BOB CERWONKA MEMORIAL SCHOLARSHIP

The Biology Department at SUNY Potsdam invites all Biology Majors to apply for the Bob Cerwonka Memorial Scholarship. This scholarship was made possible from a generous donation from department alumnus Mr. Robert E. Wagner ’75. Dr. Cerwonka, a former faculty member in the department, was a Limnologist and Ecologist and also founder of our Lambda Xi Chapter of the Beta Beta Beta Biological Honors Society.

The successful candidate will:
1. Be a student who has declared Biology as their major;
2. Be in good academic standing at SUNY Potsdam, maintaining a minimum of a 2.5 GPA.
3. Preference shall be given to students that demonstrate an interest and appreciation of nature and the environment.
4. The applicant will be required to submit an essay that incorporates their understanding of ecology and natural history with their goals for a career in the life sciences.

The successful applicant will receive a **$1,000 award**. Students can apply for this scholarship multiple times. To apply, submit a typed essay of between 250 and 500 words to Dr. Glenn Johnson by **December 1st**.
REGISTRATION

**Advising begins** October 24. The spring schedule will be available online this day

**Registration begins:**
- **Seniors** – November 10
- **Juniors** – November 14
- **Sophomores** – November 15
- **Freshmen** – November 17-18

Students may adjust their schedules on BearPAWS until midnight, Sunday, Jan. 29th 2017, which is the day before classes begin and before the week of Add/Drop.

Registration instructions can be found at this link: [http://www.potsdam.edu/offices/registrar/registration/index.cfm](http://www.potsdam.edu/offices/registrar/registration/index.cfm)

Students should consult with their advisor to make sure that they have completed the appropriate prerequisites and cognates before choosing electives. Some course descriptions and B.S. and B.A. checklists are included in this newsletter.

DECLARING BIOLOGY AS YOUR MAJOR OR MINOR

Students are strongly encouraged to declare their biology major as early as possible.

Declaring your major or minor early will help you obtain a biology faculty advisor and help you select the best courses toward your degree. It is our wish to match students with advisors with shared interests within life sciences. To declare biology as your major or minor, see Marta Whalen, the Department Secretary (Stowell 207B) or Dr. Glenn Johnson, the Department Chair (Timerman 231) or Dr. Jan Trybula (incoming Department Chair; Stowell 205A). Just fill out one form. The entire process takes less than three-minutes, but it can save you a semester or more by insuring that you receive an advisor who understands our program.

Tony Mineo removes a threatened Blanding’s turtle from a trap and both are smiling! Tony was a bio major…the turtle is undeclared …

Above: Humpback whales bubble net feeding on our Cape Cod trip – another cool thing about being a bio major! (Photo: Alex Matte)
NEW AND IMPROVED COURSES

BIOL 483 – Current Topics: Biology of Cancer - SI  
Dr. Rhoads  
Tuesdays 5:00PM – 7:30PM

Current Topics is a seminar-style class, and satisfies the college-wide requirement for a speaking-intensive course (SI). Our focus will be on the field of cancer biology, which encompasses cell biology, molecular biology, physiology and medicine. Using these various aspects of biology, we will be examining what causes cancer, what the symptoms are for particular cancers, how cancer is treated and the epidemiology of cancer types. Through the course, you will learn how to communicate concepts in cancer biology to your peers, and how to critically evaluate primary and secondary literature in the preparation of your presentation and summary paper.

BIOL 483 – Current Topics – Agroecology - SI  
Ray Bowdish  
Thursdays 4:00PM – 6:30PM

Prerequisites: Junior standing
Agroecology is the study of ecological processes applied to agricultural production systems. World food crises and ecological degradation are linked to current industrial agricultural systems. In this course students will investigate the current literature and share information about global research and development initiatives that focus on finding, creating and implementing agricultural systems that reduce ecological impacts and provide more sustainable food production.

BIOL 395 – NEW COURSE- Issues in Health Care  
MF 1200PM–1250PM  01/23/17–03/20/17

This is a one credit, eight week course where you will learn about various issues facing health care providers and prepare you for your medical, PA, Veterinary, Dental, and whatever else school interview. We will cover such issues as Physician-assisted suicide, Health Care systems around the world, the Affordable Care Act, and government-financed health programs. Towards the end of the course, you will be both interviewed and interview others to prepare you for your professional program interview. If you are not interested in gaining admission to a Health Care Professional Program, this course is not for you. See Prof Ewy for details.
BIOL 485 – NEW COURSE- Guided Biology Research – 3 credits  
Dr. Romey

NEW COURSE!  

Biol 385 – Guided Biology Research

Have you been muttering for the last few years about wanting to get some experience doing research? Many graduate programs want to see this. Have you muttered that you wished there was a course that focused on the application of biological statistics, rather than the formulae? Well, mutter no more! We’ve heard you and designed a new course for those people: Guided Biology Research.

This is an upper-level biology course meant to help you develop your research skills. Students will meet together weekly to learn and practice how to: do statistics, read primary literature, write a research proposal, and give a presentation. There will be a focus during group sessions on how to use SPSS to explore data, make tables, and perform advanced statistics such as: ANOVA, ANCOVA, GLM, Multiple Regression, and Power Analysis. Early in the course, students will take a tour of the labs of participating faculty mentors doing research on: cell biology, physiology, behavior, and ecology. Once students have identified, and been accepted by, a faculty mentor they will develop a project and work in that person’s lab for about four hours a week as well as participating in the weekly interdisciplinary group. You don’t have to have a particular research project in mind when you sign up for Biol 385, we’ll help you figure that out.

Wednesday evenings 5PM-8PM plus individually arranged lab times. Prerequisites: Ecology (Biol 300) and an overall GPA > 3.0

BIOL 422 – NEW COURSE- Molecular Evolution  
Drs. Plague & Snyder  
MWF 9AM-9:50AM

The hierarchy of biological life set forth by Linnaeus in the 18th century affords us the necessary structure to comprehend the bewildering diversity of life. In the 19th century, Darwin showed us that this diversity of life is dynamic, and the geneticists of the 20th century suggested mechanisms (e.g., mutation) for how diversity arises. Molecular evolution unites these three seminal advances, focusing on what DNA, RNA, and proteins can tell us about the history of life. The integration of these fields has, and will continue to, enhance our understanding of life in ways we could not have dreamed about 20 years ago.

Prerequisite: BIOL 311
BIOL 322 — Introduction to Genomics

Dr. Snyder

This course is meant to introduce the major theoretical aspects in the budding, interdisciplinary field of Genomics. Laboratory (required) will focus on basic bioinformatics approaches in studying “big data”. This course is well suited for students interested in graduate studies in molecular biology or students looking for a marketable skill-set in biomedical and molecular biology fields. Students should be comfortable with computers, however no prior coding skills are required.

Class meets: M 6PM-8:30PM; Lab meets: W 6PM-8:50PM

Catalog description: BIOL 322: Focuses on the theory and methods of analyzing large genetic data sets and their application to biological problems, including sequence alignment and search methods, gene prediction, phylogenetic trees, and transcriptomics Prerequisites: BIOL 311, Lab required.


Student learning outcomes:

- Recognize that genomics has transformed our approaches to all the classical topics of biology and medicine.
- Know the basic facts about the human genome – how many base pairs it contains, estimates of how many genes it contains that code for proteins.
- Understand the importance of comparative genome sequencing projects, to reveal processes of evolution and to help interpret regions of the human genome.
- Understand the importance of computer science and bioinformatics in producing the raw sequence data, in creating database in molecular biology, in archiving and careful curation of the data, in distributing them via the web, and in creating information-retrieval tools to allow effective mining of the data.
- Understand current developments in genome sequencing.
- Understand the distribution of genome size (C-value paradox) and the number of coding genes.
- Recognize the effects to gene duplication on the genome.
- Appreciate the distinction between similarity and homology, and that homology, usually unobservable, is an inference from similarity.
- Understand the basics of phylogenetic tree construction, methods for calculating them, and the information different types of trees contain.
- Understand the essential genomic differences between prokaryotic and eukaryotic life.
- Understand the relationship between cellular development and the biochemical cascades controlled by gene expression.
- Understand the scope of applied genomics in medicine and agriculture.
- Understand how proteomics is studied and it’s application to medicine.
- Gain a sense of systems biology as an integrative approach to all the ‘omics’ disciplines.
- To know the power of computers in bioinformatics, and the essentials of how programs work (especially bash and perl scripts).
- To evaluate your own programming talents, skills, and interest, and to decide to what extent you want to create programs, and the extent to which you want no more than to develop expertise in their use.
- To come to terms with the explosion of scientific information, and to find modes of keeping tract of what you need to know.
- Understand how genomes are assembled.
- Understand how genomes are annotated, and the limitations of some genomic information.
- Understand the concept of sequence alignment: the assignment of residue-residue homology.
BIOL 480 – Advanced Topics in Biology – Advanced Topics in Genomics  
Dr. Snyder and Dr. Plague

Students in this class will collaborate on one or more novel bioinformatics projects investigating the molecular evolution of parasitic genes. We will go through the entire scientific process, from generating the questions to disseminating the results, and everything in between. Our goal is to have a manuscript at the end of the semester that we will eventually submit for publication, with all students as co-authors. This class would be ideal for anyone considering graduate school. Interested student's should contact Drs. Snyder (snyderrl@potsdam.edu) or Plague (plaguegr@potsdam.edu). (Enrollment is by permission of instructor only.)

BIOL 303 – Plant Physiology  
Dr. Ewy

Lecture 1:00PM-1:50PM MWF, Lab 2:00PM-4:50PM  
Plants are dynamic organisms that can move water up 100 meters with no moving parts and no input of energy. We will cover these and other processes unique to plants in both lecture and lab. Experimental design will be stressed as students will design and carry out their own experiments on various plant physiology topics for half the lab exercises. Prerequisites: Biol 151 or 125, and 152. General Chemistry highly recommended. Fulfills Physiology component for both BA and BS degrees.

BIOL 415 – Virology  
Dr. Trybula

MWF 1:00PM-1:50PM  
prerequisites: BIOL 151/152 and Junior-level standing

Viruses can range from relatively benign to deadly. There are outbreaks of viruses everywhere around the world. Experts monitor outbreaks to precipitate what diseases are spreading or which version of the flu may find its ways to our area this season. Human have been battling viruses for millennia and today our toolkit is the better than ever. But we still have a long way to go. Viruses are also starting to be used as tools for the treatment of bacterial infections. We also use virus capsules as vessels to deliver drugs. However, the history of viruses and combating them is a long and arduous one. Even today there are individuals who do not think that vaccines are a useful tool, but all too often they do not know how devastating these diseases were in the past or present. We know that Zika infects nerve cells of the fetal brain, and we now suspect that it also infects neuronal stem cells in the adult brain. In this course we will also monitor viruses this season to see what may be coming…
BIOL 431 Developmental Biology  
**Dr. Rhoads**  
TuTh 930AM–1045AM

Ever wonder how a single fertilized egg manages to create an entire organism? This course will explore the process of development of a variety of living organisms, from the roundworm, to the fruit fly, to the frog, to the fish and all the way to humans. We will discuss the molecular genetics, cell biology and physiology behind the development of tissues and organs, and even throw in some ecological influences! Disruptions to development brought about by genes and environmental factors will be discussed. Course grade is based on lecture exams and short assignments.

BIOL 319 - Evolutionary Biology  
**Dr. Conley**

Tuesday and Thursday at 11AM

"Nothing in biology makes sense except in the light of evolution."  Theodosius Dobzhansky, 1973

Evolutionary Biology examines the mechanisms that have resulted in the rich diversity of life. Students will explore connections between natural selection and Mendelian and molecular genetics, population biology, form and function, sexual selection, development, the fossil record, and human evolution. Evolutionary Biology is a biology elective that "brings it all together."

BIOL 404 – The Origin of Species – 3 Credits  
**Dr. Plague**

Two sections are being offered: one meets Mon afternoon, & the other Wed afternoon

About 130,000,000 books have been published since Gutenberg invented the printing press, although few have had a greater influence on the fabric of humanity than Charles Darwin’s *The Origin of Species*. *Origin* is widely regarded as the most important biology book ever published. In it, Darwin not only introduced our modern views of evolution and natural selection, but he also laid the framework for phylogenetics, biogeography, and the concept of sexual selection. *Origin* is a rich and highly readable book, and is great fun to read and discuss with a group – which is what we will do in this course. (Prerequisites: BIOL 300 and BIOL 311.)
BIOL 413 – Neurophysiology  
Dr. Schreer

It’s back!

For those of you who haven’t had enough of my neural transmission rants or need to fulfill the Physiology requirement for the Biology BS or BA, this could be the course of your dreams…well at least we’ll study dreams, that is…

Neurophysiology is a 4 credit lecture and lab course.

Those of you that have already fulfilled their physiology lab requirement can opt out of the lab (see me to sign an override). But even if you have taken a physiology lab, you are welcome and encouraged to take the neurophys lab as we will have many new labs on the brain and behavior.

This course will focus on the structure and function of the nervous system including neural transmission, neurotransmitters, sensory and motor systems, the brain, behavior, and memory. Compared to my other physiology courses we will go into much more detail on how signals move through the nervous system and the different parts and functions of the brain. Additionally, we will delve deeply into several aspects of behavior including, motivation, emotion, rhythms and sleep, language, mental illness, and how we learn and remember. Wait…what did I just say? Lecture: Tues, Thurs 11:00AM-12:15PM, Lab: Tues 2:00PM-4:50PM.
NEW FACES IN THE BIOLOGY DEPARTMENT!

Dr. Jessica Rogers, a North Country native, has returned after receiving her undergraduate degree at Princeton University and her masters and PhD at Columbia University. She is currently an Assistant Professor in Biology/Environmental Studies at SUNY Potsdam. Her research interests look landscape conservation: more traditionally through deforestation changes in protected areas using GIS (Geographic Information Systems), as well as well as examining practical methods of conservation in the North Country.

Departments: Environmental Studies and Biology
Phone: 315 267-2522
E-mail: rogersje@potsdam.edu
Office: Satterlee Hall 307A

Rachel M. H. Wallace – Instructional Support Associate

I’m so pleased to be part of SUNY Biology! I’m a graduate of Skidmore College (B.A., Biology) and The Ohio State University (M.Sc., Plant Molecular Biology and Biotechnology). I’ve worked as a technician/manager at UPenn (Drosophila) and Clarkson (EE/Zebrafish), and as a Lab Instructor at Swarthmore College (Neuro, Genetics, Embryology, General Bio). I’m originally from CT, but have lived in Potsdam for 12 years with my husband Ken and our children, Margaret and Nicholas. I’m a 3-time co-op baking contest winner, enjoy all manner of fiber arts, and am VP of the Potsdam Central Board of Education.

Title: Instructional Support Associate
Department: Biology
Phone: 4814
E-mail: wallacrm@potsdam.edu
Office: Stowell Hall 223
SUMMER TRAVEL COURSES

Marine Biology for Summer 2017

Join the adventure! Several SUNY Potsdam students have been taking biology elective credits at our affiliate institution, the Gulf Coast Research Laboratory (GCRL) in Ocean Springs Mississippi as part of our Marine Biology Program. Courses include Marine Biology, Marine Mammals, Shark Biology, Ichthyology, and a variety of other life science courses with a marine focus. There are also research options available. Classes fill fast so please be attentive to opening dates if interested. For complete details, please visit the GCRL website (http://www.usm.edu/gcrl/) and under “Academics” click on “GCRL Summer Field Program.” Interested students should also contact our GCRL advisor, Dr. Conley.

Marine Biology class of 2014 on Santa Rosa Island, Pensacola Florida; including Potsdam students Ceira Dawson and Matt Nobles.
Health Professions

Interested in pursuing a career in a Health Profession? Enroll in the Health Professions Moodle course. There you will find information on all kinds of health-related programs including: MD, DO, PA, PT, Vet, Dental, OT, and Optometry, as well as medical related research programs. You can self-enroll and will receive periodic notices of events both on and off campus that pertain to various health-related careers. Talk to Profs Schreer, Trybula, or Ewy for more information.

WORK STUDY

If you are interested in and eligible for the federal work study program please see either Rachel Wallace (wallacrm@potsdam.edu, Ph 267-4814), or the department secretary, Marta Whalen (whalenmm@potsdam.edu, Ph 267-2264). Responsibilities include laboratory setup and cleanup, plant and animal care and a variety of secretarial work.

TEACHING ASSISTANTSHIPS

See the world from our side. Most professors are looking for motivated students to be teacher assistants for their courses. This is a great way to get some teaching experience and an opportunity to work more closely with one of your profs. This also counts as a 1 credit upper division bio course. Contact your profs before the end of the semester if you are interested and see some possibilities below.

- 5 (five) TAs needed for Bio 311 labs (Genetics) - Contact Dr. Trybula

- Many TAs needed for General Biology II labs – Contact Ray Bowdish or Dr. William Romey – see below

Teaching Assistant (TA) positions in General Biology 2 labs

If you are interested in becoming a Teaching Assistant in the General Biology II labs (BIOL 152) please contact me before the end of the fall semester. Basic requirements: 1) successful completion of Biology I lecture and lab courses (3.0 or better) and 2) a willingness to commit at least 2 hours of time outside your regularly scheduled lab section each week.
As a lab TA you will be helping to prepare and teach the General Biology II labs. This is a great way to reinforce your knowledge and to learn how things are done “behind the scenes” of lab. Upon successful completion of a TA position, students earn 1 credit and no monetary compensation.

For more information on anything I coordinate please email (bowdisrp@potsdam.edu).

**Teaching Assistant Opportunities** The department has a number of teaching assistant positions available this coming spring. **Biology 100 needs four TAs**, Contact Prof Ewy, if you are interested in being a TA for Biology 100 (the non-majors will appreciate your help). I am particularly interested in someone who can me help set up the Biology 100 labs which meet on Thursdays. The Biology 100 lab can be set up anytime during the week, so you can easily fit it into your schedule. This is an excellent way to review your introductory Biology, learn some teaching techniques, have some fun, and earn 1 hour of credit.

Preparing for MCATs or another exam that will test your Biology knowledge? The best way to really know Biology is to teach it! The Department is looking for TAs to help with Biology 152 recitation. This is an excellent way to review your Biology and help out the Intro class. Please see Prof Ewy for more information.

**BIOL 311 – up to 4 Teaching Assistants for Genetics labs**  
Dr. Trybula  
labs: Tuesday 9:00AM-11:50AM, Tuesday 2:00PM-4:50PM, Wednesday 2:00PM-4:50PM  
Pre-requisite: BIOL 311 lab or permission of instructor

Teaching Assistants needed for three lab sections, one TA will be selected as the lead TA who coordinates the prep activities. Duties include lab prep, lab breakdown, and attending one of the lab sections to assist the instructor and students. It is preferred that TA applicants have prior experience working with chemicals (e.g. CHEM 105) and willingness to learn lab and chemical safety regulations.

**Two assistants needed for Biological Concepts Lab (BIOL 125) - please contact Dr. Conley**

“When you teach you gain much more understanding of the subject at hand.”  
*This is a quote from an anonymous TA (not pictured).*
Profile of a Recent Bio Graduate: Alicia Lamb

My name is Alicia Lamb, and I received my Bachelor of Science in biology from SUNY Potsdam in 2014. From there I went on to be a graduate student at Stony Brook University, working under world renowned behavioral ecologist, Dr. Patricia Wright, who is best known for her holistic and successful conservation work in the bizarre and beautiful island of Madagascar. There are over 100 species and subspecies of lemurs, and they are all endemic to Madagascar. However, Madagascar is one of the world’s poorest nations, therefore, the Malagasy people resort to whatever means necessary to survive, including destroying the forests and hunting the lemurs. Because of this, more than 90% of lemur species are threatened with extinction. With only about ten percent of their original forests left, it is not surprising that lemurs are the most endangered group of mammals on the planet.

I traveled to Madagascar from May-August 2016 in order to conduct research on the effects of stress on the Milne Edwards’ sifaka (*Propithecus edwardsi*), one of the largest extant lemur species. Previous studies on these sifakas under stressful conditions in selectively logged areas have demonstrated that there are serious negative health effects especially on body size and reproductive success of the females. While some wild animals give obvious behavioral cues that indicate they are undergoing chronic stress, other animals such as lemurs are often more difficult to interpret. Using cortisol concentrations as a trusted measure of stress, I will compare it across *P. edwardsi* groups living in forests of varying amounts of human disturbance to see if stress levels increase as the amount of human activity increases. I used surveys to collect vigilance (alertness) behavior data as well as over 500 fecal samples for gut microbiome composition analysis (bacteria living within their intestinal tract) and cortisol. Through the comparison of the cortisol concentrations in varying stressful conditions, the project aims to determine if increased vigilance behavior could serve as a behavioral indicator of a stressed population. Also, by comparing the gut microbiome composition with cortisol concentrations, the under or over representation of certain bacterial genera could prove to be an effective bacterial indicator of stress in wild lemurs. If cortisol levels, vigilance behavior, and the gut microbiome composition do not differ significantly among sites, it suggests that *P. edwardsi* may not be as stressed by human presence as initially hypothesized.
A portion of my research also used a controlled stressor in order to be able to effectively study stress in the event that there were no differences across habitat disturbance. In order to stimulate the presence of a perceived natural stressor, I played recorded predator calls of Henst’s goshawk and documented individual behavior pre- and post-playback. Sifakas significantly increased the time spent in vigilance behavior after the predator playback, indicating a perception of predator risk (chi square: p-value= 0.0150). Additionally, individuals spent significantly more time travelling following predator playbacks (p= 0.0443). Interestingly, there was no significant difference in the proportion of time spent feeding before and after playback calls (p= 0.2415), suggesting that feeding time in *P. edwardsi* may be prioritized despite increases in other behaviors, such as vigilance and travelling. There was a statistically significant decrease in the proportion of time sifakas spent resting (p= 0.0127) and grooming (p= 0.0028). These data suggest that *P. edwardsi* populations that perceive an increased risk of predation, reallocate the time devoted to some activities to accommodate the increased perceived need for vigilance. It is therefore possible that anthropogenic stressors such as ecotourism and forest degradation may impact activity allocation which could impact the overall health of sifaka populations. My next steps are to finish analyzing my lab samples to see how the stress responses change across habitat disturbance. Along with these behavioral changes, I will be looking at the shifts in cortisol concentrations and the microbiome composition across the different habitats when exposed to a predator.

Through this research, I hope to come to a better understanding of how lemurs are impacted by human presence. This is crucial in Madagascar, as it is a country with an ever increasing population and ecotourism is one of the main sources of income. My goal is to have researchers and conservation biologists use my new, non-invasive indicators of stress as a way of determining where to focus their conservation efforts. This research could then be translated to other lemur species and ideally other species of primates as a means of determining the overall health of certain species and populations. This will aid in informing conservation biologists which species and populations need the most conservation efforts.
## Revision to Environmental Science Minor!!

Beginning Fall 2015, the Environmental Science Minor will be revised in an effort to shift the focus of the Environmental Science Minor to the natural sciences in order to give students the knowledge and technical skills they need to get jobs in the environmental science sector. The number of credits is largely unchanged and the number of uncounted prerequisite courses has been greatly decreased. Most scientists who focus on environmental issues end up functioning primarily as either biologists (plants, animals, and ecosystems) or geologists (water, soil, and pollution); a minor that gives them interdisciplinary training will improve their marketability. Common tasks like wetland delineation can be done more effectively by a biologist if they have had a few classes on soil and water; geologists can do it more effectively if they have had formal coursework on ecology and plant biology. See it below!

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<th>Revised Environmental Science Minor (24 credits)</th>
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<td><strong>Level</strong></td>
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<td>Required courses: 6 credits</td>
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<td>Prerequisite courses: 3-4 credits for BIOL/GEOL majors, 4 credits for others</td>
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<td>Advanced Courses: 14 credits for BIOL/GEOL majors, 11 credits for all others. Advanced courses must be taken outside of the student’s major.</td>
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Hello! I am a proud Potsdam Alumnus ('87) who earned my Masters in Entomology from the University of Maine, Orono. I feel fortunate to be able to return to campus, in 1993, to teach Biology.

As the department’s University Instructional Specialist my time is split between teaching courses and coordinating the Wagner Institute for Sustainability and Ecological Research (WISER) Center. At home in Lisbon, my wife and I own and operate Never Tire Farm, a commercial greenhouse operation and organic gardens. My favorite things aside from teaching and farming, is hiking (Figure 1).

**WISER Center**

Biology will be opening the WISER Center next spring. It promises to be a hub of activity, supporting campus sustainability, biology courses and a variety of applied learning opportunities. The Center will feature a student learning space with new technology resources that will facilitate a wide variety of teaching and outreach missions. To support the mission and begin developing the WISER Coordinator won a $150,000 grant for the development and implementation of distributed agricultural solutions. These resources will be linked to ongoing classes and programs.

Please consider a WISER Internship Opportunity or join the Current Topics in Agroecology course next spring.

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**Biology Department Applied Learning Opportunities**

**Care and Handling of Display Animals in the Biology Department at SUNY Potsdam**

- Help care for animals (reptiles and fish) in the department
- Create learning materials to help others discover the animals in the department
- Report your work to the campus at the Learning and Research Fair

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*Figure 1* Homo sapien neanderthalensis captured in a rare selfie atop the ridge to Mount Massive, CO ~ 13,750 ft. above sea level. This species is the sworn enemy of Homo sapien sasquashensis.
Wagner Institute for Sustainability and Agricultural Research (WISER) Internship, in the Biology Department at SUNY Potsdam

You get to:
- Manage the Healthy Plant Initiative (HPI) program
- Grow microgreens for PACES
- Help Develop our campus composting initiative
- Learn horticultural technique
- Practice Integrated Pest Management
- Report your achievements to the campus at the Learning and Research Fair

Figure 2 Students in Sustainable Agriculture 304 show off microgreens that were grown with the help of WISER interns

Biology Technician Internship Techniques in the Biology Department at SUNY Potsdam

You get to:
- Help create and maintain chemical inventory lists
- Learn to prepare lab materials for biology labs
- Develop skills in lab instrument care and maintenance
- Maintain the lab materials inventory
- Learn various lab protocols and skills for working in a biology research lab
- Get trained in chemical safety.
Technologies in Teaching
- Work as a TA in the General Biology Labs (credit only)
- Learn how to deploy cutting edge technologies in a classroom laboratory setting
- Create learning materials to help students learn how to use technologies
- Aid in the development of Unity software to improve its functionality for teaching.
- Report your work to the campus at the Learning and Research Fair

Off Campus Internship Opportunity

Study Horticulture from Never Tire Farm

Each spring, Never Tire Farm (Lisbon, NY) seeks motivated students of junior status or higher, for a unique and valuable experience, working in a modern greenhouse operation. Students that qualify for the internship will be actively learning about all aspects of greenhouse production including: sowing, transplanting, fertilizing, watering and propagation of various annuals, perennials, vegetables and herbs. Interns learn about the business of growing plants and will be exposed to maintenance and labor issues facing modern growers. Qualifying interns should have experience as a WISER intern and be trained in Integrated Pest Management (IPM) techniques and participate in the Never Tire Farm’s biological control program.

RESEARCH WITH PROFS

Dr. Glenn Johnson – Conservation of Threatened Species
231 Timerman Hall, 267-2710, johnsong@potsdam.edu

Note: Dr. Johnson will be on sabbatical leave for Spring 2017!

I am participating in a relatively new turtle project that has begun in earnest last Fall, where students and I are surveying local streams for the presence of wood turtles, considered a Species of Greatest Conservation Need in New York. This project is regional in scope and is being pursued by conservation departments in most northeastern states. In the meantime, we are busy beginning surveys in streams and rivers throughout the region. Wood turtles are most readily found in Fall (late September – mid November) and again in late March to early May, when they are still active and moving about in clear streams that course through woodlands and meadows. Between those dates in winter, they are hibernating in the stream banks and in beaver lodges, while in summer they spend most of their time on land, foraging for invertebrates they love to eat. Six students are participating this Fall and I am hopeful a similar number will be interested next Spring…so, if you like to muck about in wetlands and cruise up and down beautiful creeks and streams, please stop by and see me or email (johnsong@potsdam.edu).
A second, somewhat related project involves a region-wide survey for Blanding’s turtles, a Threatened Species over much of its range. This project is part of a multi-state State Wildlife Grant, is fully funded, and we will be cooperating with conservation biologists in Pennsylvania, Massachusetts, New Hampshire and Maine. Our portion involves conducting rapid assessments of Blanding’s turtle populations across the North Country, Saratoga and Dutchess Counties, establishing several long-term monitoring sites, creating artificial nest sites for this species and setting up a Turtle Crossing sign network within parts of New York. If interested in learning more, please contact Dr. Johnson.

**Dr. Jason Schreer**

OUCH MY CLAVICLE!!! Maybe if I cycled more efficiency this wouldn’t have happened. Let’s look into ways to improve efficiency. Dr. Schreer is seeking a few highly motivated students to conduct a study on whether running and cycling form affects the lactate threshold. If interested, and willing to work and think hard, contact Dr. Schreer at schrejf@potsdam.edu.
Dr. Rob Snyder

Spring 2017: I will be teaching Introduction to Genomics, Advance Topics in Genomics (with Dr. Plague) and a Current Topics (Genes, Genomes and Evolution). Come see me (or read the courses section of the newsletter) if you want to know more about these courses.

Interested in independent research? I’m willing to mentor undergraduate research in genomics / bioinformatics and phylogenetics, as well as, behavioral ecology. Don’t know what you want to do? Stop by my office (307 Stowell).

Check out my website for news and information about the Snyder Lab [http://www2.potsdam.edu/snyderrl/](http://www2.potsdam.edu/snyderrl/)

Robert Ewy - Research experience on environmental effects on plants

I have a number of research projects ranging from sustainable energy (biofuels) to co-evolution of proteins. You can learn a number of different techniques, including molecular biology processes, insect identification, analysis of "non-traditional" data sets, protein isolation and identification, to data crunching. If you are at all interested in graduate school, research experience during your undergraduate education is becoming a must. But the most important point is that research is fun! I work with all levels of students, from first year students to seniors. The only requirements you need are curiosity and an appreciation of plants.

I am particularly looking for someone to make growth measurements this fall/next spring as the willows were harvested this winter and will quickly grow back. The willows are beginning their eighth year after planting. You can earn research credit via Biology 485 or an internship.
Dr. Jan Trybula

My lab is slamming hard on the brakes and putting it into reverse. Starting Spring 2017, my primary focus will be back to my roots, so to speak, as I pursue studies in molecular ecotoxicology. This is an interdisciplinary approach that looks at organisms in “pristine” and “stressed” habitats and examines their population genetic structures. Future work will be biochemical in nature as we try to discern what genes confer resistance to stresses or which cause organisms to be more susceptible to stresses. This is work that I did back during my PhD and I’m eager to get back to it. Work will be in preliminary stages in the Spring as I gear up for the summer field season. Primary focus organisms will be emergent aquatic insects (such as dragonflies), but many organisms have potential with these analytical techniques. In summary, it is sort of looking for the “canary in the coal mine” to see which organisms are on the front lines. Knowing how they are being affected can show us how humans are potentially being affected by these same stresses, whether they are natural or man-made.

Dr. Gordon Plague – Research Opportunities in the Plague Lab

Transposable elements are the most abundant and most ubiquitous genes in nature. In my lab, we study the molecular evolution and ecology of transposable elements using both laboratory experiments and data mining/bioinformatics approaches. I’m looking for several motivated students to participate in this research. If you’re contemplating graduate school, this is a great way to gain hand-on research experience. Please contact me if you’re interested (plaguegr@potsdam.edu).
Ms. Ningyun Cai, Adjunct Professor, M.S., M.L.A.

Ning teaches labs for Genetics, General Biology and Principles of Biology. Her interests include Sustainability, Landscape Architecture and Ecotourism. She also teaches Chinese 101-103 for the modern Languages Department.
### REQUIRED BIOLOGY COURSES
(23 hours)

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### REQUIRED CHEMISTRY COURSES
(12 hours)

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### REQUIRED PHYSICS COURSES
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### REQUIRED MATH COURSES
(7-8 hours) (Two Semesters)

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### BIOLOGY ELECTIVES
(16 hours)

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</table>

CHEM 342 (Organic Chemistry II) is highly recommended for Biology Majors seeking careers in health sciences, molecular biology, or physiology.

MATH 151 and 152 (Calculus I and II) are co requisites for the University Physics sequence.

* Ecology is only offered in the Fall semester.
* Genetics is only offered in the Spring semester.

**Must have a 2.0 GPA or higher in all major courses.**
## Requirements for Graduation

### Biology (BA)

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**REQUIRED BIOLOGY COURSES**
(22 hours)

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**REQUIRED CHEMISTRY COURSES**
(12 hours)

**BIOLOGY ELECTIVES**
(14 hours)

* Ecology is only offered in the Fall semester.
* Genetics is only offered in the Spring semester.

Must have a 2.0 GPA or higher in all major courses.
# BIOLOGY SPECIALIZATION REQUIREMENTS

**Biology Required Courses (13-15 hours)**

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College requirements are 16 hours in the Specialization. This does not include the hours for Biology 125 (or equivalent). All electives after the first year sequence must be 300 or higher.