



**National Science Foundation
Directorate for Biological Sciences**

Funding Opportunities and Grantsmanship

**VCU Grantsmanship Workshop
Richmond
October 21, 2011**

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Cellular Processes Cluster

Division of Molecular and Cellular Biosciences
(BIO/MCB)

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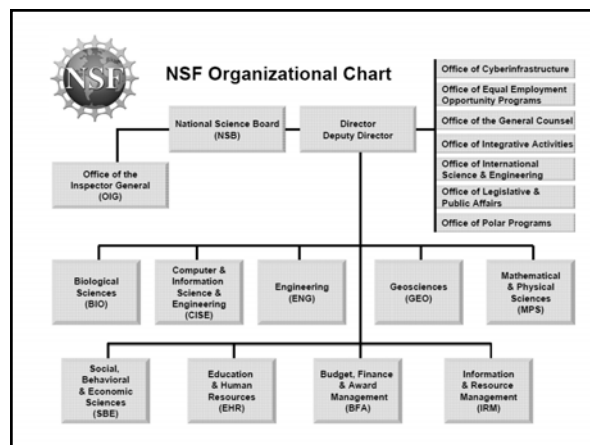
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NSF Mission (NSF Act of 1950)

- To promote the progress of science
- To advance the national health, prosperity, and welfare
- To secure the national defense

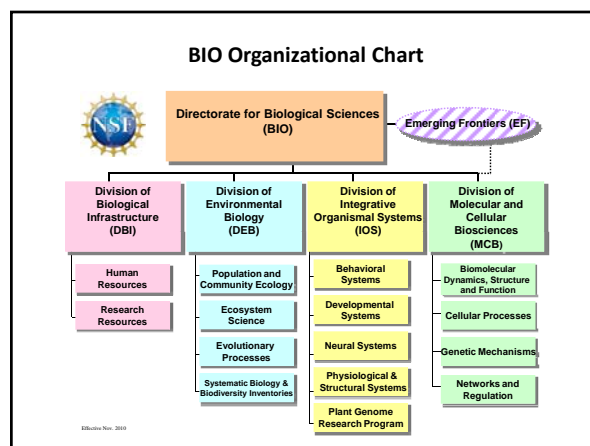
NSF Core Values

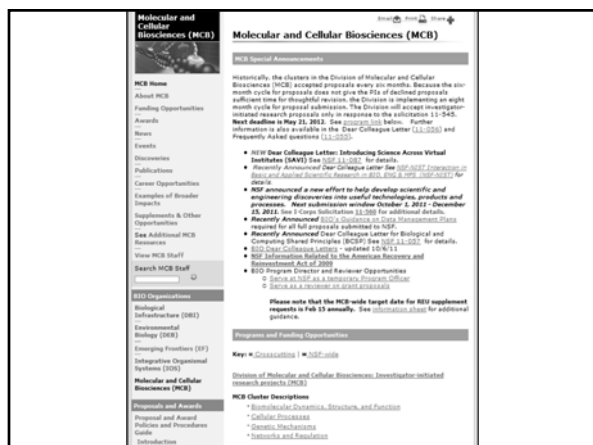
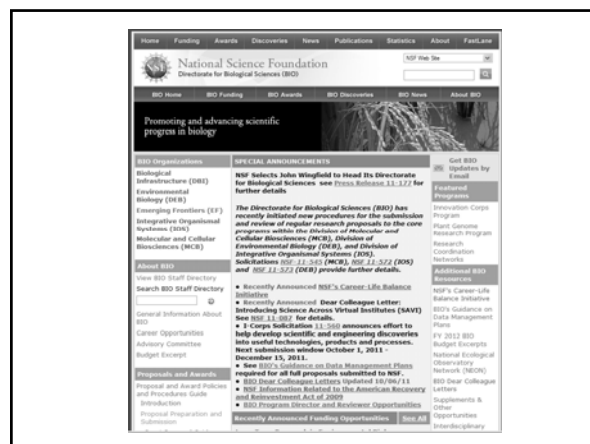
- Visionary
- Dedicated to excellence
- Broadly inclusive
- Accountable



BIO Mission and Vision

- To enable discoveries for understanding life
- To inspire research and education at the frontiers of the life sciences





Division of Molecular and Cellular Biology

*Supports basic research at the molecular and cellular levels
with an emphasis on the global analysis of large-scale systems*

Biomolecular Dynamics, Structure, and Function

Cellular Processes

Genetic Mechanisms

Networks and Regulation

See MCB web site: <http://www.nsf.gov/div/index.jsp?div=MCB>

Biomolecular Dynamics, Structure, and Function

*Supports fundamental research in the areas of
molecular biophysics and biochemistry*

- Structure and dynamics of biomolecules
- Biomolecular interactions and mechanisms
- Energy transduction: photosynthesis and biological electron transfer

Cellular Processes

*Supports innovative projects that integrate research
on the supramolecular and cellular scales*

- Membrane organization and function
- Organelle biogenesis, maintenance, and trafficking
- Cytoskeletal dynamics, cell division and motility

Genetic Mechanisms

Supports inventive studies that address fundamental questions such as how genes function and are maintained, and how genomes evolve

- Gene expression and epigenetics
- Chromosome dynamics, DNA replication, repair, recombination and inheritance
- Evolution of genes and genomes

Networks and Regulation

Supports creative proposals that offer a comprehensive understanding of the emergent properties of cells, organisms, and (microbial) communities

- Signaling and metabolic networks
- The minimal cell, synthetic biology and the origins of life
- Environmental interactions and microbial communities

Division of Integrative Organismal Systems

Behavioral Systems
Developmental Systems
Neural Systems
Physiological & Structural Systems
Plant Genome Research

See IOS Website: <http://www.nsf.gov/div/index.jsp?org=IOS>

Funding Opportunities: Graduate Students



Graduate Research Fellowships (11-582)

- Due date: Nov. 9, 2011
- Education and Human Resources Directorate. NSF-wide program

Doctoral Dissertation Improvement Grants (11-569)

- Due date: November 10, 2011
- DEB and Behavioral Systems Cluster in IOS only

Integrative Graduate Education and Research Traineeship Program (IGERT) (11-533)

- Letter of intent: May 1, 2012. Full proposal: July 2, 2012
- Education and Human Resources Directorate. NSF-wide program

Other: http://www.nsf.gov/funding/education.jsp?fund_type=2

Postdoctoral Fellows



Postdoctoral Research Fellowships in Biology (11-499)

- Support in selected areas of research (consult program announcement)
- Due date: Second Tuesday in October (next due date: October 9, 2012)

International Research Fellowship Program (06-582)

- Due date: Second Tuesday in September (next due date: Sept 11, 2012)

Other: http://www.nsf.gov/funding/education.jsp?fund_type=3

Regular ("investigator-initiated") proposals

- Fully understand the rules, requirements, and instructions described in the NSF Grant Proposal Guide (GPG)
- Follow any Directorate-specific guidance (e.g., deadlines)
- Address *both* review criteria: intellectual merit *and* broader impacts
- Take advantage of any optional opportunities
- Target the appropriate program
- When in doubt, consult a Program Director



Early-career Investigators



Faculty Early Career Development (CAREER) Program (11-690)

- For pre-tenure teacher-scholars
- Integration of research with education
- NSF-wide
- BIO minimum of \$500,000 for 5 years
- Deadline: July 23, 24, or 25, 2012 (depending on Directorate)

Research Initiation Grants (RIG)

- Discontinued: stay tuned for replacement solicitation
- In the meantime.....

Research at Undergraduate Institutions (RUI) Awards



- Support of research in predominantly undergraduate institutions
- Scope of projects should be appropriate for the undergraduate institution
- Must include a well-articulated RUI impact statement
- Otherwise, must follow same compliance rules as for regular proposals

Other Types of Proposals



- Early-concept Grants for Exploratory Research (EAGER) (GPG)
- Grants for Rapid Response Research (RAPID) (GPG)
- Proposals for Conferences, Symposia, and Workshops (GPG)
- Research Coordination Networks (RCN) (11-531)

Supplements to Active NSF Awards



- **REU Supplements:** Research Experiences for Undergraduates
- **ROA Supplements:** Research Opportunity Awards
- **RET Supplements:** Research Experience for Teachers
- **RAHSS Supplements:** Research Assistantships for High School Students
- **NSF-NIST Supplements:** NSF-NIST Interaction in Basic and Applied Scientific Research in BIO, ENG & MPS
- **DCC-PGR Supplements:** Developing Country Collaborations in Plant Genome Research



Understand the NSF Application and Peer Review Process

Common Mistakes and How to Avoid Them

**Aim high.....
Don't shoot yourself in the foot!**

Send us your best ideas.

Don't be overly risk-averse.

Required Reading

- **Grant Proposal Guide:** on the NSF Web site (http://www.nsf.gov/publications/pub_summ.jsp?ods_key=gpg)
- **Descriptions of Programs and Funding Opportunities:** on the Directorate and Divisional web sites

Understand the NSF Policy on Health-related Research

- As stated in the Grant Proposal Guide, proposals to conduct research motivated primarily by relevance to human diseases and health are not appropriate for submission to the BIO Directorate and will be returned without review
- Strong biomedical motivation of a proposal, even if it addresses basic biological principles, may affect priority for funding

Follow the Rules

- Be sure your proposal is fully compliant
- Meet the appropriate submission deadline (dependent on solicitation, program)
- Target your proposal to the most appropriate program(s)
- Take advantage of the opportunity to suggest expert peer reviewers
- Disclose all potential conflicts of interest
- Disclose all related and potentially overlapping proposals under consideration at other funding agencies

New Review Cycle and Deadlines for MCB Regular Research Proposals

- 8-month submission and review cycle
- Next deadline: May 21, 2012
- Investigators **must** submit proposals in response to the MCB solicitation (11-545) and follow **all** the rules of the solicitation
- Proposals must address areas appropriate for MCB as outlined in the MCB cluster descriptions
- Further details are on the MCB web site: <http://www.nsf.gov/div/index.jsp?div=MCB>

New Review Cycle and Deadlines for IOS & DEB Regular Research Proposals

- 12-month submission and review cycle
- Next preliminary proposal deadline: January 12, 2012
- Next invited full proposal deadline: August 2, 2012
- Investigators **must** submit proposals in response to the correct solicitation (IOS: 11-572 or DEB: 11-573) and follow **all** the rules of the solicitation
- Proposals must address areas appropriate for IOS or DEB programs
- See the BIO web site and Divisional web sites

Other New Requirements

- **Training in the Responsible Conduct of Research for any proposal involving undergraduates, graduate students, or postdocs**
 - Proposing institution must provide certification
- **Postdoctoral Mentoring Plan if a postdoc is included in the budget**
 - Included as a supplementary document of up to one page
 - RWR if omitted or over one page
- **Data Management Plan for all proposals**
 - Included as a supplementary document of up to two pages
 - Includes description of data/materials produced, data standards used, policies for data sharing, plan for archiving, etc.
 - RWR if omitted or over two pages

Address Both NSF Review Criteria

- **Intellectual merit** (i.e., scientific research plan)
 - Emphasize potential scientific impact
- **Broader impacts** (unique to the NSF)
 - Integration of research and education
 - Participation of underrepresented groups
 - Enhancement of infrastructure
 - Dissemination of results
 - Benefits to society

Hone a One-page Description of Your Specific Aims

1. Describe what you want to accomplish and why, within the time period of your request
2. Give a clear, concise statement of your rationale
3. Provide a clear statement of potential impact

A well-written page of specific aims serves multiple purposes, clarifies your thoughts, and makes the rest of the proposal easier to write!

Make the Reviewers Your Advocates

- Know your audience: both generalists and experts
- Be logical, concise, and easy to follow
- Convey enthusiasm as well as scholarship
- Beware of your own unintended biases
- Emphasize the potential scientific impact on the field (avoid the label of “incremental”)
- Don’t confuse scientific impact with “broader impacts”

Anticipate Reviewers’ Concerns

- Address potential weaknesses directly
- Don’t aggravate reviewers unnecessarily

Enlist Colleagues to Critique Your Proposal before Submission

- Choose people who will take the time to read your proposal carefully and play the devil’s advocates
- The best person may not necessarily be the person most familiar with your project or field
- Be sure to give your colleagues (and yourself) plenty of time before the submission deadline

The NSF Review Philosophy and Process

- **Ad hoc reviews:** program directors solicit independent expert opinions based on the specific scientific aims of the proposal
 - **Panel review:** panelists discuss and evaluate proposals as a group and suggest priorities (e.g., high, medium, low priority or non-competitive)
- Proposals are **not** given a numerical score or percentile ranking

The NSF Review Philosophy and Process (cont.)

- **Program review:** Program Directors evaluate *ad hoc* reviews and panel advice, then recommend awards based on additional program considerations and program budget

The Program Director (usually) makes the final award recommendation

Program considerations include...

- Programmatic scientific priorities (e.g., interdisciplinary research) and balance
- Potential impact, including high-risk/high-reward or transformative potential
- Support of beginning investigators
- Broadening participation (i.e., institutional, geographical, gender, ethnic, racial balances)
- Other support (of both the PI and area of research)

Need additional advice?

- Explore our web site
- Don't hesitate to contact Program Directors (be persistent if necessary)
- Have a draft of your specific aims at hand

