The Research Training Plan

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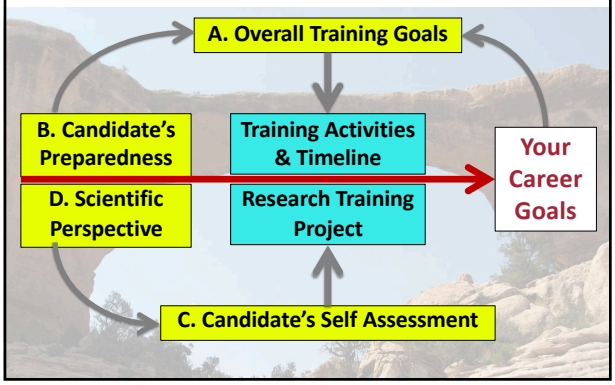
The Research Training Plan is justified by the Candidate Section



Fellowship applications will be reviewed using three criteria

Candidate's Preparedness and Potential

Research Training Plan

Commitment to Candidate

Criteria for applications submitted after May 25, 2025

Reviewers are asked to evaluate the candidate's Research Training Plan

- Assess the **rigor and feasibility** of the research training project and how completion of the project will contribute to the development of the candidate as a research scientist.
- Evaluate the **goals of the overall research training plan** and the extent to which the plan will facilitate the attainment of the goals.
- Discuss whether the research training plan identifies **areas of needed development** and contains appropriate, realistic activities and milestones to address those needs.
- Consider whether the **sponsor(s), scientific environment, facilities, and resources** are adequate and appropriate for the proposed research training plan.

Reviewers are asked to evaluate the candidate's Research Training Plan—*translated*

The Research Project:
Is it good science?
Will it help you become a research scientist?

The Training Plan:
Are the goals worthwhile?
Are they attainable through the training plan?

Areas of Needed Development:
Are they identified?
Will the planned activities address those needs?

Support:
Are your mentors experienced and committed?
Do you have access to necessary facilities and resources?
Is the scientific environment supportive?

Your career is advanced by the activities in the Research Training Plan

You have 9 pages to describe your Research Training Plan

Candidate's Goals, Preparedness, and Potential	3
Research Training Plan	
Training Activities and Timelines	3
Research Training Project Specific Aims	1
Research Training Project Strategy	6
Training in the Responsible Conduct of Research	1
Commitment to Candidate	
Sponsor(s) Commitment	6
Letters of Support from Collaborators, Contributors, and Consultants	6

This session will focus on the two major components of the Research Training Plan

Training Activities and Timeline — **3 pages**
- — planned activities to address candidate's goals and identified areas for development

Research Training Project — Strategy — **6 pages**
- — Scientific Foundation and Rationale
- — Approach

The Training Activities and Timeline must address the following . . .

- The **planned activities** during the proposed award (coursework, professional development, research training project, mentoring, clinical activities, etc.)
- How the training activities will **develop the areas defined in the self-assessment section** and help to meet the fellowship goals.
- **Specific examples** of how the proposed research training will facilitate the transition to the next career stage.
- Why the **Sponsor(s), collaborators, and research training environment** are appropriate for the proposed research training plan.

Suggested structure for Training Activities and Timeline

Introduction:
- summary of fellowship goals and identified areas for development (from self-assessment)

Areas for Development:
- describe planned activities for each and how these activities will help meet the goals

Mentors & Resources:
- describe the guidance provided by mentors
- describe any specific resources necessary for your project

The Training Plan should include a statement about the process to develop the application

"The application should describe the collaborative process between the candidate and the sponsor(s) in the development, writing, review, and editing of the research training plan, including the research training project aims and strategy."

Planned activities should address the candidate's goals & identified areas for development

- Start with your self-assessment (Candidate Section)
  — ***what are your 2–4 areas for development?***
- Summarize each area briefly with expected outcomes
  — ***what is the goal for each area?***
- List the activities to address each goal
  — ***what is the timeframe for achieving this goal?***
  — ***how will you measure achievement of this goal?***
  — ***how will you be mentored on this goal?***
  — ***how will your research project help achieve this goal?***

Use a table to summarize your activities & associated effort by year

Year	Activity	% effort	Area for Dev.
1	Research: begin Aim 1	85%	1
	Advanced Course on Imaging	5%	2
	Professional Development & Ethics Course	5%	3,4
	Meetings with Mentors	5%	1,2,3,4
	Total effort	100%	
2	Research: complete Aim 1, begin Aim 2	80%	1,2
	Meetings with Mentors	5%	1,2,3,4
	Scholarship: manuscript preparation	10%	1,2,3
	Attend National Meeting	5%	1,2,4
	Total effort	100%	

Describe the guidance you will receive from your mentors ("sponsors") and others

For each **Mentor** (Sponsor) describe:

- the expertise they bring to your project and training plan
- your relationship: have you worked with them previously?
- frequency of meetings

Similar descriptions for any collaborators, consultants

The Research Training Plan Strategy has two components

Scientific Foundation and Rationale (~1 page)

- background and justification for proposed research

Approach (~5 pages)

- detailed description of proposed research

The Scientific Foundation and Rationale should include

- the context for the proposed research
- scientific foundation based on published & unpublished findings
- strengths and weaknesses in the rigor of the prior research
- rationale for project: unaddressed areas and importance of project
- how the proposed project will advance the candidate's field

The Approach should include

- overall strategy, methodology & analyses to be used
- plans to address weaknesses in the rigor of the prior research
- experimental design and methods
  — how you will achieve robust and unbiased results*
- how the data will be collected, analyzed, and interpreted

*see **Enhancing Reproducibility through Rigor and Transparency**
https://grants.nih.gov/policy-and-compliance/policy-topics/reproducibility

For trials involving randomized groups or interventions

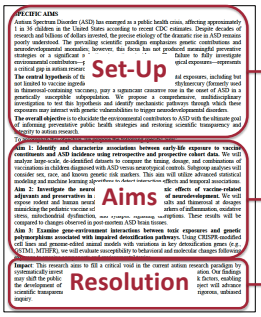
- describe how your **sample size and methods** for analysis are appropriate*
  — *do a power analysis!*
- if you are proposing **clinical trial research** experience, describe your role on the clinical trial

*see **Research Methods Resources**
https://researchmethodsresources.nih.gov

Tips for a successful approach section

Step 1: Start with Specific Aims as a roadmap
Step 2: Create an outline
Step 3: Decide on figures and tables
Step 4: Write the first draft
Step 5: Edit sections to meet submission guidelines for proposal length
Step 6: Check that what you have written matches your Specific Aims
Step 7: Spell check and polish
Step 8: Get feedback!!

Use your Specific Aims Page as a roadmap for your Research Training Project Strategy



Scientific Foundation and Rationale

Approach

Scientific Foundation and Rationale

Provide sufficient experimental detail to allow the reviewer to evaluate feasibility & outcomes

- be guided by how well a method is described in the literature
  - — common techniques just need a reference
  - — less common methods require more detail
  - — describe modifications to standard techniques
- if the project is in the early stages of development, describe any strategy to establish feasibility,

A "Modular" approach is one strategy for the Research Plan

For each Aim:

- Introduction
- Background
- Preliminary results
- Research design
- Expected outcomes
- Potential problems, pitfalls and alternative approaches

Entire Proposal:

- Scientific Rigor
- Timeline
- Future Directions

Alternatively, use a "Unitary" Approach

- Introduction
- Background
- Preliminary Studies
- **Research Design**
  - Rationale for study design
  - Study population
  - Study methods and procedures
  - Study measurements
  - Data collection, quality and management
  - Data analysis including plans for statistical analysis
  - Expected outcomes
  - Potential problems, pitfalls and alternative approaches
  - Timeline
  - Future Directions

Provide a timeline for your research strategy

- Fit the aims to the effort and project timeline
- Avoid contingent aims (the "fatal flaw")

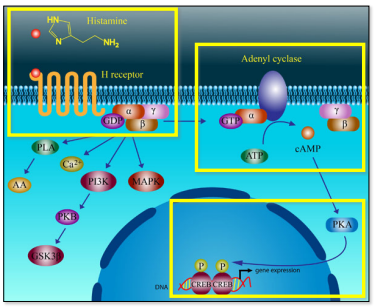
Provide a timeline for your aims in the proposal

Aim	Year 1	Year 2	Year 3
1	→		
2		→	
3			→

A timeline shows the reviewers you are ready to conduct the proposed research because you have "walked" yourself through every aspect of the project

Build a visual model of your research plan

Specific Aim # 1



Specific Aim # 2

Specific Aim # 3

Discuss potential problems, alternative strategies & benchmarks for success

Most Important!

— *shows the reviewer that you have thought through your experiments*

- what might not work?
- what alternative approach would you use?
  - — Plan B, Plan C, etc.
  - — who can help?
- how will you know that you have achieved the expected outcomes?
  - — predictions from hypothesis

Your Turn: consider an experimental approach that you plan to use in your project . . .

- Why might it not work?
- How would you troubleshoot? (hint: use a positive control)
- What alternative approach will you use to test your hypothesis?
  - What expertise or resource could help?

Then discuss in pairs

Note any requirements related to compliance

Relevant Biological Variables (e.g., sex)
- how are these factored into research design
- strong justification is required for projects using only one sex

Hazardous Materials or Procedures
- describe & list precautions

Human Embryonic Stem Cells
- justify using a cell line not on the NIH hESC Registry

The proposal must be written in your words

"Using language written by others is not allowed in this section because the application is intended to provide information regarding the candidate's understanding of the research training project and ability to communicate the scientific rationale and approaches.

Candidates may solicit feedback and incorporate suggestions from the sponsor(s) and other scientists into the research training project strategy, but the text must be written by the candidate."

Do not copy from mentor's grants!

Looks Do Matter — Edit and Polish your proposal

- Make your proposal easy to read by including **WHITE SPACE** between every paragraph
- Nothing puts a reviewer to sleep faster than text that is **TOO DENSE**
- Use the **KISS Principle** – keep it short and simple
- Communicate the **OUTCOMES** of your research project and how this will improve knowledge and/or health care practice

Follow advice from NIH . . .

Remember to include:

- While describing a method in the Approach section, state your and/or your collaborators' experience with it.
- Point out that you have access to a necessary piece of equipment.
- When explaining your field and the status of current research, weave in your own work and any preliminary data.
- Delve into the biology of the area to make sure reviewers will grasp the importance of your research, understand your field, and how the proposed work fits into it.

https://www.niaid.nih.gov/grants-contracts/write-research-plan#A8