An Introduction to the Science Research Program

A Guide for Students and Families

October 16, 2025

Learning Target

I can understand the purpose of a Science Research program and how it can help me prepare for my future endeavors.

What is the Science Research Program?

- This is a three-year program that provides high school students the chance to conduct STEM research at a college or graduate level.

- You get to choose a topic that interests you from any area of Science, Technology, Engineering, or Math.

- Students work under the guidance of a professional mentor in their field.

LIBERTY REDHAWKS

What is the Science Research Program?

- The course is taken in addition to your core science classes (like biology and chemistry), and in the future, you could earn up to 12 college credits through SUNY Albany.

- Success in this program requires motivation, enthusiasm, and dedication.

The Research Journey: Year 1 (Sophomore Year)

The first year is about building a strong foundation.

Finding Your Focus:

- You don't need to know your exact project when you start. The teacher will help you narrow down your interests.
- Many students choose a topic based on a personal experience or interest, like a family member's profession or a desire to help the environment.

The Research Journey: Year 1 (Sophomore Year)

Building Knowledge:

- You will learn how to use professional scientific databases and research tools.
- The first few months are spent reading extensively to build a strong base of knowledge on your chosen topic.
- You will find and study articles from professional research journals and present them to the class.

The Research Journey: Year 1 (Sophomore Year)

Finding a Mentor:

- Once you have enough knowledge to discuss your topic professionally, you will contact experts in your field to ask them to serve as a mentor.

The Research Journey: Years 2 & 3 (Junior & Senior Years)

This is when you conduct your experiment and share your results.

Conducting Research:

- Most of the hands-on research takes place during the summers before your junior and senior years.
- Your work might happen in your mentor's lab, or at home or school with your mentor's help via email, phone, or online meetings.
- During the school year, the teacher meets with the class daily and with each student individually to check progress and set new goals.

REDHAWKS

The Research Journey: Years 2 & 3 (Junior & Senior Years)

Presenting Your Work:

- You will create a poster and a slide presentation to document your work.
- You will also write a formal research paper.
- This prepares you to enter prestigious science competitions, such as the Regeneron Science Talent Search (STS), the Junior Science & Humanities Symposium (JSHS), and the Regeneron International Science and Engineering Fair (ISEF).

LIBERTY

A World of Possibilities: What Can You Research?

You can explore a wide variety of fields.

Some possible areas include:

- **Animal Science**
- **Astronomy**
- **Behavioral & Social Sciences (Psychology, Sociology)**
- **Biochemistry & Cellular Biology**
- **Chemistry**
- **Computer Science & Systems Software**

REDHAWKS

A World of Possibilities: What Can You Research? (Cont.)

- Engineering
- Environmental Science
- Mathematics
- Medicine and Health
- Neuroscience
- Robotics and Intelligent Machines

LIBERTY CENTRAL SCHOOL DISTRICT

Why Join? Skills for College and Beyond

This program helps you develop skills that will benefit you in college and your future career.

Academic & Technical Skills:

- Learn to read and understand complex professional research articles.
- Master presentation, word processing, and spreadsheet software (Google Suite/Microsoft Office).
- Learn how to organize scientific data to draw conclusions.

Why Join? Skills for College and Beyond (Cont.)

Professional & Personal Growth:

- Build strong communication and presentation skills.
- Develop excellent time management by balancing this project with your other responsibilities.
- Increase your creativity, self-confidence, and problem-solving abilities.
- Learn to defend your research when questioned by professional science fair judges.

A Major Advantage for College Admissions

- Participating in long-term STEM research is a significant differentiator on college applications.
- It helps you stand out from other applicants with similar grades and test scores.
- Engagement in STEM research is one of the greatest differentiators for admission to top universities.

LIBERTY REDHAWKS

A Major Advantage for College Admissions (Cont.)

It demonstrates qualities colleges look for, such as:

- *Initiative and dedication*
- *Commitment and perseverance*
- *Critical thinking and a strong work ethic*
- *A sense of purpose*

The Commitment: What Families Need to Know

The program requires a significant commitment of time, especially during the summer.

Summer Time: Most research is conducted over the summers. Extensive summer jobs or multi-week vacations can conflict with the program's demands.

Travel and Location: Where a student can travel for their research is an important family conversation.

LIBERTY REDHAWKS

The Commitment: What Families Need to Know (Cont.)

Medical or Lab-Based Projects: Often require a 5-day-a-week commitment for 7-8 weeks at locations in throughout the region.

Environmental Projects: Typically require a 5-day-a-week commitment for 4-5 weeks, followed by several more weeks of half-days, often at locations throughout the region.

Engineering, Physics, or Psychology Projects: May offer more flexibility, allowing students to work from home and meet with a mentor 1-2 days per week.

Home-Based Projects: Students who cannot travel can consider home-based projects (e.g., math, computer science, or survey-based psychology), but these still require the same overall time investment.

LIBERTY

Frequently Asked Questions

When can I join the program? Students can only join at the beginning of their sophomore year. Interested freshmen must complete a series of prerequisite steps to be accepted.

Does my project have to be my future career? Not necessarily. Some students do pursue a lifelong passion, while others explore an area of interest that does not become their career. What matters is being 100% dedicated to the project.

Can I work with a partner? It depends. Environmental, engineering, and behavioral projects are often better suited for teams. Many lab-based mentors in biological or medical fields are not willing to take on a team of students. Additionally, some major senior-level competitions, like the Regeneron STS, do not allow team projects.

REDHAWKS

Questions