Funding Resources for Early-Career Scientists

APS DNP Education Committee's workshop on Professional Development for Early-Career Scientists

DNP 2024
Fall Meeting of the APS
Division of Nuclear Physics
October 7-10

About this session

First part (these slides): most useful if you have never applied for funding before

Second part (the panel): likely useful across the board

Third part (Q&A): make the best use of it!

It is our hope that after this session you will:
- know the basic elements of a proposal
- be able to think strategically about your research idea and the corresponding budget
- be able to avoid common pitfalls
- understand how much time it takes to prepare a competitive proposal

Three basic take-aways:

***** read the call *****

call = solicitation = FOA = NOFO

(eligibility, requirements, review criteria)

***** be situationally aware *****

(be aware of national and agency priorities, research landscape, realistic costs, timelines)

***** talk to your PM *****

PM = program manager

Types of grants (***NOT a complete list***)

- where majority of people submit their proposals:
  - DOE standard open solicitation (“open FOA”)
  - NSF Investigator-Initiated Research Projects (“MPS-PHY”)

pro tip: you can submit to the “open FOA” at any time, but it **won’t** be reviewed at any random time; depends on the program

***** read the call *****

- for early-career scientists:
  - DOE Early Career Research Program (ECRP) (a.k.a. ECA = Early Career Award)
  - NSF Faculty Early Career Development Program (CAREER)

- to support a specific goal:
  - DOE Reaching a New Energy Sciences Workforce (RENEW)
  - NSF Ascending Postdoctoral Research Fellowships (MPS-ASCEND)
  - NSF Ascending Faculty Catalyst Awards (MPS-AFCA)
  - NSF Cyberinfrastructure for Sustained Scientific Innovation (CSSI)
  - targeted FOAs: e.g., AI/ML, nuclear data, …

- not for the PI directly:
  - DOE Science Graduate Student Research (SCGSR)
  - NSF Graduate Research Fellowships Program (GRFP)

- not federal:
  - Sloan Research Fellowship, Packard Fellowship, local institution, …

***** talk to your PM *****

Selected early-career funding opportunities: deadlines, amounts

- DOE Early Career Research Program (ECRP) (a.k.a. ECA = Early Career Award)
  "the minimum request [...] is approximately **$875,000** over five years"
  (for labs it's $2,750,000 over five years; intended to include the lab staff salary and thus to be effectively similar)
  upcoming deadline: for preapplications: ***likely*** Dec 2024—Feb 2025
  for applications: ***likely*** Mar—Apr 2025
  resources:
  - DOE NP 2024 office hours on Proposal Preparation Tips and Pitfalls: slides video
  - DOE HEP 2024 office hours on How to write a great proposal: slides video
  - DOE SC 2024 office hours on PIER plans: slides video
  - Early Career Research Program webinar January 10, 2024: slides video
  - FAQ for FY 2024 DOE Office of Science Early Career Research Program

*** read the call ***

- NSF Faculty Early Career Development Program (CAREER)
  "a minimum of **$400,000** for the 5-year duration"
  upcoming deadline: letters of intent, preliminary proposal submission: not required
  full proposals: July 23, 2025
  resources:
  - 2024 NSF CAREER Program Informational Webinar series: slides video
  - 2024 CAREER Proposal submission timeline guidance

*** talk to your PM ***

pro tip: these are HIGHLY competitive; you should not only apply to these, but also to regular calls

Typical elements of a grant proposal

- science narrative ← your great idea
- budget ← what you need to realize your great idea
- budget justification ← explain the numbers
- data management plan ← e.g., if and how you will store your data, make it available to others, etc.
- a list of past & pending support ← who else gave / is giving you money and for what
- CV in the SciENcv (Science Experts Network Curriculum Vitae) format ← reportedly a pain to deal with
- PIER plan / Broader Impacts ← how what you will do will benefit people beyond yourself
- a list of close collaborators who should not review your proposal ← NOT a list of all people in your field, all members of your collaboration, all authors on a white paper, ...

This is an incomplete list...

***** read the call *****

Wait, who submits the proposals?...

- grants, awards, etc. are ***NOT*** given to you — they are given to your institution

- you provide a lot of material, but it's your institution that submits the proposal!

- they don't do so without interacting with you as well as running some checks;
  your institution may have a specialized office that:
  — helps you develop your budget (usually it's the Sponsored Research Office = SRO)
  — checks whether you don't overcommit the institutional resources
  — might help you develop your PIER plan / Broader Impacts
  — checks the proposal for compliance
  — ...

Institutions are slow and offices have minimal times for processing requests.
Working on a budget with a SRO can take weeks.
You will NOT be able to put together a proposal at the last minute!

note: this assumes that your institution has all of these resources...

***** be situationally aware *****

What can you get for $1,000,000?

- It depends on your timeline!

- The award amounts include:
  — your grad students' tuition
  — your workforce's fringe benefits (health care, vacation, etc.)
  — your institution's indirect costs = overhead (pays your institution for enabling your research)

- Example grad student cost per year:
  salary: $34,000 tuition: $15,000 fringe benefits: $3,750 indirect costs: $21,750
  TOTAL: $74,500

- Example postdoc cost per year:
  salary: $72,000 fringe benefits: $21,500 indirect costs: $53,000
  TOTAL: $146,500

- Example 2 months of summer salary:
  salary: $25,000 fringe benefits: $4,500 indirect costs: $15,500
  TOTAL: $45,000

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  salary: $72,000
  TOTAL: $146,500

- Example 2 months
  salary: $25,000
  TOTAL: $45,000

Let's say you want to:
— hire a postdoc for 3 years
— support a graduate student for 5 years
— get summer salary over 5 years
— travel (annually $10k, $5k, and $3k for you, postdoc, & grad student)

That's a total of $1,117,000, or 127.7% of an ECA.

What if you hire the postdoc for 2 years and the grad for 4 years?
That's $888,000 = 101.5% of an ECA.

Your proposal should reflect what you can realistically achieve given the money and the relevant timelines
(e.g., your graduate student will take time to learn the necessary skills)

These numbers are also an incentive to leverage diverse sources of funding!

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Who reviews your proposal?

- peer review: proposals are sent to external reviewers (usually 4 per proposal)
- the evaluations are based on review criteria

***** read the call *****

- the time a reviewer is given to review varies: commonly 1-2 months, but in extreme cases it can be *a couple of days*; your reviewer might not have much time or they might be busy — clarity matters!
- most proposals are reviewed by *panels*:
  e.g., each proposal is read by 2-3 reviewers, who then present the case to the panel composed of all reviewers; the panel then discusses all the proposals and provides their opinion / recommendation
- whether a proposal is funded may still depend on other factors, e.g., priorities of the funding agency
- if your proposal is chosen for funding, you may still be asked to, e.g., adjust your budget

Make your reviewer's job easy.

***** be situationally aware *****

The reviewers might vary from experts to a broad audience.

***** talk to your PM *****

The panel and the Q&A

To promote free exchange of experiences and opinions during the panel and the Q&A, we asked the NSF and the DOE program managers to NOT attend this session, to which they kindly agreed.

Let us, however, stress again:
whenever you have any questions, and especially “always before you submit a proposal”, you should…

***** talk to your PM *****

catch them at the DNP, send them an email, set up a call… just do it!