Abstract or Summary

- Describes the project;
- Shows the importance and relevance of your research;
- Is used as a guide to the document;
- Is used to decide where to assign your application
- Is read by reviewers not assigned to your grant.

Abstract should describe:

- What do you intend to do?
- Why is the work important?
- What has already been done?
- How are you going to do the work?
- State the broad, long-term objectives and specific aims, making relevance to the mission of the agency.
- Describe the research design and methods for achieving the stated goals.
- Be sure that the project summary reflects the key focus of the proposed project so that the application can be appropriately categorized.
- Avoid the use of jargons and abbreviations

Split into parts – Background, problem and Gap, objective, strategy, significance.

Project narrative

The Project Narrative is the section of the grant application where the applicant should talk about the **relevance** of the proposed research project to public health. The information should be:

- succinct (no more than 2-3 sentences long)
- in plain language understandable by a general, lay audience

Hit the reviewers with public health impact as much as possible.

Resources

Applicants should clearly state that they have the appropriate resources to conduct the research, such as adequate equipment and laboratory space. When possible, include letters of commitment for these resources.

- Understand the level of resources needed to compete.
- Conduct an organizational assessment.
- Determine what resources and support your organization has and what additional support you'll need.
- Consider whether the available equipment and facilities are adequate and whether the environment is conducive to the research.

Specific Aims

The most (one of the most) critical parts of the grant as it contains key elements of the proposal

Parts of specific aim:

An introductory paragraph: Should include the hook, define the field/topic, the gap in knowledge, and the critical need.

A second paragraph: Introduce the solution that fills the gap in knowledge (what, why, how). Your long-term goal/ overarching research goal. Your working/central hypothesis and the rationale behind it (previous studies/preliminary data).

Research Aims: 2 – 4 Aims. Related but not dependent on each other. Provide the rationale and a brief description of the approaches to be used to test the hypothesis.

Summary paragraph: Creates a firm, broad base to support your entire proposal. Highlight the innovation of the project and the expected outcomes (if not done already). State the kind of impact the project is likely to have if successfully completed.

Research Strategy

The Research Strategy is the nuts and bolts of your application, describing the rationale for your research and the experiments you will do to accomplish each aim. It is structured into three main sections

Significance

Innovation

Approach

Preliminary Studies (for new applications) or a Progress Report (for renewal and revision applications).

For an R01, the Research Strategy is limited to 12 pages for the three main sections and the preliminary studies only.

When writing your Research Strategy, your goal is to present a well-organized, visually appealing, and readable description of your proposed project. That means your writing should be streamlined and organized so your reviewers can readily grasp the information.

As you write, put the big picture squarely in your sights. When reviewers read your application, they'll look for the answers to three basic questions:

- Can your research move your field forward?
- Is the field important—will progress make a difference to human health?
- Can you and your team carry out the work?

Don't stop at the Significance section to emphasize the project's importance and look beyond their biosketches to highlight your team's expertise.

Don't take a chance your reviewer will gloss over that one critical sentence buried somewhere in your Research Strategy or elsewhere. Write yourself an insurance policy against human fallibility: if it's a key point, repeat it, then repeat it again.

Add more emphasis by putting the text in bold, or bold italics.

Our applicants not only wrote with their reviewers in mind they seemed to anticipate their questions. You may think: how can I anticipate all the questions people may have? Of course, you can't, but there are some basic items (in addition to the "big three" listed above) that will surely be on your reviewers' minds:

- Will the investigators be able to get the work done within the project period, or is the proposed work over ambitious?
- Did the PI describe potential pitfalls and possible alternatives?
- Will the experiments generate meaningful data?
- Could the resulting data prove the hypothesis?
- Are others already doing the work, or has it been already completed?
- Address these questions; then spend time thinking about more potential issues specific to you and your research—and address those too.

Significance

When you describe your project's significance, put it in the context of 1) the state of your field, 2) your long-term research plans, and 3) your preliminary data.

After conveying the significance of the research in several parts of the application, check that

- In the Significance section, I describe the importance of my hypothesis to the field and human disease.
- I also point out the project's significance throughout the application.
- The application shows that I am aware of opportunities, gaps, roadblocks, and research underway in my field.
- I state how my research will advance my field, highlighting knowledge gaps and showing how my project fills one or more of them.

Innovation

Be cautious about seeming too innovative.

When you look at our sample applications, you see that both the new and experienced investigators are not generally shifting paradigms. They are using new approaches or models, working in new areas, or testing innovative ideas.

After finishing the draft innovation section, check that

- I show how my proposed research is new and unique, e.g., explores new scientific avenues, has a novel hypothesis, will create new knowledge.
- If I am a new investigator:
- Most likely, I explain how my project's research can refine, improve, or propose a new application of an existing concept or method.
- Less likely, I go for the other option described in NIH's definition: show how my research can shift a current paradigm. If I choose that path, I:
    - Make a very strong case for challenging the existing paradigm.
    - Have data to support the innovative approach.
    - Have strong evidence that I can do the work.

Approach

In your Approach, you spell out a few sets of experiments to address each aim. As we noted above, it's a good idea to restate the key points you've made about your project's significance, its place in your field, and your long-term goals.

Expect your assigned reviewers to scrutinize your approach: they will want to know what you plan to do and how you plan to do it.

NIH data show that of the peer review criteria, approach has the highest correlation with the overall impact score.

Be sure to lay out a plan for alternative experiments and approaches in case you get negative or surprising results. Show reviewers you have a plan for spending the four or five years you will be funded no matter where the experiments lead.

After finishing a draft Approach section, check that

- I include enough background and preliminary data to give reviewers the context and significance of my plans.
- Each of my Specific Aims results in a set of experiments.
- They can test the hypothesis (or hypotheses).
- I show alternative experiments and approaches in case I get negative or surprising results.
- My experiments can yield meaningful data to test my hypothesis (or hypotheses).
- As a new investigator, I include enough detail to convince reviewers I understand and can handle a method.
- It is clear what I do well and what unique skills I and my team bring to the research. If I think reviewers may have doubts, I explicitly state my team's resources and expertise.
- If I or my team has experience with a method, I cite it; otherwise I include enough details to convince reviewers we can handle it.
- I describe the results I anticipate and their implications.
- I omit all information not needed to state my case.

- I keep track of and explain who will do what, what they will do, when and where they will do it, how long it will take.
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