Writing a Home Run
Research Strategy

Children’s Foundation
Research Institute
Recent Changes

• Version F for application guides and forms

• Inclusion of individuals across the lifespan
  – Exclusion of any specific age or age range group (e.g., children or older adults) should be justified in this section.

• Guidelines for research using human fetal tissue
  – Added instructions for applications proposing the use of human fetal tissue obtained from elective abortions.
TRAINING INSTRUCTIONS FOR NIH AND OTHER PHS AGENCIES

SF424 (R&R) APPLICATION PACKAGES

Guidance developed and maintained by NIH for preparing and submitting applications via Grants.gov to NIH and other PHS agencies using the SF424 (R&R)
<table>
<thead>
<tr>
<th>Section of Application</th>
<th>Page Limits * (if different from FOA, FOA supersedes)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project Summary/Abstract</td>
<td>30 lines of text</td>
</tr>
<tr>
<td>Project Narrative</td>
<td>Three sentences</td>
</tr>
<tr>
<td>Introduction to Resubmission or Revision Application (when applicable)</td>
<td>1</td>
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<tr>
<td>Candidate Information and Goals for Career Development and Research Strategy</td>
<td>12 (for both attachments combined)</td>
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<tr>
<td>Specific Aims</td>
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<td>Training in the Responsible Conduct of Research</td>
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<tr>
<td>Candidate's Plan to Provide Mentoring (Include only when required by the specific FOA, e.g., K24 and K05)</td>
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<td>Plans and Statements of Mentor and Co-mentor(s)</td>
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<td>Letters of Support from Collaborators, Contributors, and Consultants</td>
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<td>Description of Institutional Environment</td>
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<tr>
<td>Institutional Commitment to Candidate's Research Career Development</td>
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<td>Biographical Sketch</td>
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Introduction

• For revised applications only
• Summarizes substantial additions, deletions, and changes
  – It is sufficient to outline the changes made to the resubmission application in the Introduction attachment. NIH has removed the requirement to identify 'substantial scientific changes' in the text of a resubmission application by 'bracketing, indenting, or change of typography'.
Introduction

• Addresses the concerns and criticisms raised in the summary statement
• Respectful and appreciative language
  – “The reviewers are obviously not familiar with……”
  – “We very much appreciate the thoughtful comments of the reviewers…. “
Research Strategy

• Significance
• Innovation
• Approach
  – Research Design
  – Preliminary Data
  – Methods
  – Analysis of Results
  – Final Section
Research Strategy

• Strengths and weaknesses of relevant prior research or preliminary data
• Strong scientific premise
• An experimental design and methods that will achieve robust, unbiased results
• Biological variables are factored into the research design, with justification provided for restrictions
Significance

• Review literature selectively and critically
• Show how your proposed work will fill gaps in knowledge in your field
• Emphasize impact
  – Remember that the final overall score of your grant is based on potential impact of your proposal
• Should be more compelling if you have less preliminary data
• Aim for a conceptual model that addresses the current project and your long-term plan
Innovation

• Will your project challenge or shift the status quo?
• Does the study use new concepts, approaches, or methods?
• Will this study improve current methods or concepts or apply them in a new way?
• Are your research/career goals unique?
• Does your plan represent a “new wave” of research in your field?
Approach: Research Design

- Show how the specific aims test the central hypothesis
- Use diagrams
- Explain rationale for your design, including compromises
- Clarify how the design addresses your primary questions/hypotheses
- Discuss limitations and alternative approaches
- Show how career development activities will enhance your research
Approach: Preliminary Data

• Strong data to support your aims
• Demonstrate feasibility
• Preliminary data are more critical in R01s than in K awards but provide a competitive edge
• Should complement your Career Development Plan
• Put yourself in the spotlight! Don’t give mentors or collaborators all the credit
Approach: Methods

• Cite previously published methods
• Devote space only to methods that are crucial to the study and unpublished
• Offer alternatives to challenging experiments
• Indicate where career development plan will strengthen your skills
• Use letters of support to emphasize capabilities
Approach: Analysis of Results

• Statistical approach and methods
• Power calculations to justify sample size/number of experiments
• Alternative approaches to analysis and interpretation
• Special courses/studies that will develop analytic skills
• Letters of support to clarify mentors’ role in data analysis
Approach: Final Section

- Timeline and benchmarks for success
- Summarize project limitations
- Reiterate project importance and strengths (IMPACT)
- Relate your research project and future R01 to your career goals
- Graphical timeline integrating your Research and Career Development Plans
Additional Details

• Describe oversight of study subject safety, including DSMB, if needed
• Point out any procedures, situations, or materials that may be hazardous to personnel and precautions to be exercised
• Follow guidelines on use of human embryonic stem cells and human fetal tissue in research
Pro Tips

• Use figures and tables to reduce text
• Avoid long stretches of unbroken monotonous text. Use paragraph breaks, figures and tables.
• Make figures and graphs easy to read and interpret
• Make sure figures depict what you say they do, especially fluorescent micrographs
• Avoid hyperbole (“highly innovative”, “paradigm-shifting”, etc.)
• Allow time for review by mentor(s) or collaborators and incorporation of feedback
Courtney Bricker-Anthony, PhD
Scientific Editor, CFRI

Venessa Spearman, MPA
Director of Grant Administration and Contract Development, CFRI