



NATIONAL SCIENCE FOUNDATION
2415 EISENHOWER AVENUE
ALEXANDRIA, VIRGINIA 22314

NSF 19-027

Dear Colleague Letter: Request for Information - Integration Institutes for Cross-cutting Biology

December 6, 2018

Dear Colleagues:

The National Science Foundation's Directorate for Biological Sciences (BIO) seeks ideas from the community on fundamental biological research questions and topics that are poised for major advances. Ideally these ideas would span multiple levels of organization in living systems and require expertise from diverse biological subdisciplines. This is a call, not for research proposals, but for high-level ideas. The deadline for submissions is **March 1, 2019**.

BACKGROUND

Biology is unified by the goal of understanding the processes that sustain life and enable biological innovation across all levels of organization, from molecular to global scales. However, the field of biology has become increasingly fragmented into sub-disciplines over the past decades due, in part, to advances that enable deep study of narrowly defined problems. Emerging and mature technologies deliver high-resolution data at every scale, opening new avenues for cross-cutting discoveries in biology but also leading to additional levels of specialization. Creative integration of diverse sub-disciplines at this stage could significantly enhance our ability to tackle ambitious, fundamental biological questions—potentially re-unifying biology.

To address this challenge, BIO envisions the creation of "Integration Institutes" to support collaborative teams of researchers at a level not feasible in most existing core programs and over a more extended timeframe than is typical of standard NSF awards. These Institutes will enable research and training in a truly integrated environment, preparing the next generation of biological scientists to pursue discipline-spanning research throughout their careers.

BIO seeks suggestions about the types of questions and resources the community envisions would benefit from such NSF investment. There is no funding directly associated with this call; however, this input will be used to inform strategies for supporting a number of

Integration Institutes over the next several years.

WHO SHOULD RESPOND

U.S.-based scientists should respond with ideas about biological challenges best suited for investigation across biological scales, as described above.

HOW TO RESPOND

In responding to this call, please consider the following questions:

- What fundamental biological research question is poised for breakthroughs by collaboration across biological subdisciplines? Why is this question important?
- Why is now a particularly good time to address this question?
- What types of resources, in terms of expertise and infrastructure, would facilitate answers to this question?

To respond, send a Word document of no more than 2 pages to BIO-RFI-II@nsf.gov, with the Subject line "RFI: Integration Institutes Response to DCL". On all submissions, include the author's name(s), organizational affiliation, and contact email. Proprietary information should not be included in the submissions.

All submissions will be analyzed by a task force from all divisions of BIO to identify the most exciting and transformative ideas from the community.

Inquiries may be directed to BIO-RFI-II@nsf.gov.

Sincerely,

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