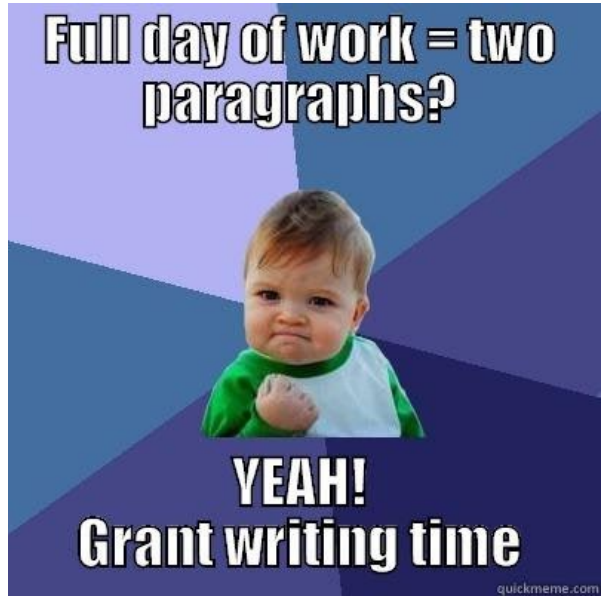
The Power of One Page
Writing a Specific Aims

2025 UWCCC Cancer Research Trainee Symposium

September 24, 2025



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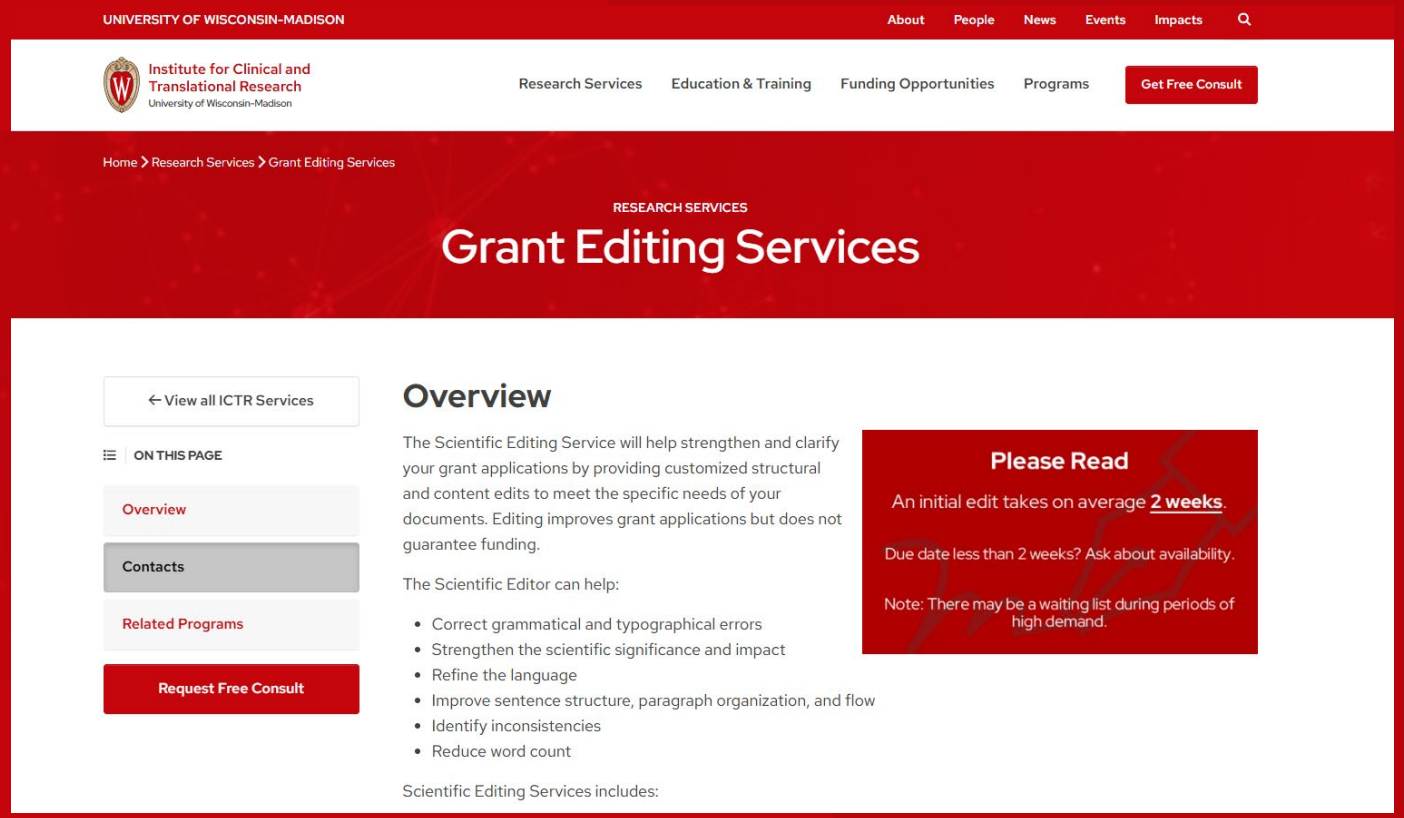

https://ictr.wisc.edu/service/grant-editing-services/

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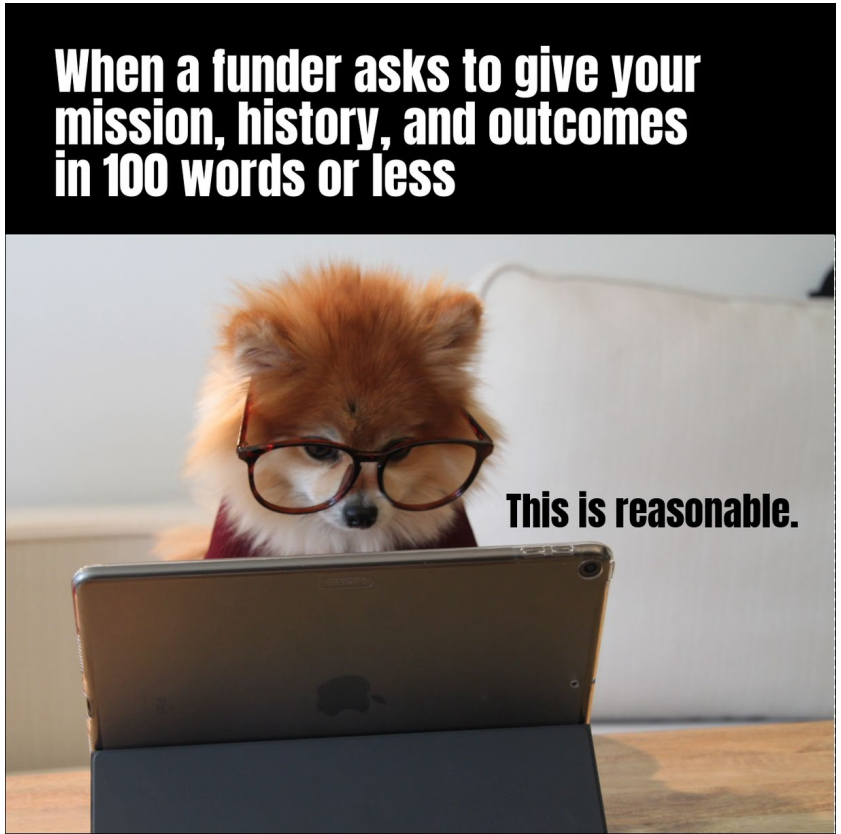
Learning Objectives

1. Understand different trainee grants
2. Overview of the Specific Aims page
3. Identify the four critical sections of a Specific Aims page
4. Q&A



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Mentored NIH Fellowship and Career-Development Awards

F Series: Research Training (NRSA) Fellowships (e.g., F31 & F32)

K Series: Research Career Development Programs (e.g., K01, K08, K25 & K99/R00)

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Mentored NIH Fellowship and Career-Development Awards

	F Awards (F31 & F32)	K Awards
Purpose	F31 – Individual Predoctoral NRSA F32 – Individual Postdoctoral NRSA • Development to Independence in same (or similar) research area	"Traditional" – K01, K08, K23 • Research independence in a new area Pathway to Independent - K99/R00 • Reduce time to research independence
Duration	Maximum of 5 (F31) and 3 (F32) years	3-5 years
Experience	Little or no pre/post-doctoral experience	Some post-doctoral experience
Time Commitment	Full time	At least 75% effort

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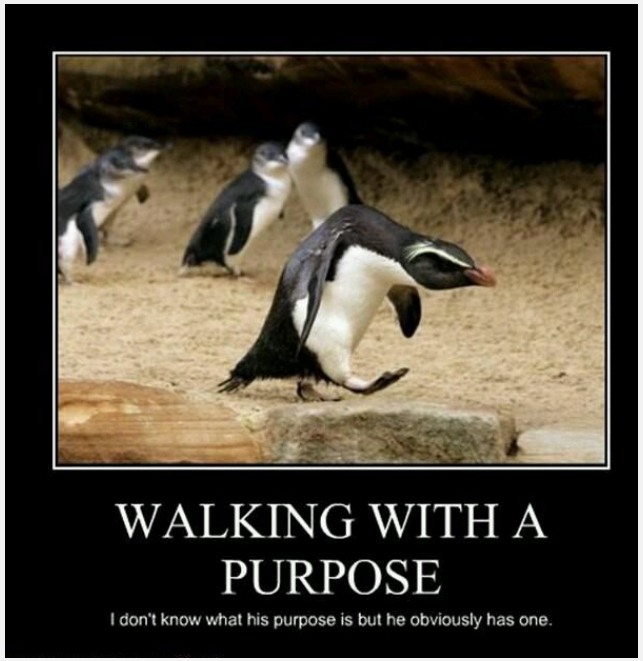
Always remember your purpose!

F Awards (F31 & F32)
Enhance the research skills of promising predoctoral and postdoctoral candidates who have the potential to become productive, independent investigators in scientific health-related research fields.
K Awards
Provide a training vehicle that will ensure career development in a new career area and results that will enable a competitive, extramural research-grant application, preferably an R01.



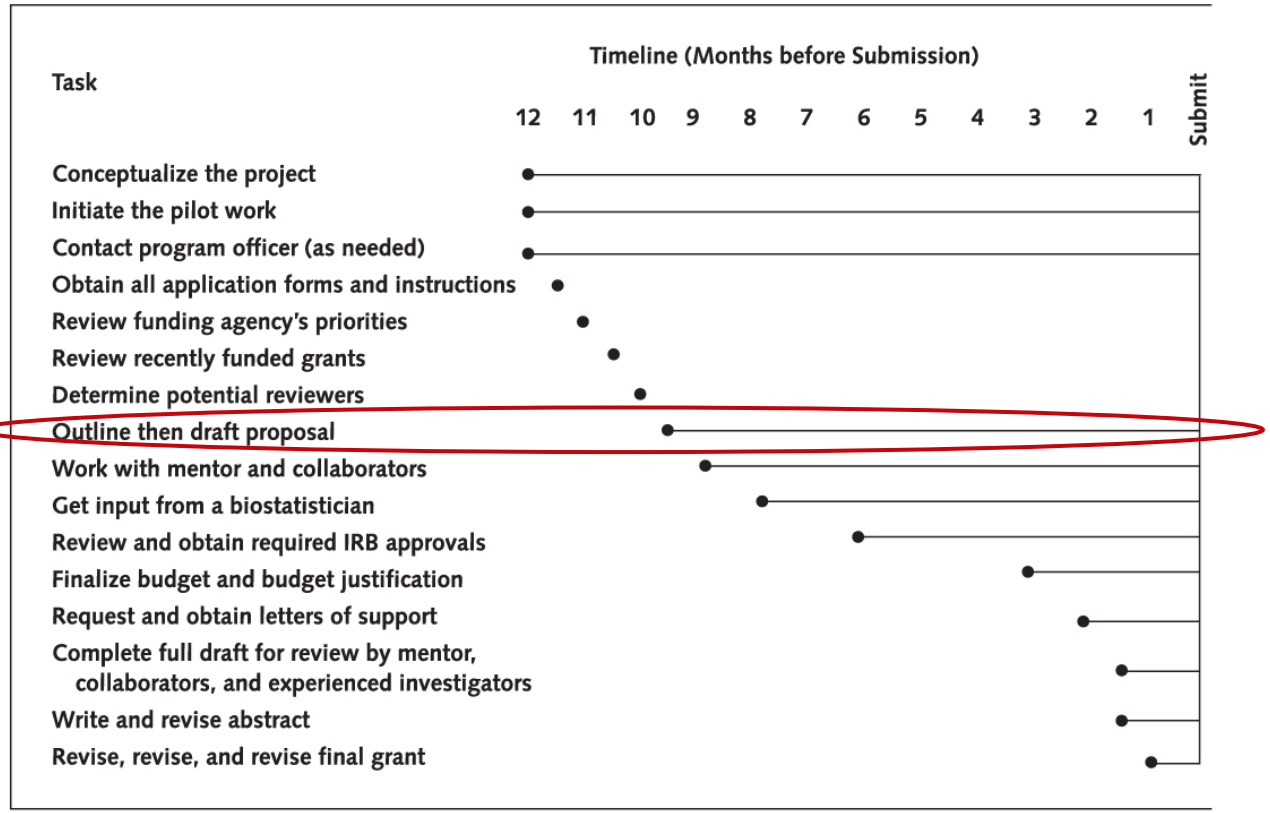
Your Specific Aims Page

- Concise “master plan” for your research plan
- Should be the first section you write
- Used by your Scientific Review Officer to choose reviewers
- Sells the reviewer on your idea
- Likely that all study section members will read before scoring if they are not chosen reviewers

Timeline

- Start your specific aim as early as possible!

Figure 1. **Grant-writing timeline: example 1.**



Problems seen

Review of 66 R01 applications to a clinical research study section at NIH revealed:

45% of applications received critical comments about the Specific Aims:

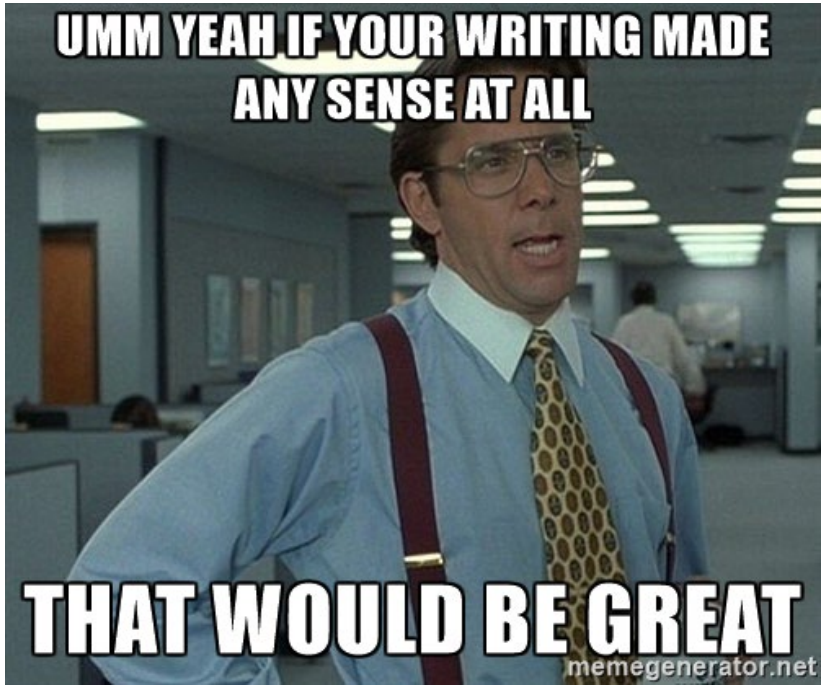
- Goals overstated, overly ambitious or unrealistic 18%
- Poorly focused or inadequately conceptualized 15%
- Hypothesis not clearly articulated 12%

By starting early, you can help mitigate these problems.

Specific Aims: Tips for Success

Make your Specific Aims page easy to read

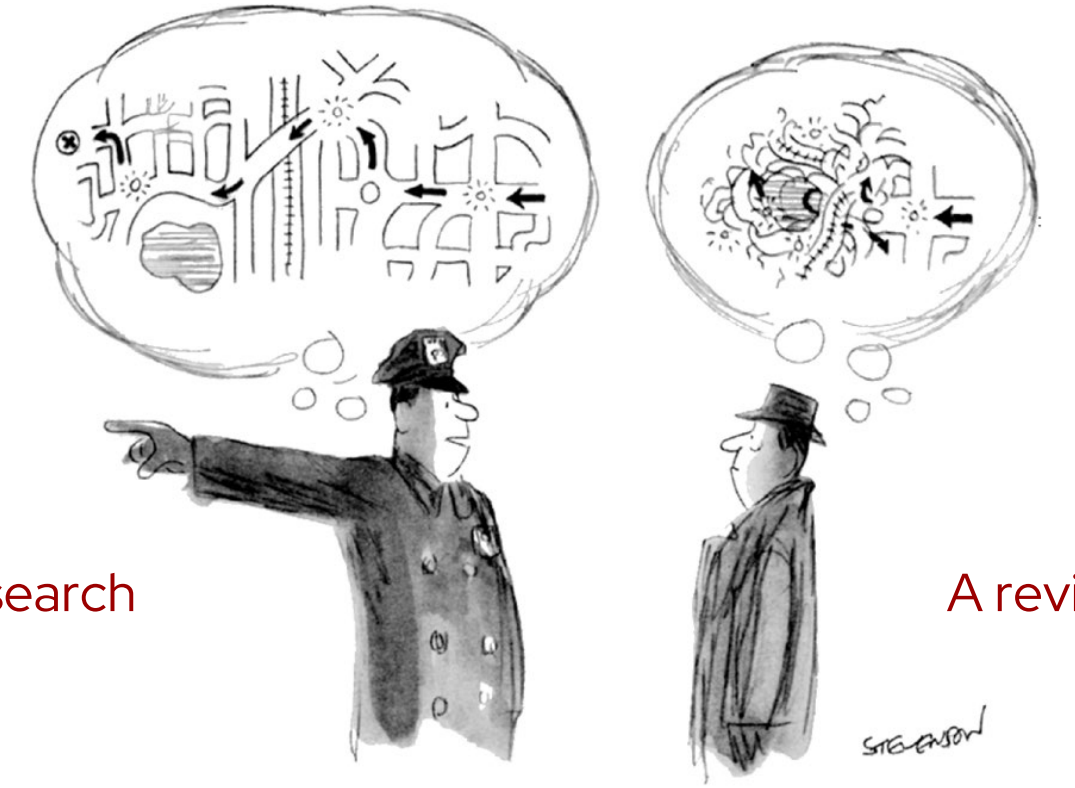
- Draw your readers in – grab their attention!
- Be concise
  - Must contain everything that is important and exciting, but without a lot of detail.
- Use plain language



Don’t be like them:

Take care of your reviewers

- Can review a dozen or more grants in a cycle
- Often less expertise than you in the grant topic



You describing your research

A reviewer reading your proposal

Sections of your Specific Aim page

1. Introduction
   - Identify the “need”
2. What, why and who
   - Outline the idea for a solution
3. Specific Aims
   - Spell out the approach
4. Conclusion and Impact
   - Summarize expectations (payoff to the funding agency)

Introduction – Identify the "need"

Introductory paragraph

- Opening sentence
- Current knowledge
- Gap or lack
- Statement of need
- Consequences of not meeting need

Primary purpose:

- Quickly convince reviewers (via education) that there is a significant gap in knowledge/lack of something (i.e., a "problem").
    - This problem then provides the basis for a "critical need" relevant to the mission of the NIH.

Introductory paragraph
- Opening sentence
- Current knowledge
- Gap or lack
- Statement of need
- Consequences of not meeting need

Introduction – Identify the "need"

Opening sentence

- Hook the reviewer in the first sentence
- Must address two key points:
  1. Identify what the proposal will be about
  2. Immediately relate how the research fulfills the mission of the granting agency
- Do not simply state knowledge that will be obvious to any reviewer

Unhelpful Example	Helpful Example
"Type II diabetes, currently affecting more than 9 percent of all adults in the U.S., frequently results in open wounds that are resistant to healing."	"Therapeutic options for impaired skin wound healing, an important complication of aging and a variety of chronic diseases (e.g., diabetes, scleroderma, and severe acne), remain limited."

Examples brought to you John D. Robertson, PhD from Grant Writers' Seminars & Workshops

Introductory paragraph
- Opening sentence
- Current knowledge
- Gap or lack
- Statement of need
- Consequences of not meeting need

Introduction – Identify the "need"

Current knowledge

- Educate reviewers on what is important in your field of research
- 3-6 sentences bringing reviewers up to speed with the "state-of-the-art" science
- Cite only key references
- All key points that reviewers need to know must be introduced here

Introduction – Identify the "need"

Gap or lack – *Frame the problem*

- Current knowledge must lead to a conclusion that there is an important gap in knowledge or a lack of something.
  - Without this, there is no need for your research proposal.

Unhelpful Example	Helpful Example
"Little research has been done…..	"What remains unknown are predictors of smoking relapse in this population.

Introductory paragraph
- Opening sentence
- Current knowledge
- Gap or lack
- Statement of need
- Consequences of not meeting need

Introduction – Identify the "need"

Statement of need – *Frame the problem*

- Convey that this problem is real, and your research will fill this gap using the funding requested

Unhelpful Example	Helpful Example
"Little research has been done….. Therefore, there is a need for more research……."	"What remains unknown are predictors of smoking relapse in this population. Thus, there is a *critical need* to identify a list of factors associated with cigarette smoking relapse among low-income new mothers shortly after giving birth."

Examples brought to you John D. Robertson, PhD from Grant Writers' Seminars & Workshops

Introductory paragraph
- Opening sentence
- Current knowledge
- Gap or lack
- Statement of need
- Consequences of not meeting need

Introduction – Identify the "need"

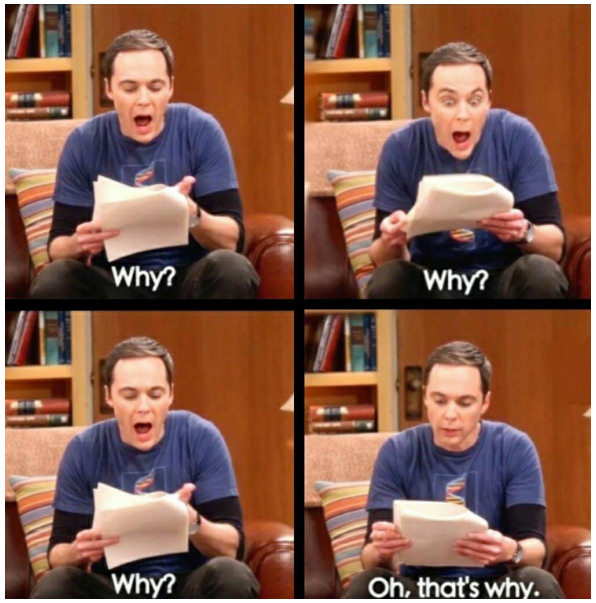
Consequences of not meeting the need – *Frame the problem*

- Conclude with why the absence of a "solution" to this problem is an issue for the funding agency
- Assert how the field will be held back

Unhelpful Example	Helpful Example
"Little research has been done….. Therefore, there is a need for more research……." *** No conclusion = hard sell to reivewers***	"In the absence of such knowledge, the development of effective intervention strategies to help decrease smoking related health risks within this underserved population will likely remain difficult."

Examples brought to you John D. Robertson, PhD from Grant Writers' Seminars & Workshops

What, why, and who



Second paragraph

- Long-term goal
- Objective in this application
- Central hypothesis & how its formulated
- Rationale

Primary purpose:

- Convince all reviewers that you and the research team have the “solution” to the “problem” or issue (i.e., a fix for the *critical need*) identified

Second paragraph

- Long-term goal
- Objective in this application
- Central hypothesis & how its formulated
- Rationale

What, why, and who

Long-term goal – Generally speaking

- Your career goal. Not the goal of this application.
- By definition, your long-term goal and the mission of the funding agency are one.
- Be realistic – do not overstate your capabilities

Unhelpful Example	Helpful Example
"The long-term goal is to eliminate illness, disability, and death related to tobacco use."	"The long-term goal is to identify key factors predictive of tobacco use, so that improved strategies can be developed to reduce environmental tobacco smoke exposure and tobacco-related morbidity and mortality."

Examples brought to you John D. Robertson, PhD from Grant Writers' Seminars & Workshops

Second paragraph

- Long-term goal
- Objective in this application
- Central hypothesis & how its formulated
- Rationale

What, why, and who

Long-term goal – F/K award specific

- Should reflect the purpose of the F/K award
- Should reflect the career area the applicant aspires to enter

F Awards (F31 & F32)

Enhance the research skills of promising predoctoral and postdoctoral candidates who have the potential to become productive, independent investigators in scientific health-related research fields.

K Awards

Provide a training vehicle that will ensure career development in a new career area and results that will enable a competitive, extramural research-grant application, preferably an R01.

Helpful Example

"My long-term goal is to establish an independent research career as a molecular epidemiologist focused on the pathogenesis of breast cancer."

Examples brought to you John D. Robertson, PhD from Grant Writers' Seminars & Workshops

Second paragraph

- Long-term goal
- Objective in this application
- Central hypothesis & how its formulated
- Rationale

What, why, and who

Overall objective

- Should define the overall purpose for the proposed set of activities, experiments, etc.
- Must be written so it addresses the "critical" need identified in 1st paragraph
- Must be a step toward attaining the long-term goal

Unhelpful Example	Helpful Example
"My overall objective for this application is to investigate factors related to high smoking relapse rates among low-income new mothers."	"My overall objective for this application is to identify factors predictive of high smoking relapse rates among low-income new mothers."

Examples brought to you John D. Robertson, PhD from Grant Writers' Seminars & Workshops

Second paragraph

- Long-term goal
- Objective in this application
- Central hypothesis & how its formulated
- Rationale

What, why, and who

Overall objective

Must have a well-defined endpoint

- Avoid indeterminate endpoints as they are ambiguous and uncertain
- Determinate endpoints are measurable and have a clearly defined, predictable outcome
  - … to identify ….
  - … to test….
  - … to quantify…

……to investigate factors related to……
……to explore why……
……to better understand why……
……to improve our understanding of……
……to examine the reasons for……
……to research the effects of……
……to study the mechanisms of……

Second paragraph

- Long-term goal
- Objective in this application
- Central hypothesis & how its formulated
- Rationale

What, why, and who

Central hypothesis

- Your "best bet" for an outcome among all alternatives
- Have readily identifiable parts that set up your specific aims
- To assess its validity, it must be testable
  - There must always be at least two outcomes

Unhelpful Example	Helpful Example
"The central hypothesis is that key psychosocial and environmental factors may relate to the high rates of smoking relapse among low-income new mothers."	"The central hypothesis is that key psychosocial and environmental factors relate to the high rates of smoking relapse among low-income new mothers."

Examples brought to you John D. Robertson, PhD from Grant Writers' Seminars & Workshops

Second paragraph

- Long-term goal
- Objective in this application
- Central hypothesis & how its formulated
- Rationale

What, why, and who

Rationale

- Justification of need
- What is likely possible after the project is complete that isn't possible now
- The underlying reason you decide to pursue the project in the first place
- Relate it to the critical need **and** the mission of the funding agency

Unhelpful Example	Helpful Example
	"The rationale is that new pilot evidence on the chemical basis for enhanced skin wound healing by Gardenia is likely to provide focus and supportive preliminary data for subsequent definitive studies at the R01 level."

Second paragraph

- Long-term goal
- Objective in this application
- Central hypothesis & how its formulated
- Rationale

What, why, and who

Rationale – F/K award specific

- Should reflect why you want the F/K award
  - What will become possible after the program is completed that is not possible now?
    - Scientifically
    - With respect to research training and/or career development

F Award Example

"The rationale for the proposed research program is that it is expected to yield important new insights into the role of the environment in the pathogenesis of breast cancer while, at the same time, it offers me the opportunity to acquire a strong foundation in rigorous research design and methods needed to advance my potential for an independent research career as a molecular epidemiologist."

K Award Example

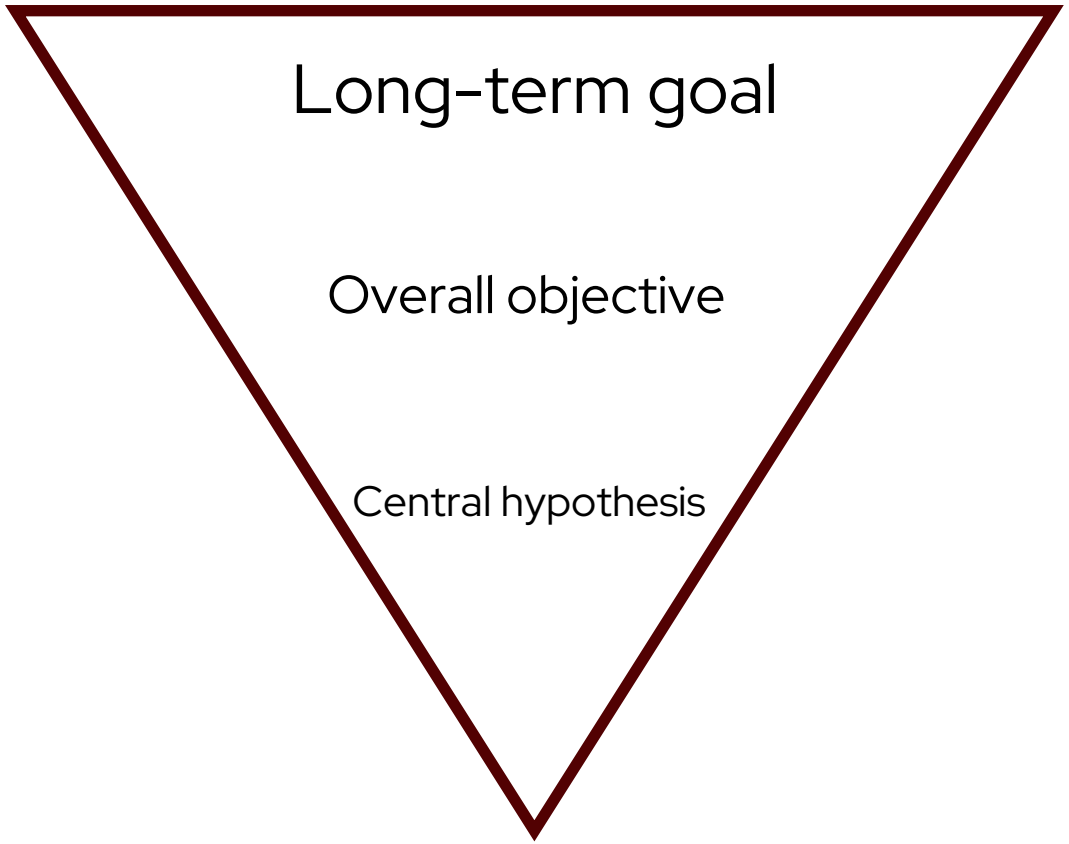
"The rationale for the proposed research program is that it is expected to yield important new insights into the role of the environment in the pathogenesis of breast cancer while, at the same time, it offers me the opportunity to establish my independence as a molecular epidemiologist."

Examples brought to you John D. Robertson, PhD from Grant Writers' Seminars & Workshops

What, why, and who

Second paragraph

- Long-term goal
- Objective in this application
- Central hypothesis & how its formulated
- Rationale



Information moves from the broadest (i.e., career orientated) to the most specific.

Specific Aims

Primary purpose:

- Provide logical, step-by-step development of key ideas, hypotheses, and activities for fulfilling the objective(s) to address the critical need.

Each aim should:

- Be 2-4 concise, eye-catching “headline” statements
- If possible, conceptual or outcome focused, **not** a description of activities
- Each should be followed by a subordinate working hypothesis and/or approach statement

Specific Aims

Example

Unhelpful		Helpful
Descriptive	**Unfocused**	**Conceptual**
Aim: Look to see whether psychosocial factors play a role in smoking relapse among low-income new mothers. I *hypothesize* that this will be an important predictive factor for relapse.	**Aim: Study psychosocial factors of low-income mothers who resume smoking after giving birth.** I *hypothesize*, based upon pilot data, that psychosocial factors will prove to be an important variable that will predict smoking relapse.	**Aim: Identify key predictive psychosocial factors for smoking relapse among low-income new mothers.** My *working hypothesis* is that loneliness, perceived infant irritability, and decreased self image will predict smoking relapse among low-income new mothers.

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Specific Aims

Example

To accomplish our main objective above, we propose the following **specific aims:**

1) **To evaluate the cultural relevance of CBT-AD by conducting formative research among HIV-infected women and HIV care providers to inform the cultural adaptation of CBT-AD intervention for HIV-infected women in rural areas of Alabama;**
2) **To systematically adapt the CBT-AD intervention to HIV-infected women residing in rural Alabama and telemedicine technology, using an iterative open-label – non-randomized process.**
3) **To assess the feasibility, acceptibility and preliminary behavioral efficacy of the adapted CBT intervention to address depression among HIV-infected women and retention and adherence to care by implementing a pilot randomized controlled trial (RCT).**

Aim 1 (K99 Y1). To identify common challenges, strategies and gaps in care and support for community-dwelling PwD near the EOL. Sub Aim 1. Identify differences in challenges, strategies, and gaps for African American and white FCG. Semi-structured interviews with African American (n=20) and white (n=20) FCG *and bereaved FCG of [patients with primary or secondary dementia diagnoses]* recruited from Visiting Nurse Service of New York (VNSNY) hospice, Weill Cornell Medicine practice sites, and community organizations, and clinicians (n=20) will identify challenges and gaps.

Aim 2 (K99 Y2). To adapt culturally inclusive, dementia-focused training materials and create a goal assessment tool for home hospice clinicians to guide care and support for PwD and FCG. Sub Aim 2. Incorporate perspectives of racially diverse stakeholders. The training will tailor existing materials on dementia caregiving to address the challenges and strategies specific to home hospice care for dying PwD identified in the literature and supported by Aim 1. The tool will encompass a culturally inclusive range of challenges, goals, and outcomes related to EOL dementia care as identified by diverse stakeholders that will guide clinicians in tailoring care to the challenges individual FCG face.

Aim 3 (R00 Y1-Y2). To examine feasibility and acceptability of the training and tool and revise them based on feedback. Hypotheses: >70% of home hospice clinicians will: 1) complete the training, 2) report the training and tool are useful, 3) increase knowledge of dementia-related challenges and care strategies, and 4) increase confidence in providing dementia-related care.

Aim 1. Determine the dominant regulatory mechanism of liver-resident DCregs. The mechanisms by which liver-resident DCregs affect graft rejection have not been well characterized. Based on prior data regarding DCreg inhibitory function[9-11], our working hypothesis is that liver-resident DCregs regulate the rejection response towards the transplanted liver through their expression of co-inhibitory proteins and production of regulatory EVs. To test this hypothesis, we will use a model of rat orthotopic liver transplantation from LEW to BN rats, to determine if expanding liver-resident DCregs *in vivo* or during NEVLP can decrease rejection after transplant. We will then use a model of rat liver transplant that *does not reject* and assess whether tolerance in this model can be broken by the selective depletion of DCregs. We will further assess whether tolerance in this model can be broken through the addition of GW4869 to inhibit EV production, or the addition of anti-PD-L1 antibody to block PD-L1 expressing cells. We expect a greater immune response towards livers that are lacking DCregs or unable to produce EVs or express PD-L1.

Aim 2. Measure the impact of expanded liver-resident DCregs generated by combination cytokine therapy during NEVLP on liver graft rejection *in vitro* and *in vivo*. Our preliminary data show that anti-inflammatory cytokines can increase DCreg frequency during NEVLP. The working hypothesis is that efficiently expanded liver-resident DCregs during NEVLP can promote a regulatory environment for the organ after transplant. To test this hypothesis, rat livers will be treated with the anti-inflammatory cytokines IL-10 and TGFβ during NEVLP[20-22]. The frequency and phenotype, and regulatory function of the DCregs will be determined using multiparameter flow cytometry and mixed cellular reactions, respectively. We will then compare NEVLP livers treated with and without anti-inflammatory cytokines in a rat liver transplant model and expect the addition of anti-inflammatory cytokines during NEVLP will induce the formation of DCregs in the liver and decrease immune responses after transplant.

Example brought to you Dr. Morgan Giddings from Marketing Your Science LLC & the NIH

Specific Aims

Tips for success:

- Make sure your grandma can understand them
- Aims should be related, but not dependent on one another
  - If you do this, the failure of one aim (or an unexpected result from one aim) does not negatively influence any other aim or prevent the completion of the other aims.
- Use headings and/or bullets to delineate each aim

Conclusion and Impact

Conclusion paragraph

- Expected outcomes
- Positive Impact

Primary purpose:

- Inform the reviewers (and the funding agency) exactly what the “return on investment” (i.e., the deliverables) will be and why this will be of value to the mission of the funding agency

Conclusion and Impact

Expected outcomes

- Specific and credible
- Do not write in future tense
  - This is what will have been accomplished (e.g., I expect to have….)

F Award Example

Don't forget to include how it will prepare you to transition into the next career stage.

"These outcomes are expected to position me to submit a competitive K22 application by the beginning of the third year of the proposed Award."

K Award Example

Don't forget to include your intent to write and submit an R01 (or equivalent).

"These outcomes are expected to position me to submit a competitive R01 application during the 4th year of the proposed Award."

Examples brought to you John D. Robertson, PhD from Grant Writers' Seminars & Workshops

Conclusion and Impact

Positive Impact

- Conclude paragraph
- General statement of how these outcomes will fill the identified need and thereby advance the mission of the agency

Unhelpful Example	Helpful Example
	"Such results will *positively impact* the development of an R01 scale RCT, testing the efficacy and cost-effectiveness of CBT-AD among women across various HIV care settings."

Conclusion

- Each Specific Aims page is unique and yours may look different
- There is flexibility in how elements can be arranged and emphasized
- Consider the novelty, innovation, and significant elements of your proposal as you organize
- Don’t forget to start early!

Any Questions?

Feel free to contact me

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Introduction – Example 1

Despite the recent development of trading with markets to the East, opportunities for individuals and governments in European countries to gain access to significant new products, as well as to grow economically, remain uncertain. Based upon the establishment of viable trade routes to the Orient, pioneered by the Italian Marco Polo and his colleagues, citizens of Europe are increasingly demanding the rich silk textiles, exotic teas, spices and other food products from the East. In this respect, such goods demand premier prices, and forward-thinking entrepreneurs and governments can be expected to accumulate significant wealth by capitalizing upon these opportunities to gain a dominant market share. Unfortunately, established trade routes to the East are currently extremely perilous and involve treacherous mountain passes, dangerous river crossings and threats from armed bandits. As a result, only ~15% of merchandise intended for European markets from the East actually reaches its destination, and the economic repercussions remain unknown. In addition, the risk to the lives of those involved in these trade routes is exceptionally high, and it is becoming increasingly difficult to recruit merchants willing to commit resources to such ventures. There exists, therefore, a *critical need* to identify alternative trade routes that can be used to cost-effectively and efficiently bring goods and merchandise from the East to markets in central Europe. In the absence of such alternative strategies, trade with the East will continue to be a challenging and economically risky practice that will impede Spain's economic growth.

Color Key: Hook | Known Information | Gap in Knowledge | Critical Need | Consequences

Introduction – Example 2

Viruses are thought to be involved in 15% to 20% of human cancers worldwide, thus providing critical tools to reveal common mechanisms involved in human malignancies. As the etiologic agent of adult T cell leukemia/lymphoma (ATLL), human T cell leukemia virus type I (HTLV-1) is just such a virus. HTLV-1 encodes a potent oncoprotein, Tax, which regulates important cellular pathways including gene expression, proliferation, apoptosis, and polarity. Over the years, Tax has proven to be a valuable model system in which to interrogate cellular processes, revealing pathways and mechanisms that play important roles in cellular transformation. Although the Tax oncoprotein has been shown to transform cells in culture and to induce tumors in a variety of transgenic mouse models, the *mechanism by which Tax transforms cells is not well understood*. A large number of Tax mutants have been generated and their biological activities have been thoroughly characterized, primarily in cell culture systems. *Currently, a major obstacle in the field* is that the transforming activity of Tax mutants cannot be compared using available transgenic models due to random transgene integration sites, variable transgene copy number, and inconsistent transgene expression levels, making it difficult to link the biological activities of Tax mutants with their transforming potential.

Color Key: Hook | Known Information | Gap in Knowledge | Critical Need | Consequences

What, why, and who – Example 1

To solve this problem we will develop an innovative mouse model system in which to study Tax tumorigenesis using targeting vectors containing wild-type or mutant Tax genes that are silenced by a preceding floxed stop cassette. These vectors will be knocked in to the *Rosa26* locus of recipient mice by recombination. After crossing these mice with Lck-CRE mice, the stop cassette will be specifically excised in developing thymocytes where the Lck promoter is active, allowing conditional expression of wild-type or mutant Tax proteins in T cells, the natural target of HTLV-1 infection. The feasibility of our proposed mouse model is supported by the fact that Lck-Tax transgenic mice have been developed and produce a leukemia that closely resembles ATLL. Thus, targeting of Tax expression in cells in which the Lck promoter is active is expected to produce a similar disease in our model. In our improved model system, insertion into the *Rosa26* locus will eliminate random integration sites and standardize gene copy number resulting in consistent levels of wild-type and mutant Tax protein expression.

Color Key: Long-term Goal | Proposal Objective | Rationale | Hypothesis | Pay-off

What, why, and who – Example 2

Our *long-term goal* is to help establish Spain as the economic center of the European marketplace, thus bringing prosperity and economic wealth to both its citizens and the government of Spain. Our *overall objective in this proposal* is to identify and establish the viability of an alternative route for the efficient exchange of goods between Europe and the East. Our *central hypothesis* is that the earth is a sphere, and that ships sailing to the West will reach the Orient by an all-seas pathway, thus creating an economically viable, readily sustainable, and far superior trade route relative to existing overland trade routes through Eastern Europe and central Asia. We have based our central hypothesis upon the fact that virtually all celestial bodies observed to date appear round and, if the earth were also to be a celestial body, it should have a round/spherical form as well. In addition, and in contrast to "flat earth" proponents, ships sailing to the West beyond the visible horizon have not yet fallen off the edge. Finally, there exist earlier reports that the Norwegian explorer, Eric the Red, discovered in 997 A.D. a continent located three-months sail to the west of Iceland. We have speculated that this earlier identified land mass is associated with the far eastern lands currently reached by overland routes through Europe and eastern Asia. Our *rationale* for this project is that its successful completion would place Spain in a superior position to capitalize upon its extensive merchant marine inventory of galleons and trade ships to become an economic super-power in 15th century Europe. We are *well-positioned to lead this project* based on our 35 years of navigation experience, and we have recently created the first detailed map of the west coast of Iceland and Greenland. We plan to attain the overall objective by pursing the following two *specific aims*:

Color Key: Long-term Goal | Proposal Objective | Rationale | Hypothesis | Pay-off

Specific Aims – Example 1

Specific aim #1: *Identify an all-seas trade route with far eastern markets.* Our *working hypothesis* is that, by sailing due west-southwest from the shores of Spain, we will be able to reach far eastern trading communities within four months.

Specific aim #2: *Evaluate the economic viability of the new route.* Our *working hypothesis* is that we will be able to return to Spain within a year with our three galleons laden with exotic textiles, spices and foods from the East.

Color Key: Aim Title | Experimental Strategy | Outcome or Impact

Specific Aims - Example 2

Aim 1 will establish an innovative mouse model for HTLV-1 Tax tumorigenesis. Targeting vectors containing silenced wild-type or mutant Tax genes will be knocked in to the Rosa26 locus of C57BL/6 mice. These mice will then be crossed with homozygous Lck-CRE mice, thereby excising the stop cassette and generating mice that express wild-type or mutant Tax proteins specifically in T cells.

Aim 2 will examine the effect of mutations that disable specific biological functions of Tax on Tax-mediated tumorigenesis. Tax can bind to and regulate the activity of members of the SRF, CREB, NF-kB and PBM protein families, each of which has been implicated in oncogenesis. Mice established in Aim 1 will allow us to compare for the first time the tumorigenic potential of wild-type and mutant Tax proteins in an effort to identify pathways that are required for Tax tumorigenesis.

Color Key: Aim Title | Experimental Strategy | Outcome or Impact

Conclusion and Impact – Example 1

The proposed studies will establish a new mouse model that will overcome current limitations and provide greater insight into the mechanism of HTLV-1 Tax tumorigenesis, knowledge that is currently lacking and that promises to yield novel insights into viral and cellular biology. The new and improved mouse model for Tax tumorigenesis will provide a valuable resource for the wider scientific community to pursue a multitude of studies that have not previously been possible due to limitations of existing mouse models of Tax.

Color Key: Innovation | Expected Outcomes | Impact/Pay-off

Conclusion and Impact – Example 2

Upon the successful the completion of this project, it is our *expectation* that we will have established a novel, economically advantageous and safe trade route to eastern trading communities that will markedly enhance Spain's stature and economic well-being within the European economic community. We also expect that the successful completion of this project will have provided a tenfold return on Spain's initial investment in this proposed project. Not only would this accomplishment have an enormous *positive impact* on the financial security and stability of the government of Spain, it would also help to redefine existing concepts of our global environment, as well as establish novel new precedents for exploration and discovery.

Color Key: Innovation | Expected Outcomes | Impact/Pay-off

Mentored NIH Fellowship and Career-Development Awards

Eligibility

- Most require either citizenship, permanent-resident status, or non-citizen national status
  - F99/K00 (in some cases) and K99/R00 allow non-citizens with temporary visas to apply
- Applications can be submitted if permanent residency is pending, but no award until it is granted.

Common Format for NIH Research Plan (K Award)

- Specific Aims (1 page)
- Research Strategy (~8-9 pages)
  - Significance (~3 pages)
  - Innovation (~0.5 pages)
  - Approach (~5-6 pages)
    - Each Specific Aim
      - Introduction
      - Research Design
      - Expected Outcome
      - Potential Problems and Alternative Strategies
    - Timetable
    - Future Directions

Common Format for NIH Research Plan (F Award)

- Training Activities and Timeline (3 pages)
- Research Training Project Specific Aims (1 page)
- Research Training Project Strategy (6 pages)
  - Scientific Foundation and Rationale (~2 pages)
  - Approach (~4 pages)
    - Each Specific Aim
      - Introduction
      - Research Design
      - Expected Outcome
      - Potential Problems and Alternative Strategies
    - Timetable
    - Future Directions

Problems seen

Review of 66 R01 applications to a clinical research study section at NIH revealed:

45% of applications received critical comments about the Specific Aims:

1. Goals overstated, overly ambitious or unrealistic 18%
2. Poorly focused or inadequately conceptualized 15%
3. Hypothesis not clearly articulated 12%

1 Include existing literature and/or preliminary studies to demonstrate that the work you propose is feasible

2 Make sure you present an overarching hypothesis in the What, Why, and Who section as well as individual hypotheses for each Aim if possible. Avoid exploring data to identify a hypothesis.

3 Make sure your proposal uses:

- A new theory or model (supported by literature)
- A different application of an existing theory or model (e.g., from another field)
- An existing theory or model in a new population, system, or circumstance
- New and better experimental methods, instrumentation, or analytic approaches

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Thank you