Anne-Marie Schmoltner

Program Director

Division of Chemistry

National Science Foundation

aschmolt@nsf.gov

Topics

- NSF in general
- NSF large and new programs
- Chemistry at NSF
- Chemistry core programs
- CHE Dear Colleague Letters
- NSF-wide programs in Chemistry
- NSF Programs to Broaden Participation
- Proposal Review
- Tips for writing a successful proposal
- GRFPs etc.
- Anne-Marie's general advice
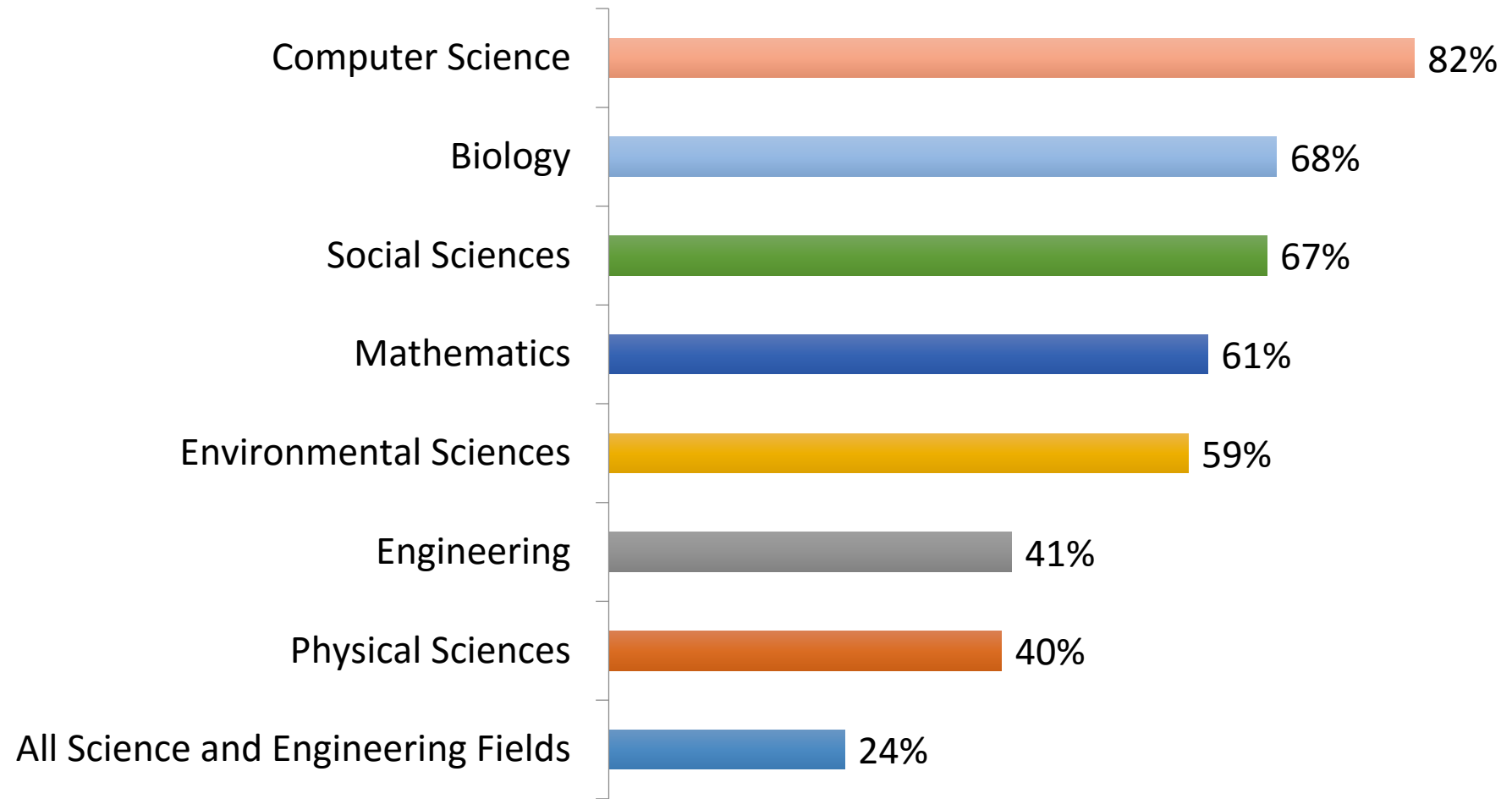- Questions??

The National Science Foundation

NSF Mission

"To promote the progress of science; to advance the national health, prosperity, and welfare; to secure the national defense..."
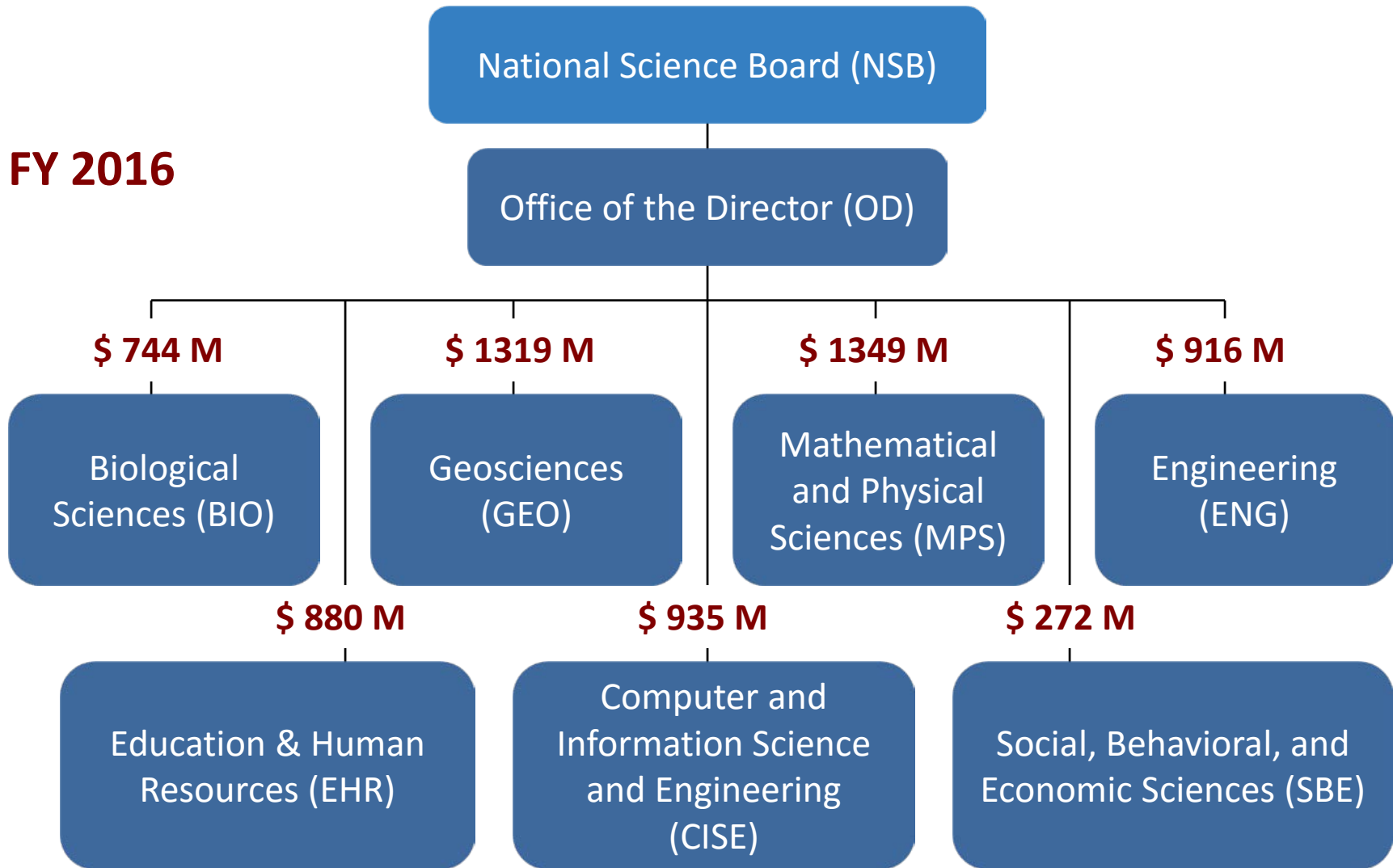
NSF is a major funder for Academic Basic Research (percentage of total federal support)

Field	Percentage
Computer Science	82%
Biology	68%
Social Sciences	67%
Mathematics	61%
Environmental Sciences	59%
Engineering	41%
Physical Sciences	40%
All Science and Engineering Fields	24%

The National Science Foundation

FY 2016

National Science Board (NSB)

Office of the Director (OD)

$ 744 M

Biological Sciences (BIO)

$ 1319 M

Geosciences (GEO)

$ 1349 M

Mathematical and Physical Sciences (MPS)

$ 916 M

Engineering (ENG)

$ 880 M

Education & Human Resources (EHR)

$ 935 M

Computer and Information Science and Engineering (CISE)

$ 272 M

Social, Behavioral, and Economic Sciences (SBE)

NSF by the Numbers FY 2016

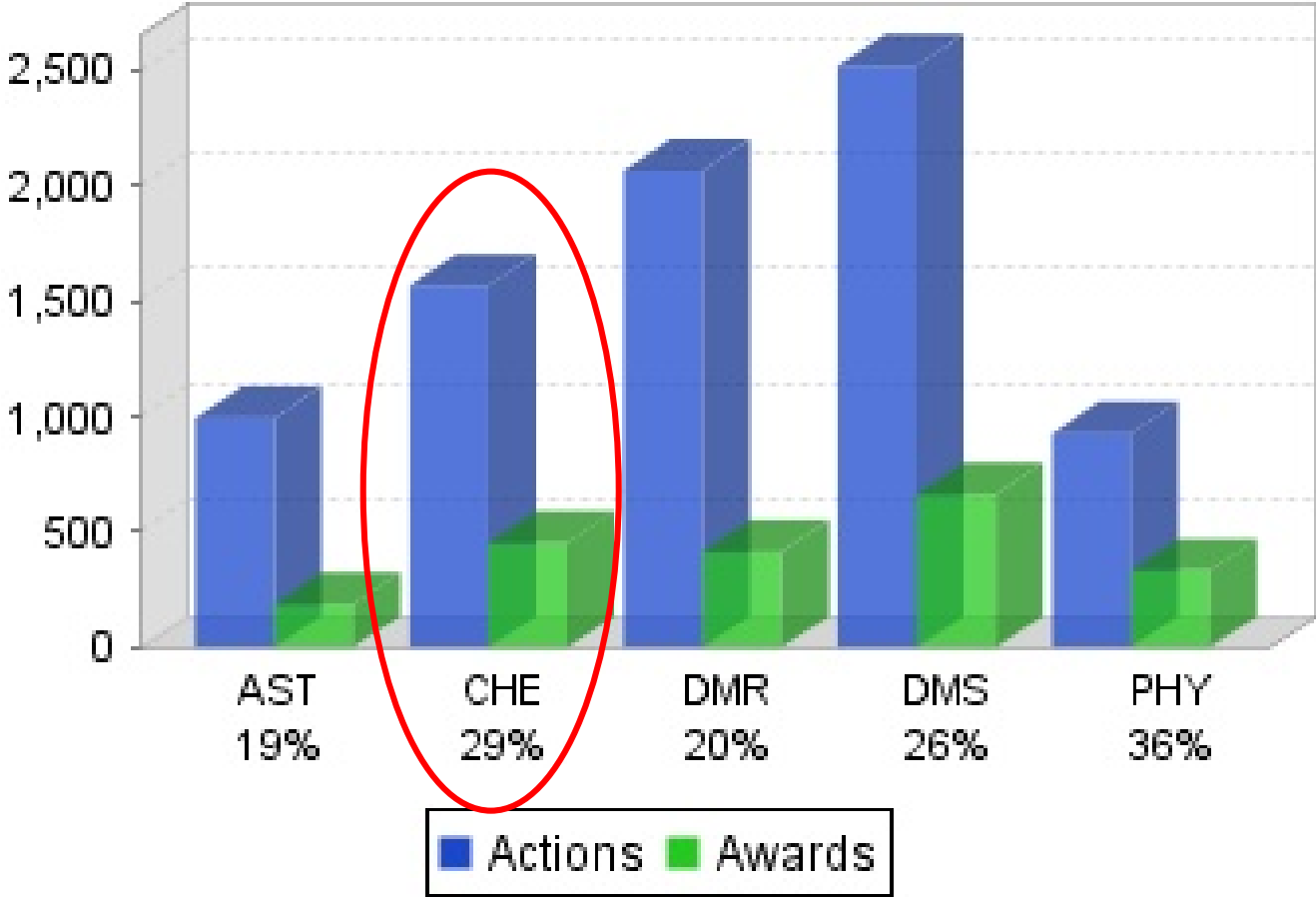| NSF Budget $ 7.46 B	MPS Budget $ 1.35 B	CHE Budget $ 246 M
42 000 Research Proposals	8100 Research Proposals	1600 Research Proposals
12 000 Research Awards (22%)	2100 Research Awards (26%)	450 Research Awards (28%)
140 000 Researchers	29 000 Researchers	About 5000 Researchers

NSF Funding for Math and Physical Sciences

Overall FY 2015 MPS Funding Rate: 25%

Funding has remained essentially "flat" for MPS... 2018?
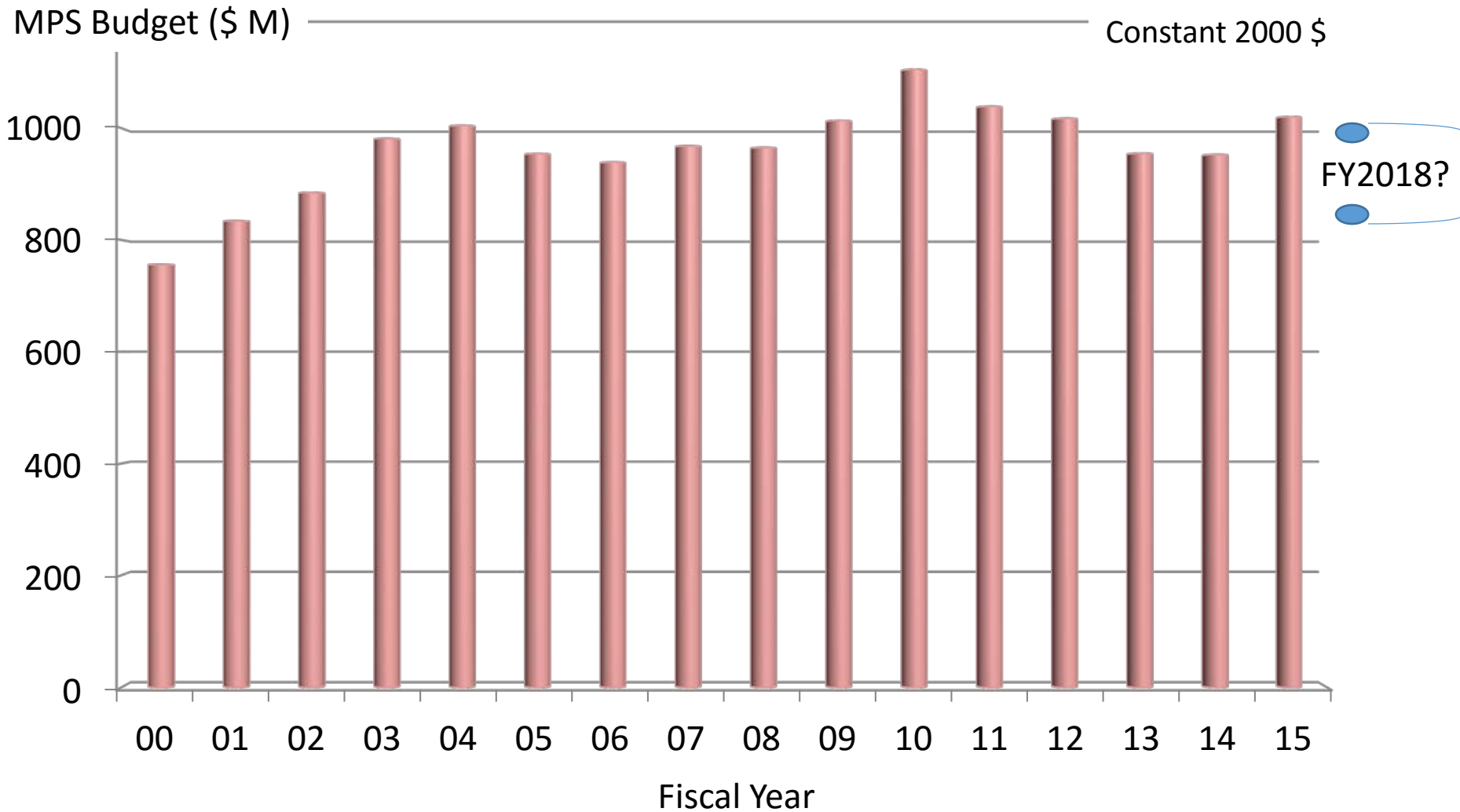
NSF's Big Ideas and major programs
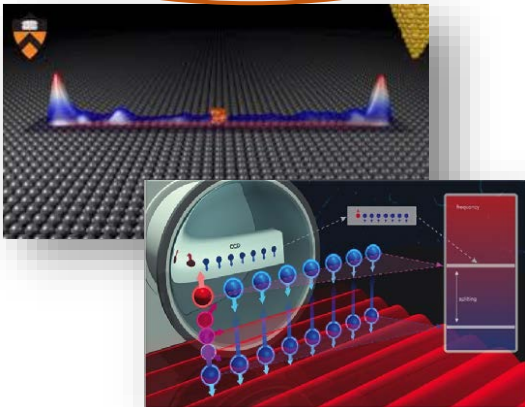
Research Ideas

Harnessing Data

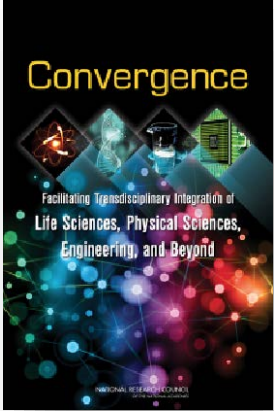## Human-Tech Frontier

Rules of Life

Quantum Leap

New Arctic

Windows on the Universe

Process Ideas

Convergence

Mid-scale

MRI$ MREFC$

NSF 2050 Fund

INCLUDES

Harnessing Data for 21st Century Science

Pursuit of **fundamental research in data science and engineering**, the development of a **research data infrastructure**, and the development of a 21st-century **data-capable workforce**.

- What **new information can be obtained** from better utilization of data (including data from multiple laboratories, techniques, and/or chemical systems)?

- How can this lead to **new research directions**?

The "Quantum Leap"
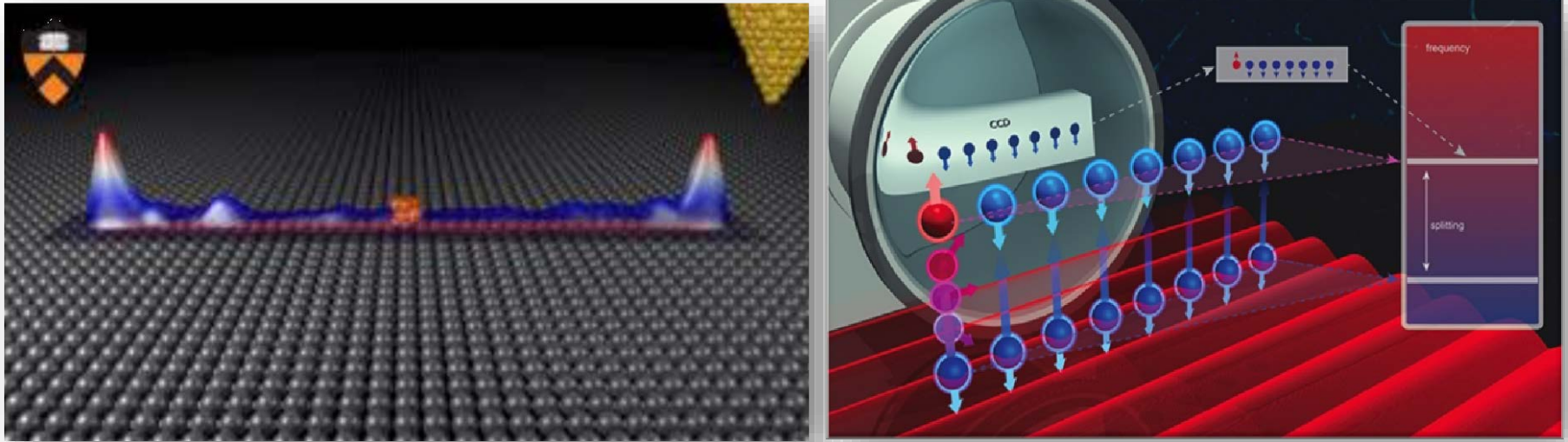
Technology achievements of the 20th century such as digital computing and optical fiber communications, **are dependent upon semi-classical properties of light and matter**, but as devices shrink and quantum effects dominate, existing strategies will fail.

What is needed? New approaches that move us toward a "quantum economy" – capitalizing on the quantum behavior of many-body systems.

INCLUDES (NSF 17-111, NSF 17-522)

(Inclusion across the Nation of Communities of Learners of Underrepresented Discoveries in Engineering and Science)

NSF INCLUDES is a comprehensive initiative to **enhance U.S. leadership in science and engineering discovery and innovation** by seeking and effectively developing STEM talent from all sectors and groups in our society. Over several years, NSF will invest in alliances and build a national network to achieve significant impact in transforming STEM education and workforce pathways.

Understanding the Brain
nsf.gov/brain

To enable scientific understanding of the full complexity of the brain in action and in context through targeted, cross-disciplinary investments in research, technology, and workforce development

INFEWS: Innovation at the Nexus of Food, Energy, and Water Systems

Food, energy and water systems are interrelated

- **Requires attention to food, energy and water systems**
- **Requires involvement from disciplines support by 3 directorates (could include DOA/NIFA)**
- **Requires a systems framework**
- **Proposals go to one of three tracks (subject to change):**
  - Modelling
  - Decision support
  - Solutions toward sustainability
- **Maximum funding: $2.5 M for 3 years, total**
- **New solicitation coming**

Chemistry at NSF

Modes of Funding in NSF CHE

$ 246 M

Ed 2%

Centers

Instrumentation 2%

12%

84%

Individual Investigators
and Small Groups

Division of Chemistry

Chemical Theory, Models, and Computational Methods (CTMC)

Chemical Catalysis (CAT)

Chemical Measurement and Imaging (CMI)

Macromolecular, Supramolecular, and Nanochemistry (MSN)

Chemical Synthesis (SYN)

Environmental Chemical Science (ECS)

Chemical Structure, Dynamics and Mechanism A&B (CSDM A&B)

Chemistry of Life Processes (CLP)

Integrative Chemistry Activities

Centers for Chemical Innovation (CCI)

Instrumentation (MRI)

Research Experiences for Undergraduates (REU)

Special Projects

Advice on Finding a Home for Your Proposal at NSF

- Read program descriptions and solictations CAREFULLY.
- **Talk to** a Program Director (good advice in general).
- Read the award abstracts of what has already been funded at NSF (but things can change..)

- Early Career workshop for chemists (March 26-27, CHE-2018Career@nsf.gov)
- Find mentors

Advice on Submitting a Proposal to CHE

- Submission windows: September, October
- Submitting more than one proposal to CHE per submission window is strongly discouraged.
- Submitting the same (or overlapping) research idea to more than one program at NSF is not allowed.
- Submitting a research idea to another agency is allowed (by MPS) but must be disclosed.

DCLs for Chemists

Emphasis areas and Dear Colleague Letters (DCLs) in CHE

- **Data-Driven Discovery Science** in Chemistry (D3SC) – DCL (coming)
- **Computational and Data-Enabled Science and Engineering** (CDS&E) – web site
- **Optics and Photonics** – NSF-wide cross-cutting activity - web site
- **Sustainable Chemistry** – integrated in all programs
- **Improving Graduate Student Preparedness** for the Chemistry Workforce – for supplements – DCL (coming)
- MPS **AGEP**-GRS – DCL – add a student from an underrepresented group to an award – NSF 13-071
- Supplemental Funding Proposals for **International Collaboration** – supplements – DCL (coming)
- **NSF-NIST Interaction** in Basic and Applied Scientific Research in BIO, ENG & MPS – supplements – NSF 11-066

Supplements

Improving Graduate Student Preparedness for Entering the Workforce (Chemistry deadline ~May 2017)

DCL 16-067

- Open to PhD students currently supported on an NSF chemistry individual investigator or small group research grant. PI applies for funding.

- The maximum supplement request is $12,000.

- Chemistry expects to fund 10–15 supplements in FY17.

- Opportunities can include:

    - 1 to 3 month internships in industry, government laboratory, policy organization.

    - Professional development course including entrepreneurship training or science communication.

Supplements

MPS Alliances for Graduate Education and the Professoriate (AGEP)-Graduate Research Supplement (GRS) DCL 13-071

- Goal: increase the number of underrepresented minorities in STEM and enhance their preparation for faculty positions.

- Available to PIs with current MPS research awards whose institutions are in the AGEP program (for AGEP site list visit www.nsfagep.org/).

- Funding will support one (additional) Ph.D. student for 1 year, renewable up to 3 years.

- Students must not have any other government-funded support.

Supplements

Career-Life Balance (CLB) Supplement

- Goal: To provide additional funding support when individuals have been granted an NSF-approved medical deferral for dependent-care (family leave) situations.

- Funding will cover up to $12,000 in salary for 3 months:
    - DCL 13-099: GRFP institutions can apply for GRFP students on family leave.
    - DCL 13-109: PIs of research awards can apply for postdoctoral researchers on family leave.
    - DCL 13-075: CAREER award PIs on family leave can apply for themselves.

2017 Dear Colleague Letter: Data-Driven Discovery Science in Chemistry (D3SC)

- Accelerate the **<u>discovery</u>** of more efficient or selective **catalysts**

- Advance the **<u>predictive design</u>** of new chemical species and/or synthetic reactions

- **<u>Forecast</u> synthetic conditions** and **elucidate structure/property relations** based on existing chemical datasets

- Enable real-time chemical data collection and processing for **rapid <u>identification</u>** and **<u>correlation</u>** of key events **during** chemical measurements

- Identify novel ways of sharing and utilizing chemical data derived from multiple instruments, datatypes, and locations

- Develop innovative approaches for integrating, correlating, visualizing, analyzing, or mining chemical simulation or measurement data to provide new chemical insights.

Computational and Data-Enabled Science and Engineering (CDS&E)
Mathematics, Astronomy, Chemistry, Material Science

- Promotes the creation, development, and application of the **next generation of mathematical, computational and statistical theories and tools**.

- Encourages adventurous ideas that generate **new paradigms** and that create and apply **novel techniques**, generating and utilizing digital data in innovative ways

- Encourages ideas at the **interface between scientific frameworks, computing capability, measurements and physical systems** that enable advances well beyond the expected natural progression of individual activities

In CHE, submit directly to a program.

The "Quantum Leap"

Address fundamental questions about quantum behavior and develop the means of accessing and manipulating quantum systems

- How to prepare and manipulate complex or dynamic quantum states?
- How to control material-light interactions to create new quantum phenomena?
- What are the mathematics that describe emergent quantum behavior?
- How do we design systems that use quantum states effectively?

Towards developments: quantum sensors, quantum computing, quantum communication

Dear Colleague Letter (NSF 17-053) A "Quantum Leap" Demonstration of Topological Quantum Computing – **Division of Material Research**

Quantum Information and Computation for **Chemistry** – Workshop in 2016

NSF-Wide Programs, managed in CHE

Funding Mechanisms

- <u>"Unsolicited" Individual Investigator award</u> (typically 3 years; could be collaborative)
- <u>RUI</u>: A proposal mechanism that allows PIs at PUIs to engage in research with undergraduates.
- <u>GOALI</u>: Promotes university-industry <u>partnerships</u> by making project funds or fellowships/traineeships available to support an eclectic mix of industry-university linkages.
- <u>EAGER</u>: Early Concepts for Exploratory Research (out of the box, highly innovative, risky ideas, explore with program director, internally reviewed. (Max of 300K, 2 years)
- Discontinued: INSPIRE, RAISE

Research in Undergraduate Institutions (RUI)

- **Designed to support research in predominantly undergraduate institutions (PUI)**
  - *Eligibility Certificate*
- **RUI is a mechanism, not a separate funding stream**

- **Housed within the specific research division and have *programmatic deadlines or submission windows***
- **The title should include "RUI"**

Research in Undergraduate Institutions (RUI) – NSF 14-579

- **Reviewers instructed the publication rate, the pace of research, the scope of the may differ. The quality should not differ**

- Budget request can be the same as for Ph.D. granting institutions

- **"RUI impact statement" (5-page maximum) must accompany the research proposal (15-page) Department record, student recruitment, student inclusion success metrics, teaching loads**

- RUI impact statement does not eliminate the need to discuss broader impacts in the 15 page project description

Should I submit a RUI or a 'regular' proposal?

- **Is your institution RUI eligible?**

- **Benefits are the RUI Impact statement and the recognition of the teaching/research environment at the institution and its impact on pace and scope of work.**

- **The budgets can be the same.**

- **RUI proposals are reviewed with other unsolicited proposals and the main Merit Review Criteria are the same**

- **THERE IS NO DOWNSIDE!!**

CAREER Awards

- **NSF wide. Support of junior faculty who exemplify the teacher-scholar model.**

- **Housed within the specific research program, with a separate deadline, July 22, 2016 for MPS**

- **Only for junior faculty member, untenured, assistant Professor, NSF supported area**

- **CAREER awards are 5-year awards. $400K minimum. ~$100-$130K/annual. Equipment possible**

- **Three submissions only**

Am I eligible for the CAREER Program?

- Proposers must meet all of the following eligibility requirements:

- By the Directorate's deadline for submission of CAREER proposals:
    - Hold a doctoral degree;
    - Be untenured; and
    - Have not previously received an NSF PECASE or CAREER award (prior or concurrent Federal support for other types of awards or for non-duplicative research does not preclude eligibility);

    AND

    - By October 1st following the deadline for submission of CAREER proposals: Be employed in a tenure-track position (or tenure-track-equivalent position) as an assistant professor (or equivalent title) at an institution located in the U.S., its territories, or possessions, or the Commonwealth of Puerto Rico, that awards degrees in a field supported by NSF;

    OR

    - Be employed in a tenure-track position (or tenure-track-equivalent position) as an assistant professor (or equivalent title) at an organization located in the U.S., its territories or possessions, or the Commonwealth of Puerto Rico, that is a non-profit, non-degree-granting organization such as a museum, observatory, or research lab.

- Associate Professors, with or without tenure, are not eligible for the program.

CAREER Proposals

- **CAREER proposals must integrate education and research. Research plan, educational plan, their integration, broader impacts. Be creative!**

- **CAREER highlights the independent research award - no co-PIs (unfunded collaborators are allowed)**

- **Consider appropriate scope and duration – want to achieve balance between strong focus and attainable research goals**

CAREER Proposals

The Project Description should include:

- A description of the proposed research project, including preliminary supporting data where appropriate, specific objectives, methods and procedures to be used, and expected significance of the results

- A description of the proposed educational activities, including plans to evaluate their impact on students and other participants

- A description of how the research and educational activities are integrated with one another

- Preliminary data? – modeling, literature basis

- Long term and short term goals

Should I submit a CAREER or 'regular' proposal?

- **Are you eligible?**

- **Are you a teacher-scholar model?**

- **Benefits are longer timeframe, prestige.**

- **No coPIs although collaborations are possible. Integration of educational and research plans.**

- **PUI faculty do get CAREER awards. Not restricted by institution type.**

Instrumentation and Facilities
MRI-Major Research Instrumentation

- **Foundation-wide activity (NSF cross-cutting) administered by both the Office of Integrative Activities (OIA) and individual directorates**

- **Emphasis on research; should also improve quality of student education, research and research training**

- **Should have research active faculty with a record of publishing in peer-reviewed journals**

- **Multi-user proposals**

MRI cont'd

- **Research instrumentation at Undergraduate Institutions may (should) be used in undergraduate teaching laboratories as well as in undergraduate research experiences.**

- **The request funds from NSF may range from $100,000 - $4 million.**

- **Non-Ph.D.-granting institutions of higher education are exempt from the cost-sharing requirement.**

- **See details in solicitation NSF 15-504**

Various supplement Programs

ROA Supplement - Research Opportunity Awards

RET Supplement - Research Experiences for Teachers (secondary school teachers)

REU Supplements (for students to join your research)

ROA - Research Opportunity Award: Supplement Opportunity

- ROAs enable faculty at PUIs, (and community colleges) to pursue research as visiting scientists with NSF-supported investigators at other institutions.

- Goal is to "enhance the research productivity and professional development of science faculty at undergraduate institutions through research activities that explore the emerging frontiers of science". It also enhances teaching.

- Most frequently, ROA activities are summer experiences, but partial support of sabbaticals may also be provided.

- Support for salary or stipend for undergraduate faculty, travel to host lab and/or to attend meetings, research supplies

Research Experiences for Undergraduates

Goals:

– Initiate and conduct projects that engage a number of undergraduate students in research.

– Involve in research students who might not otherwise have the opportunity, particularly those from academic institutions where research programs are limited.

Programs to Broaden Participation of Underrepresented Groups in STEM

Build an increasingly diverse, engaged, and high-performing workforce by fostering excellence in recruitment, training, leadership, and management of human capital...
(NSF Strategic plan)

INCLUDES

(Inclusion across the Nation of Communities of Learners of Underrepresented Discoverers in Engineering and Science)

*Networked-relationships *Talent from all sectors

*STEM workforce *Spur a national conversation for "bold visions"

*Scale social innovations through collective impact, networked communities, and/or strategic partnership

1. Launch Pilots: planning for partners to share goals and purposes.
2. Alliances: leverage pilots adding new partners.
3. Backbone organizations: provide increased communications, interoperability, coordination, support and accountability for the Network of Alliances.

<u>NSF 17-522 (closed) : Design and Development of Launch Pilots</u>
networks and consortia from different sectors
comprehensively solve a specific STEM-inclusion problem
innovative models, networks, partnerships, technical capabilities and
research

<u>NSF 15-591 (Nov. 27): Coordination Hub</u>
Communication and Networking, Network Assistance and
Reinforcement, Visibility and Expansion.
1 award, $10.5M total, 5 years

<u>NSF 17-111 (Dear Colleage Letter): Expand the NSF INCLUDES National</u>
<u>Network (Nov 13, 2017; April 16, 2018)</u>
EAGER proposals, Conference Proposals: to EHR (nsfincludes@nsf.gov)
Supplements to any current award

Does NSF have any HSI-specific programs?

Dear Colleague Letter: Improving Undergraduate STEM Education in Hispanic Serving Institutions (HSIs) (NSF 17-092)
soliciting conference proposals to inform the design of NSF's new Hispanic-Serving Institution (HSI) program, to be established in fiscal year 2018. Proposed conferences are expected to result in the identification of the most critical challenges and opportunities regarding undergraduate STEM education at two-year and four-year Hispanic-Serving institutions of higher education, and potential actionable solutions that fall within NSF's mission, policies, and practices.
Through Sept. 30, 2017

from www.hacu.net...

May 4, 2017

Congress enacts funding for a NSF program focused on HSIs

On May 4, funding for a National Science Foundation (NSF) grant program supporting undergraduate science, technology, engineering, and mathematics (STEM) education at Hispanic-Serving Institutions (HSIs) was approved by the 115th Congress as part of the final Fiscal Year 2017 Omnibus spending bill. This new funding has been a key goal of the Hispanic Association of Colleges and Universities (HACU) for many years.

The Commerce-Justice-Science portion of the appropriations bill "...*also directs NSF to establish an Hispanic Serving Institution (HSI) program at no less than $15,000,000 as authorized in 42 U.S.C. 1862o-12. The agreement encourages NSF to use this program to build capacity at institutions of higher education that typically do not receive high levels of NSF grant funding.*"

Division of Human Resource Development (HRD/EHR) programs

- Historically Black Colleges and Universities Undergraduate Program (HBCU-UP)
- Centers of Research Excellence in Science and Technology (CREST) and HBCU Research Infrastructure for Science and Engineering (RISE)
- Louis Stokes Alliances for Minority Participation (LSAMP)
- Tribal Colleges and Universities Program (TCUP)
- Alliances for Graduate Education and the Professoriate (AGEP)
- Increasing the Participation and Advancement of Women in Academic Science and Engineering Careers (ADVANCE)
- ..

Proposal Review

NSF Review Criteria: Two criteria, three principles, and five elements

- What is the potential for the proposed activity to:
  - A) Advance knowledge and understanding within its own field or across different fields (<u>Intellectual Merit</u>);
  - B) Benefit society or advance desired societal outcomes (<u>Broader Impacts</u>)
- To what extent do the proposed activities suggest and explore **creative, original, or potentially transformative concepts**?
- 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?
- How well **qualified** is the individual, team, or organization to conduct the proposed activities?
- Are there **adequate resources available** to the PI (either at the home organization or through collaborations) to carry out the proposed activities?

Merit Review Criterion: Intellectual Merit

All NSF projects should be of the highest quality and have the potential to advance, if not transform, the frontiers of knowledge.

- The Intellectual Merit is the contribution that your research makes to the knowledge base and how that advances knowledge in the field

- Questions one might address:
  - What is already known and what will your research add?
  - What might the results of this project do to enhance or enable research in your or other fields?
  - Why is your contribution important to your field of science?
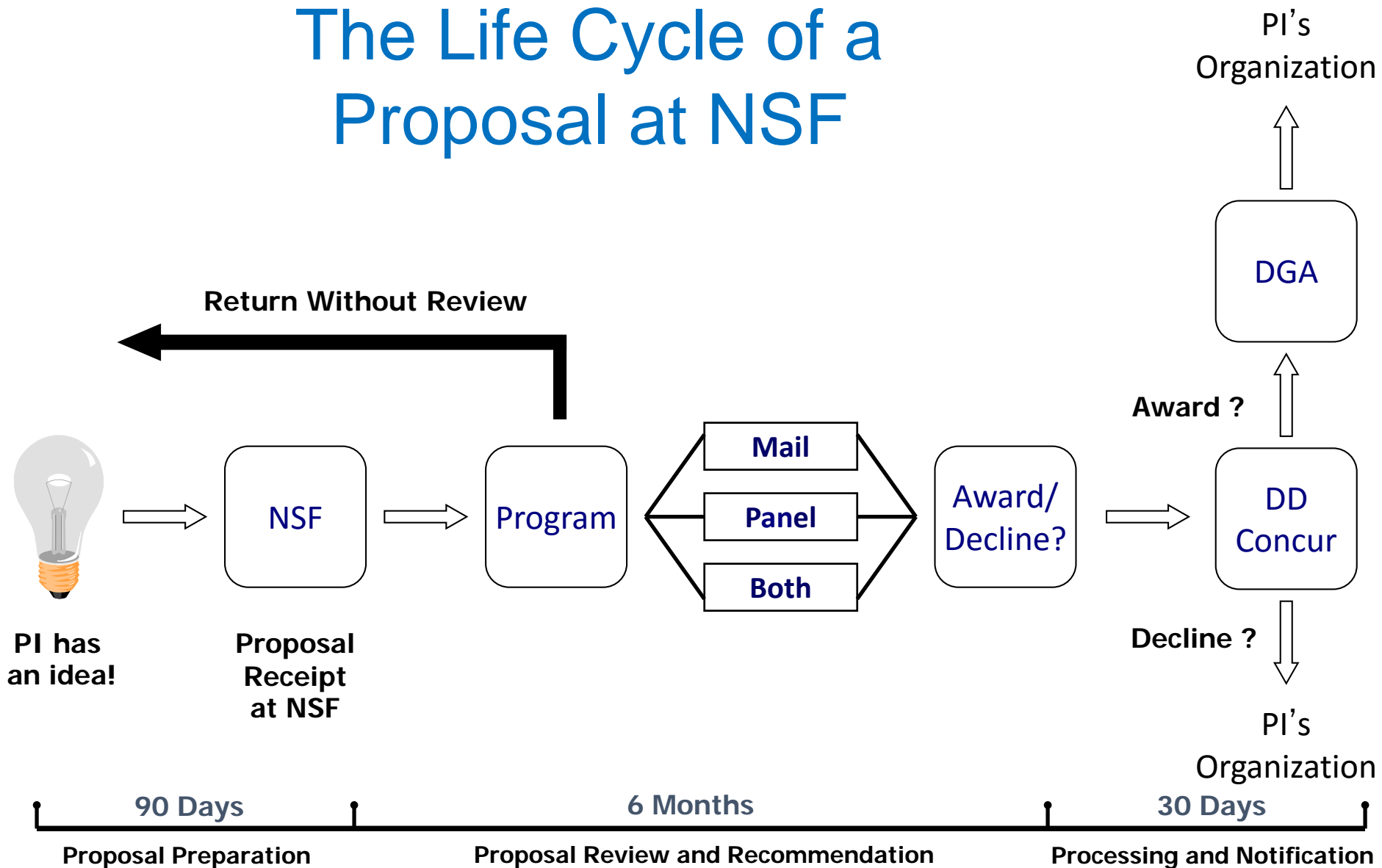 - How will your results be "transformative"?

Merit Review Criterion: Broader Impact

NSF projects, in the aggregate, should contribute more broadly to achieving societal goals. These broader impacts may be accomplished through the research itself, through activities that are directly related to specific research projects, or through activities that are supported by, but are complementary to, the project

- The Broader Impact focuses on the potential to benefit society and contribute to the achievement of specific, desired societal outcomes as a result of your research project

- Means to benefit society include:
  - Economic/environment/energy/health/safety
  - Education and training
  - Providing opportunities for underrepresented groups
  - Improving research and education infrastructure
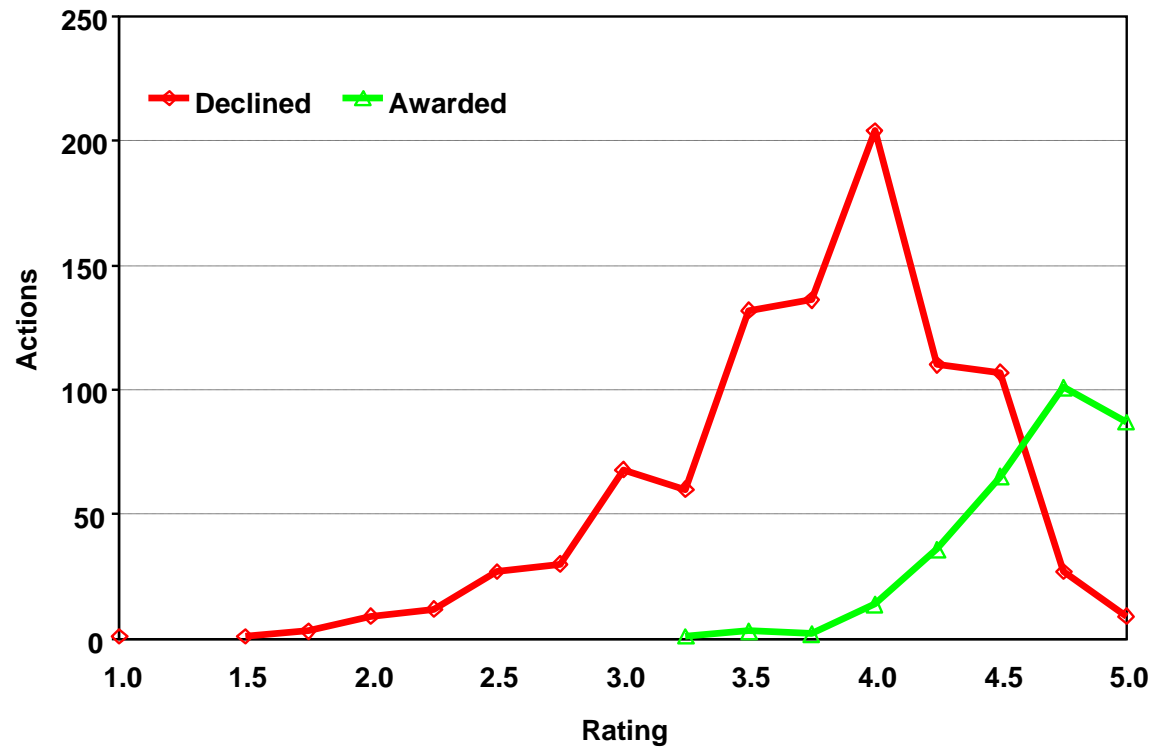 - Disseminating products of the research

The Life Cycle of a Proposal at NSF

PI's Organization

DGA

Return Without Review

Award ?

Mail

Panel

Both

NSF

Program

Award/ Decline?

DD Concur

Decline ?

PI has an idea!

Proposal Receipt at NSF

PI's Organization

90 Days

6 Months

30 Days

Proposal Preparation

Proposal Review and Recommendation

Processing and Notification
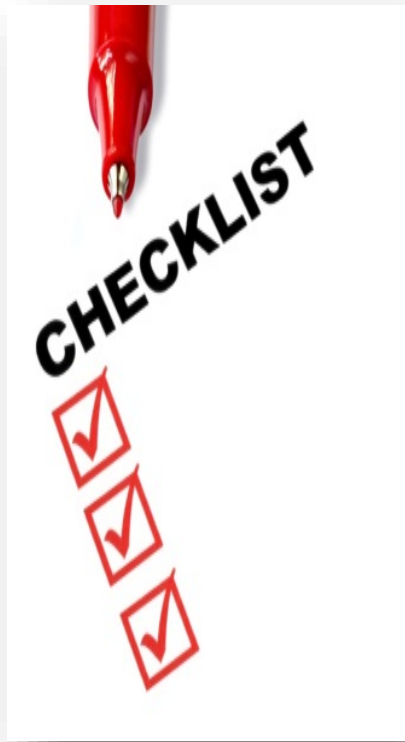
Results of Merit Review (CHE)

E = 5
V = 4
G = 3
F = 2
P = 1

Hints for writing successful proposals

Five Key Elements

1. Do you have a good idea?

2. Are you the right person to do the research?

3. Do you have a solid proposal for conducting the research?

4. Do you have all the resources to do what you propose to do?

5. Do you know how to evaluate your results?

Proposal Development Strategies:

Read the PAPPG!

What details should you glean
from the solicitation?

- Overall scope and mission

- Instructions (deviations from the PAPPG)

- How your proposed project fits with the solicitation

- Review procedures and criteria

- Deadlines

Developing your Proposal

Key Questions for Prospective Investigators

- What has already been done?
- Develop objectives or hypotheses for forward progress
- Obtain preliminary data
- Why is the work important or unique?

Proposal Development Strategies:

What Do You Need Besides $???

- Prepare to do the project

  - How are you going to do the work?
  - Realistically assess needs
  - Do you have the right team?
    - Determine available resources
    - Present to colleagues/mentors/students

- Determine possible funding sources
  (NSF may not be the right or the only one)

Proposal Development Strategies:

Read the Program Announcement carefully

Any special requirements?

Who is the target audience?

Talk to:

NSF Program Officer

Your proposed project

Clarifications on specific program requirements/limitations

Current program patterns

Your Organization's Sponsored Projects Office

- University guidelines for applications
- Institutional Review Board "IRB" Approvals

e.g. institutional Animal Care and Use Committee (IACUC) approvals

Common reasons for declinations:

- Technical concerns
- Lack of innovation
- Lack of a focused plan (including plan B..)
- Scope too ambitious
- Not relevant to program or not responsive to program announcement

If your proposal was declined:
- Read reviews & Panel summary carefully
- Read PO comments – not all criticisms are equally relevant
- Don't be defensive – take comments as guidance for future improvements
- Contact the PO to discuss best path forward

Fellowships and Opportunities

GRFP – Graduate Research Fellowship Program

GRIP – Graduate Resarch Internship Program

GROW – Graduate Research Opportunities Worldwide

PRFs -

Graduate Research Fellowship Program

Goals

- Select, recognize, and financially support <u>early in their careers</u> individuals with demonstrated potential to be high achieving scientists and engineers

- Broaden participation in S&E of underrepresented groups, including women, minorities, persons with disabilities, and veterans

Key Elements

Five Year Award – $138,000/Fellow

Three years of support

$34,000 Stipend per year

$12,000 Educational allowance to institution

Career Life Balance (family leave)

Supercomputer access: XSEDE

Professional Development Opportunities

GROW : International Research

GRIP : Federal Internships

Recent Change: Graduate students are limited to only 1 application to the GRFP, submitted either in the 1st year or in the 2nd year of graduate school.

Graduate Research Opportunities Worldwide

Graduate Research Internship Program

USDA — U.S. Department of Agriculture	U.S. Department of the Interior
U.S. Department of Commerce	U.S. Department of Transportation
U.S. Department of Defense	Environmental Protection Agency
U.S. Department of Education	Office of Science and Technology Policy, Executive Office of the President
U.S. Department of Energy	National Aeronautics and Space Administration
U.S. Department of Health and Human Services	National Science Foundation
U.S. Department of Homeland Security	Smithsonian Institution

And finally… general advice from Anne-Marie for faculty members

- Be a mentor and seek mentors
- Volunteer to be a reviewer, panelist
- Volunteer to be a GRFP Panelist, encourage your students to apply
- Subscribe to NSF newsletters, CHE Newsletter
- Attend Fall ACS meeting – CHE townhall, "speed coaching"
- Attend CHE Early Career Workshop (March 26-27)
- Attend NSF Days (AL/Feb, NM/March) or NSF Grant Conferences.. (Nov. 13-14 Phoenix)

More advice from Anne-Marie regarding proposal submissions

- Subscribe to NSF newsletters, CHE Newsletter
- Read the PAPPG (there are frequent changes)
- Read the Proposal & Award Policy Newsletter
- Communicate with your Sponsored Research Office
- Ask early, ask often
- Contact Program Officers before submitting a proposal to make sure you are targeting the right program
- Read the most recent program announcements carefully, there are frequent changes (MRI, CAREER, RUI, GRFP…)
- For technical questions regarding proposal/report/etc. submission, call the Fastlane Help Desk (800-673-6188)

You are subscribed to Program Announcements and Information - Engineering (ENG), including NSF-wide for National Science Foundation Update. This information has recently been updated, and is now available.

Dear Colleague Letter: NSF Accepting Proposals Related to Hurricane Harvey

Available Formats:
HTML: https://www.nsf.gov/pubs/2017/nsf17128/nsf17128.jsp?WT.mc_id=USNSF_30&WT.mc_ev=click
PDF: https://www.nsf.gov/pubs/2017/nsf17128/nsf17128.pdf?WT.mc_id=USNSF_30&WT.mc_ev=click

Document Number: nsf17128

This is an NSF Program Announcements and Information - Engineering item.

This e-mail update was generated automatically based on your subscription to the category listed above. Some updates may belong to more than one category, resulting in duplicate messages.

Subscriber Services: Manage Preferences | Unsubscribe | Help | Contact NSF

Follow NSF:

Advice from Anne-Marie for students

- **Seek mentors**
- For UG students: get involved in research
- Seek out REU opportunities at other institutions
- Apply for GRFP
- Develop your own "Broader Impacts" portfolio
- Be a mentor
- For GS: apply for GRFP (only one chance as GS)
- Seek professional development opportunities

And Finally:

Don't take my word for it.

Check early, check often.

Questions??