SIX BASIC TRUTHS ABOUT GRANT WRITING

- You need a good idea.
- You need to be a solid writer.
- You must be RELENTLESS.
- You must have a history of productivity appropriate for your rank.
- You need to have some luck.
- You can't get a grant unless you write one.
  (BUT, DO NOT SUBMIT A HALF-BAKED PROPOSAL!)

THE MECHANISM

- Read the Parent Announcement (PA) for the Funding Opportunity for which you are applying. For R01 (no human subjects) it is currently PA-25-301 (but check, because they change on occasion).

- Write the grant proposal. Allow sufficient time (≥2 months). Give it to senior colleagues in your area for feedback. BE SURE TO FOLLOW ALL INSTRUCTIONS.

- Submit grant proposal through your department and FSU Sponsored Research. This should be done at least 3-5 days BEFORE the deadline in case problems arise.

- Grant proposal is assigned to a study section.

- Only 1/2 of the grant proposals for that round of review by that study section are deemed worthy for discussion.

- Usually, a proposal is reviewed by 3 reviewers from a panel of 20-30. Discussion of a grant is usually only 10-15 minutes (if even that much).

- Score appears on eRA commons within a couple business days after review. Summary statements are delivered electronically ~6-8 weeks later.

THE MECHANISM (cont.)

- You will receive a priority score ranging from 10 – 90. This reflects the overall average score from the study section.

- For many mechanisms, including the R01, your proposal will receive a percentile score, if it was discussed. This score reflect the percentage of proposals that scored better than yours in that study section for the most recent 3 rounds.

- Once you get your summary statements, review them carefully and highlight EVERY single criticism.

- This would be a good time to call the program officer listed for the assigned institute to get some advice or to answer questions that you might have.

- If you decide to resubmit, you are allowed a 1 page introduction where you concisely summarize how you have addressed the concerns raised in the prior review. **BE SURE TO ADDRESS EVERY CONCERN**. Also, do not get combative in your response. Even if you were right, take the blame for not sufficiently articulating the point.

THE MECHANISM (cont.)

Typical Time Table (R01 Example)

February 5:	Submission Deadline for A0 (a first submission). These occur 3 times a year (Feb, June, Oct, on the 5th of the month).
June/July:	Study section review.
August:	Receive summary statement, possible request for Just-in-Time (JIT) documentation (ACUC, IRB approvals, other support).
October:	Institute advisory council meets and makes final decision on funding.
November 5:	Earliest resubmission (A1) date (for R01s it is 1 month later than first submission deadlines).
December 1:	Earliest possible starting date if approved by council.

THE MECHANISM (cont.)

Typical Time Table (R01 Example)

November 5:	Earliest resubmission (A1) date (for R01s it is 1 month later than first submission deadlines).
February/March:	Study section review of A1 submission.
March/April:	Receive summary statement, possible request for JIT documentation.
May:	Institute advisory council meets and makes final decision on funding.
July 1:	Earliest possible starting date if approved by council.

From initial submission date to funding of second submission = ~18 months!!!!

Mind the Study Section

1. Keep in mind the AUDIENCE TO WHOM YOU ARE WRITING – the study section.

2. FIND OUT WHO IS ON THE STUDY SECTION. THIS IS PUBLIC INFORMATION AND IT IS CRITICAL.

    a. Be sure to cover your bases, if necessary, on areas of your research for which members of the study section have an expertise.

    b. If you can, then cite their work where appropriate.

    c. You can generally identify a 2-3 person pool from which the primary and secondary reviewers will be chosen. You must convince them that your grant is worth funding. They must become your allies. There are only a few grants that they will be able to push. You have to make their job easy. It is like providing evidence to an advocate in a legal case.

3. Each reviewer is assigned ~10 grants. They are reading these at night and on weekends for 5 weeks. Make yours stand out (positively) and easy to understand and follow (more on this later).

Section of Application	Activity Codes	Page Limits* (Unless the funding opportunity specifies a different limit)
Project Summary/Abstract	For all Activity Codes	30 lines of text
Project Narrative	For all Activity Codes excluding C06, UC6, and G20.	three sentences
Introduction to Resubmission and Revision Applications	For all Activity Codes (including each applicable component of a multi-component application)	1 page
Specific Aims	For all Activity Codes that use an application form with the Specific Aims section (including each component of a multi-component application)	1 page
Research Strategy	For Activity Code DP1	5 pages
	For Activity Codes R03, R13, U13, U43, R16, R21[2], R35, R36, R41, R43, SC2, SC3, X01[1], X02[1], R50, UT1 [1] X01 and X02 opportunities can be either 6 or 12 pages. Review the NOFO for details. [2] R21 page limit may be different when combined with other activity codes. For example, R21/R33.	6 pages
	For Activity Code DP2	10 pages
	For Activity Codes DP3, DP5, G08, G11, G13, RC2, RC4, RF1, R01, R15, R18, R21/R33, R24, R28, R33, R34, R42, R44, R61, R61/R33, RL1, SB1, SC1, SI2, UB1, UC2, UH2, UH3, UG1, UC4, UF1, UG3/UH3, UH2/UH3, U01, U18, U24, U2C, U34, U42, U44, UT2, X01[1], X02[1] [1] X01 and X02 opportunities can be either 6 or 12 pages. Review the NOFO for details.	12 pages
	For all other Activity Codes	Follow NOFO instructions
Commercialization Plan	For Activity Codes R42, R44, SB1, UT2, U44, UB1 (Attachment 7 on SBIR/STTR Information form)	12 pages
Biographical Sketch (legacy)	For all Activity Codes (including DP1 and DP2 which previously had special page limits)	5 pages
Biographical Sketch Common Form & Biographical Sketch Supplement	For all Activity Codes (including DP1 and DP2 which previously had special page limits)	No hard limit; length controlled through SciENcv data entry format

SCIENTIFIC ISSUES

I. Hypothesis Testing vs. Descriptive

   A. Right or wrong, study sections prefer hypotheses.

   B. Even if you don't have a true hypotheses, many descriptive proposals can be framed in some hypothesis kind of way.

II. Specific problem that fits a global view. In other words, point out that you plan to work on a very well-defined piece of a much larger well-defined problem.

   A. Need a good idea.

   B. Are your specific aims concise and clear?

III. Feasibility

   A. Can you perform the manipulations?

   B. Can you get it done in the time frame proposed.

   C. Do you possess the necessary facilities and resources?

   D. Is your proposal designed such that if your first specific aim fails then all of the others cannot be achieved? That is a fatal flaw.

SCIENTIFIC ISSUES (cont.)

IV. Sufficient Experimental Design

A. Do you have a sufficient sample size?

B. Have you chosen an appropriate animal model (if nonhuman)

C. Have you chosen a proper population to sample from (in the case of human research)?

D. Are your *critical* parametric choices (doses, concentrations, times, session length, etc.) justified?

E. Are the experimental designs "quick and dirty" or comprehensively planned.

F. Do you have sufficient control groups, if appropriate?

G. Is your planned data analysis sufficiently explained?

V. Potential Outcomes

A. What are the potential outcomes?

B. What will each outcome mean interpretively as it relates to the specific problem and, space permitting, the big picture?

SCIENTIFIC ISSUES (cont.)

VI. Potential Problems

A. What are the possible complications that might arise?

B. What are your contingencies for dealing with them?

VII. Never try to finesse or hide weaknesses in design or interpretation. A study section will ALWAYS find them and you will look like you weren't sharp enough to realize them. If there is weakness, address it outright.

VIII. Did you demonstrate a reasonable command of the relevant literature?

A. You don't have enough space to write a review, but key citations should be integrated into the text.

B. If you suspect a certain scientist will be on the study section, then be sure to include his/her reference IF it is relevant to your project.

C. If there is a controversy, be sure to present both sides (even if you prefer one side).

IX. You need to include text addressing **sex as a biological factor.** NIH has mandated that research grants must include both sexes in experimental designs unless it is scientifically justified to focus on only one sex. Sometimes, it is best, if you have space, to have a separate section tiled: "Sex as a Biological Factor".

SCIENTIFIC ISSUES (cont.)

X. In recent years, NIH has been trying to focus on assessing the "rigor and reproducibility" in grant applications. So be sure that your proposal addresses these. Like with "sex as a biological factor", space allowing, it would be optimal to have a short section summarizing the rigor and reproducibility. From the NIH website:

> *"Two of the cornerstones of science advancement are rigor in designing and performing scientific research and the ability to reproduce biomedical research findings. Information provided on this webpage provides information about the efforts underway by NIH to enhance rigor and reproducibility in scientific research. It also provides the extramural community assistance in addressing rigor and transparency in NIH grant applications and progress reports.*
>
> ***Definition: Scientific Rigor***
> *Scientific rigor is the strict application of the scientific method to ensure unbiased and well-controlled experimental design, methodology, analysis, interpretation and reporting of results."*

Enhancing Reproducibility in NIH Applications: Resource Chart

XI. Is the science exciting to you? If not, then it will be difficult to write a proposal that excites others.

STYLE ISSUES

I. Be neat and organized.

A. Use headers and sub-headers.

B. Use bold, underline, italics, outline, etc. to help provide emphasis and help break up the document into logical subdivisions.

C. Do not have dense long paragraphs of text with no white space. On the other hand, don't have large amounts of white space that give the impression that there was more that should have and could have been said.

STYLE ISSUES (cont.)

II. Use Tables and Figures when appropriate.

A. A picture is 1000 words. Nothing beats a nice figure depicting some important point that is central to your proposed research. Fonts in figures and captions DO NOT have to meet the minimum requirements for text, but they obviously have to be legible.

B. A well organized table can really help. Like figures, the font requirements are relaxed.

1. Good for summarizing parameters of some technique.

2. Good for listing potential outcomes and their interpretations.

C. Be careful, however, not to overuse tables and figures. In the case of tables, if they are overly complex or unnecessary they can detract from the proposal. In the case of figures, they are costly in space.

D. Use text boxes and integrate the figures and tables into the document (with text wrapping).

STYLE ISSUES (cont.)

III. Writing Style

A. Write *Scientific American* style.

B. Funnel the reader. Start broad and methodically focus the reader on the importance of your specific problem.

C. Try to avoid jargon and be sure to define abbreviations. Although abbreviations/acronyms save space and are useful in that way, be careful not to overuse them, because they can make reading difficult.

D. Generally, redundancy is bad in writing, but in grants it is an effective way to keep reminding the reader of important points throughout the application.

STYLE ISSUES (cont.)

IV. Page Distribution

A. 12 pages for the Research Strategy plus 1 page for Specific Aims isn't much! Use them wisely. Must be clear and CONCISE!

B. General Breakdown (based on R01):

1. Specific Aims (1 Page)
2. Significance (~3-4 pages)
3. Innovation (0.5 page)
4. Approach (~7.5-8.5 pages)

} Research Strategy (12 pages)

C. Except for the Specific Aims section, which is 1 page, the page breakdown for the Research Strategy is not absolute and can vary as necessary for the specific proposal as long as it fits 12 pages.

D. Also, the Approach section does not necessarily have to be organized in the fashion discussed in scientific issues, but it should include that information somehow.

STYLE ISSUES (cont.)

I. Specific Aims

A. Generally start with 1-3 paragraphs to provide some very basic context to set up the specific aims.

B. List the specific aims in bold, numbered, and separated by a line (indenting is good if you have the space).

C. Different styles for denoting the actual aims. One is to have simply a bolded sentence or two. Another is to have a bolded sentence or two followed by a short paragraph.

II. Significance

A. This is where you provide the reviewer with the pertinent literature that is important to understanding the significance of the proposal.

B. Stay focused and funnel the reader. Start broad and systematically lead the reviewer to your question.

C. Remember, have sections with bold headers and be careful that the text isn't too dense.

NIH GRANT WRITING: STYLE ISSUES (cont.)

III. Innovation

A. Try to do your best highlighting what is novel and unique about your proposal. If you are using a new (but validated) technique that represents an advance from former techniques, mention it. You should always be able to point out how your grant is conceptually innovative.

IV. Approach

A. Best to organize by aims and by experiments. If there are general methods that are used across aims or experiments, it is sometimes efficient to put a general methods section in.

B. You need to be concise because you don't have much space. Provide the necessary detail and then refer reviewer to papers providing more detail. Be careful not to do this too much though.

C. Be very clear about the experimental design.

D. Possible Outcomes and Interpretations. This should be done for each experiment or at least each aim.

E. Potential Problems and Contingencies for Dealing with Them.

F. Projected Time Table – this eats up space. You could put what year you will be conducting the work in parentheses next to aim.

KISS OF DEATH

- Poor writing
- Mediocre idea
- Lack of feasibility
- Poor research design
- Flawed or missing interpretation of potential outcomes
- Poor facilities and resources
- Poor or modest productivity
- One or more specific aims depends on a specific outcome of another specific aim
- Did not include both sexes without providing justification.
- Lack of critical detail

BE RELENTLESS!!!!