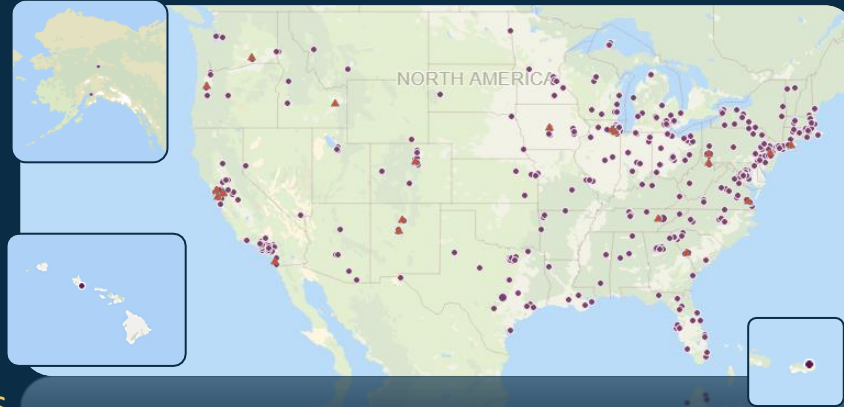


# SCGSR Program by the Numbers

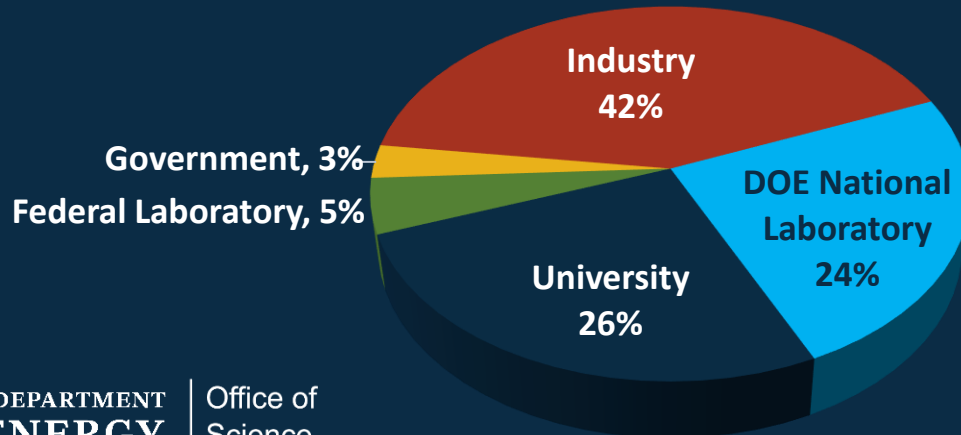
*"The SCGSR program has been the most valuable part of my graduate education."*

Christine Burgan 2022 S2

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  
**>750** Research presentations  
**>100** International Presentations  
**10** Patents

## WHAT AWARDEES SAY ABOUT SCGSR

**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

U.S. Department of Energy

# OFFICE OF SCIENCE

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

Application Assistance Workshop 2  
for 2025 Solicitation 1

*April 10, 2025*

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

What has been the hardest part of applying to the  
SCGSR program so far?



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)

Email:

[Igor.Slowing@science.doe.gov](mailto:Igor.Slowing@science.doe.gov)

## Oak Ridge Institute for Science and Education (ORISE)

- Dr. Megan Morris  
Project Manager  
Workforce Development
- Abby Robbins  
Program Specialist  
Workforce Development

Email:

[DOE-scgsr@ornl.gov](mailto:DOE-scgsr@ornl.gov)

# Schedule

(All times East)

*“This SCGSR project has been an incredible experience. In addition to the reported advancements of my thesis research, I was able to get to know and gain an appreciation for the incredible scientists and staff at ORNL. The capabilities and breadth expertise at this lab are awe-inspiring.”*

SCGSR 2023 S1 Awardee

2:00-2:50 PM Webinar:

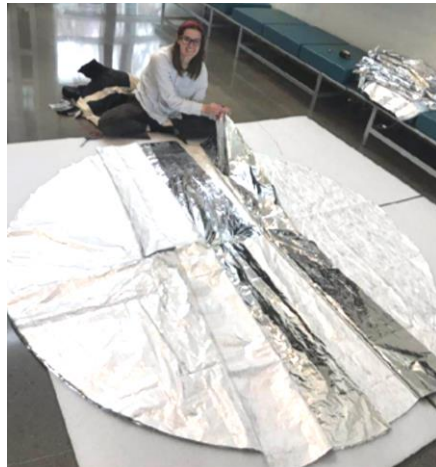
The SCGSR Program  
Evaluation of the Applications  
Proposal format  
Tips on Proposal Writing  
**Q&A**

3:00-3:30 PM **Panel I: Recent SCGSR Awardees** (2 parallel panels)

3:30-4:00 PM **Panel II: DOE National Lab Scientists** (3 parallel panels)

# SCGSR Supports PhD Students whose Research...

- Advances our fundamental understanding of nature
- Develops tools or methodologies that enable scientific discovery



SCGSR Awards and Publications

Awards from Past SCGSR Solicitations

Eligibility

Benefits

Participant Obligations

How to Apply

Information for Laboratory Scientists and Thesis Advisors

Key Dates

Frequently Asked Questions

Reporting Harassment or Discrimination

Contact

**Contact DOE Office of Science Graduate Student Research Program**

Address

U.S. Department of Energy  
SC-33 Forrestal Building  
1000 Independence Ave., SW  
Washington, DC 20585

**SCGSR Publications**

Publication Year: 2025 | 2024 | 2023 | 2022 | 2021 | 2020 | 2019 | 2018 | 2017 | 2016 | 2015

**2025**

1. **Eric Gabriel** (SCGSR 2021 S2/BES/ANL)  
Chengjun Sun  
The role of Li doping in layered/layered Na<sub>x</sub>LiNi<sub>0.4</sub>Fe<sub>0.2</sub>Mn<sub>0.4</sub>O<sub>2</sub> intergrowth electrodes for sodium ion batteries  
*Nano Energy* **2025**, 134, 110556  
<https://doi.org/10.1016/j.nanoen.2024.110556>
2. **Cameron Salyer** (SCGSR 2022 S2/DOE IP/ORNL)  
Justin Griswold  
Validation of a general-use high flux isotope reactor-specific metaheuristic optimization framework for isotope production target design  
*Appl. Rad. Isotopes* **2025**, 216, 111592  
<https://doi.org/10.1016/j.apradiso.2024.111592>
3. **Rebecca Chen** (SCGSR 2022 S1/HEP/SLAC)  
Eli Rykoff  
Evaluating cosmological biases using photometric redshifts for Type Ia Supernova cosmology with the Dark Energy Survey Supernova Program  
*Monthly Notices R. Astron. Soc.* **2025**, 536, 1948  
<https://doi.org/10.1093/mnras/stae2703>
4. **Emily Mikeska** (SCGSR 2022 S2/BES/ANL)  
Richard Wilson  
PCET-Driven Reactivity of Neptunyl(VI) Yields Oxo-Bridged Np(V) and Np(IV) Species  
*Chem. Eur. J.* **2025**, 31, e202402963  
<https://doi.org/10.1002/chem.202402963>
5. **David Mathews** (SCGSR 2019 S2/NP/ORNL)  
Leah Broussard  
A flexible data acquisition system architecture for the Nab experiment  
*Nucl. Instr. Methods Phys. Res. A* **2025**, 1071, 170079  
<https://doi.org/10.1016/j.nima.2024.170079>
6. **Gabriel Parker** (SCGSR 2021 S2/BER/PNNL)  
Andrew Plymale  
ToF-SIMS spectral analysis of *Shewanella oneidensis* MR-1 biofilms  
*Res. Surf. Interfac.* **2025**, 18, 100396  
<https://doi.org/10.1016/j.rsuc.2024.100396>

<https://science.osti.gov/wdts/scgsr/SCGSR-Awards-and-Publications>

# 59 SCGSR Research Priority Areas

## Advanced Scientific Computing Research (ASCR)

Mathematics, Computer and Computational Sciences, etc.

## Biological and Environmental Research (BER)

Biology (non-medical), bioinformatics, environmental science, plant science, microbiology, atmospheric science, earth systems modeling, etc.

## Basic Energy Sciences (BES)

Chemistry, Materials Science, Geosciences, Chemical Physics, etc.

## Isotope R&D and Production (DOE IP)

Separations, radiochemicals, imaging, enrichment, etc.

## Fusion Energy Sciences (FES)

Plasma physics, magnetic confinement fusion, energetic particles, etc.

## High Energy Physics (HEP)

Theory, experiment, accelerator and detector technologies

## Nuclear Physics (NP)

Theory, fundamental symmetries, QIS, AI, accelerator and detector technologies, etc.

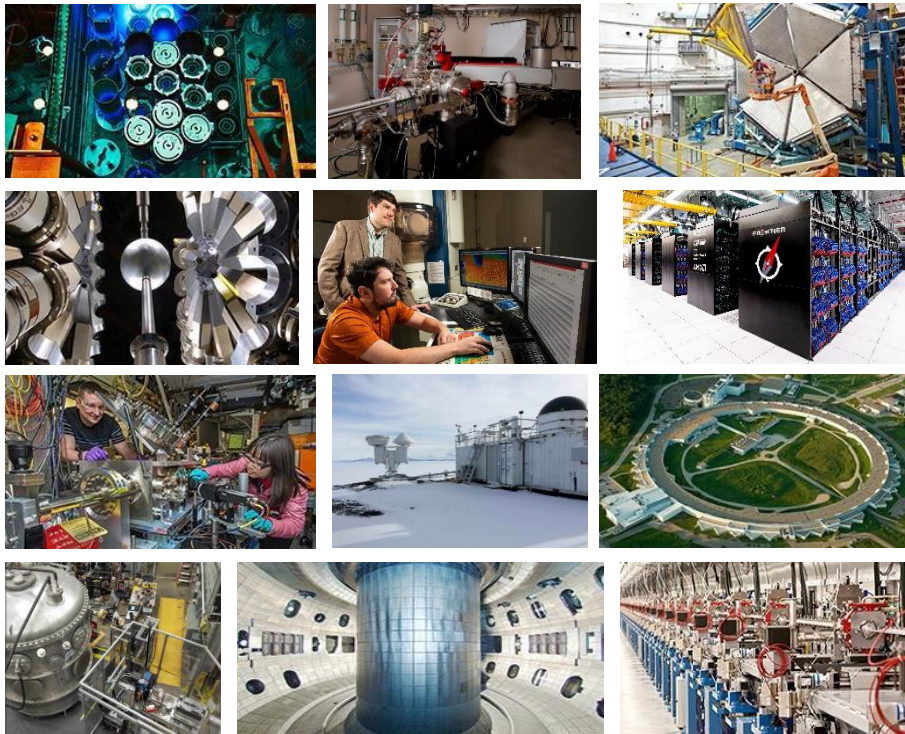
Convergence Areas

Exclusions!



# SCGSR Supports PhD Students whose Research...

Needs advanced/unique instrumentation and/or expertise available at US DOE National Laboratories – What part of your work needs resources that are there?



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

<https://science.osti.gov/User-Facilities/User-Facilities-at-a-Glance>

# Finding a Collaborating Scientist

Literature • Network • Labs Websites • SCGSR Website <https://science.osti.gov/wdts/scgsr/How-to-Apply/Identifying-a-Collaborating-DOE-Laboratory-Scientist/View-Potential-Collaborating-Scientists>



Today's advice:

- SCGSR awardees panel (3:00-3:30 PM)
- National lab scientists panel (3:30-4:00 PM)

Write to us and we can help with your search

[SC.SCGSR@science.doe.gov](mailto:SC.SCGSR@science.doe.gov)

SC Home Organization Contact Stay Connected DOE Home

U.S. DEPARTMENT OF ENERGY Office of Science

Search

Home About Laboratories Science Features Universities User Facilities Funding Initiatives Programs

Home | Programs | Workforce Development for Teachers and Scientists (WDTS) | Office of Science Graduate Student Research (SCGSR) Program | How to Apply | Identifying a Collaborating DOE Laboratory Scientist | View Potential Collaborating Scientists

### View Potential Collaborating Scientists

**DOE National Laboratory Scientists with Interest in Collaborating with SCGSR Awardees**

**Susannah Burrows** - [Susannah.Burrows@pnnl.gov](mailto:Susannah.Burrows@pnnl.gov) - Pacific Northwest National Laboratory – BER  
*I'm an atmospheric physicist focused on advancing understanding of the processes controlling atmospheric aerosols and other trace constituents, and their interactions with climate and the Earth System. I do this by developing, implementing, and advancing models that incorporate findings from laboratory, field, and remote sensing data, often in close collaboration with experimental and observational experts. I have a strong history of mentoring students and postdoctoral research associates throughout my career; former mentees have gone on to a variety of new roles in academia, research institutions, and the private sector.*

**Zhehui (Jeph) Wang** - [zwang@lanl.gov](mailto:zwang@lanl.gov) - Los Alamos National Laboratory – BES, FES, HEP, NP and DOE IP  
*Dr. Wang is a focus team leader at LANL. His research collaborations cover many topics in experimental physics with strong ties to both fundamental physics and particle physics. One of the recent directions is to apply the ideas and methods of data science to enhance the understanding of particle physics and data interpretation.*

**Nobuo Sato** - [nsato@jlab.org](mailto:nsato@jlab.org) - Jefferson Laboratory – NP  
*Research in nuclear tomography, relativistic heavy ion collisions, and data interpretation.*

**Sally Dawson** - [sally.dawson@bnl.gov](mailto:sally.dawson@bnl.gov) - Brookhaven National Laboratory – HEP  
*My research is on theoretical calculations for Higgs boson processes at future colliders and the study of new physics signals involving electroweak symmetry breaking.*

**M. Madduri** - [madduri@anl.gov](mailto:madduri@anl.gov) - Data Science and Learning Division, Argonne National Laboratory – ASCR  
*My group works in the intersection of computing and biomedicine where we develop methods that enable large-scale data analysis and application of deep learning to problems in biomedicine and health.*

**Aaron Roodman** - [roodman@slac.stanford.edu](mailto:roodman@slac.stanford.edu) - SLAC National Accelerator Laboratory – HEP  
*My main research interest is the study of Dark Energy using data from imaging surveys such as the Dark Energy Survey and the upcoming Vera C. Rubin Observatory's Legacy Survey of Space and Time. We use the observation of hundreds of millions, or billions, of galaxies to study the accelerated expansion of the universe and the distribution of matter in the universe to better understand Dark Energy. Research opportunities include topics such as weak and strong gravitational lensing, photometric redshift calibration, point spread function estimation as well as studies of the LSST Camera's operation and performance.*

SCGSR Awards and Publications

Eligibility

Benefits

Participant Obligations

How to Apply

Identifying a Collaborating DOE Laboratory Scientist

View Potential Collaborating Scientists

Research Proposal Guidelines

Office of Science Priority Research Areas for SCGSR Program

Letters of Support

Graduate Transcripts for Current Graduate Institution

Application Evaluation and Selection

Participating DOE National Laboratories/Facilities and Points of Contact

Information for Laboratory Scientists and Thesis Advisors

Key Dates

Frequently Asked Questions



# SCGSR Applications

**Only COMPLETE applications will be considered!**

1. All required fields of the Online Application System
2. Official graduate transcripts and proof of Ph.D. Candidacy  
**Remove SSN or dates of birth from transcripts**
3. Letters of Support: - graduate thesis advisor  
- collaborating DOE national laboratory scientist
4. Research Proposal (**3-pages maximum**)

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

# Proposal Structure

## 1. Overall Goal:

Overarching problem or question? **THE BIG PICTURE!**

## 2. Background:

Current understanding/state of the art? **UP TO DATE!**

Relevance? **THE BIG PICTURE!**

Fit in an SCGSR priority research area?

Broadly: how can this problem/question be answered? **GENERAL STRATEGY**

*Preliminary results/data* suggesting your idea may work? **CREDIBILITY**

## 3. Specific aims:

Basis for your research plan. Split Goal into smaller targets.

## 4. Approach:

Strategy, general steps with rationale. Will you use the best methods there are?

What will you be doing in the lab from day 1? **SPECIFICS**

What results do you expect? The impact of your work.

Potential problems? **PREPAREDNESS**

## 5. Timeline:

Expected pace of progress?

**3 pages**

## 6. References:

Separate **1** page.

**Build in time for trainings!**

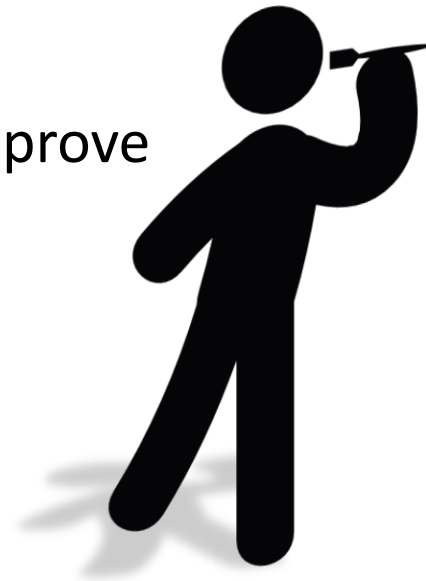
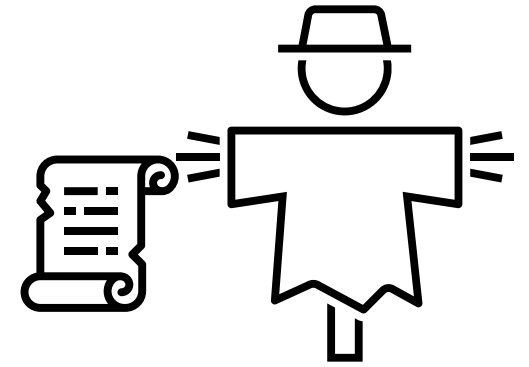
**USE IT!**



# A Straw Man Proposal

A quick draft for brainstorming

- Start with bullets
- Include all ideas: good and bad
  - > then you can trim and improve
- Beef the surviving bullets up
- Connect the bullets



# Help your Reviewers:

## Wording Typical of Key Elements

The *aim* of my research is to develop *the scientific basis* for.....  
This work will deepen the *fundamental understanding* of ....

**Goal**

XXX is one of the most promising approaches for ....(REF) However, it is not well *understood* the *mechanism* of how XXX....

**Background/  
Rationale**

*We have observed* that... and... (REF). *Our results suggest* that YYY...

**Credibility/  
Hypothesis**

To determine the potential *role* of YYY on *the mechanism* of XXX...  
we *propose* to...

**Overall strategy**

ZZZ at AAA *National laboratory* has developed ...*tools* that are ideally suited to test our hypothesis.

**SCGSR**



*Therefore, we propose to collaborate with AAA to....* **SCGSR**

*We will first... this will determine whether....* **Steps along with rationale**

*Based on the outcomes of... , we will either... or ....* **Expectations/Strategy**

*It is possible that..., in this case we will...* **Contingency plans**

*Ultimately, we expect to...* **Expected results**

*Reaching this understanding addresses the grand challenge listed in the report...  
(REF or link).* **Overall goal – Relevance to SC Mission/Impact – Vision**

# Aligning Proposal to SC Mission/SCGSR Priority Research Areas

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

Program office's websites:

- Basic research needs reports ➡ grand challenges: does your research aim that way?
- PI meeting/workshop reports for some of their divisions ➡ find potential collaborating scientists

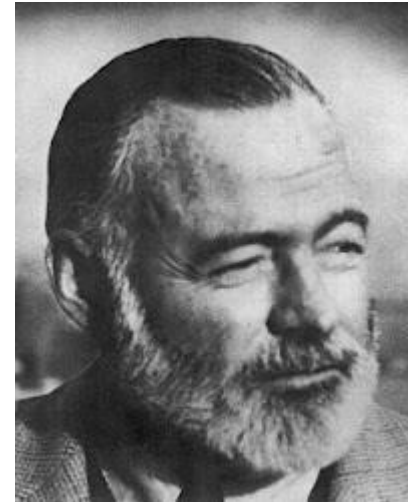
Find them along with many other document types at:

- ASCR: <https://science.osti.gov/ascr/Community-Resources>
- BER: <https://science.osti.gov/ber/Community-Resources>
- BES: <https://sc.osti.gov/bes/Community-Resources>
- DOE IP: <https://sc.osti.gov/Isotope-Research-Development-and-Production/Resources>
- FES: <https://sc.osti.gov/fes/Community-Resources>
- HEP: <https://sc.osti.gov/hep/Community-Resources>
- NP: <https://sc.osti.gov/np/Community-Resources>

## EXERCISE

# Write down your overall research goals in 2-3 sentences

1. Start rough, polish later
2. Short and meaningful sentences
3. Avoid being wordy



[This Photo](#) by Unknown Author is licensed under [CC BY-NC-ND](#)

Good old Hemingway (?):  
The shortest short story (??)



## EXERCISE

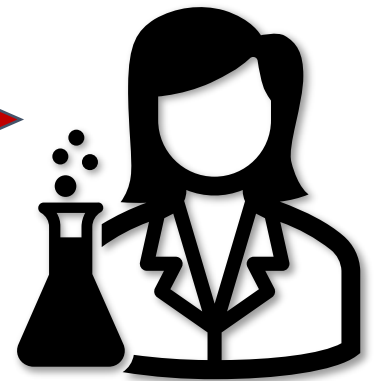
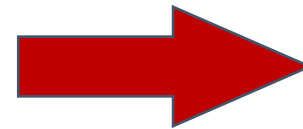
# List 5 tools, methods, and/or techniques\* that you would need to reach your research goals

\*Not available at your home university

Explain briefly:

- Why do you need them?
- How would you use them?

Homework: which DOE National Lab has them?



# Proposal Review Criteria

## 1. Scientific and/or Technical Merit of the Proposed Research

- 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

- 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**?



## EXERCISE

# Grab Your Proposal Draft and Assess it Based on the Review Criteria

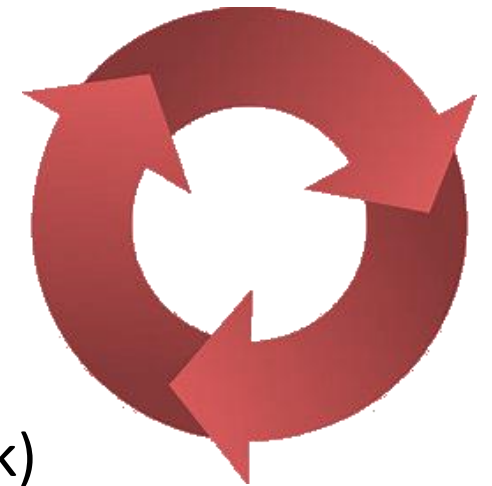
Even better... ask a friend to do it for you  
(just don't get mad about criticisms)

Check flow:

- **Logic of the ideas:** How articulate and complete is the reasoning?  
Are there any gaps?
- **Readability:** Can they understand what you meant to say?

Rate each item of the criteria on a 1 – 4 scale

(yes... that is arbitrary, but gives you an idea of what needs more work)



**Write-Feedback-Write**

# Common Observations by Reviewers

- 1) **Clarity**: make readers' lives easier: *identify key points* for them
  - discussions around key ideas – articulate connections
- 2) How well defined is your **hypothesis or problem statement** → how well you can design your activities
  - Are your research activities adequately designed to **test the hypotheses**?
  - How well can you control or account for key **variables/parameters/conditions**?
  - Will they provide **new insights**? Lead to new questions? **Impact** on the scientific community!
- 3) Identifying **challenges** → “Good understanding of the challenges” → you understand the science
  - Contingency plans
- 4) Are methods/conditions/model systems/tools appropriate? The **best tools** for your scientific problem?
- 5) Could you do this in your university?
- 6) Essential **DETAILS**: not all the details but the most relevant ones to understand the work you plan to do.

By far the most common complaint!

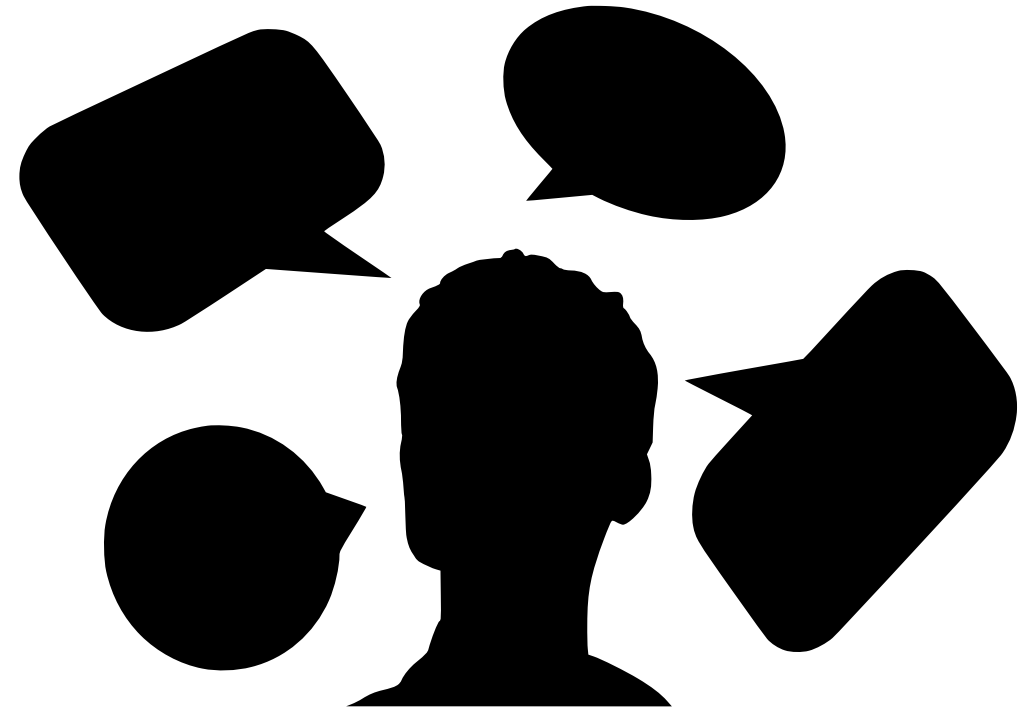


# Keep in Mind

**Reviewers are smart:** they won't fall for attempts to embellish an idea or cover some deficiency – be honest and go straight to the point

**Reviewers are busy:** don't make them lose time with items that aren't needed

**Reviewers are multitasking:** short sentences go a longer way



# Crafting an engaging narrative

## 1. Learn the Craft

- Make complex ideas accessible yet accurate
  - *Be mindful of “click-bait” pitfalls*

## 2. Hone Your Skills

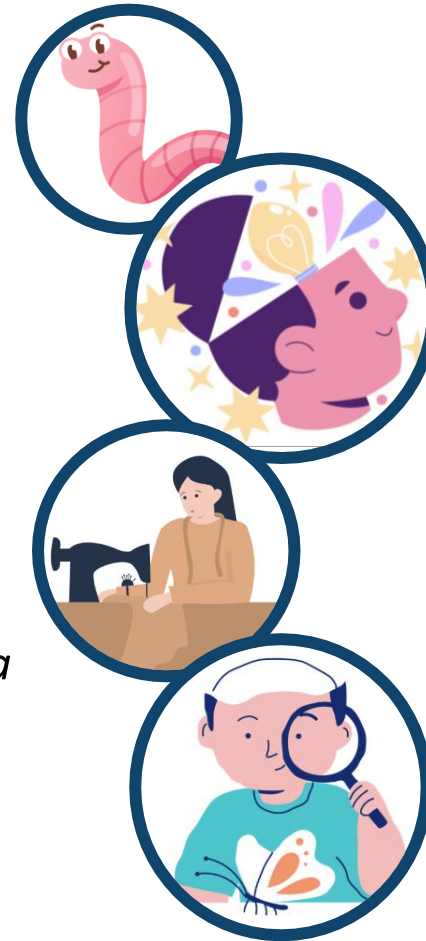
- Practice and refine
  - *Creativity blossoms in times of quiet reflection*

## 3. Choose Your Market

- Be mindful of format
  - *Tailor your proposal to align with SCGSR criteria*

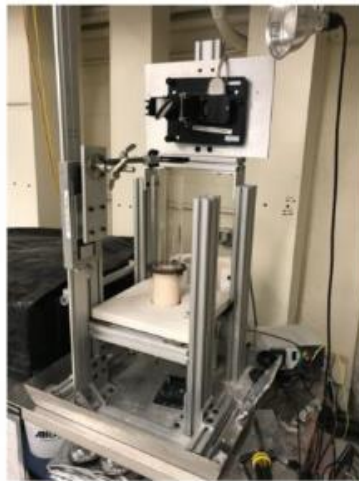
## 4. Your Responsibility as a Science Writer

- Ethics, sources
  - *Be curious, skeptical, and rigorous*

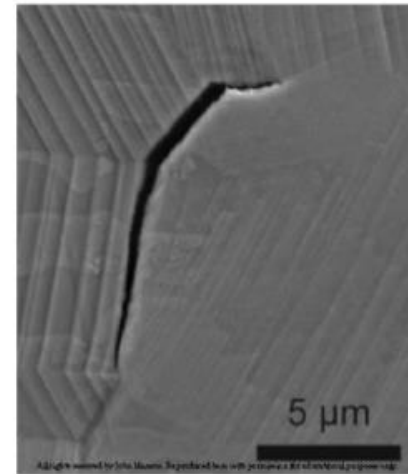
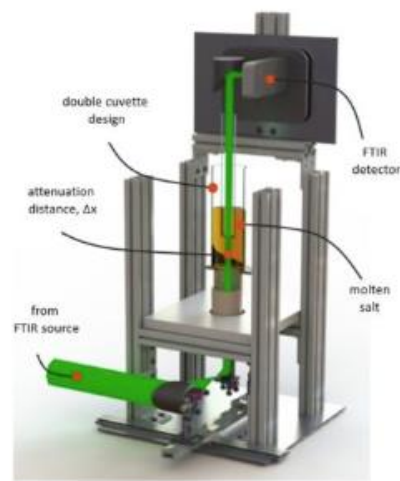


# The art of illustrating complex concepts

- Start with a plan – what do you want to convey?



Diagrams and illustrations



Schematics



MIT Nuclear Science & Engineering Communication Lab: <https://mitcommlab.mit.edu/nse/commkit/figure-design/>

# Proposal Samples

In the chat box you will find some sample proposals that former awardees generously agreed to share with you.

You are welcome to use them as examples, but we ask that you please refrain from distributing them and that you delete them after you have used them (this may be a couple of months from now).

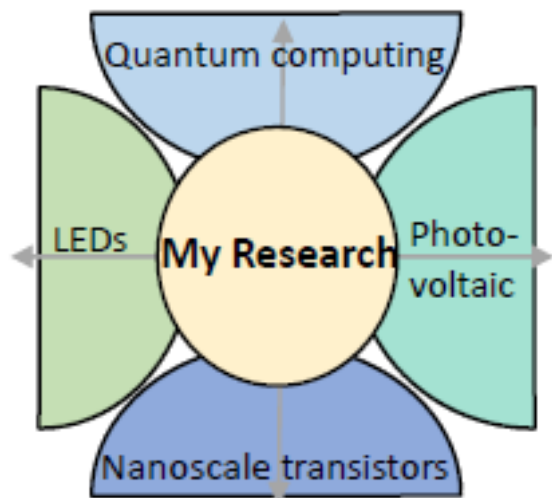
*“Working at Sandia has been a truly incredible experience, I am incredibly blessed to be working with so many prolific, kind, and humble people!”*

SCGSR 2023 S1 Awardee



# Remember a Picture\* can be Worth a Thousand Words

\*Or a graphic, or a diagram, or a plot, or a table...



| Timeline                                                          |     |     |     |     |     |     |     |     |     |     |     |     |
|-------------------------------------------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Activity                                                          | Oct | Nov | Dec | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep |
| Develop 2D model for bacteria-substrate-infiltration interactions |     |     |     |     |     |     |     |     |     |     |     |     |
| Extract metrics from 2D model                                     |     |     |     |     |     |     |     |     |     |     |     |     |
| Extend the 2D numerical model to the [redacted] river             |     |     |     |     |     |     |     |     |     |     |     |     |
| Develop simulation-based model for predicting bioclogging         |     |     |     |     |     |     |     |     |     |     |     |     |
| Quantify feedback effects on clogging                             |     |     |     |     |     |     |     |     |     |     |     |     |

# Questions So Far?

## Discussion Time

*“Working on-site at Argonne National Laboratory provided invaluable opportunities for getting feedback from Drs... as well as from other senior scientists and postdoctoral researchers... The skill gain has been tremendous... My SCGSR experience has been the best six month interval of my Ph.D. experience. The fact that my project results are pretty cool is also an awesome outcome.”*

SCGSR 2023 S1 Awardee

# Panels with 2024 S1 SCGSR Awardees

## Panel 1:

- **Elizabeth Koning** – ANL – *Computer Science*: GPUs for Large Scale Agent Based Models
- **Ian Norwood** – LANL – *Atmospheric System Research*: Understanding Frictional Charging Effects on Coarse-Mode Dust Settling Times
- **Tatiana Mamani** – LLNL – *Basic Science for Clean Energy and Decarbonization*: First-Principles Investigation of Charged Surface Oxygen Vacancies in Perovskites

## Panel 2:

- **Brian Leard** – GA DIII-D – *Burning Plasma Science & Enabling Technologies*: Toward Dual Plasma Equilibrium and Transport Optimization
- **Joyce Christiansen-Salameh** – FNAL – *Quantum Information Science*: 2D materials for phonon-targeted mitigation of quasiparticle poisoning in superconducting qubits
- **Alexandru Sturzu** – TJNAF – *Nuclear Theory*: Probing Three-Dimensional Gluonic Distributions in Nucleons with Lattice QCD

# Panels with National Laboratory Scientists

## Panel 1:

- **Dr. Maria Chan** – ANL – Machine learning for property predictions in nanomaterials and renewable energy
- **Dr. Emily Warren** – NREL – High efficiency crystalline photovoltaics
- **Dr. Christopher Shaddix** – SNL – Laser diagnostics, soot formation, biomass combustion and gasification
- **Dr. Mark Jones** – TJNAF – Experimental studies of the fundamental nucleon electromagnetic form factors

## Panel 2:

- **Dr. James Wishart** – BNL – Molten salts in extreme environments
- **Dr. Daniel Feldman** – LBNL – Climate modeling and remote sensing
- **Dr. Minerba Betancourt** – FNAL – MINERvA Experiment, Short-Baseline Neutrino program, DUNE detector
- **Dr. Fatima Ebrahimi** – PPPL – Theoretical and computational plasma physics

## Panel 3:

- **Dr. Gregory Holmbeck** – INL – Radiation and radiochemistry of nuclear fuel cycle related challenges
- **Dr. Dustin McIntyre** – NETL – Laser based probes for optical sensing in harsh environments
- **Dr. Samantha Davis** – ORNL – Community ecology
- **Dr. Nancy Washton** – PNNL – Generative AI and cloud computing in catalysis science and scientific research

# Thank You!

Remember:

the deadline for application is  
**May 7, 2025, at 5:00 PM ET**

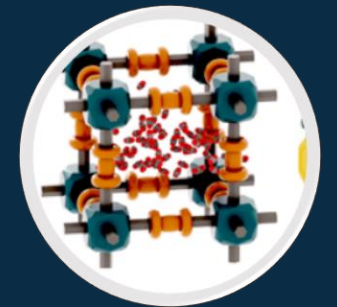
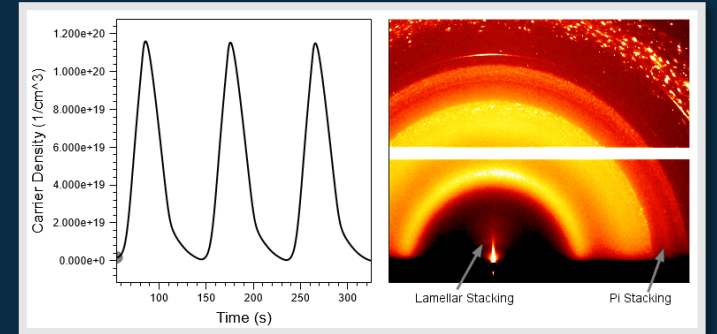
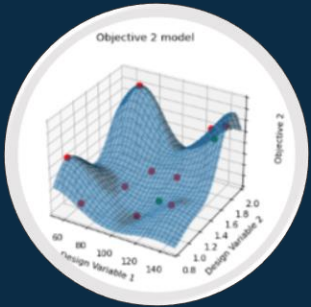
More questions:

[sc.scgsr@science.doe.gov](mailto:sc.scgsr@science.doe.gov)

[DOE-SCGSR@ORAU.org](mailto:DOE-SCGSR@ORAU.org)

and **office hours** every Friday 3:00-4:00 pm ET at

<https://www.zoomgov.com/j/16091335804>



After the panels in the breakout sessions please come back to fill the feedback poll!

**All these slides will be available at the SCGSR website**

[Energy.gov/science](https://energy.gov/science)