Specific Aims page

- Has a customary style
  - Introductory paragraph(s) followed by a list of research aims, objectives or tasks (see handout)
- Listed aims = conceptual 'headlines' that communicate why you want to do the research
- Will you have some interesting information regardless of the outcomes?
  - Aims must flow logically from one to the next to the next
  - None of the aims can be completely dependent on an expected outcome of an earlier aim – avoid a "house of cards" construction for the research aims
- Aims for a grant proposal will use different writing style compared to a dissertation

Writing the Specific Aims:
(according to Russell and Monson, 2010; www.grantscentral.com)

1. Introductory para has a high impact opening sentence that "immediately establishes the relevance of the proposal to human health"
2. Current knowledge
3. Gap in the knowledge base and or unmet need, i.e., what is the clinical problem
4. What/Why/Who – long-term goal, objective of this application, and central hypothesis and how it is formulated (fellowship and CDA are different)
5. Listing of the specific research aims or objectives

Specific Aims

PURPOSE (for NIH grants): A one-page 'capsule' of the entire project - presentation of rationale, significance, and research objectives (and sometimes training goals).

- Also called by non-NIH funders: Objectives or Research Goals
- Different than an Abstract for a grant proposal
- NIH style predominates – 1 page with a customary presentation style
- Specific Aims is arguably the most important section in the proposal
  - Establishes the reviewers' first (and sometimes the only) impression of the merits of your science
  - Previews all aspects of the proposal (including grant writing)

1. Introductory Paragraph(s)

- Opening paragraph(s) conveys a lot of information in a small amount of space
- How can you be succinct and compelling?
- This is your first chance to engage your reader in the research - make an impact!
- What kind of work are you doing/research design?
  - Primary data collection, prospective human samples, molecular data
  - Secondary data set analysis, emerging analytic techniques, databases
  - Technology development
- The importance to public health is essential to building relevance
  - Avoid a "slaying uncasef or a short paragraph – don't be overly focused on the methods, rather state relevance of the science
  - Speak to relevance and/or how your work is different – replacement of key phrases from the RFA (e.g., global health, non-communicable disease)
A Good First Sentence is Key

Opening statement - convey relevance, include epidemiology for context

Stroke is the third leading cause of death and a leading cause of long-term disability in the United States. In 2005, 710,000 strokes were estimated to have occurred, leading to more than 160,000 deaths and $57 billion in medical and disability costs.

Necrotizing enterocolitis (NEC) and intestinal perforation (IP) are common newborn surgical diseases affecting primarily preterm infants.

Relative deficiency of glutamine (GLN) appears to contribute to morbidity and mortality in surgical intensive care unit (SICU) patients, but conventional nutrition support does not repair this deficit.

Kidney transplantation is the preferred treatment for most of the 615,000 end-stage renal disease (ESRD) patients in the United States. Compared to remaining on dialysis, kidney transplantation has been associated with improved quality of life, longer survival, lower hospitalization rates, and decreased healthcare costs.

2. What is the current knowledge on your topic?

- Identify 3-4 points of the most important facts about your area of interest
- This is to show reviewers that you have a grasp of the most important current knowledge and literature (i.e., you can prioritize and synthesize information)
- The way you present these facts sets the stage for what is the knowledge gap, i.e., what is the question that drives your proposal.

Prepare using an outline of bullet points → NARRATIVE

Opening sentence + supporting facts

Example:
Over the past several years, it has become clear that achieving and maintaining adequate ARV drug concentrations is required to produce a durable virologic response.

- Durability of an ARV regimen is limited by the development of viral resistance (ref)
- Limited by occurrence of drug toxicities (ref)
- These are related to higher plasma and tissue drug concentrations (ref)

3. What is the gap in knowledge?

- Introduce what represents the “unknown” that you will address in this proposal
- The fact that something has not been studied is not a rationale for research (maybe it hasn’t been studied because no one thinks it’s worth studying).

Example:
- First opportunity to implement a program for treatment of LTBI among high-risk persons (including young children and HIV-infected persons)
- Will provide a foundation for network analysis
- Will further define transmission patterns of TB

- Who else thinks this is an unmet need or knowledge gap?
  - This is a good place to reference the funder or an authoritative body (WHO white paper) or refer to a theoretical model

Example:
- WHO and the International Union Against Tuberculosis and Lung Disease recommend providing contact investigation and treatment of LTBI for children under 5 years who are household contacts in low-income countries
- "International Standards for Tuberculosis Care" developed by the Tuberculosis Coalition for Technical Assistance (TBCTA) states....

4. Long-term goal + expected outcomes

- What would be the next logical step in this line of research?
  - Describe beneficial public health outcomes
  - Describe incremental new knowledge that will impact ......

Example:
- This implementation science project will help to provide information that can be used to define the benefits of interventions among the contacts of active TB cases inseltings of high tuberculosis prevalence.
- If successful, will lead to country-wide implementation
**Hypothesis**
Individually risks for poor health outcomes.
Prediction deceased and living donor transplantation at 5 and 10.

**Aim 1:**
To expand the current iteration of the patient's 5 year transplant outcomes for ESRD patients and kidney transplantation based on the individual's 5 and 10 year graft survival for living and deceased donor kidney transplantation, based on the work and good construct of fuzzy trace theory. This aims to refine similarly nuanced and with a construct that enables the patient to interpret and compare their treatment risks. Our specific aims for this proposal are:

1. To develop predictive models to determine long-term outcomes (5 and 10 year) and patient-specific graft survival considering living donor and deceased donor risks. The proposed research will improve our current shared decision tool to offer more accurate, individualized risk estimates, with a personalized focus on transplantation options and long-term outcomes.

**Specific Aim 1**

- To examine factors associated with concordance and discordance between the three tests to be utilized.
  - a) To assess impact of degree of immunosuppression (by CD4 count) on performance of IFNg assays and TST.
  - b) To assess influence of coinfection with hepatitis C virus on the performance of IFNg assays and TST.

**Objectives**

**Objectives of the proposed study include:**

**Objective 1.**
To examine factors associated with concordance and discordance between the three tests to be utilized.

**Objective 2.**
To determine predictors of latent tuberculosis infection among HIV positive individuals in Georgia, using two IFNg assays (T.SPOT-TB and QuantIFERON Gold in Tube) and tuberculin skin test.

**Objective 3.**
To examine factors associated with concordance and discordance between the three tests to be utilized.

**Example**

**Specific Aim 1.**
What is the prevalence of extreme drug resistant TB in rural versus urban Ethiopia? Using contact surveillance methodology, we will...

**Hypothesis-driven vs. Need-driven work**

- There may not necessarily be a hypothesis.
- The aims can be descriptive, open-ended, exploratory.
- What are the tasks to be done to meet a need?
- There may be no supporting preliminary data.

**EXAMPLES of Listing of Specific Aims**

**Hypothesis 1**
Breast milk contains substantial neutralizing activity that can block the infectivity of vaccine virus presented to infants. Breast feeding at the time of vaccine administration could neutralize the vaccine virus, lower its effective titer, and decrease immunogenicity.

**Specific Aim 1**
Test the resulting immunogenicity of the oral human rotavirus vaccine, Rotarix® GlaxoSmithKline (G1P[8]) by delaying breast feeding for 60 minutes before immunization and 60 minutes post immunization, in a group of test versus control nursing mothers.

**Hypothesis 2**
Maternal serum antibody titers to rotavirus passed from mother to infant may lower the immunogenic response of the rotavirus vaccinated infant.

**Specific Aim 2**
Compared to a control group of nursing mothers, delay of the first dose of the oral human rotavirus vaccine, Rotarix® GlaxoSmithKline (G1P[8]) from 6 to 14 weeks and delay of the second dose from 14 to 18 weeks will permit greater decay of maternal antibody titers in the infant, resulting in an increased immune response to rotavirus vaccination on a delayed, but within licensure guidelines.
Considerations for Specific Aims

- Do you have too many aims for the time frame?
- Are they logically related?
- Do they belong in the same proposal?
- Most proposals are overly ambitious.

→ This section requires the most planning and development
→ Must be exciting, compelling, beautifully written