Quick Guide for a Compelling Research Strategy

Suggested section lengths are based on a 12-page research strategy. For detailed guidance, see the NIH application guide and SF424.

THE ENTIRE RESEARCH STRATEGY

☐ **Read the RFP to learn what is important to the funder**
- The proposal should address the goals and scope stated in the RFP

☐ **Use formatting to enhance readability**
- Highlight key information with bold or underline (use sparingly)
- Place figures and tables close to the relevant text
- Check spelling and grammar

☐ **Number and label the sections to help reviewers find important information**
- Sections and subsections should be in a logical order
- Use consistent numbering and formatting throughout
- Leverage section numbering to reduce repetition (e.g., "To determine the epigenetic effects of sleep deprivation in adults, we will compare histone modifications in serum obtained from researchers 3 days before, 1 day after, and 7 days after a grant deadline, using the methods described in Aim 1.2.2.")
- Check all numbering and references to other sections before submitting

☐ **Follow NIH formatting guidelines and page limits**
- Margins are at least ½ inch
- Font size in main text is 11 pt or higher

☐ **Check the PDF for accuracy and legibility before submitting**

SIGNIFICANCE (usually 1.5-2 pages)

☐ **Establish the importance of the problem that the project addresses**
- Usually the opening paragraph
- Provide context of the "big picture" problem
- Introduce the main research question
- Explain impacts to public health, individual health, the economy, and/or scientific progress
- Support claims with statistics and citations

☐ **Describe the scientific premise of the project**
- 2-3 paragraphs
- Summarize background information that is directly relevant to the research question
  - Do not review the entire field. Instead, build a strong, focused rationale for the hypothesis. How does each bit of information support the hypothesis?
  - Published literature and key preliminary data
  - Consider strengths and weaknesses of supporting data
- State the hypothesis and goals of the project
- The project should directly address the hypothesis and main problem presented

☐ **Explain the likely short-term impacts of the project for scientific knowledge, technical capability, and/or clinical practice** (2-3 sentences)

☐ **Indicate how the completed project will change the field**
- Usually concludes the significance section
- Concepts, methods, technologies, treatments, services, or preventive interventions, etc.
- Longer-term possibilities can be included, but should not be over-stated

INNOVATION (usually ½ to 1 page)

☐ **Innovation can take several forms**
- Conceptual innovations - challenge a paradigm or provide an important knowledge leap
- Technical innovations – develop or new or substantially improved way of doing things
- Resource innovations – establish and provide proof of concept for a crucial new resource
- May be relevant for research and/or clinical practice
- Consider impact beyond your own field

☐ **Explain the limitations of current knowledge and tools**

☐ **Describe how the project will address these limitations**

☐ **Explain the advantages of the innovation over existing options**
- Cost savings, improved efficiency, new capabilities, better safety or accuracy, important shifts in knowledge

APPROACH (usually ~9 pages)

☐ **Open with the overall strategy for addressing the central hypothesis**
- Summarize the general approach, including key resources and methodologies across aims
- Explain how the aims work together so the whole is greater than the sum of the parts
- Flowcharts and diagrams can be helpful

☐ **Present preliminary data that support the central hypothesis and/or experimental feasibility**
- Can be in one combined section and/or within each aim

☐ **Usually arranged into 2-4 specific aims**
- Aims should be related, but not dependent on one another
- Experiments should provide valuable information even if the hypothesis is incorrect

☐ **Provide enough detail to show the experimental design is justified, robust, and unbiased**
- Study populations, model systems, key reagents
- Replicates (technical and biological), controls, comparison groups, biological variables (e.g., sex)
- Methods
- Data quality control, data processing, power analyses, and statistical design and interpretation
- Indicate potential hazards and relevant precautions

☐ **Discuss potential problems and alternative strategies**
- Technical challenges can be addressed with alternative methods or data demonstrating feasibility
- Are there potential challenges in obtaining key resources or recruiting participants?
- What if the underlying assumptions and/or the stated hypotheses are incorrect?
- Provide a realistic way to mitigate any problem that is mentioned

☐ **Briefly describe one or two concrete future directions that can build on this study**

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