After years of extensive research, I have concluded beyond any doubt that I need more grants!
Why?

Interest in education
How to change odds in your favor?

By knowing the game well
The Game Plan

- Proposal review process
  - Process
    - Submission to decisions
  - Criteria
    - Intellectual merit
    - Broader impacts

- Proposal preparation
  - Strengths of a winning proposal
  - Tips for writing a winning proposal
  - Top reasons for failure
Proposal Review
NSF Proposal & Award Process & Timeline

Organization submits via:
- FastLane
- Or Grants.gov

Research & Education Communities

Proposal Receipt at NSF:
- 90 Days
  - Proposal Preparation and Submission
- 6 Months
  - Proposal Review and Decisions
- 30 Days
  - DGA Review & Processing of Award

NSF

Program Director

Proposal Processing Unit

NSF

Program Director

Minimum of 3 Reviews Required
- Mail
- Panel
- Both

Program Director Analysis & Recomm.

Division Director Concur

Award
- Via DGA

Decline

Organization

Returned As Inappropriate/Withdrawn
Basis for decisions

- **Peer Review**
  - Content of the review is more important than the rating.
  - Program Director analyzes reviews.
    - Fairness
    - Substance in the reviews
    - Technical problems raised in the reviews
      - major vs. minor
    - Reasons for the reviewer concerns or enthusiasm
    - Impact of information not available to the reviewer (e.g. updates)
  - Program Director sometimes obtains additional reviews or comments from the PI

- **Portfolio Balance**
Ensuring a Balanced Portfolio

- Innovation and Creativity
  - Potentially transformative projects
- Breadth of research areas
- Priority areas and systems
- Demographics and Diversity
- Broadening participation
- Institutional impact - PUI, EPSCOR, etc.
- CAREER
  - Integration of research & education
- International collaborations
Preparing Winning CAREER Proposals

- Strengths of successful CAREER proposals
  - Proposal writing tips
- Weaknesses of failed CAREER proposals
- Concluding thoughts
Strengths of Highly Competitive Proposals

1. Idea: There is no substitute!
   - Have a cutting edge idea

2. Written for the right program

3. Written well
Based on a brilliant idea:
research and education

- **Basic Questions**
  1. What do you intend to do?
  2. Why is the work important?
  3. What has already been done?
  4. How are you going to do the work?

- **Make sure it is innovative and exciting**
  - Survey the literature
  - Talk with others in the field

- **Can you convince people that you can do the project?**
  - Obtain preliminary data
  - Develop arguments to support feasibility
  - Determine available facilities and resources
    - What you have
    - What collaborators can help with
Submitted to the right program

- **What to look for:**
  - Goal of program or solicitation
  - Eligibility
  - Special requirements
  - Deadlines

- **Where:**
  - www.nsf.gov
  - Program Directors (phone, email)

- NSF does not normally support research on human health and diseases

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Read the program description or solicitation carefully.
Written well

- **Where to find information?**
  - Grant Proposal Guide and CAREER Solicitation
    - It is revised each October
    - Get it (www.nsf.gov)
    - Read it
    - Follow it

- **What is the aim?**

- **Parts of a Proposal**

- **Tips for writing an effective proposal**
What is the aim?

- Getting funded
- Convince reviewers that your proposal is THE one to support.
What is the aim?
Comment you want to hear....

- “The proposed activity is going to be transformational.”
- “The broader impacts are exceptional.”
- “I wish I could be as productive and as creative as this PI”
- “If you can fund only one proposal in this area, this is it!”
- “Wow!”
What is your aim?
Comments you do not want to see....

- “Reading this proposal was a sheer torture.”
- “This was a ludicrous proposal from a clueless PI.”
- “This one put me to sleep every night!”
- “My freshman students know better.”
- “This PI wants to mow an old lawn, without a problem, originality, or track record of winning races.”
- “No way!”
Grantsmanship makes a difference

- Know your audience.
  - The reviewer may not be an expert in your specific field.

- Think about the reviewers.
  - Make the reviewer’s job easy.
  - Write accurately, concisely, logically, and clearly.
Writing Tips for Winning Proposals
1. Get help with proposal writing

- **Read:**
  - NSF publications
  - Successful proposals

- **Look before you leap:**
  - Serve as a reviewer (ad hoc or on a panel)
  - Read successful proposals

- **Talk with people:**
  - Program Directors-
    - general advice, but not specific comments
  - Former “rotators”
2. Start early and don’t be shy

- **Write**
  - Rewrite
    - rewrite again

- **Get critiques from:**
  - Mentors
  - Previous members of review panels

This is absolutely, positively the last rewrite!
3. Be reasonable

- Be aware of the scope:
  - “Too ambitious” vs. “Too narrow”

- Be honest and up-front:
  - Address issues instead of trying to hide them
  - Acknowledge possible experimental problems and have alternatives
4. Make it easy for the reviewers

- Make the best first impression.
  - You never get a second chance to make a first impression.
  - Project Summary and the first page of Project Description are critical.

- Simplify and streamline:
  - Make sure you get your overall idea across!
  - Prepare clear photos, graphs, etc.

- Pay attention to details:
  - Spill check and proof-read
  - Make the font size as big as you can
5. Educational plans are as important as the research plans

- Innovative and creative
- Integration with research
- Thoughtful plans
  - ‘Will teach a course’ is not enough.
  - Be careful about “will make it available on the web”
  - K-12 educational plans- who will use them?
- Evaluation /Assessment
  - Critical component
  - Find a collaborator
6. If proposal is declined

- Stay calm!
  - Take ten... breaths, hours, days
  - Examine the criticisms carefully

- Keep in touch:
  - E-mail, call, or visit your program director

- Rapid resubmission does not help!
  - Take time to self-evaluate the proposal and the project
Weaknesses in the failed proposals
How to get a CAREER proposal declined?

- Absence of innovative ideas or hypothesis
  - Will provide only an incremental advance
  - Not exciting or cutting edge
- Strategic errors
  - Unclear or incomplete expression of aims
  - Faulty logic or experimental design
  - Less than rigorous presentation
- Unrealistic, sloppy or incomplete
- Educational plans routine
- Chair’s letter generic
Problems with the declined proposals

- Problems with the Research Plan
  - too ambitious or too narrowly focused.
  - Proposed methods and plans do not address the stated research goals.
  - Resources and facilities not in place
    - PI qualifications/expertise not evident
    - Necessary collaborations not documented

- Problems with the Educational Plan
  - Limited to routine teaching and training activities
  - Unrealistically over-ambitious
  - Integration of research and education is weak or uninspired.
  - Evaluation of educational outcomes not included.
What we covered so far

- Strengths of successful CAREER proposals
  - Proposal writing tips
- Weaknesses of failed CAREER proposals
- Concluding thoughts
Some insights

- What determines funding chances?
  - Reviews
  - Panel discussion
  - NSF and Program Priorities
  - Program Portfolio

- Contact your program director
  - Cultures, practices, and funding priorities vary across NSF

- Solid science alone is not enough.
  - Exciting, cutting edge science
  - Outstanding educational plans
  - Program priorities
  - Co-funding opportunities-
    - Some luck and some planning.
Commandments for Writing Competitive CAREER Proposals

- “Thou shalt propose a brilliant idea.”
- “Thou shalt read Grant Proposal Guide and CAREER Solicitation.”
- “Thou shalt strategize, network, and work from thy strengths.”
- “Thou shalt address both review criteria!”
- “Thou shalt seek help with proposal writing.”
- “Thou shalt integrate education and research activities.”
- “Thou shalt write for the right audience.”
- “Thou shalt not irritate the reviewers.”
- "Thou shalt not kill (with some exceptions)."
- "Thou shalt not steal."