September 23, 2006

Army Medical Institute of Infectious Diseases Wins FLC MAR Award for Inhalation Exposure System

The Mid-Atlantic Region of the Federal Laboratory Consortium this year presented the Regional Excellence in Technology Transfer Award to Dr. Justin Hartings and Dr. Chad Roy of the U.S. Army Medical Institute of Infectious Diseases for work on an "Automated Inhalation Toxicology Exposure System."

As employees in the Federal laboratory, Dr. Justin Hartings and Dr. Chad Roy recognized the need in the national biodefense infrastructure for a comprehensive aerosol control platform suitable for a variety of agents, animal species, and aerosol forms.
It was important for USAMRIID to have a way to challenge animals by the aerosol method. Traditionally, humans are exposed to viruses through inhalation. However, during animal testing, the animals are often injected with the virus. Hartings and Roy together created an Automated Inhalation Toxicology Exposure System. The product itself is a single hardware and software platform that controls and monitors all aspects of an inhalation exposure, including aerosol generation, characterization, and sampling, airflow, system balancing, environmental parameters (including temperature, humidity, and pressure), animal respiration, and dose calculation.

This aerosol technology mists the animals while in the chamber, so that they inhale the small particles in a similar fashion to humans. By creating this similar environment, there is a greater chance for accuracy in replicating what may happen in a real world scenario with humans. Hartings and Roy applied for and were awarded funding through the U.S. Army Medical Research and Materiel Command (USAMRMC) to develop this platform at U.S. Army Medical Research Institute of Infectious Diseases (USAMRIID). In the Federal lab, they designed, built, tested, and validated the technology. The first patent was issued in June 2005, and three other patents are pending on various aspects of the aerosol control platform. With the federal commitment to both military and civilian biodefense following the 2001 Anthrax mail attacks, the nominees recognized the national need for this technology to be commercially available. Commercial availability of this platform would empower private sector entities to be full partners in the national effort and to develop medical countermeasures for bioterror threats. Together Hartings and Roy formed the spin-off company Biaera Technologies, LLC, located in Frederick, MD and licensed the technology from USAMRMC. In 2005 they began distribution to non-Federal entities, and continue to distribute and improve upon their product in the present day. Biaera has named the commercialized system *Aero*MP.

There are three tangible benefits to transferring this technology, with the significance of these benefits being far reaching. First, Biaera's *Aero*MP is the only automated inhalation toxicology exposure system that has full computer control over all pertinent aspects of aerosol exposures. Second, *Aero*MP offers standardization due to all aerosol related parameters being under the control of a single software platform. This allows all data to be in the same format and located in the same file. This standardization allows for

fast and efficient electronic data submission to the U.S. Food and Drug Administration. Third, the *Aero*MP is easy to use. Scientists no longer need to be trained in aerosol physics to perform high quality aerosol research due to the development of this technology.

This technology can also be used in the pharmaceutical world to conduct animal testing against different types of drugs, (such as asthmatic or ear medications, etc.)

One of the most coveted awards in the field of technology transfer, FLC awards for Excellence in Technology Transfer recognize laboratory employees who have accomplished outstanding work in the process of transferring Federally-developed technology to the marketplace. The award was made on September 21 at the region's annual meeting.

The Federal Laboratory Consortium is comprised of the technology transfer offices of all of the Federal laboratories throughout the country while its Mid-Atlantic Region focuses on the 70 Federal laboratories in DC, DE, MD, PA, VA and WV.

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