UCSF Initiative for Digital Transformation in Computational Biology & Health

Computational Innovator Grants and Fellowships

Timeline for Grants and Fellowships
All application materials due: **11:59pm on August 19, 2021**.
Award decisions: mid-September 2021.
Funding start date: mid-October 2021.

Application materials should be submitted as a single pdf file via email to rdoinfo@ucsf.edu (see below for details.)

Overview

Research at the interface of computation and the biosciences is now vital for most biomedical and health science breakthroughs. Innovations in computational methods that leverage digital technology, such as machine learning and artificial intelligence (ML & AI), promise a transformation in how we identify the fundamental scientific underpinnings of human health and the root causes of disease, how we predict and prevent disease, how we diagnose diseases, and how we treat patients. A new Initiative for Digital Transformation in Computational Biology & Health seeks to propel UCSF to the forefront of biomedical and health data sciences with a program geared toward rapidly funding the most innovative science and the most promising learners.

Funding Domain Areas

This initiative requests proposals for projects and scientists that will use computational methods such as ML & AI to achieve a measurable impact on a tangible, real-world biomedical or health-related problem. We seek to fund projects that are likely to make substantial progress within 1-2 years in any of the following domain areas. Descriptions below are for demonstrative purposes only. Think big! We seek to fund the boldest proposals with transformative potential.

Understand Root Causes of Disease and Health: Genomic sequencing and big data pattern-finding can be used to determine the root causes of a wide swath of illnesses – and large-scale molecular simulations can improve our understanding of biology.

Predict and Prevent Disease: COVID-19 will not be the last human pandemic. But evidence suggests that ML & AI can be applied to significantly improve our chances of predicting and preventing pandemics, along with other non-communicable diseases that affect millions of people. Intelligent prediction will require multidisciplinary teams, new AI models for identifying the biological and sociological drivers of pathogen emergence, and partnerships to continuously collect, integrate and analyze the necessary data.

Transform Diagnostics: We have an opportunity to truly alter the face of diagnostics across a broad array of conditions. The COVID pandemic showed us that it is critical to know early and often what illnesses surface and how they act. Catching cancer early can greatly increase the prospects of a positive outcome. We can analyze an individual's DNA for genetic biomarkers of many diseases. We can scan digital health records for symptoms suggestive of a disease for an individual patient, prompting more targeted care.

Develop Better Treatments: No patient is the same. Typically, doctors use evidence-based medicine that integrates available research with clinical expertise and patient data to make the most informed treatment decisions. This means relying on randomized controlled trials that do not always cover all clinical conditions and usually involve a relatively small, homogeneous group of study subjects. Advanced analytics can help improve drug efficacy, find new therapeutic combinations of existing drugs, find personalized ways of managing chronic conditions, among other areas.

Computational Innovator Grants

We anticipate awarding four Computational Innovator Grants, at $100,000 total costs with a 1 or 2-year project period, supporting research projects that leverage computational innovations (such as ML & AI) or their applications to transform any of the domain areas listed above. We encourage original, bold studies to rapidly address a key problem in your research area.

Computational Innovator Fellowships

At UCSF, we recognize that predoctoral and postdoctoral scholars are key drivers of the computational innovation that will transform the zettabytes of biomedical data generated each year into breakthroughs in our understanding of basic biology as well as human health and disease. The Initiative for Digital Transformation in Computational Biology & Health also anticipates awarding two Predoctoral Fellowships, and two Postdoctoral Fellowships as follows:

Predoctoral Fellowships – Each Predoctoral Fellowship will consist of a one-year award of $65,000 to support the stipend, academic fees, and ~$3,400 in discretionary research funds, to be used e.g., on travel, supplies, or computing resources.

Postdoctoral Fellowships – Each Postdoctoral Fellowship will consist of a one-year award of $75,000 to support salary/benefits and discretionary research funds such as travel, supplies, publication fees, or computing resources. No more than $65,000 of the award may be used for salary/benefits.

Eligibility

Computational Innovator Grants are open to UCSF “PI eligible researchers” at all ranks, and we would like to especially encourage early career investigators without established independent funding to apply.

Predoctoral Fellows must have a computationally-focused research project and have either advanced to candidacy in a graduate program at UCSF (i.e., successfully passed their qualifying exam and established their thesis committee) or completed the first two years of training in an alternative predoctoral program. Predoctoral fellowships are open to domestic, as well as international learners.

Postdoctoral Fellows must have less than 4 years of postdoctoral experience at the time of funding start date (above). Applicants do not need to be current UCSF postdocs, but must be able to demonstrate a commitment of postdoctoral employment at UCSF with a start date no later than the funding start date of the Fellowship (above). Postdoctoral fellowships are open to domestic as well as international learners.

Commitment to Diversity

The UCSF Initiative for Digital Transformation in Computational Biology & Health is committed to upholding the UCSF PRIDE values of Professionalism, Respect, Integrity, Diversity, and Excellence. We believe cultivating an environment founded on these PRIDE values with a focus on ensuring equity and inclusion will further drive the computing innovations that are needed for breakthroughs in biological understanding and health equity. We highly encourage applications from individuals across the gender spectrum, as well as from individuals with backgrounds historically excluded in biomedical and health research.

Leadership

The UCSF Initiative for Digital Transformation in Computational Biology & Health is currently led through a Steering Committee comprised of Dr. Ryan Hernandez (Faculty Director), Dr. Gretchen Kiser (Program Director), Dr. Kirsten Bibbins-Domingo, Dr. Atul Butte, Dr. June Chan, Dr. Michael Keiser, Dr. Raman Khanna, Dr. Dan Lowenstein, Dr. Katie Pollard, Dr. Angela Rizk-Jackson, Jason Solle, and Dr. Bob Wachter

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Computational Innovator Grant Application Instructions

1. CI Grant cover sheet (see below template)
2. NIH-style biosketch for all principal investigators
3. Research description: limited to two pages (11-pt Arial font, ½-in margins, single-spaced), with one additional page for figures and legends, and one additional page for references (maximum four pages total). Preliminary data are not required. Applications should address the following questions:
    - What is the tangible biomedical- or health-relevant problem to be addressed?
    - How will computational approaches contribute to a dramatic impact on this problem?
    - What is the translational potential of your research if the project is successful?
    - Who are the investigators involved, and how will the collaboration (across departments/ORUs/UCs) contribute to the success of your project?
    - How will this funding enable rapid completion of the proposed project within 1-2 years?
4. Brief budget justification (<1 page).

Proposals will be judged on the following criteria:

- Boldness of approach and idea
- Potential to rapidly affect or influence a new direction in a given research field
- Human health/disease relevance required, with high priority on translational potential

- Investigators involved, with priority given for investigators collaborating across traditional research silos (across departments/ORUs/UCs)

Predoctoral and Postdoctoral Fellowship Application Materials

1) CI Fellowship cover sheet (see below template)
2) Curriculum vitae (including applicant's primary research PI and thesis committee members)
3) Statement of current and proposed research interests, experience, and fellowship goals, with a focus on the biological questions to be addressed, the innovative computational techniques to be developed/utilized, and your proposed collaborative training environment (maximum 2 pages, including figures and references).
4) Statement of purpose in pursuing this fellowship, addressing your motivation, dedication, and passion to pursue computational biology and/or health data science, as well as briefly describing the journey you have taken to achieve your success thus far. (max 1 page)
5) A Letter of Nomination from your research mentor (must be a UCSF Principal Investigator). Note that the nominating letter should comment on the applicant's plan to complete their graduate degree within 6 years total (or comment on circumstances driving expected time to degree to be longer than 6 years total), as well as the applicant's capacity for computational innovation, mentorship, and leadership.

   Letters should be on official institutional letterhead, signed and saved as pdf documents, then emailed to Gretchen Kiser, PhD at rdoinfo@ucsf.edu by the application due date (August 19, 2021).

Submission

Application materials should be submitted as a single pdf file via email to rdoinfo@ucsf.edu. Applicants should follow submission instructions for all application elements.

Please use the following naming conventions for the pdf file and the submission email Subject Line:

CI Grants: CIGrant_PI Last Name_Multi-PI Last Name_2021

CI Predoctoral Fellowships: CIPredocFellowship_Applicant Last Name_2021

CI Postdoctoral Fellowships: CIPostdocFellowship_Applicant Last Name_2021

Please direct any questions to Gretchen Kiser, PhD at rdoinfo@ucsf.edu or visit the Initiative for Digital Transformation in Computational Biology & Health webpage through https://rdo.ucsf.edu/.

Award Requirements

By accepting funding, all fellowship and grant award recipients agree to attend a joint symposium with computational innovators from other University of California campuses in Fall 2021 (date TBD); participate in Initiative activities, such as mentorship, networking, and leadership development events and provide a brief summary report of their research results or fellowship program experience, with the format to be provided later.

UCSF Initiative for Digital Transformation in Computational Biology & Health

Computational Innovator Grant Cover Sheet (limit 1 page)

Title of proposal:

Amount of Funding Requested:

Project Period (1 or 2 years?):

Contact Principal Investigator (PI) 1 Name (First Name, Last Name):

PI1 Academic Series/Rank:

PI1 UCSF School and Department:

PI 1 Contact Information: phone number - ; preferred email address -

Demographic Information (note this information will only be used in the collective for programmatic assessment and will be dissociated prior to review):

(1) With which gender do you identify? (male, female, non-binary or prefer not to answer)

(2) With which race/ethnicity do you identify (list all that all that apply: African American or Black; Hispanic or LatinX; Asian: Filipino, Hmong, or Vietmanese; Asian, not Filipino, Hmong, or Vietmanese; Native American or Alaskan Native; Native Hawaiian or Pacific Islander; White; Prefer not to answer)

For each collaborating PI, please complete this section:

Multi-PI Name(s) (First Name, Last Name):

Multi-PIs Academic Series/Rank:

Multi-PIs UCSF School and Department:

Multi-PIs Contact Information: phone number - ; preferred email address –

Demographic Information (note this information will only be used in the collective for programmatic assessment and will be dissociated prior to review):

1. With which gender do you identify? (male, female, non-binary or prefer not to answer)
2. With which race/ethnicity do you identify (list all that all that apply: African American or Black; Hispanic or LatinX; Asian: Filipino, Hmong, or Vietnamese; Asian, not Filipino, Hmong, or Vietnamese; Native American or Alaskan Native; Native Hawaiian or Pacific Islander; White; prefer not to answer)

Financial management:

Name of UCSF department that will manage the award, along with the financial analyst/contact name, their email address, and their phone number.

Lay Person Summary of the Proposed Research (3-5 sentences)

UCSF Initiative for Digital Transformation in Computational Biology & Health

Computational Innovator Fellowship Cover Sheet (limit 1 page)

Fellowship Proposal Title:
Application Type - Predoctoral Fellowship or Postdoctoral Fellowship (choose one):

Applicant Name (First Name, Last Name):
Applicant contact Information: phone number - ; preferred email address -

Current student status for eligibility (if applying for a predoctoral fellowship):
Start date of current post doc (if applying for a postdoc fellowship):

UCSF School and Department Affiliation:
Research Mentor Name (First Name, Last Name)

Demographic Information (note this information will only be used in the collective for programmatic assessment and will be dissociated prior to review):

1. With which gender do you identify? (male, female, non-binary or prefer not to answer)
2. With which race/ethnicity do you identify (list all that all that apply: African American or Black; Hispanic or LatinX; Asian: Filipino, Hmong, or Vietmanese; Asian, not Filipino, Hmong, or Vietmanese; Native American or Alaskan Native; Native Hawaiian or Pacific Islander; White; Prefer not to answer)

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Name of UCSF department that will manage the award, along with the financial analyst name, their email address, and their phone number.

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