Argonne NATIONAL LABORATORY

Structural Biology Center

World's most productive and efficient facility for protein characterization

Argonne's Structural Biology Center (SBC) is the world's most productive and efficient facility for determining the structure of proteins. It is the first center ever to solve 1,000 protein structures and is on target to solve 300 new structures in 2006.

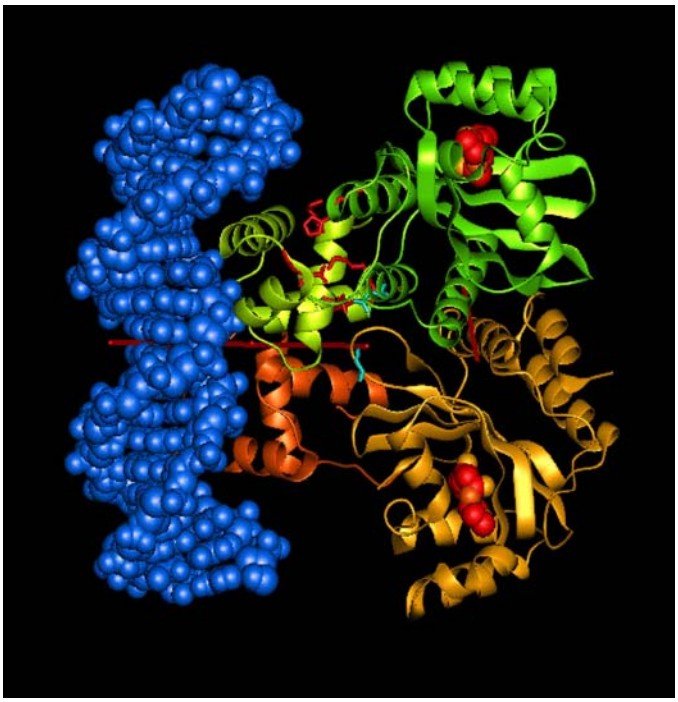
The center provides high-resolution, three-dimensional images of proteins —biomolecules critical to controlling and regulating human and environmental health.

Some of the 1,000 structures have revealed how proteins are synthesized inside the cell (ribosome), how we see light (rhodopsin), how cells communicate (integrin) and how cells differentiate (gene regulatory factors). Other findings have shed insight into origins of diseases including cancer, diabetes, osteoporosis, and infections by human pathogens causing staph and anthrax.

The SBC is based at Argonne's Advanced Photon Source (APS) — the Western Hemisphere's most brilliant source of X-rays for research — where entire data sets can be captured in minutes, compared to hours and days at other facilities. The SBC provides such a high level of detail and resolution that individual atoms can be observed.

The SBC also develops advanced technology, automation and software. For example, researchers at the University of Virginia and the University of Texas Southwestern Medical Center worked with SBC operators to automate the conversion of X-ray crystallography images into a three-dimensional model, cutting the solution time from months to minutes.

Structures solved at the SBC are deposited in the Protein Data Bank, which makes them available to researchers worldwide.



One of more than 1,000 structures determined at Argonne's Structural Biology Center, the TraR protein structure of Agrobacterium tumefaciens *revealed that cells may communicate through releasing and sensing the chemical signals pheromones. Argonne National Laboratory image.*

The SBC is a user facility supported by the U.S. Department of Energy's Office of Biological and Environmental Research, Office of Science. Researchers are chosen through a peer-reviewed proposal process and come from, the National Institutes of Health, the National Science Foundation, universities, industry and national laboratories.

October 2006

UChicago ▶ Argonne LLC

Office of Science U.S. DEPARTMENT OF ENERGY

Argonne National Laboratory is a U.S. Department of Energy laboratory managed by UChicago Argonne, LLC