Welcome! Please answer the following questions 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 (**SC GSR**) Program

Application Assistance Workshop 1
for 2025 Solicitation 1

March 6, 2025

"This program has fundamentally changed me as a scientist, and for that I am very thankful."

SCGSR 2023 S2 Awardee

U.S. DEPARTMENT of ENERGY | Office of Science

SCGSR Program by the Numbers

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

SCGSR 2022 S2 Awardee

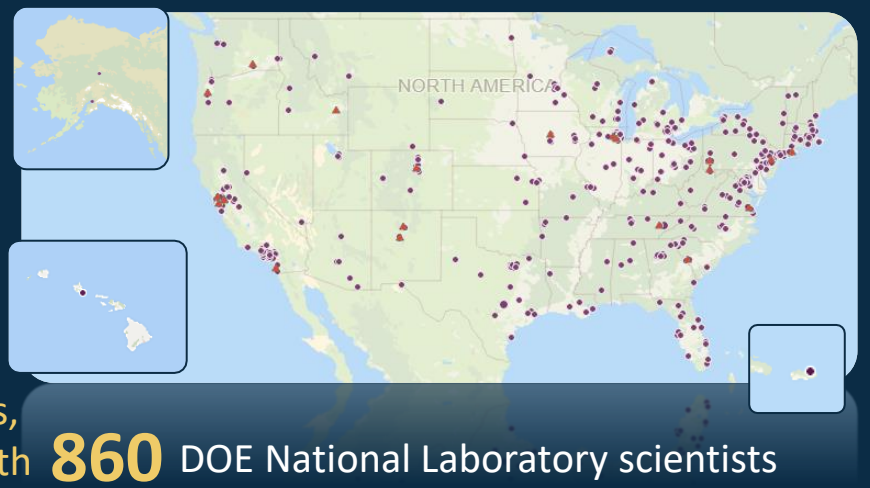
Since **2014**

1214 awardees from

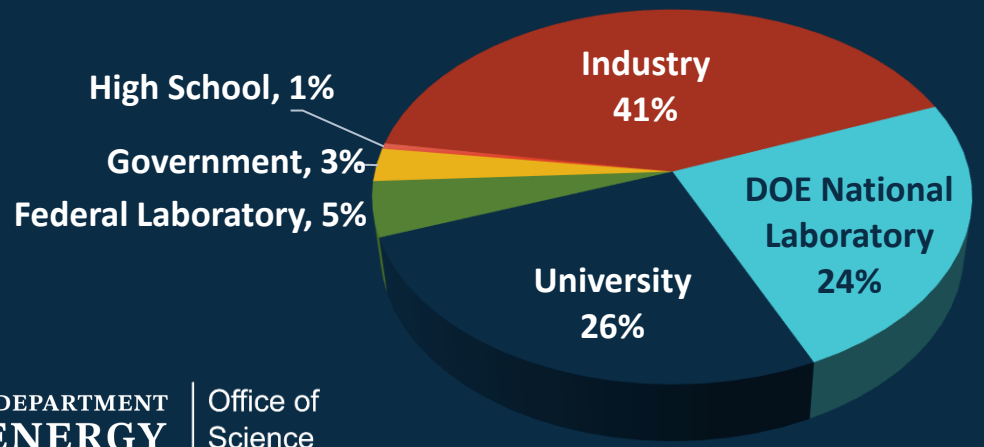
476 hometowns in

48 States + DC + Puerto Rico, pursuing PhDs at

168 Universities, working with **860** DOE National Laboratory scientists



SCGSR Alumni Work in…



>800 Research articles

>700 Research presentations

>100 International Presentations

10 Patents

WHAT AWARDEES SAY ABOUT SC GSR

99% Received training not available at their universities

99% **Expanded their networks**

99% SCGSR introduced them to careers outside academia

100% **Their SCGSR award led to completion of a key part of their PhD dissertation**

SCGSR Program Management

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)

sc.scgsr@science.doe.gov

Oak Ridge Institute for Science and Education (ORISE)

- Dr. Megan M. Morris
  Associate Manager
  STEM Workforce Development
- Abby Robbins
  Program Specialist
  Workforce Development

OAK RIDGE INSTITUTE FOR SCIENCE AND EDUCATION

doe-scgsr@orau.org


U.S. DEPARTMENT of ENERGY
Office of Science
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

7 SC Research and R&D and Production Programs

Advanced Scientific Computing Research (ASCR)	World leading computational and networking capabilities
Biological and Environmental Research (BER)	Understand complex biological, earth, and environmental systems
Basic Energy Sciences (BES)	Understand, predict, and control matter and energy at the electronic, atomic, and molecular levels
Isotope R&D and Production (DOE IP)	National preparedness for isotope production and distribution
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. David Rabson – ASCR

Dr. Justin Hnilo – BER

Drs. Christopher Fecko and James Dorman – BES

Dr. Ethan Balkin – DOE IP

Dr. Nirmol Podder – FES

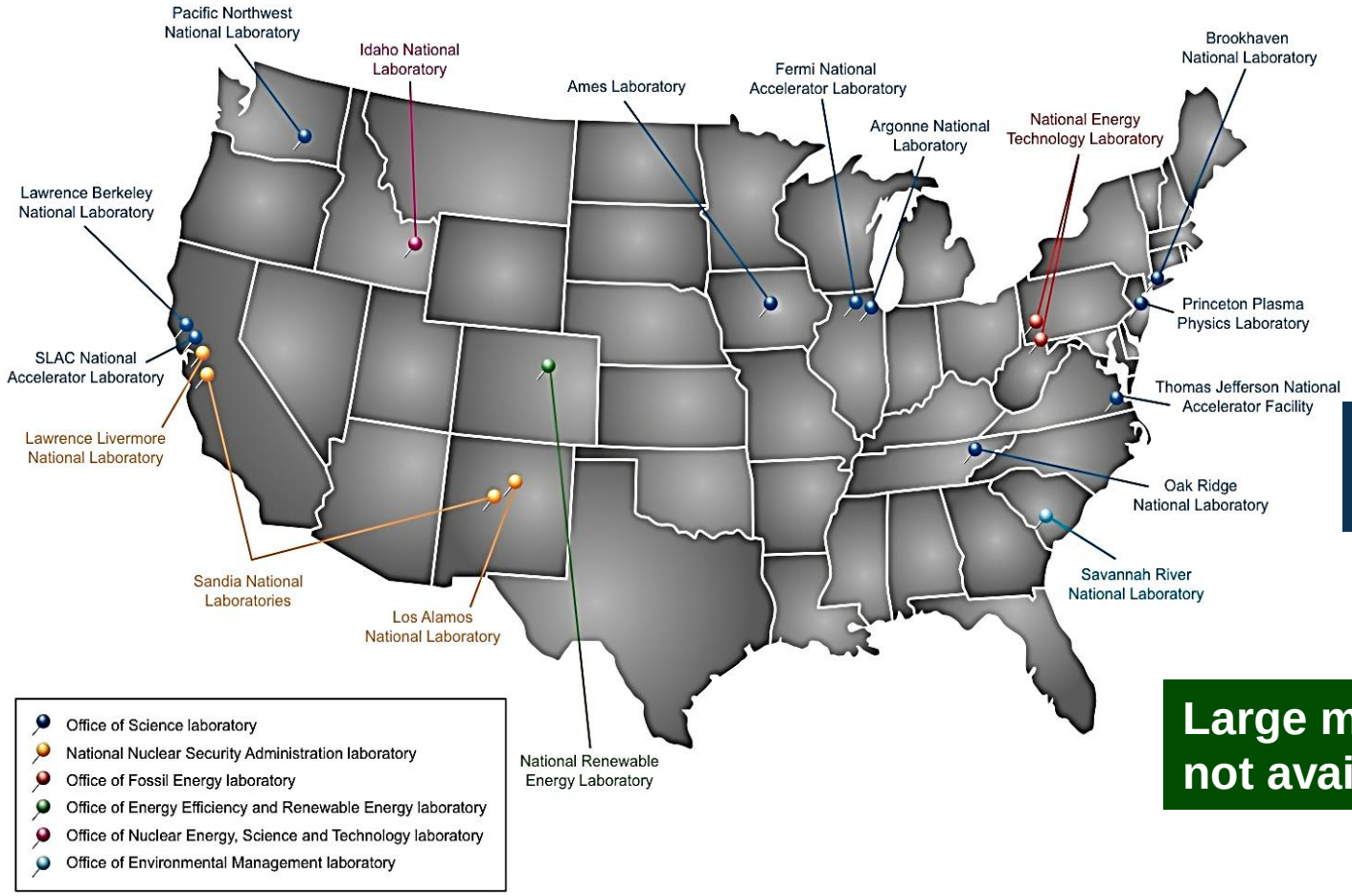
Dr. Manuel Bautista – HEP

Dr. Ken Hicks – NP

Meet them later in the Breakout Rooms!!!

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

Created as a home for large-scale, costly scientific facilities that universities cannot afford.



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

SCGSR Program

Foster advanced workforce development in areas critically important to SC mission

Supports **PhD candidates** for conducting part of their **thesis research at DOE National Laboratories**

3 – 12 months in collaboration with a DOE National Laboratory scientist

- U.S. citizens or Lawful Permanent Residents
- Alignment with priority research areas (7 SC research and R&D and production program offices)
- New research experiences (no prior experience at the host lab)

Scientist in Residence
Build network and establish yourself in the field

Stipend: Up to $3,600/month
Travel Reimbursement: Up to $2,000

What Are We Looking For?

PhD candidates who…

1) …propose research relevant to SC Priority Areas
https://science.osti.gov/wdts/scgsr/How-to-Apply/Priority-SC-Research-Areas

2) …need tools and/or expertise that are not available at their Universities

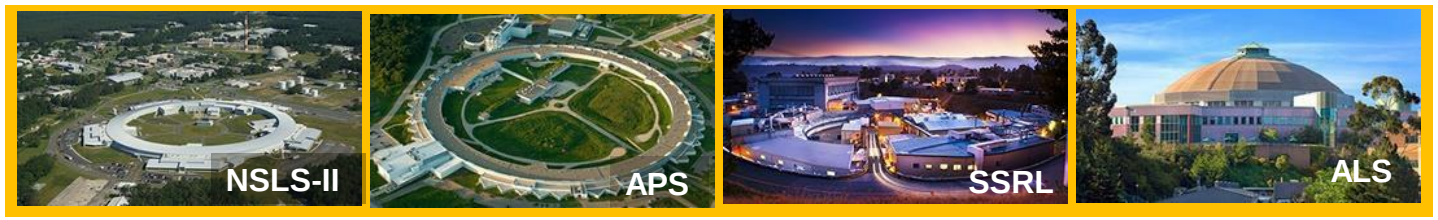
Unique expertise/capabilities of scientists/facilities at DOE National Labs/Facilities

⇨ **take your PhD research to the next level**

"The interdisciplinary nature of my SCGSR work led me to foster collaborations with a variety of scientists, dramatically increasing the breadth of my technical skills and scientific knowledge. My SCGSR research equipped me with the specific methods and data to complete my doctorate degree and expanded my scientific horizons as I look to a post-graduate future."

SCGSR 2023 S2 Awardee

28 Scientific User Facilities



Over 37,000 users per year!

Two General Types of Research that the SCGSR Program Supports

- **Hypothesis driven research:** We support fundamental research - not applied research.

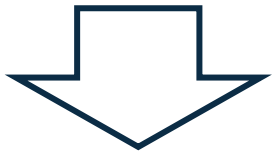
  Hypothesis: **Clear**, **Concise**, **Testable**

- **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?

Identifying the Needs of your Thesis Research

- Instrumentation – specialized spectrometers, microscopes, sequencers…
- Tools – specialized codes, algorithms, custom cells, detectors…
- Libraries – Datasets, sample collections, materials, handling protocols…
- Facilities – clean rooms, light/particle sources, high performance computers…
- Advanced techniques
- Theoretical frameworks
- Expertise/Training
- Participation in ongoing large scale projects: DUNE, ATLAS, E3SM, QIS…

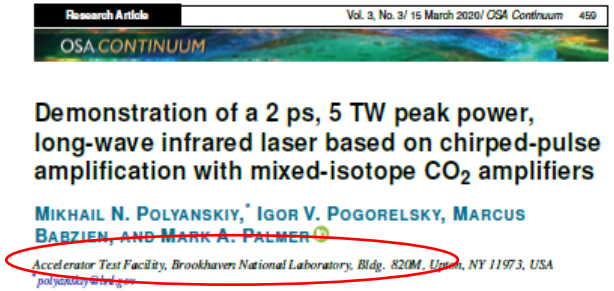


Identifying a DOE National Lab Scientist

https://www.energy.gov/national-laboratories

7 Ways to Identify a DOE National Lab Scientist

1. **Scientific literature**


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

2. **Your advisor and their network**

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

   Search by topic -> refine by institution

4. **National Laboratories websites**

   https://www.energy.gov/national-laboratories

This illustration by Unknown Author is licensed under CC BY-SA

5. **SCGSR website: list of potential collaborating scientists**

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

6. **SCGSR website: list of publications**

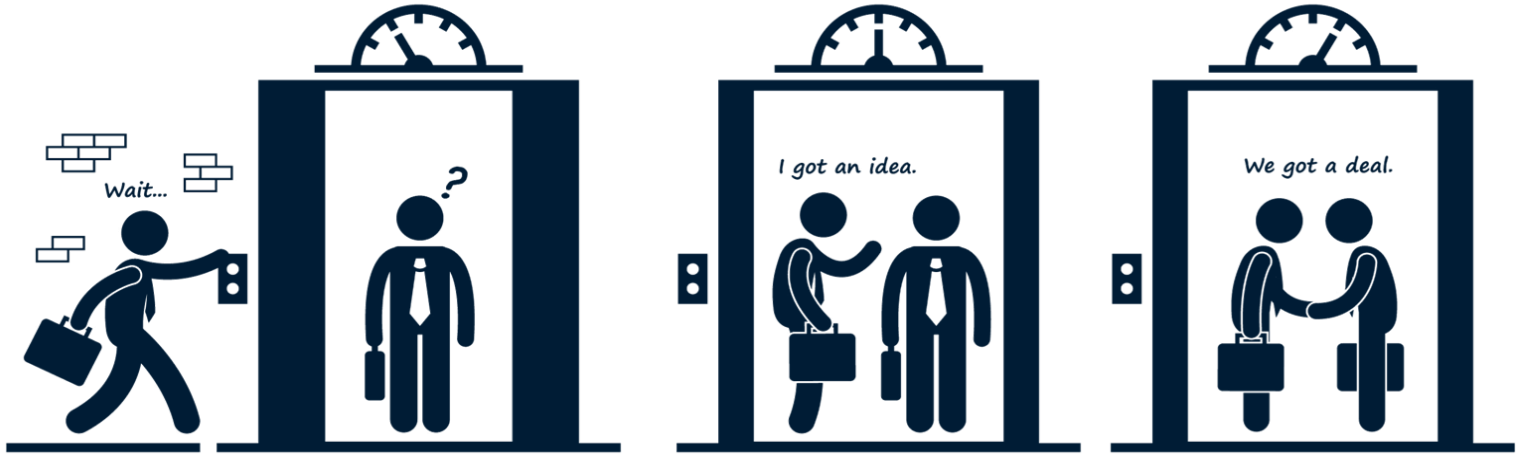
   https://science.osti.gov/wdts/scgsr/How-to-Apply/Identifying-a-Collaborating-DOE-Laboratory-Scientist

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

Contacting National Laboratory Scientists

Scientists receive **A LOT** of spam, so:

1. Use your **school's email address**
2. Subject line: "Interest in collaborating on a DOE SCGSR project on xxx" (**your topic in 3-4 words**!)
3. Cc your **advisor**
4. Brief description of the SCGSR program. (Essential information: **No cost to them!**)
5. **Brief summary** of the work you want to do.



Setting Things Clear Upfront

1. Is there an **overlap of interests**?
2. Do they have **time** for working with you?
3. What type of **instrumentation is available**?
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, set two instruments in tandem/parallel, etc.
6. Do you need to **apply for using specific facilities**?

SCGSR Application

Only COMPLETE applications submitted by the deadline will be considered!

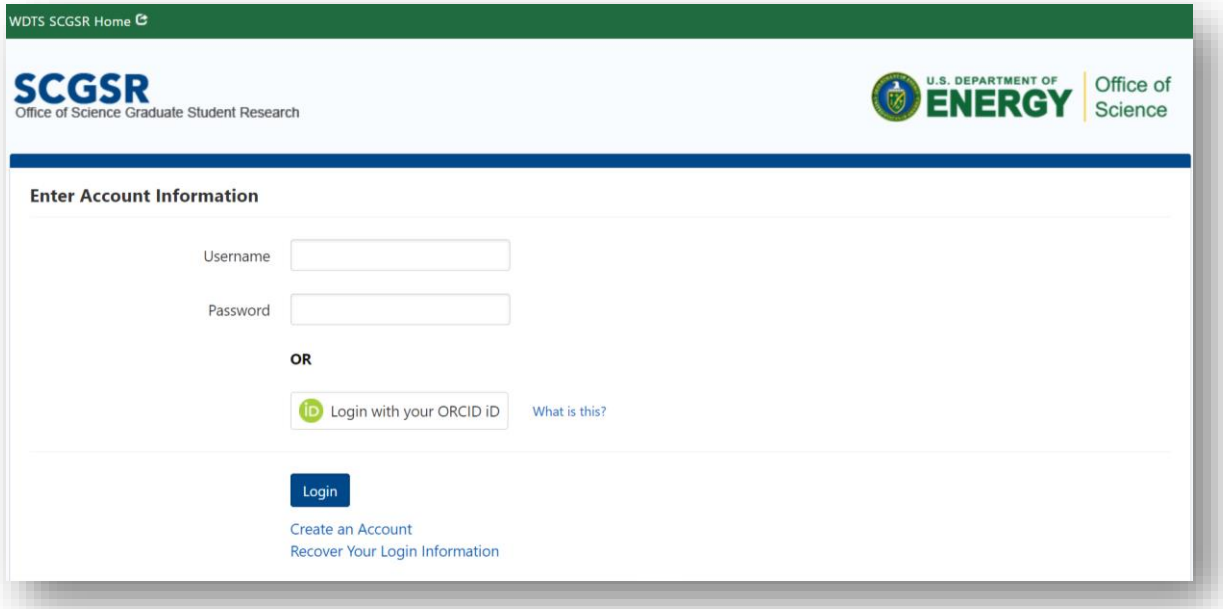
Due **May 7, 2025, 5:00 PM ET**

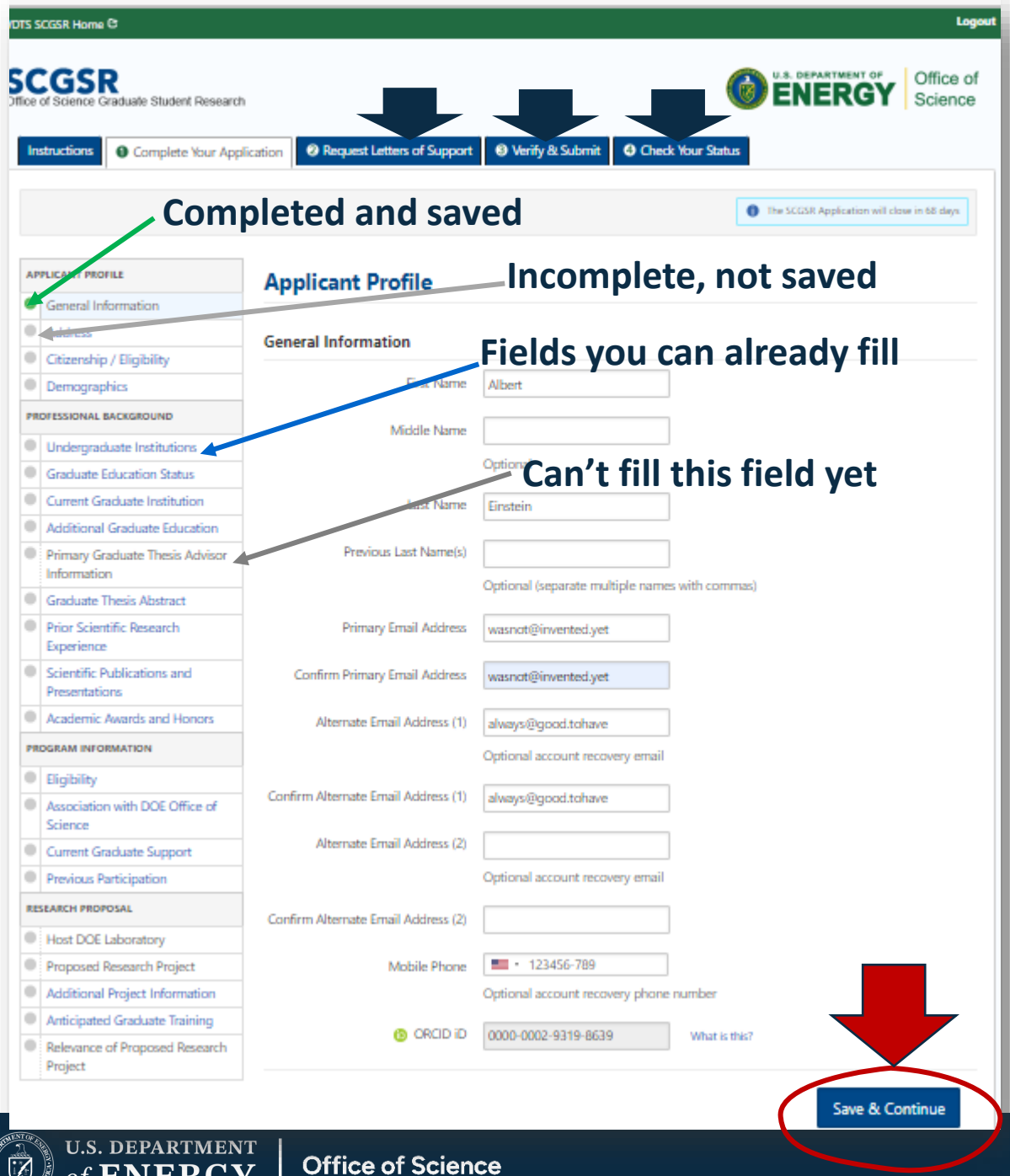
- All **required fields** of the Online Application System.
- **Official graduate transcripts** and **explicit proof of Ph.D. Candidacy**.

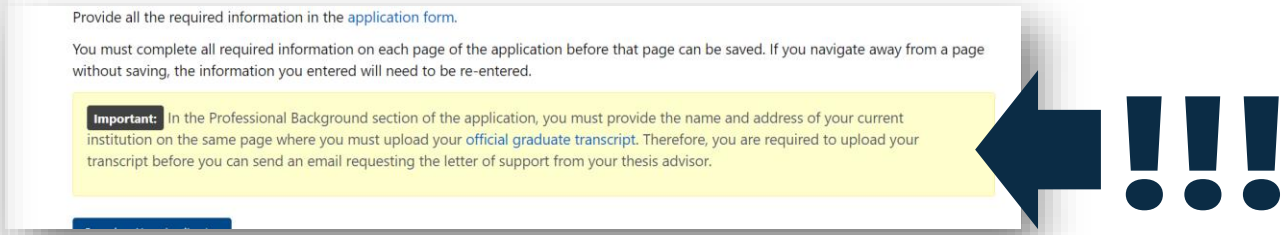
  Please **remove SSN or dates of birth** from transcripts, transcripts that have this information will be *immediately eliminated from the system and deemed non-compliant*.

- **Two Letters of Support**:
  - thesis advisor
  - collaborating National laboratory scientist
- **Research Proposal** (*3-pages maximum*).

https://apps.orau.gov/SCGSR







1. **Complete a page before moving on** – you can always come back and edit
2. **Gray non-fillable boxes** – need to fill **prior sections**
3. **Placeholders** – type in TEXT or upload blank PDFs if you don't have everything at hand, **remember to come back and replace** the placeholders when ready
4. E-mails for advisor and collaborating scientist are **sent from the system**, => you must upload their contact information – Remind them **not to wait till the last minute**
5. **Proofreading**

SCGSR Proposal

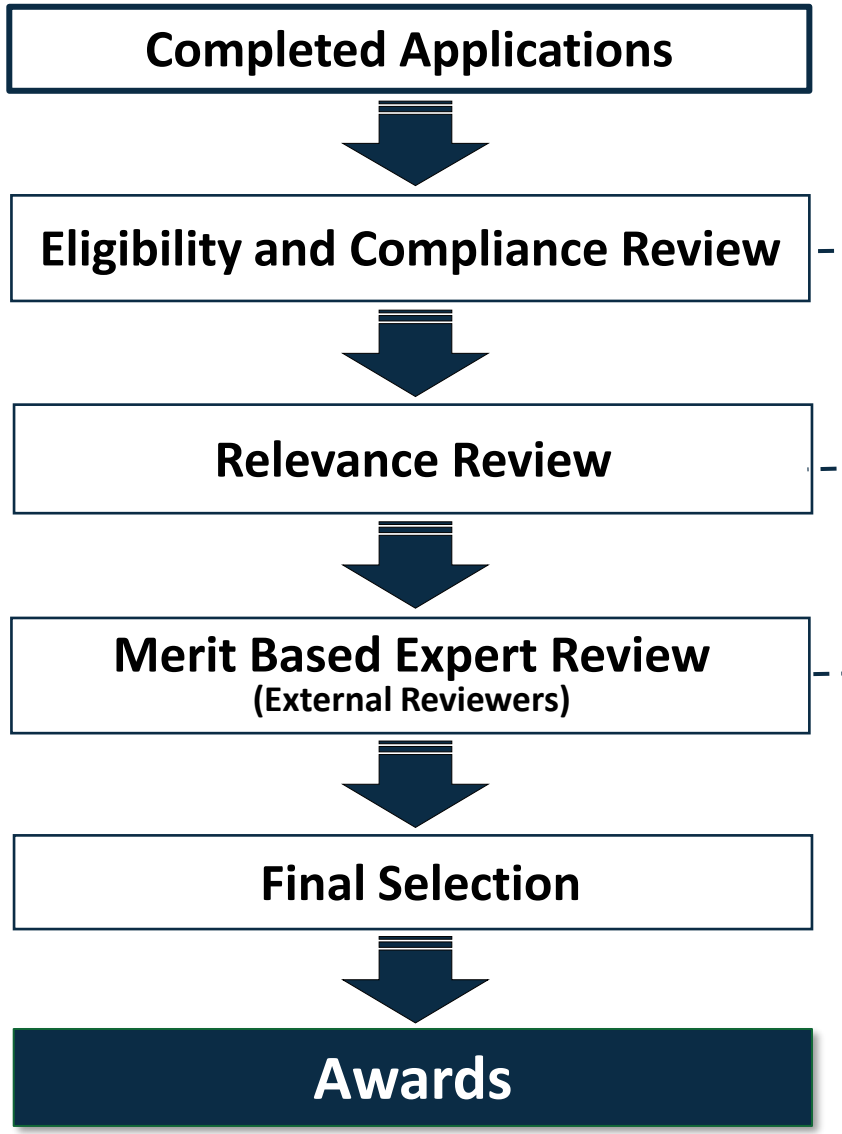
- Developed by **yourself** in collaboration with the DOE national laboratory scientist, and in consultation with your thesis advisor
- The part of your PhD thesis project that will be conducted at the DOE national laboratory/facility. **This part is your SCGSR proposal.**
- Aims should address at least one of the **SCGSR Priority Research Areas**,
- Describe how you will take advantage of the **DOE national laboratory/facility's research capabilities and assets**.

Citing a reviewer:

"The strongest of SCGSR proposals outline both sides of the student-Lab relationship in a balanced manner."

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

Review and Selection Process



Does the application **meet all the guidelines**?

Alignment 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**?

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 7, 5:00 PM ET**
Offer Notification Period	Mid September 2025
Earliest Start Date for Proposed Project Periods	November 10, 2025*
Latest Start Date for Proposed Project Periods	March 2, 2026*

*Project are 3 to 12 consecutive months long, depending on the applicant's proposed work.

*Awardees can choose the start dates within the window above.

An Exercise to Kickstart your Application

1. What is your thesis topic about? Summarize your central idea

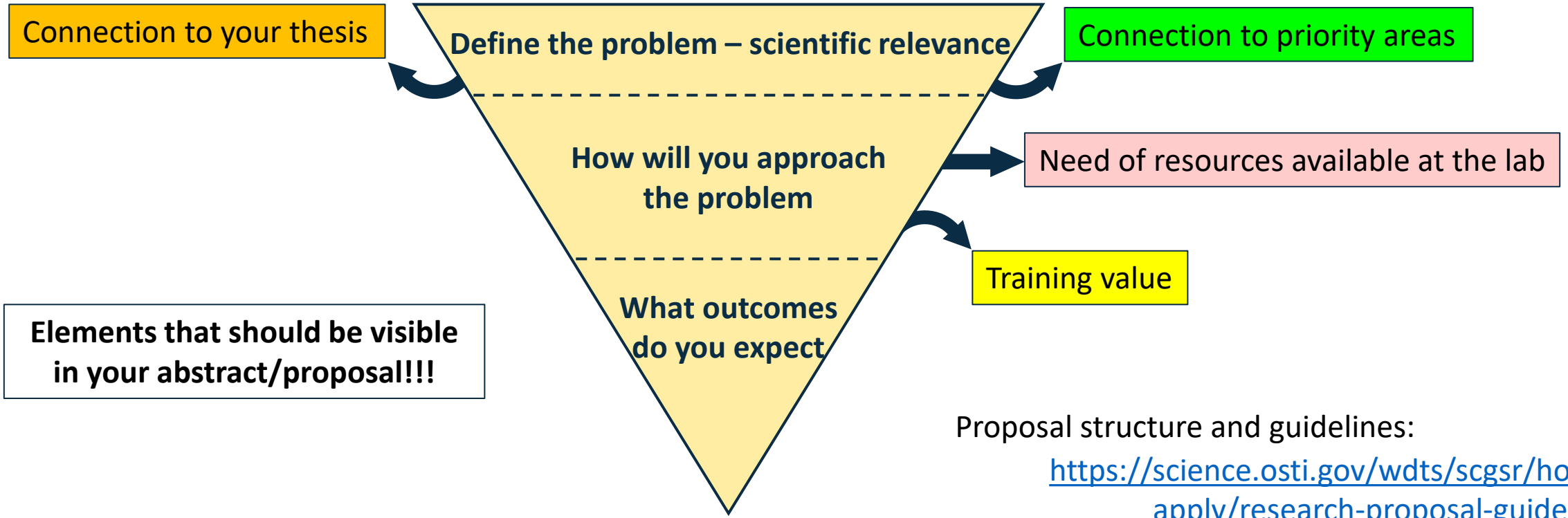
2. Wish list: What resources do you need that are not available at your university? Equipment/Instrumentation, Techniques, Theoretical methods

3. Homework: Are these resources available at a national lab? In which one(s)?

Remember: **FUNDAMENTAL RESEARCH**!

The Abstract – A Summary of Your Proposal and Your Presentation Card

You usually write it last, but what about using it as your starting draft?



Elements that should be visible in your abstract/proposal!!!

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

Exercise

Find the elements listed in the previous slide in the following sample abstracts from past awardees, copy them from the chat box – highlight them in your word processor

Sample 1: BES – MDSD Simulation of Impurities in α-Iron

Sample 2: ASCR – Almost Symmetries in Unit Commitment

Sample 3: BER – Scaling the effects of bioclogging in the hyporheic zone to predict regional hydrologic water balances

Sample 4: BES – Atomic-scale control of energy transfer in semiconductors

Sample 5: NP – Disconnected Diagrams and Deflation in Lattice QCD

Some are missing some of the elements, or could highlight them better. Can you detect what is there and what is missing?

Abstract Sample 1

Priority Areas ?

Training ?

BES - MDSD Simulation of Impurities in α-Iron

Problem?

Through the combination of molecular dynamics and spin dynamics techniques, time-dependent properties of metallic alloys and transition metals may be studied using computer simulation. A model for α-Iron has been developed using an embedded atom interaction potential and a coordinate-dependent exchange interaction. This project will investigate the effect on the system of real-world conditions such as external magnetic fields and impurities in the lattice through measurement of the dynamic structure factor and the diffusion coefficient. These results may be compared to experimental and ab initio data. The MDSD technique is general and through collaboration with Dr. **Content Blocked/Edited Out**, it may be used to investigate and test new forms of the system Hamiltonian. His expertise in high performance computing will yield insight into the viability of this code for large-scale parallelization. This collaboration will lay groundwork for future investigation of improved model interactions and for improved simulational techniques later in my thesis work.

Approach?

Need of lab res.

Outcomes?

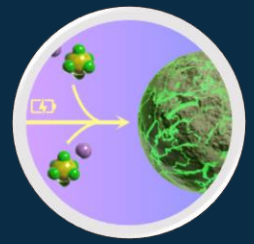
Connection to thesis

What about clarity?

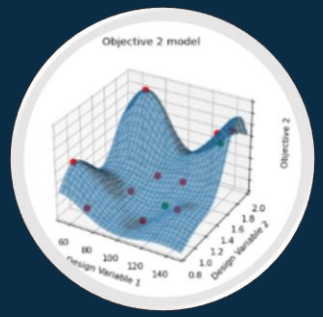
Office of Science Research and R&D Programs

- 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. Ethan Balkin – DOE IP (Ethan.Balkin@science.doe.gov)
- Dr. Nirmol Podder – FES (Nirmol.Podder@science.doe.gov)
- Dr. Manuel Bautista – HEP (Manuel.Bautista@science.doe.gov)
- Dr. Kenneth Hicks – NP (Kenneth.Hicks@science.doe.gov)

Thank You!



Questions???

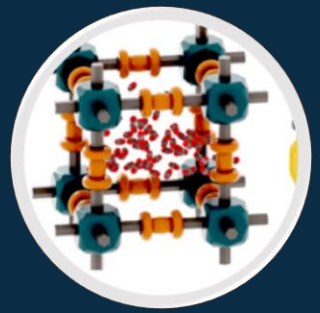


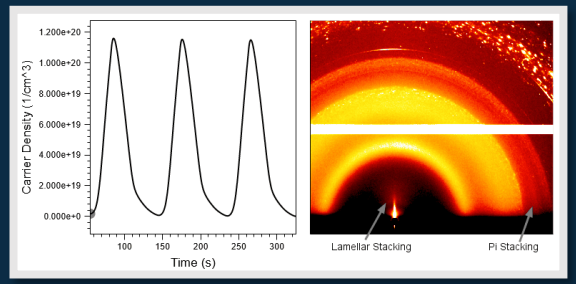
After this Q&A please visit the Breakout Rooms to meet with

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
answer our **feedback poll**





Next Application Assistance Workshop
April 10, 2025, 2:00 – 4:30 pm ET:
Helpdesk + meet Scientists and Former Awardees