

OVERVIEW: UNDERGRADUATE STUDENT RESEARCHERS IN UAB SOM/JHS LABS

Introduction

Many undergraduates come to UAB because of its national and international reputation in biomedical research. UAB's Carnegie Foundation classification as a 'Research University with Very High Research Activity' is a major attraction for academically gifted and highly motivated students who are applying to the University Honors Program, the Science and Technology Honors Program and other departmental programs. Providing these gifted students with an opportunity to participate in the research enterprise is an important component of the academic mission of the university. Opportunities for undergraduates to participate in basic and applied research with faculty in the SOM and JHS departments greatly expand students' options over and above opportunities for scholarship and research available in the multiple schools of the university that provide undergraduate education. The majority of students in UAB's various honors programs enter graduate or health professional programs and faculty mentors can play an important role in their professional development. Having highly motivated, academically talented undergraduates in your lab can be very rewarding for you and your research program (from Michael Sloane, PhD, Director, University Honors Program).

Undergraduate Research for Academic Credit

UAB Students

Many departments have an option for their undergraduate majors to conduct research for academic credit. These research options are required by most of the 25 departmental honors programs. Undergraduate students may participate in a research experience for academic credit by registering for appropriate undergraduate research courses (e.g., *BY398 Undergraduate Research*, *PY398 Research Practicum in Psychology*, *HON 399 Research Practicum*). Course descriptions and special guidance for undergraduate research for credit outside of the home department, for the Departments of Biology and Psychology as examples, are attached.

Typical common features of undergraduate research experiences include the following:

- Students are advised to seek out and make arrangements directly with SOM/JHS faculty regarding the nature of the research activity and the credit/effort hours.
- Students may have the option to register for 1, 2, or 3 credit hours of research in a given semester. One credit hour typically equates to 3-4 hours/week of research time.
- Programs typically do not provide explicit guidelines regarding the parameters of the research experience but provide flexibility to the research advisor to work with the student to design the project and evaluate the student's performance. The project should be designed to be completed in the semester for which the student is to receive academic credit.
- Since the student is receiving academic credit for their research, the faculty research advisor should provide legitimate research exposure and academic training rather than assign the student only to menial lab chores. This may include activities such as background reading and lab meeting participation, in addition to work conducted in the lab.
- The faculty research advisor must arrange for the student to take the necessary laboratory training appropriate to the research project (*see below*); lab-related injuries or illness are handled as described for Academic Credit Students below.
- The student should participate regularly, as agreed, in order to have a successful project.
- The faculty research advisor must provide a grade (Pass/Fail or a letter grade as required) to the program administrator responsible for the research practicum.
- Additional requirements exist for Honors Research students, as outlined on attached pages.
- Faculty wishing to advertise openings for talented undergraduates in their lab should contact the directors of the appropriate honors programs (see Resources listing).

Non-UAB Students

Undergraduate students from area institutions may have the opportunity to participate in research for credit at off-campus locations including UAB (see Birmingham Southern College, Department of Biology *Directed Research* example <http://www.bsc.edu/academics/science/biology/directed.htm>).

- Guidelines for parameters of the research project and student evaluation should be discussed with faculty liaison at the sponsoring institution.
 - Visiting student should be assigned "Volunteer" status (code 60) in order to receive Blazer ID access
 - Faculty advisor must arrange for the student to take the necessary laboratory training appropriate to the research project (*see below*)
 - Lab-related injury or illness is handled as indicated for Academic Credit Students below
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Undergraduate Research for Employment**UAB Students**

- Students who are currently enrolled in a degree program at UAB may be hired as a paid student employee, with the title "Student Assistant"; UAB students enrolled for credit in a Spring semester may be hired as Student Assistant during the following Summer without formal UAB enrollment
- Student Assistants are paid on an hourly basis and not subject to effort reporting if on a timesheet
- Student Assistant employees should not receive academic credit for the compensated effort; if the student desires academic credit they should perform an additional project specifically for credit, in accord with Biology or Psychology department guidelines
- The faculty employer must arrange for the student employee to take the necessary laboratory training appropriate to the research project; lab-related injury or illness is handled as indicated for Employee Students below

Non-UAB Students

- Students who are not currently enrolled at UAB are not eligible for "Student Assistant" status but may be hired as Lab Assistant (Irregular Employee 04)
 - Training and lab injury issues are handled as for Employee Students below
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UAB Undergraduate Summer Research Programs

- Summer research program students are typically recruited from other institutions and would be identified as Lab Assistant employees as above.
- Each program typically provides guidance, administrative processing, and student and mentor expectations for the research experience.
- Faculty research advisor arranges for the student employee to take the necessary laboratory training appropriate to the research project; lab-related injury or illness is handled as indicated for Employee Students above.

Current UAB Summer Research Programs

- [Ronald E. McNair Post-Baccalaureate Achievement Program](#)
 - [UAB Bridges to the Baccalaureate Degree Program](#)
 - [NSF Research Experience for Undergraduates \(REU\): Experimental and Computational Materials Research \(Physics department\)](#)
 - [Program for Research Experience in Pathology \(PREP\)](#)
 - [UAB Summer Program in Neurobiology \(SPIN\) \(NSF REU award\)](#)
 - [Summer Intern Research Program in Genetics](#)
 - [Summer in Biomedical Science \(SIBS\)](#)
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Training and Protection Issues

- Faculty research advisors must arrange for or verify that the undergraduate student, whether participating for academic credit or for pay, has the necessary laboratory training appropriate to the research project, including
 - HIPAA training
 - IACUC Use and Care of Laboratory Animals
 - OH&S Biosafety and Chemical Safety
 - IRB Training in Research with Human Participants
- **Academic credit students** may be seen at the UAB Hospital Emergency Room for lab injuries **once without charge** as a courtesy; additional health care must be provided by the student's health care provider, including Student Health if enrolled
- **Employee students** are covered for lab injuries through UAB HRM On-The-Job-Injury/Illness Program and can be seen at the Emergency Room (once) or at The Workplace (as needed) without charge; they must enroll in the UAB OHS program
- Lab access, i.e., keys and key cards, should be provided to undergraduate students on a case-by-case basis, depending on student's need and capability for independent activities in the lab
- Faculty are **strongly discouraged** from accepting UAB or non-UAB students to participate in research as **non-credit earning, unpaid volunteers** because of potential liability issues for the faculty advisor and department. All incidents involving volunteers or other visitors must be reported to Risk Management. Potential liability issues should be discussed with Risk Management.

Resources

UAB Biology Contacts

Academic Advisors

Kathy Angus	kangus@uab.edu	(205) 934-6025
Juanita McMath	jmcmath@uab.edu	(205) 975-4632
Nate Wade	nwade@uab.edu	(205) 934-8321

Biology Honors Program

Thane Wibbels, PhD	twibbels@uab.edu	(205) 934-4419
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Chair, Department of Biology

Ken Marion, PhD	kmarion@uab.edu	(205) 934-3582
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UAB Psychology Contacts

Academic Advisors

Ashley Hampton	ahampton@uab.edu	(205) 934-3850
Katherine Klyce	kklyce@uab.edu	(205) 934-3850

Psychology Honors Program

Ed Cook, PhD	ecook@uab.edu	(205) 934-3850
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Vice Chair and Director of Undergraduate Studies, Department of Psychology

David Schwebel, PhD	schwebel@uab.edu	(205) 934-8745
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Chair, Department of Psychology

Carl McFarland, PhD	cmcfarla@uab.edu	(205) 934-3850
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UAB Honors Programs Contacts

University Honors Program, Director

Michael E. Sloane, PhD sloane@uab.edu (205) 934-8733

Science and Technology Honors Program, Director

Diane Tucker, PhD dtucker@uab.edu (205) 934-8885

Other Resources

Training

UAB HIPAA www.hipaa.uab.edu (Allison Litton, aglitton@uab.edu, 996-2644)
Occupational Health & Safety <http://www.healthsafe.uab.edu/>
IACUC Training <http://main.uab.edu/internal/show.asp?durki=93632> 934-7692/7880
IRB Training <http://main.uab.edu/show.asp?durki=56078> 934-3789

Lab Injuries/Illness

UAB Employee Occupational Health Program
http://www.healthsafe.uab.edu/pages/home/occupational_health/default.html

Incident and Injury Reporting
<http://www.healthsafe.uab.edu/pages/emergencyinformation/incidentandinjuryreporting.html>

UAB Hospital Emergency Room, North Pavilion
18 St South & 6th Ave (Walk-in Emergency entrance on 18th St S)
934-5100

Student Health Service <http://students.uab.edu/services/show.asp?durki=26016>
930 20th Street South, Suite 221
(205) 934-3580

The Workplace <http://www.health.uab.edu/default.aspx?pid=4061>
UAB Highlands
1201 11th Avenue South, Suite 100
205-933-5300

Risk Management <https://riskmgt.hs.uab.edu/index.html>
934-5382 (Insurance and Liabilities, Jeanine Bailes, jbailles@uabmc.edu, 205-934-5552)

UAB Human Resource Management

Policy 118 – Hiring Temporary/Irregular Employees <http://main.uab.edu/show.asp?durki=44405>
Policy 119 – Employment of Students <http://main.uab.edu/show.asp?durki=44406>
Employment Division (205)934-5246

Office of Graduate Biomedical Sciences

Susan Rich, Associate Dean for Life Sciences, srich@uab.edu, 996-4835
Cyndi Knight, Program Manager, cknight@uab.edu, 934-2845

UAB Department of Biology

Overview for JHS/SOM Faculty - Undergraduate Biology students may participate in a research experience for academic credit by registering for BY398 Undergraduate Research or BY498 Honors Research. The course descriptions and special guidance for undergraduate research for credit outside of the Department of Biology follow the overview and were provided by Nate Wade, Academic Advisor, Department of Biology, nwade@uab.edu, (205) 934-8321.

Typical features include the following:

- Students must have completed at least 12 hours of Biology and have a 3.0 GPA in Biology and 3.0 GPA overall
- Students may take a maximum of 3 credits, with one credit hour equating to 3-4 hours/week in the lab
- Students are advised to seek out and make arrangements directly with SOM/JHS faculty regarding the nature of the research activity and the credit/effort hours
- Biology Department does not have explicit guidelines regarding the parameters of the experience but provides flexibility to the faculty research advisor to design the project and evaluate the student's performance.
- Faculty research advisor is responsible for informing a Biology Academic Advisor (see attached) of the research activity, including provision of a brief project description for Biology records, and for signing the registration form
- Faculty research advisor must arrange for the student to take the necessary laboratory training appropriate to the research project (see below)
- Faculty research advisor is expected to provide legitimate research exposure rather than assign the student to menial lab chores;
- Highly recommended that a fine-tuning discussion occur after 2-3 weeks to increase the likelihood that both student and research advisor will have a successful project experience
- Student is expected to participate regularly as agreed in order to have a successful project
- Student is expected to provide the faculty research advisor with a brief report (1-2 page) on the research activity at the semester end, which is intended as a record for Biology files (not for grade); the faculty research advisor may require other written material as part of the student's evaluation which may instead be provided to Biology as their record document
- Faculty research advisor provides the brief report and a letter grade to the Biology Chair (Ken Marion, PhD, current Chair, 2006)
- Additional, more extensive requirements exist for Honors Research students, outlined on the attached pages

BY 397 (Advanced Directed Readings)

A student may apply a maximum of 3 semester hours of BY 397 to their Biology major degree requirements.

Requirements to Enroll: Student must have completed at least 12 hours of Biology and have a 3.0 GPA in Biology with a 3.0 overall GPA. Permission of instructor is required to register (student must have signature of instructor and submit registration form to the registrar's office in order to enroll).

Best Practice: For every one semester hour, a student should write a 10 page paper on the topic which s/he was assigned to research.

BY 398 (Undergraduate Research)

A student may apply a maximum of 3 semester hours of BY 398 to their Biology major degree requirements.

Requirements to Enroll: Student must have completed at least 12 hours of Biology and have a 3.0 GPA in Biology with a 3.0 overall GPA. Permission of instructor is required to register (student must have signature of instructor and submit registration form to the registrar's office in order to enroll).

Best Practice: For every one semester hour, a student should spend 3-4 hours per week in the lab/field performing research, data analysis, etc.

BY 498 (Honors Research)

A student must complete a total of 6 semester hours of BY 498 in order to graduate with Departmental Honors. A student must apply at minimum and at maximum 6 semester hours of BY 498 to their Biology major degree requirements.

Requirements to Enroll: Student must have completed at least 18 hours of Biology and have a 3.5 GPA in Biology with a 3.0 overall GPA. Also, the student must have completed at least one semester hour of BY 398 (Undergraduate Research). The student must be admitted into the Biology Honors Program (student should meet with Dr. Thane Wibbels or a Biology Academic Advisor to review their qualifications). Permission of instructor is required to register (student must get permission from instructor to perform research and have signature of Dr. Thane Wibbels to submit registration form to the registrar's office in order to enroll). At the conclusion of their first semester, a formal research proposal including an introduction, proposed methods, and relevant literature citation is due to the professor and Dr. Thane Wibbels. At the conclusion of the student's research, a formal written report in the form of a scientific paper is due to their professor and Dr. Thane Wibbels (a small scale version/printout of the student's poster may substitute for the scientific paper). Also, a poster presentation is required at either the Biology Honors Poster Presentation Day or a Regional/National conference during their final semester of Honors Research.

Best Practice: For every one semester hour, a student should spend 4 hours per week in the lab/field performing research, data analysis, etc. Typically, most students register for 3 semester hours of Honors Research for two consecutive semesters.

Undergraduate or Honors Research Performed Outside the Department of Biology

Undergraduate or Honors Research is allowed to be performed outside the Department of Biology. The process for this to occur is listed below:

- 1) Student meets with Biology Academic Advisor to discuss qualifications and process for which research and grade reporting will occur.
- 2) Student who meets requirements to perform research should then approach the UAB faculty member of their choice and ask if opportunities may be available.
- 3) Once permission is given to the student by the faculty member, the faculty member should contact an Academic Advisor (nwade@uab.edu, jmcmath@uab.edu, kangus@uab.edu) to inform them of student's anticipated research in their lab. A one to two sentence description of proposed study is requested for Departmental purposes. Advisors will forward information to Departmental Chair and Professor over Departmental Honors (when applicable).

- 4) For Undergraduate Research (BY 398), instructor signature will be needed on the registration form. For Honors Research (BY 498), Dr. Thane Wibbels will need to sign the student's registration form. In order to register, student must take the registration form in person to the registrar's office once signatures are acquired.
- 5) After research has concluded for that semester, student should generate a one to two page synopsis of their research for that semester (what they did, what they learned, successful or unsuccessful experiments, conclusions from experiments, etc.) and provide it to the professor with whom they are researching. This paper is for Departmental records only. It is not for a grade!
- 6) Faculty member should submit the paper along with a letter grade for the student's performance during the semester to the Departmental Chair of Biology, Dr. Ken Marion (kmarion@uab.edu).
- 7) Grade reported to Dr. Marion will be submitted to appear on the student's transcript for that semester.
- 8) For students completing their first semester of Honors Research (BY 498), a formal research proposal including an introduction, proposed methods, and relevant literature citation should be submitted to the professor with whom the student is researching and Dr. Thane Wibbels (twibbels@uab.edu) for Departmental records by the end of the first semester. The proposal should count for a portion of the student's grade for that semester. This is not the paper which should be submitted along with the student's final grade to Dr. Marion (step 5).
- 9) For students completing their final semester of Honors Research (BY 498), a formal written report in the form of a scientific paper is required. This should be submitted to the professor with whom the student is researching for a portion of their semester grade and Dr. Thane Wibbels for Departmental records. **A small scale version/printout of the student's poster may substitute for the scientific paper.** This is not the paper which should be submitted along with the student's final grade to Dr. Marion (step 5).
- 10) For students completing their final semester of Honors Research (BY 498), a poster should also be generated to appear at the Honors Research Day. Professor with whom the student researched is encouraged to attend Honors Research Day. Examples of previous posters can be seen on the 2nd and 3rd floor of Campbell Hall.

Final Notes

Most freshmen will not qualify to perform undergraduate research for credit. University Honors students who are freshmen may be able to perform research for credit through the University Honors Program, but should first consult their Biology Academic Advisor and the Director of the University Honors Program for specific requirements to register.

If you have a remarkable student who is doing great research in your lab and who you know to be a good student, please let us know. There are national scholarships which they may qualify to apply for (Goldwater, Marshall, Rhodes, Fulbright, etc) and the Department of Biology will help them obtain more information.

Finally, if you have any questions, whatsoever, please do not hesitate to call or email Nate Wade, Biology Academic Advisor, 205-934-8321 or nwade@uab.edu.

Thank you for supporting students in their quest for knowledge!

UAB Department of Psychology

Overview for JHS/SOM Faculty - Undergraduate Psychology students may participate in a research experience for academic credit by registering for PY398 Research Practicum in Psychology. The course descriptions and special guidance for undergraduate research for credit outside of the Department of Psychology follow the overview and were provided by David Schwebel, PhD; Director of Undergraduate Studies, schwebel@uab.edu, (205) 934-8745.

Typical features include the following:

- Students may take a maximum of 18 credits of PY398, PY397 (community practicum), and PY396 (teaching practicum) combined, with one credit hour equating to about 3 hours/week of research time
- Students are advised to seek out and make arrangements directly with faculty regarding the nature of the research activity and the credit/effort hours
- The Psychology Department does not have explicit guidelines regarding the parameters of the experience, but provides flexibility for the faculty member to work with the student to design the project and evaluate the student's performance.
- Student is responsible for completing a research plan at the start of the semester. That plan, which is typically 1-3 paragraphs, must receive signed approval from the faculty advisor and then be submitted to a psychology department advisor
- Faculty research advisor must arrange for the student to take the necessary laboratory training appropriate to the research project
- Faculty advisor is expected to provide legitimate research exposure rather than assign the student only to menial lab chores
- Student is expected to participate regularly as agreed in order to have a successful project
- Student is expected to complete a log of research-related activities throughout the term. At the end of the term, it should be submitted to the faculty research advisor for review and approval. The faculty research advisor is required to assign a grade for the student's work and submit the form to a psychology department advisor, who will work with the Psychology Department's Director of Undergraduate Studies to submit the grade to the UAB Registrar
- Slightly more complex requirements exist for Honors Students, who must complete a written honors thesis under the context of PY398 registration (contact the Director of the Psychology Honors Program, Ed Cook, ecook@uab.edu, 934-3850, for requirements)

PY 398 (Undergraduate Research)

A student may apply a maximum of 18 semester hours combined of PY 396, PY 397, and PY 398 to their Psychology major degree requirements.

Requirements to Enroll: There are no explicit requirements besides approval of a research plan by an approved faculty mentor. Almost all UAB faculty members (in all departments) and most graduate students and post-docs are approved as mentors if the research is related to the broad field of psychological science, but this is subject to the discretion of the Director of Undergraduate Studies. Most faculty research mentors choose to screen potential students via some form of application and/or interview process.

Best Practice: For every one semester hour, a student should spend about 3 hours per week in the lab/field performing research, literature reviews, data analysis, etc. Students may not be assigned only menial laboratory tasks. Faculty research mentors are encouraged to work with students to develop products that can be presented at regional or national scientific conferences, including undergraduate research conferences. Some student projects lead to co-authorship on peer-reviewed publications.

Undergraduate or Honors Research Performed Outside the Department of Psychology

Undergraduate or Honors Research is allowed to be performed outside the Department of Psychology, and this occurs on a regular basis. The process for this to occur is listed below:

- 1) Student identifies a potential research mentor on the UAB campus (or very rarely, at off-campus placements). The research must be related to the broadly defined field of psychological science. Mentors outside of the psychology department must be approved by the Director of Undergraduate Studies.
- 2) Once permission is given to the student by the researcher, the student should contact a psychology department advisor to register for PY398. Students in the Psychology Honors program must obtain approval of the plan from the Director of the Honors Program.
- 3) At the start of the term, students must complete a brief plan for research over the course of the term. That plan must be reviewed and signed by the faculty mentor and then submitted to the psychology department advisors.
- 4) On a weekly basis during the term, the student must complete a log of research-related activities.
- 5) After research has concluded for the term, students should submit their completed log to the faculty research mentor. Mentors are responsible for reviewing the log, signing approval, and assigning a letter grade. The log should then be returned to the psychology department advisor.
- 6) Psychology department advisors will work with the Director of Undergraduate Studies to submit assigned grades to the UAB Registrar.
- 7) For students completing their second of three semesters in the Psychology Honors Program, a formal research proposal including an introduction, proposed methods, proposed analysis plan, and relevant literature citations should be submitted to the professor with whom the student is researching and the Director of the Psychology Honors Program (currently Dr. Ed Cook). On most occasions, the student will also complete a verbal proposal of the research in the Honors Program seminar, and the faculty mentor may choose to assist with preparation of that proposal.
- 8) For students completing their third and final semester in the Psychology Honors Program, a formal written report in the form of a scientific paper is required. This should be submitted for approval to the professor with whom the student is researching and to the Director of the Psychology Honors Program (currently Dr. Ed Cook). Students are also required to present their research in the Honors Seminar and at a professional meeting (one option to complete the professional meeting requirement is the annual Ost Competition held in the psychology department each spring). Faculty mentors may choose to assist students with preparation of these proposals.

Final Notes

Most freshmen will not qualify to perform undergraduate research for credit. University Honors students who are freshmen may be able to perform research for credit through the University Honors Program, but should first consult their Psychology Academic Advisor and the Director of the University Honors Program for specific requirements to register. If you are advising a student who might be competitive for a national scholarship (Goldwater, Fulbright, etc) please let us know. *To post an opening for an undergraduate student in your lab, on the Psychology website, contact the Psychology department IT specialist, Aeron Gault, agault@uab.edu.*

If you have any questions, whatsoever, please do not hesitate to call or email the Psychology Department Advisors at 205-934-3850 or ahampton@uab.edu or kklyce@uab.edu.