Welcome to the Application Assistance Workshop for the Science Undergraduate Laboratory Internship (SULI) Program

U.S. DEPARTMENT OF ENERGY | Office of Science

Presenter: Dr. Brandi Toliver, Program Manager
E-mail: SC.SULI@science.doe.gov

Breakthroughs at the DOE National Laboratories

- **Advanced Supercomputing**-The National Labs operate some of the most significant high performance computing resources available, including 32 of the 500 fastest supercomputers in the world. The Summit supercomputer at Oak Ridge National Laboratory is capable of 200 petaflops, or 200,000 trillion calculations per second.
- **Put the Jolt in Volt**- Chevy's Volt would not be able to cruise on battery power were it not for the advanced cathode technology that emerged from a National Lab (specifically, Argonne National Lab).
- **Decoded DNA**-In 1990, the National Labs joined with the National Institutes of Health and other laboratories to kick off the Human Genome Project, an international collaboration to identify and map all of the genes of the human genome.
- **Brought the web to the U.S.**-National Lab scientists, seeking to share particle physics information, were first to install a web server in North America, kick-starting the development of the worldwide web as we know it.
- **Unmasked a dinosaur killer**-Natural history's greatest whodunit was solved in 1980 when a team of National Lab scientists pinned the dinosaurs' abrupt extinction on an asteroid collision with Earth. Case closed.
- **World's First Video Game**- Before there was Atari or Nintendo, there was Tennis for Two, which may have been the first video game ever created, Brookhaven National Lab scientists built the pioneering system to entertain visitors to the Lab in 1958.
- **Launched the LED lighting revolution**-In the 1990s, scientists at a National Lab saw the need for energy-efficient solid-state lighting and worked with industry to develop white LEDs. Today, white LEDs are about 30 percent efficient, with the potential to reach 70 percent to 80 percent efficiency.
- **3D Printing Bigger and Better**-A large-scale additive manufacturing platform developed by a National Lab and an industry partner printed 3D components 10 times larger and 200 times faster than previous processes. So far, the system has produced a 3D-printed sports car, SUV, house, excavator and aviation components.
- **Discovered 22 elements** - To date the National Labs have discovered: technetium, promethium, astatine, neptunium, plutonium, americium, curium, berkelium, californium, einsteinium, fermium, mendelevium, nobelium, lawrencium, rutherfordium, dubnium, seaborgium, flerovium, moscovium, livermorium, tennessine and oganesson.

Office of Science at a Glance (https://science.osti.gov/)

- Lead federal agency supporting fundamental scientific research for energy and the largest supporter of basic research in the physical sciences in the United States
  - FY 2023 Funding Requested: $7.799B

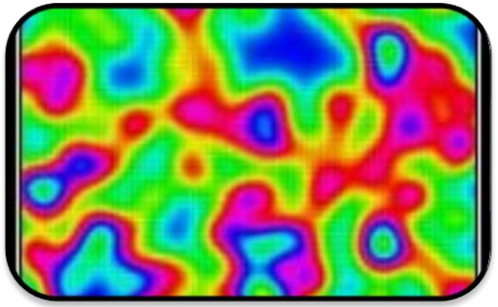
Largest Supporter of Physical Sciences in the U.S.

Funding at >300 Institutions, including 17 DOE Labs

~29,000 Researchers Supported

~34,000 Users of 28 SC Scientific Facilities

~35% of Research to Universities



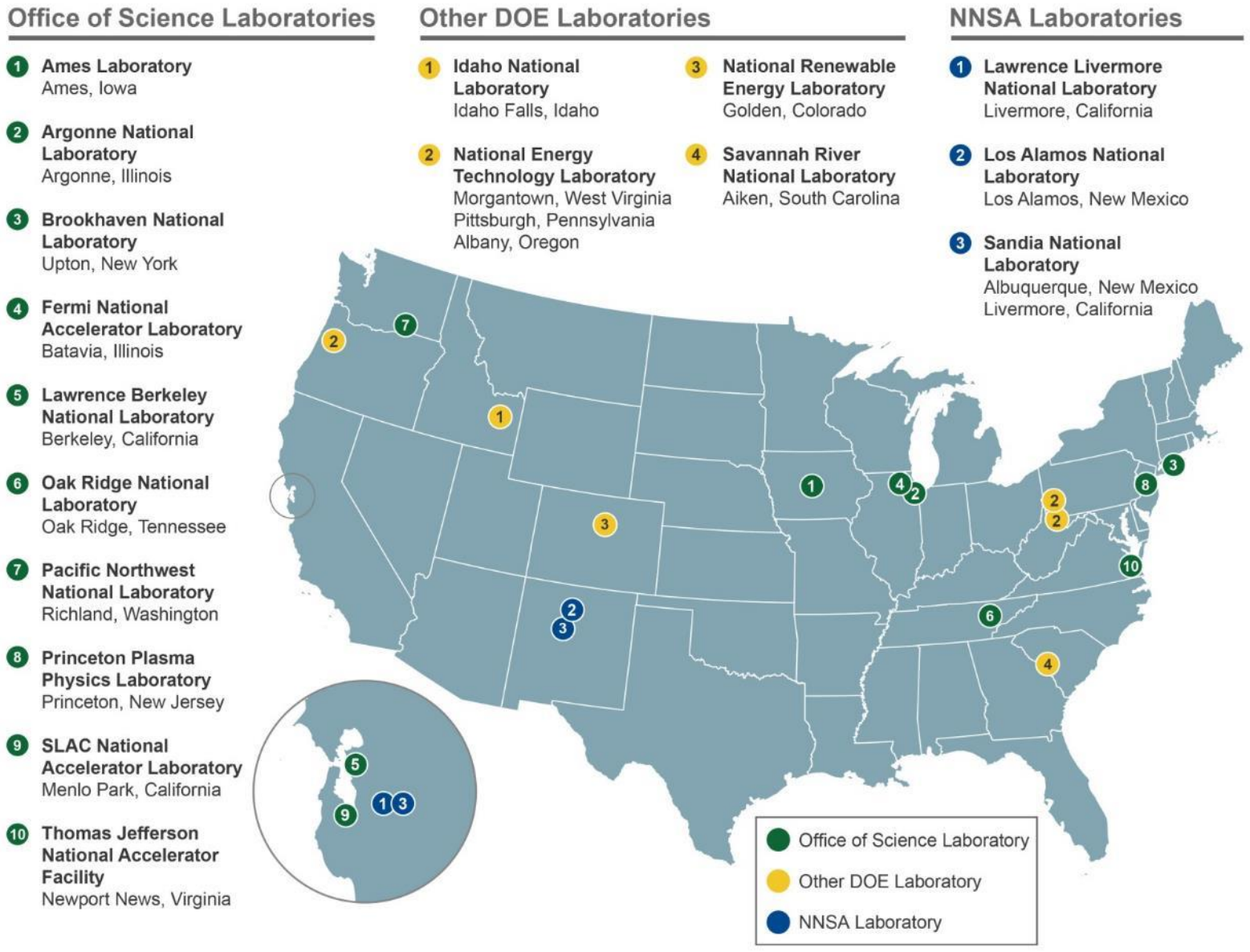
Research: ~42.8%, $3.334B

Facility Operations: ~34.5%, $2.689B

Projects/Other: ~22.6%, $1.776B

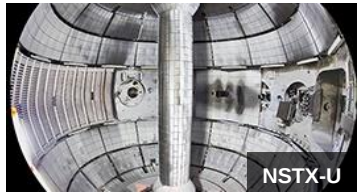
DOE National Laboratories

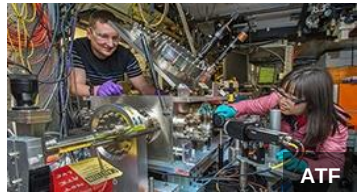
- The 17 DOE National Laboratories comprise a preeminent federal research system, providing the Nation with strategic scientific and technological capabilities
- SC stewards 10 DOE laboratories that provide essential support to the missions of the SC science programs

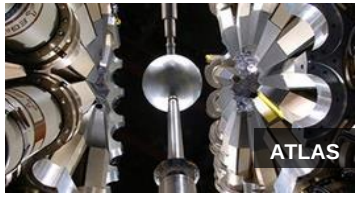


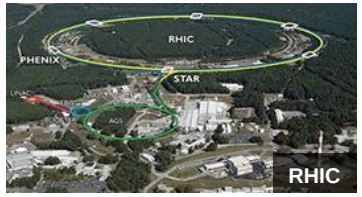
DOE Office of Science – Scientific User Facilities

FY 2023
28 scientific user facilities
~34,000 users









U.S. DEPARTMENT OF ENERGY | Office of Science

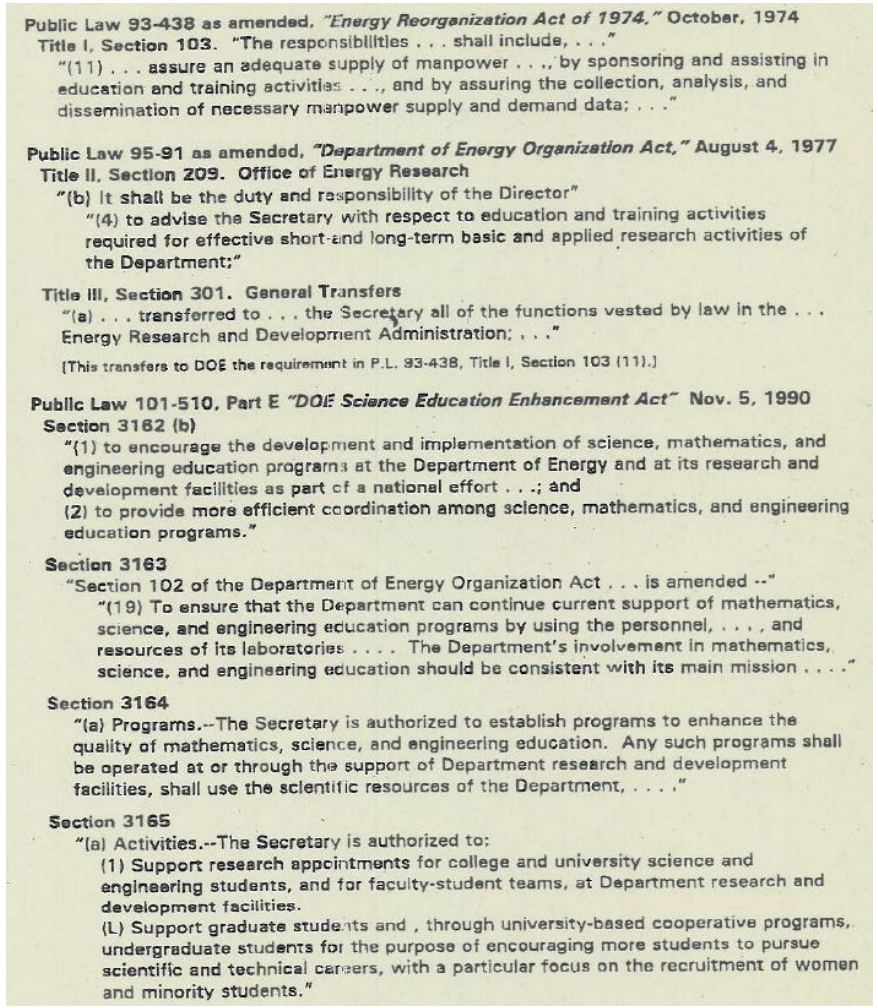
The Office of Science Research Portfolio

https://science.osti.gov/Programs/

Advanced Scientific Computing Research	• Delivering world leading computational and networking capabilities to extend the frontiers of science and technology
Basic Energy Sciences	• Understanding, predicting, and ultimately controlling matter and energy flow at the electronic, atomic, and molecular levels
Biological and Environmental Research	• Understanding complex biological, earth, and environmental systems
Fusion Energy Sciences	• Building the scientific foundations for a fusion energy source
High Energy Physics	• Understanding how the universe works at its most fundamental level
Nuclear Physics	• Discovering, exploring, and understanding all forms of nuclear matter
Isotope R&D and Production	• Supporting National Preparedness for isotope production and distribution during national crisis
Accelerator R&D and Production	• Supporting new technologies for use in SC's scientific facilities and in commercial products

U.S. DEPARTMENT OF ENERGY | Office of Science

DOE workforce development mandates



Public Law 93-438 as amended, *"Energy Reorganization Act of 1974,"* October, 1974
Title I, Section 103. "The responsibilities . . . shall include, . . ."
"(11) . . . assure an adequate supply of manpower . . ., by sponsoring and assisting in education and training activities . . ., and by assuring the collection, analysis, and dissemination of necessary manpower supply and demand data; . . ."

Public Law 95-91 as amended, *"Department of Energy Organization Act,"* August 4, 1977
Title II, Section 209. Office of Energy Research
"(b) It shall be the duty and responsibility of the Director"
"(4) to advise the Secretary with respect to education and training activities required for effective short-and long-term basic and applied research activities of the Department;"

Title III, Section 301. General Transfers
"(a) . . . transferred to . . . the Secretary all of the functions vested by law in the . . . Energy Research and Development Administration; . . ."
[This transfers to DOE the requirement in P.L. 93-438, Title I, Section 103 (11).]

Public Law 101-510, Part E *"DOE Science Education Enhancement Act"* Nov. 5, 1990
Section 3162 (b)
"(1) to encourage the development and implementation of science, mathematics, and engineering education programs at the Department of Energy and at its research and development facilities as part of a national effort . . .; and
(2) to provide more efficient coordination among science, mathematics, and engineering education programs."

Section 3163
"Section 102 of the Department of Energy Organization Act . . . is amended --"
"(19) To ensure that the Department can continue current support of mathematics, science, and engineering education programs by using the personnel, . . . , and resources of its laboratories . . . . The Department's involvement in mathematics, science, and engineering education should be consistent with its main mission . . . ."

Section 3164
"(a) Programs.--The Secretary is authorized to establish programs to enhance the quality of mathematics, science, and engineering education. Any such programs shall be operated at or through the support of Department research and development facilities, shall use the scientific resources of the Department, ..."

Section 3165
"(a) Activities.--The Secretary is authorized to:
(1) Support research appointments for college and university science and engineering students, and for faculty-student teams, at Department research and development facilities.
(L) Support graduate students and , through university-based cooperative programs, undergraduate students for the purpose of encouraging more students to pursue scientific and technical careers, with a particular focus on the recruitment of women and minority students."

Energy Reorganization Act of 1974

Dept. of Energy Organization Act, 1977

DOE Science Education Enhancement Act, 1990

> "…The Secretary is authorized to establish programs to enhance the quality of [STEM] education. Any such programs shall be operated at or through the support of Department research and development facilities, shall use the scientific resources of the Department…"

Workforce Development for Teachers and Scientists (WDTS)

- DOE has a more than 60-year history of training and educating scientists, engineers, and technicians in the United States
- As a collaborative partner of the SC Workforce Development ecosystem, WDTS strives for a sustained pipeline for the science, technology, engineering, and mathematics (STEM) workforce to support DOE mission. WDTS programs expand the reach of SC Workforce Development efforts by:
  - Leading a national-level portfolio of laboratory-based workforce training programs in partnership with all 17 DOE national labs (~1,400 participants at DOE laboratories annually)
    - **Science Undergraduate Laboratory Internship (SULI):** open to 2-/4-year undergraduate students
    - **Community College Internship (CCI):** dedicated to undergraduates enrolled at community colleges or 2-year accredited institutions
    - **Visiting Faculty Program (VFP):** open to faculty under-represented institutions in STEM, including all HBCUs
    - **Office of Science Graduate Student Research Program (SCGSR):** open to graduate students with research interest in the SC mission priority areas
  - Promoting science/energy literacy and academic achievements in STEM
    - **National Science Bowl® (NSB):** coordinate on regionals, host the National Championships final
    - **Albert Einstein Distinguished Educator Fellowship (AEF):** K–12 STEM teachers, hosted by SC/WDTS, Congressional Offices, and other federal agencies (established under P.L. 103-382)

Science Undergraduate Laboratory Internship (SULI) Program

The SULI program encourages undergraduate students and recent graduates to pursue science, technology, engineering, and mathematics (STEM) careers by providing research experiences at the Department of Energy (DOE) laboratories.

- Applications are accepted for the Fall, Spring, and Summer terms
  - Fall (August-December): 16-weeks @ 40 hrs/week
  - Spring (January-May): 16-weeks @ 40 hrs/week
  - **Summer (May-August): 10-weeks @ 40 hrs/week**
- Paid internship
  - $650/week or $6500 total stipend
  - Housing and travel allowance provided

Credit: **Lawrence Berkeley National Laboratory**

Full details: https://science.osti.gov/wdts/suli

Eligibility Requirements

- **Citizenship**-Must be a United States Citizen or Lawful Permanent Resident at the time of applying.
- **Age**-Must be 18 years or older at the time the internship begins.
- **Enrollment**-Must be currently enrolled as a full-time student at an accredited two-year or four-year college and completed at least one semester at the time of applying.
- **High School Diploma or GED**- Must have earned a high school diploma or General Educational Development (GED) equivalent at the time of applying.
- **Grade Point Average (GPA)**-Must have an undergraduate cumulative minimum Grade Point Average (GPA) of 3.0 on a 4.0 scale for all completed courses taken as a matriculated student at the applicant's current (or recently-graduated) institution and at any undergraduate institutions attended as a matriculated postsecondary student during the 5 years preceding the start of the current enrollment. *College courses completed during high school are not required to be reported.*
- **Coursework**-Must have completed at least 6 credit hours in science, mathematics, engineering, or technology course areas, and completed at least 12 credits hours towards a degree
- **Participation and Application Limit**-Applicants are limited to participation in SULI program to no more than two internships. Applicants can apply to the CCI program a maximum of four times.

The first step in submitting a successful application is meeting the eligibility requirements.

Eligibility requirements: https://science.osti.gov/wdts/suli/Eligibility

Key Dates

SULI Internship Term:	Summer 2023	Fall 2023
On-line Application Opens	October 18, 2022	March 15, 2023
Applications Due	**January 10, 2023 5:00 PM ET**	**May 25, 2023 5:00 PM ET**
Offer Notification Period Begins on or around	February 1, 2023	June 12, 2023
All DOE Offers and Notifications Complete	On or around April 10, 2023	On or around August 7, 2023

*****The Application System closes at 5:00 PM Eastern Time. Materials will not be accepted after the system has closed.**

More details available https://science.osti.gov/wdts/suli/Key-Dates

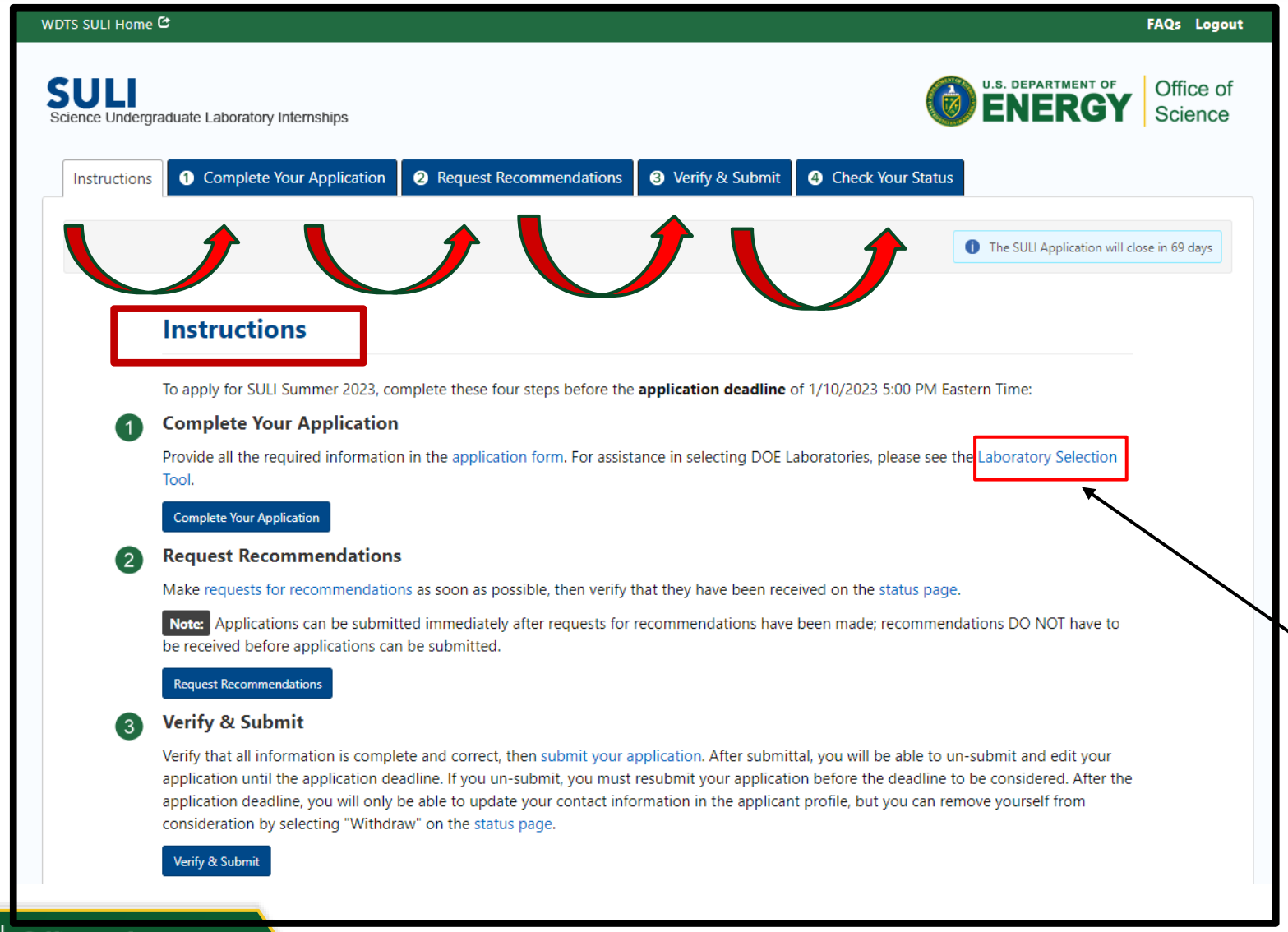
Application Requirements

Completed applications must be submitted by 5:00 p.m. ET on January 10, 2023.

- All applications must be completed online through the online application system. You will need to register as a user to access the online application system.
- Only complete applications submitted by the deadline will be considered for evaluation and placement.
- The application system is not compatible with smartphones. Completion of applications and letters of recommendation requires use of a computer and web browser.

How to apply: https://science.osti.gov/wdts/suli/How-to-Apply

Navigating the Application



Interested in the success rate of applicants? Visit the Laboratory Selection Tool.

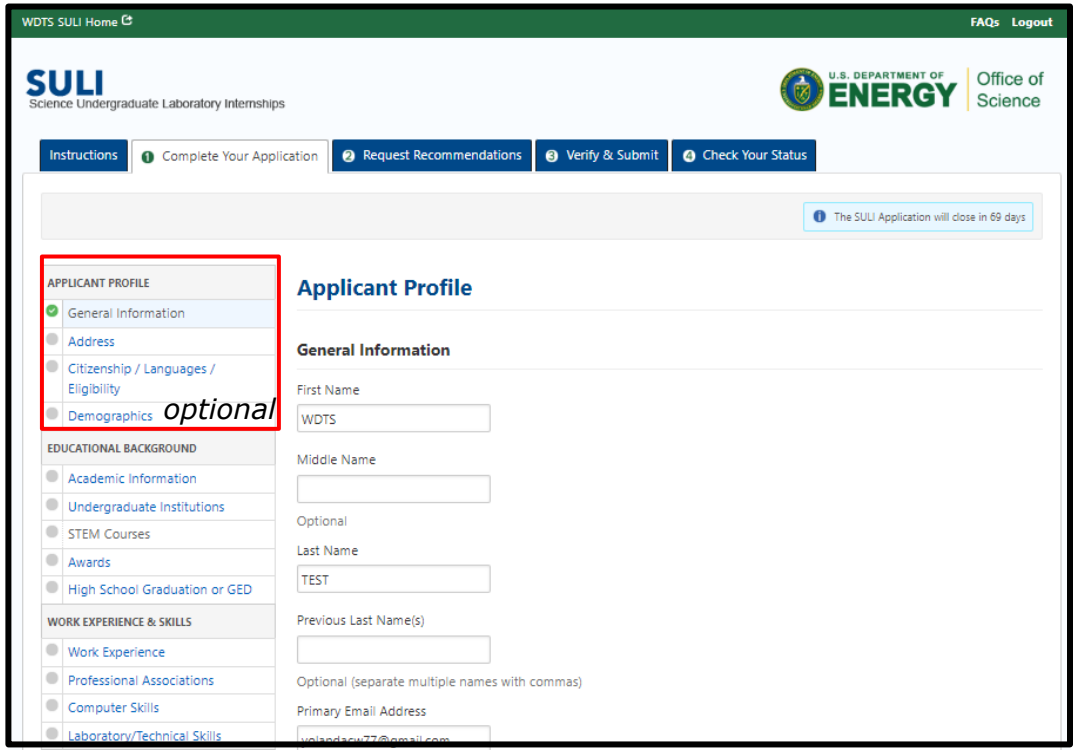
Components of the Complete Your Application Menu

- Applicant Profile
- Educational Background
- Work Experience and Skills
- Program Information
- Essays

Credit: **Lawrence Berkeley National Laboratory**

Applicant Profile

Applicant Profile

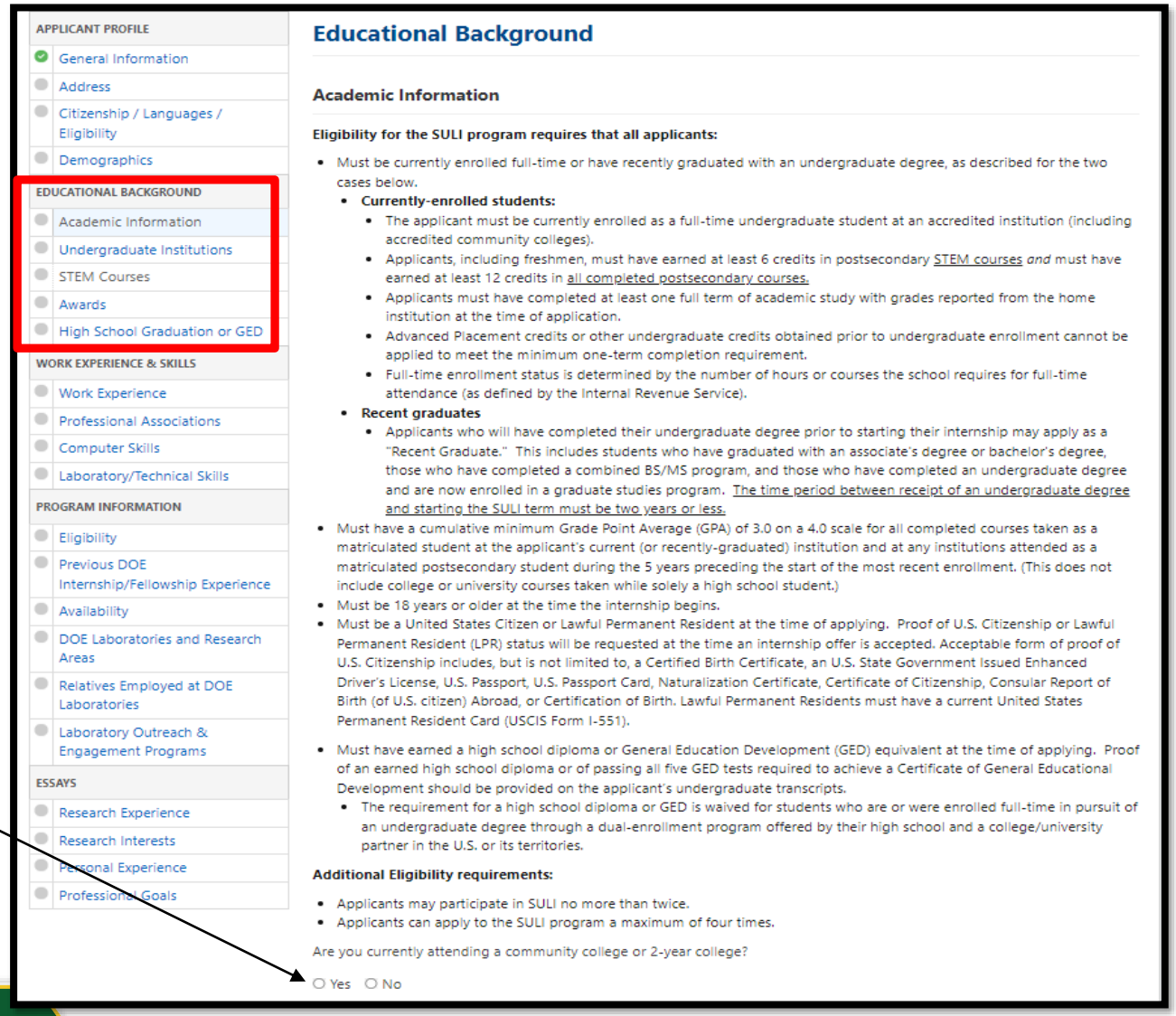


- Will you be 18 years or older by the start of the internship? Response "No" → **Not Eligible**
- Are you a U.S. citizen or U.S. permanent resident? Response "No" → **Not Eligible**
- What is your primary language?

Educational Background

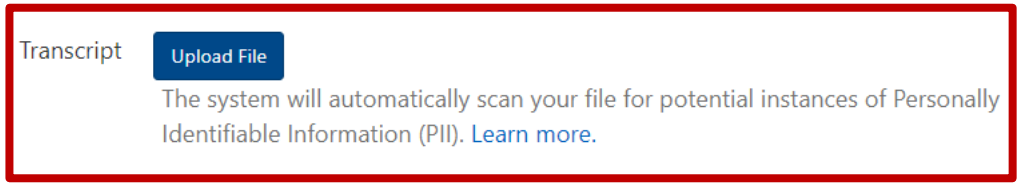
Educational Background

Select "no" = not eligible



Educational Background: Academic Institutions

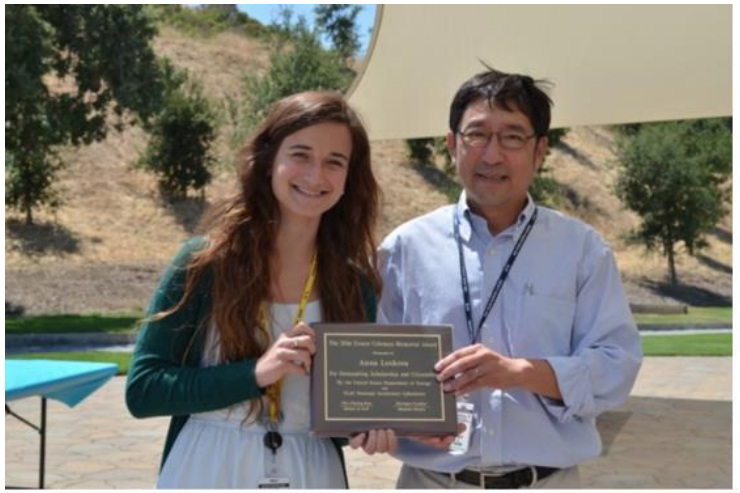
- **Academic Institutions**: List your current institution first, and then enter any other institutions you have attended. This includes all institutions which you are received transfer credit not completed as a high school student.
  - **Transcripts**: Upload a transcript in Pdf format in the application system for each postsecondary institution enrolled within the last 5 years of most recent enrollment.



    - Ensure the transcript includes the applicant's name, institution name, and course names and grades.
    - Redact personal identifiable information (PII) such as date of birth and social security number.
    - Unofficial transcripts are acceptable for submission to the application system.
    - Watch this video to assist with transcript uploads.

Education Background: Awards

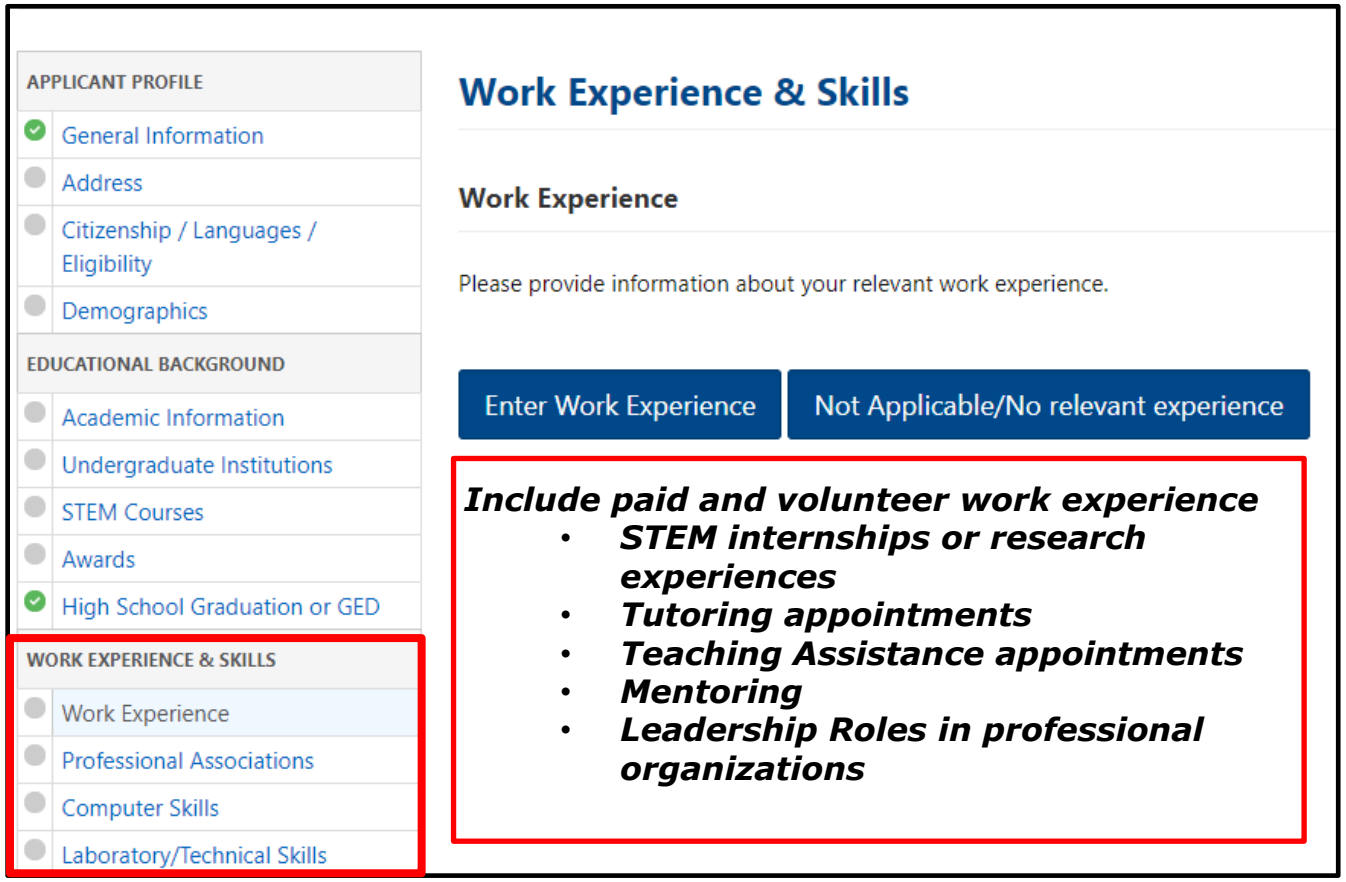
- Include all awards you received during your academic career. Some awards may include:
  - **Dean's List**
  - **Membership in Honor's Society**
  - **Merit Scholarships**
  - **Honors Program**
  - **Winner of contests, challenges, and tournaments**



Lab Director Chi-Chang Kao presents the Ernest Coleman Award to SULI intern Anna Leskova.
SLAC
Accessed 1/9/2019 at https://www6.slac.stanford.edu/news/2016-08-26-undergraduate-interns-learn-summer-research.aspx

Work Experience

Work Experience and Skills: Work Experience



Work Experience and Skills: Computer Skills

- List all computer skills including programming languages, standard software applications, statistical analysis software, and certifications.

Credit: **NREL-** Photo by Amy Glickson

Accessed 1/9/2019 from https://www.nrel.gov/news/features/2017/nrel-summer-interns-climb-to-new-heights.html

Work Experience and Skills: Laboratory and Technical Skills

- Describe your research and technical skills in detail
- The skills may be obtained through employment or coursework.

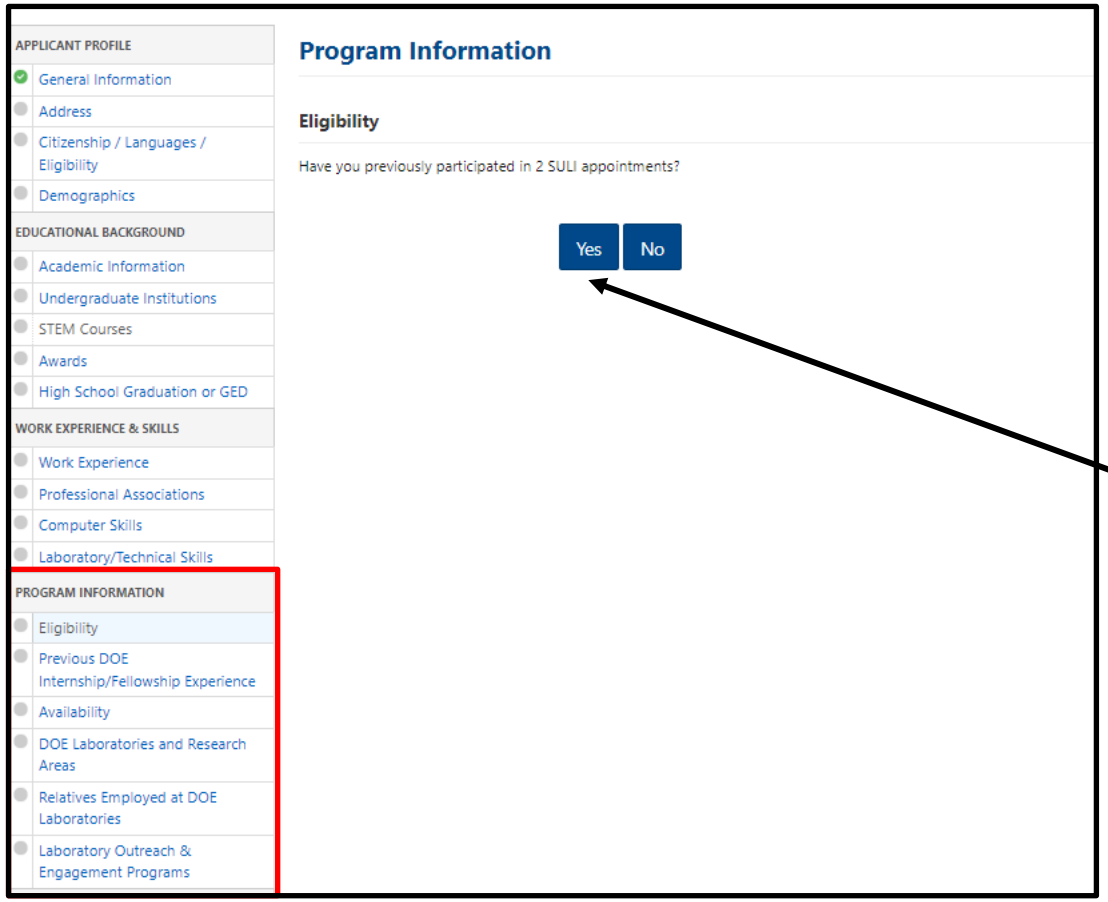
Credit: Oak Ridge National Laboratory

Program Information

From left: **PPPL** physicist Ahmed Diallo, SULI student Jalal Butt, and PPPL physicist Egemen Kolemen. Photo by Raphael Rosen.

From https://www.pppl.gov/news/press-releases/2018/08/undergraduate-students-extoll-benefits-national-laboratory-research
Accessed 1/9/2019

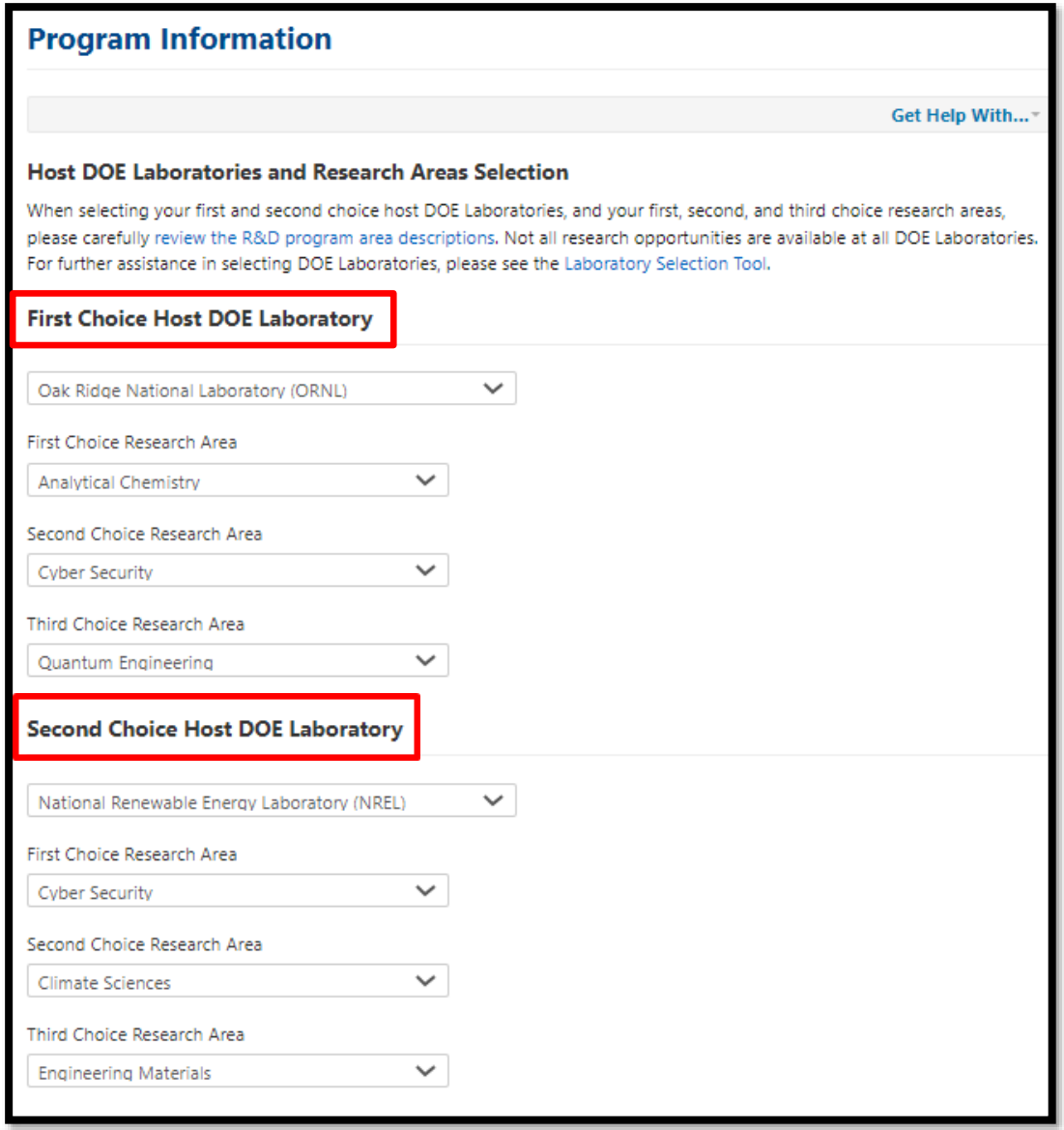
Program Information: Eligibility



- **Held more than 2 appointments? Not Eligible**
- **Applied more than 4 times? Not Eligible**

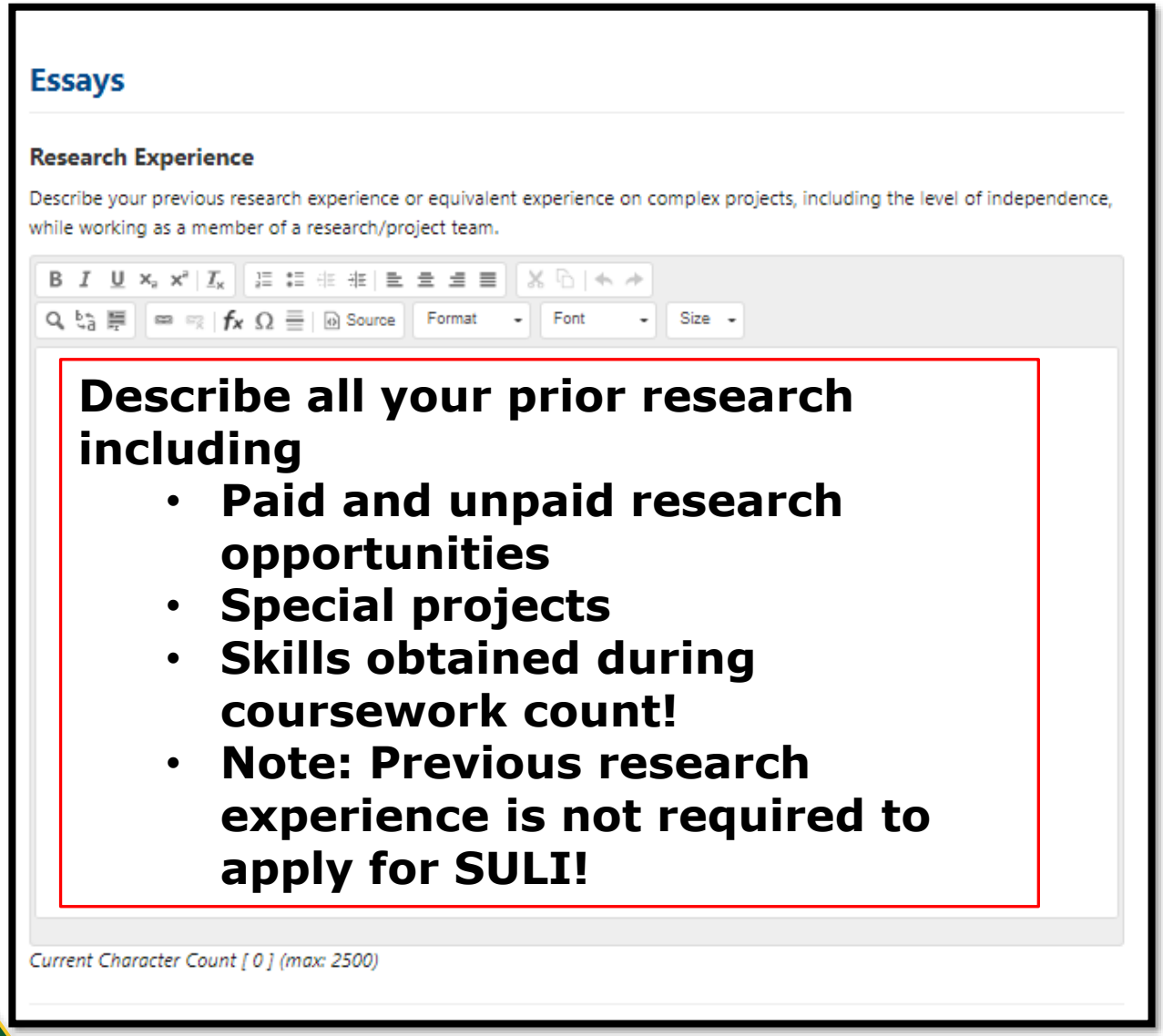
Program Information: DOE Laboratories and Research Areas Selection

- *Applicants must select a first-choice and second-choice laboratory to be considered for placement.*
- *Additionally, applicants may choose a third option to be considered by all labs within their interests.*
- *Applicants are encouraged to review laboratory websites and contact DOE researchers to learn about their research.*

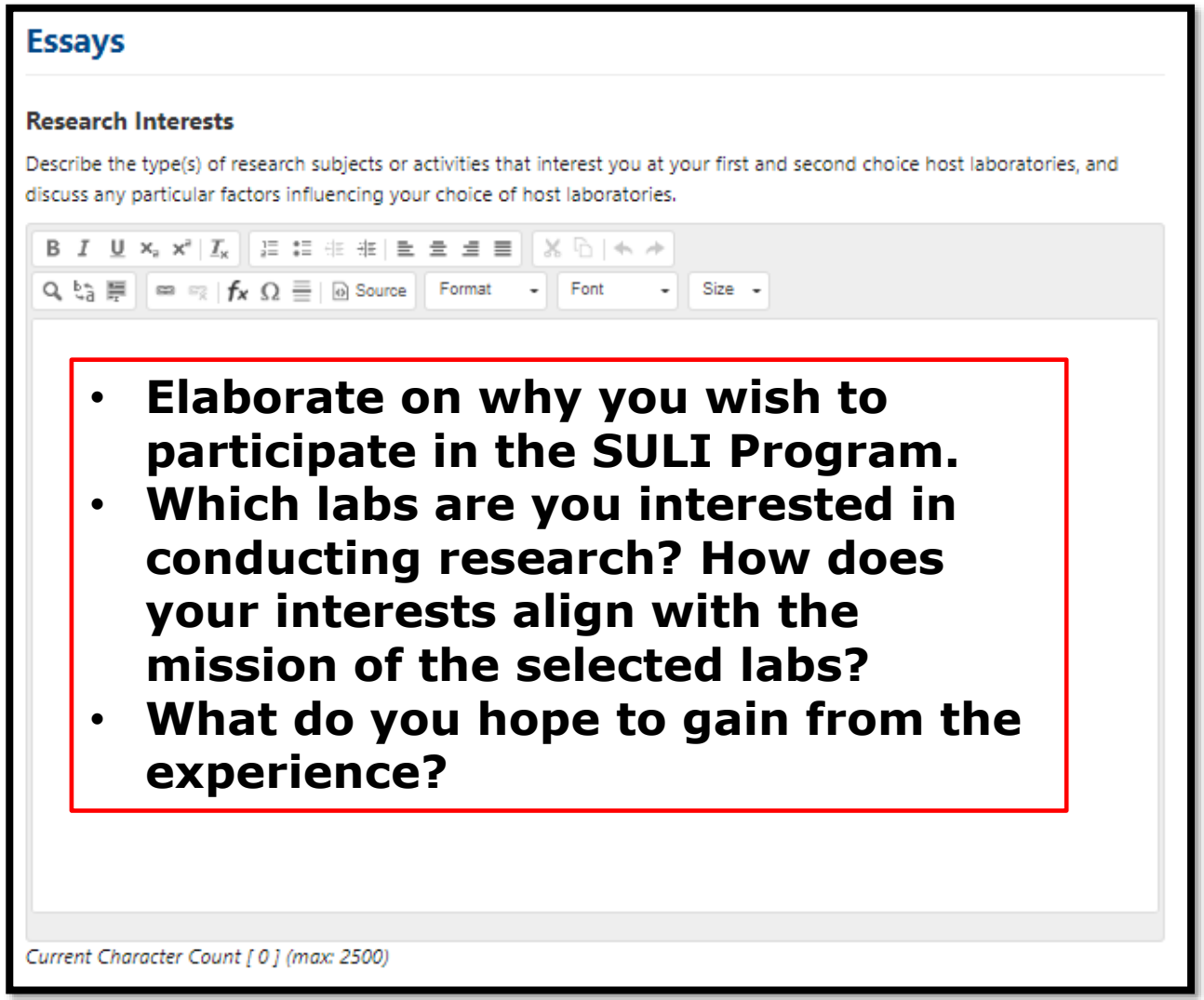


Essays

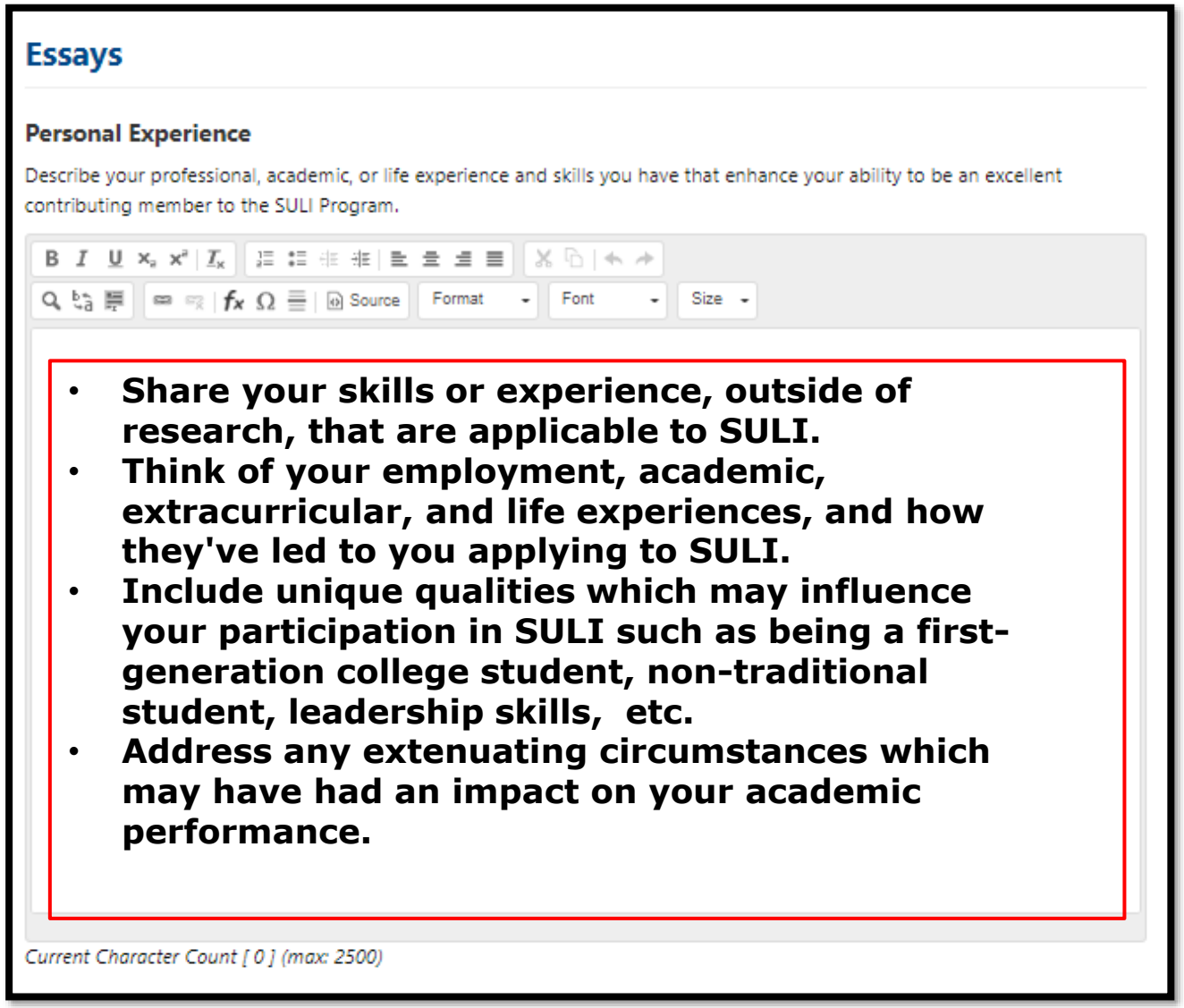
Essays: Technical and Research Experience



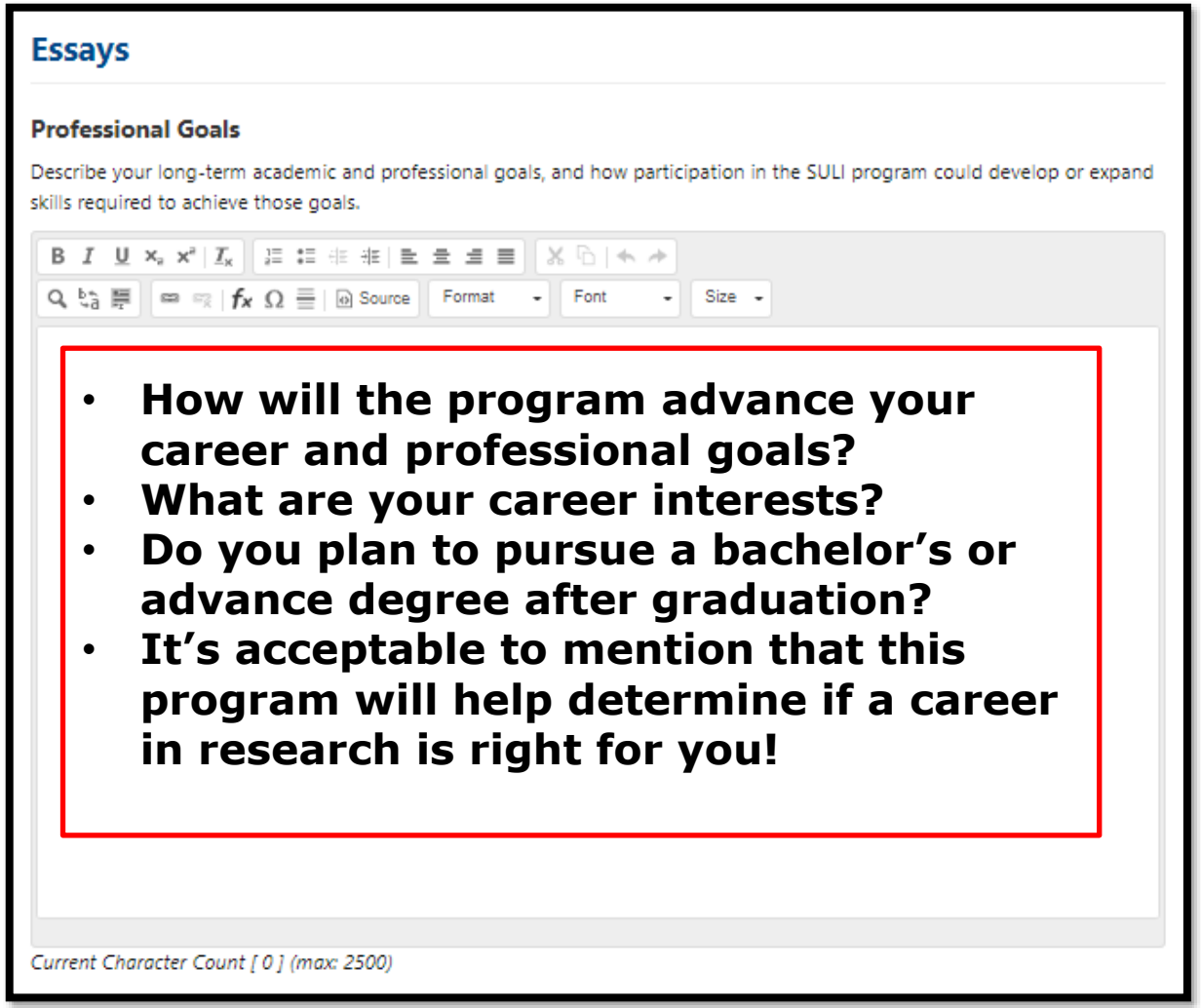
Essays: Research Interests



Essays: Personal Experience



Essays: Professional Interests



Letters of Recommendation

Letters of Recommendations

- A completed application requires recommendations from two individuals familiar with the applicant's education, training, experience, aptitude, or promise relevant to the SULI Program.
- An applicant will be asked to provide contact information for individuals indicated in the online application system. **Applicants are encouraged to make the requests for recommendations as soon as possible.**
- Letters of reference must be submitted through the application portal by the application deadline (i.e. 5:00 p.m. Eastern Time on January 10, 2023 for the Summer 2023 term).

Resources To Assist With Application Components

- Application checklist
- Submitting transcripts
- Tips for preparing essays
- Requesting letters of reference
- FAQ's-https://science.osti.gov/wdts/suli/Frequently-Asked-Questions

Selection and Notification

- **Eligibility and Compliance Check-**All applications must pass eligibility and compliance check.
- **Merit Review-** Assessment by first and second choice labs selected by the applicant.
  - Applications will be assessed based upon performance in completed academic coursework, strength of recommendations letters; expressed scientific or technical interests; and the applicant's background, experience, accomplishments, and interests as they relate to the host laboratories.
- **Notifications**-Offers are made by a Laboratory Education Directors (not research mentors) via e-mail. Applicant has 10 calendar days to respond to offer. **Only one offer will be extended to an applicant.**

All appointments are contingent upon proof of citizenship or citizenship status and the outcome of a formal background check.

Participant Obligations

- Commit to 10-weeks (40 hrs/week) in the program.
- Maintain health insurance during the appointment.
- Complete deliverables
  - Pre-survey
  - Post-survey
  - Abstract
  - Research project report (6-8 pages)
  - Oral or poster presentation
  - One-page peer review
- Maintain professional behavior.

More details: https://science.osti.gov/wdts/suli/Participant-Obligations

Benefits to Participating in SULI

- Contribute to exciting, real world, innovative, ongoing projects in the DOE national laboratories.
- Build professional networks with scientists and engineers.
- Opportunity to establish a mentor.
- Enrichment opportunities through professional development and technical seminars.
- Enhance science communication skills.
- Decide if a career in research is right for you.
- Land a permanent position.

Don’t forget!!

- The application deadline is January 10, 2023 at 5:00 p.m. Eastern Time.
- Contact your reference letter writers as soon as possible.
- Redact personal identifiable information from your transcript.
- Plan early. Submit your application ahead of the deadline.

Join us for the next workshop!!

Meet representatives from the DOE national labs and former/current SULI interns at the next workshop. The next workshop is scheduled at ***3:00 p.m. (ET) on December 5, 2022.*** *Register NOW!*

My Internship Experience at the Federal Laboratories

Dr. Toliver receiving her certificate of completion during her appointment as an intern at NASA's Johnson Space Center.

Connect with us…..

- After this session, e-mail us sc.suli@science.doe.gov if you have questions.
- Connect with us on LinkedIn
  - Office of Science
  - Office of Workforce Development for Teachers and Scientists (WDTS)
  - Science Undergraduate Laboratory Internships (SULI)
- Follow us on Twitter
- Subscribe to the YouTube Channel
- Visit the SULI website