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(54) **COMPOSITIONS AND METHODS FOR AFFECTING MOVEMENT OF CONTAMINANTS, BODILY FLUIDS OR OTHER ENTITIES, AND/OR AFFECTING OTHER PHYSIOLOGICAL CONDITIONS**

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See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

4,098,728	A	7/1978	Rosenblatt
4,211,227	A	7/1980	Anderson et al.
4,272,398	A	6/1981	Jaffe
4,636,208	A	1/1987	Rath
4,829,000	A	5/1989	Kleinman et al.
4,861,627	A	8/1989	Mathiowitz et al.
5,019,646	A	5/1991	Furcht et al.
5,126,141	A	6/1992	Henry
5,180,375	A	1/1993	Feibus
5,192,302	A	3/1993	Kensey et al.
5,222,974	A	6/1993	Kensey et al.
5,645,565	A	7/1997	Rudd et al.
5,670,483	A	9/1997	Zhang et al.
5,955,343	A	9/1999	Holmes et al.
6,333,194	B1	12/2001	Levy et al.
6,368,877	B1	4/2002	Zhang et al.
6,548,630	B1	4/2003	Zhang et al.
6,663,655	B2	12/2003	Ginn et al.
6,711,879	B2	3/2004	Korteweg et al.
6,800,116	B2	10/2004	Stevens et al.
6,800,481	B1	10/2004	Holmes et al.
6,844,324	B1	1/2005	Zhang et al.
6,953,656	B2	10/2005	Jacobson et al.
6,953,659	B2	10/2005	Jacobson et al.
7,098,028	B2	8/2006	Holmes et al.
7,179,784	B2	2/2007	Zhang et al.
7,449,180	B2	11/2008	Kisiday et al.
7,846,891	B2	12/2010	Ellis-Behnke et al.
8,021,570	B2	9/2011	Gellman et al.
8,022,178	B2	9/2011	Horii et al.
9,084,837	B2	7/2015	Ellis-Behnke et al.
9,327,010	B2	5/2016	Ellis-Behnke et al.
2001/0024784	A1	9/2001	Wagner
2002/0072074	A1	6/2002	Zhang et al.
2002/0160471	A1	10/2002	Kisiday et al.
2003/0008011	A1	1/2003	Mershon
2003/0166846	A1	9/2003	Rothstein et al.

(Continued)

FOREIGN PATENT DOCUMENTS

AU	2006241123	11/2006
GB	1006606 A	10/1965

(Continued)

OTHER PUBLICATIONS

Claudon et al, "consequences of Isostructural Main-Chain Modifications for the Design of Antimicrobial Doldamers: Helical Mimics of Host-Defense Peptides Based on a Heterogeneous Amide/Urea Backbone," Agnew. Chem. Int. Ed., 2010, 49(2): 333-336.*

(Continued)

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(57) **ABSTRACT**

Method are described for inhibiting movement of a bodily fluid and/or contaminants on or in an animal comprising administering to the animal self-assembling peptidomimetics, including α-peptides, β-peptides, γ-peptides, and/or δ-peptides.

17 Claims, No Drawings