# The Aims of Specific Aims of a NIH K Award Application

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### Main Aim: Get Funded

## Most common reasons for not receiving funds\*:

- Lack of new or original ideas
- Diffuse, superficial or unfocused research plan
- Lack of knowledge of published relevant work
- Lack of experience in the essential methodology
- Uncertainty concerning the future directions

\*Per Cheryl Anne Boyce, Ph.D. and Houston Baker, Ph.D., Grant Writing for Success, NIH Regional Grant Workshop

# Most common reasons for not receiving funds\*:

- Questionable reasoning in experimental approach
- Absence of acceptable scientific rationale
- Unrealistically large amount of work
- Lack of sufficient experimental detail
- Uncritical approach

\* Per Cheryl Anne Boyce, Ph.D. and Houston Baker, Ph.D., Grant Writing for Success, NIH Regional Grant Workshop

### Purpose of Specific Aims

- Crystallize your thinking in 1 page.
  - What are the gaps?
  - Why is this important?
  - What is innovative?
  - What are you going to do?
  - What are your hypotheses?
  - What is the public health impact?
- Persuade reviewers

(You have about 300 words).

#### First Paragraph

- Topic
- Gap
- Long-term goals
- Specific objectives
- Hypothesis
- Evidence for hypothesis
- Rationale/significance/logic

The Specific Aims page Most important part. . .

- Describes concisely the goals, objectives & outcomes of the proposed studies
- Is a useful summary for obtaining early feedback on your proposal (reality check!)
- Is the hardest part of the proposal to write
- You must devote time to draft & polish the Specific Aims!

#### **Topic Sentence**

- Concise, active statement introducing the topic of the proposal
- Diabetes is a major health concern in the United States.
- Retroviruses are responsible for a number of important human diseases . . .
- Microscopy has emerged as one of the most powerful and informative ways to analyze . . .
- Your turn:
- Compose a topic sentence for your proposal.

#### Gap

- Next describe the gap in knowledge or unmet need that your proposal will address.
- But the incidence of diabetes continues to rise . . .
- Management of parasitic diseases depends largely on chemotherapy but anti-parasitic drug treatment has multiple challenges.....
- However, many diseases and biological pathways can be better studied in whole animals . . .
- Your turn:
- Describe the gap in knowledge or unmet need that your proposal addresses.

#### Elements of a Specific Aims page\*

Goals of the proposed research & summarize the expected outcomes, including impact on the field.

List succinctly the specific objectives of the research:

- Test a hypothesis
- Create a novel design
- Solve a specific problem
- Challenge an existing paradigm or clinical prac=ce
- Address a critical barrier to progress in the field
- Develop new technology.

\*Instructions for NIH research project grants (RPGs)

## What do specific aims do and do not do?

- Do answer the question:
  Why are you doing this?
- Do not state what are you going to do until after the specific aim line.
- Do not include detailed methods.
- Do not include references.

#### Specific Aims Page

- Brief paragraph about the importance of the work (NOT the abstract verbatim)
- List of the specific aims
- Description of how this research meets the research priorities of the intended agency and the impact the results will have on research field
- Description of how the candidate/mentor team are well-poised to complete the research and transition the mentee to independent funding

### Specific Aims Outline

- Specific Aims (1 page)
- Opening Sentence (Should get the reader's attention.)
- Current Knowledge
- Gap (What is the unmet need?)
- Current Barrier to Progress in the field/area
- Long-term Goal
- Overall objective (This is the next step to achieve the long-term goal.)
- Central hypothesis

#### Specific Aims Outline

- Rationale that underlies the proposed research...
- Specific Aims that link back to the central hypothesis
- Specific Aim 1: To determine. . .
- Our working hypothesis is. . .
- To test this hypothesis, we will. . .
- Payoff (These aims will yield the following expected outcomes. . .)
- Impact (These outcomes are expected to have an important positive impact because. .)

The 13 point aims page. Adapted from"The Grant Application Writer's Workbook," by Stephen W. Russell and David C. Morrison, July 2005 edition.

1. Opening sentence. Must mention the important problem in human health or fundamental biology that your proposal will address. Ideally, the problem will be fundamental and health-relevant, but either one of these two is sufficient.

2. Current knowledge statement. The "knowns" most relevant to this proposal.

3. The gap. "However, our understanding of \_\_\_\_\_\_ remains poorly understood..."

A great resource for writing NIH grant applications is *The Grant Application Writer's Workbook* by Stephen Russell and David Morrison. It is available online at www.grantcentral.com.

4. Justification for why the gap is important enough to fill.

- 5. Our long-term goal is.... This should be a problem big enough to keep the investigator occupied for a decade, or even a whole career.
- 6. The objective of THIS application is.... This is the part of the long-term goal that you will be able to solve over the course of this grant's funding.
- 7. Our central hypothesis is... This is the thing that all parts of the application must point back to--again and again and again.

- 8. Rationale why this project can and should be done NOW.
- 9. Rationale why this project can and should be done by YOU.

Why you are "uniquely positioned" to do this work, rather than all of the others writing RO1s to do similar stuff. Better yet: be the only person equipped and positioned to do something really important

10. "Our specific aims are...." Each aim should begin with a good strong action verb and it should be short and sweet.

The second part of each aim (sentence 2) should have a hypothesis that is the smaller part of the central hypothesis tested by that aim.

11. Innovation reminder: Toot your horn about how the research proposed is innovate and can "capitalize" on your unique advantage (training and past experience, innovative technique, great preliminary results). This is probably the most dispensable component of the 13, since innovation is "nice when you can justify it", but few grants get slammed for being "not innovative enough", while plenty of innovative grants get slammed for not being logical or careful or detailed enough, especially if the applicant is a new investigator.

12. "At the end of this study, we will have..." The expected outcome, the payoff as a "deliverable." 13. "Our studies will enrich science or lead to new understanding and identify novel drug targets, etc... This is the best possible human health benefit that might arise from this research in the LONG RUN. Your specific project endpoint does not need to produce a cure--it just has to be a new, strong brick in a big construction project.

#### K Awards

- A career development proposal should include a
- statement about training potential.
- Training Potential :
- The research and complementary training plan described in this proposal will enable the candidate
- to acquire the skills and knowledge to become a productive, independent investigator in . . .
- Your turn:
- Define the training potential for your project.

#### Do the doable.