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(54) Title: SELECTIVE INHIBITORS OF HISTONE DEACETYLASE ISOFORM 6 AND METHODS THEREOF

(57) Abstract: The described invention provides histone deacetylase (HDAC) inhibitor compounds with substituted benzimidazole, benzimidazolone and benzotriazole heterocycles showing selective inhibition of histone deacetylase isoform HDAC6. The described invention further provides methods of making such compounds and methods of inhibiting HDAC, treating HDAC- associated diseases, including cell proliferative disorders, such as cancer, autoimmune or inflammatory diseases and neurodegenerative diseases.

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US 12/44087

A. CLASSIFICATION OF SUBJECT MATTER
IPC(8) - A01N 43/64; A61K 31/41 (2012.01)
USPC - 514/394
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
USPC: 514/394

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
USPC: 514/359, 385, 387, 391, 396-397 (text search) Find search terms below

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
PubWEST (PGPB,USPT,USOC,EPAB,JPAB), Google Scholar, WIPO, SureChem (structure search)
$benzimidazol$, hydroxamic acid, benzotriazole, trifluoromethyl, benzimidazol-2-one, 2-oxo-benzimidazole, HDAC$, histone deacetylase

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 2006/0205941 A1 (BRESSI et al.) 14 September 2006 (14.09.2006) para [0002], [0045]-[0046], [0071], [0258]-[0265], [0455]-[0463], [0477], [0483]	1-61 and 63-70
Y	BUTLER et al. Rational Design and Simple Chemistry Yield a Superior, Neuroprotective HDAC6 Inhibitor, Tubastatin A. J Am Chem Soc., 2010, Vol.132(31), pp 10842-10846; pg 2, para 3 - pg 4, para 4; pg 11, Table 1 Downloaded from: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2916045/	1-61 and 63-70
Y	US 2010/0196502 A1 (KOZIKOWSKI et al.) 05 August 2010 (05.08.2010) para [0008]-[0009]	4, 32-36, 40 and 55
A	WO 2009/129335 A2 (VERNER et al.) 22 October 2009 (22.10.2009) para [0004]-[0623]	1-61 and 63-70
A	SMIL et al. Novel HDAC6 isoform selective chiral small molecule histone deacetylase inhibitors. Bioorganic & Medicinal Chemistry Letters, 2009, Vol19, pp 688-692; entire document Downloaded from: www.sciencedirect.com	1-61 and 63-70

☐ Further documents are listed in the continuation of Box C. ☐

* Special categories of cited documents:
"A" document defining the general state of the art which is not considered to be of particular relevance
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"O" document referring to an oral disclosure, use, exhibition or other means
"P" document published prior to the international filing date but later than the priority date claimed
"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
19 August 2012 (19.08.2012)	04 SEP 2012
Name and mailing address of the ISA/US Mail Stop PCT, Attn: ISA/US, Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450 Facsimile No. 571-273-3201	Authorized officer: Lee W. Young PCT Helpdesk: 571-272-4300 PCT OSP: 571-272-7774

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