Pacific Northwest National Laboratory

Force Health Protection

MISSION

The national security mission at Pacific Northwest National Laboratory (PNNL) is to develop and deploy solutions to meet critical needs of the United States and its strategic partners. To accomplish this, Laboratory capabilities are tapped to deliver innovative tools and approaches in areas where we have pre-eminent skills and capabilities.

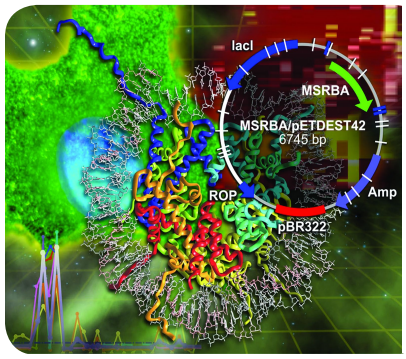
PNNL has played an integral role in national defense since the 1940s as the research arm of the Hanford Site. Over time, PNNL's capabilities and contributions have evolved and diversified. Our legacy of defense-related research puts us in an excellent position to address a new generation of military needs and challenges. In concert with this, investments in state-of-the-art Lab infrastructure and systems biology can be applied to a broad array of DoD biomedical priorities.

Our national security capabilities are in:

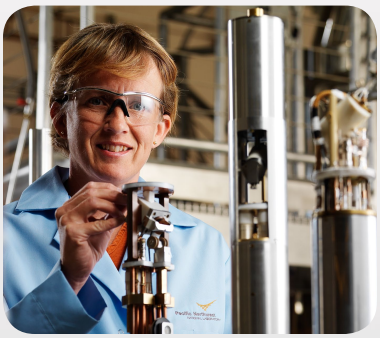
- WMD detection: Explosive detection & IED solutions
- Microtechnology and energy systems
- Logistics science and technologies
- Environmental technologies
- Cybersecurity
- Biomedical research
- Simulation and modeling
- Pathogen biology
- Nanotechnology
- Biosurveillance

PNNL's DoD Force Health Protection Account focuses on two core themes:

- **Basic Human Health** for the clinical benefit of the warfighter and their dependents, and U.S. civilians.
  - Here, PNNL expertise in systems biology and proteomics approaches align with military health care systems interests, such as cancer, diabetes, Traumatic Brain Injury (TBI), and Gulf War Syndrome.
  - Leadership in large NIH Programs and NCRR Proteomics Resources, the state of Washington's Life Sciences Discovery Fund Research, Glue Grant programs, and collaborations with military R&D medical centers provide excellent leveraging opportunities for collaborations across the DoD Biomedical arena.
- **Warfighter health and readiness** for delivery of applied solutions directly aligns with U.S. military men and women and their health and readiness needs throughout military life from enlistment to and through retirement.
  - Here, PNNL capabilities and collaborations are directed at deployment and service related injuries, conditions and threats, such as exposure to chemical and biological agents, radiation dosimetry, infectious disease threats to deployed troops, pandemic influenza and impacts to continuity of operations, sensors and monitors for blast assessments, physical trauma, and burn injuries.
  - PNNL capabilities and demonstrated delivery of solutions for Homeland Security, the Intelligence Community, DOE's National Nuclear Security Administration, and existing projects with the U.S. Army Common Logistics Operating Environment (CLOE), Air Force, Centers for Disease Control, and U.S. Navy Center for Asymmetric Warfare have contributed to PNNL's reputation for strengthening the nation's national security stance both at home and abroad.



Probing molecular function in the cell: as part of its systems biology program, PNNL scientists use a variety of technologies and capabilities, such as proteomics, molecular biology, and separation science, to probe the response of a living cell (such as the myocyte shown here) to nitrative stress.



Scientists at PNNL use EMSL's state-of-the-art nuclear magnetic resonance (NMR) capabilities to conduct proteomic research such as identifying breast cancer suppressor proteins.

Pacific Northwest NATIONAL LABORATORY

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U.S. DEPARTMENT OF ENERGY

Michael L. Spradling
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As DoD Mission Support Program Manager, Michael Spradling is responsible to act as the customer advocate by carrying client needs to Laboratory Leadership. He leads Pacific Northwest National Laboratory (PNNL) tactical efforts to bring mission support tools and methods to the defense community.

Mr. Spradling has worked for PNNL/Battelle for over twenty years. He is also technical group manager for the Information Protection and Analysis group within the National Security Directorate. When Mr. Spradling first joined Battelle, he worked in the Columbus Office Operation's Munitions and Ordnance Technologies group and was directly involved in warhead exploitation and modeling, and technology development for combating terrorism and force protection.

Significant contributions include acting as capture manager responsible for conceptualizing and developing the proposal for the Radiation Portal Monitor Project, estimated at $1B over the life-cycle of the project. Mr. Spradling has been recognized with a Federal Laboratory Consortium Award for Excellence in Technology Transfer.

Mr. Spradling holds a Master's of Science degree in Mechanical Engineering from Ohio State University.

Karin D. Rodland, Ph.D.
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As the DoD Human Health Research Leader, Laboratory Fellow Dr. Karin Rodland directs the Pacific Northwest National Laboratory's biomedical research program. She is a reviewer and member of the DoD's Congressionally Directed Medical Research Program (Ovarian and Breast), a reviewer and collaborator with the Walter Reed Medical Center Clinical Breast Care Research Project, and has reviewed for the Veteran's Administration Oncology program and the California Breast Cancer Research Program. She is PNNL's Sector Leader for National Institute of Health Programs at PNNL (totaling $29.2M in FY10). In these roles, she promotes the application of PNNL's strengths in mass spectrometry, proteomics, and systems biology to biomedical priorities for DOE, NIH and DoD.

Her research is focused on mechanisms of signal transduction in normal cells and how these mechanisms are altered in cancer cells. She is particularly interested in using a systems biology approach to understand how distinct signalling pathways are integrated to fine tune cellular responses. She is involved in efforts to apply a proteomics based approach to identify biomarkers for early diagnosis of cancer and other chronic diseases, and in the use of systems biology to identify potential therapeutic targets.

Dr. Rodland holds a Ph.D. in Biology from Syracuse University, and a Bachelor's of Arts degree in Biology, summa cum laude, from Hood College.

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As Director for the Center for Systems Biology of EnteroPathogens at the Pacific Northwest National Laboratory, Dr. Adkins leads a talented and multidisciplinary team comprised of scientists from PNNL, universities, and other research organizations where the aim is to develop therapeutics for the causative agents of Typhoid Fever and the Black Plague. His research centers on the comprehensive characterization of proteins through space (associated proteins, structural determinants and localization) and time (before and after treatment, cell cycle, day-night cycle, and evolutionary changes) to better understand biological systems. Of particular interest to Dr. Adkins are challenging biological studies that require bridging the gaps between technology development and biological application. In recent years, this interest has led him to investigate host-pathogen interactions as model systems, ranging from studies of single pathogens, such as Salmonella to studies of host response, such as changes in lung fluid with viral infection.

Dr. Adkins holds a Ph.D. in Biochemistry and Molecular Biology from Colorado State University in Fort Collins, and a Bachelor's of Science in Chemistry and Biology at Metropolitan State College of Denver.

Mary H. Ace
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As Force Health Protection Relationship Manager, Ms. Ace is responsible for leveraging research expertise and cutting-edge R&D infrastructure present at the Pacific Northwest National Laboratory (PNNL) for application to DoD priorities in the areas of biomedical research and Force Health Protection. She leads capability alignment and outreach activities to support integrated, multi-organizational collaborations for benefit to the nation's warfighter, dependents, and civilians.

Mary Ace has worked for PNNL for more than 15 years. She is a program manager in the Operations and Process Transformation (OPT) technical group, situated within the National Security Directorate (NSD). She has led and participated in strategic business development and collaborative research opportunities across all of PNNL's research directorates, with a special focus in advancing biomedical discovery and application.

Ms. Ace holds a Bachelor's of Science Degree in Technical Journalism, with a minor in Safety Studies, from Oregon State University.

DoD Clients, Partners and Collaborators

- Air Force 59th Medical Wing, Wilford Hall Medical Center
- Walter Reed Medical Center
- Congressionally Directed Medical Research Program
- Henry M. Jackson Foundation
- Windber Research Institute
- U.S. Army Common Logistics Operating Environment
- U.S. NORTHCOM Surgeon General Offices
- U.S. Navy Center for Asymmetric Warfare
- U.S. Army Corps of Engineers

ABOUT PNNL

Pacific Northwest National Laboratory is a Department of Energy Office of Science national laboratory where interdisciplinary teams advance science and technology and deliver solutions to America's most intractable problems in energy, national security and the environment. PNNL employs 4,900 staff, with an annual budge of $1.1 billion, and has been managed by Ohio-based Battelle since the Lab's inception in 1965.

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October 2010/PNNL-SA-64425