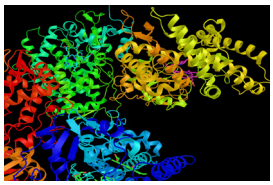
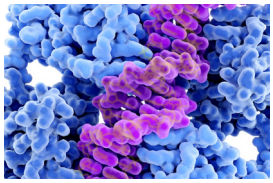
PNNL MAJOR INITIATIVES

Six institution-wide major initiatives exemplify PNNL's efforts to integrate scientific discovery and technological innovation to address some of the nation's most complex and pressing challenges. Each major initiative embodies a five-to-ten-year commitment of resources to achieve significant, breakthrough progress in its focus area.



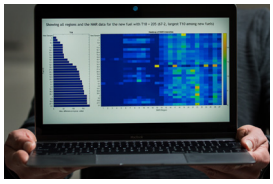
Reinventing Chemical Conversions and Energy Storage Materials seeks to design and synthesize new catalysts and battery materials to reduce the carbon intensity of fuels, increase battery efficiencies, and enable the cost-competitive use of waste carbon as a feedstock.

Understanding Multiscale Earth Dynamics and the Role of Coastal Systems strives to increase predictive power of Earth system models by observing, simulating, and analyzing dynamic interactions among atmospheric, geological, and biological processes; integrated human-Earth systems; and coastal ecosystems.



Understanding, Predicting, and Controlling the Phenome draws on capabilities of the Environmental Molecular Sciences Laboratory to explore biosystem resilience to environmental perturbations, discover molecular predictors of disease, and engineer biological systems to produce new materials and chemicals.

Scalable Machine Reasoning for Scientific Discovery aims to make machine reasoning a reality; apply it to scientific discovery in catalysis, Earth systems, cybersecurity, and predictive phenomics; and address key needs such as power grid control and resilience.



Energy Decarbonization through Grid Control and Energy Storage combines insights from large dataset analysis with PNNL's foundational strengths in catalysis and chemical conversions, data sciences, and machine learning to modernize the nation's electric power system.

Accelerating Development and Characterization of Nuclear Materials Processing draws on capabilities across the DOE national laboratories to strengthen the scientific foundations for modernization of nuclear materials processing, stewardship of the nuclear stockpile, and development of advanced nuclear energy technologies.