

## Title (en)

DIEPTIDYL PEPTIDASE IV INHIBITORS AND METHODS OF MAKING AND USING DIEPTIDYL PEPTIDASE IV INHIBITORS

## Title (de)

DIEPTIDYL-PEPTIDASE-IV-INHIBITOREN, VERFAHREN ZU DEREN HERSTELLUNG SOWIE DEREN VERWENDUNG

## Title (fr)

INHIBITEURS DE LA DIEPTIDYL PEPTIDASE IV; METHODES DE FABRICATION ET D'UTILISATION DESDITS INHIBITEURS

## Publication

**EP 1228061 A4 20041215 (EN)**

## Application

**EP 00982093 A 20001113**

## Priority

- US 0030836 W 20001113
- US 4390899 A 19991112

## Abstract (en)

[origin: WO0134594A1] The present invention provides the inhibitors of dipeptidyl peptidase IV based upon or including proline or similar moieties. The inhibitors are useful for treating various disorders, including those of the central nervous system and the prostate. Many of the inhibitors can be reversible, and can cross the blood-brain barrier. Methods of making and using the inhibitors and treatment methods also are provided.

## IPC 1-7

**C07D 401/06; C07D 277/00**

## IPC 8 full level

**C12N 9/99** (2006.01); **A61K 31/401** (2006.01); **A61K 31/4439** (2006.01); **A61K 38/00** (2006.01); **A61K 38/55** (2006.01); **A61K 45/00** (2006.01); **A61P 9/10** (2006.01); **A61P 13/08** (2006.01); **A61P 25/00** (2006.01); **A61P 25/06** (2006.01); **A61P 25/16** (2006.01); **A61P 35/00** (2006.01); **A61P 43/00** (2006.01); **C07C 229/46** (2006.01); **C07C 237/12** (2006.01); **C07C 255/46** (2006.01); **C07C 327/42** (2006.01); **C07D 207/16** (2006.01); **C07D 233/02** (2006.01); **C07D 241/04** (2006.01); **C07D 257/04** (2006.01); **C07D 263/06** (2006.01); **C07D 277/06** (2006.01); **C07D 279/12** (2006.01); **C07D 307/24** (2006.01); **C07D 401/12** (2006.01); **C07D 403/04** (2006.01); **C07D 403/12** (2006.01); **C07D 413/04** (2006.01); **C07D 417/04** (2006.01); **C07F 9/40** (2006.01); **C07F 9/48** (2006.01); **C07F 9/572** (2006.01); **C07K 5/062** (2006.01)

## CPC (source: EP)

**A61P 9/10** (2017.12); **A61P 13/08** (2017.12); **A61P 25/00** (2017.12); **A61P 25/06** (2017.12); **A61P 25/16** (2017.12); **A61P 35/00** (2017.12); **A61P 43/00** (2017.12); **C07C 229/46** (2013.01); **C07C 237/12** (2013.01); **C07C 255/46** (2013.01); **C07C 327/42** (2013.01); **C07D 207/16** (2013.01); **C07D 233/02** (2013.01); **C07D 241/04** (2013.01); **C07D 257/04** (2013.01); **C07D 263/06** (2013.01); **C07D 277/06** (2013.01); **C07D 279/12** (2013.01); **C07D 307/24** (2013.01); **C07D 401/12** (2013.01); **C07D 403/04** (2013.01); **C07D 403/12** (2013.01); **C07D 413/04** (2013.01); **C07D 417/04** (2013.01); **C07F 9/4006** (2013.01); **C07F 9/4833** (2013.01); **C07F 9/572** (2013.01); **C07C 2601/08** (2017.04)

## Citation (search report)

- [DPX] US 6011155 A 20000104 - VILLHAUER EDWIN BERNARD [US]
- [DPX] US 6110949 A 20000829 - VILLHAUER EDWIN BERNARD [US]
- [PX] WO 9967278 A1 19991229 - PROBIODRUG GES FUER ARZNEIM [DE], et al
- [PX] WO 9967279 A1 19991229 - PROBIODRUG GES FUER ARZNEIM [DE], et al
- [PX] WO 0034241 A1 20000615 - NOVARTIS AG [CH], et al
- [DX] US 5543396 A 19960806 - POWERS JAMES C [US], et al
- [X] WO 9515309 A1 19950608 - FERRING BV [NL], et al
- [X] WO 9308259 A2 19930429 - NEW ENGLAND MEDICAL CENTER INC [US], et al
- [X] DD 296075 A5 19911121 - UNIV HALLE WITTENBERG [DE]
- [X] US 5939560 A 19990817 - JENKINS PAUL D [GB], et al
- [X] WO 9534538 A2 19951221 - UNIVERSITAIRE INSTELLING ANTWE [BE], et al
- [X] WO 9740832 A1 19971106 - KNOELL HANS FORSCHUNG EV [DE], et al
- [X] ASHWORTH ET AL: "2-Cyanopyrrolidides as potent, stable inhibitors of dipeptidyl peptidase IV", BIOORGANIC & MEDICINAL CHEMISTRY LETTERS, OXFORD, GB, vol. 6, no. 10, 1996, pages 1163 - 1166, XP000953254, ISSN: 0960-894X
- [X] SNOW ET AL: "Studies on Proline Boronic Acid Dipeptide Inhibitors of Dipeptidyl Peptidase IV: Identification of a Cyclic Species Containing a B-N Bond", JOURNAL OF THE AMERICAN CHEMICAL SOCIETY, AMERICAN CHEMICAL SOCIETY, WASHINGTON, DC, US, vol. 116, no. 24, 1994, pages 10860 - 10869, XP002109443, ISSN: 0002-7863
- [X] COUTTS S J ET AL: "Structure-activity relationships of boronic acid inhibitors of dipeptidyl peptidase IV. 1. Variation of the P2 position of Xaa-boroPro dipeptides", JOURNAL OF MEDICINAL CHEMISTRY, AMERICAN CHEMICAL SOCIETY, WASHINGTON, US, vol. 39, no. 39, 10 May 1996 (1996-05-10), pages 2087 - 2094, XP002092856, ISSN: 0022-2623
- [X] YAMADA M ET AL: "A Potent Dipeptide Inhibitor of Dipeptidyl Peptidase IV", BIOORGANIC & MEDICINAL CHEMISTRY LETTERS, OXFORD, GB, vol. 8, no. 12, 16 June 1998 (1998-06-16), pages 1537 - 1540, XP004137079, ISSN: 0960-894X
- [X] ASHWORTH D M ET AL: "4-CYANTHIAZOLIDIDES AS VERY POTENT, STABLE INHIBITORS OF DIEPTIDYL PEPTIDASE IV", BIOORGANIC & MEDICINAL CHEMISTRY LETTERS, OXFORD, GB, vol. 6, no. 22, 1996, pages 2745 - 2748, XP000957892, ISSN: 0960-894X
- [X] AUGUSTYNS KJL LAMBEIR AM BORLOO M DE MEESTER I VEDERNIKOVA I VANHOOF G HENDRIKS D SCHARPE S HAEMERS A: "Pyrrolidides: synthesis and structure-activity relationship as inhibitors of dipeptidyl peptidase IV", EUROPEAN JOURNAL OF MEDICINAL CHEMISTRY, EDITIONS SCIENTIFIQUE ELSEVIER, PARIS, FR, vol. 32, no. 4, 1997, pages 301 - 309, XP004086653, ISSN: 0223-5234
- [X] SCHOEN E ET AL: "DIEPTIDYL PEPTIDASE IV IN THE IMMUNE SYSTEM. EFFECTS OF SPECIFIC ENZYME ON ACTIVITY OF DIEPTIDYL PEPTIDASE IV AND PROLIFERATION OF HUMAN LYMPHOCYTES", BIOLOGICAL CHEMISTRY HOPPE-SEYLER, WALTER DE GRUYTER, BERLIN, DE, vol. 372, no. 5, May 1991 (1991-05-01), pages 305 - 311, XP000874047, ISSN: 0177-3593
- [X] LI J ET AL: "AMINOACYLPYRROLIDINE-2-NITRILES: POTENT AND STABLE INHIBITORS OF DIEPTIDYL-PEPTIDASE 4 (CD 26)", ARCHIVES OF BIOCHEMISTRY AND BIOPHYSICS, NEW YORK, US, US, vol. 323, no. 1, October 1995 (1995-10-01), pages 148 - 154, XP000965067, ISSN: 0003-9861
- [X] BODUSZEK, BOGDAN ET AL: "DIEPTIDE PHOSPHONATES AS INHIBITORS OF DIEPTIDYL PEPTIDASE IV", J.MED.CHEM., vol. 37, no. 23, 1994, pages 3969 - 3976, XP002281461
- [X] BELAYEV, ALEXANDER ET AL: "A NEW SYNTHETIC METHOD FOR PROLINE DIPHENYL PHOSPHONATES", TETT. LETT., vol. 36, no. 21, 1995, pages 3755 - 3758, XP002281462
- See references of WO 0134594A1

Cited by

WO2011127051A1; WO2012145604A1; WO2011005929A1; WO2013055910A1; EP2116235A1; WO2012145603A1; EP2253311A2; WO2012145361A1; WO2012170702A1; WO2014074668A1; US11253508B2; WO2012040279A1; WO2012135570A1; EP3323818A1; US10555929B2; US10772865B2; US11400072B2

Designated contracting state (EPC)

AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE TR

DOCDB simple family (publication)

**WO 0134594 A1 20010517**; AU 1916401 A 20010606; CA 2390231 A1 20010517; EP 1228061 A1 20020807; EP 1228061 A4 20041215; JP 2003535034 A 20031125

DOCDB simple family (application)

**US 0030836 W 20001113**; AU 1916401 A 20001113; CA 2390231 A 20001113; EP 00982093 A 20001113; JP 2001536541 A 20001113