

For Immediate Release

UTMB to Collaborate on Program Targeting Potential Bioterrorist Pathogens Ebola and Marburg

Researchers awarded up to \$26 million by NIH to develop and test vaccines and post-infection treatments

GALVESTON, Texas, March 4, 2014—The University of Texas Medical Branch at Galveston, Profectus Biosciences, Tekmira Pharmaceuticals and the Vanderbilt University Medical Center have been awarded up to \$26 million to advance treatments of the highly lethal hemorrhagic fever viruses Ebola and Marburg.

These filoviruses are considered “Tier 1” pathogens by the U.S. Department of Health and Human Services, meaning they are considered agents with the highest risk of being deliberately misused by bioterrorists to cause mass casualties and produce devastating effects to the economy, critical infrastructure and public confidence.

There are no vaccines or treatments approved for human use against filoviruses, and infection causes high mortality rates that range between 50 and 90 percent.

The researchers will develop and test new vaccines and broad spectrum treatments to address this critical problem.

The award, to Dr. Thomas Geisbert, a professor in UTMB’s Department of Microbiology and Immunology and a member of the Institute for Human Infections and Immunity and Galveston National Laboratory, is a collaborative Center of Excellence for Translational Research grant supported by the National Institute of Allergy and Infectious Diseases, part of the National Institutes of Health. The grant funds will be distributed over five years.

Geisbert is an internationally recognized virologist, with more than 24 years of hands-on experience performing BSL-4 studies involving animals.

“We are very excited about this new grant as it combines three of the most promising post-exposure treatments that have shown the ability to completely protect animals against these deadly viruses,” said Geisbert. “We are very appreciative of the support we have received from NIAID/NIH and

look forward to working with them and with our corporate partners to further develop these most promising interventions for human use.”

Geisbert will collaborate with John H. Eldridge of Profectus Biosciences, Ian MacLachlan of Tekmira Pharmaceuticals Corporation, James E. Crowe Jr. of Vanderbilt University Medical Center, and with Alexander Bukreyev of UTMB.

“Our group will define the basic mechanisms by which naturally occurring antibodies kill Ebola and Marburg viruses,” said Crowe, who directs the Vanderbilt Vaccine Center. “This study on how antibodies recognize and kill filoviruses will point the way toward rational vaccine design and testing.

“The research tools we are using, human monoclonal antibodies derived from the blood cells of naturally infected human survivors, also can be developed as prevention and treatment biologic medicines that could be used in the field,” he said.

The center will conduct three interdependent research projects, supported by the Galveston National Laboratory at UTMB, a facility with the highest level containment required to safely work with deadly viruses, biosafety level four. UTMB has the only operational BSL-4 laboratory on a university campus in the United States, opened in 2004.

“We look forward to combining our vaccines with both Tekmira’s therapeutics and the antibodies developed at Vanderbilt,” said Eldridge, chief science officer of Profectus’ vaccine division. “Ebola and Marburg are both highly pathogenic, rapidly progressing infections with narrow windows for intervention. We are confident a combined approach will be more successful for treating these infections.”

All the investigators are involved with a variety of patents related to the development of countermeasures against infectious diseases.

The grant is NIH Award No. U19AI109711.

ABOUT UTMB HEALTH: Texas' first academic health center opened its doors in 1891 and today comprises four health sciences schools, three institutes for advanced study, a research enterprise that includes one of only two national laboratories dedicated to the safe study of infectious threats to human health, and a health system offering a full range of primary and specialized medical services throughout Galveston County and the Texas Gulf Coast region. UTMB Health is a component of the University of Texas System and a member of the Texas Medical Center.

ABOUT VANDERBILT UNIVERSITY: Vanderbilt is a private, non-sectarian, internationally recognized research university in Nashville, Tenn., with almost 13,000 students from all 50 states and more than 100 countries. Its 330-acre campus includes four undergraduate and six graduate schools, a respected medical center and the Freedom Forum First Amendment Center. Vanderbilt is ranked 17th among national universities by U.S. News & World Report, and its School of Medicine is ranked 9th in the nation for NIH funding. Vanderbilt University Medical Center is home to the region's only Level I Trauma Center and Level IV Neonatal Intensive Care Unit. With more than 3,600 full-time faculty and more than 25,000 staff members, Vanderbilt is the largest private employer in Middle Tennessee and the state's second largest Tennessee-based private employer.

ABOUT PROPECTUS BIOSCIENCES, INC.: Profectus is a clinical-stage biotechnology company developing novel vaccines to prevent and treat major chronic viral infectious diseases and associated cancers for which standard of care is inadequate or nonexistent, as well as emerging infectious diseases of public health and biodefense importance. Profectus vaccines are based on the company's proprietary Prime/Boost System of Vaccines (PBS Vax™), which enables quantitative and qualitative tailoring of effective immune responses to specific disease targets. Clinical studies of PBS Vax have shown a favorable safety profile and demonstrated that the platform enhances immune responses in new ways. The PBS Vax discovery engine is creating a pipeline of differentiated new vaccines that have the potential to be first-in-class or best-in-class products to treat and prevent diseases. Profectus' lead candidates include a therapeutic and prophylactic vaccine for HIV that initiated human clinical studies in 2013 and is currently being used in the clinic as part of the National Institutes of Health's HIV "Cure Agenda," and a vaccine against the Ebola and Marburg viruses that provided 100 percent protection of monkeys against lethal challenge with these agents when tested by the U.S. government. For more information, please visit www.profectusbiosciences.com

ABOUT TEKMIIRA: Tekmira Pharmaceuticals Corporation is a biopharmaceutical company focused on advancing novel RNAi therapeutics and providing its leading lipid nanoparticle delivery technology to pharmaceutical partners. Tekmira has been working in the field of nucleic acid delivery for over a decade and has broad intellectual property covering LNPs. Further information about Tekmira can be found at <http://www.tekmirapharm.com>. Tekmira is based in Vancouver, B.C.

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