

## Frederick National Laboratory for Cancer Research

*Partnering with university, government, and corporate scientists to speed the translation of laboratory research into new diagnostic tests and treatments for cancer and AIDS.*

### A Leading-Edge National Lab

The Frederick National Laboratory for Cancer Research (FNLCR) is a Federally Funded Research and Development Center (FFRDC) operated by Leidos Biomedical Research, Inc., for the National Cancer Institute (NCI), part of the U.S. National Institutes of Health (NIH).

The national lab excels at innovation and flexibility of operations to meet research and development needs for NCI that cannot be met as effectively otherwise. FNLCR offers scientific depth, cutting-edge technologies, and enabling infrastructure. The lab is one of 41 U.S. national laboratories and the only one in the nation devoted exclusively to biomedical research.

FNLCR partners with university, corporate, and government scientists to accelerate research and development, develop new technologies, and move new diagnostics and treatments into the clinic to benefit patients with cancer and AIDS.

Through collaborations with government, academic, and commercial partners, FNLCR has contributed to the following advances:

- A drug for childhood cancer – FNLCR manufactured a drug for the most common childhood cancer, pediatric neuroblastoma. After successful clinical trials, the lab is transferring the technology to the commercial marketplace.
- Rescue of a failed cancer drug – A company's \$40 million investment in a potent cancer killer was abandoned after it proved to be too toxic. FNLCR used nanotechnology to help reformulate the drug and get it back into clinical trials. It's now in Phase II.
- Functional cure of an AIDS-like virus – The lab collaborated on a functional cure of an AIDS-like virus in primates. This opens up a new line of research focused on an AIDS vaccine for humans.
- A drug for brain cancer – FNLCR manufactured a novel drug for the deadly brain cancer, glioblastoma multiform. The drug is showing evidence of promise in early clinical trials.

The lab also supports the National Institute of Allergy and Infectious Diseases and other institutes of NIH, consistent with NCI's mission. As an FFRDC, the lab can quickly adapt its programs to maintain a strategic focus and keep pace with new discoveries, development opportunities, and health care priorities.

### At a Glance

#### Personnel

- 1,850 Leidos Biomedical Research, Inc.

#### Workforce Education

- Baccalaureate or higher ..... 65.4 percent
- Associate ..... 4.3 percent
- No degree..... 30.3 percent

#### Inventions and Patents

- 22 new inventions in contract year (CY) 2014
- 11 NCI patents issued in CY 2014
- 56 new NCI inventions reported in CY 2009–2013

#### Location

Located 50 miles north of Washington D.C., the FNLCR has administrative offices and scientific laboratories at two main locations in Frederick, Md. One operation is on 68 acres adjacent to the Army base at Fort Detrick, and the other is in the Advanced Technology Research Facility at nearby Riverside Research Park.

#### Frederick



## Research and Development Partnerships

FNLCR engages in collaborations and partnerships to advance research and development in cancer and AIDS. These activities were established to respond to a series of national reports, including those from the U.S. Food and Drug Administration and the General Accountability Office, calling for improved public-private partnerships and the use of advanced technologies to overcome translational research barriers and benefit patients. President Barak Obama has also called on all government laboratories to engage in public-private partnerships to spur technology innovation.

FNLCR partnerships enable access to an exceptionally wide range of advanced technologies and scientific expertise, covering such areas as laboratory animal sciences and preclinical model development, nanotechnology, proteomics research, molecular analysis, advanced biomedical computing, AIDS and cancer virus research, and biopharmaceutical development and manufacturing for human clinical trials.

## Advanced Technology Research Facility

The Advanced Technology Research Facility (ATRF), a 330,000-square-foot research and development facility at Riverside Research Park in Frederick, Md., opened in the summer of 2012. The facility houses research and development laboratories and a wide range of advanced technologies—genetics and genomics, proteomics, nanotechnology, advanced biomedical imaging, bioinformatics, and others. It is also home to a drug development and Current Good Manufacturing Practices (CGMP) operation that produces candidate drugs for first-in-human clinical trials. About 250 researchers, technicians, and support staff make up the ATRF.

## The RAS Initiative

The ATRF is also the hub of a new national effort to develop effective therapies against *RAS* oncogenes, which produce a family of proteins involved in about one-third of all cancers.

FNLCR scientists at the ATRF play a key role in NCI's *RAS* initiative, which is intended to deepen knowledge of several aspects of *RAS* genes—their protein products, their role in cell signaling, and their functions in health and disease—with the explicit goals of improving treatment, diagnosis, and prevention of the many human cancers driven by mutant *RAS* genes.

## Engaging the Research Community Locally and Nationwide

The U.S. Department of Health and Human Services has approved FNLCR's use of a contractor Cooperative Research and Development Agreement (cCRADA) to establish partnerships. Leidos Biomedical Research, Inc., uses cCRADAs to streamline research and development collaborations, respond more rapidly to opportunities, and manage intellectual property for technology transfer in newly developed partnerships. Through cCRADAs, academic, nonprofit, and commercial researchers outside of the government are gaining greater access to FNLCR's science, technology, and expertise.

Leidos Biomedical Research, Inc., and its collaborators are pursuing basic research on HIV pathogenesis and investigating the effectiveness of new drug therapies. They are also characterizing the structure and function of *RAS* proteins in complex with other proteins, as well as *RAS* bound to potential inhibitors. Other studies are focusing on the human papilloma virus.

## Summary

The combination of scientific expertise, advanced technologies, an aggressive focus on partnerships, and a new, world-class facility provides a highly capable and cohesive translational research engine. FNLCR is moving to accelerate progress in cancer and AIDS research, stimulate research collaboration, and create opportunities for related business and economic development. These activities represent the necessary investment to realize a new vision for maximizing the impact of scientific discovery on human health.

<http://frederick.cancer.gov>