2025 NSF Division of Chemistry Early Career Investigator Workshop (ECIW)

- 11am EDT: Welcome!
- Presentation on proposal submission and review processes
- 12:00pm: Mock panel review
  - <break>
- 1:30pm: Program-specific meetings and break-out rooms
- 2:30pm: Concluding remarks

Some useful links:

CAREER: https://www.nsf.gov/funding/opportunities/career-faculty-early-career-development-program

Division of Chemistry: https://www.nsf.gov/mps/che

PAPPG: https://www.nsf.gov/policies/pappg

Updates on NSF Priorities: https://www.nsf.gov/updates-on-priorities

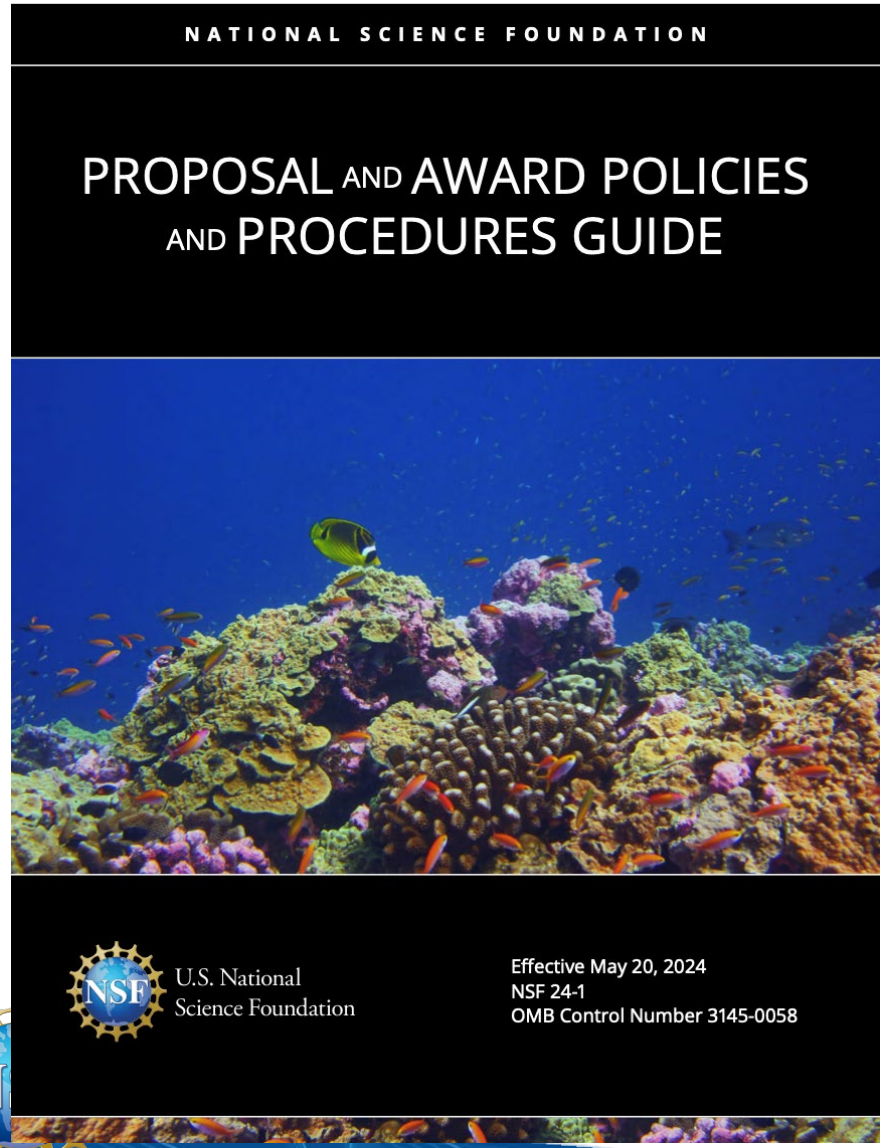
NSF Implementation of Recent Executive Orders: https://www.nsf.gov/executive-orders

Proposal submission, review, award, & decline process

NSF-CHE Early-Career Investigator Virtual Workshop 2025

Greg Dudley and John Jewett, presenters

PAPPG: Instructions for Proposal Prep



- **Proposal and Award Policies and Procedures Guide (PAPPG)**

  Describes the requirements and review criteria for an NSF proposal

  PAPPG requirements must be followed when writing and assembling a proposal, with additional requirements specified in a solicitation

- **Funding Calls: Solicitation and DCL**

  Describes funding opportunity w/provisions modified from the PAPPG.

  Can be ongoing or one-time competitions

  Examples:

  - ✓**CAREER** (NSF 22-586)
  - ✓Division of Chemistry: ***Disciplinary Research Programs*** solicitation (**CHE-DRP**, NSF 22-605/22-606)
  - ✓Major Research Instrumentation: MRI
  - ✓Research Experience for Undergraduates: REU
  - ✓Dear Colleague Letter: DCL

https://new.nsf.gov/policies/pappg/24-1

The NSF CAREER Program

The Faculty Early Career Development (CAREER) Program is a Foundation-wide activity that offers the National Science Foundation's most prestigious awards in support of early-career faculty who have the potential to serve as academic role models in research and education and to lead advances in the mission of their department or organization.

- Only for tenure-track **assistant professors** (or equivalent). There is NO time limit from the date of your degree. Each PI has only three attempts. A proposal that is returned without review or withdrawn does not count against the three attempts.
- **A five-year award**
- Project description (15 pages) should include a research plan, **an integrated education plan,** and a presentation of broader impact activities.
- Requires a **letter of support from your department chair**. This letter must state that you are eligible.

Proposals are evaluated by the same criteria as all NSF proposals:
Intellectual Merit and **Broader Impact**

Merit Review Criteria

This is what the reviewers consider!

Intellectual Merit: The Intellectual Merit criterion encompasses the potential to advance knowledge

- *(will the project support innovation?)*

Broader Impacts: The Broader Impacts criterion encompasses the potential to benefit society and contribute to the achievement of specific, desired societal outcomes.

- *(will the project make a difference?)*

Five Elements for Both Criteria

- What is the potential for the proposed activity to:
  - Advance knowledge and understanding within its own field or across different fields (Intellectual Merit); and
  - Benefit society or advance desired societal outcomes (Broader Impacts)?
- 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?

Bottom line: A good proposal is a good idea, well expressed, with a clear description of the methods for pursuing the idea and a plan for evaluating and disseminating the findings.

PAPPG: https://www.nsf.gov/policies/pappg

CAREER Proposal Strategy

- **Plan A:** Write and submit a proposal; get funded on your first try.

Reality check: NSF has resources to fund only a fraction of proposals; in the Chemistry Division; historically, this is ~20-30%.

- **Plan B:** Resubmit a revised proposal on the same topic *or* choose a different topic.

Good news: You have ***three tries*** (while an Assistant Professor)

More good news: Reviews, panel summaries and your Program Officer can provide guidance on how to succeed in a resubmission.

What happens after your proposal is reviewed?

- Based on the reviews and other considerations, the program makes a recommendation to:
  - Award

    or

  - Decline

- The Division Director must concur (sign off) on the recommendation.
- This process can take 5 – 6 months (historically).

Either way (award or decline), you will receive a letter from the Division Director

- The letter will include a link to your reviews on Research.gov including a **panel summary** *if your proposal was reviewed in a panel*
- You will also receive between 3 – 5 verbatim **reviews** with substantive commentary.
  - Each review reflects the views of the individual reviewer
- You will also see **PO comments**. These are useful because they summarize the basis for the program recommendation and can provide some guidance.

What Scores Look Like

Myth:
All E *needed* to get funded

The review does not end here.

- Your reviews will have a score of E, V, G, F, or P

  (there are also hybrid scores like E/V, V/G etc.)

The scores have definitions

- Excellent (E): Outstanding proposal in all respect, deserves highest priority for support.
- Very Good (V): High quality in nearly all respects, should be supported if at all possible.
- Good (G): A quality proposal, worthy of support.
- Fair (F): Proposal lacking in one or more critical aspect, key issues need to be addressed.
- Poor (P): Proposal has serious deficiencies.

Panel Summary

- Unlike a review, the panel summary is a consensus document written collaboratively and reflecting the opinions of all panelists.
  - It captures the discussion, including agreements and differences.
- Panelists rank proposals with respect to one another.
- Many ranking schemes exist at NSF;
  in CHE we have adopted High, Medium and Low Priority (HP, MP, LP)
  - Note: Your panel summary will tell you if you are HP, MP or LP, but not where your proposal ranked within the category

Program Recommendations

- Reviewers and panels thus provide ***advice*** *to the program.*
  - The recommendation on award or decline is made by the Program – a small group of program directors in a specific programmatic area within chemistry.
  - Reviews are a very important component of the decision, *but not the only one*.
  - The program analyzes the proposal, as well as the substance and fairness of reviews and other factors when formulating their recommendations to the Division and Agency.
- There are two options: award or decline.

Award!

- You will get a request for an updated current and pending support form first. This is to make sure there is no other funding overlapping with the proposal
  - (this is not a recommendation of award)
- The Program Director will contact you with the good news that your proposal will be *recommended* for funding.
  - (this is not a notice of award)
- They will request a draft of a public abstract and perhaps a revised budget.
  - The revised budget must be submitted through Research.gov and your SRO must sign off.
  - The official recommendation must be approved by the Division Director and processed by the Division of Grants and Awards.
- The actual award comes from the agency to your institution

Decline

- Please don’t take it personally.
  - The success rate for CHE programs is 20-30%.
- This is not a reflection on your merits as a scientist.
- It is normal to be discouraged… for a while.

Macdonald, J. E. “The Rituals of Rejection”
Chem. Mat. **2024**, *36*, 3055-3057.

Typical Reviewer Comments for Declines

The topic:

- Not important to chemistry
- Not innovative or creative
- Science is routine or incremental
- Not distinct from mentor
- More applied than fundamental

The vision:

- Needs a clear hypothesis
- What important scientific questions are being asked?
- Scope is too *narrow* for five years of support
- PI proposes *too much work* for five years
- Poorly motivated
- Not clear where project is going
- Not clear how pieces fit together

The science:

- Not convinced it will work
- Not enough detail to evaluate
- Needs proof of concept results
- PI has no plan B or C
- Too ambitious
- Not ambitious enough

Typical Reviewer Comments for Declines (continued)

Education plan:

- Not integrated with research plan
- Mostly routine faculty duties
- No assessment plan is provided
- Lacks innovation
- Uninspiring

Broader Impacts (scientific and societal)**:**

- Research will have a narrow scientific impact
- PI shows little concern for outreach or mentoring students
- No assessment plant is provided

Proposal itself:

- Poorly organized and written
- Hard to separate current from future work
- Bad grammar & typos
- Figures are illegible
- Lacks rigor
- Too technical
- Research plant not well articulated
- Figures do not support text

Broader Impacts (Societal)

The principles of merit, competition, equal opportunity, and excellence are the bedrock of the NSF mission. NSF continues to review all projects using Intellectual Merit and Broader Impacts criteria.

NSF's broadening participation activities, including activities undertaken in fulfillment of the Broader Impacts criterion, and research on broadening participation, must aim to create opportunities for all Americans everywhere.

These efforts should not preference some groups at the expense of others, or directly/indirectly exclude individuals or groups. Research projects with more narrow impact limited to subgroups of people based on protected class or characteristics do not effectuate NSF priorities.

6/3/2025 from: https://www.nsf.gov/updates-on-priorities

The Next Steps: Resolve to Succeed

- **Read** the written reviews, panel summary, and PO Comments, *not just the ratings*. Do so dispassionately.
- Make a list of "to do" items that emerge from the reviews. What are the:
  - strengths? *Emphasize these*
  - weaknesses? *Address these*
- It is often helpful to discuss your reviews with the NSF program director who managed your proposal.
  - You should email the program director and arrange a time for the discussion so they can be better prepared. (Take time to cool off first, if needed.)

Speaking / meeting with the Program Director

- Be prepared: read your reviews, have a list of questions.
- Do not waste your meeting time criticizing the reviews or reviewers.
- Do not expect specific suggestions on how to do your research.
- Listen! Our goal in these calls is to help you understand *why* the proposal was declined to guide future efforts.

Planning to Write a Revised Proposal

Note:
Proposal ≠ Paper

- Revision or entirely new topic? This year or next?
- Read the panel summary and reviews again. Make a detailed plan to **build on your strengths** and **address weaknesses.**
- In a revision, *do not* address specific reviewers; *fix* the problems they identified. **New reviewers will not see the prior reviews, and the panelists will be different.**
- Think about organization and clarity. Do you clearly distinguish between current vs. planned research? Is your proposal understandable by non-experts?
- Get more preliminary/proof of concept results to establish and support feasibility.
- Enhance your education plan. Can you better integrate this with research? Can you connect with other campus programs? Make sure that *YOUR* contribution stands out.

Writing the Revised Proposal

- Read the panel summary and reviews again. Does your improvement plan address the issues?
- Update your literature citations.
- Block off time to **hide in a quiet place** and improve your draft. Focus on writing, effective schemes and clarity of ideas.
- Is your proposal engaging to read? Does it tell a story?
- If you get writer's block, focus on a different section for a while. Take a breath of fresh air.
- Enlist colleagues and students to critique your proposal draft because it is important to be succinct.
- Get help from your sponsored research office.

Submitting the Revised Proposal

- Edit and proof your draft. Repeat…
- Have ~~a~~ trusted colleague**s** critique your draft
- Update your literature citations (again).
- **Reflect**! Have you addressed all the problems? Is your proposal "accessible" to reviewers?
- Assemble all the documents to submit.
- Work with your Sponsored Research Office to submit the proposal. Pay attention to *their* deadlines.

- Avoid going to the brink!

The proposal submission deadline (at 5pm, your institution's local time) is a hard deadline.

Questions?

- **Please feel free to reach out to your Program Directors**
  (that is, the PDs from your program(s) of interest), with any questions; and/or
- jot down your questions to discuss later today
  during the program meetings and break-out rooms; and/or
- email a program director

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- Program-specific meetings and break-out rooms
  - Chemical Catalysis (CAT): **Ken Moloy – passcode: 847061**
  - Chemical Measurement and Imaging (CMI): **Colby Foss – passcode: 616921**
  - Chemical Mechanism, Function and Properties (CMFP): **Tingyu Li – passcode: 580052**
  - Chemical Structure and Dynamics (CSD): **John Papanikolas – passcode: 307412**
  - Chemical Synthesis (SYN): **John Protasiewicz – passcode: 137406**
  - Chemistry of Life Processes (CLP): **P. Shing Ho** & **Pumtiwitt McCarthy – passcode: 885475**
  - Chemical Theory, Models and Computational Methods (CTMC): **Richard Dawes – passcode: 735343**
  - Environmental Chemical Sciences (ECS): **Maggie Capooci – passcode: 547876**
  - Macromolecular, Supramolecular and Nanochemistry (MSN): **Suk-Wah Tam-Chang** & **Stephen Boyes – passcode: 267583**

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- Subscribe to CHE-Comm:
  https://public.govdelivery.com/accounts/USNSF/subscriber/new?topic_id=USNSF_439

- Subscribe to general NSF news:
  https://public.govdelivery.com/accounts/USNSF/subscriber/new
  - You can select different categories of news to receive.