US009409987B2

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

(10) **Patent No.: US 9,409,987 B2**
(45) **Date of Patent: Aug. 9, 2016**

(54) **POLYPEPTIDES AND POLYNUCLEOTIDES, AND USES THEREOF FOR TREATMENT OF IMMUNE RELATED DISORDERS AND CANCER**

(75) Inventors: **Amir Toporik**, Holon (IL); **Amit Novik**, Binyamina (IL); **Ronen Shemesh**, Modiin (IL)

(73) Assignee: **COMPUGEN LTD**, Holon (IL)

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

(21) Appl. No.: **14/111,767**

(22) PCT Filed: **Apr. 16, 2012**

(86) PCT No.: **PCT/IB2012/051868**

§ 371 (c)(1), (2), (4) Date: **Oct. 15, 2013**

(87) PCT Pub. No.: **WO2012/140627**

PCT Pub. Date: **Oct. 18, 2012**

(65) **Prior Publication Data**

US 2014/0044641 A1 Feb. 13, 2014

Related U.S. Application Data

(60) Provisional application No. 61/475,682, filed on Apr. 15, 2011, provisional application No. 61/532,575, filed on Sep. 9, 2011, provisional application No. 61/581,194, filed on Dec. 29, 2011.

(51) **Int. Cl.**

C07K 16/28	(2006.01)
A61K 39/395	(2006.01)
A61K 39/00	(2006.01)
A61K 39/39	(2006.01)
C07K 14/705	(2006.01)
C07K 16/18	(2006.01)
G01N 33/53	(2006.01)

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

CPC ***C07K 16/28*** (2013.01); ***A61K 39/001*** (2013.01); ***A61K 39/0008*** (2013.01); ***A61K 39/0011*** (2013.01); ***A61K 39/39*** (2013.01); ***A61K 39/3955*** (2013.01); ***C07K 14/70503*** (2013.01); ***C07K 16/18*** (2013.01); ***G01N 33/53*** (2013.01); *C07K 2319/00* (2013.01); *C07K 2319/30* (2013.01); *C07K 2319/43* (2013.01); *C12N 2760/10022* (2013.01); *C12N 2760/16121* (2013.01); *C12N 2770/32031* (2013.01)

(58) **Field of Classification Search**

None

See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

6,479,238	B1	11/2002	Blumenfeld et al.	
7,919,091	B2 *	4/2011	Bihain et al.	424/139.1
2005/0202526	A1	9/2005	Baker et al.	
2007/0041963	A1	2/2007	Rosen	
2007/0054268	A1	3/2007	Sutherland	
2007/0105133	A1	5/2007	Clarke et al.	
2007/0154889	A1	7/2007	Wang	
2007/0184444	A1	8/2007	Abbas	
2009/0017473	A1	1/2009	Frantz	
2009/0117566	A1	5/2009	Frantz	
2009/0222387	A1	9/2009	Gehrmann	
2011/0245090	A1	10/2011	Abbas	
2013/0165332	A1	6/2013	Abbas	

FOREIGN PATENT DOCUMENTS

WO	9907737	A2	2/1999
WO	9958642	A3	11/1999
WO	0047772	A2	8/2000
WO	0121647	A2	3/2001
WO	03083074	A9	10/2003
WO	03087300	A3	10/2003
WO	2004046342	A3	6/2004
WO	2010105298	A1	9/2010
WO	2012140627	A1	10/2012

OTHER PUBLICATIONS

Sequence alignment, 2015, 1 page.*
Garcia et al., 2007, Clin. Cancer Res. 13: 6351-6358.*
Rodrigues et al., Current Topics in Medicinal Chemistry, 2013, 13, 2551-2561.*
Jacobs et al., Anticancer Research 34: 2689-2700 (2014).*
Barber et al., Nature. 2006;439:682-7.
Bhadra et al., Proc Natl Acad Sci. 2011;108(22):9196-201.
Crawford et al., Curr Opin Immunol. 2009;21:179-186.
Diepolder and Obst, Expert Rev Vaccines. Mar. 2010;9(3):243-7.
Duncan and Miller PLoS One. 2011;6:e18548.
Duttagupta et al, Crit Rev Immunol. 2009;29(6):469-86.
Finnefrock et al., J Immunol 2009;182;980-987.
Golden-Mason et al., J Virol. 2009;83:9122-30.

(Continued)

Primary Examiner — Ilia Ouspenski

(74) *Attorney, Agent, or Firm* — Graeser Associates International Inc; Dvorah Graeser

(57) **ABSTRACT**

This invention relates to LY6G6F, VSIG10, TMEM25 and LSR proteins, which are suitable targets for immunotherapy, treatment of cancer, infectious disorders, and/or immune related disorders, and drug development. This invention further relates to soluble LY6G6F, VSIG10, TMEM25 and LSR molecules, extracellular domains of LY6G6F, VSIG10, TMEM25 and LSR and conjugates, which are suitable drugs for immunotherapy, treatment of cancer, infectious disorders, and/or immune related disorders. This invention further relates to antibodies and antigen binding fragments and conjugates containing same, and/or alternative scaffolds, specific for LY6G6F, VSIG10, TMEM25 or LSR molecules, which are suitable drugs for immunotherapy, treatment of cancer, infectious disorders, and/or immune related disorders.

12 Claims, 116 Drawing Sheets