

Accelerating Therapeutics for Opportunities in Medicine (ATOM) Fellowship Description

Background

Headquartered in the Mission Bay neighborhood of San Francisco, the Accelerating Therapeutics for Opportunities in Medicine (ATOM) Consortium was formed in October 2017 with the goal of transforming drug discovery from a slow, sequential, and high-failure process into a rapid, integrated, and patient-centric model. Founding members of ATOM are University of California, San Francisco (UCSF), GlaxoSmithKline (GSK), Lawrence Livermore National Laboratory (LLNL, for the Department of Energy), and Frederick National Laboratory for Cancer Research (FNLCR, for the National Cancer Institute).

The ATOM Consortium aims to transform the treatment landscape for cancer, establish a modern drug discovery platform for other diseases, and create the computing infrastructure needed to enable precision medicine. ATOM is

developing a pre-competitive, pre-clinical platform that integrates diverse data types, such as physicochemical properties, in vitro assay results, and anonymized human clinical data, with AI, high-performance computing, and advanced experimental technologies intended to help shorten the drug discovery timeline. Further, ATOM seeks to build a public/private sector model for collaborative, cross-disciplinary team science underpinned by a culture of precompetitive team science which spans the preclinical landscape. The beneficiaries are cancer patients, especially those for whom there is currently no effective therapy.

ATOM's approach leads with computation, employing data-driven modeling and generative molecular design to determine design criteria that consider pharmacology, safety, efficacy, and

What: Cancer drug discovery data science fellowship in computationally-driven cancer drug discovery as part of a unique public-private partnership

When: Applications open on Oct 3 and will be considered as they are received. Fellowship start date is early 2020

Who: PhDs with backgrounds in biomedical or computational disciplines interested in cross-disciplinary training and collaboration are encouraged to apply

Virtual Information Sessions: Oct 15 & Oct 28 (details below)

How to Apply:

Visit <https://frederick.cancer.gov/careers>

And search for requisition number: REQ758

For more information, visit:

<https://frederick.cancer.gov/science/ATOM>

<https://atomsience.org/welcome/#jobs-section>

developability. The active learning design platform aims to selectively incorporate results from mechanistic simulation and human-relevant experimentation to generate and optimize new drug candidates significantly faster and with greater success than conventional processes

Overview and Intent

The Frederick National Lab and the NCI are committed to supporting the development of a cancer data science and informatics workforce. Precision oncology discovery depends on both the development of a workforce expertly trained in advanced computing technologies such as artificial intelligence, natural language processing, and deep learning, and on the development of researchers able to work effectively in a multidisciplinary team science environment. The ATOM Consortium provides a challenging and unique opportunity for such training.

ATOM's approach requires oncology and data science expertise, as well as technology development from a range of disciplines and domains. The conceptualized workflow shown below requires contributions from multiple scientific and technical disciplines including computational technologies (e.g. advanced computing, machine learning, deep learning, active learning), multi-scale modeling (e.g. physiologically-based pharmacokinetic models, mechanistic protein models and systems biology approaches), and experimental systems (e.g. complex in vitro models). Since its inception, the ATOM team has evolved into a highly collaborative, trans-disciplinary research environment where scientists with diverse expertise can interact and share research, knowledge, and data. The ATOM consortium, therefore, provides a unique, exciting and challenging training environment for gaining data science and team science expertise.

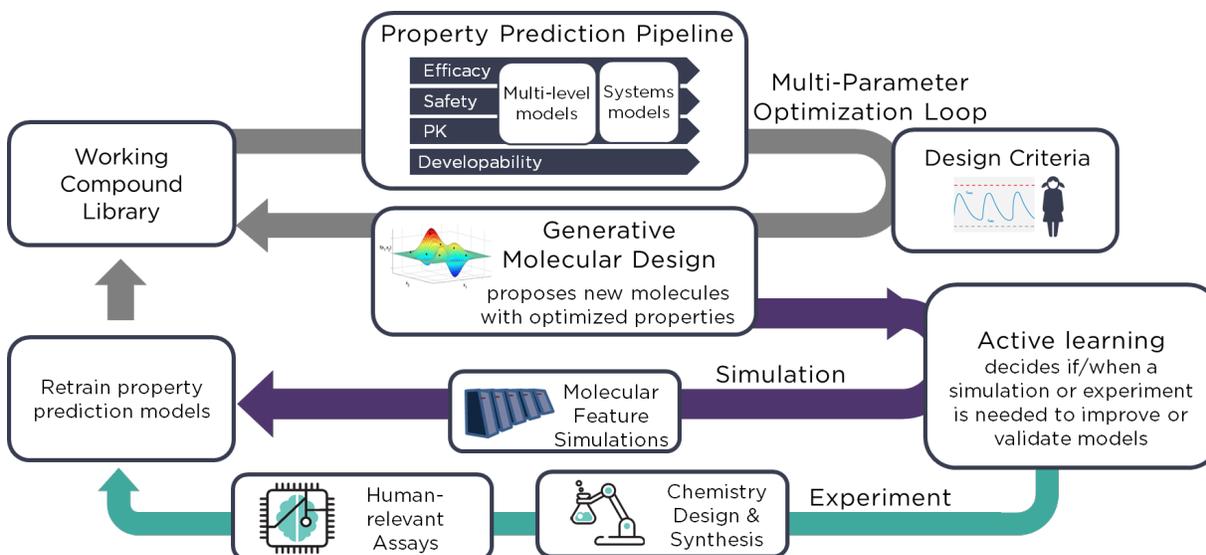


Figure 1 The ATOM preclinical drug discovery workflow.

Training Goals and Outcome

The ATOM Fellowship Program's goal is to provide both early-career computational and biomedical scientists with an immersive cross-training experience across these disciplines. We

believe this will help increase collaboration between the fields and fill a significant gap in the biomedical workforce; these trans-disciplinary scientists will be able to leverage the advances made by academic and other institutions in related, but often siloed programs, to meet the new and complex challenges in biomedical and cancer research.

Fellows with primarily data science or computational backgrounds will gain research experience in empirical or wet-lab research design, methods, applications, etc., and Fellows with empirical science backgrounds in drug discovery, oncology, pharmacology backgrounds will gain experience using computational and *in silico* methods, tools, and models. Fellows will be colocated with colleagues from academic, commercial and national laboratories providing a unique environment that will allow fellows to experience what it is like to work in each of these distinct environments.

Fellowship Eligibility Criteria

To be eligible for the ATOM Fellowship Program, applicants must meet the following criteria:

1. Possession of a PhD in Computer Science, Math or Biomedical Science related field from an accredited college or university. Foreign degrees must be evaluated for U.S. equivalency.
2. A strong background in any of the following: cancer biology, pharmaceutical or medicinal chemistry, pharmacology, toxicology, drug discovery, computational biology, in silico biology, bioinformatics, systems biology, molecular dynamics, multiscale modeling, machine learning, adaptive learning or high-performance computing
3. Be a U.S. citizen or permanent resident (green card holder)
4. Upon selection, must be able to obtain Public Trust Security Clearance and pass a pre-employment drug screen.

Fellowship Structure

Fellows will be appointed for one year. There is an option for a second year, pending funding. The Fellowship will be based in San Francisco at the ATOM facilities at 499 Illinois St adjacent to UCSF's Mission Bay campus.

At the start of the appointment, the Fellow will identify an ATOM consortium mentor to assist in the development of the Fellow's overall research plan. The ATOM Joint Research Committee, comprised of one technical lead from each member organization, will work with the Fellow to develop a research plan that is well integrated with the ATOM R&D plan and ensure that it is consistent with the overall goals and objectives of the ATOM consortium.

For the duration of the program, Fellows will be employees of Leidos Biomedical Research (LBR), the company that operates the Frederick National Lab for Cancer Research on behalf of the National Cancer Institute. As an LBR employee, the Fellow will receive a salary, not a stipend. The LBR employee will also receive the standard benefits package that includes: company-subsidized medical, dental, vision and basic life insurance, 10 paid holidays a year, vacation accruals up to 13 days a year and sick leave accruals up to 10 days per year. The Fellowship also includes travel, equipment and research support and cubicle on site at ATOM. Employment is contingent on obtaining a Public Trust Security Clearance and passing a pre-employment drug screen.

Application

We are currently accepting applicants for the ATOM Fellowship Program for a one-year appointment beginning early 2020.

Applications will only be accepted through the Frederick National Laboratory Careers site (<https://frederick.cancer.gov/careers>).

1. A brief (one paragraph) statement of research interests. The statement of research interests should clearly describe how your research background and interests relate to the overall goals of ATOM
2. A brief (one paragraph) description of your career goals, and
3. Curriculum Vitae (CV)

Virtual Information Session

Two (2) optional information sessions will be held to provide potential applicants with an opportunity to ask questions about the fellowship program and application process.

- **ATOM Fellowship Info Session 1:**

- Tuesday, October 15 at 12:00pm PT (3:00pm ET)
- Join via Webex
 - Meeting number: 739 806 444
 - Password: cJpPpG8?
 - <https://cbiit.webex.com/cbiit/j.php?MTID=m0c77202d31bebc0d2f656d64e00113ec>
- Join by phone
 - +1 (650) 479-3207 Call-in toll number (US/Canada)
 - Access code: 739 806 444

- **ATOM Fellowship Info Session 2:**

- Monday, October 28 at 9:00am PT (12:00pm ET)
- Join via Webex
 - Meeting number: 734 140 563
 - Password: nPm6d3m@
 - <https://cbiit.webex.com/cbiit/j.php?MTID=m0e78adb73606b14008c4b833de4b2665>
- Join by phone
 - +1 (650) 479-3207 Call-in toll number (US/Canada)
 - Access code: 734 140 563

Selection

After application submission, selected candidates will be contacted directly for:

- a 1-2 page statement of research experience and interests
- scheduling a virtual job seminar describing their current research
- a letter of support, which will be requested from selected applicants' current research advisors.

Fellows will become employees of Leidos Biomedical Research (LBR), the company that operates the Frederick National Lab. Employment is contingent on receiving security clearance. The security clearance process will be initiated by LBR after the selected candidates have accepted an offer of employment from LBR. The actual start date for the Fellowship will depend on the length of the security clearance process and is anticipated to be early 2020 for a period of one year.