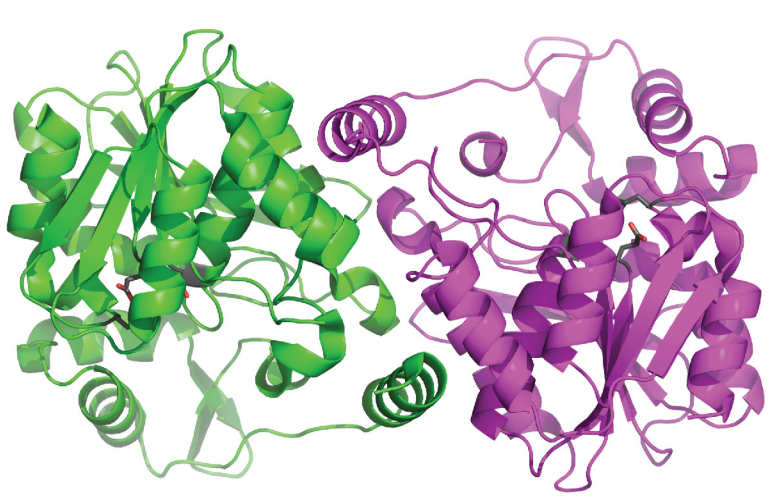
Argonne NATIONAL LABORATORY

Janet L. Smith

"Structural Biology of Biosynthetic Enzymes: Everyday Experimental Challenges at the Beamline"

The natural world is the source of most drugs used in the clinic. However, we exploit only a tiny fraction of the impressive biosynthetic capacity that nature has bestowed on microbes. Janet Smith's group studies the structure and function of enzyme assembly lines, where much of the most interesting bio-synthesis occurs. Their goal is to discover new synthetic routes that could be engineered into new assembly lines to make new drug candidates. Among the ~36 crystal structures they have solved for assembly-line proteins, several yielded only small or inhomogeneous crystals. This talk will highlight enzyme structures where careful exploration of flawed crystals with a small x-ray beam was critical to solving the structures and understanding enzyme function.

Janet L. Smith, a graduate of the University of Wisconsin, is Scientific Director of the General Medicine and Cancer Institutes Collaborative Access Team at the APS, and Martha L. Ludwig Professor of Protein Structure & Function, Professor of Biological Chemistry, and Research Professor in the Life Sciences at the University of Michigan. Her research on the structure and function of multi-functional enzymes has illuminated the intriguing architecture of enzyme assembly lines for antibiotic synthesis. As a developer and early user of the "MAD" method in protein crystallography, she has advocated for and represented the structural biology community at synchrotron sources. She has held academic positions at Purdue University and the University of Michigan, and is a founder of the Structural Biology Synchrotron Users Organization (BioSync). She is a recipient of the Herbert Newby McCoy Award at Purdue University and a MERIT Award from the National Institutes of Health. She is co-author of 140 publications, and a Fellow of the American Association for the Advancement of Science.



Wednesday, June 6, 2012 | 3:00 p.m.

APS Colloquium

Bldg. 402 | APS Auditorium
Argonne National Laboratory