DOE Office of Science Graduate Student Research Program
~ Applications due 16th May

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Research Interests

- Research Interests
  - Patterns and controls of land-water-atmosphere carbon, water and energy exchange (Chihuahuan Desert, Arctic, Tropical forests)
  - Cyberinfrastructure – sensors, middleware and software
  - Education and outreach

- Current/Recent funding
  - NSF, NASA, NOAA, DHS, USDA, USFWS, BOEM, Industry

- Lab
  - 7 FTE, 11 grad students, 4 undergrads
  - Support 7 graduate programs

- Collaborations locally to internationally
Who Are You

- Degree program
- Experience with grant writing
- Recent successes?
- Aspirations and motivations
My Experience with DOE

- 4 Past students/postdocs work for DOE
  - Christian Andresen – Los Alamos National Lab
  - Santonu Goswami – Oak Ridge National Lab
  - Mark Lara – U. Alaska Fairbanks Next Gen. Ecosystem Experiment
  - Shawn Serbin – Brookhaven National Lab

- Worked/published with DOE-NGEE project ~ LANL, LBNL, ORNL

- Reviewer – proposals and programs

- No DOE grants but 5 students received full scholarships in recent years – NSF, EPA
Motivations for Seeking Scholarships

- Financial incentives
- Grant writing is what scientists do
- Hastens development and timeliness of goals
- Personnel, mental, intellectual challenge
- Can transform/ provides a step-change for your career
About DOE

- Know your agency...
- Responsibilities include the nation's nuclear weapons program, nuclear reactor production for the United States Navy, energy conservation, energy-related research, radioactive waste disposal, and domestic energy production.
- Sponsors more research in the physical sciences than any other U.S. federal agency, the majority of which is conducted through its system of National Laboratories.
- The Human Genome Project originated through a DOE initiative.
- 17 labs, >300 universities
SCGSR Program Highlights

- All information provided at [http://science.energy.gov/wdts/scgsr/](http://science.energy.gov/wdts/scgsr/)

- Due 5pm Eastern, 11th May 2016 ~ online submission requiring login

- Eligibility
  - 18yo & citizen/resident
  - FTE PhD student with candidacy (proof required)
  - Enrolled in physics, chemistry, material science, biology (non-biomed), math, engineering, Comp. Sci. or Env Sci. aligned with DOE Office of Science
  - Research aligned with DOE
  - Partnered to a collaborating DOE scientist
SCGSR Program Highlights

**Benefits**
- Supports dissertation research at a DOE national lab
- Living stipend up to $3000/month paid directly to awardee’s bank account
- In/outbound transportation up to $2000 ~ travel and not relocation award
- 3-12 months of support
- No support for materials, supplies, equipment etc ~ supplementary

**Obligations**
- Proof of citizenship, degree status, terms of agreement, disclosure of other funding, project reporting, background check
- Letter of support from advisor
SCGSR Application

- Fill in required fields in online application system
- Research proposal (next slide)
- Official transcripts and proof of candidacy
- Two letters of support
  - Graduate advisor
  - DOE scientist
Research Proposal

- 3 pages – read the fine print!
- Scope must match DOE research priority area ~ see links from home page
- Needs to be Co-Developed with DOE Scientist and Advisor (i.e. cannot be conceived the night before)
- Research integrated within dissertation and can only be performed at DOE national lab using their unique assets
- .... Must be well planned, feasible, urgent, catalyzing, potentially transformative, ethical!
Why is DOE Doing this?

- Investing in the future
- Looking for raw and laterally thinking talent
- Linking universities and National Labs
- Broadening collaborative base
- Keeping their researchers on their toes
- Maximizing use of unique facilities
- Maximize tax payer dollars
- Improving diversity
- ...It is the right thing to do! ~ use this insight to deepen proposal impact
### DOE National Labs

<table>
<thead>
<tr>
<th>Laboratory Name</th>
<th>Location</th>
<th>Site Office</th>
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<tbody>
<tr>
<td>Ames Laboratory</td>
<td>Ames, Iowa</td>
<td>Ames Site Office</td>
</tr>
<tr>
<td>Argonne National Laboratory</td>
<td>Argonne, Illinois</td>
<td>Argonne Site Office</td>
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<tr>
<td>Brookhaven National Laboratory</td>
<td>Upton, New York</td>
<td>Brookhaven Site Office</td>
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<tr>
<td>Fermi National Accelerator Laboratory</td>
<td>Batavia, Illinois</td>
<td>Fermi Site Office</td>
</tr>
<tr>
<td>Lawrence Berkeley National Laboratory</td>
<td>Berkeley, California</td>
<td>Berkeley Site Office</td>
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<tr>
<td>Oak Ridge National Laboratory</td>
<td>Oak Ridge, Tennessee</td>
<td>Oak Ridge National Laboratory Site Office</td>
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<tr>
<td>Pacific Northwest National Laboratory</td>
<td>Richland, Washington</td>
<td>Pacific Northwest Site Office</td>
</tr>
<tr>
<td>Princeton Plasma Physics Laboratory</td>
<td>Princeton, New Jersey</td>
<td>Princeton Site Office</td>
</tr>
<tr>
<td>SLAC National Accelerator Laboratory</td>
<td>Stanford, California</td>
<td>SLAC Site Office</td>
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<tr>
<td>Thomas Jefferson National Accelerator Facility</td>
<td>Newport News, Virginia</td>
<td>Thomas Jefferson Site Office</td>
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</tbody>
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Identifying a DOE Scientist

- Collaborator
- Colleague of a colleague
- Conference
- Journal paper/proceedings
- Web search – past advisor, UTEP alumni
- Don’t just look for senior scientists.....

- Be... organized, humble, respectful, passionate, convincing, prepared, knowledgeable, persistent, responsive, ready to jump! ..... Make them realize you are worth the investment
- Think of hooks – CV, recent paper/presentation, proposal, code, website, youtube elevator speech, connections, review their work and relate it to yours
- Don’t put all your eggs in one basket (person)!
More UTEP students should apply!
- Actively pursue a DOE mentor
- Take advantage of UTEP’s faculty connections
- Focus writing on what you know well – mix background, theory, and success with proposed activities
- Show explicitly how the unique facilities and expertise at DOE will combine with existing elements to build the “crown jewel” of your dissertation
- The work you will do at a national lab will be published with DOE co-authors
Elements of an Outstanding Proposal

- Know your agency and make the work a natural fit
- Epitomize novelty, urgency, opportunity/timeliness, transformability
- Compelling opening sentence/s – succinct, nails theme and other requirements, demonstrates how fits a big picture challenge, eludes to products and transformative nature of the work
- Concise throughout, logical, easy to read, minimal jargon, perfect english
- Embed passion, knowledge, creativity, recognized need for the work
- Elucidate how this will be a sound investment in a productive person and crucial stepping stone in your career ~ morally and ethically sound!
- Rationalize why DOE if the best funding agency for the project
- Tell a story – juxtapose beginning, middle, end ~ heroes and villains; geekiness and societal relevance; what we know vs not know;
- ALWAYS turn a weakness into a strength and read the fine print!
Elements of an Outstanding Proposal

- Captivating and memorable title ~ acronyms, rhymes, questions etc.
- Background – demo knowledge of the underlying motivations and the field, interconnections, tech/other innovation, disconnected pieces of the puzzle, what we don’t know and why, why are you the person for this project
- Goals and objectives – logical, feasible, rationalized
- Approach – modern, quantitative, use traditional and new methods, highlights unique assets of DOE
- Define products – papers, code, software, presentations, people, inventions
- Highlight organizational structure – time line, management plan, metrics of success, roles and responsibilities
- Use bold type to highlight topic points
Starting Tips

- Get started now and don’t procrastinate….. It will always take longer than you think
- Priorities = good idea, ID a national lab and DOE scientist
- Review past awards at SCGSR home page – glean ideas for style and execution, don’t plagiarize!
- For most recent ideas – see what was just funded, not what was just published e.g. www.grants.gov
- Create a hierarchical structure, map ideas on to this structure
- Write as if you were writing a front page newspaper article – first 5 sentences explains all, the rest provides detail ~ hook the reader!
Writing…. And Eating the Elephant….

- How to deal with your brain telling you this is a ginormous undertaking
  - Breakdown the complexity (bite sized chunks, hierarchical structure)
  - Run the math on achievability (provides plausibility, confidence)
  - Create a plan with consequences for inaction (give yourself a time frame)
  - Mix the hard with the easy (mix tenderloin and a**hole)
  - Establish consistency and iterative writing ethic (be habit-forming, promote creativity, establish reward)

- The more you do, the easier, more enjoyable, and rewarding it becomes
Good writing habits

- Create an overarching and hierarchical structure – tell the story with multimedia.
- Couple reading with writing implicitly ~ *don’t isolate yourself*.
- Write down all of your random thoughts and ideas as they come to mind but create a way to organize these thoughts.
- ALWAYS have a word document open on your PC and/or surround yourself with opportunities to write – even if it is rough notes.
- Write in sound bites – 15 minutes in length.
- Write, leave for a week, then read with fresh eyes.
- If you get stuck, flag it and move on – it will make more sense when more of the story develops.
- Find a writing buddy and create a sense of commitment to them with opportunities to brainstorm, edit, critique your and their work.
Writing techniques

- Structure your writing to follow a logical sequence and tell a story.
- Within each section, there must be a paragraph/s with a beginning, middle and end.
- Each paragraph has to have a topic sentence and a flow on sentence and supporting sentences in between these.
- Every sentence has to have a purpose and present something new.
- Every word in every sentence should not be superfluous and must contribute something to the meaning of that sentence.
- Choose terminology carefully, make it simple and be consistent.
- Know that the more you write, the better you will get, the better you get the easier it will be…. And the more productive you will be.
Writing techniques

- Scientific writing workshop by Josh Schimel
- Thursday 13th April 1-4pm, location to be finalized
- Sponsored by the Environmental Science and Engineering program
- If interested please add name to sign-up sheet
- More information will be forthcoming