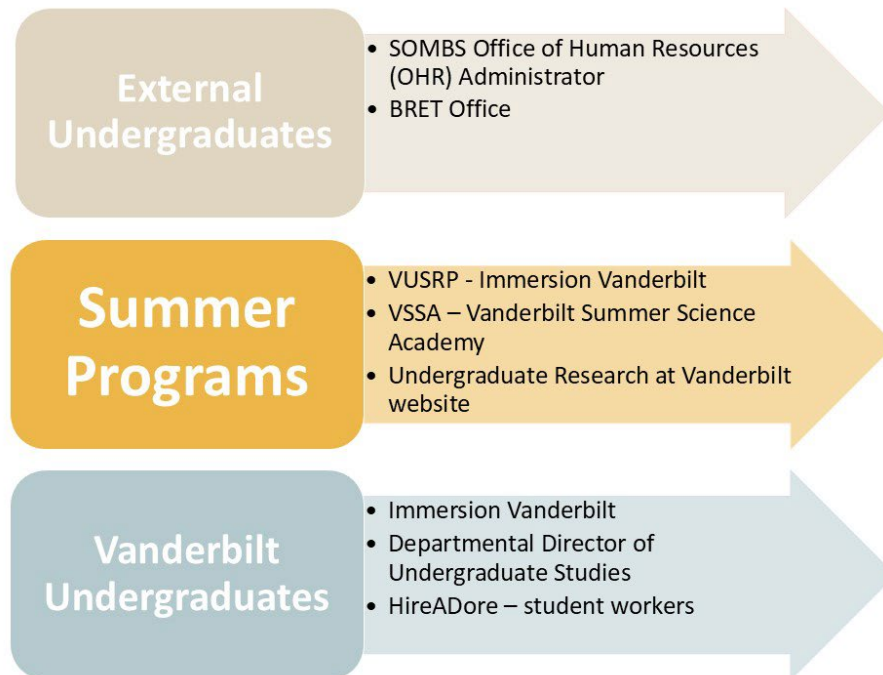


School of Medicine Basic Sciences

Quick-Start Guide

to Undergraduate and High School Student Laboratory Research



Flowchart: Guide to resources for additional information for External Undergraduate Research, Summer Programs for Vanderbilt and external students, and Vanderbilt Undergraduate Research.

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Introduction to Undergraduate Research in Vanderbilt Basic Sciences (SOMBS)

Vanderbilt University prides itself on being a center for scholarly research and provides many opportunities for undergraduate students to participate. In the School of Medicine Basic Sciences, faculty are encouraged to engage undergraduate students in scientific research. The benefits to the academic institution, the faculty mentor, and students in teaching undergraduates how to do research are long-lasting. Producing students who see and understand the importance of rigor, academic integrity, and responsible conduct in research will help them acquire skills they can use beyond the educational environment.

Separate onboarding processes exist depending on whether you will host undergraduate students from other institutions (external) or VU undergraduates. These processes become more stringent if you host high school or undergraduate students under 18 (minors). Faculty must meet institutional safety policy requirements regardless of the program or student designation. You can quickly and easily navigate to the information you are looking for by utilizing the links in the table of contents.

This Quick Start Guide provides an overview of the programs available on campus and the policies and procedures SOMBS faculty should follow. Whether an undergraduate reaches out to you individually asking to volunteer or you are looking to hire a student worker for your lab, this guide provides a general overview, links to program details, and a program-specific point of contact for additional information. When appropriately used, faculty will know the process from start to finish in advance, providing clarity on the time and energy needed for the onboarding process, and program administrators will ensure that all policies are adhered to.

Vanderbilt Institutional Safety Policy Requirements

The faculty sponsor's laboratory must be in full compliance with all Vanderbilt safety programs and regulations. The faculty sponsor/designated supervisor is responsible for ensuring that students complete all safety and compliance training. This training includes, but is not limited to, biological safety, chemical safety, and hazardous waste training. Additionally, depending on the student's research activities, radiation safety, laser safety, or other safety training may be required. More information on research safety training requirements can be found on the [Environmental Health and Safety training webpage](#). The faculty sponsor or designated supervisor should also complete lab, protocol, or hazard-specific orientation and safety training with each student, such as the [biosafety orientation training checklist](#) or review of a department or lab-specific chemical hygiene plan and/or [chemical safety protocols](#). The faculty sponsor/designated supervisor must maintain a copy of the finished record in the lab. If infectious agent activities occur in the faculty sponsor's laboratory, please refer to the [Institutional Biosafety Committee's Temporary Trainee Researchers and Infectious Agent Activities policy](#). The faculty sponsor and student should refer to the [Environmental Health and Safety website](#) for additional research safety information or requirements or email ehs@vanderbilt.edu for general questions.

Vanderbilt Undergraduate Student Policies

Vanderbilt undergraduate students have several options to participate in research experiences in Basic Science laboratories. They can be hired as a student worker, participate in research for academic credit through their major/minor area of study or Immersion Vanderbilt, and/or participate in various summer programs. Vanderbilt Students are encouraged to engage in research experiences through one of the programs mentioned previously. However, they also can volunteer separately from these programs. The lab's faculty principal investigator (PI) is responsible for ensuring that all biosafety training is completed and documented before the student begins work in the lab.

If a faculty sponsor is looking to recruit a student worker, they should refer to the Vanderbilt student employment website, [HireADore](#). This website provides all the necessary forms and guidance for faculty to post their positions, review applications, and hire VU undergraduates. Once your hire is confirmed, notify your SOMBS Office of Human Resources (OHR) administrator so they can input your student employee into Oracle.

If a faculty sponsor knows the student they want to hire, SOMBS OHR will work with the PI and student to get them employed in Oracle.

Faculty sponsors must give SOMBS OHR at least a week's notice before the student worker's proposed start date. The student worker needs to complete the required paperwork before they start working.

Research For Academic Credit

Students must make arrangements with their advisor or research program administrator if they want to gain research experience for credit in a SOMBS laboratory. SOMBS OHR does not handle these placements. All institutional biosafety requirements apply.

Biological Sciences

Majors in biological sciences are encouraged to carry out research projects for credit. Students usually start with either BSCI 3860 or BSCI 3861 in their sophomore or junior year. A typical progression is BSCI 3860, followed by BSCI 3861, then one or more semesters of BSCI 3961, depending on a student's level of research interest. Other sequences are possible; consult the catalog for prerequisites.

[BSCI 3860 Research Internship](#) - Introduction to research (wet-lab observation and literature review)

Prerequisite: BSCI 1510, Pre- or corequisite: BSCI 1511

[BSCI 3861 Directed Research](#) - Original laboratory research participation (taken after BSCI 3860)

Prerequisites: BSCI 1510 and BSCI 1511, one intermediate course appropriate to the major, or BSCI 3860

[BSCI 3961 Independent Research](#) - Independent research (taken after BSCI 3861)

Prerequisites: BSCI 3861 and an overall grade average of B or higher

BSCI 4999 Honors Research – Intensive two-semester research project under the guidance of a faculty sponsor (usually taken both semesters of senior year)

See <https://as.vanderbilt.edu/biological-sciences/honors-research/> for more information.

[Research and Immersion | Department of Biological Sciences | Vanderbilt University](#)

In biological sciences, the research courses (BSCI 3861 and 3961) serve as the department's Immersion experience.

Biochemistry and Chemical Biology (BCB)

Majors in Biochemistry and Chemical Biology have numerous opportunities to engage in high-impact research in Vanderbilt faculty laboratories working at the interface of chemistry and biology. Research areas include bioanalytical chemistry, nanomaterials, synthesis, biochemistry and biophysics, and molecular and cellular biology. Undergraduates interested in research are encouraged to engage in the full spectrum of research at Vanderbilt through seminars and symposia. The graduate and training programs integrate undergraduates, graduate students, and postdoctoral trainees at all experience levels.

[Independent Laboratory Research \(BCB 3201\)](#) – original laboratory research performed under the direct supervision of a BCB faculty sponsor

- The student and faculty sponsor should identify a project, develop a title, and write a short synopsis. This course is a research immersion experience.
- This course is offered at variable credit depending on the research time commitment the student and the faculty sponsor agreed upon. Students are expected to spend at least 3-4 hours in the lab per credit hour.
- The student must fill out the Independent Research Application and send it to the faculty sponsor, who then forwards it to DUS-BCB@vanderbilt.edu.

[Independent Research Application](#)

- A list of faculty associated with the BCB program is found in the link below. Students wishing to conduct independent research in a laboratory not listed on this page must obtain approval during the application process for BCB 3201.

[Associated Research Faculty](#)

[Honors Research in Biochemistry and Chemical Biology \(BCB 4999\)](#) – intensive two-semester research project under the guidance of a faculty sponsor

- Honors research is a research immersion experience. It requires a significant time commitment, with a minimum of 6 credit hours (3 per semester), but students may register for more, up to 12 credits (6 per semester).
- Students are expected to spend at least 3-4 hours in the lab per credit hour.
- Please contact DUS-BCB@vanderbilt.edu with questions.

[BCB Honors Program Application](#)

[Research | Biochemistry and Chemical Biology | Vanderbilt University](#)

[Immersion Vanderbilt](#)

What is Immersion Vanderbilt? Immersion Vanderbilt is a degree requirement for all Vanderbilt undergraduate students and consists of two parts – an immersive experience and a final capstone/culminating piece. The process requires students to complete four online forms known as milestones for Immersion Vanderbilt. ALL research experiences in SOM can count toward Immersion. For example, the Vanderbilt Undergraduate Summer Research Program (VUSR), Honors Thesis, and Research for Credit can also count as a student’s immersion experience. Immersion does not have to be a separate thing.

Faculty Involvement. Faculty advisers guide students through the experiential and culminating project phases, ensuring students learn through doing. The plan to complete the final culminating project is decided upon by the student and their Immersion Vanderbilt adviser. A student must complete at least 300 hours of scholarly activity in the School of Medicine. This can include reading, writing, attending seminars, and conducting research. The culminating project is preferred to be a poster presentation at one of the two Undergraduate Research Symposia held in the fall and spring. If students cannot attend the symposium, the Faculty Director of Immersion in the School of Medicine can be consulted to approve an alternative. A School of Medicine [Mentor/Mentee compact](#) is required to mentor a student for Immersion.

Students Completing Independent Experiences or Projects

Students usually complete an immersive experience in their sophomore or junior year and can complete multiple immersive experiences until they have completed their culminating project. A faculty member must mentor research experiences. However, students are responsible for selecting the pathway and format of their immersive experience. They must devise a proposed meeting schedule and project timeline before contacting potential mentors and faculty advisers. The mentor and student will then determine the necessary time and depth of advising based on the chosen experience. Faculty or mentoring multiple students must submit a cohort form detailing all student involvement.

Students can track their immersive experiences by submitting [Independent Experience forms](#). When deciding on their culminating project format, they must submit a [project plan proposal](#) and have an Immersion Vanderbilt faculty adviser oversee the project’s completion. Faculty advisers are required to review the student’s [Immersion Vanderbilt Culminating Project Submission](#). Once approved, this completes the Immersion Vanderbilt requirement.

Advisor Support

Contact the [Office of Education Design and Development](#) for additional support or to learn more about experiential learning and culminating projects.

Faculty advisors are encouraged to schedule an [Immersion Vanderbilt Advising Appointment](#). Appointments are offered in person, virtually, or by telephone. Our office hours are Monday-Friday, 8:00 am – 12:00 pm and 1:00 – 5:00 pm. Weekend and evening advising appointments will be offered during the fall and spring semesters. Immersion Vanderbilt is located in the Student Life Center, Suite 103.

Faculty Resources

[Faculty and Staff Resources | Immersion Vanderbilt | Vanderbilt University](#)

[School of Medicine Immersion Webpage](#)

Each school and college has designated faculty to contact with questions about Immersion Vanderbilt. The School of Medicine Basic Sciences designated faculty contact for Immersion Vanderbilt:

Amy Major, Ph.D.

Faculty Director of Immersion
Associate Professor of Medicine
amy.major@vumc.org

Erin Calipari, Ph.D.

Faculty Advisory Board Member
Associate Professor of Pharmacology
Associate Professor of Molecular Physiology and Biophysics
Director of Vanderbilt Center for Addiction Research
erin.calipari@vanderbilt.edu

Additional Institutional Research Information

The [Undergraduate Research at Vanderbilt](#) website is a valuable tool. This website has all the relevant information about the programs available to VU and external students interested in research experiences for additional learning.

You can find the following:

- Information about how to get started

- general advice
- types of experiences
- finding a faculty mentor
- getting funded, etc.

- Campus Resources
 - resources for research in Creative Arts, Education, Engineering, Natural Sciences, etc.
 - Campus department resources like the library, Office of Immersion Resources, etc.
 - A list of Undergraduate research programs for VU students only and those open to all students
 - [Summer Research Programs](#)

- FAQs

[Undergraduate Research | Vanderbilt University](#)

External Student Policies for Short-term Research Training Experiences

Each year, faculty support observational and intern experiences for students visiting from local, national, and international universities, as well as high school students considering a career in biomedical research. These opportunities are intended to provide a clearly defined educational training experience.

Research Intern (paid) – Interns are students (high school, undergrad, or graduate) appointed for educational purposes only. Research Intern appointments are not applicable for individuals with terminal degrees (ex., Ph.D.). Internships are for individuals looking for research experience and are not appropriate for general lab work. Please contact your SOMBS OHR administrator if you want someone to perform general lab duties or data entry. If the faculty sponsor intends to accept an international student, first contact SOMBS OHR to ensure all relevant documentation and visa requirements are understood before requesting an appointment. Please contact the [Office for International Students & Scholars Services](#) for more information.

Visiting Student Observers (unpaid) – Visiting Student Observers in Research Laboratories are students from institutions outside of Vanderbilt who wish to observe research activities for purely educational purposes. The position is of short duration, typically no longer than eight weeks. Please note that strict criteria govern the placement of visiting student observers in research laboratories. Observational experiences are only approved if they are for a legitimate educational experience. Additionally, the experience is only accepted if the proposed activity is not one that a regular employee would typically perform.

Intern/Observer Appointment Process for Vanderbilt University Basic Science Research Laboratories

(This process does not apply to minors (under 18), please see the Institutional Policy Requirements for Minors in Laboratories section.)

1. Please review the above eligibility criteria before submitting an appointment request to your SOMBS OHR administrator.
2. SOMBS OHR will request a background check with the intern/observer.
3. Send the following two documents together to your SOMBS OHR administrator. OHR will compile all required documents and submit them for processing.
 - [SOM Registration Form](#) (To be completed by requesting department)
 - [Statement of Agreement](#) (To be completed and signed by the incoming intern/observer)
4. Once the completed appointment request packet is received, the BRET Office will provide a Letter of Appointment.

Institutional Policy Requirements for Minors in Laboratories

There are different requirements for minors (under 18) in the lab. Please see the [Guidelines for Minors in Vanderbilt University Laboratories](#). Numerous steps are involved in appointing minors in SOMBS research labs, so please allow at least 4 to 6 weeks for approval. Anyone under 18 must always be directly supervised by the faculty sponsor or designated supervisor while in the laboratory.

Institutional Health Insurance Policy Requirements

Research intern appointments are short-term, temporary positions without fringe benefits, regardless of the funding source supporting the intern. Departments are responsible for verifying all interns have health insurance during their appointments. Please keep proof of existing health insurance coverage within the department. If an intern does not have health insurance before the appointment, the faculty sponsor should contact their SOMBS OHR administrator to determine the available options and must arrange payment for any resulting expense.

If the intern will be an IGP or QCB student in the fall term, the BRET office has two short-term policies that can be purchased (June 13 or July 1 start date before fall enrollment). This insurance will cover the student's summer work period before the official start of graduate studies in August. The mentor will be responsible for the expense. The BRET office can help facilitate student registration in the Academic HealthPlans policy, which is the same vendor used for the annual coverage of enrolled students. Aaron Howard (aaron.w.howard@vanderbilt.edu) in the BRET office can help facilitate enrollment in one of these plans and the financial billing for the department/mentor.

In all other cases outside of early arriving IGP and QCB students, the mentor and department must find a short-term policy for interns who need health coverage.

VUMC Guidance

Faculty mentors based in VUMC departments requesting research interns/student observers should contact your department or Division Human Resources Director to help initiate the process. For health care observations (shadowing), see [VUMC Observational Experience \(VOE\)](#). VUMC faculty mentors must ensure students and interns conducting research in their laboratories comply with all VUMC safety programs and regulations. Additional guidance is on the [Office of Clinical and Research Safety](#) website. Please be advised that it is a lengthy process, so start early. Students are not allowed in labs until the onboarding process is complete. Refer to the [Medical Center Relations](#) website for additional information. You can also email Medical Center Relations at vumc.iso@vumc.org.

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