Welcome! Please answer the following question in the chat box:

How many DOE National laboratories do you know?
Why are you interested in the SCGSR program?

U.S. Department of Energy

OFFICE OF SCIENCE

Office of **SC**ience **G**raduate **S**tudent **R**esearch (**SCGSR**) Program

Application Assistance Workshop 1
for 2024 Solicitation 1

March 7, 2024

"The SCGSR program has been the most valuable part of my graduate education."

Christine Burgan 2022 S2

U.S. DEPARTMENT OF ENERGY | Office of Science

SCGSR Program Management Team

U.S. Department of Energy (DOE), Office of Science (SC)

- Dr. Igor I. Slowing
  SCGSR Program Manager
  Office of Workforce Development
  for Teachers and Scientists (WDTS)

U.S. DEPARTMENT OF ENERGY | Office of Science
Office of Workforce Development for Teachers and Scientists (WDTS)

Oak Ridge Institute for Science and Education (ORISE)

- Dr. Maria Taydem
  Project Manager
  Workforce Development
- Abby Robbins
  Program Specialist
  Workforce Development

OAK RIDGE INSTITUTE FOR SCIENCE AND EDUCATION

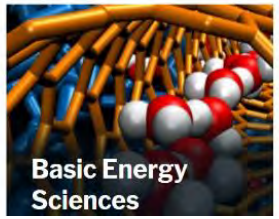
The SCGSR Program Involves Multiple Institutions

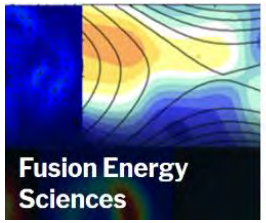
The SCGSR program is sponsored and managed by

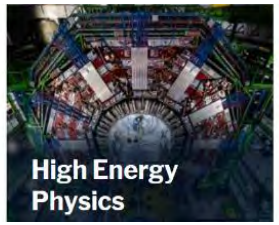
U.S. DEPARTMENT OF ENERGY | Office of Science

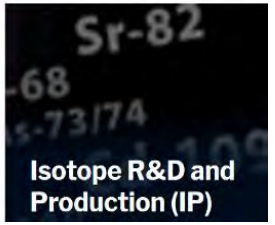
Office of Workforce Development for Teachers and Scientists (WDTS)

In collaboration with the SC Program Offices of









and the US DOE National Laboratories/Sites

AMES LABORATORY
Fermilab
Lawrence Livermore National Laboratory
NREL NATIONAL RENEWABLE ENERGY LABORATORY
Pacific Northwest NATIONAL LABORATORY
DIII-D NATIONAL FUSION FACILITY
Argonne NATIONAL LABORATORY
INL Idaho National Laboratory
NETL NATIONAL ENERGY TECHNOLOGY LABORATORY
OAK RIDGE National Laboratory
Sandia National Laboratories
Jefferson Lab
Brookhaven National Laboratory
BERKELEY LAB Lawrence Berkeley National Laboratory
Los Alamos NATIONAL LABORATORY EST. 1943
PPPL
Savannah River National Laboratory
SLAC NATIONAL ACCELERATOR LABORATORY

Online application and awards administration provided by

OAK RIDGE INSTITUTE FOR SCIENCE AND EDUCATION

Two Workshops

Workshop I: This one

General Description of the Program

- Overview of the Office of Science
- SCGSR Program:
  - Benefits
  - Application Process
  - Requirements
  - General tips/advices on application
- General Questions
- Breakout sessions: Meet SC Managers for Discussing your Research (3:00-3:30 PM ET)

> *"This combination of hands-on experience and networking has been an immense boost to my professional development, and I would encourage any other grad student in a similar place in their early science career to pursue SCGSR opportunities whenever possible."*
>
> Cooper Wagner SCGSR 2022 S1

Workshop II: April 18, 2024, 2:00-4:30 PM ET

- Office Hours
- Specific steps of application, common issues
- Tips on proposal writing
- Meet current and former SCGSR awardees
- Meet US DOE National Laboratory scientists

Office of Science (SC): A Mission of Research

SC Mission:

Deliver scientific discoveries and major scientific tools to:

- transform our understanding of nature
- advance the energy, economic and national security of the United States

https://science.osti.gov/

- **118** Nobel Laureates affiliated to DOE
- **65** affiliated to DOE National Laboratories

https://science.osti.gov/About/Honors-and-Awards/DOE-Nobel-Laureates

The largest Federal sponsor of basic research in the physical sciences.
The lead Federal agency supporting **fundamental** scientific research for energy.

SC Research and R&D and Production Programs

Accelerator R&D and Production (ARDAP)	New accelerator technologies for SC's scientific facilities and commercial products
Advanced Scientific Computing Research (ASCR)	World leading computational and networking capabilities to extend the frontiers of science and technology
Biological and Environmental Research (BER)	Understand complex biological, earth, and environmental systems
Basic Energy Sciences (BES)	Understand, predict, and control matter and energy flows at the electronic, atomic, and molecular levels
Isotope R&D and Production (DOE IP)	Support national preparedness for isotope production and distribution during crisis
Fusion Energy Sciences (FES)	Build the scientific foundations for a fusion energy source
High Energy Physics (HEP)	Understand how the universe works at its most fundamental level
Nuclear Physics (NP)	Discover, explore, and understand all forms of nuclear matter

SC Program Managers

Dr. Christine Clarke – ARDAP

Dr. David Rabson – ASCR

Dr. Justin Hnilo – BER

Dr. Robin Hayes – BES

Dr. Julie Ezod – DOE IP

Dr. Curt Bolton – FES

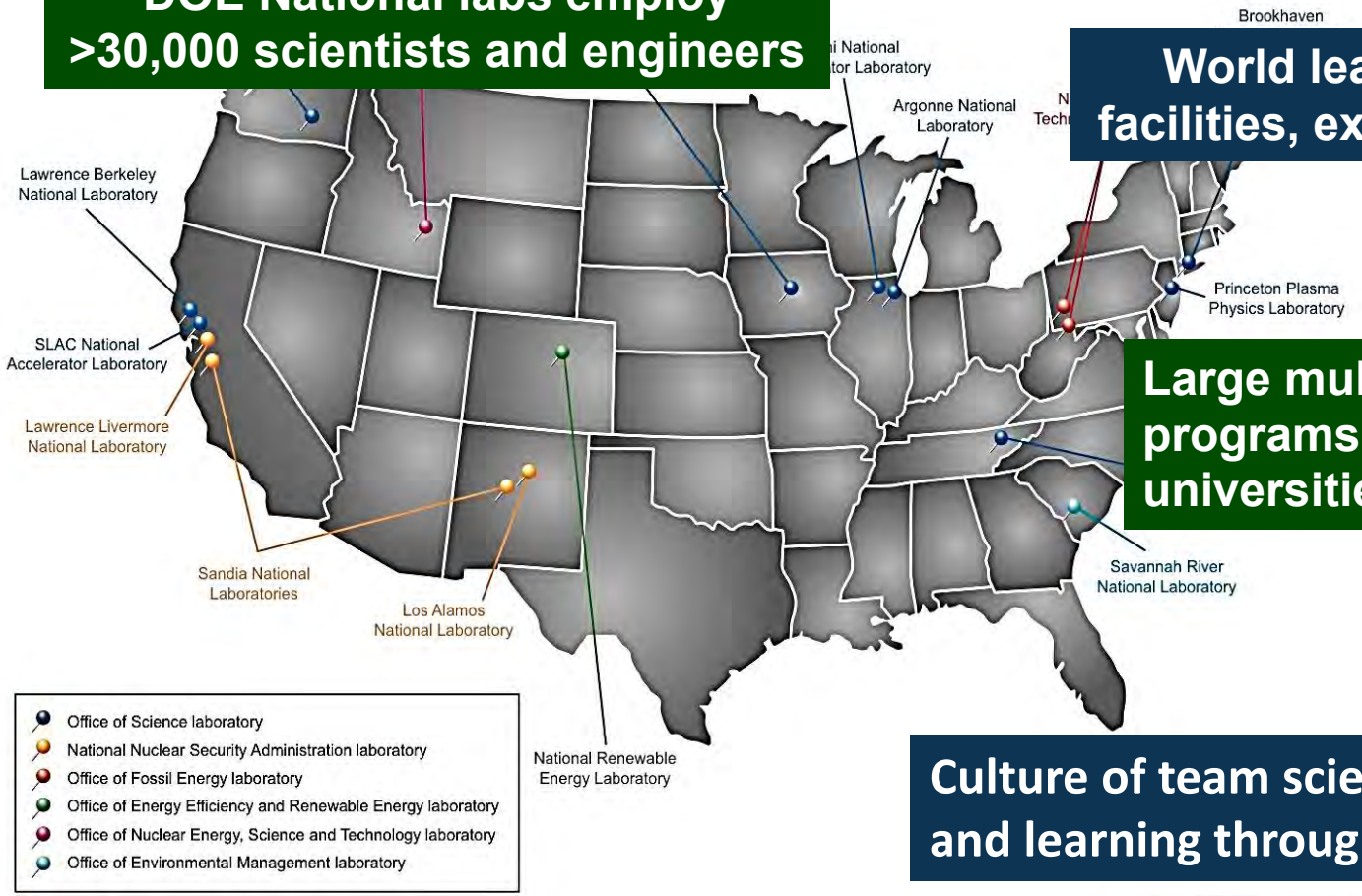
Dr. Jeremy Love – HEP

Dr. Kenneth Hicks – NP

Meet them later in the Breakout Rooms!!!

DOE National Laboratories:
A Unique Asset for Training and Scientific Discovery

DOE National labs employ >30,000 scientists and engineers

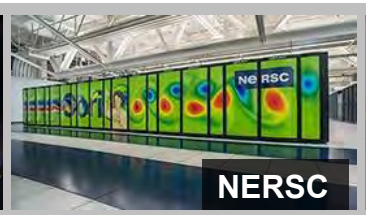


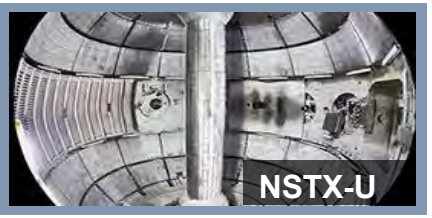
World leading scientific user facilities, expertise, and resources

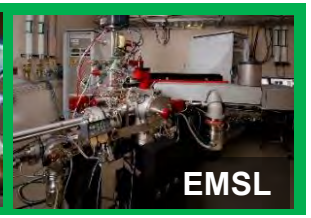
Large multidisciplinary research programs not available in universities or industry

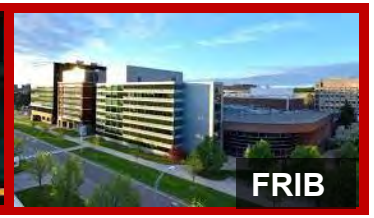
Culture of team science, mentoring, and learning through discovery

28 Scientific User Facilities





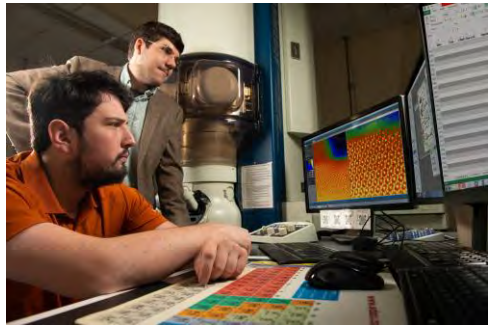




Over 35,000 users per year!

Office of Workforce Development for Teachers and Scientists (WDTS)

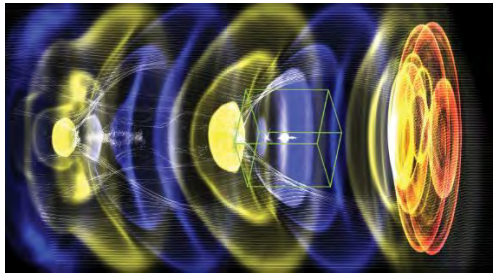
Foster the development of the **next generation of scientists, engineers, and technicians** to support DOE mission and conduct the research to realize the nation's science and innovation agenda.

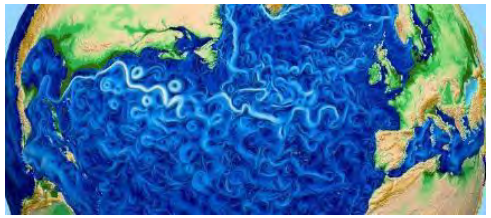



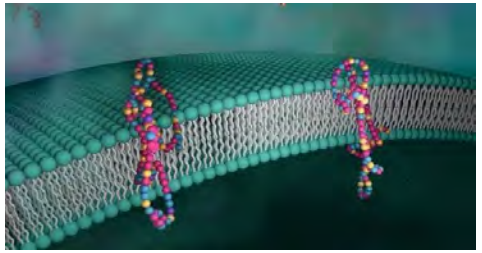
Training Opportunities for Students and Faculty at DOE National Laboratories:

- Science Undergraduate Laboratory Internships – SULI
- Community College Internships – CCI
- Visiting Faculty Program – VFP
- **Office of Science Graduate Student Research Program – SCGSR**

SCGSR Program







Supplemental awards
to outstanding graduate students

Move to a DOE National Laboratory/Facility
to conduct part of their doctoral thesis research
3 – 12 consecutive months

Areas that address high-priority workforce needs in scientific challenges central to the SC mission

SCGSR Program by the Numbers

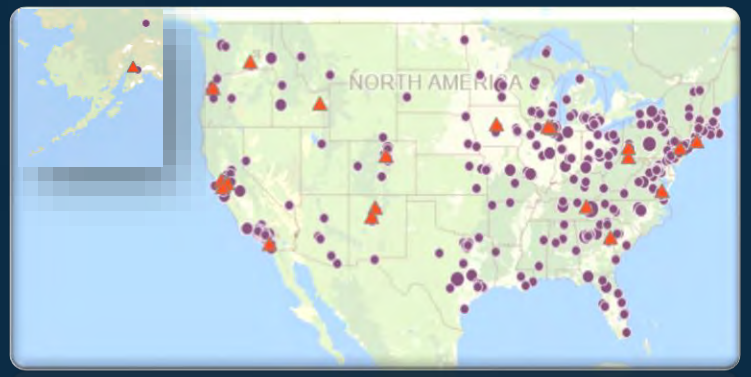
Since **2014**

1066 awardees from

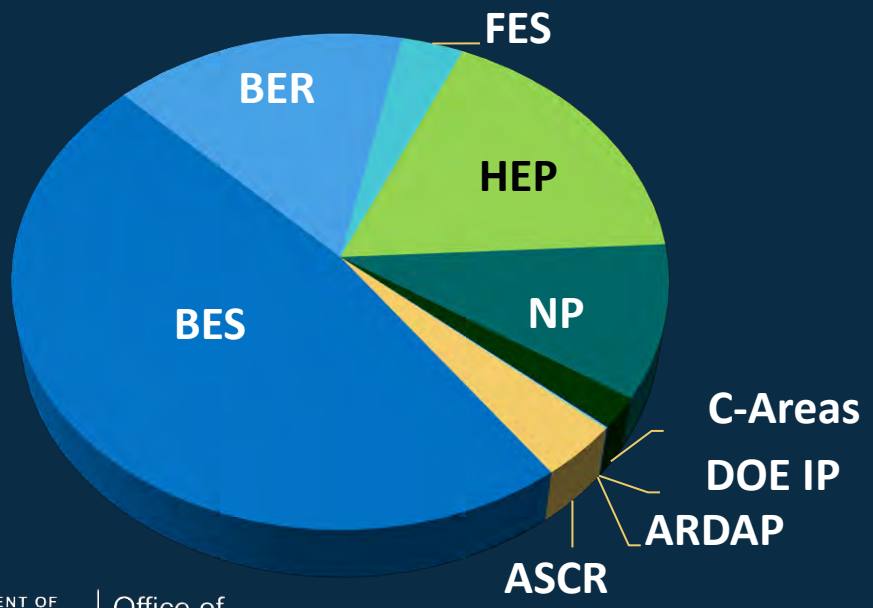
443 hometowns in

47 States + DC, pursuing PhDs at

161 Universities, working with



779 National Laboratory scientists



50 % of the awardees working at least at one of the

28 scientific user facilities and

18 DOE National Labs and Sites

30 % Of the awardees are women

WHAT AWARDEES SAY ABOUT SCGSR

99 % Received training not available at their universities

99 % **Expanded their networks**

>78 % Interested in employment or postdoctoral positions at DOE National Labs

99 % **Stated SCGSR introduced them to careers outside academia**

100 % SCGSR enabled completion of an important part of their dissertation

Questions to Ask Yourself

- Why do I want to do part of my PhD research at a DOE national laboratory?
- What tools/expertise do I need that is not available at my university?

The unique expertise/capabilities of scientists/facilities at DOE National Labs/sites may enable a more in depth understanding of your research!

- Does my research **align with the priority directions** of the DOE Office of Science?

https://science.osti.gov/wdts/scgsr/How-to-Apply/Priority-SC-Research-Areas

One More Question

Can the SCGSR program contribute to my **professional and career** goals?

- Become a "**Scientist-in-Residence**": test drive a career as a scientist
- **Networking** opportunities

"However, it was not just the advanced techniques that I learned, but also the people I met and the networking I was able to do that was a critical part of my experience. I met many scientists who pushed my understanding in my field to new heights, and who gave me career and research advice along the way."

Leila Wahab 2021 S2

Priority Research Areas for 2023 Solicitation 2

Advanced Scientific Computing Research (ASCR)
(a) Applied **Mathematics**
(b) **Computer** Science
(c) Advanced Computing **Technologies**

Biological and Environmental Research (BER)
(a) Computational Biology and **Bioinformatics**
(b) **Biomolecular** Characterization and **Imaging** Science
(c) **Plant Science** for Sustainable **Bioenergy**
(d) Environmental **Microbiology**
(e) **Environmental System** Science
(f) **Atmospheric** System Research
(g) Earth System Model Development
(h) Regional and Global Model and Analysis

Basic Energy Sciences (BES)
(a) **Accelerator and Detector** R&D
(b) Basic **Geosciences**
(c) Basic Science for **Advanced Manufacturing**
(d) Basic Science for **Clean Energy** and **Decarbonization**
(e) Chemical and Materials Sciences for **Quantum Information Science** (QIS)
(f) **Data and Computational Sciences** for Materials and Chemical Sciences
(g) Fundamental **Electrochemistry** for Chemical and Materials Sciences
(h) Gas Phase **Chemical Physics**
(i) Instruments R&D for **Neutron and X-ray** Facilities
(j) Instruments and Techniques R&D for **Electron and Scanning Probe Microscopy**
(k) Materials Sciences and Chemistry for **Microelectronics**
(l) **Nuclear Chemistry** and **Radiochemical Separations**
(m) **Radiation Effects** in Materials and Chemistry

Fusion Energy Sciences (FES)
(a) **Burning Plasma** Science & Enabling Technologies
(b) Discovery Plasma Science

Ask Us!!!

Breakout Rooms

High Energy Physics (HEP)
(a) **Theoretical and Computational** Research in High Energy Physics
(b) Advanced **Accelerator** and Advanced **Detector** Technology Research and Development in High Energy Physics
(c) **Experimental** Research in High Energy Physics

Nuclear Physics (NP)
(a) Medium Energy **Nuclear Physics**
(b) **Heavy Ion** Nuclear Physics
(c) **Fundamental Symmetries**
(d) Nuclear Structure and **Nuclear Astrophysics**
(e) **Nuclear Theory**
(f) Nuclear Data and Nuclear Theory **Computing**
(g) **Accelerator** Research and Development for Current and Future Nuclear Physics Facilities
(h) **Quantum Information Science** for Experimental and Computational Nuclear Physics
(i) **Artificial Intelligence** and **Machine Learning** for Nuclear Physics
(j) Advanced **Detector** Technology Research and Development in Nuclear Physics

Isotope R&D and Production (DOE IP)
(a) **Isotope** Production Research
(b) Isotope Processing, Purification, Separations and **Radiochemical Synthesis**
(c) **Biological Tracers** and Imaging
(d) **Isotope Enrichment** Technology

Accelerator R&D and Production (ARDAP)
(a) **Accelerator R&D and Production**

Convergence Research Topical Areas
(a) **Microelectronics** (ASCR, BES, HEP, and NP)
(b) **Data Science** (ASCR, BES, BER, FES, HEP, and NP)
(c) **Quantum Information Science** (ASCR, BER, HEP, and NP)
(d) **Accelerator** Science (ASCR, BES, BER, FES, HEP, NP, DOE IP, and ARDAP)

https://science.osti.gov/wdts/scgsr/how-to-apply/priority-sc-research-areas/

Benefits and Eligibility

Awards/Compensation

- Stipend up to $3,600/month for general living expenses
- Reimbursement of inbound/outbound traveling expenses to/from the host DOE National Laboratory/facility of up to $2,000 (> 50 miles away)

Eligibility

- **U.S. Citizen or Lawful Permanent Resident**
- Enrollment in a qualified graduate program
- **Ph.D. Candidacy**
- **Graduate research aligned with an SCGSR priority research area**
- Collaboration with a DOE laboratory scientist

New research experiences

Full details, requirements, FAQs, and link to application at: https://science.osti.gov/wdts/scgsr/

Program Contact: sc.scgsr@science.doe.gov

Key Dates

At the submission deadline, the application system will close, and no additional materials will be accepted. The online application system closes at 5:00 PM Eastern Time

Applications Due (including all letters of support)	**May 1, 2024, 5:00 PM ET**
Offer Notification Period	September 1-10, 2024*
Earliest Start Date for Proposed Project Periods	November 11, 2024*
Latest Start Date for Proposed Project Periods	March 3, 2025*

* These dates are tentative.

- Project periods may be 3 to 12 consecutive months in duration, the length is determined by the applicant's proposed work.
- Awardees can choose the start dates within the window above.

Identifying a DOE National Lab Scientist

1. Directly from the scientific literature

Ideally: your research needs drive you to a specific investigator!

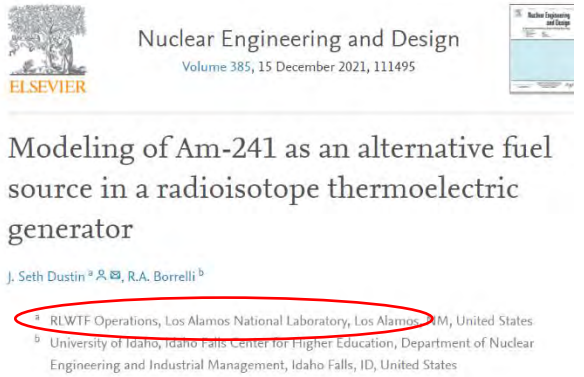

Research Article Vol. 3, No. 3/ 15 March 2020/ OSA Continuum 459

OSA CONTINUUM

Demonstration of a 2 ps, 5 TW peak power, long-wave infrared laser based on chirped-pulse amplification with mixed-isotope CO_2 amplifiers

MIKHAIL N. POLYANSKIY,* IGOR V. POGORELSKY, MARCUS BABZIEN, AND MARK A. PALMER

Accelerator Test Facility, Brookhaven National Laboratory, Bldg. 820M, Upton, NY 11973, USA


Nuclear Engineering and Design

Volume 385, 15 December 2021, 111495

ELSEVIER

Modeling of Am-241 as an alternative fuel source in a radioisotope thermoelectric generator

J. Seth Dustin [a] ✉, R.A. Borrelli [b]

[a] RLWTF Operations, Los Alamos National Laboratory, Los Alamos, NM, United States

[b] University of Idaho, Idaho Falls Center for Higher Education, Department of Nuclear Engineering and Industrial Management, Idaho Falls, ID, United States

2. Your advisor and their network

3. Searchers: ISI Web of Science, SciFinder, Google Scholar…

Search by topic -> refine by institution

4. Browse National Laboratories websites https://www.energy.gov/national-laboratories

5. SCGSR website: list of potential collaborating scientists

Includes research descriptions and contact information

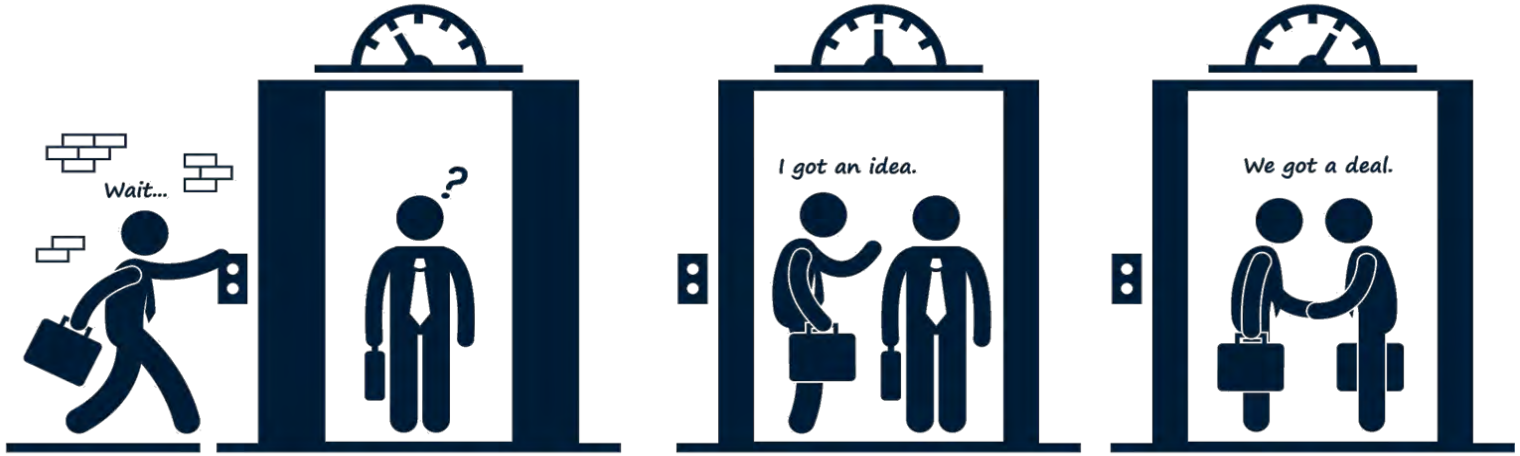
https://science.osti.gov/wdts/scgsr/How-to-Apply/Identifying-a-Collaborating-DOE-Laboratory-Scientist

6. Email us (SC.SCGSR@science.doe.gov) or the Managers of each Program Office (emails in the last slide)

Contacting National Laboratory Scientists

Be aware scientists receive **A LOT** of spam and may overlook your messages, so:

1. Don’t use a private email address, use your **school’s email address**
2. Subject line: clear and to the point! “Interested in collaborating on a DOE SCGSR project on xxx” (**your topic in 3-4 words**!)
3. Cc your **advisor**
4. Some National Laboratory scientists may not know the program. Provide a brief description.
5. Essential information: the program pays you for working along with them on xxx. (**No cost to them!**)
6. Provide **a brief summary** of the work you want to propose: Elevator pitch!



Questions to Ask a Scientist

- Discuss your research thesis and ideas to find out:
  1. Is there an **overlap of interests**?
  2. Do they have **time** for working with you?
  3. What type of **instrumentation is available** at the National Lab?
  4. How **accessible** is equipment? Is there a schedule?
  5. Do you need to build/make some specialized **adaptations** for the equipment? *e.g.*, specialized cells, put two pieces of equipment together, etc.
  6. Do you need to **apply for using specific facilities**?

- If you agree it makes sense to work together…
  1. Discuss with your **thesis advisor**
  2. Start drafting your proposal and send early versions to advisor and collaborating scientist for **feedback** (many iterations!)

This is a **team effort,** but **you must lead it,** and **you** will have the **major responsibilities!**

SCGSR Application

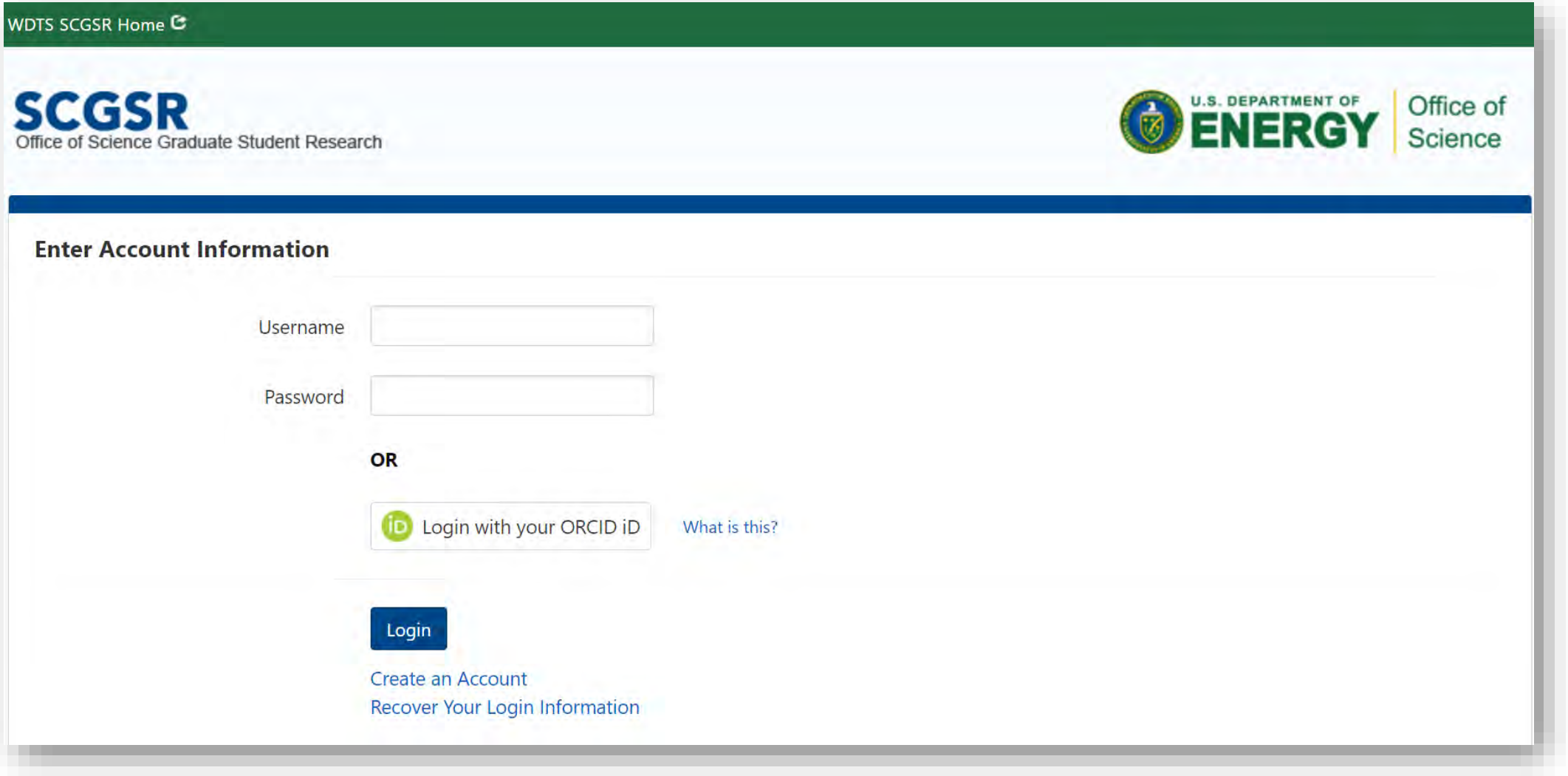
All applications must be completed through the **online system.**

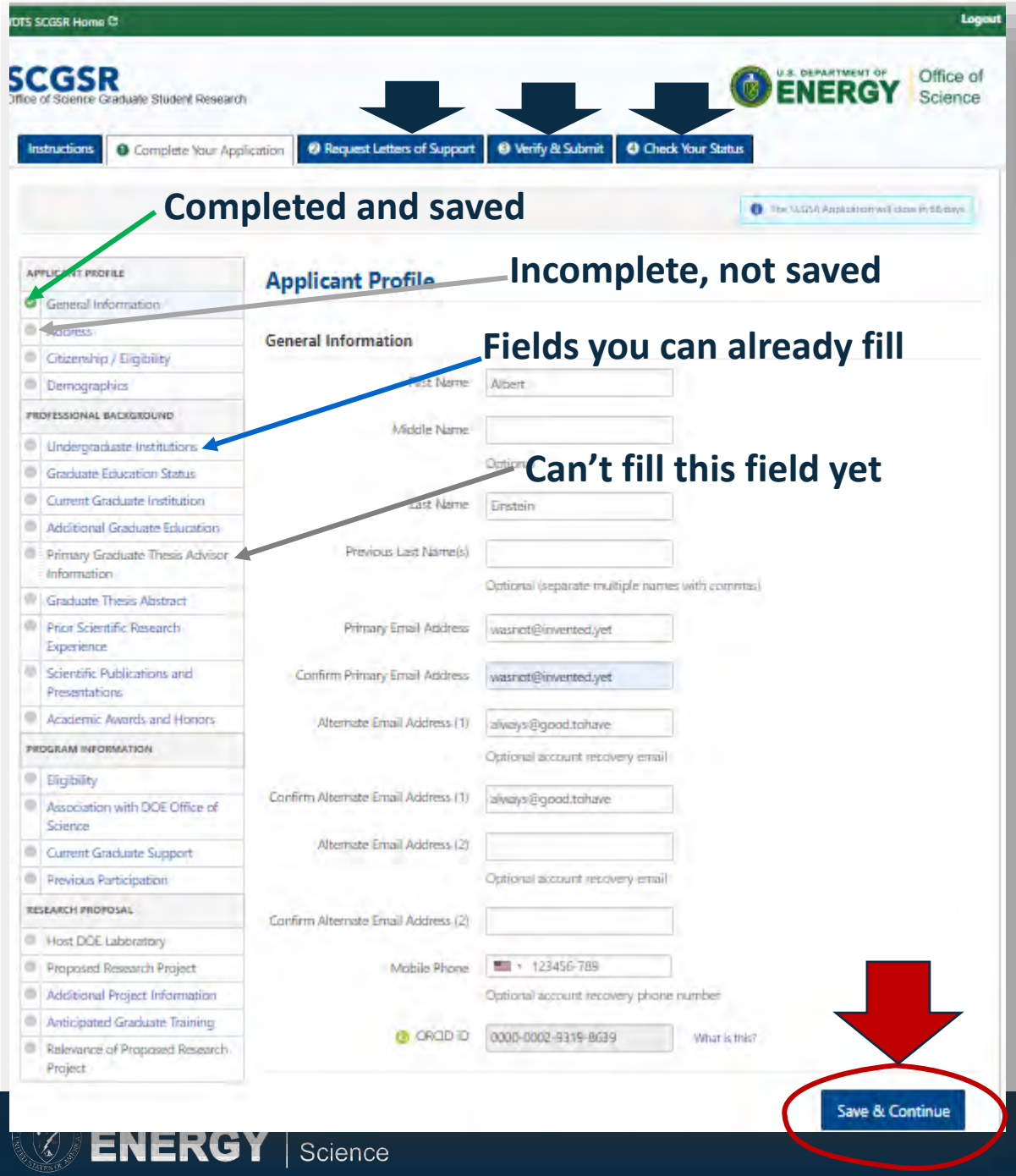
Only COMPLETE applications submitted by the deadline will be considered!

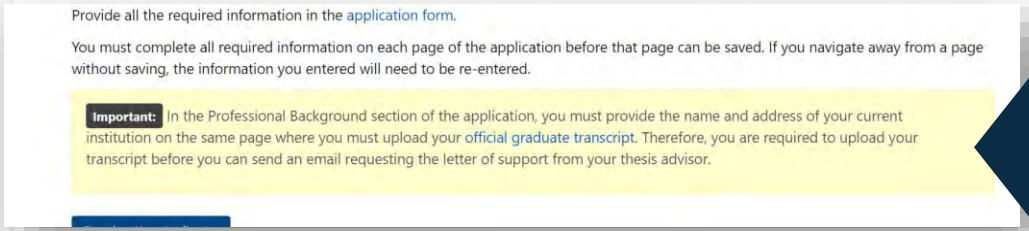
A Complete SCGSR Application includes:

- All **required fields** of the Online Application System, *including:*
  - **Contact information** of the **applicant**, primary graduate thesis **advisor**, and collaborating National Laboraotry **scientist**.
  - **Academic information**.
  - **Professional information**, including research experiences, scientific publications, awards, etc.
  - **Alignment** of proposed research to one of the **SCGSR Priority Research Areas**.
- **Official graduate transcripts** and **proof of Ph.D. Candidacy**.
  - Please **remove SSN or dates of birth** from transcripts, transcripts that have this information will be *immediately eliminated from the system and deemed non-compliant*.
- **Two Letters of Support**: one by graduate thesis **advisor**, and the other by **collaborating National laboratory scientist**.
- **Research Proposal** (*3-pages maximum*).

WARS: Online Application System







1. **Complete a page before moving on**, otherwise it won't be saved – you can always come back and edit the contents
2. **Gray non-fillable boxes** depend on you filling **prior sections**
3. If you don't have the answer or document, type in or upload placeholders (*e.g.*, the word **PLACEHOLDER** or **blank PDFs** if you don't have the official transcripts or proposal), then **remember to come back and replace** the placeholders when ready
4. E-mails for advisor and collaborating scientist **sent from the system**, but won't be sent until you upload all the required information

Alignment with Research Priority Areas

- Priority research areas descriptions: what is your **match**?
- Writing a justification: Look for **keywords**, but then make sure your explanation makes sense.
- Discuss today with specific **Program Managers** in the breakout rooms, you can also email them or us afterwards.
- During review, managers may **move your application to a more suitable area**.
- Convergence areas: outline how your proposed work applies to **each office**.

SCGSR Research Proposal

- Developed by **yourself** in collaboration with the DOE national laboratory scientist, and in consultation with your thesis advisor

- Describe the part of your PhD thesis project that will be conducted at the DOE national laboratory/facility. **This part is your SCGSR proposal.**

- Address in its aims at least one of the **SCGSR Priority Research Areas**, and how the proposed SCGSR project will take advantage of the DOE national laboratory/facility's research capabilities and assets.

An application whose SCGSR research proposal is the same as that of an SCGSR application awarded in a previous solicitation cycle is a duplicate and will NOT be considered in any other SCGSR solicitation cycles.

https://science.osti.gov/wdts/scgsr/how-to-apply/research-proposal-guidelines/

Proposal Structure

1. Overarching Goal: What is the **problem** you want to solve or the **question** you want to answer?

2. Background: Why is this problem/question **relevant**? What is the **current understanding**/state of the art? How does it **fit in a SCGSR priority area**? Broadly: how can this problem/question be answered, and what are the **preliminary steps/data** you have taken/got that **suggest your idea may work**?

3. Specific Aims: The **basis for your research plan**. How do your specific goals relate to each other? Do they depend on each other? Are they sequential, parallel?

4. Approach: **Strategy, general steps with rationale**. What will you be doing in the lab from day 1? What **results do you expect**? What could go wrong and how could you **overcome potential problems**?

5. Timeline: When will you do each part of the work? What is the expected **pace of progress**?

3 pages

Build in time for contingencies!

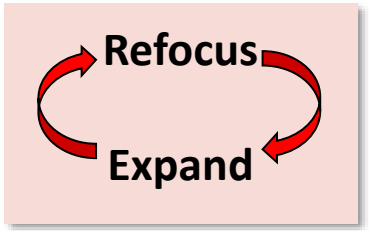
---

6. References: Separate page.

https://science.osti.gov/-/media/wdts/scgsr/pdf/SCGSR_Research_Proposal_Full_Guidance_Document_2023.pdf

Successful proposals effectively communicate the **innovation, timeliness, and excitement** of the ideas for the proposed research.

A Possible Workflow



Key *Points!*

Address the questions as bullets

Expand each gradually into paragraphs

Trim - Connect

Proofread, proofread, proofread

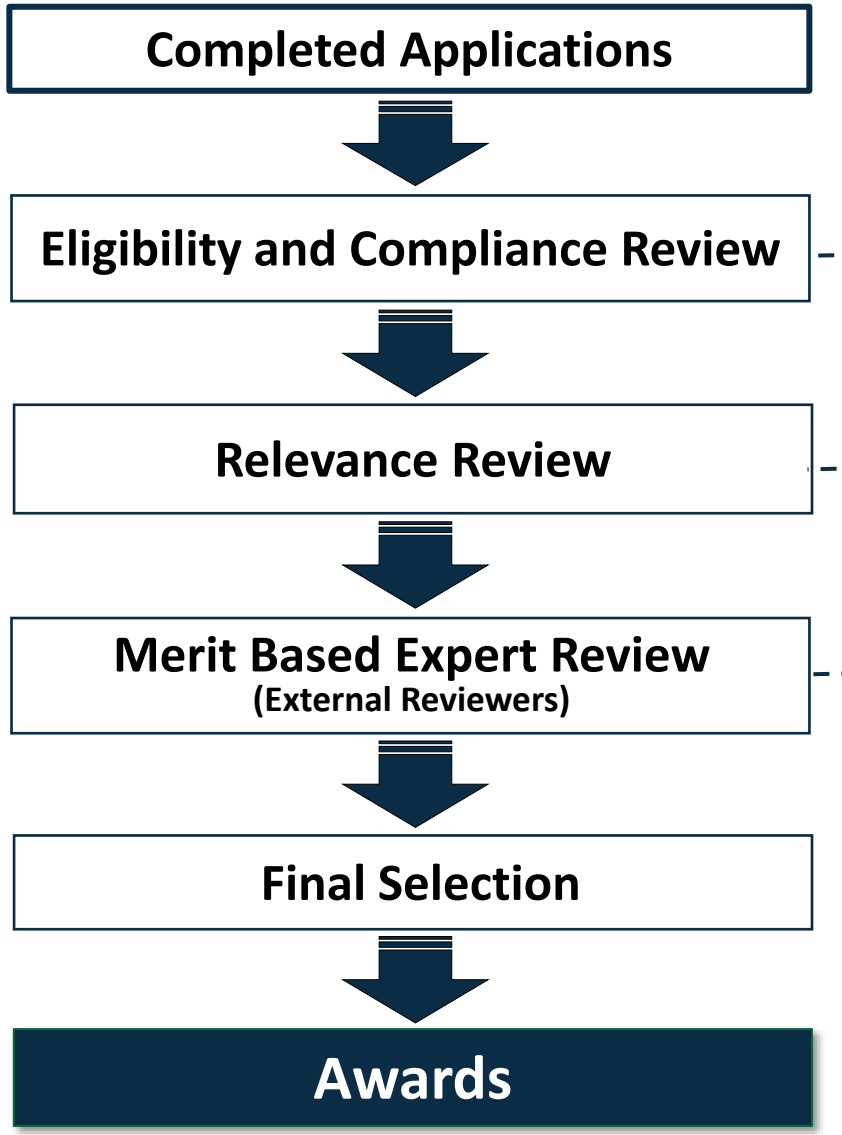
Colleague's feedback
Does your message get across the way you thought?

Advisor and Collaborator

The Strength of your Argument for Funding

What is the innovation?
How important is the work?
Scientific excitement!

Review and Selection Process



Does the application meet all the program guidelines?

Is the proposed work aligned with at least one of the SCGSR Priority Research Areas?

Expert reviewers from the scientific community. Scientific merit and value for PhD training.

Merit Review Criteria

1. Scientific and/or Technical Merit of the Proposed Research (Score 1 – 6)
a. Is the proposed research **well-conceived**, and does it demonstrate a **clear understanding** of the scientific and technical challenges involved? b. Is the proposed **method and approach** for the proposed research appropriate? c. Is the applicant **sufficiently prepared** to conduct the proposed research? d. Are the DOE laboratory **resources** adequate? If applicable, has the necessary access to a scientific user facility been secured?
2. Relevance of the Proposed Research to Graduate Thesis Research and Training (Score 1 – 4)
a. Does the proposed research have the potential to make a **significant contribution to the applicant's PhD thesis** research project? b. Will the proposed research enhance the applicant's **training and research skills**?

Some Additional Thoughts…

- **HYPOTHESIS DRIVEN RESEARCH:** We support fundamental research - not applied research.

- **Method or instrument development**: when aimed to enable fundamental research, or when it is part of a large fundamental science experiment.

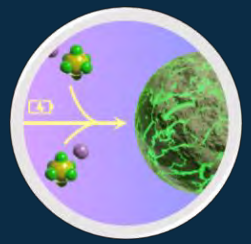
  What are the big scientific questions that these new tools will eventually help to answer?

- **You want the reviewers to write:**

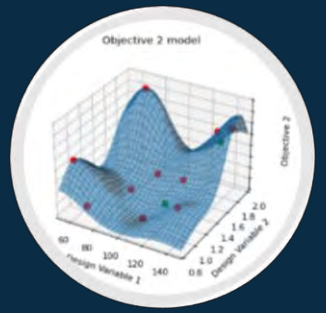
  "The proposed research is well thought out"

  If the reviewer does not understand what you were trying to say: Is it the reviewer's fault?

Thank You!



Questions???

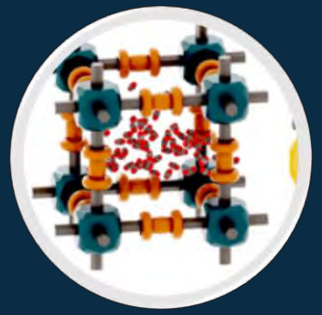


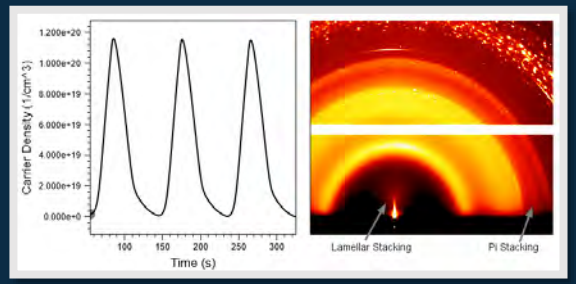
After this Q&A please visit the Breakout Rooms to meet with

Program Managers of the SC Research Offices

Talk with them about of your research

After the breakout session,
please come back to the main room and
please answer our **feedback poll**





Next Application Assistance Workshop
April 18, 2024, 2:00 – 4:30 pm ET:
Helpdesk + meet Scientists and Former Awardees

“My experience was nothing short of extraordinary, and I am forever grateful to the DOE SCGSR program for enabling me to get my foot in the door. I remember thinking to myself the first day I stepped into SQMS's offices "this is exactly where I was meant to be", and a year later I still think that same exact thought. I felt welcome by my colleagues, and that I am really part of the team and their tireless efforts to bring this technology to life. I learned such valuable skills that have rounded me out as a scientist/engineer that I would not have gotten without this program, and it has really shaped me into an expert in this field.”

Hans Johnson 2022 S1

“However, it was not just the advanced techniques that I learned, but also the people I met and the networking I was able to do that was a critical part of my experience. I met many scientists who pushed my understanding in my field to new heights, and who gave me career and research advice along the way.”

Leila Wahab 2021 S2

“This combination of hands-on experience and networking has been an immense boost to my professional development, and I would encourage any other grad student in a similar place in their early science career to pursue SCGSR opportunities whenever possible.”

Cooper Wagner SCGSR 2022 S1

“The SCGSR program has been the most valuable part of my graduate education.”

Christine Burgan 2022 S2

Office of Science Research and R&D Programs

- Dr. Christine Clarke – ARDAP (Christine.Clarke@science.doe.gov)
- Dr. David Rabson – ASCR (david.rabson@science.doe.gov)
- Dr. Justin Hnilo – BER (Justin.Hnilo@science.doe.gov)
- Dr. Robin Hayes – BES (Robin.Hayes@science.doe.gov)
- Dr. Julie Ezold – DOE IP (Julie.Ezold@science.doe.gov)
- Dr. Curt Bolton – FES (Curt.Bolton@science.doe.gov)
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