

BIOLOGY 198X, 199X, 300X

PETITION for Approval to Obtain Research Credit for Working outside the Department of Biology

READ this ENTIRE form BEFORE COMPLETING PETITION – refer all questions to Dr. Angela Lee, Undergraduate Research Coordinator, angelee@stanford.edu; Gilbert 118; 650-723-3767

Research and directed reading can be invaluable components of undergraduate education, and therefore we have provided course numbers 198, 199, and 300 for such work. **These courses are open only to declared biology majors or students working with a member of the Biology faculty.** Bio 198X, 199X, and 300X are the course numbers for research done with faculty who are not members of the Department of Biology and these courses are only available by petition to declared Biology majors (see reverse side; also see "Out-of-Stanford Research" handout).

BIOLOGY 198 - Undergraduate Directed Reading may be taken as a prelude to research by learning the literature of a specific field. This course entails journal reading and discussion and may also involve participation in a laboratory research seminar along with library research. The grading policy for Biology 198 is satisfactory/no credit. Bio 198 units may not be applied towards a departmental Honors project.

BIOLOGY 199 - Undergraduate Research credit is available for students involved in research which is substantially *independent*. Although this course should be used once students have a project of their own, the first Quarter may be used to learn essential techniques while helping with other's projects. Although the independent project may be suggested by the sponsor and developed with their guidance, the student is expected to be involved in the planning and execution of experiments, analysis and interpretation of data, presentation of results and evaluation of the research. The research field is expected to encompass biological concepts and processes. NOTE: Application for Biology 199 credit is not a substitute for an Honors petition. See the information sheet on the "Honors Program".

Appropriate Research Projects: Projects should be empirical or theoretical biological research, consisting of independent and original scientific work by the student. Applied clinical, environmental, or technological studies may be appropriate in cases where there is a major analytical, experimental or observational component to the study, involving independent conceptual, field or laboratory work by the student. Simply collecting data or samples from human subjects or interviewees, collating data, doing repetitive technical work, or doing statistical analysis is not sufficient for Bio 199X credit. Students should discuss the nature of their projects with their Departmental advisors or the Undergraduate Research Coordinator, prior to petitioning for approval, if there is any doubt about appropriateness.

BIOLOGY 300 - Graduate Research differs from Biology 199X in that the student has completed requirements for a baccalaureate degree and has a more advanced science background. The student should be capable of more extended independent research and greater responsibilities.

RESEARCH SPONSORS: Sponsors must be Academic Council members (assistant, associate, or full professors) [Note: if you're not sure if your research sponsor is an Academic Council member, look in the *Stanford Directory* - an asterisk "*" next to the telephone number of the faculty member indicates membership in the Academic Council]. If your sponsor is not an Academic Council member you will need to find a "co-sponsor" in the Department of Biology who will agree to assign you credit and grade your participation in research (see Research Sponsorship Agreement).

CREDIT: There is a clear distinction between scientific research activities pursued for educational benefit and those routine laboratory tasks usually associated with laboratory technician services. [NOTE: We cannot guarantee that credit will be approved for research done in non-Stanford University laboratories. Please refer to the special guidelines described in the "Out-of-Stanford Research" handout.]

UNITS: University guidelines specify that each unit of coursework represents at least 3 hours of instruction each week. A more complete policy statement may be found in the section "Unit of Credit" in the Stanford University Bulletin.

SUMMER RESEARCH FOR CREDIT: Students may receive Bio 198, 199 or 300 credit for work performed over the summer by filling out a separate petition for "Summer Research." In this petition, the research sponsor will verify the total number of hours worked. Summer research credit is available to students working both within and outside of the Department of Biology. Students working off-campus must follow the requirements stated above for off-campus research. **There is a 10-unit maximum for summer research.** For requirements, guidelines, and instructions for registering and petitioning, see the "Summer Research Petition."

THE PETITION PROCESS: Petitions are required only for work with individuals outside the Department of Biology (i.e. Bio 198X, 199X, 300X). There are two forms involved in the petition: "Petition requesting Biology 198X, 199X, 300X credit" AND the "Research Sponsorship Agreement" form. You will need to turn in both of these forms with appropriate signatures and your project description to [Dr. Angela Lee](#), Undergraduate Research Coordinator (Gilbert Room 118 or the box outside her door). Note: You only need to petition ONCE to work with the same sponsor. If you have taken Bio 198X and now want enroll in Bio 199X, or if you change labs, then you will need to re-petition.

PETITION DEADLINES: Petitions for Autumn Quarter are due one week after the start of classes in Autumn Quarter; for Winter and Spring Quarters, by the Monday of exam week of the previous Quarter. For the 2008/2009 academic year the deadlines are: Autumn Qtr- Oct. 3, 2008; Winter Qtr- Dec. 8, 2008; Spring Qtr- March 16, 2009. We cannot guarantee that credit will be given for late petitions!

PETITION FORM: Fill out the form completely, attach your project description, and have your departmental advisor sign it after they have read and approved your project.

SPONSOR FORM: Your research sponsor needs to fill out the "Research Sponsorship Agreement" form and sign it after they have also read and approved your project description. This form includes information regarding the expected duration of the project and the basis for grading. Make sure you and your sponsor both agree on the time commitment, evaluation procedure and grading option. In the middle of this form is where a co-sponsor would sign (a co-sponsor is *only* needed if your research sponsor is not an Academic Council member or is not associated with Stanford - see "Out-of-Stanford Research" handout). Give your research sponsor the explanatory sheet at the end of this packet for them to keep so they will have information about our courses.

PROJECT DESCRIPTION: The project description should be at least 2-3 pages in length for a Biology 199X or 300X proposal (double spaced, not including references and figures) and should be organized as described below using the following headings. Also please include your Sponsor's name and department at the top.

A. Title of Research Project

B. Objective of research. Briefly and clearly state the question that your research is designed to address. Explain the specific aims of the research.

C. Background and Significance: Using appropriate background information which is appropriately referenced, indicate the significance of your research.

D. Experimental design. Describe the project design you will use to carry out your research including methods and materials. Indicate how these techniques will allow you to address your research question. Note the following: 1) research involving vertebrate animals requires that your sponsor have an approved Animal Use Protocol on file with the University Panel on Laboratory Animal Care; 2) work with radioactive substances requires certification in the University's radiation safety course; 3) work with pathogenic organisms requires special training and precautions 4) work with human material requires that you complete the Human Subjects Training. If any of these apply, describe them in your proposal.

E. Possible results. Describe the expected outcome of your research, indicating how the data collected will be used to draw conclusions regarding the research question. Throughout your proposal, be specific about your own work: do not simply state the goals of the lab in which you are working. Stress the biological concepts you are using and your understanding of the methodology. The proposal should clearly show some level of *independence* in your research, the *feasibility* of the project, and an understanding of the basic *biology* involved.

- If this is your first Quarter of Bio 199X and you do not yet have your own project, but are helping someone else in the lab on *their* project while learning concepts and methods, then describe the project that you are working on instead.
- Biology 198X proposals need not be as extensive (1-2 pages). For Bio 198X, describe the research of the lab you're working in. Explain what you hope to learn through this experience. List the research articles you plan to read and discuss and who you will be doing the reading with.
- Examples of previous project descriptions are in a binder outside of Dr. Lee's cubicle. If you do not want a copy of your project description on file, please indicate so on the petition form. Alternatively, you can elect to have your name blacked out.

For more information about Research and Honors in Biological Sciences (policies, guidelines, and petitions), see our Web page:

<http://biohonors.stanford.edu>

PETITION REQUESTING BIOLOGY 198X, 199X, 300X CREDIT**(Directed Reading or Undergraduate Research with an Out-of-Department Sponsor)**

To receive Biology credit for directed reading or undergraduate research done under the supervision of a Stanford faculty member not associated with the Department of Biology, you must submit this petition along with a completed Research Sponsorship Agreement form and research proposal. Fill out the form below, attach your project description, and have your departmental advisor sign below after they have read and approved your proposal; your research sponsor needs to fill out and sign the 'Research Sponsorship Agreement' on the back of this form. Turn in the completed packet to Dr. Angela Lee, Undergraduate Research Coordinator (Gilbert 118) by the appropriate deadline (for 2008/09- Autumn Qtr- Oct. 3, 2008; Winter Qtr- Dec. 8, 2008; Spring Qtr- March 16, 2009).

If your research sponsor is not an Academic Council member (see cover sheet) or not associated with Stanford University, you must have a "co-sponsor" within the Department of Biology. The co-sponsor must sign in the center of the Research Sponsorship Agreement form (you will register using your co-sponsor's 199X section number, and end-Quarter grades must be conveyed to him or her from your primary research sponsor).

You will be notified by E-mail of the status of your petition as well as the approval/course enrollment number before the add deadline (so make sure your E-mail address is legible!) Questions? Contact Dr. Angela Lee, angelee@stanford.edu; 650-723-3767; Gilbert Hall, Room 118.

Please type or print *neatly*.

Student name _____ E-mail _____

SUID (8 digits) _____ Date declared major _____ Phone _____

Present status: Freshman ____ Sophomore ____ Junior ____ Senior ____ M.S. ____

Mailing address _____

BioSci Academic Advisor _____ E-mail _____

Requesting credit for ____ Bio 198X (Undergraduate Directed Reading)

____ Bio 199X (Undergraduate Research)

____ Bio 300X (Graduate Level Research)

Project title _____

On additional sheets describe the research problem being investigated. Following the guidelines on the instruction sheet, indicate what question you are addressing, what experiments you will do and what results you anticipate.

If you do not wish your project description to be on file for other students to read, please indicate so here: ____ Please black out my name: ____

"I have read the student's project description and agree that this work is appropriate for Biology credit under the course indicated above."

Academic Advisor's signature _____ **Date** _____
Department of Biology

RESEARCH SPONSORSHIP AGREEMENT

(Please type or print *neatly*)

Sponsor _____ Department _____

University/Organization (if other than Stanford) _____

Position _____ Phone _____ Email _____

Mailing address (include mail code) _____

Name of student sponsored _____ SUID (8 digits): _____

If necessary for the project:

Animal Use Protocol # (for research involving vertebrates) _____

Has student taken the radiation safety course? _____

Has student been trained to handle pathogenic organisms? _____

Has the student completed human subjects training? _____

First Quarter (or date) of participation _____

Estimated number of Quarters to complete project (or completion date) _____

Department co-sponsor name (if applicable) _____

Please print

Signature

A Department co-sponsor is *only* necessary if the research sponsor is (1) not an Academic Council member or (2) not associated with Stanford. End-Quarter grades need to be reported to the departmental co-sponsor by the end of classes in the Quarter of registration.

"I have read the memorandum regarding the expectations of the Department of Biology with respect to academic credit for student participation in research. The nature of this student's involvement in this project is, in my judgment, appropriate for the awarding of academic credit in" (check one)

_____ Biology 198X (satisfactory/ no credit only)

_____ Biology 199X letter grade _____ P/NC _____

If for a letter grade, the student's grade will be evaluated by one of the following:

_____ give oral presentation at the end of the Quarter to the lab group

_____ write a paper summarizing the research findings and experience

_____ a one-on-one meeting with the faculty research sponsor

_____ Biology 300X letter grade _____ P/NC _____

Sponsor's signature: _____ Date: _____

STUDENTS - PLEASE GIVE THIS SHEET TO YOUR SPONSOR!!
RESEARCH SPONSOR -- PLEASE KEEP THIS FOR YOUR FILES!

BIOLOGY 198X, 199X, 300X

SPONSORS: We are grateful for the many research opportunities available for our majors, as research and directed reading often are invaluable experiences highlighting a student's stay at Stanford. Because of the diversity of these opportunities and the lack of direct contact between research sponsors and our Department, we find it useful to describe at the beginning of a project, our expectations for a student engaged in Biology 198X, 199X or 300X work. Thank you for being a research sponsor - we appreciate it!

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HOW CREDIT IS GIVEN. You will need to log into Stanford's student information system, Axess, to assign your student a grade (<http://axess.stanford.edu>) at the end of the Quarter. You will need to assign your student(s) credit and grade (S/NC or letter grade). Class lists of students enrolled in your section can also be viewed at this site.

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