Paul G. Allen Family Foundation
Request for Proposals Allen Distinguished Investigators Program – 2012
RFP release date: August 1, 2012
RFP submission deadline: October 30, 2012

Purpose: The Allen Distinguished Investigator (ADI) Program seeks to create a cohort of investigators to pursue new, pioneering research in academic settings that, collectively, ‘move the needle’ towards answering broad scientific questions. The most promising proposals will incorporate creative, ambitious, interdisciplinary and forward-thinking approaches. For this reason, the program is especially interested in proposals that are unlikely to receive funding from traditional governmental sources.

This 2012 request for proposals (RFP) focuses on two fundamental biology topics: (1) Cellular Decision Making and (2) Modeling Dynamic Biological Systems.

Research Initiative Details:
ADI 2012 Focus #1: Cellular Decision Making
Description: We seek proposals whose focus is on new research approaches to understand the fundamental principles underlying cellular decision-making.

Cellular decision-making is fundamental to the development of living systems. It is the process whereby cells modify their regulatory state in response to internal and external inputs, as well as allowing cells to interpret intercellular signals within an integrated multicellular system. Cellular decisions emerge from a network of interactions within a cell, often under the combined influence of an array of internal and external factors. Thus, the role cellular decision-making plays in cellular diversity, function, and behavior--and the subsequent importance in evolutionary processes--is central to many areas of basic biology. The current state of the art describes the process of cellular decision-making primarily through statistical correlations. However, the underlying principles and mechanisms by which it operates are largely unknown.

We are looking for proposals that integrate experimental and computational research, developing methodologies and/or technologies as needed that allow for insights into cellular decision-making. Lines of inquiry include:

• How do the dynamics of interactions and their connectivity determine decisions?
• What are the algorithms for cellular decision-making?
• What is the role of noise in cellular decision-making? How can noise be modulated and/or incorporated in the function of networks?
• How are inputs and outputs defined, by both the cell and the researcher?
• How does cellular decision-making evolve?
**ADI 2012 Focus #2: Modeling Dynamic Biological Systems**

**Description:** We seek proposals whose focus is on modeling dynamic biological systems, specifically the development and discovery of approaches for more sophisticated treatments of modularity and complexity in order to make progress towards characterizing biological network connectivity and functionality.

Even ‘simple’ biological systems are staggeringly complex. This is especially so given current approaches to grouping their highly heterogeneous building blocks (genes, proteins, individuals, species, etc.) into approximate components. Current work has explored the diversity of genes/cells/neurons/species that exist and are focusing on their connectivity and to some extent their temporal dynamics. It has also identified a plethora of individual mechanisms used by those systems to make them adaptive and evolutionarily successful. Theoretical work has defined and characterized the nature and degree of complexity involved in how those mechanisms might interact. Yet, open challenges remain to analyze the degree of modularity and organization of dynamic biological circuitry in a way that allows that complexity to be understood, identifying the important “control knobs” in a network and finding ways to usefully characterize emergent network dynamics. It is a time when computational, control theoretic, and analytic research is meeting the data dense, big data world of experimental studies of living networks.

To better understand this issue we are looking for proposals that combine theory, modeling, and empirical work to allow for the testing of predictions or principles of biological system operation. Lines of inquiry include:

- Is there a supra-modular level of organization in biological systems?
- How is information transmitted through living networks?
- How does the connectional topology of the network determine information flow and emergent function?
- How do we assess the dynamics of the connections and not merely their topology?
- How do we find the important ‘control knobs’ in a biological network?
- What is the controllability of complex dynamical systems?

**Full Proposal Format** We request that all submissions use Arial or Helvetica typeface, a black font color, and a font size of 11 points or larger. Type density, including characters and spaces, must be no more than 15 characters per inch. Submissions will have the following proposal sections and associated length limits:

- a. Project summary Short paragraph – (200 word limit)
- b. Project description 5 pages
- c. Biographical sketch 3 pages
- d. Facility, infrastructure/external support 2 pages
- e. Risk assessment/Barriers to success 2 pages
- f. Project Milestones & measurable outcomes 2 pages
- g. Leverage 1 page
- h. Partner agreements 3 pages
- i. Budget* 3 pages

*The Paul G. Allen Family Foundation has a 0% indirect cost policy.
Please note that the Foundation does not require the use of a standardized budget template. Instead, we accept budget documents that your organization routinely uses.

**Program Goals**
The primary goal of the ADI Program is to advance the state of the art and increase human knowledge and understanding in the targeted topic areas. The program also seeks to have a lasting impact on the direction of research, aiming to serve as a catalyst upon which future research is founded. One mechanism used by the program to promote the goal of lasting impact is supporting young faculty members. Early stage scientists often have significant hurdles to overcome that include building a new research group, teaching, writing proposals, and establishing themselves in a highly competitive research community. Receiving a significant award can be a substantial boost in their careers and seed ideas in their labs that may last a lifetime. The ADI program seeks to enable scientists relatively new in their academic careers to take risks with new ideas and approaches.

The ADI Program strongly believes interdisciplinary approaches allow scientists to look beyond their own disciplines to explore approaches with colleagues in other disciplines in order to bring new perspectives to challenging problems where traditional approaches within a discipline may be ‘stuck’. Proposals by interdisciplinary teams are encouraged with the goal of having any given cohort to include one or more such teams. Only one member of the team need be from the invited institution. Team collaborations should delineate the effort of each group and collaborations of two or three laboratories should clearly specify the value and integration of such a union.

Methodological and technological advances are often necessary complements to scientific advance and yet these are often difficult to fund through traditional sources. The ADI Program encourages and supports researchers including novel methodological, theoretical and technological elements in their proposals.

Supported projects are expected to have interim milestones and clearly described anticipated outcomes. Scientific goals in the topic area should be achievable within the award period.

**Program and Award Structure**
The ADI Program expects to issue a Request for Proposals through our academic and other research partners periodically with the number of projects concurrently funded remaining more or less constant over time. The questions posed for each round may continue or refocus a previous research agenda or may focus on a new topic area.

The Foundation’s Science Advisory Board develops the question(s) defining the research agenda for a given cohort within topic areas of interest to The Paul G. Allen Family Foundation Board. The Foundation Board makes the final approval of all scientific questions. The Science Advisory Board consists of researchers and scientists from a range of disciplines reflecting the breadth of backgrounds and perspectives necessary to define the research agenda and to evaluate proposals for the given topic area.
Each cohort generally consists of between 5 and 8 projects with an average total funding of up to $1.5M for each project over a 3 year period. (Cohort size may be expanded if warranted.) Funding is intended to provide a sustainable funding stream for investigators allowing them sufficient time to investigate big questions in-depth using risky, novel approaches.

Distribution of funds is made over the period of the grant based on the budget submitted with the proposal.

Eligibility Requirements
Scientists at any stage of their career may apply. The Foundation has a particular interest in supporting and promoting the careers of exceptional young scientists showing particular promise as thought leaders in their fields. To that end proposals from scientists recently appointed as assistant professors on a tenure-track appointment will be given priority consideration.

Nomination and Application Process
Only invited institutions may nominate proposals for submission to the application process. The ADI Program does not accept unsolicited applications or nominations from uninvited institutions. The Foundation may, at its discretion, solicit proposals directly from researchers.

Invited institutions may submit proposals from up to two qualified applicants. The program seeks new and novel approaches and encourages risk taking to address the target area specified by the question. Institutions should evaluate submissions with this in mind. The most creative proposals, especially those including interdisciplinary approaches, are most likely to succeed.

The University will submit the two final proposals through the Office of the Provost and the Office of Foundations, working closely with ORSP.

If you have questions, please contact

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