My experience getting research funding from DOE

or

Storming the gates, swimming the moat, riding in a Trojan horse: whatever it takes to get into the castle!

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Clemson Expenditures

- Summary of “Research and Development Cluster” Expenditures from OMB report, year ending June 30, 2013.
- I’m not sure where NIH is.
The most useful thing I’ll say in the next 30 minutes or so:

1. Identify the program you will most likely pursue, call/email the program manager(s) and offer to review proposals for them. Attach your abridged CV to the email.
2. Review the proposals in a timely manner and do a good job.
3. Track which get funded (monitor the website) and review your review to see what was unique about the funded proposals. Also see what was “bad” about the unfunded proposals.
The perfect proposal, Courtesy of Dr. Nick Woodward, Program Manager, DOE OS BES Geosciences

**The Perfect Proposal**

Objective: Identify a very important geological Process, that will be investigated at a unique Place (field site, lab, etc.), that can be examined with new innovative Probes, by the appropriate People.

Page 1 – Executive Summary (not a science abstract) that immediately allows the program director to identify 1) the objectives, 2) the people, 3) the techniques to be used, and 4) know what kind of reviewers are needed.

Page 2-5 – Concise description of the “State of the Art” in the subject area of the proposal.

Page 6-8 – Concise but polite description of what is wrong with the current “state of the art.” Identify a vision of the future for this research area and what the major gaps are, even if they will not all be addressed in this proposal.

Page 9-13 – Concise descriptions of the highest priority (1) objectives and (2) innovative approaches the investigator(s) will take to overcome the limitations in the current state of the art. Justify why not all gaps will be addressed immediately.

Page 14 – Identify the cast of characters and the unique skills each brings to the project.

Page 15 – Discuss the potential scientific impact of the research which always involves understanding a system well enough to be able to predict how it will work: 1) in the future or 2) in different areas.

Page 16 – Budget and Budget justification consistent with proposal text.

*Basic Energy Sciences*
My DOE Funding record

• Preproposals submitted/accepted: Lost count, way too many. Throw enough stuff at a wall and something will stick.
• Full proposals submitted/funded to National FOAs: 15/7
  – PI “Development of a Self-Consistent Model of Plutonium Sorption: Quantification of Enthalpy and Ligand-promoted Dissolution”
    • Through DOE OS BER CESD SBR
  – Co-PI “Environmental Transport of Plutonium: Geochemical Processes at Femtomolar Concentrations and Nanometer Scales”
    • Through DOE OS BER CESD SBR
  – PI “Quantification of cation sorption to engineered barrier materials under extreme conditions”
    • Through DOE NE NEUP
  – PI, “Examination of Actinide Chemistry at Solid-Water Interfaces to Support Advanced Actinide Separations”
    • DOE ECRP through DOE OS BES HEC
• Work for national laboratories submitted/accepted: 5/5
  – Subcontracts through South Carolina Universities and Research Educational Foundation (SCUREF)
DOE Offices

- [http://energy.gov/offices](http://energy.gov/offices)
DOE FY13 Budget, $27.2 billion request

http://blogs.scientificamerican.com/plugged-in/files/2012/02/DOEbudget_NNSA.png
What to discuss today

- DOE Office of Science
  - Basic Energy Sciences
  - Biological and Environmental Research
- DOE Nuclear Energy
- Getting to know your program manager
- My two cents: Write your hypothesis first
Office of Science

• Structure
  – http://science.energy.gov/
### Overview

Appropriation Summary by Program

<table>
<thead>
<tr>
<th>Program</th>
<th>FY 2011 Current</th>
<th>FY 2012 Enacted</th>
<th>FY 2013 Request</th>
</tr>
</thead>
<tbody>
<tr>
<td>Advanced Scientific Computing Research</td>
<td>410,317</td>
<td>440,868</td>
<td>455,593</td>
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<tr>
<td>Basic Energy Sciences</td>
<td>1,638,511</td>
<td>1,688,093</td>
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<td>Biological and Environmental Research</td>
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<td>Fusion Energy Sciences</td>
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<td>High Energy Physics</td>
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<td>Nuclear Physics</td>
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<td>Workforce Development for Teachers and Scientists</td>
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<td>Safeguards and Security</td>
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<td>Program Direction</td>
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<td>Small Business Innovation Research/Technology Transfer (SBIR/STTR) (SC funding)</td>
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<td><strong>Subtotal, Office of Science</strong></td>
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<td><strong>4,873,634</strong></td>
<td><strong>5,001,156</strong></td>
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</tbody>
</table>

Budget


General funding approach: Broad agency announcements

- Contact a program manager by email and phone with an idea
- Go/No-go for a preproposal or white paper
- Go/No-go for a full proposal
- Consider the federal funding “atmosphere” in your timing.

Read the DOE BES research needs reports

DOE Office of Science – Biological and Environmental Research

- **Structure**
  - [http://science.energy.gov/ber/](http://science.energy.gov/ber/)

- **Budget**

- **FOA mechanism**
  - University lead projects and block funding to national laboratories
  - Mostly specific proposals within a fixed time window
  - Some coupled with relevant NASA, USGS, EPA programs (example: recent carbon cycling interest)
DOE – Nuclear Energy

• You don’t have to be a “nuke” to get funding here.
  – http://energy.gov/ne/office-nuclear-energy

• Significant fraction of work is done through national labs but there is a big university program

• DOE Nuclear Energy, Nuclear Energy University Programs

• Typically FOA
  – Very specific FOA released along with webinars outlining the technical needs addressed in the FOA
  – Preproposal stage undergoes peer review, a very large number of preproposals are cut at this stage
  – Full proposals submitted/accepted
  – Very detailed reporting requirements once funded
Getting to know the DOE Labs

SLAC National Accelerator Laboratory
Menlo Park, California

Pacific Northwest National Laboratory
Richland, Washington

Idaho National Laboratory
Idaho Falls, Idaho

National Renewable Energy Laboratory
Golden, Colorado

Ames Laboratory
Ames, Iowa

Argonne National Laboratory
Argonne, Illinois

Fermi National Accelerator Laboratory
Batavia, Illinois

National Energy Technology Laboratory
Morgantown, West Virginia

Brookhaven National Laboratory
Upton, New York

Sandia National Laboratories
Livermore, California

Albuquerque, New Mexico

Lawrence Livermore National Laboratory
Livermore, California

Lawrence Berkeley National Laboratory
Berkeley, California

Los Alamos National Laboratory
Los Alamos, New Mexico

Oak Ridge National Laboratory
Oak Ridge, Tennessee

Savannah River National Laboratory
Aiken, South Carolina

Thomas Jefferson National Accelerator Facility
Newport News, Virginia

Princeton Plasma Physics Laboratory
Princeton, New Jersey
DOE User Facilities

- General user facilities list
  - [http://science.energy.gov/user-facilities/](http://science.energy.gov/user-facilities/)

- DOE OS Basic Energy Sciences
  - [http://science.energy.gov/user-facilities/basic-energy-sciences/](http://science.energy.gov/user-facilities/basic-energy-sciences/)

- DOE OS Biological and Environmental Research
Upcoming and current FOAs

• Offices are getting their FY14 budgets now, it’s a good time to contact BES program managers if you haven’t already
• DOE Early Career Research Program
• DOE EPSCoR Implementation grant
  – [http://science.energy.gov/bes/epscor/how-to-apply](http://science.energy.gov/bes/epscor/how-to-apply)
  – Internal Limited Submission due Feb 24th
  – State level preproposal March 12th
  – Federal proposals due April 15th
My opinion of the perfect proposal

• Page 1, First sentence
  – “The objective of this proposal is to…..”
• Page 1, first paragraph: Overview of the project concisely identifying knowledge gaps (page 5 below) and how great you/your team is with the clever ways you will solve the knowledge gaps (page 6-7 below)
• Page 1-3: Background information giving the state of the art in your science/engineering field. Be sure to include your own contributions.
• Page 4-5: knowledge gaps: Identify what is wrong with the state of the art. Explain what you will cover in this proposal and what you won’t cover (and why).
• Page 5-7: Clearly and concisely discuss how you are going to address the knowledge gaps with a series of specific hypotheses and objectives. A table linking hypotheses, objectives, and tasks is quite effective (Write this section first)
• Page 7-13: Detailed task descriptions. Show how tasks are interrelated.
• Page 14: Listing of personnel and qualifications to show reviewers that you can do the work proposed above
• Page 15: Impact, what “product” will you deliver to the funding agency.