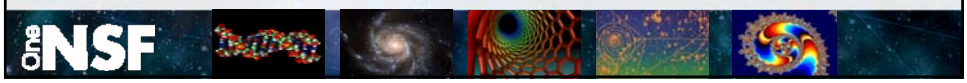
NSF/BIO Research Support

Henry L. Gholz, Program Director

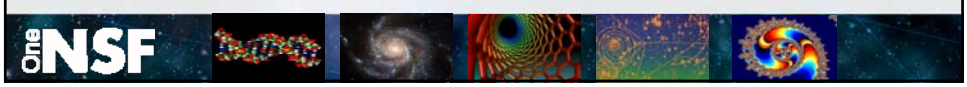
Division of Environmental Biology
National Science Foundation

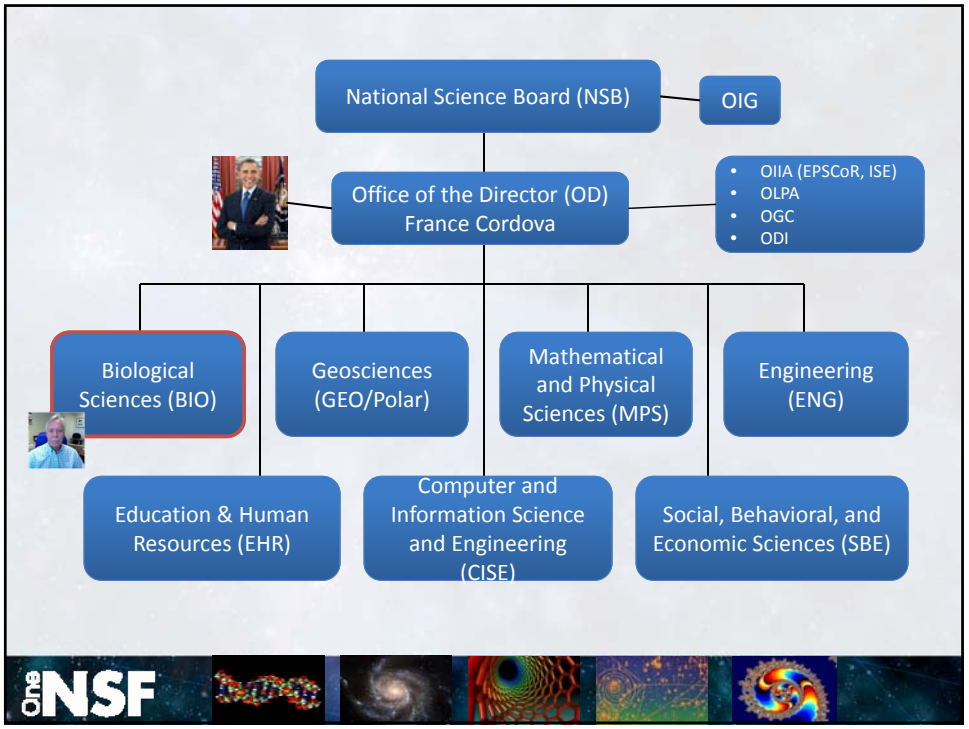
Denver, CO
June 23-24, 2014

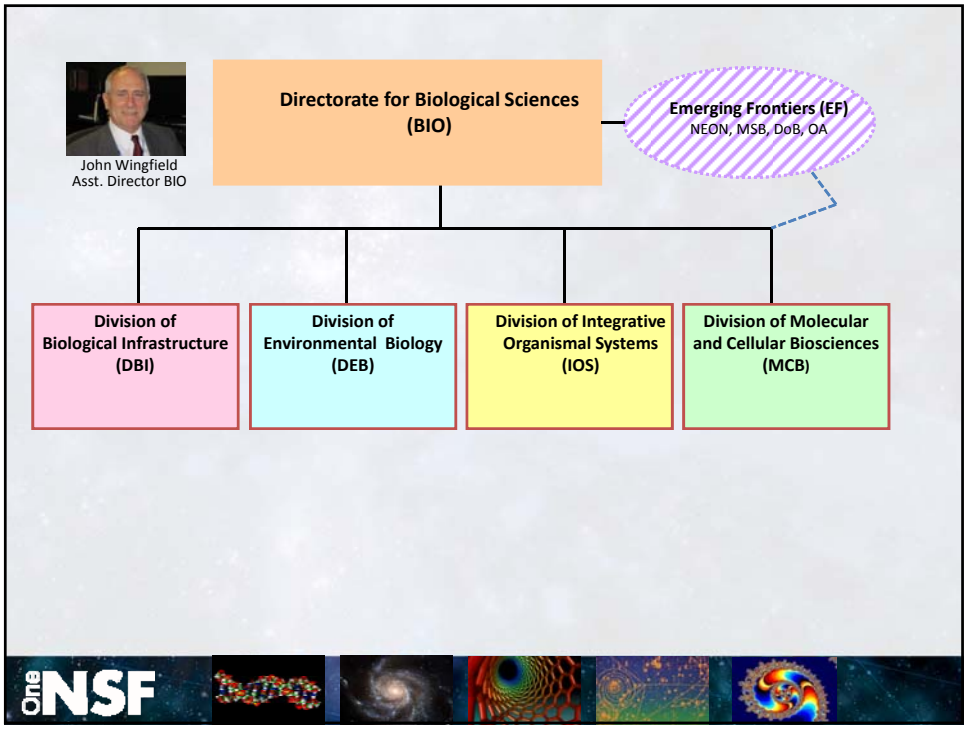


Outline

- BIO organization, Divisions
- Some big issues
- Pre/Full proposal process in DEB & IOS
- Writing for success
- Program considerations
- Q&A




National Science Board (NSB)
OIG
Office of the Director (OD)
France Cordova
OIIA (EPSCoR, ISE)
OLPA
OGC
ODI
Biological Sciences (BIO)
Geosciences (GEO/Polar)
Mathematical and Physical Sciences (MPS)
Engineering (ENG)
Education & Human Resources (EHR)
Computer and Information Science and Engineering (CISE)
Social, Behavioral, and Economic Sciences (SBE)
One NSF


John Wingfield
Asst. Director BIO
Directorate for Biological Sciences (BIO)
Emerging Frontiers (EF)
NEON, MSB, DoB, OA
Division of Biological Infrastructure (DBI)
Division of Environmental Biology (DEB)
Division of Integrative Organismal Systems (IOS)
Division of Molecular and Cellular Biosciences (MCB)
One NSF

Division of Biological Infrastructure (DBI)

Supports resources needed to empower biological discovery.

- Research Resources
  - Advances in Biological Informatics
  - Improvements at Field Stations and Marine Labs
  - Instrument Development
  - Synthesis Centers (SESynC, iPLANT, etc.)
- Human Resources
  - Postdoctoral Research Fellowships
  - Research Experiences for Undergraduates - Sites

Division of Environmental Biology (DEB)

Supports fundamental research on populations, species, communities, and ecosystems.

- Evolutionary Processes (see also Dimensions of Biodiversity)
- Ecosystems Science (see also MacroSystems Biology)
- Population and Community Ecology
- Systematics and Biodiversity
- LTER

Division of Integrative Organismal Systems (IOS)

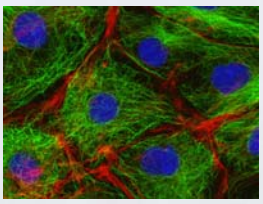
Supports research aimed at understanding the living organism -- plant, animal, microbe -- as an integrated unit of biological organization.

- Behavior
- Development
- Neurobiology (incl. Brain)
- Physiology
- Structure and Function
- Plant Genome Research Program

Division of Molecular and Cellular Biosciences (MCB)

Supports research aimed at understanding life processes at the molecular, sub-cellular and cellular levels.

- Cellular biology and biochemistry
- Molecular genetics and genomics
- Molecular biophysics
- Networks and regulation
- System and synthetic biology



Division of Emerging Frontiers (EF)

- **National Ecological Observatory Network (NEON), M&O**
- Dimensions of Biodiversity
- MacroSystems Biology
- Other

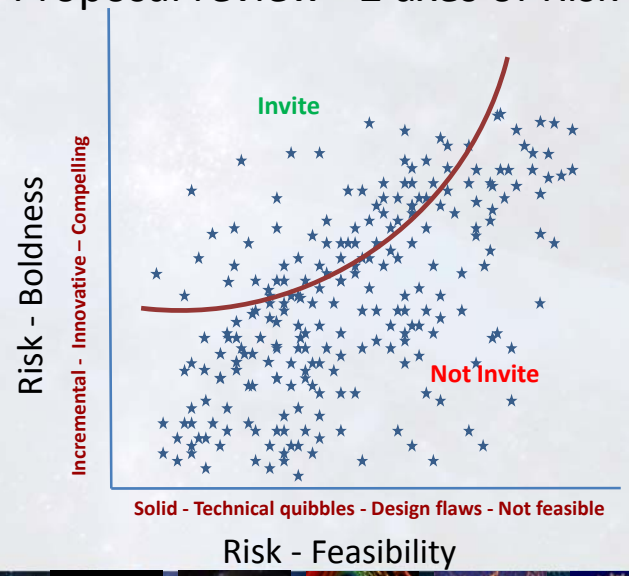
"Infrastructure Dilemma"?

Infrastructure = low risk
Transformative research = high risk

How do you lead with ideas (high risk), while trying to leverage existing investments in major infrastructure (low risk)?

(applies to EPSCoR, NEON, LTER, other facilities)

Proposal review - 2 axes of Risk

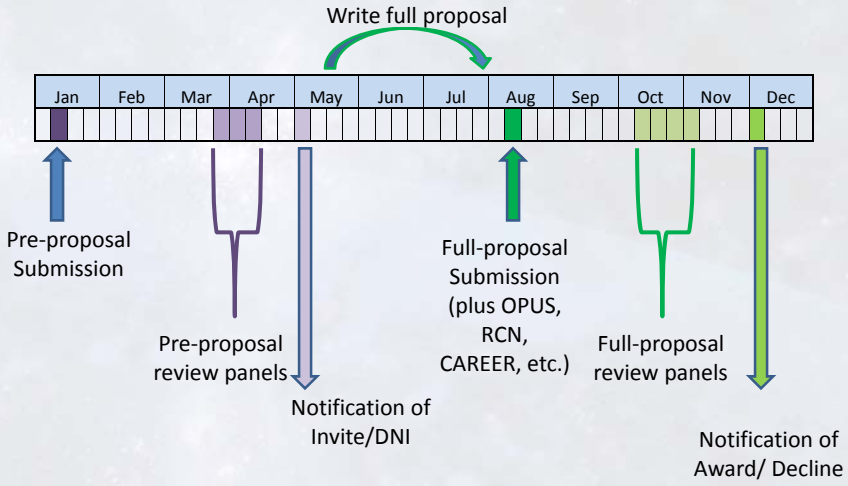


DEB and IOS changed core programs (2012)

- Dropped full proposals @ 2x/yr
- Adopted pre-proposals @ 1x/yr (with limit of 2/PI/division); invited full proposals @1x/yr
- Currently considering impacts and potential changes

- DEB blog: monitored/react
- NSF/BIO/DEB homepages: DCLs, solicitation changes, etc.
- We need your feedback!

Annual Cycle of Review and Recommendation



DEBrief

Blog of the Division of Environmental Biology, NSF

for NEWS: Subscribe to the DEB Blog

http://nsfdeb.wordpress.com

JULY 23, 2013 BY DEB SCIENCE STAFF

DEB Numbers: Award Size and Duration

This installment of DEB Numbers looks at the DEB Core Programs' regular research project portfolio through the lens of award size and duration.

Introduction

This post was inspired by some of the reaction we heard to our earlier DEB Numbers posts on collaboration. (We also will take the serendipitous bounce off these recent findings about award size from north of the border and subsequent discussion here.)

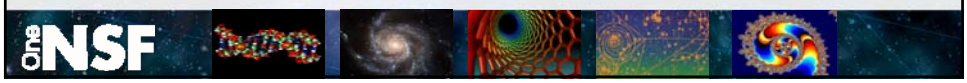
Writing Proposals For NSF(General)

• Lead with best **ideas** for moving forward the frontiers of science.

• Everything else must logically follow.

This is the greatest contrast with all other agencies.

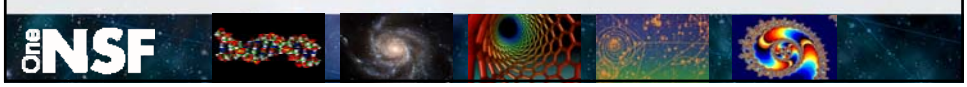
(do not start proposals stating where you would like to work, which species/ecosystem you want to study, the newest techniques you will use, what societal problem you are going to solve, what you can leverage…)



Writing Successful Pre-proposals

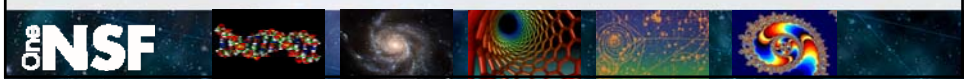
- In a compelling pre-proposal, the logical flow and significance of the proposed line of investigation must be articulated clearly and the broader impacts of the work apparent.

- Pre-proposals are reviewed by panelists only, so should be developed with a generalist, scientist reviewer in mind.



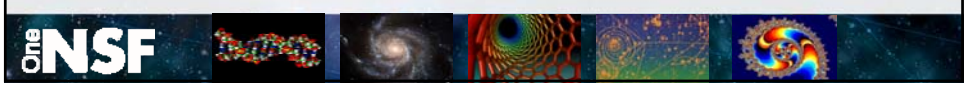
Writing Successful Pre-proposals

- Ideas new and novel, potentially transformative, conceptually well-grounded
- Potential impact of the science clear
- Experimental approaches and design feasible, logically linked to central ideas
- PIs well qualified and sufficiently experienced to effectively conduct the research
- Risks recognized and evaluated
- Convincing and significant effort made towards broader impacts (incl. required resources, leveraging)



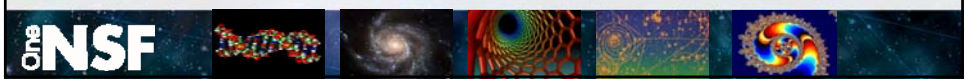
Writing Successful Full Proposals

- Start with the big picture (conceptual framework), the fundamental question/science issue
- Make your science compelling and relevant to fundamental issues (generalizable)
- Experimental plan well-matched to hypotheses
- Preliminary data consistent with hypotheses
- New methods usually require preliminary data or demonstration they work
- Methods and design are best to test the hypotheses
- Alternative experimental outcomes considered



Other (Program) Considerations

- Likely scientific impact
- PI career point (encourage beginning PIs)
- Program's scientific portfolio balance
- Other grant support for the PI (*varies*)
- Institution or state (encourage PUI, EPSCoR)
- Special programmatic considerations (CAREER, RUI, RCN, LTREB, OPUS, Small Grants, etc.)
- Other diversity issues
- Likely educational impact



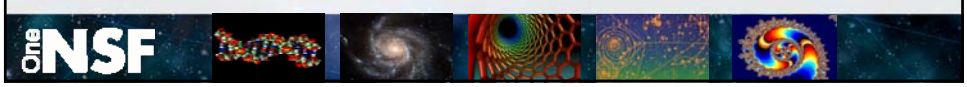
Highly uncertain times demand solid science

Societal trust in science is high

Problems are urgent, so we need more than marginal science and advancements

Resources are limited and competition is strong

Must be aggressive and creative



Questions?

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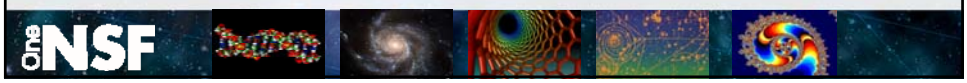
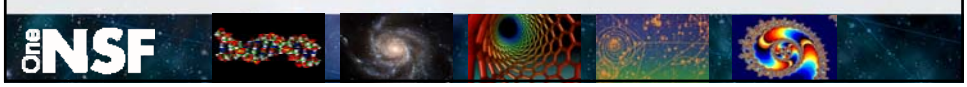


Submission Deadlines Changed

- DBI – Various (see individual solicitations)
- DEB & IOS (2014)
  - Pre-proposals: January 16 (DEB), 17 (IOS)
  - Full proposals: August 4 (DEB), 1 (IOS)
- MCB
  - November 15, 2013



IOS and DEB: New Core Proposal Solicitations

- Preliminary proposal deadline in January
  - Limit of 2 pre-proposals per division per PI
- Binding Invite/Do Not Invite decision in May and full proposal deadline in August
  - 2-3 months for full proposal preparation with reviewer input
  - 6-7 months for preliminary proposal resubmission with reviewer input
- Full proposal decisions in November
  - 6-8 weeks for preliminary proposal resubmission