US008980332B2

(12) **United States Patent**
Hyde et al.

(10) **Patent No.: US 8,980,332 B2**
(45) **Date of Patent: *Mar. 17, 2015**

(54) **METHODS AND SYSTEMS FOR USE OF PHOTOLYZABLE NITRIC OXIDE DONORS**

(71) Applicant: **Searete LLC, a limited liability corporation of the State of Delaware**, Bellevue, WA (US)

(72) Inventors: **Roderick A. Hyde**, Redmond, WA (US); **Muriel Y. Ishikawa**, Livermore, CA (US); **Lowell L. Wood, Jr.**, Bellevue, WA (US)

(73) Assignee: **The Invention Science Fund I, LLC**, Bellevue, WA (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

This patent is subject to a terminal disclaimer.

(21) Appl. No.: **14/148,524**

(22) Filed: **Jan. 6, 2014**

(65) **Prior Publication Data**

US 2014/0194808 A1 Jul. 10, 2014

Related U.S. Application Data

(63) Continuation-in-part of application No. 11/981,743, filed on Oct. 30, 2007, now Pat. No. 8,642,093.

(51) **Int. Cl.**

A61N 5/06	(2006.01)
A61K 31/04	(2006.01)
A61K 33/00	(2006.01)
A61K 41/00	(2006.01)

(52) **U.S. Cl.**

CPC ***A61N 5/062*** (2013.01); ***A61K 33/00*** (2013.01); ***A61N 5/0601*** (2013.01); ***A61K 41/0042*** (2013.01)

USPC **424/718**; 607/88

(58) **Field of Classification Search**

USPC 424/718; 607/88

See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

4,162,536	A	7/1979	Morley
4,210,697	A	7/1980	Adiletta
4,248,214	A	2/1981	Hannah et al.
4,919,149	A	4/1990	Stang
5,109,871	A	5/1992	Thornton
5,279,294	A	1/1994	Anderson et al.
5,351,698	A	10/1994	Wheeler et al.
5,366,997	A	11/1994	Keefer et al.
5,374,710	A	12/1994	Tsien et al.
5,405,919	A	4/1995	Keefer et al.
5,495,961	A	3/1996	Maestre
5,530,263	A	6/1996	DiVincenzo
5,571,152	A	11/1996	Chen et al.
5,580,433	A	12/1996	Baker et al.
5,582,170	A	12/1996	Soller
5,665,077	A	9/1997	Rosen et al.
5,676,963	A	10/1997	Keefer et al.
5,683,668	A	11/1997	Hrabie et al.
5,690,777	A	11/1997	Kuethe et al.
5,692,520	A	12/1997	Lavoisier
5,736,152	A	4/1998	Dunn
5,765,558	A	6/1998	Psaros et al.
5,814,666	A	9/1998	Green et al.
5,858,799	A	1/1999	Yee et al.
5,900,433	A	5/1999	Igo et al.
5,910,316	A	6/1999	Keefer et al.
5,943,160	A	8/1999	Downing
5,956,172	A	9/1999	Downing
5,980,705	A	11/1999	Allen et al.
5,994,444	A	11/1999	Trescony et al.
6,000,398	A	12/1999	Alla et al.
6,037,346	A	3/2000	Doherty, Jr. et al.
6,080,110	A	6/2000	Thorgersen
6,100,096	A	8/2000	Bollinger et al.
6,103,765	A	8/2000	Neal
6,127,363	A	10/2000	Doherty, Jr. et al.
6,143,314	A	11/2000	Chandrashekar et al.
6,149,606	A	11/2000	Alving et al.
6,156,753	A	12/2000	Doherty, Jr. et al.
6,182,661	B1	2/2001	Solanki et al.
6,190,704	B1	2/2001	Murrell
6,223,747	B1	5/2001	Rudge et al.
6,241,752	B1	6/2001	Sheinman et al.
6,265,420	B1	7/2001	Lai
6,280,604	B1	8/2001	Allen et al.
6,287,601	B1	9/2001	Russell
6,306,609	B1	10/2001	Lai
6,308,708	B2	10/2001	Strauss et al.
6,321,751	B1	11/2001	Strauss et al.
6,327,074	B1	12/2001	Bass et al.
6,341,607	B1	1/2002	Couvreur
6,369,071	B1	4/2002	Haj-Yehia

(Continued)

FOREIGN PATENT DOCUMENTS

DE	20115123	U1	6/2001
EP	1 704 877	A1	9/2006

(Continued)

OTHER PUBLICATIONS

U.S. Appl. No. 12/006,069, Hyde et al.

(Continued)

Primary Examiner — Samantha Shterengarts

(57) **ABSTRACT**

The present disclosure relates to methods and systems for use of photolyzable nitric oxide donors for the treatment of sexual dysfunction.

17 Claims, 8 Drawing Sheets