PHT180 Grant Workshop: Writing Competitive NIH Proposals

JANUARY 29, 2026

NICOLE HALE

Agenda

- NIH overview and proposal preparation
- Panel discussion
- Q&A

NIH Overview

- 27 institutes and centers (ICs)
  - Funding is made through ICs
  - Each has their own mission
- Use Matchmaker to determine which IC is the best fit for your research
  - Enter your abstract to find similar funded projects
  - Can also see program officials (POs) within that IC

How to Find Funding Opportunities

- NIH no longer posts Notices of Funding Opportunities (NOFOs) in their Guide for Grants and Contracts
  - Notices are still posted there
- All NOFOs are posted on grants.gov
- NIH offers a search tool with NIH-specific filters to help find opportunities on grants.gov: https://grants.nih.gov/funding/explore-nih-opportunities

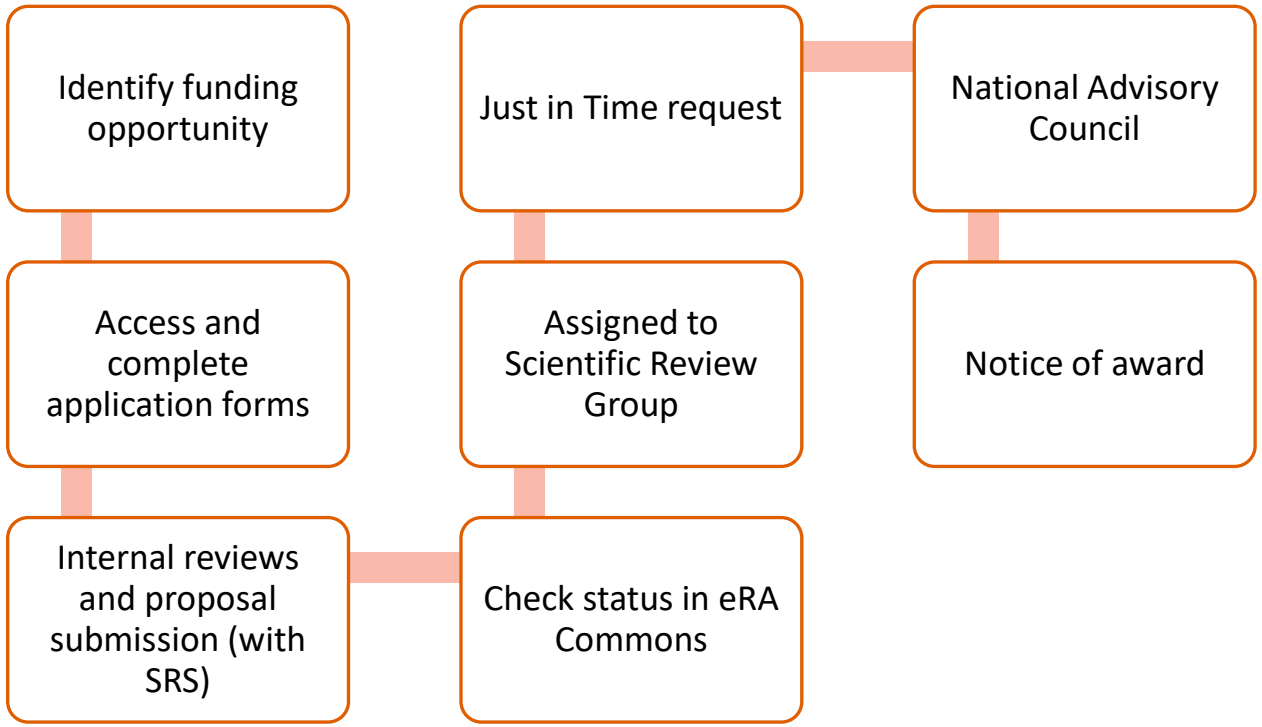
Early Stage Investigators (ESIs)

- Investigator within 10 years of final degree date (PhD or clinical training) that has not received a substantial NIH research award
- Advantages for R01 equivalent program
  - ESI applications are often prioritized for funding and may have different payline
  - Reviewed with other ESI applications
- Add date of terminal degree to your eRA Commons profile to see if you qualify as ESI

https://grants.nih.gov/policy-and-compliance/policy-topics/early-stage-investigators

Application Process

- Read the How to Apply - Application Guide for general application instructions
  - Check the NOFO and any related notices for program-specific instructions, these take precedence over the Application Guide!

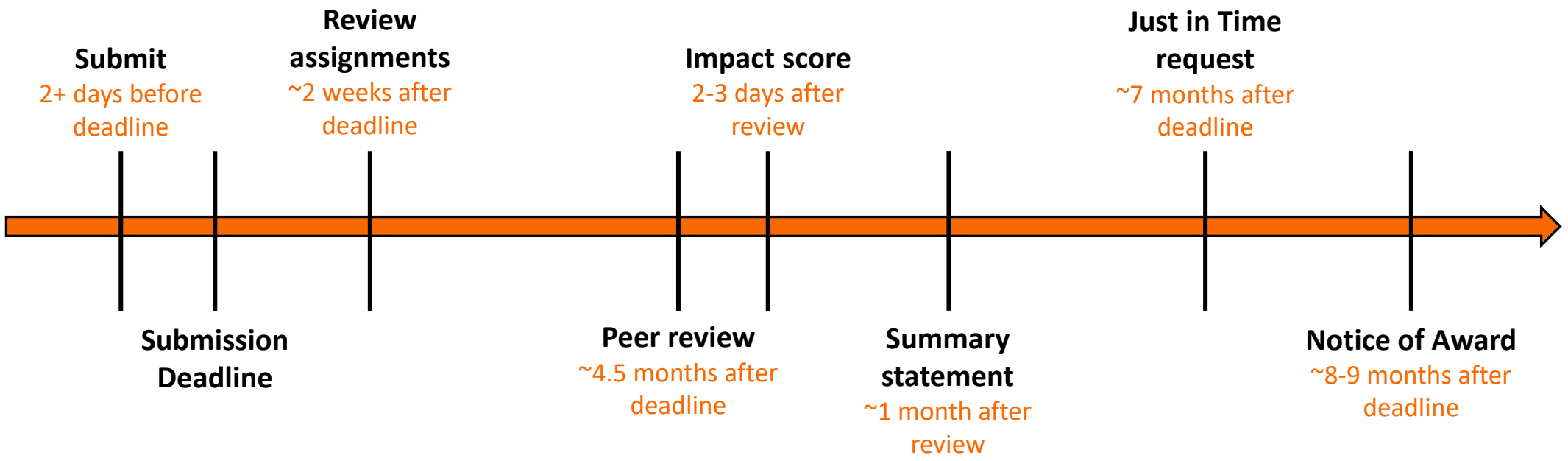


Application Process

- Scientific Review Group
  - Initial peer review
  - Applicant receives numerical impact score within 2-3 days of the meeting
  - Scientific Review Officer (SRO) prepares Summary Statement within 1 month of meeting
- Just in Time request
  - May be asked for additional information if application is under consideration for funding
  - Includes Other Support for senior/key personnel and additional documents for human subjects or live vertebrate animal research (if applicable)
- National Advisory Council
  - Council recommends applications for funding
  - IC director makes final funding decisions

Application Process

- Can take 9-12 months from submission to Notice of Award
- Plan ahead and submit early!



General Submission Tips

- Double check Related Notices section of NOFO before submission
- Talk to your PO!
  - Before submission to ensure your idea is a good fit for the opportunity and IC
  - After Summary Statement for clarification and advice on next steps if you didn't score well
  - For initial contact, email a summary of your research idea and include a specific funding opportunity and specific questions if you have them
- Share proposal with colleagues and mentors for feedback

General Proposal Writing Tips

- Have realistic and clear goals—be explicit and not overly ambitious
  - Proposed work needs to be plausible and feasible
- Be organized—make it easy for reviewers to follow
  - Have a structure with headings and paragraphs
  - Use white space
  - Guide with graphics and emphasis, but don't overdo it!
- Use clear, concise language—write for someone who is not an expert in your field
  - Share with peers, mentors, collaborators, and investigators at different levels
- Edit and proofread
- Reiterate important information throughout your proposal
- Read funded proposals

General Proposal Writing Tips

- Strong applications:
  - Strong and clear significance
  - High impact
  - Relevance to health-related problems
  - Well-qualified investigators
  - Clear rationale
  - Focused and organized with attention to detail
- Weak applications:
  - Weak impact
  - Overly ambitious
  - Not innovative or only incremental progress
  - Unclear hypothesis or rationale
  - Flawed approach
  - Proposal is messy or has a lot of typos

Simplified Peer Review Framework

- Reorganizes five review criteria into three factors
- Factor 1: Importance of the Research
  - Significance and Innovation
  - Scored 1-9
- Factor 2: Rigor and Feasibility
  - Approach
  - Scored 1-9
- Factor 3: Expertise and Resources
  - Investigator and Environment
  - Evaluated for sufficiency

https://grants.nih.gov/policy-and-compliance/policy-topics/peer-review/simplifying-review/framework

NIH Application Components

- Project Summary
- Project Narrative
- Specific Aims
- Research Strategy
- Budget
- Biographical Sketch
- Facilities & Other Resources
- Equipment
- Resource Sharing Plan
- Data Management and Sharing Plan
- Vertebrate Animals
- Select Agent Research
- Multiple PI Leadership Plan
- Consortium Arrangements
- Authentication of Biological and Chemical Resources
- Human Subjects and Clinical Trials forms

Project Summary

- Description of the proposed work that should be able to stand on its own
- Content
  - Broad, long-term objectives and specific aims of proposed work
  - Project's relation to health
  - Research design and methods
- Should be understandable to a scientifically literate reader
- 30 lines of text

Specific Aims

- Summary of your entire application
  - Explain your project direction and identify a well-defined health-related problem
  - Clear, concise summary of everything
- Want to grab reviewers' attention and sell them on your idea
  - Why is it important and exciting?
  - Why should they fund you?
- Focus on goals, anticipated outcomes, and overall impact
  - What do you want to do?
  - How will you do it?
  - What do you expect to find?
  - What are the short- and long-term impacts?
- Number of aims should be appropriate for the project duration—most often will have 3

Four Paragraph Structure

- Problem/Rationale
- Solution/Hypothesis
- Aims/Approach
- Expected Outcomes/Impact

Paragraph 1: Problem/Rationale

- Identify health-related problem with NIH/IC mission
  - Convey urgency and importance
  - Start with hook sentence to put reviewers in context and grab their attention
- Brief literature review
  - Introduce current knowledge and state of the field
  - Identify the knowledge gap that your project will fill

Paragraph 2: Solution/Hypothesis

- Outline your solution to the problem
  - Include your own preliminary data or recent work if you can
- State your hypothesis and overall goal
- Explain your rationale for the proposed project
  - Why is your project needed?
  - What will become possible with your results that is not possible now?

Paragraph 3: Aims

- Be realistic about your aims depending on project duration and budget
- Design aims with a clear, measurable endpoint
  - Avoid open-ended aims with language like study, explore, or investigate
  - Use verbs like determine or establish
- Have a focused, innovative approach—summarize your methods to accomplish your aims
- Aims should be logically related but not dependent on success of previous aims
- SMART method for writing aims
  - **S**pecific, **M**easurable, **A**chievable, **R**ealistic, **T**ime-bound
  - Clearly explain what you will be doing, don't make the reviewers figure it out

Paragraph 4: Expected Outcomes/Impact

- Summarize overall impact of your project
  - Clearly state your expected outcomes
  - Explain the impacts of those outcomes
- Be specific in your outcomes
  - What will your specific project do for the field?

Research Strategy

- Expand on what is written in your aims page with more details
- Address the following:
  - Rationale
  - Experiments
  - Data analysis
  - Potential problems and alternative approaches
  - Expected outcomes
  - Timeline
  - Future directions

General Writing Tips

- Be clear and concise
- Make it easy for reviewers to read and follow
  - Labeled sections
  - Carefully write beginning of Research Strategy, and beginnings and ends of each section
- Write so non-experts can understand
- Ensure your overall idea is clear and easy to remember
  - Repeat in different ways
  - Be explicit
  - Use titles and emphasis to guide reviewers
- General structure is background, significance, innovation, approach
  - Approach is usually ~75% of total length

Research Strategy Sections

- Significance
  - Why is your idea important?
  - Highlight critical gaps that you will address
- Innovation
  - Does your work improve an existing concept or method, or propose a new concept, method, or application?
  - Demonstrate how your work will advance the field
- Approach
  - How are you going to solve the problem?
  - Include preliminary data if available
  - Demonstrate that your project is feasible and explain the potential impact it will have

Significance

- Explain the problem
  - Why is it important?
  - What has been tried before?
  - Why is it important to solve it now?
- Address these criteria:
  - Importance—why does your work matter from a health perspective?
  - Critical barriers—what has limited progress in this area?
  - Prior research—what is lacking in previous work?
  - Potential impact—how will your project advance the field?

Innovation

- Explain the solution
  - What is different or novel in your work?
  - Are you creating a completely new technique or technology? Are you combining existing techniques in new ways? Are you significantly improving on previous methods or technologies?
- Show comparisons between your idea and the standard techniques or concepts
- Use prior work to show feasibility and acceptability
- Mention alternative or validating techniques if needed

Common Problems

- Rationale is too vague
- Too many technical details without proper context
- Not identifying your own preliminary work in a clear fashion
- Not mentioning your own expertise or your collaborators
- Vague or far-reaching outcomes

Approach

- Play to your strengths
- Keep it interesting for your reviewers!

Option 1

- Overview and preliminary data
- Experiments and outcomes
  - Aim 1
  - Aim 2
  - Aim 3
- General methods
- Potential problems and alternatives
- Timeline and future directions

Option 2

- Overview
- Aim 1
  - Preliminary data
  - Experiments, methods, outcomes
  - Pitfalls and alternatives
- Aim 2
- Aim 3
- Timeline and future directions

Option 3

- Overview and preliminary data
- General methods
  - Aim 1 experiments
  - Aim 2 experiments
  - Aim 3 experiments
- Expected outcomes
- Potential problems and alternatives
- Timeline and future directions

Aims

- Why?
  - Rationale and hypothesis
  - Supporting data or literature
- How?
  - Experimental design
  - Data analysis and interpretation
- What?
  - Expected outcomes
  - Potential problems and alternative strategies

Preliminary Data

- Not always required but can still be helpful if you have it
- Make sure it is relevant to your proposed project and is of high quality
- Don’t make reviewers look up references—if a piece of data is important then put it into your proposal and explain it!

Experimental Design

- Clearly describe what you are planning to do
- Give alternatives if experiments don't go as planned
- Establish your expertise and demonstrate that you are capable of completing the work
- Utilize the iceberg model
  - Can't include everything due to space constraints
  - Need to decide what is important and needs to be clearly stated
  - Show reviewers you've made a good faith effort and give them confidence in you
- Be concise while including enough detail so reviewers can understand

Expected Outcomes

- Explicitly state what you think will happen
- Discuss potential problems and give solutions
  - Show reviewers that you have fully thought out your project and are prepared for obstacles
  - Can also address issues of feasibility and confirm your team's ability to do the work

Timeline and Future Directions

- Include a simple figure or a couple sentences to show a brief timeline of your project
- Tell reviewers exactly what the impact of your project will be
  - Be specific—why are these outcomes interesting and important, and how will they make a difference?
- Discuss potential plans and next steps for after the proposed project

Budget

- Start early!
- Work with your SRS representative
- Budget should be necessary and reasonable
  - Don’t want to significantly over- or underestimate
- Confirm the allowed budget limit in the NOFO

Biographical Sketch

- NIH has adopted the Common Forms for the biosketch
  - NOT-OD-26-018: https://grants.nih.gov/grants/guide/notice-files/NOT-OD-26-018.html
  - Webinar from SuRE Resource Center: https://www.youtube.com/watch?v=vbKCRKxdmkY
- All biosketches must be created using SciENcv
- Need to link ORCID iD to eRA Commons account (in Personal Profile section)
- Included information is similar to previous format, but in two different parts
  - Common Form: identical across all agencies
  - Supplement Form: specific to NIH

Biosketch Sections – Common Form

- Appointments/Positions
  - System will automatically place them in reverse chronological order
  - Maximum of 15 entries
  - Identify foreign and domestic appointments/positions outside of primary organization for a period of 3 years from submission date
- Products
  - Up to 5 products closely related to proposed project
  - Up to 5 other significant products that highlight contributions to science
  - All products must be citable

Biosketch Sections – NIH Supplement

- Personal Statement
  - Can provide narrative on Products Most Closely Related to Proposed Project (cited in Common Form)
  - No citations allowed
  - Can still include ongoing and recent research projects
- Honors
  - Maximum 15 entries
- Contributions to Science
  - Provide up to 5 narrative contributions to science
  - No citations allowed
  - Can refer to Other Significant Products (cited in Common Form)

Summary of Changes

- Must use SciENcv to complete biosketch and link ORCID iD
- Common Form and NIH Supplement Form
- Citations can be selected from MyBib and ORCID and will be correctly formatted
  - ORCID iD is linked at the top of the biosketch, MyBib link should no longer be included
- No page limits, but rather character limits within sections
- Delegates can assist with entering information in SciENcv
- Investigators must certify their own forms in SciENcv

Resource Sharing Plan

- Describe plans for sharing model organisms and research tools (if applicable)
- Templates available on PHT180 Grant Writing Resources page
- Use the NIH decision tool to see what applies to your research:

https://grants.nih.gov/policy-and-compliance/policy-topics/sharing-policies/which-policies-apply-to-my-research

Data Management and Sharing Plan

- Use the DMS Plan format page from NIH

- Data Management and Sharing Justification (within Budget Justification)
  - Estimate cost of proposed DMS activities (use DMS Effort Calculator from SRS)
  - Summary of amount and type of data to be preserved and shared, and repositories that will be used
  - Include general categories with dollar amount and explanation for each

Human Subjects and Clinical Trials

- NIH Decision Tools to determine if you are doing Human Subjects Research/Clinical Trials:
- Depending on your project, you may have to include the following information:
  - Study record form
  - Inclusion of individuals across the lifespan
  - Inclusion of women and minorities
  - Recruitment and retention plan
  - Study timeline
  - Protection of human subjects
  - Data and safety monitoring plan
  - Overall structure of the study team
  - Statistical design and power

Resources

- NIH Institutes and Centers
- Matchmaker
- NIH Guide for Grants and Contracts
- Grants.gov Funding Opportunity Search
- PHT180 Grant Writing Resources
- NIH Webinars
- SuRE Resource Center
- NIH Sample Applications

Agenda

- NIH overview and proposal preparation
- Panel discussion
- Q&A

Meet the Panelists

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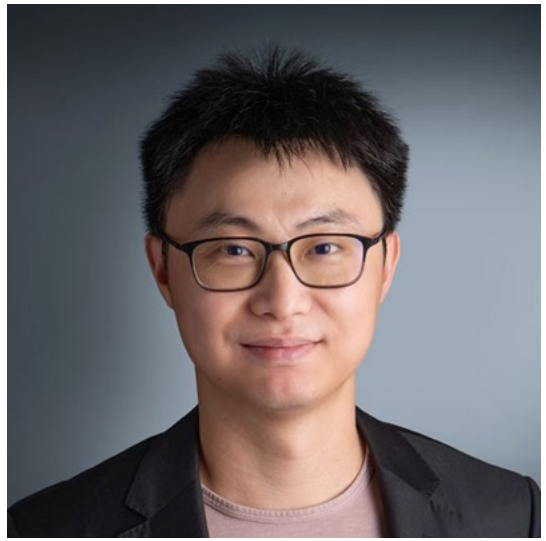

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