

US010472379B2

(12) United States Patent

(54) RUTHENIUM-SPHINGOMYELIN COMPLEXES AND METHODS FOR THEIR USE IN THE TREATMENT OF TUMORS

(71) Applicant: **Garnett McKeen Lab, Inc.**, Bohemia, NY (US)

(72) Inventor: Merrill Garnett, East Islip, NY (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.

(21) Appl. No.: 15/589,828

(22) Filed: May 8, 2017

(65) **Prior Publication Data**

US 2018/0051045 A1 Feb. 22, 2018

Related U.S. Application Data

- (60) Provisional application No. 62/339,699, filed on May 20, 2016.
- (51) Int. Cl.

 C07F 15/00 (2006.01)

 A61K 33/24 (2019.01)

 C07K 14/47 (2006.01)

 A61K 47/54 (2017.01)

 A61K 47/68 (2017.01)

 C07K 5/062 (2006.01)
- (52) U.S. Cl.

CPC C07F 15/0046 (2013.01); A61K 33/24 (2013.01); A61K 47/547 (2017.08); A61K 47/548 (2017.08); A61K 47/6803 (2017.08); C07K 5/0606 (2013.01); C07K 14/4717 (2013.01)

(10) Patent No.: US 10,472,379 B2

(45) **Date of Patent:**

Field of Classification Search

Nov. 12, 2019

See application file for complete search history.

(58)

(56)

None

References Cited U.S. PATENT DOCUMENTS

OTHER PUBLICATIONS

"The structure of a typical antibody molecule" from Immunobiology: The Immune System in Health and Disease. 5th edition., Janeway CA Jr, Travers P, Walport M, et al. New York: Garland Science; 2001. (Year: 2001).*

(Continued)

Primary Examiner — Nissa M Westerberg (74) Attorney, Agent, or Firm — McCarter & English, LLP; Beverly W. Lubit

(57) ABSTRACT

The described invention provides a compound comprising an organometallic complex comprising a core of ruthenium and sphingomyelin, with the option of added zinc, that, in a therapeutic amount, through further connections with contributing organic ligands, are effective as chemotherapeutic agents that have an anti-tumor or anti-cancer effect on a tumor comprising tumor cells including a cytotoxic effect on of the tumor cells, inhibition of the growth of the tumor comprising the tumor cells, inhibition of migration of the tumor cells, or any combination of these effects.

40 Claims, 20 Drawing Sheets

