Accelerating Therapeutics for Opportunities in Medicine (ATOM) Fellowship Opportunity

Background

The Accelerating Therapeutics for Opportunities in Medicine (ATOM) Consortium, was recently formed among the 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). ATOM aims to integrate high performance computing, traditional drug discovery, and emerging biotechnology capabilities and forge new computational (*in silico*) technologies, validated empirically, which will deeply impact drug discovery paradigms. In this era of precision medicine, ATOM'S intent is to dramatically accelerate the discovery of new cancer drugs – from target to first in human experimental trials in twelve months. ATOM 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

> **What:** Public-private partnership-based postdoctoral fellowships in computationally-driven cancer drug discovery
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> **When:** Applications due Dec. 4, 2017.
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> Selections made January 2018.
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> Fellowships to start in the Spring of 2018.
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> **Who:** Postdoctoral fellows with backgrounds in biomedical or computational disciplines interested in cross-disciplinary training and collaboration.

precision medicine. Further, ATOM seeks to build a public/private sector model for collaborative, cross-disciplinary team science underpinned by a culture of precompetitive collaboration which spans the target and preclinical landscapes. The beneficiaries are cancer patients, especially those for whom there is currently no effective therapy.

Overview and Intent

Big data, "-omics" technologies, and multi-scale and high content data are crucial to driving new insights in biomedical and cancer research. ATOM is built on the hypothesis that precision medicine discovery can be accelerated by integrating empirical biological and clinical research with computer and data science technologies. However, because these fields remain siloed in most academic institutions, it is uncommon to see integration of these disparate areas. ATOM's ambition is to evolve the drug discovery process from an iterative, sequential make-and-test cycle to a network of *in silico* and high content experimental protocols designed by predictive simulation, deep learning, and high-performance analytics. By providing

a unique and collaborative training environment, one where any researcher can generate multi-dimensional data with each new experiment and link these data in real time to advanced computational tools, approaches and technologies, ATOM plans to modernize cancer therapy research.

ATOM's approach requires oncology and data science expertise, as well as technology development from a range of disciplines and domains. The workflow is expected to require contributions from multiple scientific disciplines including computational technologies (e.g. supercomputing, machine learning, deep learning, active learning), multi-scale modeling (e.g. human pharmacokinetics, protein models, cell/tumor models), and experimental systems (e.g. advanced, *ex vivo* biological/organoid models). These wide-ranging domains are expected to yield a highly collaborative, trans-disciplinary research environment where scientists with diverse expertise can interact and share research, knowledge, and data.

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 in biomedical and cancer research. We believe this will 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 more traditional drug discovery, oncology, pharmacology backgrounds will do the same regarding computational and *in silico* methods, tools, and models. In addition, Fellows will be exposed to regulatory processes, such as investigational new drug (IND) applications, and their impact on drug discovery.

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

(1) Have earned a Ph.D. from an accredited program in a biomedical, mathematical, computational, or related discipline with 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.
(2) Have an existing or planned research relationship with a USCF Faculty member interested in participating in ATOM.
(3) Be a current trainee or employee of UCSF.
(4) Be a U.S. citizen or permanent resident (green card holder).
(5) Upon selection, 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 a potential option for a second year. The Fellowship will be based in San Francisco at the ATOM facilities at 499 Illinois Ave, adjacent to UCSF's Mission Bay campus.

At the start of the appointment, the Fellow will identify an additional 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 be responsible for reviewing the research plan to ensure that it is consistent with the overall goals and objectives of the ATOM consortium.

For the duration of the program, Fellows will need to become 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 postdoc employee, the Fellow will receive a salary, not a stipend. The LBR postdoc 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 space at 499 Illinois Ave, adjacent to UCSF's Mission Bay campus. 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 inaugural ATOM Fellowship Program. Application packages must include:

1) A brief statement of research interests. The statement of research interests should be no more than two pages and should clearly describe how your proposed research area/topics relate to the overall goals of the ATOM Consortium,
2) CV, and
3) Letter of support from your UCSF academic mentor.

Please submit your application to Deb Hope, ATOM Program Manager, Frederick National Lab for Cancer Research, at debra.hope@nih.gov no later than **December 4, 2017**. Be sure to include "ATOM Fellowship Application" in the subject line.

Selection
Applications will be reviewed by a Fellowship Review Committee convened by the NCI and FNLCR. Selections and notifications are expected to be made in January 2018. Selected applicants will then complete an employment application to be hired by Leidos Biomedical Research (LBR) as a postdoctoral employee. 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 be in the Spring of 2018 for a period of one year, and is flexible to accommodate this requirement.

Interested individuals are welcome to submit questions about the program and research opportunities to Deb Hope, ATOM Program Manager, FNLCR, at deb.hope@fnlcr.nih.gov or Deirdre Olynick, ATOM Interim Program Manager, UCSF, at Deirdre.olynick@ucsf.edu.