,I,M
260	998.4	A,D,I,M
261	978.4	A,D,G,I,M
262	1032.4	A,D,G,I,M
263	886.6	A,D,I,M
264	886.6	A,D,I,M
265	976.6	A,D,G,I,M
266	1000.6	A,D,G,I,M
267	984.5	A,D,G,I,M
268	976.6	A,D,G,I,M
269	1012.6	A,D,G,I,M
270		A,C,D,I,M
271		A,D,G,I,M
272		A,D,G,I,M
273	1005.3	A,D,G,I,M
274		A,D,I,M
275		A,D,I,M
276		A,D,G,I,M
277		A,D,I,M
278		A,D,I,M
279		A,D,I,M
280	898.1	A,D,I,M
281		A,D,I,M
282		A,D,I,M
283		A,D,I,M
284		A,D,I,M
285		A,D,I,M
286		A,D,G,I,M
287		A,D,G,I,M
288		A,D,I,M
289		A,D,I,M
290		A,D,I,M
291		A,D,I,M
292		A,D,G,I,M
293	949.2	A,D,G,I,M
294		A,D,G,I,M

Table S1

Compound No. LC-MS (m/z) Experimental Protocol

295		A,D,I,M
296		A,D,I,M
297		A,D,G,I,M
298	1012.6	A,D,G,I,M
299	1005.4	A,D,G,I,M
300	915.2	A,B,D,I,M
301	915.2	A,B,D,I,M
302	893.2	A,B,D,I,M
303	1047.3	A,B,D,I,M
304	898.2	A,B,D,I,M
305	898.2	A,B,D,I,M
306		A,D,G,I,M
307		A,D,I,M
308		A,B,D,I,M
309	916.2	A,B,D,I,M
310	916.2	A,B,D,I,M
311	900.2	A,B,D,I,M
312	904.2	A,B,D,I,M
313	918.2	A,B,D,I,M
314	954.1	A,B,D,I,M
315	968.1	A,B,D,I,M
316	929.2	A,B,D,I,M
317		A,D,G,I,M
318	999.4	A,D,G,I,M
319	808.6	A,D,I,M
320	917.4	A,D,G,I,M
321	1032.4	A,D,G,I,M
322	978.5	A,D,G,I,M
323		A,B,D,G,I,M
324		A,D,I,M
325	914.3	A,B,D,I,M
326	928.2	A,B,D,I,M
327	870.2	A,B,D,I,M
328	912.2	A,B,D,I,M
329	900.4	A,B,D,I,M
330	942.5	A,B,D,I,M
331	852.5	A,B,D,I,M
332	884.6	A,B,D,I,M
333	867.2	A,D,I,M
334	900.4	A,B,D,I,M
335	884.5	A,B,D,I,M
336		A,D,I,M
337		A,D,G,I,M
338		A,D,G,I,M
339		A,D,G,I,M
340		A,D,G,I,M
341		A,D,G,I,M
342		A,D,I,M
343		A,D,G,I,M

Table S1

Compound No.	LC-MS (m/z)	Experimental Protocol
344		A,D,G,I,M
345		A,D,G,I,M
346		A,D,G,I,M
347		A,D,G,I,M
348		A,D,G,I,M
349		A,D,G,I,M
350		A,D,G,I,M
351		A,D,G,I,M
352		A,D,G,I,M
353		A,D,G,I,M
354		A,D,G,I,M
355		A,D,G,I,M
356		A,D,G,I,M,L,M
357		A,D,I,M
358		A,D,I,M
359		A,D,I,M
360		A,D,I,M
361		A,D,I,M
362		A,D,G,I,M
363		A,D,G,I,M
364		A,D,G,I,M
365		A,D,G,I,M
366		A,D,G,I,M
367		A,D,G,I,M
368		A,D,G,I,M
369		A,D,G,I,M
370		A,D,G,I,M
371		A,D,G,I,M
372		A,D,G,I,M
373		A,D,G,I,M
374		A,D,G,I,M
375		A,D,G,I,M
376		A,D,G,I,M
377		A,D,G,I,M
378		A,D,G,I,M
379		A,D,G,I,M
380		A,D,G,I,M
381		A,D,G,I,M
382		A,D,G,I,M
383		A,D,G,I,M
384		A,D,G,I,M
385		A,D,G,I,M
386		A,D,G,I,M
387		A,B,D,I,M
388		A,B,D,G,I,M
389	985.2	A,C,D,G,I,M
398		A,D,I,M
399		A,D,I,M
400		A,D,I,M

Table S1

Compound No.	LC-MS (m/z)	Experimental Protocol
401		A,D,I,M
402		A,D,I,M
403		A,D,I,M
404		A,D,I,M
405		A,E,Fa,Jb,I,M
406		A,E,Fa,Jb,I,M
407		A,D,I,M
408		A,D,I,M
409		A,D,I,M
410		A,D,I,M
411		A,E,Fa,Jb,I,M
412		A,D,I,M
413		A,E,Fa,Jb,I,M
414		A,E,Fa,Jb,I,M
415		A,D,I,M
416		A,D,I,M
417		A,D,I,M
418		A,D,I,M
419		A,D,I,M
420		A,D,I,M
421		A,D,I,M
422		A,D,I,M
423		A,D,I,M
424		A,D,I,M
425		A,D,I,M
426		A,D,I,M
427		A,D,I,M
428		A,D,I,M
429		A,D,I,M
430		A,D,I,M
431		A,D,I,M
432		A,D,I,M
433		A,D,G,I,M
434		A,D,G,I,M
435		A,D,G,I,M
436		A,D,G,I,M
437		A,D,G,I,M
438		A,D,G,I,M
439		A,D,I,M
440		A,D,I,M
441		A,D,I,M
442		A,B,D,I,M
443		A,D,I,M
444		A,D,I,M
445		A,D,I,M
446		A,D,I,M
447		A,D,I,M
448		A,D,I,M
449		A,D,I,M

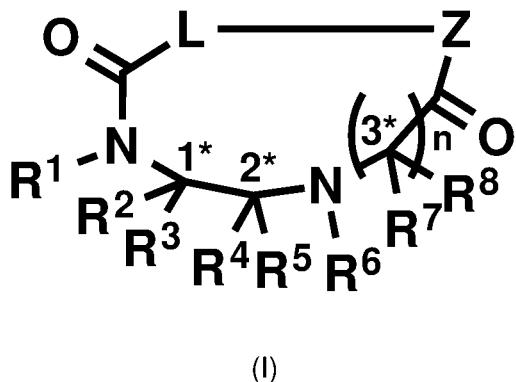
Table S1

Compound No. LC-MS (m/z) Experimental Protocol

450	A,D,I,M
451	A,C,D,I,M
452	A,C,D,I,M
453	A,C,D,I,M
454	A,C,D,I,M
455	A,C,D,I,M

**CLAIMS:**

1. A compound of formula (I):



wherein

$R^1$  is H; C1-6 alkyl; aryl; heteroaryl; alkenyl; or heterocycle; all of which are optionally substituted at one or more substitutable positions with one or more substituents selected from the group consisting of hydroxyl; cyano; alkyl, alkoxy, vinyl; alkenyl, alkynyl; formyl; haloalkyl, halide; aryl, heteroaryl, amide; acyl; ester, ether, thioether, thioalkoxy; phosphino; and  $-NR_aR_b$ , where  $R_a$  and  $R_b$  are independently selected from C1-6 alkyl, aryl or benzyl;

$R^2$  and  $R^3$  are each independently an amino acid side chain of a proteinogenic or a non-proteinogenic alpha-amino acid,

provided that  $R^2$  and  $R^3$  may be covalently linked to each other to form a ring;

$R^4$  and  $R^5$  are each independently H; C1-6 alkyl; aryl; heteroaryl; alkenyl; heterocycle; acids of the formula  $-C(O)OH$ ; esters of the formula  $-C(O)OR^*$  wherein  $R^*$  is selected from alkyl and aryl; amides of the formula  $-C(O)NR^{**}R^{***}$ , wherein  $R^{**}$  and  $R^{***}$  are independently selected from H, alkyl and aryl;  $-CH_2C(O)R$ , wherein R is selected from  $-OH$ , C1-6 alkyl, aryl, - C1-6 alkyl-aryl, or  $-NR_aR_b$ , where  $R_a$  and  $R_b$  are independently selected from H, C1-6 alkyl, aryl or - C1-6 alkyl-aryl; or  $-C(O)R_c$ , wherein  $R_c$  is selected from C1-6 alkyl, aryl or - C1-6 alkyl-aryl; or - C1-6 alkyl- $OR_d$ , wherein  $R_d$  is a suitable protecting group or OH group; all of which are optionally substituted at one or more substitutable positions with one or more substituents selected from the group consisting of hydroxyl; cyano; alkyl, alkoxy, vinyl; alkenyl, alkynyl; formyl; haloalkyl, halide; aryl, heteroaryl, amide; acyl; ester, ether, thioether, thioalkoxy;

phosphino; and  $-\text{NR}_a\text{R}_b$ , where  $\text{R}_a$  and  $\text{R}_b$  are independently selected from C1-6 alkyl, aryl or benzyl;

provided that  $\text{R}^2$  or  $\text{R}^3$  can be covalently linked to  $\text{R}^1$  to form a cyclic secondary amine, and /or to  $\text{R}^4$  or  $\text{R}^5$  to form a ring,  $\text{R}^4$  and  $\text{R}^5$  may also be covalently linked to each other to form a ring;

$\text{R}^6$  is H, C1-6 alkyl, benzyl, alkenyl, C1-6 alkyloxy; aryl; heteroaryl; heterocycle;  $-\text{C}(\text{O})\text{R}^{***}$ , wherein  $\text{R}^{***}$  is independently selected from alkyl, aryl, heteroaryl, amino, aminoalkyl, aminoaryl, aminoheteroaryl, alkoxy, aryloxy, heteroaryloxy;  $-\text{CH}_2\text{C}(\text{O})\text{R}$ ; or  $-\text{C}(\text{O})\text{Rc}$ ; all of which are optionally substituted at one or more substitutable positions with one or more substituents selected from the group consisting of hydroxyl; cyano; alkyl, alkoxy, vinyl; alkenyl, alkynyl; formyl; haloalkyl, halide; aryl, heteroaryl, amide; acyl; ester, ether, thioether, thioalkoxy; phosphino; and  $-\text{NR}_a\text{R}_b$ , where  $\text{R}_a$  and  $\text{R}_b$  are independently selected from C1-6 alkyl, aryl or benzyl,

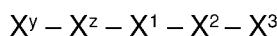
or along with  $\text{R}^7$  or  $\text{R}^8$ , a cyclic side chain of a proteinogenic or a non-proteinogenic amino acid having, the N-terminus thereof being the N- $\text{R}^6$ , wherein the proteinogenic or a non-proteinogenic amino acid can be substituted with a substituent selected from the group consisting of hydroxyl; cyano; alkyl, alkoxy, vinyl; alkenyl, alkynyl; formyl; haloalkyl, halide; aryl, heteroaryl, amide; acyl; ester, ether, thioether, thioalkoxy; phosphino; and  $-\text{NR}_a\text{R}_b$ , where  $\text{R}_a$  and  $\text{R}_b$  are independently selected from C1-6 alkyl, aryl or benzyl;

$\text{R}^7$  and  $\text{R}^8$  are independently selected from the amino acid side chains of a proteinogenic or a non-proteinogenic alpha-amino acid having the N-terminus thereof being the N- $\text{R}^6$ , or may form a cyclic side chain with  $\text{R}^6$ ;

stereocentres  $1^*$ ,  $2^*$  and  $3^*$  are each independently selected from R and S;

n is 1, 2, 3, or 4 and where n is 2-4, each  $\text{R}^7$  and each  $\text{R}^8$  are independent of each other; and

wherein Z is an amino terminus of an amino acid;  $-\text{C}=\text{O}-$  adjacent L is the carboxy terminus of an amino acid; and L along with Z and  $-\text{C}=\text{O}-$  is a peptide having the following formula:



wherein  $X^y$  and  $X^z$  are each independently a proteinogenic or non-proteinogenic amino acid, or  $X^z$  is absent;

$X^1$  is Leucine or tert-butyl-Ala;

$X^2$  is Asp; and

$X^3$  is an amino acid selected from the group consisting of Thr, Thr(OBn), Thr(OEt), Pen, MeThr, alloThr, Abu, Val, Ile and allolle.

2. The compound of claim 1, wherein  $R^1$  is H.
3. The compound of claim 1, wherein  $R^2$  or  $R^3$  is covalently linked to  $R^1$  to form proline having  $NR^1$  as the N-terminus.
4. The compound of any one of claims 1-3, wherein  $R^2$  and  $R^3$  are not both H.
5. The compound of claim 1 or 2, wherein  $R^2$  and  $R^3$  are each independently selected from the group consisting of amino acid side chains of a proteinogenic or a non-proteinogenic alpha-amino acids.
6. The compound of claim 1 or 2, wherein  $R^2$  and  $R^3$  are H and  $CH_3$  respectively or vice versa.
7. The compound of claim 1 or 2, wherein  $R^2$  or  $R^3$  is  $-CH_2-S-R^s$ , wherein  $R^s$  is selected from C1-6 alkyl; C1-6 amino alkyl; aryl; heteroaryl; alkenyl; or heterocycle; all of which are optionally substituted at one or more substitutable positions with one or more substituents selected from the group consisting of hydroxyl; cyano; alkyl, alkoxy, vinyl; alkenyl, alkynyl; formyl; haloalkyl, halide; aryl, heteroaryl, amide; acyl; ester, ether, thioether, thioalkoxy; phosphino; and  $-NR_aR_b$ , where  $R_a$  and  $R_b$  are independently selected from C1-6 alkyl, aryl or benzyl; preferably  $R^s$  is phenyl or phenyl substituted with C1-6 alkyl, halogen; or C1-6 amino alkyl.
8. The compound of any one of claims 1-4, wherein  $R^4$  and  $R^5$  are not both H.
9. The compound of any one of claims 1-4, wherein  $R^{**}$  and  $R^{***}$  are not both H.

10. The compound of any one of claims 1-4, wherein R<sup>4</sup> and R<sup>5</sup> are each independently H, or C(O)-NHR<sup>t</sup>, wherein R<sup>t</sup> is H or a C1-6 alkyl.
11. The compound of claim 10, wherein R<sup>t</sup> is tert-butyl.
12. The compound of claim 10 wherein R<sup>t</sup> is H.
13. The compound of any one of claims 1-12, wherein R<sup>6</sup> is H.
14. The compound of any one of claims 1-12, wherein R<sup>6</sup> and either R<sup>7</sup> or R<sup>8</sup> form a ring resulting in a proline residue having N-R<sup>6</sup> as its N-terminus.
15. The compound of any one of claims 1-14, wherein n is 1.
16. The compound of any one of claims 1-15, wherein Z along with L and -C=O is any one of SEQ ID NOs. 1-380.
17. The compound of any one of claims 1-16, wherein X<sup>1</sup> is Leu.
18. The compound of any one of claims 1-16, wherein X<sup>2</sup> is Asp.
19. The compound of any one of claims 1-16, wherein X<sup>3</sup> is Thr.
20. The compound of any one of claims 1-16, wherein X<sup>3</sup> is Val.
21. The compound of any one of claims 1-16, wherein X<sup>3</sup> is Ile.
22. The compound of any one of claims 1-21, wherein X<sup>y</sup> and X<sup>z</sup> are each independently a proteinogenic or non-proteinogenic alpha-amino acid.
23. The compound of any one of claims 1-21, wherein X<sup>z</sup> is a proteinogenic or non-proteinogenic beta-amino acid.
24. The compound of any one of claims 1-21, wherein X<sup>z</sup> is betaHomoLys or MethylbetaHomoLys.
25. The compound of any one of claims 1-21, wherein X<sup>y</sup> and X<sup>z</sup> are each a primary amino acid.

26. The compound of any one of claims 1-21, wherein  $X^y$  and  $X^z$  are selected from the group consisting of:

Cpd No	$X^y$	$X^z$
1	Y	absent
2	H	absent
3	Y	absent
4	Y	absent
5	F	absent
6	HomoPhe	absent
7	Cha	absent
8	W	absent
9	1Nal	absent
10	2Nal	absent
11	W	absent
12	Bip	absent
13	Tyr(OPh)	absent
14	1Nal	absent
15	2Nal	absent
16	2Nal	absent
17	W	absent
18	Bip	absent
19	Tyr(2-tolyl diaryl ether)	absent
20	Tyr(4-CF <sub>3</sub> diaryl ether)	absent
21	Tyr(4-methoxy diaryl ether)	absent
22	Tyr(4-fluoro diaryl ether)	absent
23	Tyr(2-methoxy diaryl ether)	absent
24	Tyr(3-methoxy diaryl ether)	absent
25	Tyr(3-fluoro diaryl ether)	absent
26	Tyr(3,4-difluoro diaryl ether)	absent
27	Tyr(3-methyl diaryl ether)	absent
28	Tyr(3,4-dimethyl diaryl ether)	absent
29	Tyr(4-CO <sub>2</sub> Me diaryl ether)	absent
30	Tyr(3-CO <sub>2</sub> Me diaryl ether)	absent
31	Tyr(4-CO <sub>2</sub> H diaryl ether)	absent
32	F	absent
33	metaY(Opr)	absent
34	Orn(benzamide)	absent

35	Orn(acetamide)	absent
36	Orn(methanesulfonamide)	absent
37	Orn(ethylcarbamate)	absent
38	Orn(pentyl amide)	absent
39	R	absent
40	F	absent
41	F	absent
42	dTyr	absent
43	dTic	absent
44	[3-(3'-pyridyl)-Ala]	absent
45	F	absent
46	Bip	absent
47	[3-(3'-pyridyl)-Ala]	absent
48	Y	absent
49	Y	absent
50	dArg	absent
51	dPip	absent
52	[3-(4-thiazolyl)-Ala]	absent
53	Y	absent
54	(4-aza-Phe)	absent
55	Y	absent
56	(vinyl-Br-Leu)	absent
57	Hyp(OBn)	absent
58	Hyp(OBn)	absent
59	Dap(Cbz)	absent
60	His(Bn)	absent
61	(4-amino-Phe)	absent
62	(4-aza-dPhe)	absent
63	Hyp	absent
64	dTrp	absent
65	M	absent
66	dMet	absent
67	(4-guanidino-Phe)	absent
68	(3-aza-Phe)	absent
69	dTic	absent
70	(3-aza-dPhe)	absent
71	Nva	absent
72	dNle	absent
73	dLys	absent

74	dPro	absent
75	dOrn	absent
76	(3-benzothienyl-Ala)	absent
77	dTyr(OAllyl)	absent
78	dSer(OBn)	absent
79	[3-(4-thiazolyl)-dAla]	absent
80	(3-benzothienyl-dAla)	absent
81	[3-(2-thienyl)-dAla]	absent
82	(4-aminomethyl-Phe)	absent
83	dOrn(dimethyl)	absent
84	(4-amino-dPhe)	absent
85	(4-aminomethyl-dPhe)	absent
86	dTyr(OBn)	absent
87	P	absent
88	cycloLeu	absent
89	Aic	absent
90	Tyr(OAllyl)	absent
91	Chg	absent
92	K	absent
93	(2-aza-dPhe)	absent
94	(2-aza-Phe)	absent
95	[2-(2-pyridyl)-4-thiazolyl-Ala]	absent
96	[2-(3-pyridyl)-4-thiazolyl-Ala]	absent
97	[2-(4-pyridyl)-4-thiazolyl-Ala]	absent
98	dTiq	absent
99	[1-(S)-isoindoline-carboxylic acid]	absent
100	Y	dThr
101	Y	P
102	Y	dPro
103	Y	Sar
104	Y	cycloLeu
105	Y	Sar
106	(3-iodo-Phe)	Sar
107	(4-iodo-Phe)	Sar
108	(3,3-diphenyl-Ala)	Sar
109	F	dLys
110	Bip	dLys
111	[3-(4-thiazolyl)-Ala]	dLys
112	(3,3-diphenyl-Ala)	dLys

113	Y	dLys
114	Y	dArg
115	Y	dSer
116	Bip	Sar
117	1Nal	Sar
118	Y	Pip
119	(2-iodo-Phe)	Sar
120	1Nal	dLys
121	Y	dLys
122	F	Sar
123	Y	dTic
124	Y	dPro
125	Y	dPip
126	F	dPro
127	(3,4-dimethoxy-Phe)	dPro
128	(3,4,5-trifluoro-Phe)	dPro
129	(3,5-dibromo-Tyr)	dPro
130	F	dPip
131	[3-(4-thiazolyl)-Ala]	dPip
132	(4-aminomethyl-Phe)	dPip
133	[2-iodo-Phe]	dPip
134	(2-phenyl-Phe)	dPip
135	[2-(2-methoxy-phenyl)-Phe]	dPip
136	[2-(3-methoxy-phenyl)-Phe]	dPip
137	[2-(4-methoxy-phenyl)-Phe]	dPip
138	Bip	dPip
139	Y	Hyp
140	Y	dHyp
141	Y	(cis-dHyp)
142	dTyr	dPip
143	1Nal	dPip
144	2Nal	dPip
145	(4-aminomethyl-Phe)	dTic
146	(3-aminomethyl-Phe)	dTic
147	(3-aminomethyl-dPhe)	dTic
148	MeTyr	dPip
149	Y	dPip
150	Y	dPip
151	[3-(4-thiazolyl)-Ala]	dHyp

152	(4-aminomethyl-Phe)	dHyp
153	Y	dPip
154	Y	dMeLys
155	Y	dNle
156	F	dHyp
157	Y	dMeArg
158	Y	G
159	Y	A
160	Y	dAla
161	M	G
162	Tyr(OAllyl)	Sar
163	Tyr(OAllyl)	G
164	[3-(4-thiazolyl)-Ala]	Sar
165	(4-aminomethyl-Phe)	G
166	Tyr(OAllyl)	dVal
167	Tyr(OAllyl)	dSer
168	Tyr(OAllyl)	dAla
169	Tyr(OAllyl)	P
170	Tyr(OAllyl)	dPro
171	[3-(4-thiazolyl)-Ala]	dVal
172	[3-(4-thiazolyl)-Ala]	dSer
173	[3-(4-thiazolyl)-Ala]	dAla
174	[3-(4-thiazolyl)-Ala]	P
175	[3-(4-thiazolyl)-Ala]	dPro
176	(4-aminomethyl-Phe)	P
177	(4-aminomethyl-Phe)	dPro
178	cycloLeu	P
179	[2-(2-pyridyl)-4-thiazolyl-Ala]	Sar
180	[2-(2-pyridyl)-4-thiazolyl-Ala]	dPro
181	[2-(3-pyridyl)-4-thiazolyl-Ala]	Sar
182	[2-(3-pyridyl)-4-thiazolyl-Ala]	dPro
183	[2-(4-pyridyl)-4-thiazolyl-Ala]	dPro
184	[3-(2-aminobenzyl-4-thiazolyl)-Ala]	Sar
185	[2-(amino-benzyl)-4-thiazolyl-Ala]	dPro
186	dTyr	dPip
187	(2-aminomethyl-Phe)	Aze
188	Y	dPip
189	(3-aminomethyl-Phe)	dTic
190	(2,4-dichloro-Phe)	dPip

191	(3-phenyl-dPhe)	dPip
192	[3-(5-quinolinyl)-dPhe]	dPip
193	Y	betaHomoLys
194	Y	betaHomoPro
195	Y	betaHomoLys
196	Y	2Abz
197	F	betaHomoLys
198	[3-(4-thiazolyl)-Ala]	betaHomoLys
199	(4-aminomethyl-Phe)	betaHomoLys
200	Y	betaHomoLys
201	MeTyr	dbetaHomoLys
202	1Nal	betaHomoLys
203	2Nal	betaHomoLys
204	Bip	betaHomoLys
205	(2-iodo-Phe)	betaHomoLys
206	[2-(2,5-dimethyl-isoxazole)-Phe]	betaHomoLys
207	(2-phenyl-Phe)	betaHomoLys
208	(2-phenyl-Phe)	betaHomoLys
209	[(2-piperazinyl-2-Phenyl)-Phe]	betaHomoLys
210	Cha	betaHomoLys
211	W	betaHomoLys
212	dTrp	betaHomoLys
213	(3-aminomethyl-Phe)	betaHomoLys
214	(4-aminomethyl-dPhe)	betaHomoLys
215	(4-aminomethyl-Phe)	betaHomoLys
216	Y	dbetaHomoLys
217	dArg	betaHomoLys
218	(4-aminomethyl-Phe)-reduced	betaHomoLys
219	[3-(4-thiazolyl)-Ala]	dbetaHomoLys
220	F	dbetaHomoLys
221	[3-(4-thiazolyl)-Ala]	MebetaHomoLys
222	(4-aminomethyl-Phe)	MebetaHomoLys
223	[3-(4-thiazolyl)-Ala]	betaHomoLys
224	Tic	betaHomoLys
225	dTic	betaHomoLys
226	dTic	dbetaHomoLys
227	Y	betaHomolle
228	(4-aminomethyl-Phe)	betaHomoPro
229	Y	dbetaHomoPro

230	(4-aminomethyl-Phe)	dbetaHomoPro
231	R	betaHomoLys
232	F	MebetaHomoLys
233	Phe-reduced	betaHomoLys
234	(3-aminomethyl-dPhe)	betaHomoLys
235	[2-[3-(1-piperazinyl)phenyl]-Phe]-betaHomoLys	betaHomoLys
236	[3-(4-thiazolyl)-dAla]	betaHomoLys
237	(2-bromo-Phe)	betaHomoLys
238	(2-chloro-Phe)	betaHomoLys
239	(2-fluoro-Phe)	betaHomoLys
240	(2-CF <sub>3</sub> -Phe)	betaHomoLys
241	(2,4-dichloro-Phe)	betaHomoLys
242	(2-aminomethyl-Phe)	betaHomoLys
243	[2-(4-quinolinyl)-Phe]	betaHomoLys
244	[2-(5-quinolinyl)-Phe]	betaHomoLys
245	[2-(3-quinolinyl)-Phe]	betaHomoLys
246	dhomoPhe	betaHomoLys
247	(2-iodo-dPhe)	betaHomoLys
248	(2-phenyl-dPhe)	betaHomoLys
249	[(2-piperazinyl-2-Phenyl)-dPhe]	betaHomoLys
250	Y	betaHomoLys
251	Y	betaHomoLys
252	dTyr	betaHomoLys
253	(4-aminomethyl-dPhe)	betaHomoLys
254	(4-aminomethyl-Phe)	betaHomoLys
255	(3-iodo-Phe)	betaHomoLys
256	(3-phenyl-Phe)	betaHomoLys
257	[3-(2-methoxy-phenyl)-Phe]	betaHomoLys
258	[3-(2,6-dimethoxy-phenyl)-Phe]	betaHomoLys
259	[3-(2-trifluoromethoxy-phenyl)-Phe]	betaHomoLys
260	(4-iodo-Phe)	betaHomoLys
261	[4-(2-methoxy-phenyl)-Phe]	betaHomoLys
262	[4-(2-trifluoromethoxy-phenyl)-Phe]	betaHomoLys
263	alphaMePhe	betaHomoLys
264	MePhe	betaHomoLys
265	[3-(2,6-dimethyl-phenyl)-Phe]	betaHomoLys
266	[3-(quinolin-4-yl)-Phe]	betaHomoLys
267	[3-(3,4-difluoro-phenyl)-Phe]	betaHomoLys
268	[4-(2,6-dimethyl-phenyl)-Phe]	betaHomoLys

269	[4-(2-chloro-6-methoxy-phenyl)-Phe]	betaHomoLys
270	[3-(4-thiazolyl)-Ala]-reduced	betaHomoLys
271	[2-[4-(1-piperazinyl)phenyl]-Phe]	betaHomoLys
272	[2-(2,6-dimethylphenyl)-Phe]	betaHomoLys
273	[2-(benzothiazol-5-yl)-Phe]	betaHomoLys
274	HomoPhe	betaHomoLys
275	(piperidine-4-amino-4-carboxylic acid)	betaHomoLys
276	[2-(2,5-dimethyl-isoxazole)-dPhe]	betaHomoLys
277	dTyr	betaHomoLys
278	(4-aminomethyl-dPhe)	betaHomoLys
279	[2-(2-chloro-6-methoxyphenyl)-Phe]	betaHomoLys
280	2Igl	betaHomoLys
281	d2Igl	betaHomoLys
282	Atc	betaHomoLys
283	Y	betaHomoLys
284	dTyr	betaHomoLys
285	(4-aminomethyl-Phe)	betaHomoLys
286	[2-[2,5-Bis(trifluoromethyl)phenyl]-Phe]	betaHomoLys
287	[2-[2,5-Bis(trifluoromethyl)phenyl]-Phe]	betaHomoLys
288	Aic	betaHomoLys
289	P	betaHomoLys
290	dPro	betaHomoLys
291	Pip	betaHomoLys
292	[2-(3-Pyridyl)-Phe]	betaHomoLys
293	[2-(4-Pyridyl)-Phe]	betaHomoLys
294	[2-(3-bromo-2-Pyridyl)-Phe]	betaHomoLys
295	Y	dbetaHomoLys
296	(N-benzyl-Gly)	betaHomoLys
297	[2-(2-bromo-3-Pyridyl)-Phe]	betaHomoLys
298	[3-(2-chloro-6-methoxy-phenyl)-Phe]	betaHomoLys
299	[3-(benzothiazol-5-yl)-Phe]	betaHomoLys
300	(2-aminomethyl-Phe)	MebetaHomoLys
301	(2-aminomethyl-dPhe)	MebetaHomoLys
302	[3-(4-thiazolyl)-dAla]	MebetaHomoLys
303	[2-(2-trifluoromethoxy-phenyl)-dPhe]	MebetaHomoLys
304	Tic	MebetaHomoLys
305	dTic	MebetaHomoLys
306	[2-(5-quinolinyl)-dPhe]	betaHomoLys
307	Y	betaHomoLys

308	Y	MebetaHomoLys
309	MeTyr	MebetaHomoLys
310	MeTyr	MebetaHomoLys
311	MePhe	MebetaHomoLys
312	(2-fluoro-Phe)	MebetaHomoLys
313	(2-fluoro-MePhe)	MebetaHomoLys
314	(2,4-dichloro-Phe)	MebetaHomoLys
315	(2,4-dichloro-MePhe)	MebetaHomoLys
316	(2-aminomethyl-MePhe)	MebetaHomoLys
317	[3-(2,6-dimethoxy-phenyl)-dPhe]	betaHomoLys
318	[3-(4-Quinolinyl)-dPhe]	betaHomoLys
319	betaHomoLys	Aze
320	(3-phenyl-dPhe)	betaHomoLys
321	[3-(2-trifluoromethoxy-phenyl)-dPhe]	betaHomoLys
322	[3-(2-methoxy-phenyl)-dPhe]	betaHomoLys
323	[2-(5-quinolinyl)-MePhe]	MebetaHomoLys
324	F	betaHomoNle
325	F	MebetaHomoLys(Me)2
326	MePhe	MebetaHomoLys(Me)2
327	M	MebetaHomoLys
328	Igl	MebetaHomoLys
329	HomoPhe	MebetaHomoLys
330	Hyp(OBn)	MebetaHomoLys
331	(1,2-cis-ACHC)	MebetaHomoLys
332	MeMet	MebetaHomoLys
333	betaHomoLys	betaHomoLys
334	BetaHomoPhe	MebetaHomoLys
335	betahomoMet	MebetaHomoLys
336	Y	(3-aminomethyl-4-bromo-benzoic acid)
337	Y	[3-aminomethyl-4-(4-aza-phenyl)-benzoic acid]
338	Y	[3-aminomethyl-4-(2,5-dimethyl-isoxazole)-benzoic acid]
339	Y	[3-aminomethyl-4-(3-aminomethyl-phenyl)-benzoic acid]
340	[3-aminomethyl-4-[4-(1-piperazinyl)-phenyl]-benzoic acid]	absent
341	[3-aminomethyl-4-(4-quinolinyl)-benzoic acid]	absent
342	(3-aminomethyl-4-bromo-benzoic acid)	absent
343	[3-aminomethyl-4-(2,5-dimethyl-isoxazole)-benzoic acid]	absent

344	[3-aminomethyl-4-(4-pyridyl)-benzoic acid]	absent
345	[3-aminomethyl-(4-methylpyrazole-3-yl)-benzoic acid]	absent
346	[3-aminomethyl-4-(3-quinoliny)-benzoic acid]	absent
347	[3-aminomethyl-4-(5-quinoliny)-benzoic acid]	absent
348	[3-aminomethyl-4-[2-(1-piperazinyl)phenyl]-benzoic acid]	absent
349	[3-aminomethyl-4-[3-(1-piperazinyl)phenyl]-benzoic acid]	absent
350	[3-aminomethyl-4-[2-(3-(piperidin-4-ylmethoxy)phenyl]-benzoic acid]	absent
351	[3-aminomethyl-4-(4-pyridyl)-benzoic acid]	absent
352	[3-aminomethyl-4-(4-pyridyl)-benzoic acid]	absent
353	[3-aminomethyl-4-(4-quinoliny)-benzoic acid]	absent
354	[3-aminomethyl-4-[4-(1-piperazinyl)phenyl]-benzoic acid]	absent
355	[3-aminomethyl-4-(4-quinoliny)-benzoic acid]	absent
356	[3-aminomethyl-4-[4-(1-piperazinyl-4-FITC)phenyl]-benzoic acid]	absent
357	(N-benzyl-3-aminomethyl-benzoic acid)	absent
358	(3-aminomethyl-benzoic acid)	absent
359	(3-aminomethyl-5-bromo-benzoic acid)	absent
360	(3-aminomethyl-6-bromo-benzoic acid)	absent
361	(3-aminomethyl-4-bromo-benzoic acid)	absent
362	[3-aminomethyl-5-(4-aza-phenyl)-benzoic acid]	absent
363	[3-aminomethyl-4-(3-thiophenyl)-benzoic acid]	absent
364	[3-aminomethyl-4-(4-N,N-dimethyl-carboxamide-phenyl)-benzoic acid]	absent
365	[3-aminomethyl-4-(4-aza-phenyl)-benzoic acid]	absent
366	[3-aminomethyl-4-(3-aza-phenyl)-benzoic acid]	absent
367	[3-aminomethyl-4-(4-hydroxy-phenyl)-benzoic acid]	absent
368	[3-aminomethyl-4-[5-(2,4-dimethyl)thiazole]-benzoic acid]	absent
369	[3-aminomethyl-4-(3-N,N-dimethylaniline)-benzoic acid]	absent
370	[3-aminomethyl-4-(2-fluoro-pyridyl)-benzoic acid]	absent
371	[3-aminomethyl-4-(5-pyrimidinyl)-benzoic acid]	absent
372	[3-aminomethyl-4-(3-N,N-dimethyl-diaryl ether)-benzoic acid]	absent
373	[3-aminomethyl-4-(3-CF <sub>3</sub> -phenyl)-benzoic acid]	absent
374	[3-aminomethyl-4-(2,5-dimethoxy-phenyl)-benzoic acid]	absent
375	[3-aminomethyl-4-[(2,3,4-tri-methoxy)-phenyl]-benzoic acid]	absent

376	[3-aminomethyl-4-(4-carboxy)-phenyl]-benzoic acid]	absent
377	[3-aminomethyl-4-(piperonyl)-benzoic acid]	absent
378	(3-aminomethyl-4-piperidinyl-benzoic acid)	absent
379	(3-aminomethyl-4-morpholinyl-benzoic acid)	absent
380	[3-aminomethyl-4-(N,N-dimethyl)-benzoic acid]	absent
381	[3-aminomethyl-4-(2-aminomethylphenyl)-benzoic acid]	absent
382	[3-aminomethyl-4-(3-aminomethylphenyl)-benzoic acid]	absent
383	[3-aminomethyl-4-(4-aminomethylphenyl)-benzoic acid]	absent
384	[3-aminomethyl-4-(4-quinolinyl)-benzoic acid]	absent
385	[3-aminomethyl-4-(4-quinolinyl)-benzoic acid]	absent
386	[3-aminomethyl-4-[4-(1-piperazinyl-4-AlexaFluor 647)phenyl]-benzoic acid]	absent
387	(N-methyl-3-aminomethyl-benzoic acid)	absent
388	[N-methyl-3-aminomethyl-4-(4-quinolinyl)-benzoic acid]	absent
389	[2-(5-quinolinyl)-Phe]-reduced	betaHomoLys
390	[3-aminomethyl-4-[4-(1-piperazinyl)-phenyl]-benzoic acid]	absent
391	[3-aminomethyl-4-[4-(1-piperazinyl)-phenyl]-benzoic acid]	absent
392	[3-aminomethyl-4-[4-(1-piperazinyl)-phenyl]-benzoic acid]	absent
393	F	absent
394	F	absent
395	F	absent
396	F	absent
397	F	absent

27. The compound of claim 1, being any one of compounds 1-397:

Compound No.	R <sup>1</sup>	R <sup>2</sup>	R <sup>3</sup>	R <sup>4</sup>	R <sup>5</sup>	R <sup>6</sup>	R <sup>7</sup>	R <sup>8</sup>	X <sup>y</sup>	X <sup>z</sup>	X <sub>2</sub>	X <sup>3</sup>
1	H	H	CH <sub>2</sub> -S-Ph	H	C(O)-NH-tert-Butyl	PRO	PRO	H	Y	absent	L	D
2	H	H	CH <sub>2</sub> -S-Ph	H	C(O)-NH-tert-Butyl	PRO	PRO	H	H	absent	L	D
3	H	H	CH <sub>2</sub> -S-Ph	H	C(O)-NH-tert-Butyl	PRO	PRO	H	Y	absent	L	D
4	H	H	CH <sub>3</sub>	H	C(O)-NH-tert-Butyl	PRO	PRO	H	Y	absent	L	D
5	H	H	CH <sub>3</sub>	H	C(O)-NH-tert-Butyl	PRO	PRO	H	F	absent	L	D
6	H	H	CH <sub>3</sub>	H	C(O)-NH-tert-Butyl	PRO	PRO	H	HomoPhe	absent	L	D
7	H	H	CH <sub>3</sub>	H	C(O)-NH-tert-Butyl	PRO	PRO	H	Cha	absent	L	D
8	H	H	CH <sub>3</sub>	H	C(O)-NH-tert-Butyl	PRO	PRO	H	W	absent	L	D
9	H	H	CH <sub>3</sub>	H	C(O)-NH-tert-Butyl	PRO	PRO	H	1Nal	absent	L	D
10	H	H	CH <sub>3</sub>	H	C(O)-NH-tert-Butyl	PRO	PRO	H	2Nal	absent	L	D
11	H	H	CH <sub>3</sub>	H	C(O)-NH-tert-Butyl	PRO	PRO	H	W	absent	L	D
12	H	H	CH <sub>3</sub>	H	C(O)-NH-tert-Butyl	PRO	PRO	H	Bip	absent	L	D
13	H	H	CH <sub>3</sub>	H	C(O)-NH-tert-Butyl	PRO	PRO	H	Tyr(OPh)	absent	L	D
14	H	H	CH <sub>3</sub>	H	C(O)-NH-tert-Butyl	PRO	PRO	H	1Nal	absent	L	D
15	H	H	CH <sub>3</sub>	H	C(O)-NH-tert-Butyl	PRO	PRO	H	2Nal	absent	L	D
16	H	H	CH <sub>3</sub>	H	C(O)-NH-tert-Butyl	PRO	PRO	H	2Nal	absent	L	D
17	H	H	CH <sub>3</sub>	H	C(O)-NH-tert-Butyl	[(4S)-fluoro-Pro]	PRO	H	W	absent	L	D
18	H	H	CH <sub>3</sub>	H	C(O)-NH-tert-Butyl	PRO	PRO	H	Bip	absent	L	D
19	H	H	CH <sub>3</sub>	H	C(O)-NH-tert-Butyl	PRO	PRO	H	Tyr(2-tolyl diaryl ether)	absent	L	D
20	H	H	CH <sub>3</sub>	H	C(O)-NH-tert-Butyl	PRO	PRO	H	Tyr(4-CF <sub>3</sub> diaryl ether)	absent	L	D

21	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> Butyl	PRO	PRO	H	Tyr(4-methoxy diaryl ether)	absent	L	D	T
22	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> Butyl	PRO	PRO	H	Tyr(4-fluoro diaryl ether)	absent	L	D	T
23	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> Butyl	PRO	PRO	H	Tyr(2-methoxy diaryl ether)	absent	L	D	T
24	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> Butyl	PRO	PRO	H	Tyr(3-methoxy diaryl ether)	absent	L	D	T
25	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> Butyl	PRO	PRO	H	Tyr(3-fluoro diaryl ether)	absent	L	D	T
26	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> Butyl	PRO	PRO	H	Tyr(3,4-difluoro diaryl ether)	absent	L	D	T
27	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> Butyl	PRO	PRO	H	Tyr(3-methyl diaryl ether)	absent	L	D	T
28	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> Butyl	PRO	PRO	H	Tyr(3,4-dimethyl diaryl ether)	absent	L	D	T
29	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> Butyl	PRO	PRO	H	Tyr(4-CO <sub>2</sub> Me diaryl ether)	absent	L	D	T
30	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> Butyl	PRO	PRO	H	Tyr(3-CO <sub>2</sub> Me diaryl ether)	absent	L	D	T
31	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> Butyl	PRO	PRO	H	Tyr(4-CO <sub>2</sub> H diaryl ether)	absent	L	D	T
32	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> Butyl	HYP	HYP	H	F	absent	L	D	T
33	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> Butyl	PRO	PRO	H	metaY(Opr)	absent	L	D	T
34	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> Butyl	PRO	PRO	H	Orn(benzamide)	absent	L	D	Thr(OBn)
35	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> Butyl	PRO	PRO	H	Orn(acetamide)	absent	L	D	Thr(OBn)
36	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> Butyl	PRO	PRO	H	Orn(methanesulfonamide)	absent	L	D	Thr(OBn)
37	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> Butyl	PRO	PRO	H	Orn(ethylcarbamate)	absent	L	D	Thr(OBn)
38	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> Butyl	PRO	PRO	H	Orn(pentyl amide)	absent	L	D	Thr(OBn)
39	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> Butyl	PRO	PRO	H	R	absent	L	D	T
40	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> Butyl	PRO	PRO	H	F	absent	L	D	Thr(OMe)
41	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> Butyl	PRO	PRO	H	F	absent	L	D	Thr(OEt)
42	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> Butyl	PRO	PRO	H	dTyr	absent	L	D	T
43	H	<sub>3</sub> CH	H	H	C(O)-NH- <i>tert</i> Butyl	PRO	PRO	H	dTic	absent	L	D	T

44	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> Butyl	HYP	H	[3-(3'-pyridyl)-Ala]	absent	L	D	T
45	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> Butyl	[(4R)-fluoro-Pro]	H	F	absent	L	D	T
46	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> Butyl	[(4R)-fluoro-Pro]	H	Bip	absent	L	D	T
47	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> Butyl	[(4R)-fluoro-Pro]	H	[3-(3'-pyridyl)-Ala]	absent	L	D	T
48	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> Butyl	[(4R)-fluoro-Pro]	H	Y	absent	L	D	T
49	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> Butyl	[(4S)-fluoro-Pro]	H	Y	absent	L	D	T
50	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> Butyl	PRO	PRO	dArg	absent	L	D	T
51	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> Butyl	PRO	PRO	dPip	absent	L	D	T
52	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> Butyl	PRO	PRO	[3-(4-thiazolyl)-Ala]	absent	L	D	T
53	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> Butyl	PRO	PRO	Y	absent	L	D	I
54	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> Butyl	PRO	PRO	(4-aza-Phe)	absent	L	D	T
55	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> Butyl	PRO	PRO	Y	absent	L	D	Pen
56	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> Butyl	PRO	PRO	(vinyl-Br-Leu)	absent	L	D	T
57	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> Butyl	PRO	PRO	Hyp(OBn)	absent	L	D	T
58	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> Butyl	PRO	PRO	Hyp(OBn)	absent	L	D	T
59	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> Butyl	PRO	PRO	Dap(Cbz)	absent	L	D	T
60	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> Butyl	PRO	PRO	His(Bn)	absent	L	D	T
61	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> Butyl	PRO	PRO	(4-amino-Phe)	absent	L	D	T
62	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> Butyl	PRO	PRO	(4-aza-dPhe)	absent	L	D	T
63	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> Butyl	PRO	PRO	Hyp	absent	L	D	T
64	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> Butyl	PRO	PRO	dTrp	absent	L	D	T
65	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> Butyl	PRO	PRO	M	absent	L	D	T

66	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	dMet		absent	L	D	T
67	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	(4-guanidino-Phe)		absent	L	D	T
68	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	(3-aza-Phe)		absent	L	D	T
69	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	dTic		absent	L	D	T
70	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	(3-aza-dPhe)		absent	L	D	T
71	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	Nva		absent	L	D	T
72	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	dNle		absent	L	D	T
73	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	dLys		absent	L	D	T
74	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	dPro		absent	L	D	T
75	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	dOrn		absent	L	D	T
76	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	(3-benzothienyl-dAla)		absent	L	D	T
77	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	dTyr(OAllyl)		absent	L	D	T
78	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	dSer(OBn)		absent	L	D	T
79	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	[3-(4-thiazolyl)-dAla]		absent	L	D	T
80	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	(3-benzothienyl-dAla)		absent	L	D	T
81	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	[3-(2-thienyl)-dAla]		absent	L	D	T
82	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	(4-aminomethyl-Phe)		absent	L	D	T
83	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	dOrn(dimethyl)		absent	L	D	T
84	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	(4-amino-dPhe)		absent	L	D	T
85	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	(4-aminomethyl-dPhe)		absent	L	D	T
86	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	dTyr(OBn)		absent	L	D	T
87	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	P		absent	L	D	T
88	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	cycloLeu		absent	L	D	T
89	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	Aic		absent	L	D	T

90	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	Tyr(OAllyl)	absent	L	D	T
91	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	Chg	absent	L	D	T
92	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	K	absent	L	D	T
93	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	(2-aza-dPhe)	absent	L	D	T
94	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	(2-aza-Phe)	absent	L	D	T
95	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	[2-(2-pyridyl)-4-thiazolyl-Ala]	absent	L	D	T
96	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	[2-(3-pyridyl)-4-thiazolyl-Ala]	absent	L	D	T
97	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	[2-(4-pyridyl)-4-thiazolyl-Ala]	absent	L	D	T
98	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	dTiq	absent	L	D	T
99	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	[1-(S)-isindoline-carboxylic acid]	absent	L	D	T
100	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	Y	dThr	L	D	T
101	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	Y	P	L	D	T
102	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	Y	dPro	L	D	T
103	H	<sup>3</sup> CH	H	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	Y	Sar	L	D	T
104	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	Y	cycloLeu	L	D	T
105	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	Y	Sar	L	D	T
106	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	(3-iodo-Phe)	Sar	L	D	T
107	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	(4-iodo-Phe)	Sar	L	D	T
108	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	(3,3-diphenyl-Ala)	Sar	L	D	T
109	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	F	dLys	L	D	T
110	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	Bip	dLys	L	D	T
111	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	[3-(4-thiazolyl)-Ala]	dLys	L	D	T
112	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	(3,3-diphenyl-Ala)	dLys	L	D	T
113	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	Y	dLys	L	D	I

114	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	Y		dArg	L	D	T
115	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	Y		dSer	L	D	T
116	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	<i>Bip</i>		Sar	L	D	T
117	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	1Nal		Sar	L	D	T
118	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	Y		<i>Pip</i>	L	D	T
119	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	(2-iodo-Phe)		Sar	L	D	T
120	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	1Nal		dLys	L	D	T
121	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	Y		dLys	L	D	MeT
122	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	F		Sar	L	D	T
123	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	Y		dTic	L	D	T
124	H	<sup>3</sup> CH	H	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	Y		dPro	L	D	T
125	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	Y		dPip	L	D	T
126	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	F		dPro	L	D	T
127	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	(3,4-dimethoxy-Phe)		dPro	L	D	T
128	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	(3,4,5-trifluoro-Phe)		dPro	L	D	T
129	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	(3,5-dibromo-Tyr)		dPro	L	D	T
130	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	F		dPip	L	D	T
131	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	[3-(4-thiazoly)-Ala]		dPip	L	D	T
132	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	(4-aminomethyl-Phe)		dPip	L	D	T
133	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	[2-iodo-Phe]		dPip	L	D	T
134	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	(2-phenyl-Phe)		dPip	L	D	T
135	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	[2-(2-methoxy-phenyl)-Phe]		dPip	L	D	T
136	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	[2-(3-methoxy-phenyl)-Phe]		dPip	L	D	T
137	H	H	CH <sub>3</sub>	H	C(O)-NH-	PRO	PRO	H	[2-(4-methoxy-phenyl)-Phe]		dPip	L	D	T



				<i>tert</i> Butyl														
162	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> Butyl	PRO	PRO	H	Tyr(OAllyl)		Sar	L	D	T				
163	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> Butyl	PRO	PRO	H	Tyr(OAllyl)		G	L	D	T				
164	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> Butyl	PRO	PRO	H	[3-(4-thiazolyl)-Ala]		Sar	L	D	T				
165	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> Butyl	PRO	PRO	H	(4-aminomethyl-Phe)		G	L	D	T				
166	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> Butyl	PRO	PRO	H	Tyr(OAllyl)		dVal	L	D	T				
167	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> Butyl	PRO	PRO	H	Tyr(OAllyl)		dSer	L	D	T				
168	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> Butyl	PRO	PRO	H	Tyr(OAllyl)		dAla	L	D	T				
169	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> Butyl	PRO	PRO	H	Tyr(OAllyl)		P	L	D	T				
170	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> Butyl	PRO	PRO	H	Tyr(OAllyl)		dPro	L	D	T				
171	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> Butyl	PRO	PRO	H	[3-(4-thiazolyl)-Ala]		dVal	L	D	T				
172	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> Butyl	PRO	PRO	H	[3-(4-thiazolyl)-Ala]		dSer	L	D	T				
173	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> Butyl	PRO	PRO	H	[3-(4-thiazolyl)-Ala]		dAla	L	D	T				
174	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> Butyl	PRO	PRO	H	[3-(4-thiazolyl)-Ala]		P	L	D	T				
175	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> Butyl	PRO	PRO	H	[3-(4-thiazolyl)-Ala]		dPro	L	D	T				
176	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> Butyl	PRO	PRO	H	(4-aminomethyl-Phe)		P	L	D	T				
177	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> Butyl	PRO	PRO	H	(4-aminomethyl-Phe)		dPro	L	D	T				
178	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> Butyl	PRO	PRO	H	cycloLeu		P	L	D	T				
179	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> Butyl	PRO	PRO	H	[2-(2-pyridyl)-4-thiazolyl-Ala]		Sar	L	D	T				
180	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> Butyl	PRO	PRO	H	[2-(2-pyridyl)-4-thiazolyl-Ala]		dPro	L	D	T				
181	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> Butyl	PRO	PRO	H	[2-(3-pyridyl)-4-thiazolyl-Ala]		Sar	L	D	T				
182	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> Butyl	PRO	PRO	H	[2-(3-pyridyl)-4-thiazolyl-Ala]		dPro	L	D	T				
183	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> Butyl	PRO	PRO	H	[2-(4-pyridyl)-4-thiazolyl-Ala]		dPro	L	D	T				

184	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	[3-(2-aminobenzyl-4-thiazolyl)-Ala]	Sar	L	D	T
185	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	[2-(amino-benzyl)-4-thiazolyl]-Ala]	dPro	L	D	T
186	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	dTyr	dPip	L	D	I
187	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	(2-aminomethyl)-Phe)	Aze	L	D	T
188	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	(2-aminomethyl)-Phe)	dPip	L	D	Abu
189	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	(3-aminomethyl)-Phe)	dTic	L	D	Abu
190	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	(2,4-dichloro-Phe)	dPip	L	D	T
191	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	(3-phenyl-dPhe)	dPip	L	D	T
192	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	[3-(5-quinoliny)-dPhe]	dPip	L	D	T
193	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	Y	betaHomolys	L	D	T
194	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	Y	betaHomoPro	L	D	T
195	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	Y	betaHomolys	L	D	T
196	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	Y	2Abz	L	D	T
197	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	F	betaHomolys	L	D	T
198	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	[3-(4-thiazolyl)-Ala]	betaHomolys	L	D	T
199	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	(4-aminomethyl)-Phe)	betaHomolys	L	D	T
200	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	Y	betaHomolys	L	D	Th(OBn)
201	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	MeTyr	dbetaHomolys	L	D	T
202	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	1Nal	betaHomolys	L	D	T
203	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	2Nal	betaHomolys	L	D	T
204	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	Bip	betaHomolys	L	D	T
205	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	(2-iodo-Phe)	betaHomolys	L	D	T
206	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	[2-(2,5-dimethyl-isoxazole)-Phe]	betaHomolys	L	D	T
207	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	(2-phenyl)-Phe)	betaHomolys	L	D	T

208	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	(2-phenyl-Phe)	betaHomolys	L	D	T
209	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	[(2-piperazinyl-2-Phenyl)-Phe]	betaHomolys	L	D	T
210	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	Cha	betaHomolys	L	D	T
211	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	W	betaHomolys	L	D	T
212	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	dTtp	betaHomolys	L	D	T
213	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	(3-aminomethyl-Phe)	betaHomolys	L	D	T
214	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	(4-aminomethyl-dPhe)	betaHomolys	L	D	T
215	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	(4-aminomethyl-Phe)	betaHomolys	L	D	I
216	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	Y	dbetaHomolys	L	D	I
217	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	dArg	betaHomolys	L	D	T
218	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	(4-aminomethyl-Phe)-reduced	betaHomolys	L	D	T
219	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	[3-(4-thiazolyl)-Ala]	dbetaHomolys	L	D	I
220	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	F	dbetaHomolys	L	D	I
221	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	[3-(4-thiazolyl)-Ala]	MebetaHomolys	L	D	T
222	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	(4-aminomethyl-Phe)	MebetaHomolys	L	D	T
223	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	[3-(4-thiazolyl)-Ala]	betaHomolys	L	D	I
224	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	Tic	betaHomolys	L	D	T
225	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	dTic	betaHomolys	L	D	T
226	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	dTic	dbetaHomolys	L	D	T
227	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	Y	betaHomolle	L	D	T
228	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	(4-aminomethyl-Phe)	betaHomoPro	L	D	T
229	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	Y	dbetaHomoPro	L	D	T
230	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	(4-aminomethyl-Phe)	dbetaHomoPro	L	D	T
231	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	R	betaHomolys	L	D	T



256	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	(3-phenyl)-Phe]	betaHomolys	L	D	T
257	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	[3-(2-methoxy-phenyl)-Phe]	betaHomolys	L	D	T
258	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	[3-(2,6-dimethoxy-phenyl)-Phe]	betaHomolys	L	D	T
259	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	[3-(2-trifluoromethoxy-phenyl)-Phe]	betaHomolys	L	D	T
260	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	(4-iodo-Phe)	betaHomolys	L	D	T
261	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	[4-(2-methoxy-phenyl)-Phe]	betaHomolys	L	D	T
262	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	[4-(2-trifluoromethoxy-phenyl)-Phe]	betaHomolys	L	D	T
263	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	alphaMePhe	betaHomolys	L	D	T
264	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	MePhe	betaHomolys	L	D	T
265	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	[3-(2,6-dimethyl-phenyl)-Phe]	betaHomolys	L	D	T
266	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	[3-(quinolin-4-yl)-Phe]	betaHomolys	L	D	T
267	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	[3-(3,4-difluoro-phenyl)-Phe]	betaHomolys	L	D	T
268	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	[4-(2-dimethyl-phenyl)-Phe]	betaHomolys	L	D	T
269	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	[4-(2-chloro-6-methoxy-phenyl)-Phe]	betaHomolys	L	D	T
270	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	[3-(4-thiazolyl)-Ala]-reduced	betaHomolys	L	D	T
271	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	[2-[4-(1-piperazinyl)phenyl]-Phe]	betaHomolys	L	D	T
272	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	[2-(2,6-dimethylphenyl)-Phe]	betaHomolys	L	D	T
273	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	[2-(benzothiazol-5-yl)-Phe]	betaHomolys	L	D	T
274	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	HomoPhe	betaHomolys	L	D	T
275	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	(piperidine-4-amino-4-carboxylic acid)	betaHomolys	L	D	T
276	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	[2-(2,5-dimethyl-isoxazole)-dPhe]	betaHomolys	L	D	T
277	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	dTyr	betaHomolys	L	D	V
278	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	(4-aminomethyl-dPhe)	betaHomolys	L	D	T
279	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	[2-(2-chloro-6-methoxyphenyl)-Phe]	betaHomolys	L	D	T

280	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	2gl	betaHomolys	L	D	T
281	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	d2gl	betaHomolys	L	D	T
282	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	Atc	betaHomolys	L	D	T
283	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	Y	betaHomolys	L	D	alloI
284	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	dTyr	betaHomolys	L	D	alloI
285	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	(4-aminomethyl)-Phe)	betaHomolys	L	D	alloI
286	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	[2-[2,5-Bis(trifluoromethyl)phenyl]-Phe]	betaHomolys	L	D	e
287	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	[2-[2,5-Bis(trifluoromethyl)phenyl]-Phe]	betaHomolys	L	D	T
288	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	Aic	betaHomolys	L	D	T
289	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	P	betaHomolys	L	D	T
290	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	dPro	betaHomolys	L	D	T
291	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	Pip	betaHomolys	L	D	T
292	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	[2-(3-Pyridyl)-Phe]	betaHomolys	L	D	T
293	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	[2-(4-Pyridyl)-Phe]	betaHomolys	L	D	T
294	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	[2-(3-bromo-2-Pyridyl)-Phe]	betaHomolys	L	D	T
295	PR O-	PR	H	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	Y	dbetaHomolys	L	D	T
296	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	(N-benzyl-Gly)	betaHomolys	L	D	T
297	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	[2-(2-bromo-3-Pyridyl)-Phe]	betaHomolys	L	D	T
298	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	[3-(2-chloro-6-methoxy-phenyl)-Phe]	betaHomolys	L	D	T
299	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	[3-(benzothiazol-5-yl)-Phe]	betaHomolys	L	D	T
300	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	(2-aminomethyl)-Phe)	MebetaHomolys	L	D	T
301	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	(2-aminomethyl-dPhe)	MebetaHomolys	L	D	T
302	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	[3-(4-thiazolyl)-dAla]	MebetaHomolys	L	D	T
303	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	[2-(2-trifluoromethoxy-phenyl)-dPhe]	MebetaHomolys	L	D	T

304	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	Tic		MebetaHomolys	L	D	T
305	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	dTic		MebetaHomolys	L	D	T
306	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	[2-(5-quinoliny)-dPhe]		betaHomolys	L	D	T
307	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	Y		betaHomolys	L	D	alloT
308	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	Y		MebetaHomolys	L	D	alloT
309	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	MeTyr		MebetaHomolys	L	D	T
310	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	MeTyr		MebetaHomolys	L	D	alloT
311	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	MePhe		MebetaHomolys	L	D	T
312	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	(2-fluoro-Phe)		MebetaHomolys	L	D	T
313	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	(2-fluoro-MePhe)		MebetaHomolys	L	D	T
314	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	(2,4-dichloro-Phe)		MebetaHomolys	L	D	T
315	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	(2,4-dichloro-MePhe)		MebetaHomolys	L	D	T
316	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	(2-aminomethyl-MePhe)		MebetaHomolys	L	D	T
317	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	[3-(2,6-dimethoxy-phenyl)-dPhe]		betaHomolys	L	D	T
318	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	[3-(4-Quinoliny)-dPhe]		betaHomolys	L	D	T
319	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	betaHomolys	Aze		L	D	T
320	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	(3-phenyl-dPhe)		betaHomolys	L	D	T
321	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	[3-(2-methoxy-phenyl)-dPhe]		betaHomolys	L	D	T
322	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	[3-(2-trifluoromethoxy-phenyl)-dPhe]		betaHomolys	L	D	T
323	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	[2-(5-quinoliny)-MePhe]		MebetaHomolys	L	D	T
324	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	F		betaHomone	L	D	T
325	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	F		MebetaHomolys(Me) <sup>2</sup>	L	D	T
326	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	MePhe		MebetaHomolys(Me) <sup>2</sup>	L	D	T
327	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	M		MebetaHomolys	L	D	T

							IgI			MebetaHomolys	L	D	T	
328	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	H							
329	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	H	HomoPhe		MebetaHomolys	L	D	T	
330	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	H	Hyp(OBn)		MebetaHomolys	L	D	T	
331	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	H	(1,2-cis-ACHC)		MebetaHomolys	L	D	T	
332	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	H	MeMet		MebetaHomolys	L	D	T	
333	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	H	betaHomolys		betaHomolys	L	D	T	
334	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	H	BetaHomoPhe		MebetaHomolys	L	D	T	
335	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	H	betaHomolMet		MebetaHomolys	L	D	T	
336	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	H	Y	(3-aminomethyl-4-bromo-benzoic acid)		L	D	T	
337	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	H	Y	[3-aminomethyl-4-(4-aza-phenyl)-benzoic acid]		L	D	T	
338	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	H	Y	[3-aminomethyl-4-(2,5-dimethyl-isoxazole)-benzoic acid]		L	D	T	
339	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	H	Y	[3-aminomethyl-4-(3-aminomethyl-phenyl)-benzoic acid]		L	D	T	
340	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	H	[3-aminomethyl-4-(1-piperazinyl)-phenyl]-benzoic acid]		absent		L	D	T
341	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	H	[3-aminomethyl-4-(4-quinolinyl)-benzoic acid]		absent		L	D	T
342	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	H	(3-aminomethyl-4-bromo-benzoic acid)		absent		L	D	T
343	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	H	[3-aminomethyl-4-(2,5-dimethyl-isoxazole)-benzoic acid]		absent		L	D	T
344	H	CH <sub>3</sub> <sup>3</sup>	H	C(O)-NH- <i>tert</i> -Butyl	H	dPRO	H	[3-aminomethyl-4-(4-pyridyl)-benzoic acid]		absent		L	D	T
345	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	H	[3-aminomethyl-4-(4-methylpyrazole-3-yl)-benzoic acid]		absent		L	D	T
346	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	H	[3-aminomethyl-4-(3-quinolinyl)-benzoic acid]		absent		L	D	T
347	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	H	[3-aminomethyl-4-(5-quinolinyl)-benzoic acid]		absent		L	D	T
348	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	H	[3-aminomethyl-4-(2-(1-piperazinyl)phenyl)-benzoic acid]		absent		L	D	T
349	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	H	[3-aminomethyl-4-[3-(1-piperazinyl)phenyl]-benzoic acid]		absent		L	D	T
350	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	H	[3-aminomethyl-4-[2-(3-piperidin-4-ylmethoxy)phenyl]-benzoic acid]		absent		L	D	T

351	H	H	CH <sub>3</sub>	C(O)-NH- <i>tert</i> Butyl	H	PRO	PRO	H	[3-aminomethyl-4-(4-pyridyl)-benzoic acid]	absent	L	D	T
352	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> Butyl	PRO	PRO	H	[3-aminomethyl-4-(4-pyridyl)-benzoic acid]	absent	L	D	Th(OBn) alloT hr
353	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> Butyl	PRO	PRO	H	[3-aminomethyl-4-(4-quinoliny)-benzoic acid]	absent	L	D	T
354	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> Butyl	PRO	PRO	H	[3-aminomethyl-4-[4-(1-piperazinyl)phenyl]-benzoic acid]	absent	L	D	T
355	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> Butyl	PRO	PRO	H	[3-aminomethyl-4-(4-quinoliny)-benzoic acid]	absent	tertbutyAla	D	T
356	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> Butyl	PRO	PRO	H	[3-aminomethyl-4-[4-(1-piperazinyl-4-FITC)phenyl]-benzoic acid]	absent	L	D	T
357	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> Butyl	PRO	PRO	H	(N-benzyl-3-aminomethyl-benzoic acid)	absent	L	D	T
358	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> Butyl	PRO	PRO	H	(3-aminomethyl-benzoic acid)	absent	L	D	T
359	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> Butyl	PRO	PRO	H	(3-aminomethyl-5-bromo-benzoic acid)	absent	L	D	T
360	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> Butyl	PRO	PRO	H	(3-aminomethyl-6-bromo-benzoic acid)	absent	L	D	T
361	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> Butyl	PRO	PRO	H	(3-aminomethyl-4-bromo-benzoic acid)	absent	L	D	T
362	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> Butyl	PRO	PRO	H	[3-aminomethyl-5-(4-aza-phenyl)-benzoic acid]	absent	L	D	T
363	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> Butyl	PRO	PRO	H	[3-aminomethyl-4-(3-thiophenyl)-benzoic acid]	absent	L	D	T
364	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> Butyl	PRO	PRO	H	[3-aminomethyl-4-(4-N,N-dimethyl-carboxamido-phenyl)-benzoic acid]	absent	L	D	T
365	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> Butyl	PRO	PRO	H	[3-aminomethyl-4-(4-aza-phenyl)-benzoic acid]	absent	L	D	T
366	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> Butyl	PRO	PRO	H	[3-aminomethyl-4-(3-aza-phenyl)-benzoic acid]	absent	L	D	T
367	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> Butyl	PRO	PRO	H	[3-aminomethyl-4-(4-hydroxy-phenyl)-benzoic acid]	absent	L	D	T
368	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> Butyl	PRO	PRO	H	[3-aminomethyl-4-[5-(2,4-dimethyl)thiazole]-benzoic acid]	absent	L	D	T
369	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> Butyl	PRO	PRO	H	[3-aminomethyl-4-(3-N,N-dimethyl-aniline)-benzoic acid]	absent	L	D	T
370	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> Butyl	PRO	PRO	H	[3-aminomethyl-4-(2-fluoro-pyridyl)-benzoic acid]	absent	L	D	T
371	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> Butyl	PRO	PRO	H	[3-aminomethyl-4-(5-pyrimidinyl)-benzoic acid]	absent	L	D	T
372	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> Butyl	PRO	PRO	H	[3-aminomethyl-4-(3-N,N-dimethyl-diarylether)-benzoic acid]	absent	L	D	T
373	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> Butyl	PRO	PRO	H	[3-aminomethyl-4-(3-CF <sub>3</sub> -phenyl)-benzoic acid]	absent	L	D	T
374	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> Butyl	PRO	PRO	H	[3-aminomethyl-4-(2,5-dimethoxy-phenyl)-benzoic acid]	absent	L	D	T

375	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	[3-aminomethyl-4-[2,3,4-trimethoxy-phenyl]-benzoic acid]	absent	L	D	T
376	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	[3-aminomethyl-4-(4-carboxy-phenyl)-benzoic acid]	absent	L	D	T
377	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	[3-aminomethyl-4-(piperonyl)-benzoic acid]	absent	L	D	T
378	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	(3-aminomethyl-4-piperidinyl-benzoic acid)	absent	L	D	T
379	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	(3-aminomethyl-4-morpholinyl-benzoic acid)	absent	L	D	T
380	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	[3-aminomethyl-4-(N,dimethyl)-benzoic acid]	absent	L	D	T
381	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	[3-aminomethyl-4-(2-aminomethylphenyl)-benzoic acid]	absent	L	D	T
382	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	[3-aminomethyl-4-(3-aminomethylphenyl)-benzoic acid]	absent	L	D	T
383	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	[3-aminomethyl-4-(4-aminomethylphenyl)-benzoic acid]	absent	L	D	T
384	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	[3-aminomethyl-4-(4-quinolinyl)-benzoic acid]	absent	L	D	Abu
385	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	H	Nva	H	[3-aminomethyl-4-(4-quinolinyl)-benzoic acid]	absent	L	D	T
386	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	[3-aminomethyl-4-[4-(1-piperazinyl-4-AlexaFluor 647)-phenyl]-benzoic acid]	absent	L	D	T
387	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	(N-methyl-3-aminomethyl-benzoic acid)	absent	L	D	T
388	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	[N-methyl-3-aminomethyl-4-(4-quinolinyl)-benzoic acid]	absent	L	D	T
389	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	[2-(5-quinolinyl)-Ph]-reduced betaHomolys	L	D	T	
390	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	[3-aminomethyl-4-[4-(1-piperazinyl)-phenyl]-benzoic acid]	absent	L	D	T
391	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	[3-aminomethyl-4-[4-(1-piperazinyl)-phenyl]-benzoic acid]	absent	L	D	T
392	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	PRO	PRO	H	[3-aminomethyl-4-[4-(1-piperazinyl)-phenyl]-benzoic acid]	absent	L	D	T
393	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	HYP	HYP	H	F	absent	L	D	T
394	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	HYP	HYP	H	F	absent	L	D	T
395	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	HYP	HYP	H	F	absent	L	D	T
396	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	HYP	HYP	H	F	absent	L	D	T
397	H	H	CH <sub>3</sub>	H	C(O)-NH- <i>tert</i> -Butyl	HYP	HYP	H	F	absent	L	D	T

28. The compound of claim 1, being selected from the group consisting of compounds 340, 348, 349 and 358.
29. A pharmaceutical composition comprising the compound of any one of claims 1-28 along with the pharmaceutically acceptable carrier.
30. The pharmaceutical composition of claim 29, formulated for oral delivery.
31. The pharmaceutical composition of claim 29, formulated for topical delivery.
32. The pharmaceutical composition of claim 29, formulated for parenteral delivery.
33. A method for treating a condition or disease in a patient associated with a biological function of an  $\alpha 4\beta 7$  integrin, the method comprising administering to the patient a therapeutically effective amount of the compound of any one of claims 1-28, or a pharmaceutical composition according to any one of claims 29-32, wherein the condition or disease is Inflammatory Bowel Disease (IBD), ulcerative colitis, Crohn's disease, Celiac disease (nontropical Sprue), microscopic colitis, collagenous colitis, eosinophilic gastroenteritis, pouchitis resulting after proctocolectomy and ileoanal anastomosis, cholangitis, pericholangitis, primary sclerosing cholangitis, human immunodeficiency virus (HIV) infection in the GI tract, colitis, microscopic colitis, or graft versus host disease.
34. A method for treating a condition or disease in a patient associated with a biological function of an  $\alpha 4\beta 7$  integrin, the method comprising administering to the patient a therapeutically effective amount of the compound of any one of claims 1-28 or a pharmaceutical composition according to any one of claims 29-32, wherein the condition or disease is pancreatitis, cholangitis, pericholangitis, or graft versus host disease.
35. The method of claim 33, wherein the condition or disease is an inflammatory bowel disease.
36. The method of claim 33, wherein the condition or disease is ulcerative colitis.
37. The method of claim 33, wherein the condition or disease is Crohn's disease.
38. A method for treating a disease or condition in a patient comprising administering to the patient a therapeutically effective amount of the compound of any one of claims 1-28, or a pharmaceutical composition according to any one of claims 29-32, wherein the disease or

condition is a local or systemic infection of a virus or retrovirus, wherein the virus or retrovirus is human immunodeficiency virus type 1.

39. A method for treating a disease or condition in a patient comprising administering to the patient a therapeutically effective amount of the compound of any one of claims 1-28, or a pharmaceutical composition according to any one of claims 29-32, wherein the disease or condition is non-alcoholic steatohepatitis, cirrhosis, primary biliary sclerosis, biliary tract disease, or autoimmune hepatitis.

40. The method of any one of claims 33-39, wherein the compound inhibits binding of  $\alpha 4\beta 7$  integrin to MAdCAM.

41. The method of claim 40, wherein the compound selectively inhibits binding of  $\alpha 4\beta 7$  integrin to MAdCAM.

42. The method of any one of claims 33-41, wherein the patient is a human.

43. Use of the compound of any one of claims 1-28, or a pharmaceutical composition according to any one of claims 29-32, in the manufacture of a medicament for treating a condition or disease associated with a biological function of an  $\alpha 4\beta 7$  integrin, wherein the condition or disease is Inflammatory Bowel Disease (IBD), ulcerative colitis, Crohn's disease, Celiac disease (nontropical Sprue), microscopic colitis, collagenous colitis, eosinophilic gastroenteritis, pouchitis resulting after proctocolectomy and ileoanal anastomosis, cholangitis, pericholangitis, primary sclerosing cholangitis, human immunodeficiency virus (HIV) infection in the GI tract, colitis, microscopic colitis, pancreatitis, cholangitis, pericholangitis, or graft versus host disease.

44. Use of the compound of any one of claims 1-28, or a pharmaceutical composition according to any one of claims 29-32, in the manufacture of a medicament for treating a condition or disease associated with a biological function of an  $\alpha 4\beta 7$  integrin, wherein the condition or disease is pancreatitis, cholangitis, pericholangitis, or graft versus host disease.

45. Use of the compound of any one of claims 1-28, or a pharmaceutical composition according to any one of claims 29-32, in the manufacture of a medicament for treating a disease or condition, wherein the disease or condition is a local or systemic infection of a virus or retrovirus, wherein the virus or retrovirus is human immunodeficiency virus type 1.

46. Use of the compound of any one of claims 1-28, or a pharmaceutical composition according to any one of claims 29-32, in the manufacture of a medicament for treating a disease or condition, wherein the disease or condition is non-alcoholic steatohepatitis, cirrhosis, primary biliary sclerosis, biliary tract disease, or autoimmune hepatitis.

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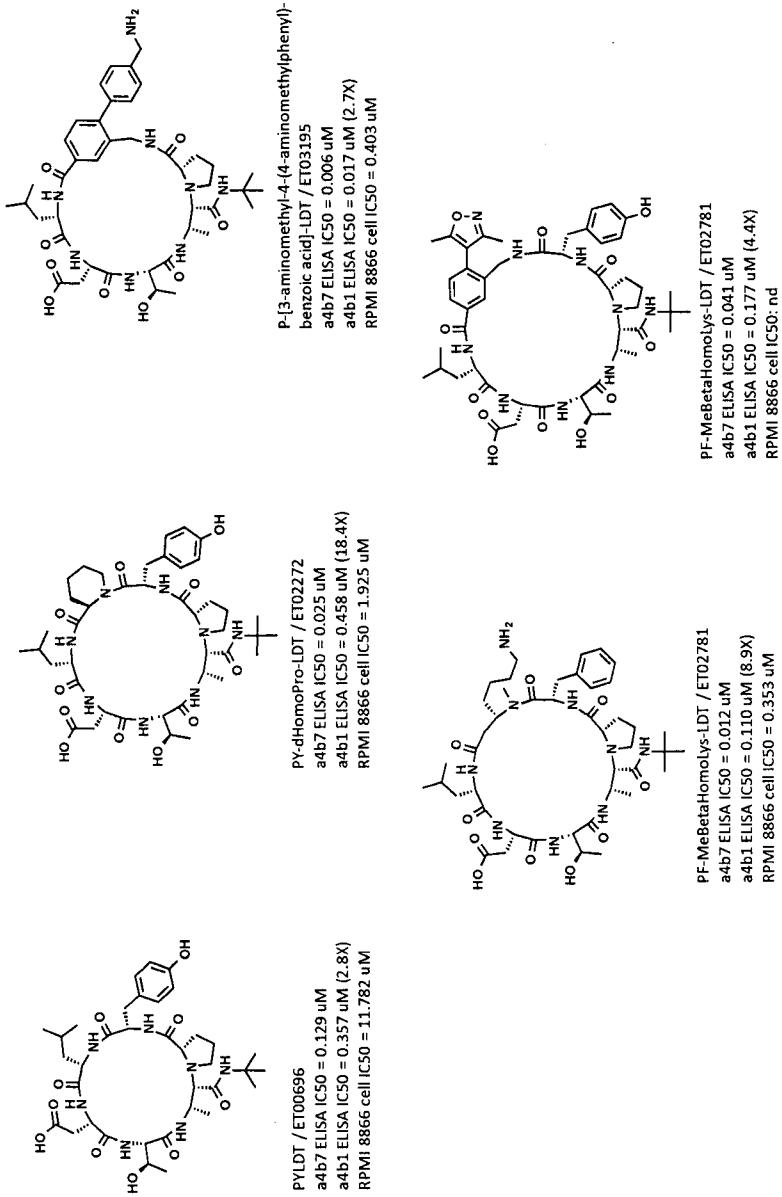


Figure 1

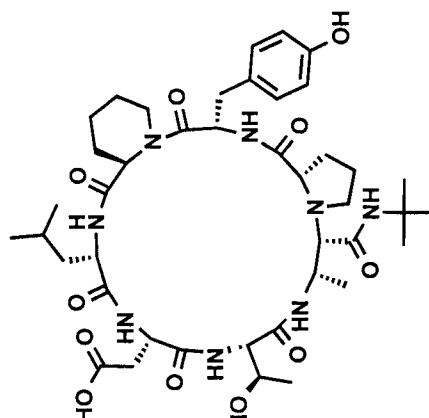
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Figure 2

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a4b7 IC50 ( $\mu$ M)		a4b7 IC50 ( $\mu$ M)	
Leu	0.054	"dHomoPro"	"dHomoPro"
tertbutyAla	0.719	dTrp	dTrp
Nle	0.83	dcyHyp	dcyHyp
neopenetyl glycine	1.04	trans-dHyp	trans-dHyp
MeLeu	1.443	Pro	Pro
NorVal	3.665	dLys	dLys
HomocycloLeu		Ala	Ala
		dLys	dLys
		dIle	dIle
		dAla	dAla
		Sar	Sar
		dMethylG	dMethylG
		A2e	A2e
		dArg	dArg
		dSer	dSer
		Gly	Gly
		dMethylS	dMethylS
		cycloLeu	cycloLeu
		dVal	dVal
		dThr	dThr
		dLys	dLys
		dTyr	dTyr
		alphaMethylA	alphaMethylA
		Cys	Cys
		dTrp	dTrp
		BnGly	BnGly
		dGin	dGin
		Tyr	Tyr
		dOrn	dOrn
		His	His
		HomocycloLeu	HomocycloLeu
		Gln	Gln
		Atc	Atc
		Dab	Dab
		Lys	Lys
		Val	Val
		MeNle	MeNle
		Nle	Nle
		dPhe	dPhe
		Met	Met
		Cit	Cit
		threonine	threonine
		dMet	dMet
		1.517	1.517
		1.739	1.739
		(Ac)lys	(Ac)lys
		dMeCys	dMeCys
		2.934	2.934
		2.291	2.291
		2.656	2.656
		Ser	Ser
		2.984	2.984
		Thr	Thr
		3.061	3.061
		dIle	dIle
		3.665	3.665
		dTyr	dTyr
		(2.058 - cell)	(2.058 - cell)
		(8.240 - cell)	(8.240 - cell)
		(24.080 - cell)	(24.080 - cell)
		Tic	Tic

Figure 3



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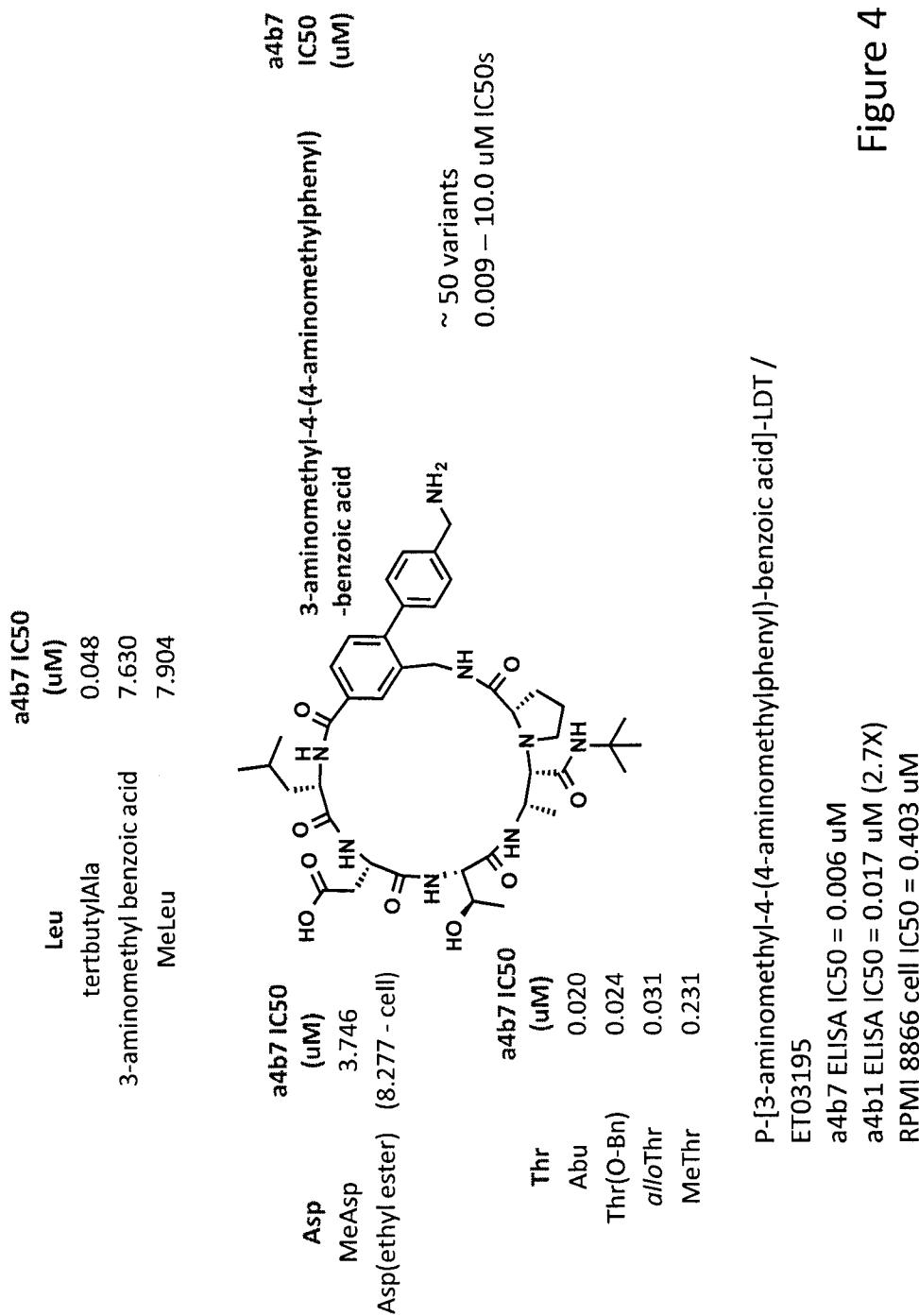


Figure 4

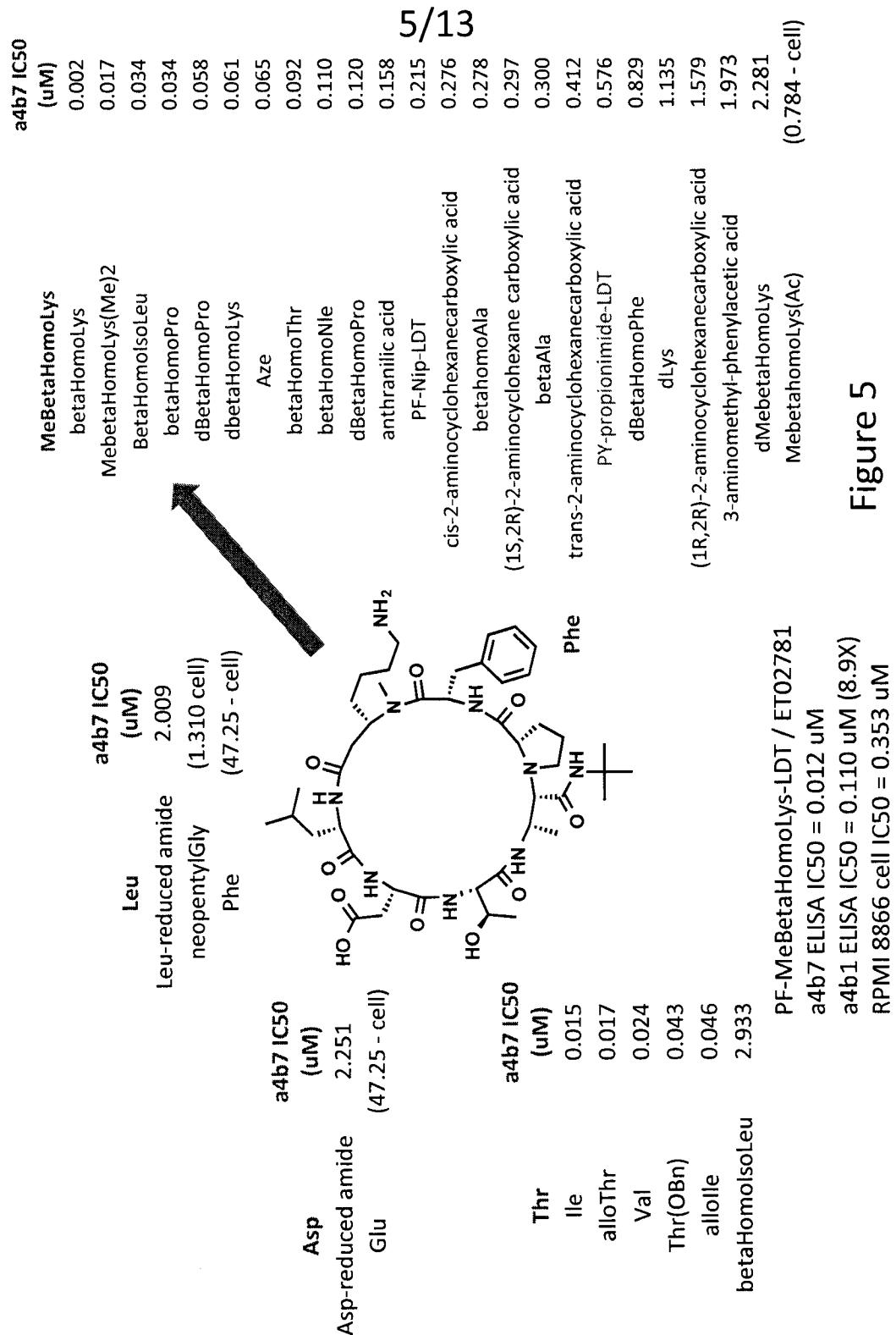


Figure 5

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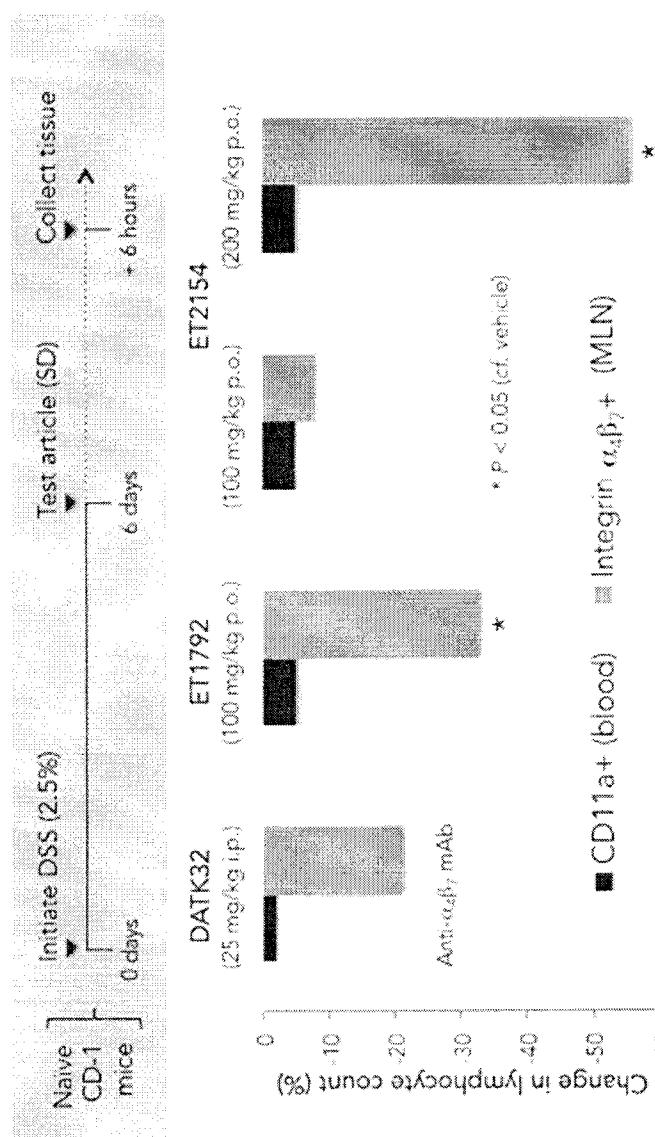
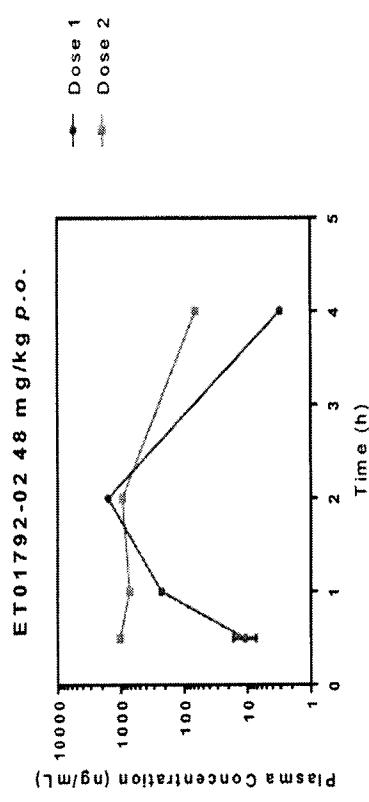


Figure 6

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Summary of PK Parameters for ET01792-02

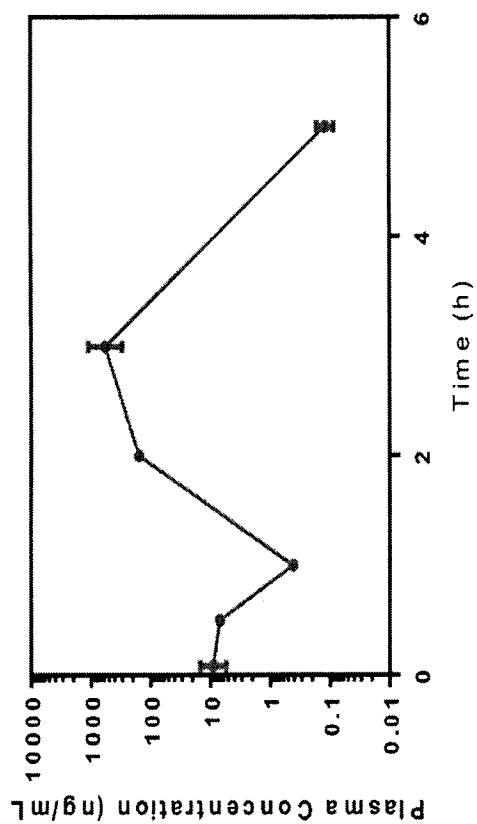
Parameter	Unit	First dose	Second dose	Estimate
$t_{max}$	h	2.00	0.500	
$C_{max}$	ng/mL	1587	1026	
Apparent $t_{1/2}$	h	nc	nc	
$AUC_{0-t_{last}}$	h*ng/mL	1475	2188	
$AUC_{0-\infty}$	h*ng/mL	nc	nc	
$MRT_{0-t_{last}}$	h	1.99	1.59	

nc denotes not calculable as a clear terminal elimination phase was not observed.

$t_{max}$ : time at which maximum concentration is observed  
 $C_{max}$ : maximum observed concentration  
Apparent  $t_{1/2}$ : apparent terminal half-life  
 $AUC_{0-t_{last}}$ : area under the concentration vs. time curve from time 0 to the time of the last measurable conc  
 $AUC_{0-\infty}$ : area under the concentration vs. time curve from time 0 to infinity  
 $MRT_{0-t_{last}}$ : mean residence time from time zero to the time of the last measurable conc

Figure 7

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Summary of PK Parameters for ET01792-03

Parameter	Unit	Estimate
$t_{max}$	h	3.00
$C_{max}$	ng/mL	581
Apparent $t_{1/2}$	h	nc
$AUC_{0-tlast}$	$h^*ng/mL$	589
$AUC_{0-inf}$	$h^*ng/ml$	nc
$MRT_{0-tlast}$	h	2.77

Figure 8

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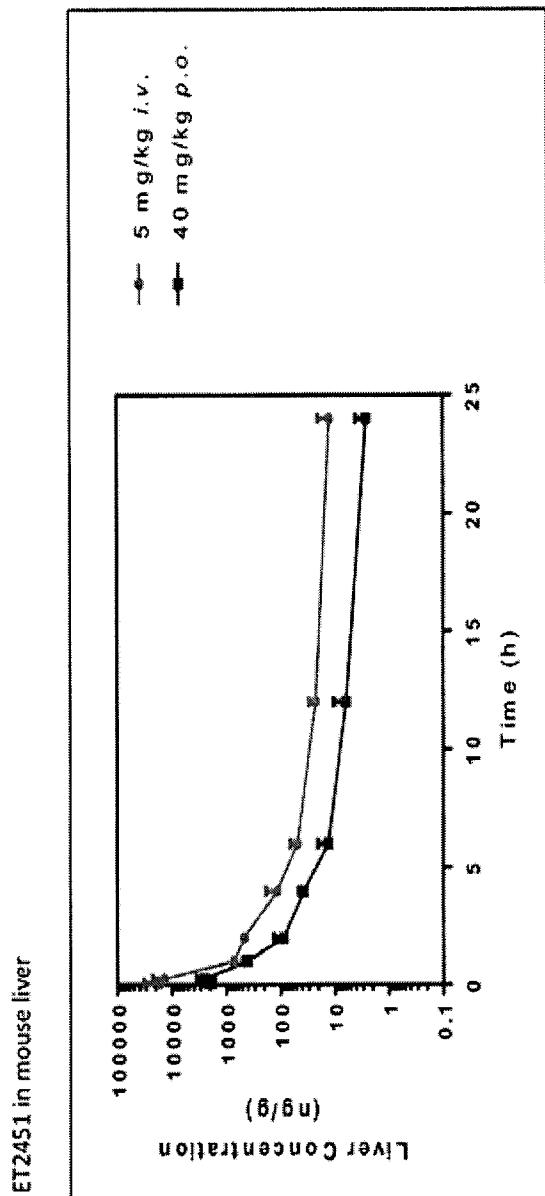


Figure 9

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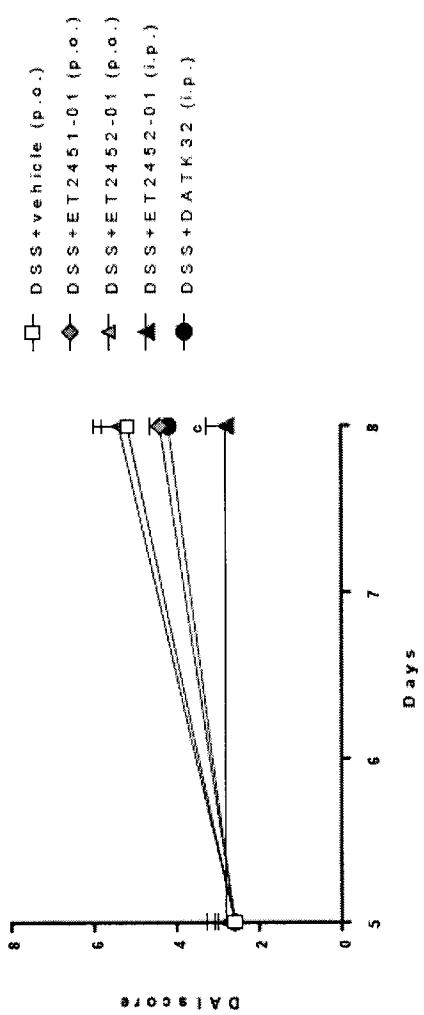
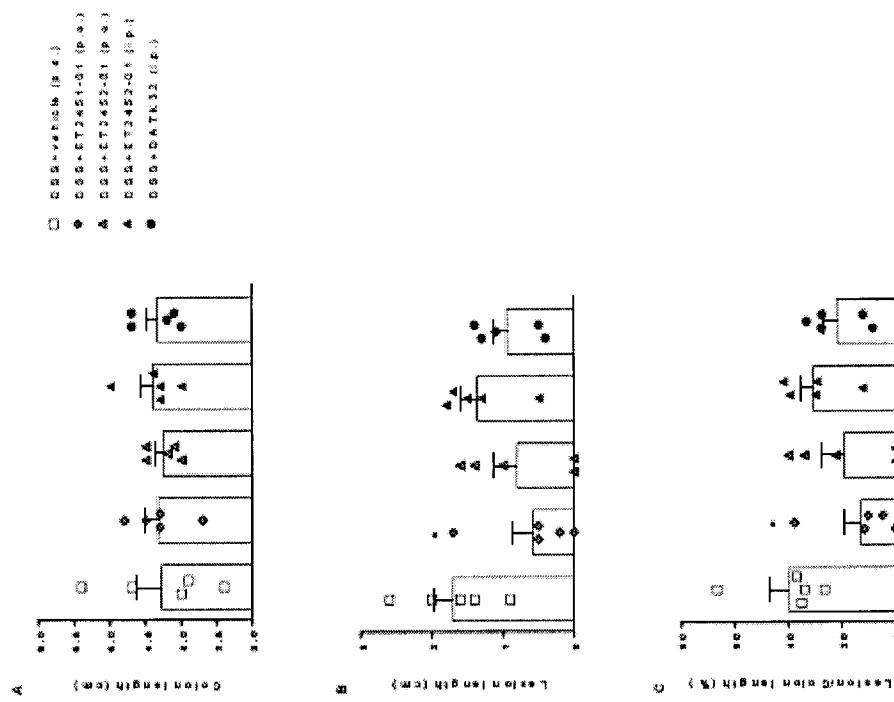


Figure 10

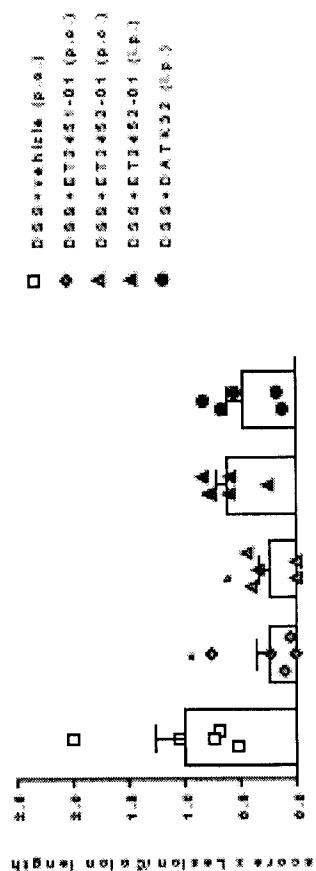
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Measurement of colon length (A), lesion length (B) and colon/lesion length ratio in percentage (C) from DSS-induced UC mice, receiving vehicle or treatments either by oral or i.p. route.

Figure 11

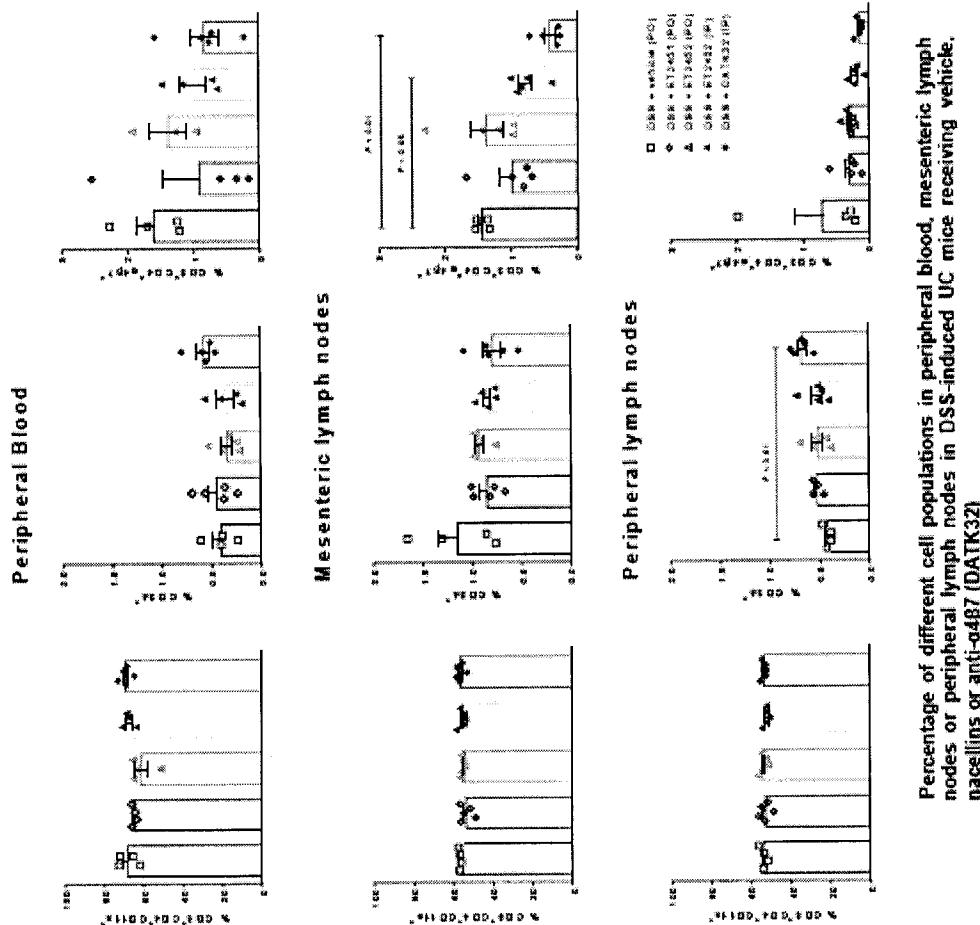
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Macroscopic inflammation score x colonflesion length ratio calculated for the different groups of DSS-induced UC mice, receiving vehicle or treatments either by oral or i.p. route.

Figure 12

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Percentage of different cell populations in peripheral blood, mesenteric lymph nodes or peripheral lymph nodes in DSS-induced UC mice receiving vehicle, nacellins or anti-4487 (DATK32).

Figure 13