GRADUATE PROGRAM IN EVOLUTION, ECOLOGY AND ORGANISMAL BIOLOGY

UNIVERSITY OF CALIFORNIA, RIVERSIDE

GRADUATE STUDENT HANDBOOK

2009-2010

Introduction

This handbook is designed to guide your progression as a graduate student in the Evolution, Ecology and Organismal Biology graduate program (EEOB) at the University of California, Riverside. The principal objective of the program is to train scientists with the broad perspectives, technical skills, and initiative and imagination that will lead to productive independent research careers in either academic or industrial settings.

Standing committees of the EEOB and current committee membership

All affairs related to the EEOB graduate program are administered by the Program Director, the Graduate Advisor for Admissions, the Graduate Advisor for Continuing Students, and the following standing committees:

Executive Committee:

- John Rotenberry – Chair (Program Director)
- Daphne Fairbairn (Graduate Advisor for Continuing Students)
- Wendy Saltzman (Graduate Advisor for Admissions)
- TAAC Coordinator – Len Nunney
- Continuing Students committee member (TBA)
- Graduate Admissions committee member (TBA)
- Teaching and Program committee member (TBA)

Committee for Continuing Students:

- Daphne Fairbairn – Chair (Graduate Advisor for Continuing Students)
- Kim Hammond (Physiology)
- Marlene Zuk (Evolution)
- Dan Hare (Ecology)
- Derek Roff (Graduate Advisor for Admissions)
- TAAC Coordinator – Len Nunney

Graduate Admissions Committee:

Wendy Saltzman – Chair (Graduate Advisor for Admissions)
Joel Sachs (Evolution)
Lou Santiago (Ecology)
TBA - (Physiology)
Daphne Fairbairn (Graduate Advisor for Continuing Students)
Derek Roff – Past Graduate Advisor for Admissions

Teaching and Program Committee:

Richard Cardullo (Physiology)
Nigel Hughes (Evolution)
Len Nunney (Ecology)
Graduate Student Representative – Martin Turcotte

Web Committee:

Ted Garland – editor-in-chief (Physiology)
Helen Regan (Ecology)
Mark Chappell (Evolution)
Teri Orr (Graduate Student Representative)

The EEOB/Biology Graduate Student Association (BGSA)

Every EEOB graduate student is automatically a member of the EEOB/Biology Graduate Student Association (BGSA). The BGSA serves several purposes, such as promoting interactions among the graduate students, providing information about the department and the university to the graduate students, and representing graduate student concerns to the faculty and other campus organizations. Students become better acquainted with each other and with the EEOB faculty during social events that the BGSA organizes, such as the annual Biology departmental retreat. The BGSA president serves as a liaison between the faculty and the graduate students, both by disseminating information to the students and by soliciting student opinions regarding departmental issues and policies. The BGSA facilitates unified action of the graduate students regarding issues that affect them. Issues of interest to our students are discussed during meetings held at least once per quarter, and these concerns are brought to the faculty's attention when appropriate. The BGSA also sends representatives to Graduate Student Council (GSC) meetings, who then report back to the other members. The BGSA president is elected each spring by ballot, and other officers are elected during the first meeting in the Fall. For the 2009-10 academic year, the BGSA president is Carla Essenberg (email: Carla.essenberg@email.ucr.edu).

The Academic Program (PhD)

The PhD degree in EEOB requires demonstration of broad knowledge of Ecology, Evolutionary Biology or Physiology & Biophysics; and substantive ability in original

research. The general requirements are the same for each specialization (except for course requirements) and include, in approximate chronological order:

- completion of basic coursework
- completion of one year (three quarters) of teaching
- passing the Written Qualifying Examination
- passing the Oral Qualifying Examination
- completion of research and preparation of the PhD Dissertation
- successful defense of the Dissertation through a final Oral Examination

The normative time for completion of the PhD degree requirements is six years. During the first two to three years, emphasis is on coursework and reading in preparation for, as well as completing the Written and Oral qualifying examinations. The remaining three to four years are devoted primarily to research and to the completion of the Dissertation, although students continue to participate in graduate seminars and may take additional coursework during this period.

Briefly, you are expected to achieve three major goals during your time in the program: 1) pass the Written Examination; 2) prepare an original research proposal and pass the Oral Qualifying Examination, thereby advancing to candidacy; and 3) produce and file your Dissertation.

The following is a general timeline guide to achieving these goals and other requirements:

1. **Meet with your guidance committee as soon as possible** in your initial quarter of study. The guidance committee is assigned by the Graduate Advisor for Recruitment on the basis of your perceived interests indicated in your statement of purpose provided with your application. The committee works with you to design an appropriate academic course of study for your degree plan and helps you select an appropriate major professor.

2. **Complete course requirements**, including enrollment in seminar each quarter for all students, and enrollment in two colloquia (one of which is EEOB 265) each quarter for those students in the Evolutionary Biology, Ecology, or Physiology & Biophysics tracks. Students in the PhD program must normally have completed a bachelor's degree in one of the biological sciences, with a preparation deemed equivalent to that required for the bachelor's degree from UCR. Students who are admitted to graduate standing with deficiencies in preparation will be required to take appropriate undergraduate courses. Below is a general guideline that applies to all three tracks within the program:

- Biology 400 as an entry course required of all new graduate students
- A disciplinary core course
- Two graduate level courses (200 series) within the discipline
- A colloquium in the department or program of the student's choice each quarter (i.e. BIOL 252)
- The "lunch bunch" seminar (EEOB 265)

3. **Complete your teaching requirement**. A minimum of three quarters of service as a Teaching Assistant is required for the PhD degree.

4. **Take Written Qualifying Examination**. The written qualifying examination consists of a review paper in the intended topic of the dissertation (Evolutionary Biology and Ecology tracks) or a research proposal (Physiology and Biophysics track)., Generally, the written exam consists of a detailed background relating to the research project. The main purpose of the written exam is to permit evaluation of the student's ability to identify meaningful research problems and design solutions for them. Work on the review paper or research proposal and preliminary experiments may begin at any time, but the final written examination should be submitted by the end of the sixth quarter of residence (normally Spring quarter of the second year).

5. **Take Oral Qualifying Examination and advance to candidacy**. Before advancing to candidacy, the student must pass an oral examination conducted by a Qualifying Committee. This Committee is nominated by the Graduate Advisor in consultation with the student and prospective Chair of the Dissertation Committee (major professor) and officially appointed by the Graduate Dean. The Qualifying Committee is comprised of five members, one of whom is a faculty member from outside the graduate program. The committee cannot include the student's major professor. The committee evaluates the research proposal and conducts the Oral Qualifying Examination.

The oral examination should be completed by the end of the seventh quarter of residence (normally Fall quarter of the third year) and absolutely no later than the end of the ninth quarter of residence (normally Spring quarter of the third year).

Following successful completion of the examination, the student is advanced to candidacy for the PhD and the Dissertation Chair is formally appointed within 48 hours. The rest of the Dissertation Committee should be selected within one quarter from the time that the Exam takes place. The Dissertation Committee consists of the major professor and two other faculty members selected on the basis of their ability to guide the research and writing of the dissertation. These members may be from Departments other than Biology, or even from another institution, with the Graduate Dean's approval. It is the responsibility of this committee to decide when data of sufficient quality and quantity have been gathered to demonstrate proficiency in independent research.

6. **Complete your Dissertation**. Meet at least once annually with your Dissertation Committee to discuss your research progress and to redefine the goals and expectations necessary to complete your dissertation. The format of the dissertation is somewhat flexible, but must be approved by the Dissertation Committee and the Graduate Division. At the discretion of your Dissertation Committee, you may be required to defend your dissertation. Defense of your dissertation will include a public formal presentation (seminar) on the dissertation research. The candidate will be responsible for defending the dissertation in response to questions from the dissertation committee and other faculty and students. Following the public seminar and question period, the candidate may be requested to meet with the dissertation committee to answer additional questions and discuss modifications of

the dissertation. Once the committee is satisfied with the dissertation, it is filed with the Graduate Division. It is expected you will complete this process by the end of your eighteenth quarter of residence (normally Spring quarter of the sixth year).

Please refer also to the timetables found at the end of this handbook.

Satisfactory Academic Progress

Normative time for the PhD degree in EEOB is six years (18 quarters). Normative time is defined as the period of full-time registration required to earn the degree, assuming that the student enters with a bachelor's degree and has no course deficiencies or need to take any remedial work. For most programs at UCR, this falls between five and seven years. Because the PhD is a research degree, the University gives programs considerable latitude in establishing degree requirements. As stated above, in the EEOB Program the individual student's program of study is planned in consultation with his or her guidance committee, which supervises the student's progress prior to the appointment of the dissertation committee. After the student advances to candidacy, the dissertation committee oversees the student's progress in the final stages of his or her degree program.

For all MS and PhD students, evaluations of progress are carried out each spring by the student's major professor. All evaluations are reviewed by the Graduate Advisor, whom is responsible for making specific recommendations to the Graduate Division concerning the student's progress. The Graduate Advisor may also approve exceptions to the normal time schedule occasioned by unusual circumstances. Students are notified in writing of the results of the annual evaluation, and copies are forwarded to the Graduate Division.

Unsatisfactory Academic Progress

It is hoped that you will make good progress in your degree program. Failing to do so will have serious consequences for your career in graduate school. If you do not reach deadlines such as qualifying exams in a timely fashion, if your GPA drops below the minimum level of 3.00 (3.50 for Fellowship recipients, 3.00 for those holding TA appointments), if you have 12 or more units of "I" grades, or if your advisor feels that you are not advancing as you should, the Graduate Division can and will block your registration. In addition, opportunities for receiving block grant money and other funding through the Department become severely limited.

The Academic Program (MS)

The MS degree is a research degree that requires the completion of a thesis. MS students generally concentrate on formal coursework during the first year and on research in the second year.

The MS degree requires completion of 36 units of courses. Twenty-four units must be in graduate courses (200 series) in biological sciences, where at least 12 must be in courses other than 290-299. The remaining 12 units can be taken either in the 100 or 200 series.

The following is a timeline guide for students pursuing the MS degree:

1. **Meet with your guidance committee as soon as possible** in your initial quarter of study. The guidance committee is assigned by the Graduate Advisor for Recruitment on the basis of your perceived interests indicated in your statement of purpose provided with your application. The committee works with you to design an appropriate academic course of study for your degree plan and helps you select an appropriate major professor.

2. **In the first year, take basic coursework** in Evolutionary Biology or Physiology. Students who are admitted to graduate standing with deficiencies in preparation will be required to take appropriate undergraduate courses.

3. **Plan and begin a research project by the end of the second quarter**, selecting a faculty research sponsor and preparing a brief description of the proposed research to present to your guidance committee.

4. **Initiate research by the third quarter**.

5. **Meet with your guidance committee** during your third quarter in residence to discuss progress in the program.

6. **Work on your thesis**. Confer with your major professor regarding the format of your thesis. The format is somewhat flexible, but must meet with the approval of the thesis committee and the Graduate Division.

7. **File your advancement paperwork the quarter you expect to graduate.**

8. **Defend your thesis.** At the discretion of the department, students may be required to undergo a final oral examination in defense of the thesis.

Please also refer to the timetables found at the end of this handbook.

Satisfactory Academic Progress

Normative time for the MS degree in EEOB is two years (six quarters). Normative time is defined as the period of full-time registration required to earn the degree, assuming that the student enters with a bachelor's degree and has no course deficiencies or need to take any remedial work. For most Master's degree programs at UCR, this falls between two and three years. As stated above, in the EEOB program the individual student's program of study is planned in consultation with his or her guidance committee, which supervises the student's progress prior to the appointment of the thesis committee. After the student advances to candidacy, the thesis committee oversees the student's progress in the final stages of his or her degree program.

Graduate Division mandates that all graduate students must be formally evaluated each spring, culminating in submission of a formal, written evaluation containing specific

recommendations concerning the student's progress. To initiate this process, each student is expected to meet with his or her advisory committee to review progress over the past year and set appropriate goals for the coming year. The initial guidance committees serve as the advisory committees for students who have not advanced to candidacy, while the dissertation advisory committees serve this role for PhD candidates. Following this meeting, the advisory committees prepare an evaluation report for the Graduate Advisor for Continuing Students (GACS). Based on these evaluations, along with all other relevant aspects of the student's record such as TA evaluations, course grades, and the results of any written or oral exams taken over the past year, the GACS prepares an annual progress report for each student. These reports serve as objective evaluations of each student's success in the program and provide recommendations to ensure timely and successful completion of the program requirements. Copies of these reports are distributed to the student, the student's major advisor, the student's permanent file and Graduate Division.

Unsatisfactory Academic Progress

It is hoped that you will make good progress in your degree program. Failing to do so will have serious consequences for your career in graduate school. If your GPA drops below the minimum level of 3.00 (3.50 for Fellowship recipients, 3.00 for those holding TA appointments), if you have 12 or more units of "I" grades, or if your advisor feels that you are not advancing as you should, the Graduate Division can and will block your registration. In addition, opportunities for receiving block grant money and other funding through the Department become severely limited.

Continuing from the Master's to the Doctorate

Students who are enrolled in the MS program may petition to pursue the PhD degree. To do so, they must have the recommendation of the EEOB Committee for Continuing Students. Approval by the GCCS is not automatic; the committee determines on a case-by-case basis whether a student has the academic potential to succeed in the PhD program. This requirement for evaluating each student's potential and academic fitness to proceed toward the PhD is enforced by the Graduate Division regardless of what the student's initial degree objective was. For further information on the process of petitioning to the PhD program, please see the graduate student affairs officer.

Graduate Division Requirements

For information on specific Graduate Division requirements, please refer to the UCR Graduate Student Handbook, published by the Graduate Division; to the Graduate Studies section of the University of California, Riverside General Catalog; and to the Graduate Division's World Wide Web site. That address is: http://www.graduate.ucr.edu.

Financial Support

The main sources of graduate student support in the EEOB program are Teaching Assistantships and Graduate Student Research Assistantships obtained through research grants awarded to the faculty. Students who enter the PhD program with strong

undergraduate records are encouraged to apply for National Science Foundation or Howard Hughes Medical Institute fellowships. Students who have advanced to candidacy are encouraged to pursue funding in the form of training grants or fellowships. Other support is available through a variety of fellowships and grants from a number of university, state, and federal sources. Students in good academic standing making acceptable progress in either the MS or PhD program are typically supported by the Program.

Departmental Financial Support

Teaching Assistantships (TAs): This is usually a 50% time commitment, meaning that you theoretically work 20 hours per week on average. The type of work varies according to the class. If it is a lab course, a 50% appointment means teaching two three-hour labs per week; if it is a discussion course that means leading four one-hour discussion sections. Appointments are made for one quarter at a time, meaning that you will receive three monthly paychecks for each appointment. Students with Teaching Assistantships receive a partial remission of fees and payment of the Graduate Student Health Insurance Program Fee.

Graduate Student Research Assistantships (GSRs): This is generally a 49% position, with somewhat more flexible hours than Teaching Assistantships, and may be more than half-time during summer. These positions are usually supported by money from a particular professor's grant, and arrangements must be made through the professor one wishes to work with. Students with GSRs receive a partial remission of fees and payment of the Graduate Student Health Insurance Program Fee.

NOTE: TAs and GSRs must be making acceptable progress toward their degree objective; must be advanced to candidacy within 12 quarters after entry; and must have fewer than 8 units of incomplete grades. In addition, TAs and GSRs must maintain a 3.00 GPA. Graduate students may not be employed more than 50% time or 20 hours per week during the academic year in any combination of appointments. During quarter breaks and in the summer they may be employed full-time.

Summer support: A limited number of positions are available for teaching Biology courses each summer. Priority for these assignments is generally given to PhD students advanced to candidacy. Payment of summer teaching is through Summer Session Office.

Irwin W. Newell Graduate Research Fund: Awards from this fund are made for research, travel to present research results (in a poster or talk) at national meetings of professional societies, and extramural coursework. Awards are limited to students currently enrolled in the MS or PhD programs of the Biology Department. The maximum award is $400. A student may apply for several awards, but may receive no more than $800 in aggregate over his/her tenure in the Department. Applications are evaluated by a departmental committee each fall and spring. For applications or further information, please contact the graduate student affairs officer.

Vaughan H. Shoemaker Graduate Fellowship: The Shoemaker Fellowship is awarded to graduate students doing experimental work in any area of organismal biology, ecology,

evolution, or related supraorganismal fields. Normally the award is made each spring, in the amount of $1,000, to a qualifying graduate student. Highest priority is given to students in the PhD program who have been advanced to candidacy. Potential Fellowship recipients are nominated by their faculty mentors, following an annual call for nominations.

Important FAFSA Information: Fellowship/Grant awards are paid from a variety of funding sources, some of which require socioeconomic and parental educational history and financial data. Students who accept fellowship and/or grant awards are required to complete the *Free Application for Federal Student Aid (FAFSA).* FAFSA forms are available in the Biological Sciences Graduate Student Affairs Center and at the Graduate Division. Electronic filing is faster and available at: www.FAFSA.ed.gov If you expect to receive financial support from UCR, you must file FAFSA every year (after you've prepared your federal tax return). **International students are also required to complete FAFSA.**

Other Sources of Financial Support

Graduate Division Financial Support

Fellowships UCR offers a variety of multi-year fellowship packages for incoming students that may include stipends up to $16,000, full or partial payment of tuition and fees, and appointment as TA or GSR. An applicant is judged on the basis of the quality of previous academic work, on the evidence of ability to do research and other creative accomplishments, and on promise of becoming a productive scholar. A contribution to the campus goal of achieving a diverse student body may also be a consideration. Applications are made through your major department by submitting the application for admission and the required supporting documents (letters of recommendation, transcripts, test scores, etc.) Deadline for consideration of fellowship awards is January 5.

Dissertation Research Grants provide funds to doctoral candidates for research expenses associated with the dissertation. Applicants must be advanced to candidacy and plan to be registered during the period of the award. Proposals may be funded up to a maximum of $1,000. These funds may not be used for preparing the dissertation copy or as a stipend for personal support. Contact the Graduate Division for applications.

Graduate Student Association (GSA) Minigrants help to pay the travel expenses of students who have been invited to present scholarly papers or posters at regional and national professional conferences. The program is administered by the Graduate Student Association and requires that departments agree to provide matching funds. Contact the GSA, at x2-3740 or www.gsa.ucr.edu, or the graduate student affairs officer for minigrant applications.

Extramural support

In addition to the fellowships, assistantships, grants, and loans administered by the University, graduate students may also be eligible for other types of support provided by federal agencies and private foundations. Organizations that have awarded fellowships and research support to UCR students include the National Science Foundation, National Institutes of Health, U.S. Public Health Service, U.S. Department of Education, Fulbright

Program, Phi Beta Kappa Alumni Scholarships for International Scholars, and Sigma Xi. If students wish to explore these sources of support for study, they should consult the *Annual Register of Grant Support* and other similar directories either at the reference department of the library or through the Financial Support section in the Graduate Division. There are also many sites on the World Wide Web devoted to various sources of aid for graduate students.

TEACHING ASSISTANT DEVELOPMENT PROGRAM (TADP)

UCR has a long history as a distinguished teaching campus and regards Teaching Assistant (TA) training as a crucial part of graduate instruction. The Teaching Assistant Development Program (TADP) sponsors activities designed to help TAs develop their teaching skills and to prepare them to be successful professors. Each Teaching Assistant is required to attend an orientation program. TADP oversees the quarterly student evaluations of TAs and sponsors annual awards for outstanding TAs. In addition, TADP has a mentor TA program, in which TAs of proven ability have the opportunity to mentor their less experienced colleagues.

TAs are exclusively represented by the United Auto Workers. Please see the Union web-site for information. www.uaw.com

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CLASSROOM/LABORATORY SAFETY

You should familiarize yourself with the Biology IIPP (Injury, Illness and Prevention Program), the Department CHP (Chemical Hygiene Program), and the Emergency Procedures for Spieth Hall/Biology. Copies are available in the Business Office as well as in each major teaching and research laboratory. See Beverly McNeil if have any questions or need additional information.

1. Proper Attire in a Laboratory Environment - As a TA in a lab environment, you must set a good example for students. You are required to wear closed toe shoes, no sandals. Short shorts are not allowed. Wear eye protection when appropriate. Safety glasses should have side shields.

2. Laboratory Safety Training - As an employee of the University, you are required to attend Lab Safety Training provided by Environmental Health & Safety (EH&S). Please make arrangements through EH&S at x2-5528 to enroll in a session. You may also enroll on-line via the EH&S website: http://www.ehs.ucr.edu/ . Please attend this training as soon as possible.

3. Classroom/Laboratory Accidents - Report all lab accidents to the business office. Fill out a "Report of Injury" form and give the completed form to Lally in the business office.

For minor cuts and abrasions, treat with first aid and send student to the Student Health Center. For major accidents, call 9911 Emergency. From the phone in the Teaching Labs, dial x2-5222 (Campus Police). Hallway and elevator phones are connected directly to Campus Police and may be used for any emergency. Use the shower and/or eye wash if necessary. In case of a serious injury, you should prepare an outline of the circumstances that led to the injury as well as your responses to the accident. This should be done as soon as possible after the class meeting so that the memory of the chain of events is clear in your mind. This outline should include as much detail as possible.

4. Small Chemical Spills - A spill kit is provided in each training laboratory. If a spill kit is not found in the lab on the first day, see Jon Allen. As a Teaching Assistant, be knowledgeable about hazardous materials used in the lab. Read the appropriate "Material Safety Data Sheet," commonly referred to as MSDS. In the event of a chemical or radioactive spill or laboratory accident resulting in a potential hazard to personnel or the environment, call EH&S at x2-5528 immediately. After hours/weekends, call University Police at x2-5222. In either case, responsible officials will be dispatched to you as soon as possible.

5. Right to Know Law - The "Material Safety Data Sheet" is required from vendors whenever chemicals are ordered. If such materials required an MSDS, it is sent to the ordering person and must be kept in the lab. The law stipulates that MSDS must be available to users of hazardous chemicals. See your faculty member for the binder or Environmental Health & Safety (x2-5528) for the materials if you have any questions. **While working with hazardous materials (chemicals, micro-organisms or isotopes) in the teaching lab, your knowledge and familiarity with these materials is extremely important! In the event of an accident, your knowledge and understanding of the hazards associated with these materials will determine the appropriate response and, most importantly, may prevent injury to your students and yourself.**

6. Emergency Evacuation Procedures - Refer to the evacuation procedures in the "Emergency Procedures for Spieth Hall/Biology" located in each laboratory. Know the best evacuation route. Bring your list of students with you. Assist those who need help. Shut the door where room is located. Guide your students to the designated assembly area and check in with your Building Supervisor for Emergency Conditions (BSEC). Remain in assembly area and await further instructions.

7. Disposing of Hazardous Waste

   Glass: Each lab facility has a separate trash container labeled "GLASS ONLY." Place glass in these containers.

   Sharps: Other sharp objects (i.e., razor blades, etc.) are to be disposed of in designated containers only!

   Recyclable: Please deposit waste in proper containers. ("Recyclable" waste consists of paper, cardboard, etc. No food wrappers should be put into these containers.)

Non-recyclable: Please deposit waste accordingly into proper containers.

Organic Waste/Animals: Carcasses and/or other animal materials must be double-bagged in plastic and deposited in the freezer in the incinerator room (Spieth 328) located in the basement of Spieth Hall. Carcasses contaminated with infectious organisms must be sterilized before they are packaged and placed in the freezer. Check with your faculty advisor or Environmental Health & Safety about the method to be used to sterilize the carcasses. DO NOT USE YOUR OWN METHOD. Consult with your faculty advisor should you have any questions regarding the proper disposition of animal carcasses.

Chemical Waste: Note that laws exist that regulate disposal of hazardous material; disposal of "unknowns" is prohibited. To minimize unknowns, it is strongly recommended that you label and date the items and dispose of them before labels peel off or become illegible. Non-radioactive, hazardous waste must be placed in containers marked with the identity of the material. Also, the "Chemical Storage/Disposal Record" of Environmental Health & Safety must be completed, and is available in the Business Office. Use of radioactive materials requires users to obtain a permit through Environmental Health & Safety (see your faculty advisor). Environmental Health & Safety issues special containers to dispose of radioactive waste. Again, consult the Department Chemical Hygiene Plan and Radioactive Waste Manuals.

Microorganisms: When human pathogens are used, check with Esther Valdez in Lab Prep.

Syringes: Laws establish procedures for purchasing, storing, using, and disposing of syringes. Teaching Assistants and lab workers should be particularly careful about accountability and use of syringes in lab courses and projects under their supervision. Syringes and needles shall be stored under lock and key. After use, a hypodermic safety device should be used to destroy the needle and the plastic barrel. Broken syringes must be double-bagged and labeled "CAUTION." Place the labeled bag into the broken glass container, or other designated container, for disposal by the Custodian.

DEALING WITH CHEATING AS A TEACHING ASSISTANT

1. The final responsibility for monitoring of examinations rests with the instructor in charge of the course. A faculty member should be present or immediately available if TAs are proctoring exams. There should always be at least two proctors in the room. If additional proctors are needed, John Oross will attempt to arrange for faculty or TAs not assigned to the course to serve in this capacity.

2. Proctors should attempt to minimize the opportunity (temptation) for cheating:

   a. Clearly announce the expected disposition of books, papers, etc. (if they are allowed in the examination room). Make the consequences of violation of the announced procedure clear (see #3 below).

   b. Space students as far apart as possible.

   c. Use randomized seating arrangements, seating charts, or multiple versions of exams if appropriate.

   d. Ask students to move to a different seat if suspicious behavior is observed.

3. If suspicious behavior is observed, it should be confirmed by another instructor/TA, if possible. Suspicious materials present at an examination (i.e., notes, open books not used or disposed of according to announced policy; see #2a) should be taken by the instructor (or by the TA and turned over to the instructor). If suspected of cheating, a student should be informed by the instructor as soon as possible. It is up to the discretion of the instructor whether a student should be allowed to finish an examination if he/she is suspected of cheating. TAs SHOULD NOT MAKE SUCH A DECISION. These incidents should immediately be reported to the Department Chair and the Department Administrator.

The Biology Department is proud of its faculty, staff, and students. We hope this document is helpful and that you enjoy your graduate studies in the Biology Department.

Appendix A: Course requirements for the PhD Degree of Evolution, Ecology, and Organismal Biology

Summary of EEOB Evolutionary Biology PhD Track

Intro Course:	BIOL 400 Introduction to graduate studies at UCR
Disciplinary Core Course:	BIOL 216 The Theory of Evolution; or the equivalent
Disciplinary Courses:	At least two from the following courses: BIOL 211 Genes to Ecosystems BIOL 212 Ecological Systems in Space and Time BIOL 213 Behavioral Ecology BIOL 214 Population Genetics BIOL 217 Advanced Population and Community Ecology BIOL 219 Theory of Systematics BIOL 220 Evolutionary Physiology
Current Research Topics Courses:	In each quarter of residence (both classes): BIOL 252 General Colloquium in Biology or another disciplinary colloquium BIOL 265 Advances in Population and Evolutionary Biology / Lunch Bunch
Written Qualifying Exam Due Date:	Papers are due no later than the end of week 8 of the spring quarter of the second year in the Ph.D. program. Resubmissions will be required by the beginning of the winter quarter of the third year.
Written Qualifying Exam Format:	Maximum length of 4500 words excluding tables, figures, and citations; Times Roman 12 point font (or the equivalent in size and clarity), double-spaced, left-justified, with 1" margins all around; no more text than 15 pages double-spaced. Give citations in the text by name and date (not by number).
Written Qualifying Exam Evaluation:	Submitted papers will be circulated to the faculty of the Evolutionary Biology Track for evaluation.
Written Qualifying Exam Results:	1. The student passes the Written Qualifying Exam if the paper shows that the student is ready to proceed in developing the dissertation proposal. Alternatively, if there are serious flaws in the paper, the faculty may decide either to allow one resubmission, or not to allow resubmission. 2. Faculty will provide specific comments (constructive criticisms) for purposes of revising the pre-proposal to become the Research Proposal for the Oral Qualifying Exam
Oral Qualifying Exam:	Typically follows within a few months after successfully completing the written exam and should be completed no later than the end of the ninth quarter of residence (usually Spring quarter of the third year).

Summary of the EEOB Ecology PhD Track

Intro Course:	BIOL 400 Introduction to graduate studies at UCR
Disciplinary Core Course:	BIOL 211 Genes to Ecosystems
Disciplinary Courses:	At least two from the following courses: BIOL 212 Ecological Systems in Space and Time BIOL 213 Behavioral Ecology BIOL 217 Advanced Population and Community Ecology BPSC 246 Advanced Plant Ecology (focus on ecosystem ecology) BPSC 247 Ecological Theory and Modeling BPSC 243 Physiological Ecology ENSC 232 Biogeochemistry SWSC/MCBL 211 Microbial Ecology
Current Research Topics Courses:	In each quarter of residence (both classes): BIOL 252 General Colloquium in Biology or another disciplinary colloquium BIOL 265 Advances in Population and Evolutionary Biology / Lunch Bunch
Written Qualifying Exam Due Date:	Papers are due no later than the end of week 8 of the spring quarter of the second year in the Ph.D. program. Resubmissions will be required by the beginning of the winter quarter of the third year.
Written Qualifying Exam Format:	Maximum length of 4500 words excluding tables, figures, and citations; Times Roman 12 point font (or the equivalent in size and clarity), double-spaced, left-justified, with 1" margins all around; no more text than 15 pages double-spaced. Give citations in the text by name and date (not by number).
Written Qualifying Exam Evaluation:	Submitted papers will be circulated to the faculty of the Ecology Track, with individual faculty members leading discussion of each paper and summarizing the group evaluation in writing for the student.
Written Qualifying Exam Results:	1. The student passes the Written Qualifying Exam if the paper shows that the student "is ready to start research." Alternatively, if there are serious flaws in the paper, the faculty may decide either to allow one resubmission, or not to allow resubmission. 2. Faculty will provide specific comments (constructive criticisms) for purposes of revising the pre-proposal to become the Research Proposal for the Oral Qualifying Exam
Oral Qualifying Exam:	Typically follows within a few months after successfully completing the written exam and should be completed no later than the end of the ninth quarter of residence (usually Spring quarter of the third year).

Summary of the EEOB Physiology and Biophysics PhD Track

Intro Course:	Introduction to graduate studies at UCR (Biol. 400)
Disciplinary Core Course:	Research in Physiology--Biology 297 two units each in the first four quarters of residence for a total of 8 quarters. Example: Fall (year 1) Research proposal (oral) and Research Winter (year 1) Research Spring (year 1) Research Fall (year 2) Oral presentation of results and Written manuscript
Disciplinary Courses:	*Two 200 level physiology courses (see list below).* CMDB 200 Cell Biology or CBNS 200A Fundamentals of Neuroscience: Molecular and cellular mechanisms CMDB 201 Molecular Biology CBNS 200B Fundamentals of Neuroscience: Neural and hormonal systems CMDB 202 Developmental Biology CBNS 200C Fundamentals of Neuroscience: Neural control of behavior BIOL 203 Cellular Physiology and Biophysics BIOL 216 Theory of Evolution BIOL 220 Evolutionary Physiology ENTM 201 Structure and Function of Insects ENTM 243 Advanced Insect Physiology, Biochemistry, and Molecular Biology
Current Research Topics Courses:	BIOL 252 General Colloquium in Biology or another disciplinary colloquium BIOL 265 Advances in Population and Evolutionary Biology / Lunch Bunch
Written Qualifying Exam Due Date:	Papers are due no later than the end of week 8 of the spring quarter of the second year in the Ph.D. program. Resubmissions will be required by the beginning of the winter quarter of the third year.
Written Qualifying Exam Format:	Prepared as an expanded NSF Dissertation Improvement grant proposal; Times Roman 12 point font (or the equivalent in size and clarity), double-spaced, not right-justified, with 1" margins all around; no more than 30 pages double-spaced, including figures and tables, but not including literature cited
Written Qualifying Exam Evaluation:	The Physiology and Biophysics Faculty will evaluate the research plan using two criteria. First, is the proposed research significant, and does the plan clearly explain its relationship to other work in the field? Second, does the proposed work appear to be feasible in general terms, i.e., is there evidence that the questions posed can be addressed effectively?
Written Qualifying Exam Results:	1. The student passes the Written Qualifying Exam if the pre-proposal shows that the student "is ready to start research." Alternatively, if there are serious flaws in the pre-proposal, the faculty may decide either to allow one resubmission, or not to allow resubmission. 2. Faculty will provide specific comments (constructive criticisms) for purposes of revising the pre-proposal to become the Research Proposal for the Oral Qualifying Exam
Oral Qualifying Exam:	Typically follows within a few months after successfully completing the written exam and should be completed no later than the end of the ninth quarter of residence (usually Spring quarter of the third year).

Appendix B: Written qualifying examination procedures for the PhD Degree of Evolution, Ecology, and Organismal Biology

WRITTEN QUALIFYING EXAM PROCEDURE
EVOLUTIONARY BIOLOGY PhD TRACK

The purpose of the Written Qualifying Examination is to determine whether students have enough background knowledge and understanding of evolutionary biology to prepare a meaningful and feasible dissertation. To that end, students are required to prepare a Review Paper in the intended topic of the dissertation. This paper will contain the conceptual framework for the work, placing it in an appropriate and broad background in evolutionary biology as a whole. The intended audience is scientists in all fields of evolutionary biology, as will be the case for many grant proposals, so it is particularly important to make the significance of the issues addressed clear. The paper is not merely a summary of papers, but a focused synthesis and critical review of the accomplishments in the area that emphasizes the unanswered questions and thus defines the area of dissertation research.

The review paper has a maximum length of 4500 words, excluding tables, figures, and citations. It shall be prepared in Times Roman 12pt font (or the equivalent in size and clarity), double-spaced, left-justified, with 1" margins all around. Regardless, no more text than 15 pages double-spaced. Give citations in the text by name and date (not by number).

The writing of the paper should be in the hands of the student alone, **without benefit of editing by faculty or others**. However, it is understood that the development of students' ideas up to the point of writing the paper involves written and oral give-and take with faculty and other students, which is encouraged.

The Review Paper will be more than a summary of the literature in a given field, although it is expected that the major papers and books in an area will be used to write the paper. Emphasizing the historical development of the ideas, the paper should focus on the conceptual framework of the topic, and conclude with a discussion of the remaining issues in the field. The paper should explicitly answer the following questions:

1. What are the big questions in the area of interest?
2. How have they been approached previously?
3. What is needed now to advance our understanding in this area?

These questions may form sections of the paper, but this is not necessary. Note that this paper is **not** a research proposal. Nevertheless, you are encouraged to include up to one page describing your research and how it will contribute to the broader area in evolutionary biology that you have chosen to review. Examples of good review papers may be found in recent issues of *Annual Reviews* (various topic areas) or *Quarterly Review of Biology*.

Submitted papers will be circulated to the faculty of the Evolutionary Biology Track, who will evaluate them. If a paper shows that a student is ready to proceed in developing the dissertation proposal, then the student will be encouraged to prepare for the Oral Qualifying Examination. Alternatively, if there are serious flaws in the paper, the faculty may decide either to allow one resubmission, or not to allow resubmission.

Papers are due no later than the end of week 8 of the spring quarter of the second year in the Ph.D. program. Resubmissions will be required by the beginning of the winter quarter of the third year.

WRITTEN QUALIFYING EXAM PROCEDURE
ECOLOGY PhD TRACK

The purpose of the Written Qualifying Examination is to determine whether students have enough background knowledge and understanding of ecology to prepare a meaningful and feasible dissertation. To that end, students are required to prepare a Review Paper in the intended topic of the dissertation. This paper will contain the conceptual framework for the work, placing it in an appropriate and broad background in ecology as a whole. The intended audience is scientists in all fields of ecology, as will be the case for many grant proposals, so it is particularly important to make the significance of the questions being asked clear. The paper is not merely a summary of papers, but a focused synthesis and critical review of the accomplishments in the area that emphasizes the unanswered questions and thus defines the area of dissertation research.

The review paper has a maximum length of 4500 words excluding tables, figures, and citations. It shall be prepared in Times Roman 12pt font (or the equivalent in size and clarity), double-spaced, left-justified, with 1" margins all around. Regardless, no more text than 15 pages double-spaced. Give citations in the text by name and date (not by number).

The writing of the paper should be in the hands of the student alone, **without benefit of editing by faculty or others**.. However, it is understood that the development of students' ideas up to the point of writing the paper involves written and oral give-and-take with faculty and other students, which is encouraged.

The Review Paper will be more than a summary of the literature in a given field, although it is expected that the major papers and books in an area will be used to write the paper. Emphasizing the historical development of the ideas, the paper should focus on the conceptual framework of the topic, and conclude with a discussion of the research questions that will comprise the dissertation. The paper should explicitly answer the following questions:

1. What are the big questions in the area of interest?
2. How have they been approached previously?
3. What is needed now to advance our understanding in this area?
4. How will the proposed work address this need?

Note that the paper should not dwell on methodology; this is not a proposal to a granting agency already familiar with the issues. Similarly, there is no need to discuss the structure of the dissertation. If the student has done preliminary research, this is all to the good, but the focus of the paper is not on the details of how the research will be performed but on why the questions to be asked are important and interesting, and their intellectual and conceptual context.

Submitted papers will be circulated to the faculty of the Ecology Track, with individual faculty members leading discussion of each paper and summarizing the group evaluation

in writing for the students. If a paper shows that a student is ready to proceed in developing a more specific research plan, then the student will be encouraged to prepare for the Oral examination. Alternatively, if there are serious flaws in the paper, the faculty may decide either to allow one resubmission, or not to allow resubmission.

Papers are due no later than the end of week 8 of the spring quarter of the second year in the Ph.D. program. Resubmissions will be required by the beginning of the winter quarter of the third year.

The written exam will be followed by an oral exam.

WRITTEN QUALIFYING EXAM PROCEDURE
PHYSIOLOGY AND BIOPHYSICS PhD TRACK

The oral qualifying exam will be preceded by a written proposal, ordinarily to be written in the form of an expanded NSF Dissertation Improvement grant proposal and given to the students committee prior to the first day of the spring quarter of the 2nd year (not to be longer than 30 double spaced pages; not including figures and tables). There is also every expectation that students will submit this to NIH or NSF. The students qualifying committee as well as any other interested physiology faculty will read these proposals. Faculty in the physiology and biophysics track (other than those on the committee) are not required to read all proposals but all proposals will be available to all faculty. In any case, at least three faculty members in addition to the student's advisor should read the proposal.

Pre-proposals shall be prepared in Times Roman 12 point font (or the equivalent in size and clarity), double-spaced, not right-justified, with 1" margins all around. The length of the pre-proposal should be no more than 30 pages double-spaced, including figures and tables, but not including literature cited.

Pre-proposals and research proposals should contain the following elements:

a. Discussion of the conceptual framework of the proposed research, emphasizing the historical development of the ideas. This framework should communicate to a general biological audience why the question(s) to be asked in the research are interesting and important, and how it (they) will contribute to progress in broader field(s).
b. Following from the above, presentation of a plan for the PhD research project, including questions to be addressed in the research, alternative hypotheses derived from these questions, and how these hypotheses could be tested and what different possible outcomes would mean.

Faculty will evaluate the research plan using two criteria. First, is the proposed research significant, and does the plan clearly explain its relationship to other work in the field? Second, does the proposed work appear to be feasible in general terms, i.e., is there evidence that the questions posed can be addressed effectively?

All members of the Physiology and Biophysics Track will evaluate proposals. Faculty will provide comments that consist of two parts. First, they will indicate whether the pre-proposal shows that the student "is ready to start research." If so, then the student passes the Written Exam. Alternatively, if there are serious flaws in the pre-proposal, the faculty may decide either to allow one resubmission, or not to allow resubmission. Second, faculty will provide specific comments (constructive criticisms) for purposes of revising the pre-proposal to become the Research Proposal for the Oral Qualifying Exam.

The written exam will be followed by an oral exam.

Outline of Target Dates for PhD degree

Name _____

Chair of Guidance Committee _____

Entered degree program _____

	Target Date	Date Completed:
Year 1		
Meet with guidance committee	first quarter	_____
Meet with guidance committee	third quarter	_____
Annual review of progress by GAC	third quarter	_____
Year 2		
Annual review of progress by GAC	Spring quarter	_____
Written qualifying examination	Spring quarter	_____
Meet with guidance committee	Spring quarter	_____
Name dissertation committee	Spring quarter	_____
Year 3		
Meet with dissertation committee	Fall quarter	_____
Oral qualifying examination	Fall quarter	_____
Annual review of progress by GAC	Spring quarter	_____
Year 4		
Meet with dissertation committee	Fall quarter	_____
Annual review of progress by GAC	Spring quarter	_____
Year 5		
Meet with dissertation committee	Fall quarter	_____
Annual review of progress by GAC	Spring quarter	_____
Year 6		
Meet with dissertation committee	Fall quarter	_____
Dissertation to committee	Winter quarter	_____
Annual review of progress by GAC	Spring quarter	_____
Defend dissertation	Spring quarter	_____

Advancing to Candidacy
PhD students

- Nominate Qualifying Committee. Notify the graduate student affairs officer of the date and time of the exam and who the members of the committee will be. This should be done at least four weeks prior to the Qualifying Examination, and must be done two weeks prior. The form nominating the qualifying committee must be approved by the Graduate Division, which will then generate advancement paperwork for the Graduate Advisor for Continuing Students to fill out prior to the Oral Qualifying Examination.

- The Graduate Advisor for Continuing Students completes the Report of Departmental Requirements for the PhD degree, which certifies that the students has fulfilled all course requirements and notes any remaining requirements.

- The graduate student affairs officer will prepare the Report of the Qualifying Examination form and give the form and the student's academic file to the Chair of the student's qualifying committee the day before the exam.

- Upon completion of the exam, the committee Chair obtains the committee members' signatures on the Report and returns it and the student's file to the graduate student affairs officer, who then forwards it to the Graduate Division. This must be done within 48 hours after the exam is completed. Advancement paperwork is then processed. Once completed, the student is charged a $90.00 fee which will later be used to microfilm the student's dissertation.

- The Dissertation Committee Chair (and the rest of the committee, if possible) should be named at the time of the Oral Qualifying Examination.

Outline of Target Dates for MS degree

Name _____

Chair of guidance committee _____

Entered degree program _____

	Target Date	Date Completed:
Year 1		
Meet with guidance committee	first quarter	_____
Select a faculty research supervisor	second quarter	_____
Plan research project	second quarter	_____
Initiate research	third quarter	_____
Meet with guidance committee	third quarter	_____
Annual review of progress by GAC	third quarter	_____
Year 2		
Name thesis committee	fourth quarter	_____
Thesis to committee	fifth quarter	_____
Annual review of progress by GAC	sixth quarter	_____
File advancement to candidacy paperwork	sixth quarter	_____
Defend thesis	sixth quarter	_____

Final Steps to MS degree

In your final quarter as a student in the MS program:

- File an Application for Candidacy for Master of Science form with the Graduate Division
- Have your thesis committee review a draft of your thesis
- Defend your thesis

Appendix C: Faculty Membership in EEOB

The graduate program in Evolution, Ecology, and Organismal Biology is administered by the Department of Biology. Membership includes faculty members in the Department of Biology and Cooperating Faculty Members (CFMs) who apply for membership in the Department of Biology (renewal every 2 years) following the guidelines approved by Executive Vice Chancellor David Warren on June 2, 1995. The program currently has 41 faculty members.

Biology Faculty in EEOB	Cooperating Faculty in EEOB
1. Michael F. Allen	24. Khaleel Abdulrazak (Psychology)
2. Douglas Altshuler	25. Edith B. Allen (Botany and Plant Sciences)
3. Kurt Anderson	26. James G. Baldwin (Nematology)
4. Richard A. Cardullo	27. Ring T. Carde (Entomology)
5. Mark A. Chappell	28. Paul DeLey (Nematology)
6. Daphne Fairbairn	29. Mary L. Droser (Earth Sciences)
7. Theodore Garland, Jr.	30. Norman Ellstrand (Botany and Plant Sciences)
8. John Gatesy	31. J. Daniel Hare (Entomology)
9. Kimberly A. Hammond	32. John M. Heraty (Entomology)
10. Cheryl Y. Hayashi	33. Nigel C. Hughes (Earth Sciences)
11. Bradley C. Hyman	34. Darrel Jenerette (Botany and Plant Sciences)
12. Morris Maduro	35. Seung-Chul Kim (Botany and Plant Sciences)
13. Dmitri Maslov	36. Sang-Hee Lee (Anthropology)
14. Leonard P. Nunney	37. Timothy D. Paine (Entomology)
15. Edward G. Platzer	38. Richard A. Redak (Entomology)
16. Helen Regan	39. Louis S. Santiago (Botany and Plant Sciences)
17. David N. Reznick	40. Richard Stouthamer (Entomology)
18. Derek A. Roff	41. William E. Walton (Entomology)
19. John T. Rotenberry	
20. Joel Sachs	
21. Wendy Saltzman	
22. Mark S. Springer	
23. Marlene Zuk	

UC RIVERSIDE UNIVERSITY OF CALIFORNIA

Faculty Research Interests for the Graduate Program in Evolution, Ecology and Organismal Biology

Khaleel Abdulrazak
The development of sensory processing; the development of both sound localization and echolocation behaviors in the pallid bat

Edith Allen
Effects of invasive species on native vegetation, weed competition and succession, restoration ecology and mycorrhizal fungi, effects of urbanization and agriculture on native ecosystems

Michael F. Allen
Ecosystem and community dynamics in restored and conserved wildlands under changing environmental conditions; soil biology

Douglas Altshuler
Evolutionary and physiological ecology, with emphasis on the aerodynamics, neural control, and behavior of flight

Kurt Anderson
Responses of stream populations to multi-scale spatial environmental variation, spatially-explicit consumer-resource interactions in streams and agricultural plant-herbivore systems, linking individual behavior to population-level dispersal patterns in fish and birds, and meta-analyses of the strengths of trophic cascades across environments

James Baldwin
Nematode evolution; character homology; evolution of morphological traits

Ring Carde
Principal model systems are male moth orientation to pheromone and female mosquito orientation to odors from prospective hosts and oviposition sites

Richard Cardullo
Receptor and membrane biophysics; signaling events in mammalian gametes during fertilization

Mark A. Chappell
Physiological ecology & behavior, energetics, thermoregulation, reproductive effort

Paul DeLey
Ecology, phylogeny and taxonomy of nematodes, with particular emphasis on the behavioral, molecular and morphological differences between closely related species

Mary Droser
Evolutionary paleoecology, Paleoecology of the Precambrian-Cambrian and Ordovician radiations, Phanerozoic trends in ecospace utilization, Cambrian and Ordovician of the Great Basin

Norman Ellstrand
Applied plant population genetics with emphasis on gene flow and its role in evolution of invasiveness, extinction by hybridization, and adventitious presence of transgenes

Daphne Fairbairn
Evolutionary ecology of sexual selection and sexual dimorphism

Theodore Garland, Jr.
Evolutionary biology and physiology, with emphasis on the evolution of complex phenotypes

John Gatesy
Biodiversity; evolutionary processes that produce biodiversity

Kimberly Hammond
Animal physiological ecology and evolutionary physiology

Daniel Hare
Evolutionary biology, the process of adaptation; the interactions between plants, their insect herbivores, and their natural enemies

Cheryl Hayashi
Evolutionary genetics and function of spider silk proteins

John Heraty
Systematics, phylogeny and biogeography of Chalcidoidea (Hymenoptera)

Nigel Hughes
Trilobite paleobiology; Lower Paleozoic paleogeography and tectonics

Bradley C. Hyman
Diversity of structure, genetic organization and mode of replication in mitochondrial DNAs; evolution and population genetics of the nematode mitochondrial genome

Darrel Jenerette
Ecological scaling, coupled biogeochemical cycles, terrestrial aquatic linkages, ecosystem responses to altered precipation regimes, societal-biophysical interactions

Seung-Chul Kim
Evolution of endemic plants on oceanic islands

Sang-Hee Lee
Evolution of human morphological variation based on the fossil record and seeks to identify the causal mechanisms for the patterns observed in the human (and ancestral human) fossil record

Morris Maduro
Developmental mechanisms of cell fate specification in the nematode *C. elegans*

Dmitri A. Maslov
Molecular biology and parasitology; mitochondrial gene expression in kinetoplastid protozoa; evolution of RNA editing

Leonard P. Nunney
Population & conservation genetics; levels of selection; Drosophila ecology

Timothy Paine
Biology and ecology of the herbivorous insects through studies of their interactions with host plants, competitors, and natural enemies, and determine the influence of environmental stress on those interactions

Edward G. Platzer
Physiological, cellular, and molecular mechanisms in parasite-host interactions involving nematodes

Richard Redak
Interactions between insect herbivores and their host plants

Helen Regan
Areas of interest include treatments of uncertainty in conservation, ecology and risk assessment, population viability analysis of endangered and threatened species, and formal decision making for conservation management.

David N. Reznick
Evolution & population biology; life-history evolution in guppies

Derek Roff
Theoretical and empirical studies of population and quantitative genetics, life-history, and the importance of trade-offs in shaping life history evolution

John Rotenberry
Avian population & community ecology; conservation biology

Joel Sachs
The evolution of cooperation and conflict with an emphasis on rhizobial bacteria.;conceptual frameworks for understanding the evolutionary origins, maintenance and breakdown of cooperative systems.

Wendy Saltzman
Behavioral endocrinology, especially the bidirectional interactions between hormones and social behavior in mammals

Louis Santiago
Environmental Physiology, Ecosystem Science, Evolutionary Physiology, Stable Isotopes, and Tropical Biology

Mark S. Springer
Evolution of transposable elements in echinoids; mammalian molecular systematics; molecular clocks

Richard Stouthamer
Symbionts and sex ratio distortion in insects; the use of molecular techniques to study population genetics, identification of cryptic species, biotypes and their origin

William Walton
Ecology in natural and man-made wetlands with an emphasis on mosquitoes and bacteria used as an environmentally friendly method for controlling mosquitoes

Marlene Zuk
Animal behavior; sexual selection; role of parasites in behavior & evolution