HOW TO PREPARE A RESEARCH PROPOSAL

The Abstract
  . Broad, long-term objectives
  . Hypothesis *
  . Specific Aims**; research, design and methods
  . Importance of Project

Research Plan
  . Specific Aims
  . Background Significance
  . Progress Reports/Preliminary Studies
  . Research Design and Methods: accomplishing Specific Aims
  . Human Subjects Research
  . Vertebrate Animals
  . Consultants
  . Consortium Contractual Agreements
  . Literature Cited

Appendix

Budget

*One should start with an important hypothesis. Write a powerful hypothesis.

**Specific Aims are not objectives. They are the tests of the hypothesis in terms of experiments or groups of experiments.

Research Proposals, A Guide To Success, Thomas E. Ogden and Israel A. Goldberg
Research-Based Grant Writing Checklist

Specific Aims/Hypothesis
- Are the Aims well focused and fully conceptualize?
- Are the hypotheses clearly articulated?
- Do the aims appear balanced - not over ambitious or unrealistic?

Background/Significance
- Is the significance/importance of the work evident?
- Is it Innovative?
- Does it contribute substantially to previous work in the field?
- Is the need for the study well justified?
- Is the significance overstated?
- Is there extraneous information?

Preliminary / Pilot Studies
- Are the preliminary studies well described and their contributions to the proposed project clear?
- Is there sufficient pilot work?
- Is availability of subjects assured?
- Are enrollment and/or intervention procedures tested and feasible?

METHODS

Study Sample
- Are the inclusion and exclusion criteria fully described and well-justified?
- Are the reasons for selecting this sample clear, not merely convenient?
- Are there important potential biases in the sample section?
- Are there too many exclusions that are not well-justified, or are important exclusions overlooked?
- Are there post enrollment exclusions that could potentially bias the sample?
- Is availability of adequate numbers of participants from the sampling frame assured?
- Are there enough participants in the setting to do the study as described?
Data Collection / Procedures

- Are procedures well described?
- Are there quality assurance measures for data collected?
- Is there adequate description of study instruments/measures?
- Are standardized, validated measures used?
- Are there concerns about validity or reliability of data collection methods?
- Are all important study variables described and collected?
- Are there extraneous variables that are never used in subsequent analyses?

Outcome

- Is the outcome adequately described, defined, and specified?
- Are the validity, reliability, and performance characteristics of the outcome measure provided?
- Is the outcome data collected by researchers who are blinded to the study hypothesis and he study group assignments?

Intervention (if applicable)

- Does the intervention appear potent (is it likely to be effective as described)?
- Is the intervention well described - can you understand what was done or is it a "black box"?
- Is the protocol standardized so it is likely to be reproduced in other settings?
- Is the intervention administered by a separate individual/organization not involved in outcome assessment?
- Is there blinded administration of the intervention protocol (e.g. double-blinding of drug trial)?
- Is there randomization to study groups?
- Will adherence to the intervention be monitored? Will the effects of non-adherence be considered?
- Are safety issues regarding the intervention addressed?
- Is an appropriate control group selected?
- Are issues of contamination or co-interventions in the control group addressed?

Data Analysis

- Have you consulted a biostatistician?
- Are the analytical approach and structure of analyses adequately described?
- Will an intention to treat approach be used?
- Is there adequate attention to potential confounders?
- Are there sample size or power calculations?
- Are attrition rates/losses provided? Do they appear realistic / justified?
- How will missing data and non responses be handled in analyses?
Summary

- Are the strengths and weaknesses of the grant presented?
- How do the weaknesses affect the validity or interpretation of the study results?
  Are potentially fatal flaws under addressed?
- Are the implications of the work discussed?