



US009145441B2

(12) **United States Patent**
Aciro et al.(10) **Patent No.:** **US 9,145,441 B2**(45) **Date of Patent:** ***Sep. 29, 2015**(54) **MACROCYCLIC INHIBITORS OF FLAVIVIRIDAE VIRUSES**(2013.01); *A61K 45/06* (2013.01); *C07D 487/18* (2013.01); *C07D 498/18* (2013.01); *A61K 38/21* (2013.01)(71) Applicants: **Gilead Sciences, Inc.**, Foster City, CA (US); **Selcia Ltd.**, Ongar, Essex (GB)(58) **Field of Classification Search**
CPC A61K 38/13; A61K 38/21; A61K 38/12; A61K 38/00
See application file for complete search history.(72) Inventors: **Caroline Aciro**, Bottisham (GB); **Victoria Alexandra Steadman**, Stansted (GB); **Simon Neil Pettit**, Colchester (GB); **Karine G. Poullennec**, Chelmsford (GB); **Linos Lazarides**, London (GB); **David Kenneth Dean**, Ware (GB); **Neil Andrew Dunbar**, Chelmsford (GB); **Adrian John Highton**, Chelmsford (GB); **Andrew John Keats**, Chelmsford (GB); **Dustin Scott Siegel**, Foster City, CA (US); **Kapil Kumar Karki**, Foster City, CA (US); **Adam James Schrier**, Redwood City, CA (US); **Petr Jansa**, San Mateo, CA (US); **Richard Mackman**, Millbrae, CA (US); **Jean Yves Chiva**, Chelmsford (GB)(56) **References Cited**

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Primary Examiner — Marcela M Cordero Garcia*Assistant Examiner* — Kaipeen Yang(74) *Attorney, Agent, or Firm* — Francis O. Ginah(57) **ABSTRACT**

Provided are compounds of Formula I:

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(*) 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.: **13/913,259**(22) Filed: **Jun. 7, 2013**(65) **Prior Publication Data**

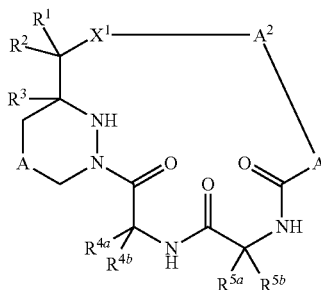
US 2014/0030221 A1 Jan. 30, 2014

Related U.S. Application Data

(60) Provisional application No. 61/657,550, filed on Jun. 8, 2012.

(51) **Int. Cl.***A61K 38/21* (2006.01)*C07K 5/062* (2006.01)*C07D 487/18* (2006.01)*C07D 498/18* (2006.01)*A61K 38/12* (2006.01)*A61K 45/06* (2006.01)(52) **U.S. Cl.**CPC *C07K 5/06052* (2013.01); *A61K 38/12*

Formula I



and pharmaceutically acceptable salts and esters thereof. The compounds, compositions, and methods provided are useful for the treatment of virus infections, particularly hepatitis C infections.

30 Claims, No Drawings