NSF Graduate Research Fellowship Program

https://www.fastlane.nsf.gov/grfp/

Why would I want an NSF GRF?

- Prestige
- Career enhancement
- Research independence
- Generous stipend ($30,000 per year) and tuition/fee payment ($10,500 per year) for 3 years
- Frees up Graduate school funds for other students
- Eligibility for WIE and Computer and Information Science Awards

Eligibility

- U.S. citizen or national or permanent resident alien status

- For graduate study in fields supported by NSF

- Completion of no more than 12 months full time graduate study. This means you can apply at 3 times : (1) senior year of college, (2) before or during 1st year of graduate school, (3) beginning of 2nd year of graduate school (if < 12 months of full time study)

- You can apply more than once.

What are the odds?

- About 9,000 -10,000 applications expected in November 2005

- About 1000 awards will be made

- MTU has as good or better a track record as any other school, but one thing is certain:

Hmmm…

1 in 10 odds.

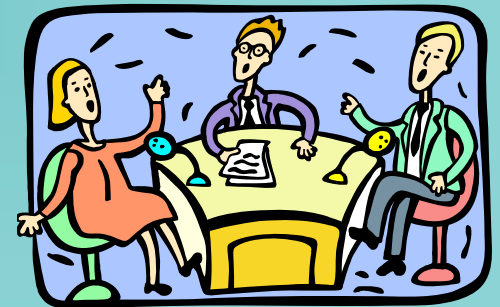Not bad!
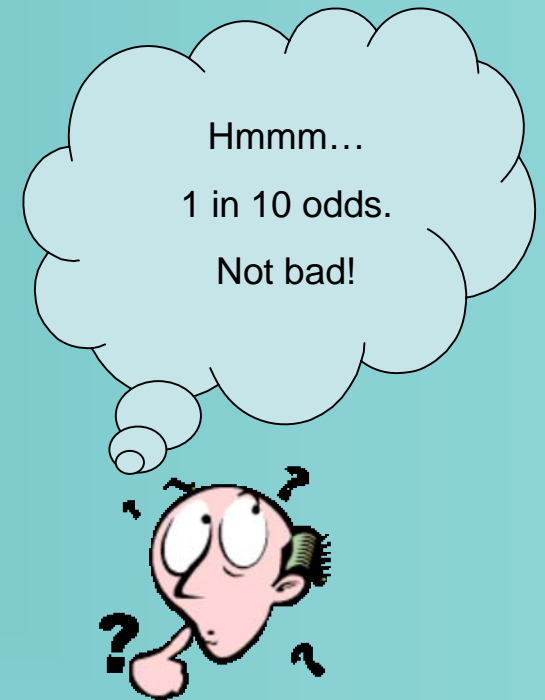
You can't win
if you don't enter!

What does it take to win?

- A great research idea <u>AND</u>
- Well-expressed essays

How you can develop a great research idea:

- Your advisor
- Your own research and thinking
- Reading journals in your field
- Talking to others in your field

Well-Expressed Essays

- This workshop

- Practice and allow plenty of time

- Your advisor

- Use other resources: MTU's Writing Center

- Gopen & Swan 1990. "The Science of Scientific Writing." *American Scientist,* 78, 550-558. www.amstat.org/publications/jcgs/sci.pdf

- Grant proposal writing courses

Logistics
If you don't comply, you can't even enter

- You must use Fastlane, NSF's on-line document submission system – see Lisa or Kim in Research & Sponsored Program (7-2225) for help with Fastlane & MTU submission process.

- Observe application deadlines – they vary by program

- Don't wait until the last minute – system could be clogged & you won't get in

- Follow all instructions – for example, Essays: 12-pt or larger font; page limits

Evaluation of Applications

- Intellectual Merit
- Broader Impacts
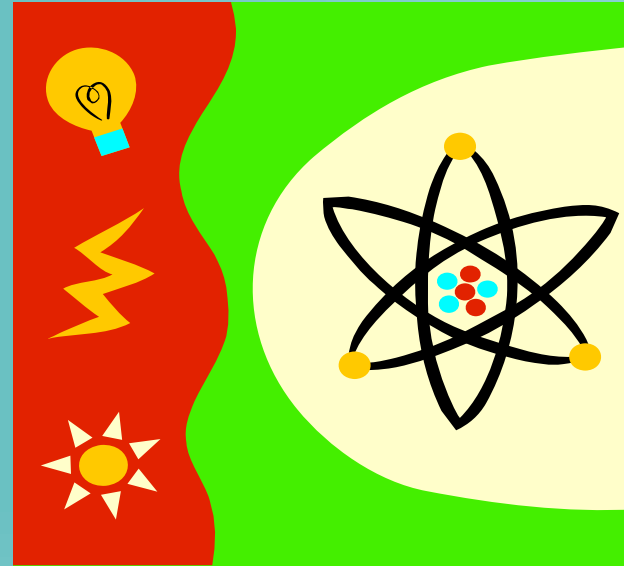
These are the criteria that you must address as you complete the four essay portions of the Application.

Intellectual Merit

(1) Demonstrated intellectual ability and

$$E = MC^2$$

(2) other accepted requisites for scholarly scientific study such as the ability to:

- Plan and conduct research
- Work as a member of a team and independently
- Interpret & communicate research findings

Broader Impacts

Contributions that:

- Integrate research & education at all levels, infuse learning with excitement of discovery, assure that findings & methods are communicated to a large audience

- Encourage diversity

- Enhance scientific & technical understanding
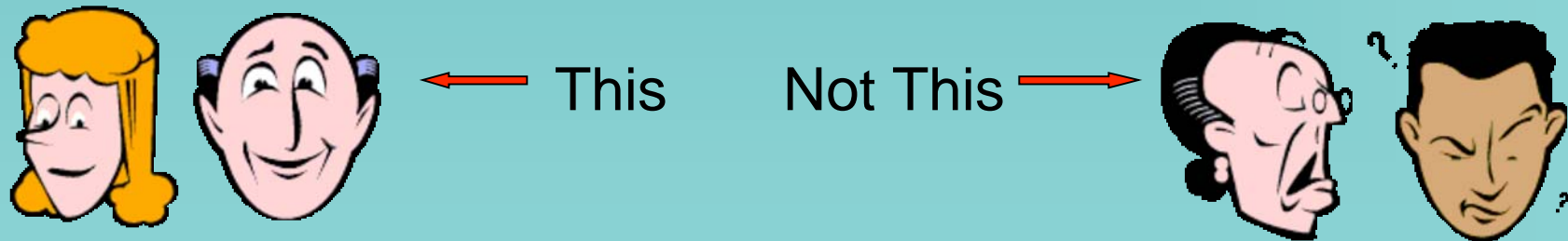
- Benefit society
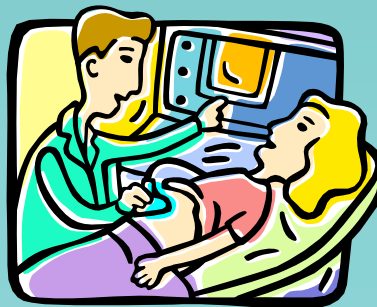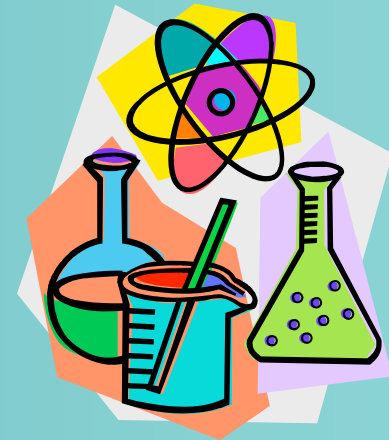
Your Three Essays

1. Personal, professional or educational experiences that contribute to your desire to pursue study in STEM

2. Previous Research Experience

3. Proposed Plan of Research

How to Write Successful Proposals

The number 1 rule!

Make the job of reading your proposal

as easy and pleasant as possible

for the reviewers.

← This   Not This →

The number 2 rule:

Show your passion!
It is contagious!

Now, more rules….

3. Start early

Most RFP's are announced 2 months or more before they are due. There is a reason for that. There is no rule that you must wait until the week before a proposal is due to begin work on it.

4. Follow <u>all</u> instructions <u>exactly</u>.

If something is ambiguous, ask. There is almost always a contact person named in the RFP, and this is part of that person's job.
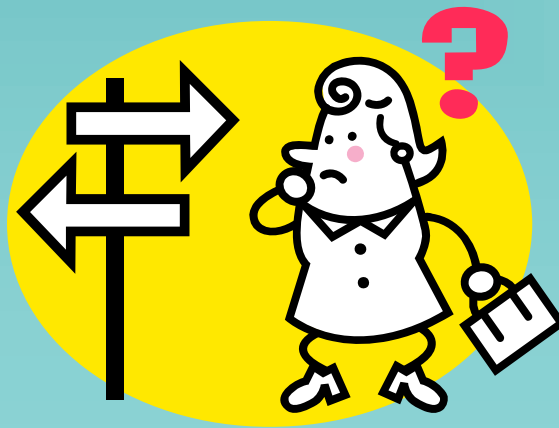
5. Provide <u>all</u> information requested and answer <u>all</u> questions asked.
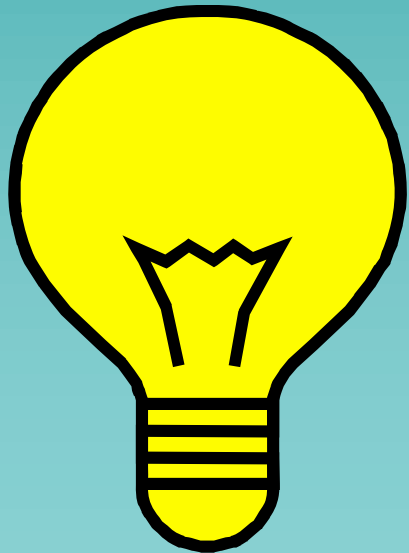
Create a list of information requested to make certain you cover everything.

6. Organize your narrative:

❖ Use headings to define major topics and use the topics identified in the RFP.

❖ Make each page look inviting. Nothing is more daunting than a solid page of text.

❖ Use white space (even when space is at a premium).

❖ Use diagrams, tables, pictures, charts. But keep them simple and understandable.

❖ Use bullets and numbered lists.

❖ Ask: Do I want to read this?

Hypothesis

Test 1   Test 2   Test 3

100
50
0
1st Qtr   3rd Qtr

☐ East
■ West
■ North
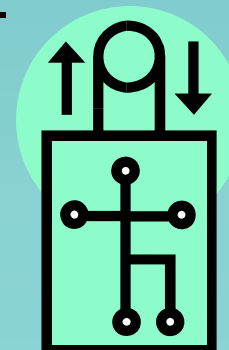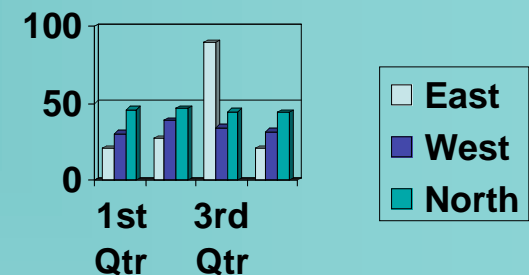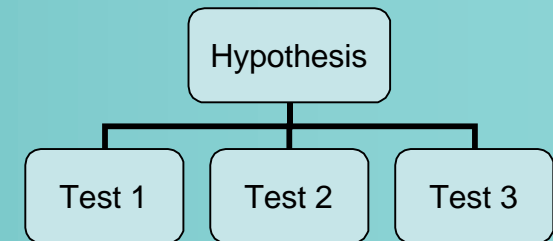
7. Grammar counts!

- ✓ No misspellings
- ✓ Proper sentences
- ✓ Proper grammar
- ✓ Correct punctuation

8. Your writing style counts

➢ Direct sentences are best.

Example:

The research to be undertaken will…..

It is proposed to….

Better:

I will conduct research that…..

My research will prove that….

➢ Write in the first person (I, we) unless you are directed otherwise.

NSF proposals generally require the Project Summary to be in the 3rd person, but not the rest of the proposal or application.

➢ Avoid technical jargon when possible.
NSF directs that proposals should be written, insofar as possible, for "scientifically or technically literate lay audiences."

➢ Avoid phrases like: It is obvious. It is apparent. As previously stated.

➢ Take out every "very" in your narrative.

➤ Does what you have written make sense? Read it aloud. Ask others   to read it. Do they understand it? Do they enjoy reading it?

9. Use references to support your proposal.
10. Don't promise something you cannot deliver.
11. It is OK to use the same words as are used in the instructions. Reflect back the words the funder uses. Example: NSF's "broader impacts" criterion
12. Is your proposal internally consistent – no contradictions and no ambiguities.

13. Use reviewer's comments to your benefit (if you've submitted before).

14. Be yourself & show who you are in your writing.

15. Don't be shy about selling yourself (but don't be arrogant either).

16. Don't give up. You will improve your proposal and your skills each time.

17. Be truthful and make sure your essays are your own work.

   You can't win if you don't enter!

Personal Statement
Supporting Essay – 2 pages

- Read the instructions carefully and provide the information requested.

- Purpose of this essay: to establish that you can become a knowledge expert and a leader who can contribute significantly to research, education and innovations in science and engineering.

- This should be a personal statement that lets the reviewer get to know you.

Essay 1, continued

- Describe personal, professional or education experiences that have prepared you or contributed to your desire to pursue graduate study in STEM

- Describe your competencies and evidence of leadership potential.

- Discuss your career aspirations and how the NSF GRF will help you achieve your goals.

- Include details here that address the NSF review criteria of Intellectual Merit & Broader Impacts

Personal Statement Supporting Essay 2

- NOTE: This Essay is no longer required but you must upload a blank document.
- Don't forget to do this per the instuctions.

Previous Research Experience Essay

Describe any previous scientific research activities in which you participated

- Purpose of research
- Your specific role in the research; did you work independently or as part of a team
- What you learned from your research (how to plan & conduct, work independently or as part of a team, learn interpret & communicate results – elaborate on this)
- Separate UG from graduate research: chronological is best
- If none, describe activities that prepared you to undertake research
- List any publications or presentations
- Not to exceed 2 pages

Essay
Proposed Plan of Research – 2 pages

- Clear, concise, original
- Describe how you became interested
- Present a <u>complete</u> plan for a research project that you may pursue while on fellowship
- Must demonstrate your understanding of research design and methodology
- Must explain the relationship to prior research, if any
- Must describe how you propose to address Intellectual Merit and Broader Impacts in your research.
- If no research plan formulated, discuss a topic that interests you and how you would propose to conduct research on that topic.

Proposed Plan of Research

- **NOTE the format requirement for this essay.**
- **Include:**
  - **The title**
  - **Key words**
  - **Hypothesis**
  - **Research plan**
  - **Anticipated results or findings**
  - **Literature citations**
  - **Statement attesting to the originality of the research proposal**

Proposed Plan of Research

- Title: Descriptive of your project (acronyms are good if you can come up with a good one)

- Key words: For literature search.

Proposed Plan of Research

- Hypothesis – remember what a hypothesis is: a concept that is not yet verified but that, if true, would explain certain facts or phenomenon

Proposed Plan of Research

1. Identify your research field and the research problem you want to address.

2. Describe how and why you became interested in this topic. Discuss the relationship of any prior research to your proposed research.

3. Provide a brief scientific background of the topic or problem. Discuss how the knowledge gained from your research will advance the field and why this is important.
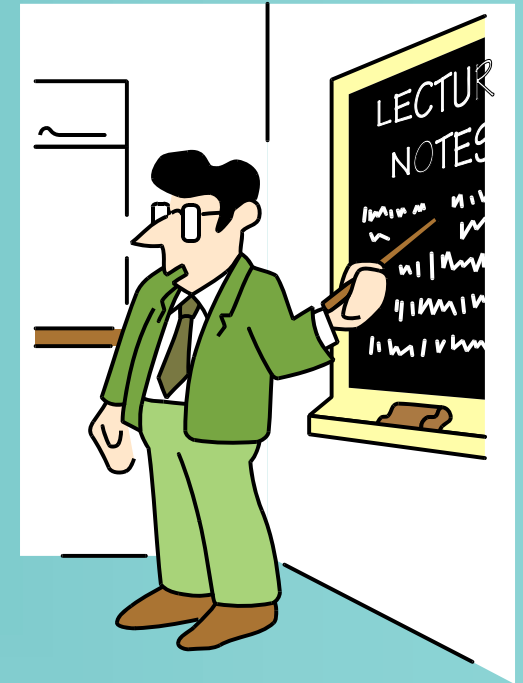
Proposed Plan of Research, continued

4. Describe your research plan: Strategy, methodology, and controls.

   How will you test the hypothesis? What is the work plan? What experiments will you conduct? What controls will you use and why? What instrumentation will you need? What problems might you encounter and how will you address them? What is your research timetable?

   This should demonstrate your understanding of and ability to use the scientific method.

Proposed Plan of Research, continued

5. Anticipated results and findings: What future research opportunities might your research lead to? How will you disseminate or communicate the results of your research? Remember, your research in graduate school is just the beginning….

6. In a separate and final paragraph, _specifically_ address the Intellectual Merit and Broader Impacts of your proposed research. This can also serve as a summary paragraph.

7. Literature citations (included in 2-page limit)

8. Statement attesting to originality of research rpoposal