



INSPIRE

Integrated NSF Support Promoting
Interdisciplinary Research and Education

**CREATIV: Creative Research Awards for
Transformative Interdisciplinary Ventures**

Co-chair: Thomas Russell, Office of Integrative Activities

Co-chair: Richard Behnke, Directorate for Geosciences



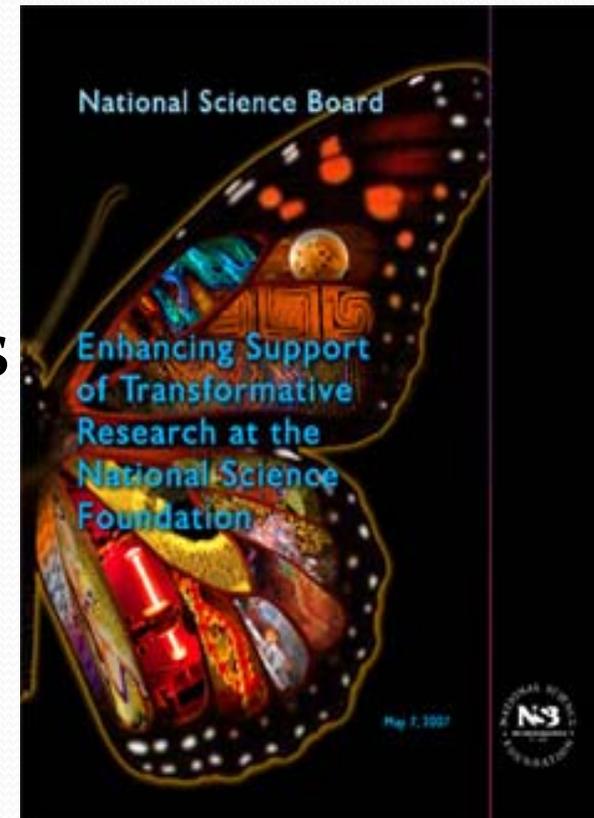
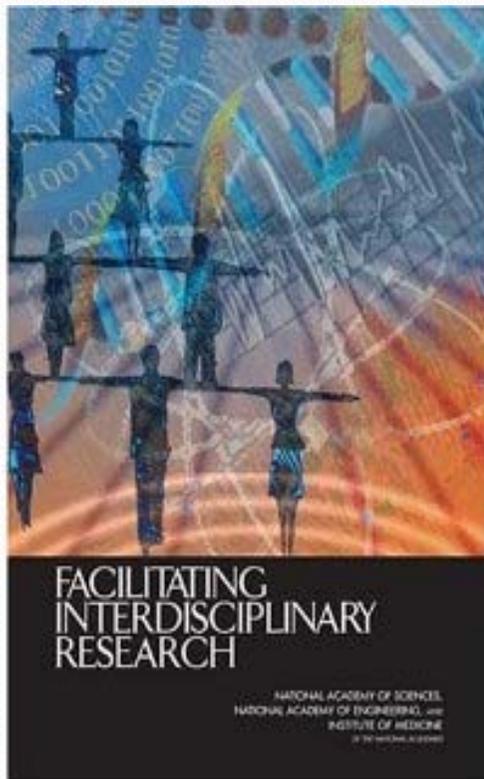
INSPIRE

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by Jeffrey Mervis on 15 April 2010, 4:34 PM | [2 Comments](#)



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For years, Congress has pushed the National Science Foundation to take more risks. Yesterday, a House of Representatives science panel offered a first-ever definition of what that would mean for the \$7 billion research agency and—by extension—the entire U.S. scientific enterprise.

At issue is striking the right balance between the institutional conservatism of NSF reviewers and program managers and the desire of policymakers to fund the next big thing—a crazy idea that will transform science and, eventually, bolster the economy and solve an important societal problem. Although NSF prefers to call it "potentially transformative research," it's usually referred to as "high-risk, high-reward research."

The panel's [definition](#) is a mouthful: "Research driven by ideas that have the potential to radically change our understanding of an important existing scientific or engineering concept, or leading to the creation of a new paradigm"

U.S. RESEARCH FUNDING

NSF Creates Fast Track for Out-of-the-Box Proposals

Nothing strikes the National Science Foundation (NSF) closer to the bone than criticism that its vaunted peer-review system is too conservative. For years, the community and Congress have pressured NSF to lay more bets on research that is risky but that could rock our world if it succeeds. NSF officials have always insisted that everything the basic-research foundation supports is "potentially transformative" and that there's no need for a special program.

Until now. Last week, NSF Director Subra Suresh unveiled an initiative (www.nsf.gov/pubs/2012/nsf12011/nsf12011.jsp) that aims to roll the dice on a relative handful of researchers with unorthodox ideas about how to tackle complex problems. At \$24 million, the Creative Research Awards for Transformative Interdisciplinary Ventures (CREATIV) will take up only a tiny portion of NSF's \$5.5 billion research portfolio. But NSF hopes it will send a big signal to the U.S. research community. "It's a new way of doing business for NSF," says Richard Behnke, who co-chaired an internal NSF committee that designed the new program.

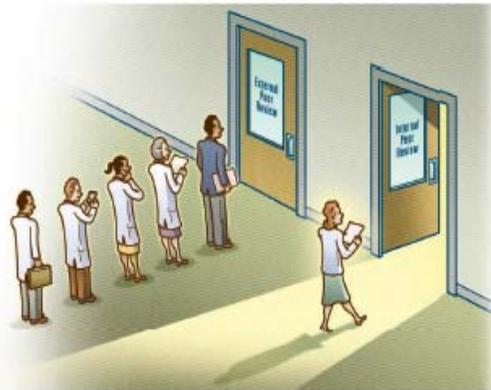
The biggest difference between proposals submitted to CREATIV and those processed in the traditional manner is that the former won't be judged by external review panels. Instead, researchers need only win over NSF program managers. In fact, researchers must receive prior, written approval from at least two program managers before even submitting a proposal.

But once that hurdle has been cleared, researchers should expect an answer within 2 or 3 months. That's more than twice as fast as the usual turnaround time. Researchers from U.S. institutions can submit proposals in any area that NSF now funds, and there are no priority topics. The maximum grant is \$1 million over 5 years, and proposals will be accepted starting 1 December and processed on a first-come, first-served basis.

In an NSF-sponsored webcast (www.tvworldwide.com/events/nsf/111109/), Suresh said that not every research idea is right for CREATIV. The most distinguishing characteristic is what he called "interdisciplinary proposals [without] a

recognizable home" within the foundation.

NSF officials say they have no idea how many researchers will submit CREATIV proposals. But Samuel Rankin, head of the Coalition for NSF Funding and associate executive director of the American Mathematical Society, thinks that it will be popular and that it meets a need. "Given the conservative nature of review panels and reviewers," he says, "I think having a [separate] mechanism that requires transformative research can be helpful in acquiring and evaluating such proposals."



NSF officials acknowledge that they are stepping into a long-running controversy by launching CREATIV. "There are quite diverse opinions on how significant the problem is and what needs to be done," notes Thomas Russell, the internal panel's second co-chair.

Russell and Behnke are part of a group of a dozen NSF senior managers who began meeting last spring to discuss how to flesh out an initiative in NSF's current budget request called INSPIRE (Integrated NSF Support Promoting Interdisciplinary Research and Education). Starting with \$12 million in 2012, Suresh hopes that INSPIRE will eventually grow to be a \$120-million-a-year effort by 2016.

CREATIV is the first of what Suresh hopes

will be several activities under the INSPIRE umbrella. "It was seen as an effective and relatively easy-to-implement first step," Russell says. Another idea on the table is greater support for research larger in scope than what is typically carried out by individual investigators but smaller than what is done at a center.

Pending approval by Congress, CREATIV will actually have access to \$24 million—\$12 million from the director's office and a matching amount from NSF's six directorates. That amount might support 40 to 50 awards, Behnke says. Although CREATIV is a pilot program, NSF expects it to continue in 2013 and beyond.

Some scientists worry that CREATIV could favor researchers with a track record of NSF support, those who are familiar with its inner workings and who enjoy a close relationship with their program manager. Suresh says that's not his intent and that the

need to get approval to apply from more than one NSF staffer will prevent such bias. "But we'll be monitoring it closely to see how it evolves," he adds.

There are also concerns that the new program could undermine NSF's traditional merit-review process. In response, Behnke noted that the program, even at its projected maximum size, would represent less than 2% of NSF's overall research budget. "For the great majority of proposals, we will continue the traditional merit-review process," he said. "The gold standard remains in place."

Amen to that, Rankin says. "As the CREATIV program grows, I hope that NSF balances it with the regular review process."

—JEFFREY MERVIS

Science

Nov. 18, 2011

Article by J. Mervis

<http://www.sciencemag.org/content/334/6058/883.full.pdf>

Downloaded from www.sciencemag.org on November 17, 2011



INSPIRE Working Group

Co-chair: Thomas Russell, Office of Integrative Activities

Co-chair: Richard Behnke, Directorate for Geosciences

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Sohi Rastegar, Directorate for Engineering

Marc Rigas, Office of Cyberinfrastructure

Neil Swanberg, Office of Polar Programs

Alan Tessier, Directorate for Biological Sciences

Mark Weiss, Directorate for Social, Behavioral & Economic Sciences



Integrated NSF Support Promoting Interdisciplinary Research and Education (INSPIRE)

Goals:

- *Demonstrate that NSF is open to unusually novel cross-disciplinary ideas:* Welcome groundbreaking or unconventional ideas and approaches, and unusually novel, creative interdisciplinary proposals
- *Encourage Program Directors to promote such ideas:* Empower PDs with flexibility and new resources and mechanisms to enable cross-cutting collaboration and risk-taking in developing their awards portfolio

FY 2012 budget: \$20 million

FY 2013 request: \$63 million

First pilot INSPIRE activity for 2012-13: Creative Research Awards for Transformative Interdisciplinary Ventures (CREATIV)

Second pilot under development for 2013: Larger projects



INSPIRE / CREATIV

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Office of Integrative Activities (OIA)

CREATIV

CREATIV (Creative Research Awards for Transformative Interdisciplinary Ventures): a pilot grant mechanism under the Integrated NSF Support Promoting Interdisciplinary Research and Education (INSPIRE) initiative, to support bold interdisciplinary projects in all NSF-supported areas of science, engineering, and education research.

Note to all prospective CREATIV principal investigators: Before writing or submitting a CREATIV proposal, PIs must obtain written authorizations by at least two NSF program directors from intellectually distinct divisions or programs. To begin the process of contacting program directors, the PI is encouraged to submit the [CREATIV Inquiry Data Form](#). To identify program directors to list on this form, some keyword searching of the NSF web site may be helpful in finding appropriate NSF divisions and programs, for example by using the "Search Funding Opportunities" box in the left-hand column of the [home page](#), or the "Search Award For" box in the [Award Search](#) database. Another potential resource is the NSF Interdisciplinary Research web site, http://www.nsf.gov/od/oia/additional_resources/interdisciplinary_research/, where the [Contact Options](#) page suggests various approaches, and the [Points of Contact](#) page lists people who can be helpful at the directorate level.

DEAR COLLEAGUE LETTER: [NSF 12-011](#) posted November 8, 2011.

FREQUENTLY ASKED QUESTIONS: [NSF 12-012](#)

WEBCAST: On November 9, 2011, NSF Director Subra Suresh and the co-chairs of the NSF INSPIRE Working Group presented a live webcast about the new CREATIV grant mechanism. The co-chairs answered questions submitted by the audience. The archived webcast can be viewed at <http://www.tvworldwide.com/events/nsf/111109/>.

CREATIV Inquiry Data Form: To initiate the process of a potential CREATIV submission, [start here](#).

[CREATIV Inquiry Data Form](#)

- Dear Colleague Letter NSF 12-011, www.nsf.gov/creativ

- In a nutshell:
 - Only internal merit review is required
 - Proposals **must** be **interdisciplinary and potentially transformative**
 - Maximum award size: **\$1,000,000**
 - Maximum award duration: **5 years**

- To begin process, PI submits inquiry form



CREATIV

Goals of this pilot funding mechanism:

- Attract unusually creative high-risk / high-reward interdisciplinary proposals, including ones that PIs may have been reluctant to submit to a standard review process
- Provide substantial funding, not limited to the exploratory stage
- Be open to all NSF-supported areas of science, engineering, and education research – no favored topics
- CREATIV is **not** for proposals that are more appropriate for existing mechanisms:
 - Primarily advance a single discipline, or
 - Can be expected to receive an appropriate evaluation through external review in regular programs, or
 - Continue a well-established line of research, leading to the next expected step

Through inquiry process, PI must have at least 2 program directors' authorizations in advance in order to submit a proposal



Scope and organizational eligibility

- For **FY 2012** funding: Full proposal deadline **6/15/2012**
- Generally for support of an individual PI or small team
- Organizations that may submit proposals:
 - U.S. academic institutions
 - U.S. non-profit, non-academic organizations
- Other types of organizations (e.g., federal research labs, for-profits, foreign organizations) may be included as subawardees
- Multi-organization collaborative projects:
 - **Must** be submitted as a single proposal, with subawards administered by the lead organization



Identifying PDs to contact

- It is the PI's responsibility
- Various routes are possible
- If assistance is needed, one resource is the NSF interdisciplinary research (IDR) Points of Contact on the IDR web site:

http://www.nsf.gov/od/oia/additional_resources/interdisciplinary_research/

- Not all inquiries will result in authorization (e.g., PDs may find that the proposal idea should be reviewed under a different mechanism)



CREATIV review criteria (1)

- Standard NSB-approved criteria of intellectual merit and broader impacts, as augmented by:
 - Intellectual merit, *interdisciplinary*: Project must integrate across multiple disciplines, as opposed to incorporating disciplinary contributions additively; proposal must specify and justify how this is met
 - Intellectual merit, *potentially transformative*: Project must fulfill at least one of the characteristics described on the web site http://www.nsf.gov/about/transformative_research/characteristics.jsp, with justification (e.g., what conventional wisdom is challenged, and how it could be overturned)



CREATIV review criteria (2)

- Broader impacts: In line with NSF strategic goal to innovate for society in the 2011-2016 NSF strategic plan, unusual promise for societal benefit is highly valued
- Proposal must address how the project is better suited for CREATIV than for a regular NSF review process
 - For example, if it is of a high-risk nature that could be expected to meet resistance from conventional reviewers, this could be explained and justified



CREATIV review process

- PDs' initial authorization is a preliminary judgment, not a commitment to recommend program co-funding
- Only internal merit review is required and typically used
 - PI will be informed if PDs decide to obtain external reviews
- PDs decide whether to recommend co-funding from their programs; for CREATIV, at least 2 must do so
- NSF-wide CREATIV management group validates the process and the project's CREATIV-appropriateness
- Decision and feedback sent to PIs, typically within 2 to 3 months after submission



CREATIV

- Maximum flexibility for PIs and PDs
- Maximum empowerment of PDs
- Maximum openness to new ideas – no special topics
- A great opportunity!



Questions?