

Isis Pharmaceuticals' TIGER Biosensor System Characterizes Epidemic in Military Training Camp

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Isis Pharmaceuticals and Naval Health Officials Publish Results Demonstrating the Utility of the TIGER Biosensor System for the Identification and Strain-Typing of Infectious Organisms

CARLSBAD, Calif., May 26, 2005 /PRNewswire-FirstCall via COMTEX/ -- Isis Pharmaceuticals, Inc. (Nasdaq: ISIS) announced today that The Proceedings of the National Academy of Sciences (PNAS) has published a study authored by scientists from its Ibis division and collaborators at the Naval Health Research Center and San Diego-based Science Applications International Corporation (SAIC). The study titled, "Rapid Identification and Strain-Typing of Respiratory Pathogens for Epidemic Surveillance" is online and accessible at <http://www.pnas.org/cgi/doi/10.1073/pnas.0409920102> and will also be published in the May 31, 2005 issue of PNAS. The groups used the innovative, high-throughput TIGER biosensor system to rapidly identify the infectious agents responsible for a severe outbreak of respiratory disease.

The publication describes results obtained from analysis of throat swabs taken during an outbreak of severe respiratory disease at the Marine Corps Recruit Depot (MCRD) in San Diego. Using the TIGER biosensor system, the bacteria responsible for the infection were identified and the potential spread of the epidemic monitored. The scientists were able to analyze patient samples in two ways, neither of which were previously possible.

First, in a broad survey, all bacteria present at significant levels in clinical samples were identified. The outbreak was determined to be primarily due to a particularly virulent strain of *Streptococcus pyogenes*. Other potentially pathogenic organisms were also identified in many of the affected patients, suggesting that infection with several organisms might affect morbidity. Second, the Streptococcal strain type associated with the pneumonia was determined; previously identified as especially virulent. In addition to the San Diego facility, patient samples from other military facilities were also tested and a distinctly different pattern of organisms was identified, confirming that the San Diego recruits were not spreading the disease to other facilities.

CMDR Kevin Russell, M.D., a co-author of the publication from the Naval Health Research Center said, "Despite having a well-equipped laboratory at my disposal, techniques currently available would simply not allow monitoring of an evolving outbreak in a timeframe necessary for intervention. The TIGER biosensor system did just that. More importantly, it did so in a highly accurate manner. The Public Health ramifications are staggering and limitless."

"The TIGER biosensor system supports the rapid identification and quantitation of any infectious organism without knowing what organism you are looking for, and without culturing. The TIGER biosensor system can also determine the particular strain of the infectious agent. This crucial information can be used to monitor the spread of an epidemic in real-time thus, facilitating rapid intervention that can help to contain the outbreak," said David J. Ecker, Ph.D., Isis' Vice President and Scientific Leader of the Ibis Division of Isis Pharmaceuticals. "The sensitivity and specificity of the TIGER biosensor system is remarkable. The TIGER biosensor system has proven to identify and characterize infectious agents using virtually any sample, from air to the most complex biological materials."

"This study is further validation of the TIGER technology; we have previously reported the ability of the TIGER biosensor system to detect the SARS virus and other organisms. This year, we plan to deliver the TIGER biosensor systems to several of our partners and customers in the government, including the Naval Health Research Center for the continued surveillance of infectious diseases in operational forces," Dr. Ecker added.

The TIGER biosensor system can identify known, previously unknown, and bioengineered infectious agents for use in biowarfare defense; identify and track disease patterns for use in epidemiological surveillance; and aid in solving crimes involving infectious agents for use in microbial forensics. The TIGER biosensor system also has the potential to be used in pharmaceutical process control, hospital-associated infection control and infectious disease diagnostics.

ABOUT TIGER AND THE IBIS DIVISION

Isis' Ibis division has invented the TIGER (Triangulation Identification for Genetic Evaluation of Risks) biosensor system, a system that has the potential to revolutionize the identification of infectious diseases. The Ibis division was founded to take advantage of the Company's expertise in RNA and utilize that knowledge and innovation to create a fundamentally different approach for the identification of bacterial and viral organisms. Isis' scientists have applied proprietary technologies to develop a biological sensor to identify a broad range of infectious organisms contained in a sample, including those that are newly-emerging, genetically altered and unculturable. The division has successfully demonstrated proof-of-principle of the TIGER biosensor system with the identification of a variety of bacteria and viruses in both environmental and human clinical samples. In addition to bioweapons defense, Ibis has advanced the development of the TIGER biosensor system to include epidemiological surveillance, biological products screening and microbial forensics applications. These applications represent the first of many of Isis' plans to add to the TIGER biosensor system to enhance its commercial value and opportunity in the government, research, medical and diagnostic markets. Additional information on Ibis and TIGER can be found at <http://www.ibistiger.com>.

To develop TIGER technology and applications, Isis' Ibis division has received contracts from a number of government agencies, including the Defense Advanced Research Projects Agency (DARPA), the National Institute of Allergy and Infectious Diseases (NIAID), part of the National Institutes of Health (NIH), the Centers for Disease Control and Prevention (CDC), the Federal Bureau of Investigation (FBI), and the Department of Homeland Security (DHS). From inception through March 31, 2005, Ibis has earned \$38.5 million in revenue from government partners. An additional \$9.0 million is committed under existing contracts and grants, with the potential for added funding.

ABOUT ISIS PHARMACEUTICALS, INC.

Isis Pharmaceuticals, Inc. is exploiting its expertise in RNA to discover and develop novel human therapeutic drugs for its pipeline and for its partners. The Company has successfully commercialized the world's first antisense drug and has 11 antisense products in development to treat metabolic, cardiovascular and inflammatory diseases, and cancer. Through its Ibis division, Isis is developing and commercializing the TIGER biosensor system, a system that has the potential to revolutionize the identification of infectious organisms. As an innovator in RNA-based drug discovery and development, Isis is the owner or exclusive licensee of more than 1,500 issued patents worldwide. Additional information about Isis is available at <http://www.isispharm.com>.

This press release contains forward-looking statements pertaining to the development and commercialization of the TIGER biosensor system, and the financial position and goals of Isis. Any statement describing our goals, expectations, intentions or beliefs is a forward-looking statement and should be considered an at-risk statement, including those statements that are described as Isis' goals. Such statements are subject to certain risks and uncertainties, particularly those inherent in developing and commercializing systems to identify infectious organisms that are effective and commercially attractive, and in the endeavor of building a business around such products. Our forward-looking statements also involve assumptions that, if they never materialize or prove correct, could cause our results to differ materially from those expressed or implied by such forward-looking statements. Factors that could cause or contribute to such differences include, but are not limited to, those discussed in Form 10-K, including those identified in the section of Item 1 entitled "Risk Factors." Although our forward-looking statements reflect the good faith judgment of our management, these statements are based only on facts and factors currently known by us. As a result, you are cautioned not to rely on these forward-looking statements. These and other risks concerning Isis' programs are described in additional detail on Form 10-K for the year ended December 31, 2004, and quarterly report on Form 10-Q for the quarter ended March 31, 2005, which are on file with the SEC. Copies of these and other documents are available from the Company.

SOURCE Isis Pharmaceuticals, Inc.

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