R21 BASICS

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PhD Qualifying Exam Session

THE TAKE HOMES

Understand the goal of a R21

• The purpose of a grant is not to prove what you know. It is ultimately a request for resources to conduct a study, namely protected time and the requisite funds to accomplish the goal.

• The goal is to present a sound/rational case that you will create value/impact in an interesting/important area in bioengineering through this proposed work detailed in this plan. The value could be a technology or knowledge/insight.

• Return-on-investment expectations are scaled to the size/duration of the request. Specifically, the R21 assumes a ~3 year time frame for one person full-time (i.e. similar to the remainder of your thesis).
CRITERIA IN LAY TERMS

- A clear picture of what do you propose to do / what your technology is.

- "Significance" - Why are you doing it? (i.e. problem statement in context of the field and known literature or state of technology/biology)

- "Innovation" - How is this a novel improvement? How will it advance the field?

- "Approach" – Experimental design and rationale, organized into a set of specific aims. The deliverable of the aim is typically specific knowledge or technology that meets a performance metric. How are you going to do it, and what evidence do you have that it should be possible?

- "Impact" – What is the potential for upside given the Significance and Innovation, when probabilized for success based on the Approach?

- "Investigator" – Why should you in particular be funded. Here, you do not have to explain why in the R21. This is gauged by your technical foundations demonstrated during the presentation.

THE R21 FORMAT

- 0.5” margins, at least Arial 11 font

- 7 pages with figures (references not included), with rough guidelines:
  - 1 page specific aims (summary of the whole R21, including description of aims)
  - ~ 1-2 pages significance and innovation (problem and solution statement)
  - ~ 4-5 pages approach (research plan)

- Scoring
  - Significance (directly evaluated here)
  - Innovation (directly evaluated here)
  - Impact
  - Approach (directly evaluated here)
  - Investigator (indirectly evaluated here)
  - Environment

- Examples of successful R21 and summary statements:
  - https://www.nichd.nih.gov/grants-funding/grants-process/application-samples/Pages/default.aspx
  - https://www.niaid.nih.gov/grants-contracts/sample-applications