**GRADUATE STUDENT SURVIVAL GUIDE**

**Department of Biological Sciences**

**Towson University**

*Academic Year 2020 - 2021*

**GRADUATE STUDENT SURVIVAL GUIDE**

**Department of Biological Sciences, Academic Year 2020 – 2021**

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**GENERAL INFORMATION**

**The University**

Towson University (often referred to as TU by its students and faculty) is a 329-acre suburban campus, located eight miles north of Baltimore City and a short one-hour drive from Washington D.C. With a rich 150-year history, TU has become the educational and cultural hub of Baltimore County and is one of the nation’s premiere regional public universities inside the University System of Maryland.

**The Department of Biological Science (often: Department of Biology)**

**M.S. Biology Program**

Greater Baltimore is a center for high technology and biomedical research where candidates with master’s-level training are in demand. The M.S. program in biology prepares you with:

* Comprehensive foundational knowledge in your area of specialty
* Advanced competence in research design and methods
* Communication skills beneficial for professional scientists

Our graduates work in research facilities, private and government laboratories, environmental consulting firms, and public and private secondary schools.

**Design your Degree**-You can select between two specialized options:

* Molecular and Cell Biology Track
* Organismal Biology and Ecology Track

There are also thesis and non-thesis options. The course of study is designed to give you advanced knowledge and understanding of biology and help you develop a proficiency in independent thought, inquiry and research.

**General Information Mailing Address**Department of Biological Sciences Department of Biological Sciences\*  
Smith Hall, Room 341 Towson University  
Email: [biolsci@towson.edu](file:///C:\Users\Jason\AppData\Local\Temp\biolsci@towson.edu) 8000 York RoadPhone: 410-704-3042 Towson, MD 21252-0001  
Fax: 410-704-2405 **\*Must be labeled Dept. of Biology**

**Dr. Laura Gough, Chairperson**   
Department of Biological Sciences   
Smith Hall, Room 341   
Phone: 410-704-5033  
E-mail: [lgough@towson.edu](mailto:lgough@towson.edu)

**Dr. Colleen Winters, Assistant Chairperson**  
Department of Biological Sciences  
Smith Hall, Room 215A  
Phone: 410-704-3124  
E-mail:cwinters@towson.edu

* Scheduling coordination
* Student Grievances
* Plagiarism
* Assessment

**Sarah Grue**

* Assist Pre-Professional Program
* Assist MB3 Director
* Ordering Office supplies
* Mail Distribution
* Advising assistance
* keys

Administrative Assistant I

Smith Hall, Room 341

Phone: 410-704-3043

E-Mail: [sgrue@towson.edu](mailto:sgrue@towson.edu)

**Jennifer Scott**Operations Manager  
Smith Hall, Room 269A  
Phone: 410-704-2607  
E-Mail: [jlscott@towson.edu](mailto:jlscott@towson.edu)

* Building access
* Building maintenance issues
* Purchasing
* Travel
* Budget/finances

***Biology Conference Room*** (Hilton Conference Room), Smith Hall, 340  
***Biology Faculty Workroom***-in Biology Office, Smith Hall, 341  
***Biology Lunchroom***-in Biology Office, Smith Hall, 341

***Fisher College of Science and Math Dean’s Office***-Smith Hall, 306  
***Biology Conference Room, reserved for BIOL Grad Students M-F 11:00-1:30*** -Smith Hall, 318

**Biology Grad Students Lunchroom: SM 359 (capacity of 22**)

**Academic Integrity Policy**- The acquisition, sharing, communication, and evaluation of knowledge are at the core of a university’s mission. To realize this part of its mission, a university must be a community of trust. Because integrity is essential to the purpose of an academic community, the responsibility for maintaining standards of integrity is shared by all members of that academic community. As instructors, faculty members are ultimately responsible for maintaining the academic standards of integrity on which trust is founded because they set academic standards, award academic credit, and confer degrees when standards are met. To carry out these responsibilities, faculty members will reasonably assess that student work submitted for academic credit is authentic as well as consistent with established academic standards. Therefore, academic evaluation includes a judgment that the student’s work is free from academic dishonesty of any type. Through example in their own academic pursuits and through the learning environment that they create for their students, faculty members preserve and transmit the values of the academic community. They are expected to instill in their students respect for integrity and a desire to behave honestly. They must also take measures to discourage student academic dishonesty. The following policies, procedures, and definitions are intended to help faculty meet these responsibilities. As responsible members of the academic community, students are obligated not to violate the basic standards of integrity. They are also expected to take an active role in encouraging other members to respect those standards. Should a student have reason to believe that a violation of academic integrity has occurred, he/she is encouraged to make the suspicion known to a member of the faculty or university administration. Students should familiarize themselves with the university’s policies, procedures, and definitions of types of violations. Commitment to maintaining and encouraging high standards of academic integrity is demonstrated in many ways. One way is through the establishment of policies and procedures governing violation of the standards. The provisions of Towson University’s Student Academic Integrity Policy follow. For more information on this policy, the link to the academic integrity policy can be found [here](https://www.towson.edu/provost/academicresources/documents/03_01_00_student_academic_integrity_policy.pdf).

**Building Issues**-All building issues (cleaning, maintenance, and repairs) go to Jen Scott, who is the building supervisor for our department. Call one of the Administrative Assistants or email Jen directly.

**Chairperson**-Please give anything that needs a Chair’s signature to a biology administrative assistant, who will then get it back to you, or forward to the next person or department. For appointments with the Chair, see Sarah or Michelle who will schedule an appointment for you.

**Chemical Inventory-**Information regarding chemical safety and the chemical inventory program used by Towson (Vertere Chemical Information List Database) can be found at: <https://www.towson.edu/ehs/programs/chemical/index.html>

**Classroom Technology**-Dr. Erik Scully, Dr. Rich Seigel, and Dr. Barry Margulies are our department I.T. emergency contacts. When an emergency arises, have a student (or yourself) let the Administrative Assistants know of the problem, and they will call one of the above for help. If they are unavailable, you will have to contact OTS from the classroom at 410-704-8324 and a technician will walk you through your issue.

**Copier**-The Biology Office has a copier that requires a passcode. The copier is located in the Biology Lunchroom. See Administrative Assistants for your copy code. Please make only 30 or fewer copies on this machine. Larger quantities for teaching-related activities should be copied through a request to Copies-Plus (located in Cook Library).

**The Biology M.S. Program**

**Dr. Peko Tsuji, Graduate Program Director (Biology)**

Department of Biological Sciences

Smith Hall, Room 349

Phone: 410-704-4117

Email: [ptsuji@towson.edu](mailto:ptsuji@towson.edu)

**Non-thesis Program**-Mirroring a traditional master’s program, the non-thesis program requires students to earn 30 credits in graduate level coursework, with up to three 500-level undergraduate courses. Students also have the option for non-thesis research and/or study with a faculty member.

**Thesis Program**-This program is a more intensive M.S. degree, where students obtain a traditional master’s degree experience coupled with a thesis research regimen. Students are required to earn 24 credits of coursework and 6 credits of thesis research, in which students will propose and defend a thesis.

**BIOLOGY GRADUATE STUDENT ASSOCIATION (GSA)**

One of the main goals of the biology GSA is to act as a support group for thesis and non-thesis students. We are all walking down a similar path and we can grow and learn from each other. We welcome everyone to join our organization and provide input on how we as a group can make our graduate experience a good one. Feel free to contact the members of the GSA with questions. The GSA meets once a month. Flyers with more information will be posted in Smith Hall before each meeting.

**Yuyi Zhu- President**

PI –Dr. John (Jed) Weldon

Office Area – SM267

Contact – yzhu7@students.towson.edu

**Dara A. Freemon - Vice President**

PI- Dr. Chris Oufiero

Office area – SM253, Lab Room – SM369

Contact – dfreem7@students.towson.edu

**Gregory Lesko - Secretary**

PI- Dr. Barry Margulies

Office area- SM485B

Contact – glesko1@students.towson.edu

**Amerria Causey– Treasurer**

PI – Dr. Ehrlich

Office area– SM249, Lab Room – SM211A

Contact – acause1@students.towson.edu

**Michelle Darkwa -Event Manager**

PI- Dr. Peko Tsuji

Office area- SM341, Lab Room- SM367

mdarkw1@students.towson.edu

**Aliyah Hassan- Non-Thesis Student Representative**

ahasan3@students.towson.edu

**CLASS DYNAMICS**

For a more accurate account of all classes available, as well as detailed descriptions, please visit the [course descriptions](https://www.towson.edu/fcsm/departments/biology/gradbiology/coursedescriptions.html) online.

**Mandatory Classes**

Towson University has a wide-range of courses available for the Biology M.S. program catering to the unique and diverse interests of its students. However, while many courses are variable, there are certain courses that thesis-track students are required to take:

**BIOL 796 – Professional Aspects of Biology (2 units)**

Information, techniques, and skills useful in completing a MS degree, gaining employment and functioning as a professional biologist, or gaining access to Ph.D. programs. Topics include literature retrieval, the publication process, obtaining funds for research, presentations at national meetings, job hunting, and professional ethics. While mandatory for thesis students, all non-thesis students interested in academic research are encouraged to enroll in this course.

**BIOL 797 – Graduate Seminar (1 unit)**

Students read, discuss, and present primarily literature on a specific area in biology. The seminar topic will vary each semester and can be organismal or molecular in nature. Check with the instructor. While several graduate seminars can be taken, a maximum of 1 credit is allowable towards an M.S. degree in Biology.

**BIOL 896 – Biology Thesis (1 – 6 units)**

Thesis students will usually take 3 units of biology thesis in their fall and spring semesters of their second year. This includes performing research and writing and defending a thesis approved by your thesis committee. Your faculty advisor must open a section for you by contacting the biology office.

**BIOL 899 – Thesis Continuum (1 unit)**

Thesis continuum is only required if a student requires an additional semester to complete their thesis project and has already exhausted both 3 credit biology thesis courses. Your faculty advisor must open a section for you by contacting the biology office.

**Classes Offered – 2017-2018 and 2018-2019**

This class offering is only a suggestion of classes typically offered during these periods and are subjected to change as classes are both moved to new semesters and new classes are offered. **NOTE: Students are only allowed three 500 level courses throughout their graduate career to count towards their M.S. degree.**

**Fall 2017**

**General Ecology** BIOL 502 4 units

**Cell Biology** BIOL 508 4 units

**Immunology** BIOL 521 4 units

**Plant Ecology** BIOL 535 4 units

**Wetland Ecology** BIOL 552 4 units

**Invertebrate Zoology** BIOL 553 4 units

**Advanced Physiology** BIOL 570 4 units

**Current Topics in Biology\*** BIOL 601 3 units

\*this is a place holder for new classes that are not in catalog yet. Keep an eye out for these!

**Data Analysis and Interpretation** BIOL 603 3 units

**for Biologists**

**Molecular Medicine** BIOL 617 3 units

**Professional Aspects of Biology** BIOL 796 2 units

**Graduate Seminar (Ecology)** BIOL 797 1 unit

**Ecosystem Ecology** ENVS 604 4 units

**Minimester 2018**

**Dissection of the Upper Extremity** BIOL 525 2 units

**Spring 2018**

**Cell Biology** BIOL 508 4 units

**Conservation Biology** BIOL 510 4 units

**General Microbiology** BIOL 518 4 units

**Neuromusc. Mech. Of the Upper Body** BIOL 527 2 units

**Virology** BIOL 528 4 units

**Tropical Ecology and Conservation** BIOL 536 4 units

**Fish Biology** BIOL 555 4 units

**Endocrinology** BIOL 568 4 units

**Seminar Ecol, Evolution, Behav, Consv** BIOL 584 4 units

**Evolutionary/Ecological Physiology** BIOL 607 3 units

**Community Analysis & Bioassessment** BIOL 609 3 units

**Population and Community Biology** BIOL 610 3 units

**Applied Biotechnology** BIOL 614 3 units

**Modern Microscopy &** BIOL 650 3 units

**Microtechniques**

**Graduate Seminar (Cell/Molecular)** BIOL 797 1 unit

**Fall 2018**

**General Ecology** BIOL 502 4 units

**Cell Biology** BIOL 508 4 units

**Microbiology** BIOL 518 4 units

**Immunology** BIOL 521 4 units

**Vascular Plant Taxonomy** BIOL 532 4 units

**Entomology** BIOL 561 4 units

**Advanced Physiology** BIOL 570 4 units

**Parasitology** BIOL 601 3 units

**Animal Social Evolution** BIOL 601 3 units

**Current Topics in Ecology** BIOL 601 3 units

**Data Analysis and Interpretation for** BIOL 603 3 units

**Biologists**

**Biology of Cancer** BIOL 655 3 units

**Professional Aspects of Biology** BIOL 796 2 units

**Graduate Seminar (Organismal)** BIOL 797 1 unit

**Ecosystem Ecology** ENVS 604 4 units

**Minimester 2019**

**Dissection of the Upper Extremity** BIOL 525 2 units

**Spring 2019**

**General Ecology** BIOL 502 4 units

**Cell Biology** BIOL 508 4 units

**Conservation Biology** BIOL 510 4 units

**General Microbiology** BIOL 518 4 units

**Neuromusc. Mech. Of the Upper Body** BIOL 527 2 units

**Virology** BIOL 528 4 units

**Mammalogy** BIOL 558 4 units

**Developmental Biology** BIOL 563 3 units

**Herpetology** BIOL 567 4 units

**Seminar Ecol, Evolution, Behav, Consv** BIOL 584 4 units

**Global Change Biology** BIOL 601 3 units

**Biochemical Adaptions** BIOL 606 3 units

**Cell Signaling or CMB topic** BIOL 621 3 units

**Gene Expression & Regulation** BIOL 622 3 units

**Graduate Seminar (Cell/Molecular)** BIOL 797 1 unit

**Summer 2019**

**Tropical Field Ecology in Peru** BIOL 547 4 units

**Fall 2019**

**General Ecology** BIOL 502 4 units

**Cell Biology** BIOL 508 4 units

**Evolution** BIOL 513 4 units

**General Microbiology** BIOL 518 4 units

**Immunology** BIOL 521 4 units

**Plant Ecology** BIOL 535 4 units

**Wetland Ecology** BIOL 552 4 units

**Invertebrate Zoology** BIOL 553 4 units

**Histology** BIOL 560 4 units

**Advanced Physiology** BIOL 570 4 units

**Parasitology** BIOL 601 3 units

**Data Analysis & Interpretation for** BIOL 603 3 units

**Biologists**

**Mechanisms in Animal Physiology** BIOL 604 3 units

**Molecular Medicine** BIOL 618 3 units

**Modern Microscopy &** BIOL 650 3 units

**Microtechniques**

**Graduate Seminar (Organismal)**  BIOL 797 1 unit

**Ecosystem Ecology** ENVS 604 4 units

**Spring 2021**

**Limnology** BIOL 506 4 units

**Cell Biology** BIOL 508 4 units

**General Microbiology** BIOL 518 4 units

**Virology** BIOL 528 4 units

**Wildlife Biology** BIOL 555 4 units

**Mammalogy** BIOL 558 4 units

**Developmental Biology** BIOL 563 3 units

**Neuropharmacology** BIOL 601 3 units

**Biochemical Adaptions** BIOL 606 3 units

**Global Change Biology** BIOL 611 3 units

**Applied Biotechnology** BIOL 614 3 units

**Cell Signaling or CMB topic** BIOL 621 3 units

**Gene Expression & Regulation** BIOL 622 3 units

**Graduate Seminar (Molecular/Phys)** BIOL 797 1 unit

Courses taught each semester (only with permission from graduate faculty instructor)

* BIOL 701: Non-Thesis Laboratory Research (3 credits)
* BIOL 703: Non-Thesis Library Research (3 credits)
* BIOL 896: Thesis (must have successfully completed thesis proposal defense) (1-6 credits)
* BIOL 899: Thesis Continuum (must have successfully completed thesis credits BIOL 896)

**Completing Coursework Outside of the Biology Department**

If there is graduate coursework outside of the department you believe could aid in your future career goals, you are encouraged to take these classes. To accomplish this, identify the course you would like to take, and contact the biology graduates program director for approval before enrolling into those classes. Prior approval is needed for it to be counted towards the total number of graduate credits. See required form in appendix.

**Transferring Credits from Other Universities**

Towson University allows graduate students to seek out classes and subjects outside of TU’s purview. Towson University will provide financial compensation of up to one class per semester at an institution inside the University System of Maryland. Approval from the biology graduate program director is required before a class can be registered. See required form online.

**How to apply for thesis credits**

Thesis-track graduate students take thesis credits in their second year of the graduate program. To apply for thesis credits, contact your advisor, and Michelle Riley will open a section under your advisor’s name for you to enroll. Since thesis credits are variable, ensure that you select the correct number of credits, with consultation of your advisor, when enrolling on PeopleSoft.

**Placeholder Credits (thesis students only)**

While attending Towson University’s Biology M.S. program, placeholder credits may be used by thesis students to ensure you are listed as a full-time graduate student (9 credits) as opposed to only part-time (6 credits). Placeholder credits should only be used in the event of a financial aid adjustment caused by being only a part-time graduate student. To apply for placeholder credits, you must contact the biology graduate program director.

**BIOL 701 - Non-thesis Research**

If you are interested in non-thesis research, browse the **Resources Available** section and choose a faculty member that aligns with your research interests. You must contact the faculty member and have a meeting about availability and potential research areas. This study requires a contract and syllabus with instructor and student and can be from 1 – 3 units. To apply for independent study credits, you must establish a syllabus together with your instructor. This syllabus with learning outcomes, grading policies, expectations, etc. must be approved by the graduate program director before your PI can contact a biology administrative assistant about opening a section for you, in which you would then enroll manually. Non-thesis students may take a maximum of six units.

**BIOL 703 - Independent Study**

Thesis students and non-thesis students have the opportunity to take an Independent Study throughout their time at Towson University. This study requires a contract with instructor and student, can be from 1 – 3 units, and must be approved by your advisor and the graduate program director. The independent study should consist of a research/writing project **outside** of your thesis project, and can be with your own advisor, or with another faculty member in the college. To apply for independent study credits, you must establish a syllabus together with your instructor. This syllabus with learning outcomes, grading policies, expectations, etc. must be approved by the Graduate program director before your PI can contact a biology administrative assistant about opening a section for you, in which you would then enroll manually. Students may take a maximum of three units.

**THESIS PROJECT**

**Thesis Proposal**

**When to start**- Start formulating your thesis project upon your arrival at Towson University. Your advisor should have ideas on potential projects that you could do or include in your thesis project. Once you have a good idea of what your thesis project will consist of, form your thesis committee. Coming up with your thesis project and forming your thesis committee should be done during your first semester, as the proposal must be defended by the end of your first year. Ideally, formulate a specific aims page with brief background, hypothesis, and your aims. What is required for a successful thesis defense is on the Department of Biological Sciences Graduate Thesis Student Checklist.

**Choosing your committee members**- Speak with your advisor about potential committee members before finalizing your decision. Your thesis committee at a minimum must consist of your advisor and two additional members of the department. You have the option of choosing a fourth additional member from outside the department. Your thesis committee members should work in fields that compliment your thesis project. It is a good idea to include members on your thesis committee that have access to resources that will aid in completing your thesis project. Once you and your advisor have agreed on whom will be included on your thesis committee, approach those persons and ask if they want/can be a member on your thesis committee. There is no guarantee that the persons you want to be on your committee will be willing or able to do so. Be prepared to describe your thesis project and explain why being a member on your committee will benefit the project. Once you have verbal or written agreements by the persons you wish to have on your committee, fill out the “Thesis Committee Approval Form” and have your committee members and the Graduate Program Director, and the Department Chair (Laura Gough) sign it. Keep a scanned or photocopied copy for yourself! Turn this form in to the College of Graduate Education and Research located in the Psychology building. If for any reason you wish to change members of your thesis committee, you can by filling out a new form with the current members of your thesis committee and resubmitting it to the same location. **Note: Make sure to check if any of your committee members will be going on sabbatical during your time at Towson, as they would not be an ideal choice.**

**Important deadlines**

* **Proposal deadline**-The proposal should be defended in February/March with a hard deadline of March 31st. You should send your proposal to your thesis committee for review **at least 2 weeks** before your proposal defense date. Keep in mind, that your advisor likely wants the first draft about 1 month prior to the proposal defense date, so that a final draft can be sent to the whole committee on time.
* **Room for proposal**-You will need to reserve a room for your thesis proposal defense. Select a room that has a projector and screen for your power point presentation. To reserve a room, go to the biology department office and speak to the person at the front desk, keeping in mind that the proposal defense will only be attended by your thesis committee members and a Graduate Committee member (typically the graduate program director). Reserve your room a few weeks in advance, because there is a high demand for appropriate rooms around the thesis proposal defense deadline. Possible rooms for defense include: SM301, SM305, SM340, and SM359. Rooms SM340 and SM359 are best for your thesis defense because they can accommodate more people. Reserve the room for a 2-hour period. Rooms in other departments in Smith Hall can also be reserved, if necessary, by contacting the administrative assistants of those departments.
* **Plan of study**- Complete a plan of study and present it to your thesis committee during your proposal defense. Review the class projections and make a list of the classes you would like to take and what semester you plan on taking them. An example of a plan of study form can be found on page 38 Talk with your advisor and your thesis committee before finalizing your plan of study, and have them sign it. Turn in the approved plan of study to the Graduate Director.
* **Forms needed**
  + Thesis proposal
  + Cover/Approval Page for Thesis Research Proposal
  + Plan of Study
  + Thesis Committee Approval Form
* **Guidelines for writing thesis proposal**-Guidelines for writing a successful thesis proposal are given during BIOL 796 Professional Aspects. This includes an introduction, materials & methods, preliminary data (own or published), expected results, and a literature cited.
* **Guidelines for thesis proposal presentation** – Generalized guidelines for a successful presentation will also be given during BIOL 796 Professional Aspects. The presentation should be between 20 – 25 minutes in length, and include all components dictated in the written proposal. The presentation will be accompanied by a Q&A session that will contain questions on your experimental design, as well as general concept questions throughout the area of biology.

**Thesis Defense**

|  |  |  |  |
| --- | --- | --- | --- |
|  | Fall Term | Spring Term | Summer Term |
| Thesis draft to advisor | October 31 | April 2 | June 28 |
| Announce form to Graduate Studies office | November 6 | April 9 | July 5 |
| Oral Defense | November 20 | April 22 | July 19 |
| Post oral defense meeting | November 26 | April 24 | July 19 |
| Final corrections to committee members | November 26 | April 30 | July 21 |
| Final committee approval | December 4 | May 6 | July 22 |
| Committee signatures | December 4 | May 6 | July 22 |
| Approved draft to Graduate Studies office | December 5 | May 7 | July 23 |
| Format corrections | December 5 - 12 | May 7 - 14 | July 25 - 29 |
| Final submission to Graduate Studies office | December 12 | May 14 | July 30 |
| Submission of grade by committee chairperson | December 18 | May 20 | August 6 |

**Flyers for defense**- It is your responsibility to make, print, and post flyers around Smith Hall **at least one week** before your defense. These flyers should have the title of your thesis, your name, your advisor’s name, the date, time, and place of your thesis defense. For an example, please see page 42.

**Room and time for defense**

* See “room and proposal” on page 13
* Reserve room for 3 hours
* COVID adjustment: Send out a poll to committee for ideal zoom meeting time

**Forms needed**

* Thesis Defense Announcement Form
* Thesis Format Review
* Thesis Approval Page
* Internet Release Form
* Report of Results of Thesis Defense to Graduate Program Director Form

Questions about the thesis proposal and defense can be answered by reviewing the *Department of Biological Sciences Graduate Thesis Student Checklist* and the *Guidelines for Preparing Thesis and Dissertations* found [here](http://www.towson.edu/academics/graduate/office/documents/guidelines.pdf).

**FINANCIAL ASSISTANCE**

As graduate students, you have several opportunities available to you outside of federal Stafford loans provided by financial aid. There are several scholarship opportunities that range $200 - $11,000 per academic year (a majority of graduate students who apply receive between $1,000 - $2,000 in financial assistance). In addition, thesis graduate students have the option of either a teaching or research assistantship, to which you apply during the application process.

**Scholarships**

**Delegate Scholarship**-If your delegates offer their own awards, you should call or write them for further instructions. The Office of Student Financial Assistance (OSFA) can provide a list of all State legislators. Some delegates ask OSFA to make awards for them. These awards are made on the basis of need as demonstrated on the FAFSA.  If a delegate asks OSFA to make the awards, students must complete and file the FAFSA. Complete and file the FAFSA by March 1. Contact your delegates in February for further instructions. The minimum award amount is $200 and the maximum award is $11,250.

**Senatorial Scholarship**-If your senator makes his/her own awards, you must call or write to your legislator for further instructions. The Office of Student Financial Assistance (OSFA) can provide a list of all State legislators. Complete and file the FAFSA by March 1. Contact your delegates in February for further instructions. The minimum award amount is $400 and the maximum award is $11,250.

**Graduate and Professional Scholarship Program**-Complete and file the Free Application for Federal Student Aid (FAFSA) at [www.fafsa.gov](http://www.fafsa.gov/). Also, contact the financial aid office and ask to be considered for a Graduate and Professional Scholarship. You must be a Maryland resident and demonstrate financial need. You must be enrolled as a degree-seeking student, either part-time or full-time and applicants are ranked on basis of the student need as demonstrated on the FAFSA. The minimum award is $1,000 per year and the maximum award is $5,000 per year.

**Research Assistantships – Department of Biological Sciences**

Faculty members within the Biology Department may be able to offer research assistantships funded through extramural research grants. Research Assistantships include a stipend of at least $8,000 during the academic year, a summer stipend of $4,000 or $5,000 and a full tuition waiver. Research Assistants participate in thesis related research under the direction of their faculty research mentor.

**Grants**

Towson University does not offer grants for graduate students, specifically, but it is encouraged to seek external sources, including the following:

<https://www.sigmaxi.org/programs/grants-in-aid>

<http://www.collegescholarships.org/grants/graduate.htm>.

**Teaching Assistantships**

The Biology Department offers a limited number of Teaching Assistantships, each of which includes a stipend of $9000 with a full tuition waiver (value up to $5,000). There are also a limited number of summer stipends of $4,000 awarded to Teaching Assistants. Teaching Assistants spend 8-9 hours/week as instructors in undergraduate biology laboratory classes and assist their faculty teaching mentor with laboratory preparation and grading. The total time commitment is ~20 hours per week. **\*NOTE: If graduating in the summer, you will receive a teaching assistantship, but NOT tuition remission. Students must pay tuition and student fees.**

**Graduate Student Exam**

All incoming graduate students are required to take an exam on a comprehensive understanding of all areas of biology. The exam is administered early in the fall semester and requires that each graduate student earn a 70% passing grade. If this grade is not earned, the graduate student will have another opportunity to take the exam later in the semester.

**RESEARCH AND TRAVEL**

The Graduate Student Association (GSA) offers graduate students, who are enrolled in degree seeking programs, currently taking courses, and are in good academic standing, support for their research and travel. Students may not use the award for projects, conferences, events or materials that occur after they have graduated from their program. In an academic year, a student can only receive one travel award and one research award. Submission of application does not guarantee award. Awards are given out based on the availability of funds during the academic year.

**GSA Research Award**

The GSA research award can be used to purchase supplies and materials that will be used in order to complete thesis research. To be considered for a GSA Award, once completed, submit all the documents at one time, at least 20 business days prior to purchasing the supplies, to the GSA office in Psychology Bld., Room 203 or email to [gsa@towson.edu](mailto:gsa@towson.edu). Below, you can find specific details regarding how to apply and where to submit application:

**How to apply for a research award-**Complete the following documents and submit in person or via email to the GSA:

* GSA Application (Link found [here](https://www.towson.edu/academics/graduate/gsa/documents/gsa-award-application.pdf))
* Estimated itemized budget
* Summary or abstract of research or scholarly work
* Brief personal statement detailing how the GSA Award will contribute to graduate studies
* Brief letter of recommendation from faculty advisor (An email sent directly from the faculty advisor is acceptable)

Once you submit all of the required information, the GSA will review the materials and make a decision. You will be notified via email regarding the status of your award. If you do not receive an email response from the GSA within 10 days, please contact the GSA office at gsa@towson.edu or 410-704-3967.

**Award Amount**-Each student can be awarded a maximum of $500 per academic year.

**Reimbursement process information**- Award money will be reimbursed for costs, not to exceed the awarded amount, associated with presenting at or attending a conference or for the purchase of supplies related to research for graduate program and/or thesis or dissertation. Advancement of monies for supplies is not permitted. Reimbursement can take up to 6 weeks. Students on University payroll will receive their refund through direct deposit. Students not employed by the university will receive a check. Students who are not U.S. citizens or Permanent Resident Aliens will have the funds deposited to their student account.

**Directions for research award reimbursement**- Within 10 business days of purchasing supplies, submit a completed Miscellaneous Expense Voucher Instructions and Form and original receipts (please follow specific instructions) or documentation for supplies. Email receipts for online purchases are acceptable; all other receipts must be original.

Return to:

Robin Walczak (in person or via mail)

Office of Graduate Studies

Towson University

8000 York Road Towson, MD 21252

Psychology Building RM 207

Email: [rwalczak@towson.edu](mailto:rwalczak@towson.edu) Phone: 410 704 2078

**GSA Travel Award**

The GSA Travel award can be used for presenting or attending a scholarly event. These

funds can be used toward: Registration, hotel/lodging, meals, transportation (airfare, taxi,

etc.), mileage, parking and tolls. To be considered for a GSA Award, submit all the documents at one time, at least 20 business days prior to the first day of traveling to the GSA office in Psychology Bld., Room 203 or email to [gsa@towson.edu](mailto:gsa@towson.edu). Below, you can find specific details regarding how to apply and where to submit application:

**How to apply for a travel award-**Complete the following documents and submit in person or via email to the GSA:

* GSA Application (link found [here](https://www.towson.edu/academics/graduate/gsa/documents/gsa-award-application.pdf))
* Estimated itemized budget
* Summary or abstract of research/presentation or scholarly work (if applicable)
* Brief personal statement detailing how the GSA Award will contribute to graduate studies
* Brief letter of recommendation from faculty advisor (An email sent directly from the faculty advisor is acceptable)
* Agenda/brochure/schedule from conference which shows the location and date of event, if applicable (these can usually be found on the conference web page).

Once you submit all of the required information and documentation, the GSA will review the materials. You will be notified via email regarding the status of your award. If you do not receive an email response from the GSA within 10 days, please contact the GSA office at gsa@towson.edu or 410-704-3967.

**Travel Authorization**-See the **Travel Authorization** section for more information.

**Travel Award Amount**-Each student can be awarded a maximum of $500 per academic year.

**Reimbursement Process Information-** Award money will be reimbursed for costs, not to exceed the awarded amount, associated with presenting at or attending a conference or for the purchase of supplies related to research for graduate program and/or thesis or dissertation. Advancement of monies for travel or supplies is not permitted. Reimbursement can take up to 6 weeks. If you are on University payroll you will receive you refund through direct deposit, if you are not employed by the University, you will receive a check and if you are not U.S. citizen or a permanent resident aliens, the funds will be deposited to your student account.

**Directions for Travel Award Reimbursement**- Within 5 business days of presenting at or attending an approved scholarly event, complete the following:

* Contact your program/departmental Travel Coordinator (Jen Scott) to complete a Travel Expense Voucher eForm (link found [here](https://www.towson.edu/financialservices/travel/documents/howto_complete_expensevoucher_eform.pdf))
* Submit original receipts or documentation for costs associated with travel, (e.g., registration fee, hotel, airfare, taxi, parking, etc.). Travel and Meal reimbursement information can be found [here](https://www.towson.edu/financialservices/travel/reimbursements.html).
* An Authorization Addendum must be submitted if receiving additional travel funds and can be found [here](https://www.towson.edu/financialservices/travel/documents/travel_authorization_addendum.pdf).

**Dean’s Award**

The biology department offers up to $600 for research and/or travel. For specific details please contact the biology office. Each student can receive one award per academic year.

**Travel Authorization**

The Travel Authorization eform must be completed prior to departure for travel requiring an overnight stay. Authorization for travel should be obtained prior to making travel arrangements, expensing travel against a budget or using personal funds. Travel authorization must be completed by the travel coordinator (Jen Scott) through TigerTravel. For access to Tiger Travel the following form needs to be completed by you and the biology department travel coordinator (link found [here](https://www.towson.edu/financialservices/travel/documents/travel_security_request_form.pdf)). Once completed the travel coordinator can begin a Travel authorization form on your behalf.

The following information will be required to complete travel authorization eform (All files should be saved as PDFs and given for Travel coordinator on a flash/thumb drive):

* Flyer for conference/ symposium or scholarly event containing the location and dates for the event.
* Conformation of acceptance to present or attend scholarly event
* Conformation of travel awards (from Towson and or outside funding)

**Expense Voucher**

Upon return from presenting or attending a conference or scholarly event an expense voucher must be completed by you and the biology department travel coordinator in order to be reimbursed for travel expenses. Be sure to set up a meeting with the travel coordinator within five days of the date you return from traveling. Save all receipts in the form of PDFs for all purchase including: meals, registration, hotel/lodging, and transportation. You can find specific instructions on how to fill out the expense voucher [here](https://www.towson.edu/financialservices/travel/documents/howto_complete_expensevoucher_eform.pdf).

**University Vehicle Request**

Towson university vehicles are available for use to travel off campus for research and travel purposes. Rental cars are also available for use to travel to conferences and scholarly

events. Below are specific details on how to rent a vehicle:

Complete and submit a driver clearance application (link found [here](https://www.towson.edu/facilities/services/documents/vehicle-request-form-v5.pdf)) and a signed acknowledgment of general rules (link found [here](https://www.towson.edu/parking/documents/fleet-services-vehicle-request.pdf)) to Fleet Services.

* If you carry an out of state driver's license: submit an official driving record from your state's MVA with at least three years of history (copies and electronic records will not be accepted).
* Students not employed by TU: submit a declaration of insurance that names you as being insured.
* Once your paperwork is processed, you will receive an email with a link to complete the Maryland online Defensive Driving Technique course.

**Using the Department Van**

The Biology Department possesses two vans available for use by faculty members. The prerequisite to borrowing a vehicle is completing the University Driver Clearance Course in accordance with the Biology Department (contact Sarah Grue for information).

All vehicles must be reserved prior to their use by filling in the appropriate time and date on a calendar located in the Biology Office (found inside the middle black file cabinet). Additionally, the date must be requested by filling out a permission slip with the Biology Department and approved by the Program Chair.

**RESOURCES AVAILABLE**

**Faculty Information**

**Name:** Vanessa Beauchamp, Ph.D.

**Research Interests and Current Work:**

I’m a plant ecologist. My research interests lie in forest ecology and succession, wetland and riparian ecology and restoration, invasive plant species ecology, and mycorrhizal fungi.

**Expertise (Including Previous Skills):**

Vegetation sampling, plant identification, wetland delineation

**Name:** Harald Beck, Ph.D.

**Research Interests and Current Work:**

My research interests include mammal-plant interaction, multi trophic-level interactions, and ecosystem engineering in temperate and tropical ecosystems. Recently, my research focuses on the effects of hyper-abundance of ungulates in the northern hemisphere and defaunation of ungulates in the southern hemisphere. My study sites are located within the Peruvian Amazonas and forests in Maryland.

**Expertise (Including Previous Skills):**

Ecological research and conservation applications. Mammal trapping, home rage and animal. Mammal traps, camera traps other equipment for mammal research.

**Name:**Mark Bulmer, Ph.D.

**Research Interests and Current Work:**

Molecular ecology and evolution of termites and their pathogens, competitors and symbionts.

**Expertise (Including Previous Skills):**

Lab and analytical techniques for studying molecular evolution, field and lab techniques for studying social insects.

**Name:** Renee Dickie, Ph.D.

**Research Interests and Current Work:**

Vascular biology and regeneration

**Expertise (Including Previous Skills):**

Histology, immunohistochemistry, perfusion, stereology

**Name:** Elana Ehrlich, Ph.D.

**Research Interests and Current Work:**

Viral oncology, ubiquitin and ubiquitin like (Ubl) proteins

**Current projects:**

Understanding the latent/lytic transition in Kaposi’s sarcoma herpesvirus, specifically the role of ubiquitin and Ubls in regulating this transition

Understanding the role of the Cullin 5 ubiquitin ligase in Hsp90 inhibitor sensitivity

Characterization of naturally occurring variants of HCMV US28

**Expertise (Including Previous Skills):**

Cell biology, signal transduction, immunology, virology, microbiology

**Name:** Brian Fath, Ph.D.

**Research Interests and Current Work:**

Systems Ecology, Network Analysis, Sustainability, Urban metabolism, Resilience of socio-ecological systems.

**Expertise (Including Previous Skills):**

Ecological Network Analysis, Ecological Modelling, Thermodynamic applications for ecosystems and economic systems

**Name:** Laura Gough, Ph.D.

**Research Interests and Current Work**:

Plant Ecology, Community and Ecosystem Ecology, Tundra, Wetlands, Urban Ecology

**Expertise (Including Previous Skills):**

Plant community ecology, soil biogeochemistry, ecosystem ecology, statistical analysis

**Name:** Susan Gresens, Ph.D.

**Research Interests and Current Work:**

Potential areas for student research projects:

Distribution of chironomid species along gradients of watershed urbanization: collection of floating chironomid pupal exuviae (cast pupal exoskeletons) provides an effective means to compare species diversity among streams impacted by urban development and other stressors. Comparison of this technique with standard methods of benthic invertebrate bioassessment are needed to adapt the chironomid exuviae technique to our region.

Attached algae provide important inputs to stream food webs. Algal diversity is also a valuable indicator of eutrophication of freshwaters. Nutrient-limitation and growth of benthic algae are affected by fine silt-clay sediments, a major source of pollution. Such suspended sediments are capable of binding and releasing phosphorus, another major pollutant in the Chesapeake Bay watershed. We have developed laboratory microcosms to examine the relations between algae, suspended sediments, and phosphorus, and generate predictions that can be tested in the environment.

Ecotoxicologial studies involving chironomids, e.g., Chironomus riparius and anthropogenic chemicals in laboratory microcosms. This is dependent on collaboration with chemists who share an interest in environmental effects of the compounds they study.

**Expertise (Including Previous Skills):**

I study freshwater ecology from the perspective of benthic invertebrates and algae. Many of my research projects involve chironomids, “non-biting midges”, as a model research system well-suited to studies of biodiversity and aquatic health. The Family Chironomidae includes thousands of species with an amazing range of ecological specialization. Chironomid larvae are abundant in many aquatic habitats and thus are an important link in benthic food webs. On a larger geographic scale, I am using both DNA sequence data and morphological methods to compare North American and European populations of chironomid species in the genus *Cricotopus*, in collaboration with Dr. Torbjørn Ekrem and Dr. Elisabeth Stur, at the Norwegian University of Science and Technology.

**Name:** Sarah Haines, Ph.D.

**Research Interests and Current Work:**

K-12 science education; teaching and learning of science

Environmental education and its effects on learning and achievement

**Expertise (Including Previous Skills):**

Pedagogy techniques, place-based education techniques, and outdoor teaching.

**Name:** L. Scott Johnson, Ph.D.

**Research Interests and Current Work:**

Reproductive behavior and biology of birds.

**Expertise (Including Previous Skills):**

Descriptive and experimental field studies

**Name:** John S. LaPolla, Ph.D.

**Research Interests and Current Work:**

Research interests: systematics and taxonomy of ants; fossil ants; codiversification analysis

**Current work:**

Codiversification of *Acropyga* ants and mealybugs:

*Acropyga* ants display a fascinating behavior I have termed trophophoresy. Trophophoresy is the behavior of a queen ant taking with her on her mating flight a mealybug from her birth nest. This mealybug serves as a “seed” individual through which a new colony of mealybugs will be created. The ants feed on the sugary substances produced by the mealybugs. It is believed the ants and mealybugs are mutually dependent on one another for survival. This allows for the opportunity that codiversification has occurred between the two partners in this system. A major focus of my lab has been exploring the possible codiversification of *Acropyga* ants and their mealybug symbionts.

Revisionary Systematics:

There has been much media and scientific focus on the number of undescribed species on Earth, with estimates that only 20% or less of the world’s species have been discovered. With this realization comes the need to document species so they can be saved before they are driven to extinction by human activities. However, one point often missing from this discussion is just how new species are discovered. The taxonomy of many groups of organisms has become a hopeless tangle of names applied haphazardly, with no consensus existing on what are, and what are not, actual species. This impedes research on biological diversity, conservation and most especially prevents the discovery of new taxa. I am very interested in the discovery of new taxa. The single most powerful tool to clear away taxonomic quagmires is a taxonomic revision. I am involved in the revision of several ant genera, including some globally important ones such as *Nylanderia*.

**Expertise (Including Previous Skills):**

Taxonomy; morphology of insects; morphological analysis; molecular sequencing;

**Name:** Barry Margulies, Ph.D.

**Research Interests and Current Work:**

Current antiviral therapy for the human herpes viruses, HSV–1, –2, and varicella zoster virus and the feline herpesvirus, FHV-1, consists of multiple doses of FDA-approved anti-herpetic drugs (typically acyclovir [ACV], valacyclovir, penciclovir [PCV], or famciclovir) taken daily for the lifetime of the host. These daily doses require rigorous patient compliance; missed doses allow small windows of drug troughs that permit breakout replication, sometimes resulting in drug-resistant mutants. Our research involves slow, controlled release of ACV or PCV from both biodegradable and non-biodegradable polymer matrices. These devices release continuous, steady levels of drug for an estimated 3 to 5 years after a single implantation. We are continuing to explore the chemistry, biology, pharmacology, and engineering of these implants to further improve their design and eventual clinical deployment in human and veterinary patients.

We also study the human cytomegalovirus chemokine receptor homologue encoded by US27. While we have some ideas about the function of this glycoprotein, we don’t know what host proteins interact with it. We are using FRET and GST pulldown assays to determine those interacting partners, with an eye towards eventual antiviral intervention.

**Expertise (Including Previous Skills):**

Controlled release technology, polymer chemistry, pharmacology, virology, mammalian cell culture, molecular biology, cell biology, biochemistry, herpes virology, retroviruses, HIV, SIV, ultracentrifugation

**Name:** Rich Seigel, Ph.D.

**Research Interests and Current Work:**

Conservation biology of amphibians and reptiles, population ecology, life history evolution, Herpetology

**Expertise (Including Previous Skills):**

Statistical analysis, Herpetology, Population ecology

**Name:** Mara Shainheit, Ph.D.

**Research Interests and Current Work:**

Microbiology, Immunology, Host-pathogen interactions, *Streptococcus pneumoniae*, Neutrophils

Previously: parasitology, innate immunity, helper T cell differentiation, autoimmunity, inflammation

**Expertise (Including Previous Skills):**

PCR, aseptic technique, bacterial cell culture, tissue culture, Gram stain, transformation, basic microscopy, splice by overlap extension, DNA/protein gel electrophoresis, ELISA, qRT-PCR

**Name:** Erik Silldorff, Ph.D.

**Research Interests and Current Work:**

Renal microvascular control. I studied both mammalian and comparative control of the vascular system for almost 20 years. I currently do not do lab work and am working on the development of a new text in Human Physiology with Jones and Bartlett Learning.

**Expertise (Including Previous Skills):**

In vivo and in vitro cardiovascular measurements. Isolated tissue studies (vascular, microvascular, and isolated heart). Microperfusion of rat vasa recta and vascular activity studies. Immunohistochemistry, patch clamp, cardiovascular pharmacology, etc.

**Name:** Michelle Snyder, Ph.D.

**Research Interests and Current Work:**

The research in my laboratory uses the social amoeba *Dictyostelium discoideum* as a model to characterize the evolutionarily conserved cellular and molecular processes underlying host-pathogen interactions. The focus in my lab has been to study the hypothesis that *D. discoideum* cells, which take up bacteria for nutritive purposes, detect bacterial prey using conserved innate immune-like pattern recognition machinery. Current studies in the lab, being undertaken in collaboration with Dr. David Rasko at University of Maryland, School of Medicine, are focused on building upon these previous results by using next generation sequencing technology to identify potentially conserved molecular pathways that underlie *D. discoideum* responses to enteric bacteria and to expand our understanding of the similarly conserved mechanisms bacteria use to evade these responses.

**Expertise (Including Previous Skills):**

Basic Molecular Biology techniques, Protein gels/Western Blotting, Flow cytometry, Fluorescence microscopy

**Name:** Peko Tsuji, Ph.D.

**Research Interests and Current Work:**

Selenoproteins, cancer prevention, carcinogenesis, tumorigenesis, catalytic enzyme activity

Specifically: the role of the 15kDa selenoprotein in colon carcinogenesis

**Expertise (Including Previous Skills):**

Fluorescent activated cell sorting

Cell culture (including transfection, transformation)

Catalytic enzyme activity assays: EROD (for CYP activity), GSH, TXNRD

Various assays: BCA (protein detection), MTT (Cell viability)

Cytokine analyses (but the Mesoscale instrument for ELISA is at NIH)

Phosphorimaging, Mouse work (at NIH), qPCR, Western blotting, NextGen Sequencing (in collaboration with Brian Masters)

**Name:** Faith J. Weeks, Ph.D.

**Research Interests:** My research interests focus on entomology education and outreach, specifically the use of insects as models in science instruction and evaluating their use in various educational settings.

**Current Work:**

Currently I am working on two projects; Insects as models for enhancing science teaching & understanding and evaluating teacher’s perceptions of insects in their classrooms. The first examines how elementary education majors come to understand science and the best methods for teaching science when using insects as models for common biological concepts (ex: predator/prey interactions, energy flow, decomposers). The second provides local elementary teachers with guidance and specimens to integrate live insects into their science lessons, and evaluating their reactions to the use and keeping of these organisms.

**Expertise (Including Previous Skills):**

Qualitative and quantitative research methods in education

Entomological collection curation and maintenance

Creating surveys/assessments

**Name:** John Weldon

**Research Interests and Current Work:**

Very generally, I study the control of protein synthesis by bacterial toxins. This includes generation and improvement of recombinant immunotoxins (targeted cell killing agents) for the treatment of cancer, studying the intracellular trafficking of Pseudomonas exotoxin A, and elucidating role of the unique diphthamide residue in elongation factor 2.

**Expertise (Including Previous Skills):**

Basic molecular biology techniques (PCR, DNA purification and analysis, mutagenesis, cloning, transformation, etc.…), Basic protein biochemistry techniques (PAGE, western blotting, concentration analysis, enzyme kinetics, CD analysis, etc.…), CRISPR/Cas9, Protein expression and purification, Tissue culture and cytotoxicity, Antibody engineering, Directed evolution, Analytical ultracentrifugation, X-ray crystallography

**Name:** Larry Wimmers, Ph.D.

**Research Interests and Current Work:**

My laboratory employs a combination of molecular genetics and classical physiological tools to address aspects of plant function including the response of plants to abiotic stress, the mechanisms of phloem translocation and the evolution of plants in response to the urban environment. We also assist plant breeding activities at the Cocoa Research Institute at the University of West Indies via genotyping of the Cocoa germplasm collection.

**Expertise (Including Previous Skills):**

I have expertise in all basic molecular genetic and plant physiological tools including gene cloning, gene expression analysis, DNA sequencing, microsatellite analysis, light and electron microscopy (TEM)

**Name:** Colleen Winters, Ph.D.

**Research Interests and Current Work:**

Population genetics of land snails; Taxonomic studies of land snail species using genetics, shell morphology, and anatomy

**Expertise (Including Previous Skills):**

PCR, sequencing, primer design, microsatellite analysis, experience with GenAlEx, Structure, Tess, Arlequin, Bottleneck, FSTAT, Microchecker and HP-RARE analysis programs

**Common Equipment Available to the Biology Department**

|  |  |
| --- | --- |
| **Equipment** | **Quantity** |
| -70 freezers | 6 |
| Agilent 2100 Bioanalyzer | 1 |
| Anaerobic Glovebox (COY) | 1 |
| Atomic Force Microscope | 1 |
| Autoclaves | 2 |
| Benchtop shaking, temperature-controlled incubators | Many |
| Centrifuges: Model RC5 (Sorvall), Model RC2-8 (Sorvall), Accuspin 3R(Fisher) | 1, 1, 1 |
| CO2 incubators | Many |
| Digital Gel Documentation Systems: BioRad, UVP Digital Imaging System | 1, 1 |
| DME microscope (Leica) with EC3 digital camera and LLAS EZ software on a Dell Latitude 131L laptop computer | 1 |
| DNA Analyzers: ABI Model 9700, Beckman CEQ8000 | 3,1 |
| EPR System Model E-12 X-Band (Varian) | 1 |
| Floor shaking, temperature-controlled incubators | 1 |
| Fluorometer (FluoroMax 4) | 1 |
| FPLC AKTA Prime Plus (GE) | 1 |
| FTIR Microscope (Centaurus) | 1 |
| FTIR: Nicolte 320, Nicolte 360, Perkin Elmer Nexus 670 | 1, 1, 1 |
| Gas Chromatograph (HP Model 6890) | 1 |
| Gas Chromatograph/Mass Spec HP MSD5973, Agilent  NMR spectrometer (JEOL ECS-400) | 1 |
| HPLCs (Dionex Model DX120, Shimadzu; Models 1200 and 1260, Agilent; LC-MS, Waters) | 1, 1, 1, 1 |
| Hybridization Ovens | 4 |
| Inverted Fluorescent Microscope (Nikon) | 1 |
| Inverted Fluorescent Microscope (Axio Observer, Zeiss) | 1 |
| Inverted Microscope CK-41 (Olympus) equipped with a Sony DSC-H1 5.1-megapixel Super Steady Shot digital camera | 1 |
| Laminar Flow Hoods | Many |
| Liquid N2 Storage | 1 |
| Liquid Scintillation Counter LS6500 (Beckman Coulter) | 1 |
| Microcentrifuges (various brands) | 6 |
| MiSeq NextGeneration DNA Sequencer (Illumina) | 1 |
| Plate Reader | 1 |
| Plate Washer | 1 |
| Polarizing Fluorescent Microscope LV100 (Nikon) | 1 |
| RealTime-PCR: BioRad CFX Connect, ABI Model 7000 | 2 |
| Refrigerated microcentrifuges (Fisher) | 2 |
| Scanning Electron Microscope (JSM-6100 JEOL) | 1 |
| Sonicator (Branson Sonifier) | 1 |
| Spectrophotometers: Nanodrop DNA 2000 (Fisher), Genesys 5 (x2) (Spectronic), Cary 50 UV-Vis, Cary 100 UV-Vis | 2, 2, 1, 1 |
| Speed-vacs | 3 |
| Thermocyclers (multiple, various brands) including gradient PCR capacity | Many |
| Thermo Elemental Inductively Coupled Plasma Mass Spectrometer | 1 |
| Ultracentrifuge (OTD60B, Sorvall)\* | 1 |
| UV crosslinkers | 2 |
| X-ray Diffraction System  (Bruker Model AXS) | 1 |
| X-ray Film Developer CP1000 (AGFA) | 1 |
| X-ray Fluorescence System  (Bruker Model D8) | 1 |

**Career Center**

**LOCATION HOURS**

7800 York Road, Suite 206 Towson, MD 21252 M-F, 8 a.m. - 5 p.m.

**PHONE FAX EMAIL**

410-704-2233 410-704-3459 careercenter@towson.edu

The Career Center at TU offers many opportunities to students and alumni looking for jobs and internships.

Their main service, Hire@TU, is a free database that assists students and alumni to find employment or internships. Use Hire@TU from Towson’s website to begin looking and planning for your career early. Additional Career Center services include resume assistance, job fairs, mentoring, international opportunities, interview practice, and many more events and guidance to find the right job.

**Library Liaison**

Each department at Towson is assigned a specific librarian with a background in the branch’s subject. They support additional library services including distance education, generating subject gateways (links to important databases), adding support materials to the library, and much more. For assistance with these services or additional library needs, contact your assigned liaison.

**Name:** **Email: Phone:**

Laksamee Putnam lputnam@towson.edu 410-704-3746

**MISCELLANEOUS**

**Card Access and Obtaining Keys**

As a graduate student you will spend a majority (*all*) of your time in Smith Hall. The hours of Smith Hall are generally Mon- Sat during working hours, with changes due to holidays and extreme weather conditions. However, for unlimited building access, and keys to your lab and Biology Office, speak to Jen Scott. Your advisor may need to send an email to the department chair for approval before you are assigned those keys. For all other room access, you may obtain temporary access through your advisor or the department. Finally, master keys are kept with the Biology Office and can be lent when needed.

**Journal Access**

Towson University has a number of options to use when researching a topic or looking for a particular article or book. Towson students/ faculty have access to a large number of journals and the ability to request additional articles free of charge. Start by navigating to the TU Library website at (<http://libraries.towson.edu/>).

Subjects and article titles can rapidly be found using the Cook OneSearch. Also, links to research databases, Subject Gateways, and help manuals will also be available on the libraries’ main page. Subject Gateways send users to subject based databases or gateways set up for particular courses.

If the journal article is already known and not found in a basic search, then use the ‘Journal List’ link on the right side of TU library homepage. Journal titles can be searched through the toolbar or scanned manually in alphabetical order.

**Microsoft Office and Discounted Software**

Microsoft Office subscriptions are offered for free to Towson University students. This can be downloaded by navigating through Towson’s website ([www.towson.edu](http://www.towson.edu/)) until you reach the Office of Technology Services (OTS). The OTS webpage contains many links to help the technologically impaired, and additionally directs users to free or discounted software downloads. For additional assistance contact OTS at 410-704-5151 or visit them at the bottom floor of the Cook Library.

Alternatively select this [Link](http://www.towson.edu/technology/studentservices/software.html), then scroll down to Office 365 Portal and click the icon labeled “Download Microsoft Office”.

**Clubs and Activities**

Towson University has over 200 clubs and organizations available to students. If the club of your interest does not currently exist you can create your own. Visit Involved@TU ([Link](https://involved.towson.edu/)). You'll find contact information, social media links, meeting times, upcoming events, and information on how to join.

Biology GSA Facebook group:<https://www.facebook.com/groups/1394724267501161/>

**PARKING & TRANSPORTATION SERVICES**

**Parking Passes**

Students with teaching or research assistantships may receive faculty parking passes. After receipt of a faculty parking approval letter from the University, students must turn in the letter to the Parking & Transportation Services office for faculty privileges. The office is located at the lower level of the Union Garage (hours: Mon-Fri 8-5). Regardless of employment, passes can be purchased by selecting this “eParking” ([Link](https://tuflexport0616.t2hosted.com/Account/Portal)). All parking passes are virtual and will be based off the license plate number given during the purchase.

Tip: Anytime you bring a new vehicle to campus, be sure to update the forms using eParking! **Only one vehicle can park on campus at any time.**

**Parking Locations**

Several small lots for parking exist, but the four main areas are the Glen, Towsontown, Union, and West Village Parking Garages. Considering you will spend your next few years in Smith Hall, the Glen, Towsontown, and Union Parking Garages are all relatively close to Smith Hall. ([Map](http://www.towson.edu/maps/index.html))

**Visitors**

Prospective graduate students will need to purchase a visitor pass during a campus visit. Pay stations are located in each garage and they accept cash and credit cards. Remember to keep the ticket face up on the vehicle’s dashboard and park ONLY in spaces marked for visitor or overflow parking.

**Citations**

Heed our warning that Towson University has a **strict policy** on parking!

In the event of a *misfortune*, citations can be paid using the Parking Portal ([Link](https://tuflexport0616.t2hosted.com/Account/Portal)). First time offenders are typically granted the ability to dispute citations; however, if the dispute is lost, the accused must still pay the fine. Furthermore, failure to pay a citation allows TU police to contact the MVA and suspend your registration.

**Additional Transportation**

Towson offers free shuttle services at select times during the school year. The school’s shuttle cycles on and off campus, and routes/ times can be viewed at the Towson University website under “Off-Campus Shuttle Bus Service”. For the duration of the Fall and Spring semesters the Off-campus routes operate Mon-Fri and On- campus routes are 7 days a week. The shuttles can be viewed in real-time by downloading the TU TigerRide app ([Link](https://itunes.apple.com/us/app/towson-u/id459260127?mt=8)). During holidays and inclement weather, the schedules may change and will be announced on the Towson University website.

Tip: Be 5 minutes early to the shuttle and remember to bring your student ID.

Students with mobility issues may be eligible for the ParaTransit Van. This van assists students only around the campus. In order to receive assistance for this commodity, one must become certified through the office of Disability Support Services (DSS), which is located in the Admin Building on York Road. Once a student has received a card from DSS they can now schedule rides during normal operating hours through the Parking & Transportation Services Offices or by emailing [upark@towson.edu](mailto:upark@towson.edu).

For additional bus and shuttle services at TU, view the MTA Express BusLink service at (<https://mta.maryland.gov/>) or the Collegetown Shuttle (link [here](http://baltimorecollegetown.org/)).

Safety is paramount at Towson University. During occasions where you may need to traverse across campus alone, students may be provided with a ride or escort from the Towson University Police. **For a police escort call 410-704-SAFE**

**SUPPORT AND COUNSELING INFORMATION**

**Advise/Support from past graduate students**

**James Stegman, Dr. Margulies’ Herpes Virus Lab:**

I’m not going to lie; my first semester at Towson was filled with stress, exhaustion, and worry. Attending classes and doing the necessary coursework, teaching, and finding the footing in lab is a difficult feat, but I wanted to convey some strategies that helped me get through it and make the overwhelming load manageable.

* **It’s okay if you don’t know what your thesis project is yet!** Aspects of my project are still changing in my second year as methods don’t pan out and new methods must be used. You have plenty of time to decide this in your first semester. If your thesis project is already understood, rather than diving in on the research right away, take your time to read papers on the subject and familiarize yourself with techniques. It is a great idea to start your research in your first semester, but start slow. You can always pick up the pace when you see what you can handle.
* **Do not overload your coursework!** I highly recommend taking Dr. Seigel’s professional aspects course and only one other class! If you are not teaching, go ahead and throw another one in the mix, but otherwise, three classes is simply too much to handle. You will have time to make it up the following semester after you know how to manage your responsibilities. Don’t bite off more than you chew; you don’t want your grades to suffer in the very beginning.
* **I can’t emphasize this enough: use every resource you have!** We have dozens of intelligent scientist in the department that would be more than happy to help you with your research goals. If you’re not sure how to perform a certain procedure or even how to test a certain variable, ask around. Chances are a faculty member has been where you are and knows exactly what you’re looking for (they also usually have cool tricks to avoid common mistakes in more difficult procedures).
* **Do NOT stress out about your thesis proposal!** We all know speaking intelligently in front of faculty can be difficult at first, but they are here to help you. Your committee members want you to succeed! I highly recommend treating your proposal as a collaboration between colleagues. They will offer their input on your experimental design and you will tell them you’re thinking and rational behind what you’ve presented. If you see it as a collaboration session (with a little biology fact session thrown in there), the stress will go away and you will be able to answer their questions to the best of your ability.
* **Treat faculty members as your respectable colleagues.** Since you have passed the undergraduate level and begin specializing in your field, a perk that comes with that is breakdown of the professor/student relationship. This breakdown is there for a reason: to allow graduate students to fully utilize the minds and expertise of the faculty and to make it a more comfortable, low-stress environment. As soon as you remove this mentality of student/teacher relationship you will begin to think more like a professional scientist, and be able to throw around research ideas with your committee and other faculty.

**Jason Martin, Dr. Bulmer’s Molecular Ecology Lab:**

Hello and welcome. If you are feeling lost and like you have no clue what is going on, do not worry, that is perfectly normal. The best way to overcome these feelings is to be proactive and not procrastinate. Hopefully this guide can help. Keep an open dialog with your advisor and come up with ideas for your thesis project as soon as possible, and then get to work on your proposal. The worst thing you can do is procrastinate. Classes, teaching, and research can get a little over whelming but by being proactive and using solid time management you can still find time to have a life outside Smith Hall. Remember your advisor, thesis committee, class professors, and fellow graduate students all want you to succeed, so do not hesitate to ask for help or advice whenever you need it.

**Ben Atha, Dr. Weldon’s Protein Biochemistry Lab:**

Time flies while you’re pipetting.

Whether you are here for 2 or 3 years, this program will fly by faster than you can imagine. Just remember to take advantage of any opportunities given to you during this time. Obviously there are limitations, because you will be busy with many other tasks. However, when you get the chance volunteer for additional lab projects, volunteer to teach a lecture class, volunteer to go to conferences, volunteer to write and review papers, and even volunteer to help at some of the events around Towson.

Remember that at the end of this program you will be either applying to PhD programs or applying to jobs and you’ll want something to show for all the hard work you’ve done.

Use this time to find out what you truly enjoy.

Many students enter this program with a general idea of which branch and sub-discipline of biology they wish to pursue in their career. Yet, some of us are still trying to find our specific “scientific calling”. Try new things and read interesting papers outside your line of work. It is not uncommon to conduct projects between labs or create an experiment outside your advisor’s expertise. Towson’s faculty have a diverse set of skills and you will be surprised at the array of experience they contain.

Additionally, take classes that truly interest you or generate an independent project outside your thesis to expand your skill set. This program allows students to obtain credits for making new projects and also supplies grant money each year.

When in doubt ask your fellow graduate students for help.

Chances are if you are having difficulty with something, other students are having the same problem. Talk to the students about to graduate, they’ve been through this before. Also, the students in your program are the best support group and when the semester gets rough, head down to Bateman’s or enjoy the $6 Fridays. Camaraderie is served best over food!

Finally, pass on your knowledge to the next group of graduate students. Trust me, they will need it.

**Ayana Ruffin, Dr. Ehrlich’s KSHV Lab**

To Incoming Graduate Students,

Here is some advice about making your graduate experience work for you. As a thesis student, it is important to do well in your classes but to also get started on your research as soon as possible. With that being said, you should try to be in your lab as much as possible. Whether you have research experience or not, it would be wise to use your first semester getting up to speed with all the techniques and protocols used in your lab. This will aide in starting and finishing your thesis project faster. Your first year can be very challenging and stressful so I would recommend taking no more than 2 graduate level courses at a time. I would also recommend taking only one 500 level course at a time. Courses at the 500 level require a larger time commitment because they are taught concurrently with the undergraduate level course. You should definitely prepare weekly for the course you are teaching. Although you are not being graded for teaching, it is a valuable experience and you should get the most out of it. Although most students finish in 2.5 years, you should not feel intimidated if you are not sure what your project is. It is also okay if you project changes from the time to you defend your proposal to the time you are doing your final defense. Remember that your committee, faculty advisor, GSA and other graduate students are here to help.

**Health/Counseling center**

The Health and Counseling center at TU offers a variety of physical and mental health services to undergraduate and graduate students. Majority of the counseling center services are free of charge. The health center rates for services are based on the student’s insurance provider. The health/Counseling is located across from the Newell dining hall. Balancing classes, teaching, researching, and personal life can be stressful; however, you are not alone in the process. So, feel free to use these services to help you in your journey through graduate school.

**Counseling Center Services**

The Counseling Center offers a variety of group experiences that provide opportunities to identify with others who have similar concerns; to increase self-awareness and self-acceptance; and to improve the quality of your life, work, and personal relationships. All groups are free and open to undergraduate and graduate students. Most groups meet weekly, usually for a total of 8-10 weeks during a semester.

**Types of Services**

· Brief Individual and Couples Counseling

· Career Counseling

· Psychiatric Services

· Group Counseling

· Substance Education Treatment & Prevention Services

· Mindfulness and Meditation

Contact the counseling center to make an appointment: 410-704-2512

**Health Center services**

The health center offers a variety of services to students such as:

* Allergy Shots
* COVID Testing
* Contraceptive Counseling and Services
* Common Illnesses and Minor Injuries
* HIV and other STD Testing
* Immunizations/ TB testing
* Lab Services
* Minor Office Procedures
* Physical Exams (employment/sports/travel)
* Referral Network of Specialists
* Smoking Cessation
* Using Monday as Your Day to Quit!
* Health Education Services
* Acupuncture & Massage Therapy

Visit the health center website for more information (find link [here](https://www.towson.edu/healthcenter/)). To make an appointment visit:<https://tigerhealth.towson.edu/login_directory.aspx>

**Plan of Study (Example)**

Student Name: John Doe

Student ID: 123456

|  |  |  |  |
| --- | --- | --- | --- |
| Fall 2015 | Spring 2016 | Fall 2016 | Spring 2017 |
| BIOL 612  Molecular Ecology and Evolution  3 credits | BIOL 609  Community Analysis and Bioassessment  4 credits | BIOL 561  Entomology  4 credits | BIOL 510  Conservation Biology  4 credits |
| BIOL 796  Professional Aspects of Biology  2 credits | BIOL 610  Population and Community Biology  3 credits | ENVS 604  Ecosystem Ecology  4 credits | BIOL 896  Thesis  6 credits |
|  | BIOL 797  Graduate Seminar  1 credit |  |  |

Thesis Committee:

Dr. X (advisor)

Dr. XY

Dr. XYZ

**PROPOSAL FOR A THESIS ENTITLED**

**click here to enter your title**

by

click here to enter your name

Approved by Thesis Committee:

Chair \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

click her to enter your committee chair's name

Member \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

click here to enter your first committee member's name

Member \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

click here to enter your second committee member's name

Date \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Received by Biology Graduate Program Director On \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**NEW THESIS GRADUATE STUDENT CHECKLIST**

Congratulations!! Now that you have been admitted to the Biology Graduate program there are a few things that should do to ensure a smooth transition into your first semester.

* Check your home mailbox you should receive a letter from the office of graduate studies informing you of your Research or Teaching assistantship award. This letter details your award amount and when you will receive your first paycheck. This letter should also be taken to the parking and transportation office so that you can purchase a faculty/staff-parking permit.
* Make sure that you are enrolled in at least 2 courses for the semester (6 credits in total). If you need placeholder credits for financial aid, please email the program director as soon as possible.
* Be sure to purchase a faculty/staff-parking permit before the first day of classes to avoid parking tickets.
* In order to receive your paycheck via Direct Deposit, you will need to fill out an I9 form, Direct Deposit form, as well as the W-4 tax form. All of these documents will need to be turned into the Student financial services office (W-4, Direct deposit form) and the Office of Human resources (I9) which are located in the Administration Building. Complete these forms as soon as possible to avoid delay in direct deposit setup.
* You should receive an email from the professor you will be a TA for detailing what class and sections you will be teaching. Be sure that the times do not conflict with your class schedule. Your professor should set up a time for you to meet and discuss the expectations he/she has for the course you are teaching. You should be meeting weekly with that professor as well as observing another TA or faculty member who is also teaching the same course before you teach your first section. Your professor will let you know who you should observe and when.
* Email the biology department to set up a time to pick up your keys for your class room and the biology office
* You should meet with your faculty advisor as soon as possible to discuss their expectations, what you will be working on this semester, as well as get acclimated to your new lab and meet your fellow lab mates.
* Don’t forget to breathe and enjoy your time at Towson University. Everyone wants you to succeed and train you to become the best scientist you can. This is your time to do that!
* A typical graduate student week should consist of being on campus roughly 40 hours. This is variable around your research, but with performing research, teaching (if you have a TAship), and classes will require a good deal of time. It is also recommended to form study groups and do homework on campus, as it has distinct advantages: you’ll be close to faculty that have all the answers!
* Graduate students often partake in $6 Fridays at Newell and Glenn dining halls to decompress the week. If you would like to participate, feel free to ask a senior graduate student.

**Application for Courses in Departments Other than Biology at Towson University**

***Courses in Departments Other than Biology at Towson University***

Students are normally not allowed to count more than two non-BIOL courses towards their degree. Note that ENVS 604 is not considered a non-biology course. The Biology Graduate Program Director can, however, grant an exception to this rule when it would clearly benefit the student given their field of study or chosen career. Requests for exceptions must be made to the program director(s) by the student’s advisor.

Student completes sections 1 & 2. Faculty mentor completes section 3. For non-thesis graduate students, the Graduate Program Director will complete section 3. Graduate Program Director completes section 4.

**Section 1: Student information**

Student ID \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Full name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Last name/family name First name

How will taking this course benefit the student given their field of study or chosen career?

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**Section 2: Course Information – One course per form**

Department where course will be taken: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Semester & year taking course: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Number of units: \_\_\_\_\_\_\_\_\_\_\_

Title & course number: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Section 3: Faculty Mentor Approval**

Faculty mentor (full name): \_\_\_­\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Faculty mentor (signature, date): \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Section 4: Graduate Program Director Approval**

Graduate Program Director (full name): \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Graduate Program Director (signature, date): \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Annual Progress Report Form**

For the Annual Progress Report form, please go to your email and search for a folder shared to you by Dr. Tsuji called “**MS Biol forms (this folder shared with grad students)**”.

This form is to be filled out annually following a meeting with your committee. The due date is October 1st of that year and should contain information from August 1st – July 31st.

This shared folder contains some of the documents included to you here, as well as some resources that can be found on the TU website, among other things.

**Thesis Defense Announcement Example**

