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Human clinical trials begin for deadly Hendra virus therapy

Antibody developed in U.S. Federal labs

Bethesda, Md – The world's first human clinical trials for a treatment against Hendra virus, a rare but deadly viral disease, have just begun in Australia, using a human monoclonal antibody discovered by Federal scientists at the Uniformed Services University of the Health Sciences (USU) and the National Cancer Institute (NCI) in Bethesda, Md.

Earlier work led by Christopher Broder, Ph.D., at USU, and Dimitar Dimitrov, Ph.D., at NCI, supported by the National Institute of Allergy and Infectious Diseases, isolated and characterized the monoclonal antibody known as m102.4. Antibodies – proteins found in blood or other bodily fluids of vertebrates – are used by the immune system to recognize and neutralize viruses and bacteria. The m102.4 antibody attacks a critical component of Hendra virus and blocks its ability to infect cells. It was the world's first antibody administered to humans as a treatment against the Hendra virus infection, and was later also used by Zoetis, Inc. (formerly Pfizer Animal Health) working in conjunction with the CSIRO Australian Animal Health Lab, to characterize a successful vaccine against Hendra for animals.

The Hendra virus is a member of the paramyxovirus family, and is a highly infectious agent that emerged from large bats commonly called fruit bats or flying foxes, in the 1990s to cause serious disease outbreaks in humans and livestock in Australia. Although not currently found in the U.S., there have been 52 recorded incidents of Hendra virus in horses in Australia since 1994, with 14 in New South Wales and 38 in Queensland. Ninety horses have died from the virus. There have been seven human cases of Hendra (including four fatalities) recorded in Australia, all in Queensland. Experiments have shown that the antibody therapy is also effective against Nipah virus, a related deadly virus that emerged in 1998 and has caused numerous outbreaks in Bangladesh, India, Malaysia and Singapore. To date, m 102.4 has been successfully administered to 10 individuals (nine in Australia and one in the U.S.), on a compassionate use basis, as an experimental human monoclonal antibody therapy to individuals with significant exposure risk for Hendra or Nipah virus.

The Queensland Health department contracted the University of Queensland Australian Institute for Bioengineering and Nanotechnology, under director Professor Peter Gray, to manufacture the antibody for emergency stockpiles and for recently-started human clinical trials. AIBN has developed a way to produce large quantities of m102.4 without having to replicate any portion of the Hendra virus.

“Quite a number of people over the last several years have worked on the development of this antibody therapy – truly a successful team effort. To see basic science research on important emerging pathogens like Hendra and Nipah lead to a therapy that is now being taken to this stage of human testing and evaluation is an incredibly rewarding experience,” said Broder.

Learning to Care for Those in Harm's Way

The Uniformed Services University of the Health Sciences (USU), founded by an act of Congress in 1972, is the academic heart of the Military Health System. USU students are primarily active duty uniformed officers in the Army, Navy, Air Force and Public Health Service who receive specialized education in tropical and infectious diseases, TBI and PTSD, disaster response and humanitarian assistance, global health, and acute trauma care. A large percentage of the university's more than 5,200 physician and 790 advanced practice nursing alumni are supporting operations around the world, offering their leadership and expertise. USU also has graduate programs in biomedical sciences and public health committed to excellence in research, and in oral biology. The University's research program covers a wide range of clinical and basic science important to both the military and public health. For more information, visit www.usuhs.edu.