AVI BioPharma Strengthens its Patent Position in RNA Therapeutics

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Composition of Matter Patent for Enhanced Antisense Agent AVI–5126

For Immediate Release

PORTLAND, OR — December 23, 2008 — AVI BioPharma, Inc. (NASDAQ: AVII), a developer of RNA–based drugs, today announced issuance of a U.S. patent protecting the composition of matter of its RNA–based therapeutic agent AVI–5126. The patent “Compositions for Enhancing Transport of Molecules Into Cells” (U.S. Patent No. 7,468,418) claims compositions and methods for AVI–5126, a PPMO (peptide–conjugated morpholino phosphorodiamidate oligomer)-based RNA therapeutic agent aimed at silencing C–MYC, an important protein in wound healing, cell proliferation and cancer.

AVI has licensed AVI–5126 to Global Therapeutics, a Cook Medical company, which is conducting the world’s first clinical trial of a third generation drug–eluting stent (“DES”) that uses an RNA–based therapeutic agent. AVI–5126 targets C–MYC, a key regulatory gene involved in cardiovascular restenosis, silencing the gene before the biochemical pathways leading to restenosis are fully triggered. The enhanced antisense compound has increased potency and bioavailability compared with earlier analogs, allowing for a DES system that delivers a lower concentration of more potent drug.

“This is a significant patent issuance for a number of AVI programs, but most importantly it covers the lead drug candidate on which Cook’s Global Therapeutics unit is working,” said Leslie Hudson, Ph.D., President and Chief Executive Officer of AVI. “This patent protects the broad concept of a cell delivery peptide that is conjugated to a neutral oligomer and its issuance significantly expands AVI’s intellectual property base for the next generation of therapeutic oligomers capable of significantly improved bioavailability and potency.”

AVI has published numerous articles in 2008 on novel compounds using the principle of peptide–PMO (PPMO) conjugates.

- Morpholino Oligomers Targeting the PB1 and NP Genes Enhance Survival of Mice Infected with Highly Pathogenic Influenza A H7N7 Virus
  Gabriel G, Nordman A, Stein DA, Iversen PL and Klend HD
  April 2008, The Journal of General Virology
- Inhibition of Iinfluenza A H3N8 Virus Infections in Mice by Morpholino Oligomers.
  Lupfer C, Stein DA, Mourich DV, Tepper SE, Iversen PL and Pastey M
  March 28, 2008, Archives of Virology
- Inhibition of Alphavirus Infection in Cell Culture and in Mice with Antisense Morpholino Oliogmers
  Paessler S, Rijnbrand R, Stein DA, Ni H, Yun NE, Dziuba N, Borisevich V, Seregin A, Ma Y, Blouch R, Iversen PL, and Zacks MA
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- Inhibition of Multiple Species of Picornavirus Using a Morpholino Oligomer Targeting Highly Conserved IRES Sequence.
  Stone J, Stein DA, Rijnbrand R, Iversen PL and Andino R
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- Inhibition of Respiratory Syncitial Virus Infections with Morpholino Oligomers in Cell Cultures and in Mice
  Lai SH, Stein DA, Liao SL, Guerrero–Plata A, Hong C, Iversen PL, Casola A and Garofalo RP
  June 2008, Molecular Therapy
- Treatment of AG129 Mice with Antisense Morpholino Oligomers Increases Survival Time Following Challenge with Dengue 2 Virus
  Stein DA, Huang CYH, Silengo S, Amantana A, Crumley S, Blouch RE, Iversen, PL and Kinney RM
  September 2008, Journal of Antimicrobial Chemotherapy
- Delivery of Steric Block Morpholino Oligomers by (R–X-R)4 Peptides: Structure–activity Studies
  Abes R, Moulton HM, Clair P, Yang ST, Abes S, Melikov K, Prevot P, Youngblood DS, Iversen PL, Chernomordik LV and Lebleu B
  November 2008, Nucleic Acids Research

About AVI BioPharma

AVI BioPharma is focused on the discovery and development of RNA–based drugs utilizing proprietary derivatives of its antisense chemistry (morpholino–modified phosphorodiamidate oligomers or PMOs) that can be applied to a wide range of diseases and genetic disorders through several distinct mechanisms of action. Unlike other RNA therapeutic approaches, AVI’s antisense technology has been used to directly target both messenger RNA (mRNA) and its precursor (pre–mRNA), allowing for both up- and down–regulation of targeted genes and proteins. AVI’s RNA–based drug programs are being evaluated for the treatment of Duchenne muscular dystrophy as well as for the treatment of cardiovascular restenosis through our partner Global Therapeutics, a Cook Group Company. AVI’s antiviral programs have demonstrated promising outcomes in Ebola Zaire and Marburg

Musoke virus infections and may prove applicable to other viral targets such as HCV or Dengue viruses. For more information, visit www.avibio.com.