

Center for Advanced Drug Research (CADRE)

The Center for Advanced Drug Research (CADRE) at SRI Shenandoah Valley in Harrisonburg, Virginia has a mission to improve the productivity of the pharmaceutical industry, help our nation respond to biothreats, and develop life-saving treatments for neglected and orphan diseases.

The Center's goal is the creation of new diagnostics, therapeutics, and vaccines for infectious and neglected diseases and for biodefense. The Center combines SRI's well-established expertise in drug discovery, computational biology, and preclinical development with a new proteomic laboratory to develop these solutions. It is one of very few laboratories in the world focused on proteomics of host-vector-pathogen interactions to discover new ways to detect, prevent, and treat infectious diseases.

The Center's focus on proteomics — the study of the proteins that make up living organisms, including infectious agents — fills in gaps in scientific understanding of the biological systems critical to infection,



recovery from, and defense against infection. This new understanding, facilitated by both in vitro and in vivo laboratory experiments and in silico computational biology, can then be applied to detecting and treating diseases such as tuberculosis. Further, discovering effective countermeasures against bioterror threats is an important component of our research.

Scientific research at CADRE focuses on prevention, detection, and treatment of infectious and neglected diseases.

Our work includes three distinct program areas:

- *Proteomic studies of host-vector-pathogen interactions, focusing on insect-borne viruses, respiratory and diarrheal pathogens, and parasitic protozoa. Examples include West Nile fever, dengue fever, tuberculosis, leishmaniasis, and malaria*
- *Identification of the 'critical links' underlying the mechanisms of antibiotic resistance, intracellular toxin transport, and vector competence. Our approaches will enable the discovery of novel markers, well-characterized targets, and therapies*
- *Mining SRI's and others' databases for biological pathways that play a critical role in disease development. Coupling computational approaches with proteomics and structural biology will help design novel therapies and diagnostics*

Interplay of research and training

Advances in the study of genomics and our understanding of how genes influence both life and death have transformed biomedical research dramatically in recent years. Questions remain, however, both around the technologies required to further advance our use and understanding of these data, and how



best to apply this information to produce future healthcare products. Continued exposure of students, fellows, faculty, and staff to real-life laboratory problems is essential to achieve the desired impact on healthcare in our lifetime – eliminating suffering and death due to diseases that are eminently treatable or preventable.

Because of this, research and training of undergraduate, graduate, and postdoctoral fellows is an integral part of the Center's activities, be it in biotechnology, exploring alternate forms of energy, or nanotechnology. Student interns and postdoctoral fellows form the bulwark of the Center's workforce, and key staff members of the Center hold adjunct faculty appointments at nearby James Madison University (JMU) and other institutions. Staff at the Center actively collaborate with the faculty at JMU and other Virginia academic institutions. Researchers from these institutions are invited to spend sabbaticals at the Center.

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About SRI International

Silicon Valley-based SRI International is one of the world's leading independent research and technology development organizations. SRI, which was founded by Stanford University as Stanford Research Institute in 1946 and became independent in 1970, has been meeting the strategic needs of clients and partners for more than 60 years. The nonprofit institute performs sponsored research and development for government agencies, businesses, and foundations. SRI also licenses its technologies, forms strategic alliances, and creates spin-off companies. In 2008, SRI's consolidated revenues, including its wholly owned for-profit subsidiary, Sarnoff Corporation, were approximately \$490 million.

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Photography on the front page shows SRI Shenandoah Valley's brand new state-of-the-art laboratory facilities.