

Synergistic Faculty Recruitment Initiative in AI-Driven Biomolecular Design, Biotechnology, and Computational Biology

Purdue University Main Campus | Indianapolis and West Lafayette, IN

Tenure-Track/Tenured Faculty Positions at Assistant and Associate Ranks

Purdue University invites applications for multiple tenured or tenure-track faculty positions as part of a multi-department strategic faculty recruitment initiative in **AI-Driven Biomolecular Design, Biotechnology, and Computational Biology**. This strategic initiative will help advance Purdue's One Health initiative

(<https://www.purdue.edu/onehealth/>) which seeks to tackle complex challenges with real-world impact at the intersection of human, animal, plant, and environmental health. Through academic programs, research, facility infrastructure and industry partnerships, Purdue is making giant leaps in improving health outcomes for all living things and driving economic growth regionally and globally.

Participating colleges (and departments) include:

- College of Agriculture (Agricultural and Biological Engineering, engineering.purdue.edu/ABE)
- College of Science (Biological Sciences, bio.purdue.edu/; Chemistry, chem.purdue.edu/; Computer Science, cs.purdue.edu/; Statistics, stat.purdue.edu/)
- College of Engineering (Biomedical Engineering, engineering.purdue.edu/BME; Chemical Engineering, engineering.purdue.edu/ChE; Materials Engineering, engineering.purdue.edu/MSE ; or Mechanical Engineering, engineering.purdue.edu/ME)
- College of Pharmacy (Medicinal Chemistry and Molecular Pharmacology; mcmp.purdue.edu/)
- College of Veterinary Medicine (Comparative Pathobiology; vet.purdue.edu/cpb/)
- College of Health and Human Sciences (Health Sciences, hhs.purdue.edu/hsci/; Public Health, <https://hhs.purdue.edu/public-health/>; Nutrition Science, <https://hhs.purdue.edu/nutr/>)

Areas of Research Focus

Successful candidates will blend advanced AI/ML computational approaches, complemented with innovative experimental approaches where possible to develop cutting-edge solutions in drug discovery, synthetic biology, cell engineering, drug or biomaterial design, diagnostics, drug safety, precision health, infectious disease control,

cell and gene therapy, and sustainable biomanufacturing. We invite applications from scholars working in the following areas, as well as related or emerging fields that complement the cluster's interdisciplinary goals:

- Structural biology and computational biomolecular modeling.
- AI-driven drug discovery, drug delivery (i.e., blood brain barrier), drug safety, and biomolecular engineering.
- Computational biophysics and multi-omics for discovery and health-related innovations.
- Synthetic biology and biomolecular and biosystem design for biomanufacturing.
- Novel computational and experimental approaches to biosurveillance, epidemiology, diagnostics, imaging, and risk assessment for One Health applications.

Faculty Responsibilities

- Establish a vigorous, externally funded research program
- Contribute to the education and mentoring of graduate and undergraduate students
- Collaborate across disciplines to solve complex global health challenges

Strategic Advantages at Purdue

Faculty hired under this initiative will join a vibrant ecosystem of interdisciplinary centers and institutes, including:

- Purdue Institute for Drug Discovery
- William D. and Sherry L. Young Institute for the Advanced Manufacturing of Pharmaceuticals
- Dane O. Kildsig Center for Pharmaceutical Processing Research (KCPPR)
- Dauch Center for the Management of Manufacturing Enterprises (DCMME)
- Purdue Institute for Plant Sciences
- Purdue MRI Facility
- Laboratory of Renewable Resources Engineering
- Rosen Center for Advanced Computing
- Purdue Institute for Cancer Research
- Bindley Bioscience Center

Purdue has existing research capabilities in biomolecular sciences, AI, computational biology, and structural biology, with key strengths in:

- **Structural Biology** – Cryo-electron microscopy (cryo-EM), X-ray crystallography, and NMR spectroscopy for characterizing purified biomolecules and *in situ* structural biology. Expertise in viruses and infectious disease, advanced instrumentation for precise and high-throughput measurements.
- **Computational Biophysics and AI-Driven Drug Discovery** – Molecular dynamics simulations, quantum chemistry, and machine learning for drug-target optimization.
- **Advanced Manufacturing of Pharmaceuticals and Biomanufacturing** – Engineering bioactive compounds, vaccine platforms, and biomaterials to address infectious diseases and environmental health.
- **Computational Biology** – Multi-omics integration, AI-driven biosurveillance, and predictive modeling for One Health solutions.
- **Biomedical Engineering, Imaging, and Pharmacy** – AI-powered drug delivery platforms and processes, biosensors, molecular and functional imaging, and pharmacology solutions.
- **Computational Epidemiology, Toxicology, and Public Health** – AI-driven models for disease prediction, risk assessment, and public health intervention.
- **Microbiome Sciences in One Health** – predicting and controlling microbiomes for improving plant, animal, human, and environmental health.

Qualifications

- A Ph.D. in chemistry, biology, biochemistry, toxicology, computer science, engineering, biomedical science, or a related discipline by the start of the appointment
- A record of research excellence and productivity commensurate with rank
- Demonstrated potential or record of interdisciplinary collaboration and impactful scholarship
- Commitment to teaching and student mentorship

Application Process

To apply, please submit a cover letter, CV, research statement, teaching statement, and contact information for at least three references. During the application process, the candidate will be given an opportunity to identify which academic department(s) align with their scholarly interests. Review of applications will begin on November 14, 2025 and continue until positions are filled. Applications should be submitted at:

https://careers.purdue.edu/job/AssistantAssociate-Professor-AI-Driven-Biomolecular-Design%2C-Biotechnology%2C-and-Computational-Biol/39197-en_US/

A background check is required for employment in this position.

Purdue University is an equal opportunity/equal access university.