



Welcome to...



Developing a Competitive Educational Research Proposal for the US National Science Foundation (NSF) Division of Research on Learning

Bob Russell



EHR-CORE · AISL · DRK-12 · ITEST · REAL · STEM+C



NATIONAL SCIENCE FOUNDATION

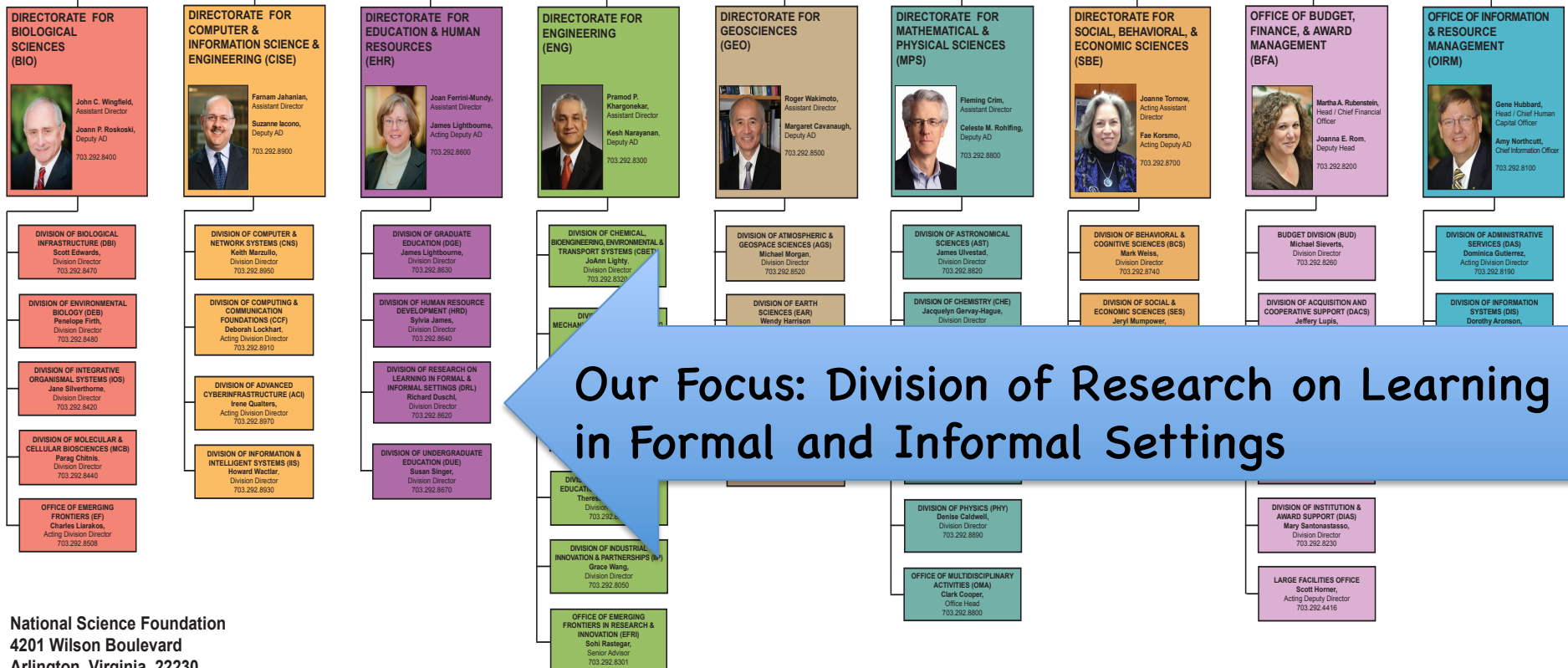


OFFICE OF DIVERSITY & INCLUSION (ODI)

Claudia J. Postell, Head
703.292.8020

Established as an independent agency under the Executive Branch (NSF Act of 1950):

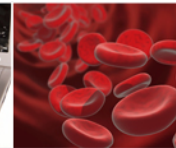
“To promote the progress of science; to advance the national health, prosperity, and welfare; to secure the national defense; and for other purposes.”



Our Focus: Division of Research on Learning in Formal and Informal Settings



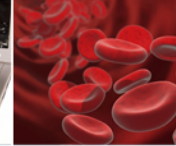
WHERE DISCOVERIES BEGIN



Selected Funding Programs & Priorities



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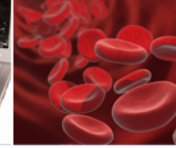


Choosing the Appropriate Program

- Where is the “intellectual center of gravity” of your project?
 - Foundational learning research (ECR)
 - Resources, Models, & Tools (DRK-12)
 - Informal STEM learning (AISL)
 - Workforce development in STEM for youth & teachers (ITEST)
 - Partnerships with schools and others (STEM+C)
- Examine the websites of the relevant programs
 - Prepare a 1-2 -page summary of your project
 - Address the merit review criteria
 - Contact one of the listed Program Directors with questions about relevance of your project



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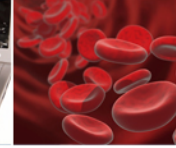


Advancing Informal STEM Learning (AISL)

- Advances new approaches to and *understanding* of the design and development of STEM learning in informal environments for public and professional audiences.
- Investments should be of interest and utility to public audiences, informal STEM practitioners, and decision-makers.
- Priorities are: knowledge-building, innovation, strategic impact, and collaboration.
- Supports a range of project types (n=7) to serve different functions and varied strategies.
- Deadline date: Nov. 8, 2016



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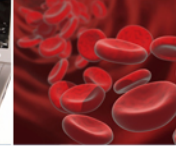


Discovery Research PK-12

- DRK-12 supports integrated Research and Development of Resources, Models , and Tools in the service of STEM learning and learning environments.
- Goals are: enhanced student achievement in STEM, preparation for the scientific workforce, and improved science literacy.
- Focus is on the learning that takes place during the 12-14 years students are enrolled in the formal classroom learning environment.
- Deadline date: Dec. 5, 2016



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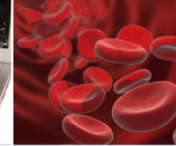


ITEST: *Innovative Technology Experiences for Students and Teachers*

- Funded through H1-B Work Visa Revenue
- Began in 2003
- Broadening Participation Emphasis Program
- STEM Workforce Advancement
- Broadening Participation
- Diverse Learning Environments
- Deadline date: August 6, 2016



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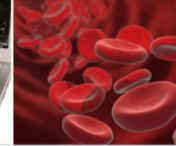


STEM + Computing (STEM+C)

- EHR-CISE partnership for computing education + *CSforAll.org*.
- Broaden participation in computing.
- Advance the evidence-based foundation to support the education and professional development of K12 teachers in computing.
- Advance applied research in teaching and learning for the integration of computational thinking in the STEM disciplines for real-world application of computing with those disciplines.
- Deadline date: March 14, 2017



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EHR Core Research (ECR)

Introduced in 2013 to support *fundamental research to generate foundational knowledge* in and across the following focal areas:

- STEM learning and STEM learning environments
- STEM professional workforce development
- Broadening participation in STEM

ECR projects are: Theory driven, theory generating, theory testing and predictive.

Funding and management is shared across all 4 divisions in EHR.

Awards funded by ECR program:

Use NSF Advanced Award Search:

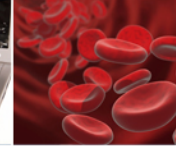
<http://www.nsf.gov/awardsearch/advancedSearch.jsp>

In the Element Code field, enter: 7980

Deadline date: September 8, 2016



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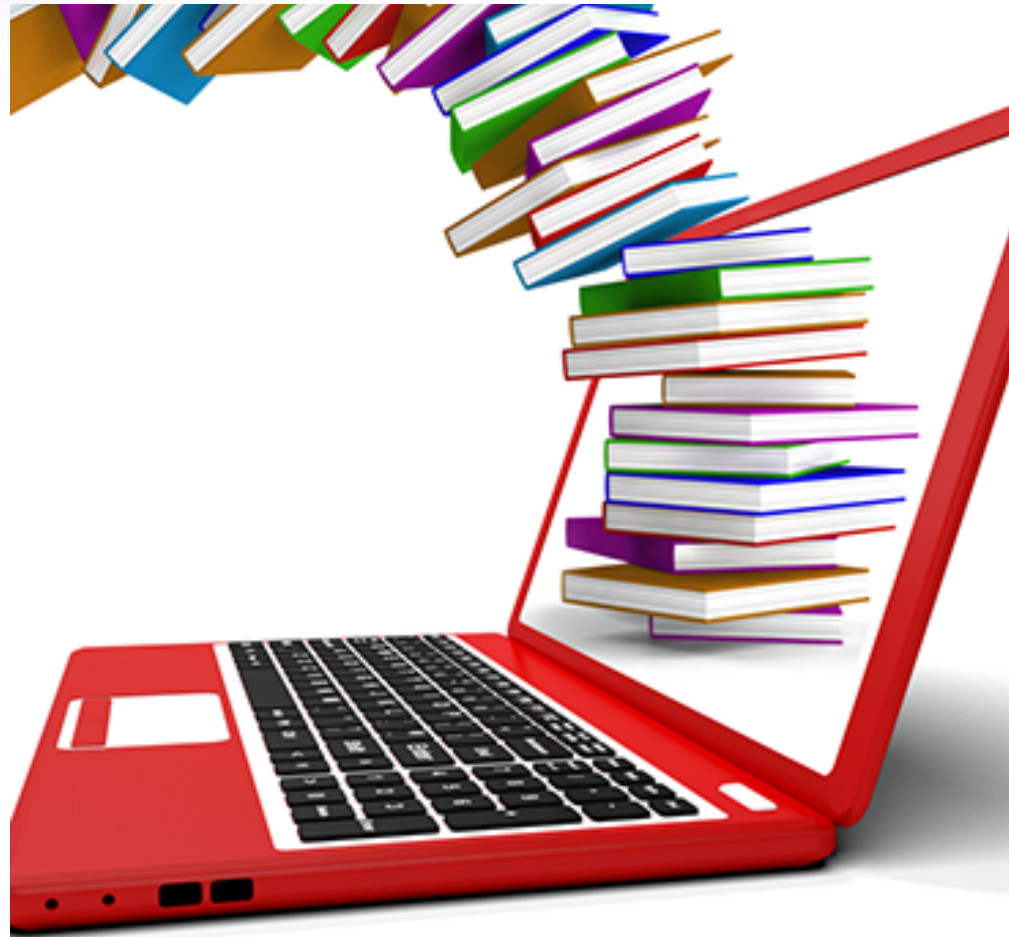
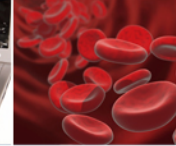


Faculty Early Career Development Program (CAREER)

https://www.nsf.gov/funding/pgm_summ.jsp?pims_id=503214



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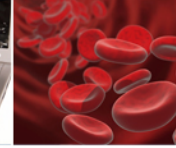


Cyberlearning and Future Learning Technologies (Cyberlearning)

https://www.nsf.gov/funding/pgm_summ.jsp?pims_id=504984



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Where to find out about funding?

- Full list of NSF education funding programs:
http://www.nsf.gov/funding/pgm_list.jsp?org=EHR
- Search of abstracts: nsf.gov (then select Awards)
- Search for publications: nsf.gov (then select Documents)
- Dear Colleague letters: use search window at nsf.gov



WHERE DISCOVERIES BEGIN



Resource Centers

NSF funds resource centers linked to some programs. The resource websites have project abstracts, research and evaluation reports, and a variety of other useful info for project planning and proposal development.

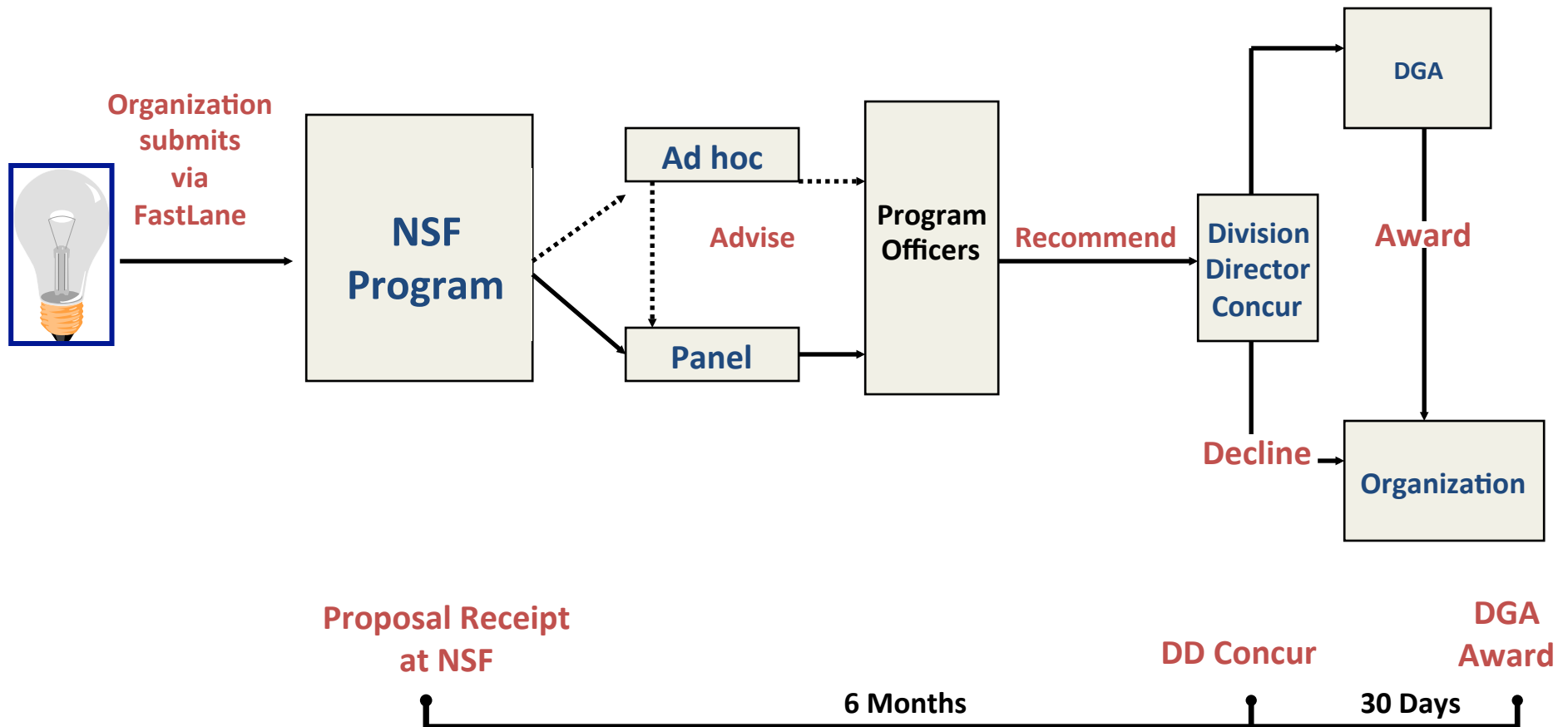
- Advancing Informal STEM Learning: informalscience.org
- Discovery Research PK-12: cadrek12.org
- Innovative Technology Experiences for Students & Teachers: stelar.edc.org
- Cyberlearning: circlcenter.org



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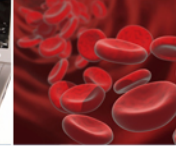


Proposal Review Process and Timeline





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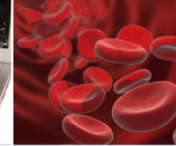


Help the Reviewers

- Writing to reviewers and program officers
- Make what they are looking for easy to find, using the language of the review criteria and headings to highlight the elements of the project description.
- Don't assume that all reviewers will know the jargon of your discourse community or commonly used acronyms as reviewers may not be in your subspecialty.
- Make sure the most important things receive the most space



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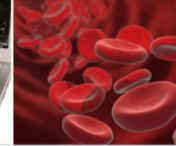
NSF Review Criteria

All proposals are reviewed under two criteria:
Intellectual Merit and Broader Impact

1. What is the potential for the proposed activity to:
 - a. advance knowledge and understanding within its own field or across different fields (Intellectual Merit); and
 - b. benefit society or advance desired societal outcomes (Broader Impacts)?
2. To what extent do the proposed activities suggest and explore creative, original, or potentially transformative concepts?
3. Is the plan for carrying out the proposed activities well-reasoned, well-organized, and based on a sound rationale? Does the plan incorporate a mechanism to assess success?
4. How well qualified is the individual, team, or institution to conduct the proposed activities?
5. Are there adequate resources available to the PI (either at the home institution or through collaborations) to carry out the proposed activities?



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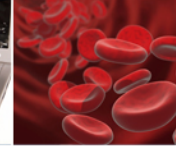


Before You Begin Writing

- Do your homework
 - Familiarize yourself with the NSF website
 - Print and read the Grant Proposal Guide (GPG)
 - Read the solicitation carefully multiple times
 - Check the NSF Awards Search Page
 - Visit the Website of the resource center or network for the relevant program.
 - Read sample proposals; ask funded PIs **politely**
- Talk to NSF Program Officers about your ideas
 - POs may ask you to send a 1-2 page summary in advance.



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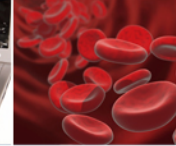


Project planning

- Many proposals excel at describing need and a good idea but are weak at details about the activities (and research plan)
- Before you write lay out everything that will happen
 - Who are the participants? Where are you going to recruit them? Will that organization allow you? What are the population demographics? Etc.
 - How long will the activity take? Who is going to support it? Do you need help? What kind? Do you need permission? From whom? What will happen? When and how? What preparations are needed?
 - How will data be collected? Will data collection be intrusive? (What are the research questions?) Who is going to do it? What preparations are needed?
 - When you're done, list EVERY task, noting what will cost money.



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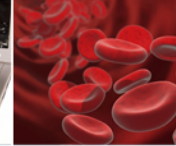


Project Summary Suggestions

- **One page maximum**
- **First Sentence**
 - Type of Proposal (Most programs have “strands”)
- **Second Sentence**
 - STEM or STEM Cognate areas of emphasis
 - Grade or Age level (s) addressed
- **A general description of the project to be designed, implemented, and evaluated.**
- **Intellectual Merit and Broader Impacts**
 - Must include separate statements on each of these two NSB criteria



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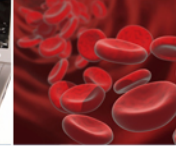


Project Description Should Include...

- 15 page maximum
- Project overview
- Project goals and objectives
- Summary of effectiveness and impact of prior support
- Explanation of principles that guided the project design, informed by the literature
- Detailed work plan with a timeline
- Qualifications of key personnel who will be coordinating the project
- Anticipated results
- Research plan (if appropriate)
- External review or evaluation process
- Dissemination plan



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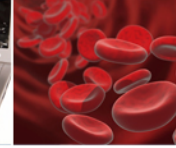


What Makes This Project Important?

- How is it innovative or potentially transformative?
- How will it advance knowledge and move the field forward?
- What are the anticipated outcomes or products of this project?
- Who will be interested in these outcomes, and how will you target dissemination of findings to them?
- How might these products or findings be useful on a broader scale?



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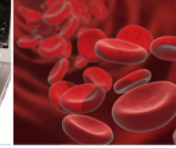


What Have You And Others Done?

- Describe the theoretical and research basis on which the proposal is based.
- How has the prior research influenced this project?
- Discuss how the proposal is innovative and different from similar projects.
- If you have previously been funded by NSF for similar work, provide evidence about the **effectiveness** and **impact** of that work.



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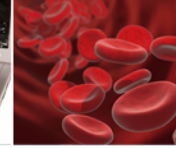


Who Will Do the Work?

- Briefly describe the expertise of the persons included on the proposal and why they are needed:
 - Education researchers and evaluators
 - Teachers and/or practitioners
 - Community and/or industry
 - STEM-related content experts
- Upload two page bios for all senior personnel
- Don't forget the mentoring plan if Post-Docs are involved.



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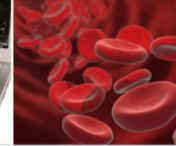


Expertise

- Successful projects generally involve interdisciplinary teams. In all cases, proposals must describe the expertise needed for the work, how this expertise is incorporated in the project, and who is responsible for each component.
- Projects typically include STEM education researchers, development experts, experienced teachers, STEM researchers, statisticians, psychometricians, informal learning experts, and policy researchers, as appropriate.



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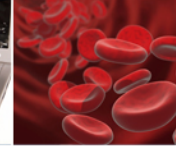


External Review & Evaluation

- The Merit Review Elements require you to have
 - A mechanism for iterative improvement: Advisory board, external evaluators,
 - A mechanism to assess success: External evaluators, advisory board
- Iterative improvement HELPS your project become better
 - Should focus on how the project is working, why the projects is working that way, and identify places to make it better
 - Should also be responsive to the project's needs
- Assess success
 - Addresses accountability to taxpayer investment



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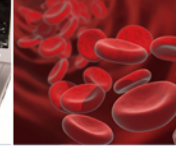
What Evaluation Is All About

The objectives of the evaluation include:

- assessing whether the project is making satisfactory progress toward its goals.
- recommending reasonable, evidenced-based adjustments to project plans.
- determining the effectiveness and impact of the products or processes.
- attesting to the integrity of outcomes reported by the project.



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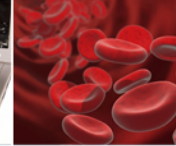


Budget

- How much will this cost?
- Contact your Sponsored Research Office early and often
- Remember Federally Negotiated Indirect Costs
- Budget and project description should match
 - PI and senior personnel time should reflect the effort on the project
 - Limited to 2 months across ALL NSF awards
 - Justification required for more than 2 months
 - Graduate students and undergraduate students
 - Post docs require a Post-doc mentoring plan
 - Remember to budget for fringe benefits
 - New rules on direct costs for clerical support



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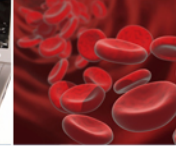


Budget continued

- Non-personnel Budget costs
 - Equipment is only for equipment that costs more than \$5000
 - Travel must be itemized per trip, can include local costs
 - Participant support – “stipends or subsistence allowances, travel allowances, and registration fees paid to or on behalf of participants or trainees (but not employees) in connection with NSF-sponsored conferences or training projects.”
 - The number of participants to be supported must be entered in the parentheses on the proposal budget.
 - Indirect costs (F&A) are not allowed on participant support costs.
 - Other direct costs
 - Materials and Supplies
 - Publication Costs
 - Consultant Services
 - Subawards



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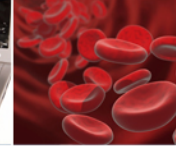


Proposal Submission

- All proposals are ultimately submitted by your SRO
- If at all possible, use FastLane system (<http://www.fastlane.nsf.gov>)
- DO NOT wait until the last minute (see two bullets above)
- All notifications will be available to you via FastLane



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Where to Submit Proposals

- NSF's FastLane:

<https://www.fastlane.nsf.gov/index.jsp>

- Grants.gov:

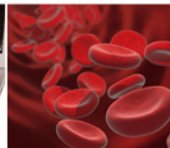
<http://www.grants.gov>

Note:

- Collaborative proposals must be submitted through FastLane.
- Fastlane will check for required sections of proposals.



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Questions?

NSF Needs You!





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Contact Information

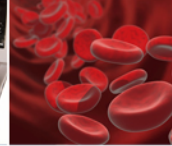
Bob Russell

rlrusse1@nsf.gov

Check the NSF program pages for more email addresses.



WHERE DISCOVERIES BEGIN



Thanks for Participating!

We look forward to receiving your proposals.