

## **National Institute of Allergy and Infectious Diseases (NIAID) Bioinformatics Resources Centers for Biodefense and Emerging/Re-Emerging Infectious Diseases Contract (BRC)**

The Bioinformatics Resource Centers (BRC) for biodefense and emerging/re-emerging infectious diseases contract is a 5-year contract from NIH, NIAID, Division of Microbiology and Infectious Diseases (DMID). The BioHealthBase (BHB) system was developed by the Northrop Grumman BRC Team under this contract to provide scientists with an integrated source of complex, high-quality genomic, proteomic, and supporting scientific data, as well as a bioinformatics framework in which to contribute, access, process, and exchange data during scientific collaboration. The BHB system supports critical public health and biodefense research, while enhancing the scientific discovery process through data integration and novel analysis approaches. The BHB system is focused on five pathogens with critical public health and biodefense implications, including the bacteria *Mycobacterium tuberculosis* and *Francisella tularensis*, the influenza virus, the fungi microsporidia, and the plant pathogen ricin.

The BRC system design was developed in collaboration with representatives from the scientific user community using the SEI CMMI Level 3 and IEEE/EIA 12207 processes and the iterative, incremental development (IID) methodology.

The four critical scientific goals of the project are to:

- Support researchers who develop rapid, inexpensive, and broad-based diagnostic approaches using genomics and proteomics
- Assist researchers who develop drugs and vaccines
- Analyze responses at the genome level of infection with bioterrorism agents and re-emerging infectious diseases
- Collect and present data and information to investigate mechanisms by which the intracellular inhalation bacteria (e.g., TB) survive.

The Northrop Grumman BRC Team includes our partner, the University of Texas Southwestern Medical Center (UTSWMC), and our Vecna Technologies subcontractor. Our team was given the additional responsibility of expanding the knowledge base for the influenza virus by integrating the functionality of the Influenza Sequence Database (ISD), developed and maintained at the Los Alamos National Laboratory. With the emergence of avian flu and the associated fears that it could mutate to cause a human disease and create a worldwide influenza pandemic, the scope of BHB has been expanded to provide a central repository for the collection and analysis of NIAID-funded influenza research data. The intent of this expansion in scope is to make the NIAID Influenza Database at BioHealthBase one of the premier repositories for influenza virus research data. BioHealthBase will become a tool that will leverage NIAID-funded influenza research to make the whole more valuable than the sum of the parts.