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Registration info  
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Transitions in the Biology Department:  
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BOB CERWONKA MEMORIAL SCHOLARSHIP

This year’s recipient of the $1000 Bob Cerwonka Memorial Scholarship is Amber Rudolf. This scholarship, made possible by a generous donation from department alumnus Mr. Robert E. Wagner (’75) is awarded to a declared Biology major in good academic standing with a demonstrated interest and appreciation of nature and the environment.

Look for an announcement about the next Cerwonka Award in the Fall 2018 newsletter.

Comments or suggestions about the newsletter?  
Contact Dr. Glenn Johnson, Newsletter Editor, in Timerman 231, x2710, johnsong@potsdam.edu
REGISTRATION

Advising begins March 19. The spring schedule will be available online this day
Registration begins:

- Seniors – April 11
- Juniors – April 12
- Sophomores – April 13
- Freshmen – April 17-18

Students may adjust their schedules on BearPAWS until midnight, Sunday, August 26th, 2018, 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

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. View the Fall 2018 class schedule at:
http://www.potsdam.edu/offices/registrar/schedules/classschedulebydept

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. Jan Trybula, the 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.

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

A group of SUNY Potsdam students on Lime Caye, an island in the Caribbean Sea of southern Belize…
TRANSITIONS – NEW DEVELOPMENTS IN THE BIOLOGY DEPARTMENT

Beginning in Fall 2019, BIOL 151 will be taught in the Spring and BIOL 152 will be taught in the Fall. Another upcoming change for Biology majors who matriculate beginning in Fall 2018, there will be requirement that two (2) of the elective courses selected for the Biology BA and BS major degree program have a laboratory section.

With no small degree of bittersweet feelings, I need to inform you of several personnel changes involving our colleagues coming for Fall. First, Bill Brown will be leaving SUNY Potsdam for a position he loves with the Adirondack Land Trust in Keene, where he was employed prior to his time here. Bill taught several biology courses for, and was an integral part of, our Environmental Studies major. We wish Bill and Katherine well and they will be sorely missed!

Second, Dr. Kate Cleary, our wonderful Lecturer this past year, has taken a Visiting Professor position in the Environmental Studies Department at St. Lawrence University…so she is still nearby!! She is sad to be leaving but she looks forward to continue collaborations with us. Give Kate your congratulations and thank her for running a great Seminar Series!

Finally, although he is not leaving us, Dr. Conley will continue to serve as Interim Dean for the School of Education and Professional Studies and will not be teaching any courses this coming Fall. Dr. Snyder and Ning Cai return from their yearlong sabbatical leave and we look forward to hear all about their time away!

WISER Center News

The WISER center has been a hub of activity, supporting campus sustainability, biology courses and a variety of applied learning opportunities. The Center’s two greenhouses features Tower Garden Aeroponics, propagation space, exotic plant and insect species along with innovative student growing projects like Vertical Microgreens and the Herb Wall.

We are currently seeking students for our WISER Staff for fall. The positions available include:

- 4 student volunteers (minimum of 2 and a maximum of 6 hours per week)
- 4 student internships (1 – 3 credit hours = ~2.5 – 8 hours per week)
- 2 student research projects (6 – 10 hours per week)

Please consider a WISER Internship Opportunity or join Sustainable Agriculture (BIOL 304) course next Fall. Space is limited to 11 seats so make sure you don’t miss it! For more information contact Raymond Bowdish at bowdisrp@potsdam.edu
NEW AND IMPROVED COURSES

Three Current Topics Offerings for Fall!!

BIOL 483 – Current Topics: Biology of Cancer - SI
Dr. Laura Rhoads
Wednesday 4:00 – 6:50

What person is NOT affected in some way by cancer? Why haven’t we figured out a cure for all cancers yet? Why do some people die young from cancer yet others live to a ripe old age cancer-free? Would you like to learn more about these questions? Biology of Cancer is a seminar-style class and satisfies the college-wide requirement for a speaking-intensive course (SI) and the requirement for a Current Topics course in the biology major. We will be looking at cancer through the lens of cell biology, molecular biology, physiology and medicine. Using these various aspects of biology, we find out what causes cancer (and what not to be so worried about), 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. Each student will give a full presentation on a type of cancer, with peer review and feedback.

BIOL 483 – Current Topics: Neuroscience of Consciousness - SI
Dr. Jason Schreer
Wednesday 2:00 – 4:50

READY TO HAVE YOUR MIND BLOWN?!?

Neuroscience of Consciousness, BIOL 483, will be offered this Fall by Dr. Schreer. This is a current topics course and fulfills the speaking intensive (SI) requirement. We will explore arguably the greatest unanswered question, what is consciousness? We will start by approaching this from a biological perspective looking into brain anatomy and neural function. We will then expand the conversation into where the “mind” is located, how consciousness affects our reality, and even the quantum enigma, that is, how consciousness actually alters reality?! Any questions, please contact Dr. Schreer at schreejf@potsdam.edu.
BIOL 483 – Current Topics: Invasion Biology - SI
Dr. Glenn Johnson
Tuesdays 4:00 – 6:50 pm

In the form of bacteria, small arthropods and tiny plants, life first invaded the land from the sea in the Silurian, about 450 million years ago. Vertebrates followed about 70 million years later, probably from fresh water environments. Since then, living things have moved around the planet, entering and occupying new habitats, expanding their range as they evolve and adapt to changing conditions. It has only been relatively recently, however, that the magnitude and pace of these invasions has been ramped up as human beings now move with relative ease to all corners of the Earth. Some of the worst offenders are those species, like rats and cockroaches, that are commensal with humans, travelling with us as we populate the globe. Others get scooped up in our ballast water or hitchhike on our clothing. Many (most?) are deliberately or through ignorance moved about for agricultural purposes, for their beauty, for novelty or to control another, earlier exotic import. Many of these have become invasive and can drastically alter natural ecosystems, often with grave consequences. In this Current Topics, we will drill deep into the ever-growing body of literature on Biological Invasions.

A case of Invasional Meltdown:
The native red land crab, whose overland migrations are legendary, being attacked by the invasive yellow crazy ant…leading to alterations of the native vegetation on Christmas Island in the Indian Ocean.

Sustainability Trifecta!

The interaction between plants and insects is key to any sustainable agricultural system. If humans are to have enough food, we need to understand all the relationships between plants and insects. This fall the Biology Department will offer not one, not two, but three upper division electives that form a basis of a Biology-based Sustainability curriculum. Insect Ecology (BIOL 312), Botany (BIOL 326), and Sustainable Agriculture (BIOL 304) will be offered this fall. See the next pages for course descriptions and here’s the schedule:

Botany: MW lecture 10-10:50, Lab M 2-5
Insect Ecology: MWF lecture 11:00-11:50 Lab W 2-5
Sustainable Agriculture: MW lecture 1:00-1:50 Lab TBA

If you have any questions, contact: Dr. William Romey about Insect Ecology
Dr. Robert Ewy for Botany
Ray Bowdish for Sustainable Agriculture
BIOL 304 – Sustainable Agriculture (now 4 credits!!)
Ray Bowdish
MWF 1:00 – 1:50, Stowell 213, Lab to be announced soon!
Prerequisites: BIOL - 100, 125, 151 OR 152

This course is offered each fall. Lecture and active learning activities are designed to investigate topics vital to understanding agricultural sustainability, including issues of: land use, biological diversity, pest control, labor and human rights and economic viability. Field trips to local farms will serve as examples of the various local agroecosystems. The class will document the differences between these farms and analyze them for their relative sustainability. Class members will also grow crops themselves, to investigate tools for sustainability assessment.

Students from the Sustainable Agriculture 304 course grew microgreens for PACES in Fall 16’.

BIOL 326 – “Morphology of Higher land Plants” aka “Botany”
Dr. Rob Ewy
Lecture MW 10:00 – 10:50, Lab M 2:00 – 4:50

Plants are the basis of our food chain. We will cover plant anatomy, life cycles, and the interrelationships of plants and animals. Sustainability begins with plants, so an understanding of plants is key to developing sustainable practices. If you are at all interested in sustainability, this class will provide you a solid foundation on which to build "best practices."

Transplanted Olive trees at Olivas de Oro Olive farm.
**BIOL 312 – Insect Ecology**  
Dr. William Romey  
MWF 11:00 – 11:50 Lecture; W 2:00 – 4:50 Lab

Insects rule the world. Not only do they have the most number of species, they have some of the biggest impacts on many ecosystems and on humans. They are a major cause of disease spread and a major cause of agricultural losses. And with all of those species, they have some of the most interesting behaviors and ecological adaptations of any group on the planet. Whatever your career plans (genetics, ecology, behavior, medicine, teaching, conservation biology) this course will enhance your goals by giving you a thorough understanding of insects and how to do science in general. We will cover the topics of: behavior, ecology, diversity, evolution, and physiology. A number of field trips will get us up to the Adirondacks and surrounding areas, and we typically prepare an insect feast in order to share our knowledge with the campus. In the laboratory for this course, students will prepare an insect collection, collect data in the field, and do behavioral studies in the lab with high tech cameras and video analysis equipment. During the last four weeks of the course, you will have the opportunity to do an independent project of your choosing. This class satisfies an upper division lab credit requirement.

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**BIOL 409 – Freshwater Ecology**  
Dr. William Romey  
MWF 9:00 – 9:50 Lecture; Thursday 2:00 – 4:50 Lab

Rivers and lakes are some of Northern New York’s greatest assets. Many of our industries rely on our freshwater resources: tourism, logging, and power. Also, there is a lot of interesting biology going on under the surface. If you enjoy going out on (and in) the water while pursuing biological truths, this is the course for you! Weekly labs include: surveying native clams in the river, visiting the St. Lawrence Power dam and its zebra mussels, and going to Adirondack Lakes to take sediment core samples that let us look 100s of years back in time. In class we will explore the physical properties of water, phytoplankton, zooplankton, aquatic insects, and fish. Local ecosystems will be compared with others around the world including: The Great Lakes, killer African lakes, and tropical rivers such as the Amazon. The effects of pollution and dams on these ecosystems will also be considered. This class satisfies an upper division lab credit requirement.
Life began in the ocean, so the marine realm was not only the first ecosystem, but it remains by far the largest and it drives global forces that affect every other ecosystem on our planet. Marine Biology examines the diversity and ecology of organisms that reside in the open ocean, in coral reefs, around deep sea thermal vents and in bays, estuaries, mangrove swamps and salt marshes. In this course, we will examine physiological and morphological adaptations of marine life, including the ecological interactions among organisms that inhabit the plankton, nekton, and benthos. We will also explore marine resources and the impact of humans on the oceans.

Please be aware that this is not a laboratory course although some lab exercises are being planned. An optional weekend field trip to the New England Aquarium is in the works for students enrolled in this class.

Students exploring careers in the marine field should strongly consider electing the summer field course at the Gulf Coast Research Laboratory (see page 14 and Dr. Conley for details).

*Photos by Jessen Swider and Scott Schlueter*
BIOL 401 – Exercise Physiology – Fall and **SUMMER COURSE** – 100% online w/ lab

*Dr. Jason Schreer*

Summer: May 25 - June 29, 100% online with lab  
Fall: Lecture: Tu, Th 9:30 – 10:45,  
Lab: Monday 2:00 – 4:50

*So...who wants to suffer???*  
*Well, hopefully will learn ways to suffer less when we exercise?*

**Exercise Physiology, BIOL 401, will be offered this Summer 100% online including an online lab component AND this Fall as a regular face-to-face lecture and lab course.**

Just to be clear, this is NOT a 2-term course, just the same course being offered 2 terms in a row. The summer course will take place from May 24 - June 28. Both courses fulfill the biology Physiology requirement. Any questions, please contact Dr. Schreer at schreejf@potsdam.edu.

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BIOL 279 – Careers in Health Care

*Dr. Robert Ewy*

Interested in a health career, but not sure which one? Or maybe you came to college thinking you wanted to become a surgeon, but then decided it wasn't really for you. What else can you do in health care? Did you know you can be the person who runs the heart/lung machine during surgery, but you don't have to go to medical school to do this? Maybe the idea of working in a hospital lab determining if tissues are cancerous or not sounds interesting. There are lots of careers outside of medicine that enable you to help patients. This course will have professionals in various health careers discuss what they do, the ups and downs of the job, and what it took to get into a professional program. This course will meet twice a week for eight weeks in the first half of the semester. Sophomore level standing required. See Prof Ewy for details.

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**Biology on Facebook**

Did you know that the Biology Department has a Facebook page? Please connect with us online through Facebook. You will find department announcements as well as information about internships, department seminars, and interesting science news.

[https://www.facebook.com/SunyPotsdamBiology/](https://www.facebook.com/SunyPotsdamBiology/)
What Is Ecology?
Ecology is the study of the relationships between living organisms, including humans, and their physical environment; it seeks to understand the vital connections between plants and animals and the world around them. Ecology also provides information about the benefits of ecosystems and how we can use Earth's resources in ways that leave the environment healthy for future generations.

Ecologists study these relationships among organisms and habitats of many different sizes, ranging from the study of microscopic bacteria growing in a fish tank, to the complex interactions between the thousands of plant, animal, and other communities found in a desert.

Ecologists also study many kinds of environments. For example, ecologists may study microbes living in the soil under your feet or animals and plants in a rainforest or the ocean.

The Role Of Ecology In Our Lives
The many specialties within ecology, such as marine, vegetation, and statistical ecology, provide us with information to better understand the world around us. This information also can help us improve our environment, manage our natural resources, and protect human health.

Catalog description: BIOL 300 – Ecology (3-4) Physical environment of terrestrial and fresh-water eco- systems, interspecific and intraspecific relationships, speciation, demography, growth and regulation of populations, energy flow, community organization and development. Prerequisites: BIOL 151 or 125, and 152.

Lab optional*. Gen Ed: WI (writing intensive) lab only.

*New students (Fall 2016) will have the option to take either Ecology (BIOL 300 lab) or Genetics (BIOL 311) lab. Students should consult with their Biology advisor to determine which option is best. Students can take both labs, with the additional lab counted as Biology Elective credit. Current students can request this option; please contact your advisor.

ECOLOGY TAs needed!!! Please see Dr. Johnson, Dr. Cleary or Dr. Snyder if you are interested in being a TA for Ecology labs. Valid Driver’s License required!
BIOL 407 – Cell Physiology
Dr. Laura Rhoads
Lecture Tuesday/Thursday 9:30 – 10:45  Lab Tuesday 1:00 – 3:50 pm

Cell physiology is the study of living organisms at the cellular level. This course will take you through all of the parts of a cell, looking at both the structure and the functions of biomolecules and organelles. The accompanying lab will give you hands-on opportunities to work with cells from across the living kingdoms of eukaryotic organisms- animal, plant, fungi and protist (in the photo you can see flagella from a protist called Tetrahymena- we will be playing with these!). Students will perform an independent project based upon the techniques learned throughout the course. The lecture includes short writing assignments and exams that have a research focus. This course counts for the physiology requirement for the biology major; if you are looking for an elective upper level and have already completed one of the physiology courses, please contact me about an override to remove the lab requirement.

BIOL 445 – Human Genetic Diseases
Dr. Jan Trybula
MWF 9:00 – 9:50

It seems that every time we look, there is more information about how our genes affect our health. Some diseases are rather straightforward – if you have the wrong allele, then you get the disease. However, those well-known and well-studied diseases (like cystic fibrosis or retinoblastoma) are the exception, not the norm. The influence of most genes is much more subtle. They either set off a cascade of events that eventually results in a disease phenotype (like fibrodysplasia ossificans progressive seen in the picture) or they are just one minor player in a much larger cast that includes other genes and/or environmental influences (like heart disease or many cancers). Combine this with the fact that healthcare is moving more to a “personalized medicine” format and you can see that genetics is an important aspect of modern medicine. Recently tests have become available to scan for nearly 200 genetic disorders. This course explores various aspects of genetic-based diseases, while looking into the current peer-reviewed literature and giving students a chance to explore a few diseases in more detail.

FOP, a chronic bone overgrowth disorder. Image from: http://www.uphs.upenn.edu/news/News_Releases/apr06/briefing/FOPfeatures.jpg
BIOL 320 – Microbiology
Dr. Gordon Plague
Lecture MWF at 10:00 am-10:50 am, Lab W 2:00 pm - 4:50 pm

Microbiology (BIOL 320). Microbes may be small, but they rule the world (and they’re phenomenally interesting from a biological perspective).

Call for Teaching Assistants in Microbiology

Please contact Dr. Plague (plaguegr@potsdam.edu) if you are interested in being a Microbiology TA. The lab will meet on Wednesday afternoon.

BIOL 403 – Human Anatomy and Physiology I
Dr. Sarah Sirsat
Lecture TuTh 11:00 – 12:15, Lab sections Tu/W/Th 2:00 – 4:50

Planning on going into a health professional program? MD, PA, RN, etc.? The first semester of any medical professional program will feature challenging gross anatomy, dissection, and physiology courses. But what if there was a way to get exposure to all of those topics ahead of time?! But, wait!! There is!!

Human Anatomy & Physiology I (BIOL 403) is the first half of a 2-term course (2nd term is BIOL 404 offered in the spring) in which students are introduced to different levels of human life: from cells to tissues to organ systems with a special emphasis on preparation for careers in the medical field.

Organ systems are explored in detail so that students will be able to recognize and identify key structure as well as discuss function and role of those structures in respect to the human body as a whole. Throughout the course, students will be challenged to integrate all the information and systems into a holistic approach of what makes a human being and how humans work. The laboratory component of the course provides hands on experiences in physiological experiments and anatomical identification.
The State of New York and the nation are experiencing a massive teacher shortage. Areas of greatest need include all STEM fields. There are many openings for biology, and all of the natural sciences, educators in every school district, and every state. If you love biology, and want to share that passion with others, the teaching profession offers opportunities to positively influence the lives of many. SUNY Potsdam has been a pioneer in teacher education, housing the oldest teacher preparation program in SUNY, and among the first in the nation. Our BA/MST option provides professional certification while preparing students for a lifetime of success in the classroom. If interested, please contact your academic advisor.
**SUMMER TRAVEL COURSES**

**Marine Biology for Summer 2018**

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://gcrl.usm.edu/summer_field/index.php](http://gcrl.usm.edu/summer_field/index.php) Interested students should also contact our GCRL advisor, Dr. Conley ([conleywj@potsdam.edu](mailto:conleywj@potsdam.edu)).

SUNY Potsdam Biology major Nelson Torres (pictured far left) and Alexandra Bosse enrolled in the Shark Biology course during summer 2017.
SUNY Potsdam will be offering a travel program to Kenya from May 24 – June 2018. **LOOK for this course in 2019 as well!!!** You’ll get to take 2 courses, simultaneously, for 6 credits: BIO 352 Tropical Biology and Conservation (BIO UD credit, ENVR science elective) and ENVR 195: Environmental Studies in Kenya (XC and ENVR elective). The Instructors are Drs. Jessica Rogers and Glenn Johnson. Both courses will travel to 4 different sites in Kenya looking at wildlife, national parks, management and conservation practices and cultural exchange. The program fee covers all expenses from leaving the US until your return.
Winterim 2018 – 2019

BIOL 395 – Tropical Ecology and Conservation - Belize
Dr. Glenn Johnson and Scott Schlueter (US Fish and Wildlife Service)

Spend the first days of the new year in a remote tropical rain forest in Belize.

Consider a winterim travel course leaving snowy Potsdam on December 27 and returning on January 9. See Dr. Johnson (johnsong@potsdam.edu; x2710. 231 Timerman) for details. Note: Winterim has gone to a tuition-based semester so in addition to the program fee (which covers all expenses including flights) you need pay for the credits and register during Fall and attend 3-4 meetings in late November and December.

Over this two week course to Belize students will visit unique biological communities including tropical hardwood rain forests, mountain pinelands, mangroves, coral reefs and several freshwater wetland communities such as freshwater lagoons, tropical streams and rivers. Participants will visit Mayan ruins and see first-hand the ecological problems that beset some parts of this small Central American country. Prerequisites: BIOL 300 or permission of instructor. Contact Dr. Johnson for more details.

Photos: Jessen Swider
Agroecology of Cuba January 2019

Ray Bowdish
I hope to take 12 students to study for two weeks at the Universidad de Cienfuegos in January of 2019. This Winterim course will offer a wide variety of historic and cultural experiences as we travel to Cuban farms cities and historic sites around the city of Cienfuegos. Some of the sites we may visit include: Rancho Luna beach, the historic town of Trinidad, Casa De La Santander (a sugar mill museum), a private Farm “El Mango”, the Pedregal biodiversity research farm, and the National Aviary Reserve at Laguna Guanaroca, and national historic sites like the Agusto “Che” Guevara memorial and the Armored Train Museum in Santa Clara. Look for announcements for an upcoming interest meeting. If you are interested please email me at: bowdisrp@potsdam.edu

Bert Correa, Julie LeVonne and Sidney LaPan are heading off to do some birding in Laguna Guanaroca

The Agroecology of Cuba Course is a 3-credit travel course designed to investigate the history, methods and cultural connections of a range of Cuban agricultural practices. Participants will travel around the province of Cienfuegos Cuba, visiting historical sites and attending cultural events and activities in a multidiscipline course of reflection and learning about Cuba’s food production systems. Students will be immersed in Cuban culture as they live in Casa Particulares and attend lectures from faculty of the Universidad de Cienfuegos (UCF). Faculty and staff from UCF attend activities and events to enrich information and provide advice to students about how to interact with Cubans and their institutions. The combination of focused study in agroecology, its connection the economic and societal issues of Cuba, presents a unique multidisciplinary learning opportunity, unique to both SUNY and nationally.
**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.

**Pre-health club**

There is a student-run pre-health club on campus. This is another valuable resource for information about various health professional graduate programs. You can talk to students who have taken exams such as the MCAT, GRE, and other exams, as well as what out of class experiences you should be doing to help you get into the program you want. The current president is Camille Holmes.

**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.

**Teaching Assistant positions in General Biology I labs**

If you are interested in becoming a Teaching Assistant in the General Biology I labs (BIOL 151) please contact Dr. Jan Trybula trybulj@potsdam.edu 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 I 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.
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 151 recitation. This is an excellent way to review your Biology and help out the Intro class.

Please see Dr. Rhoads if interested in being a TA for BIOL 407 Cell Physiology

Call for Teaching Assistantships in Microbiology (BIOL 320).

Please contact Dr. Plague (plaguegr@potsdam.edu) if you are interested in being a Microbiology TA. The lab will meet on Wednesday afternoon.

3-4 TAs needed for Bio 300 labs (Ecology) - Contact Drs Cleary, Johnson or Snyder.

Dr. Ewy is looking for TAs for Biology100 (non–majors Biology). Bio 100 lab has (4) two-hour sections, all on Thursday. See Prof Ewy for more details.

“When you teach you gain much more understanding of the subject at hand.”
This is a quote from an anonymous TA (not pictured).

**INTERNSHIPS**

**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
- See Dr. Johnson or Rachel Wallace for more information

**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 horticulture techniques
- Practice Integrated Pest Management
- Report your achievements to the campus at the Learning and Research Fair

**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.

**What can you do with a Biology Degree??**

Here’s a few web resources!


https://www.tradeschools.net/articles/biology-careers.asp

https://www.indeed.com/q-Bachelors-Biology-jobs.html

For those interested in Natural Resources, Conservation and Wildlife:

https://wfscjobs.tamu.edu/job-board/

Thinking of Grad School in Biology?:

https://www.gradschools.com/programs/biology
Profile of a Recent Bio Graduate: Alberto Correa III

My name is Alberto Correa III, I graduated from SUNY Potsdam in the Spring of 2017 with a Bachelors of Science in Biology. While at Potsdam I took advantage of the wide breadth of courses in the department, by participating in classes ranging from ecology to bioinformatics. Two life changing travel courses, Tropical Ecology and Conservation taught by Glenn Johnson and Agroecology of Cuba taught by Raymond Bowdish, broadened my biological world view and showed me just how beautiful the world we live in is. Without a doubt these experiences, as well as classes such as microbiology, and advanced topics in biology: bioinformatics taught by Gordon Plague and Rob Snyder, shaped how I viewed the world not just as a citizen but a researcher, and gave me the confidence to apply to Ph.D. programs all over the country.

In the Spring of 2017 I accepted one of eight spots in Cornell University’s incoming cohort of Microbiology Ph.D. students. Cornell University is home to 18 different colleges and over 100 different departments, it is truly a place where collaboration is thriving. As a student in the Microbiology program, I am required to engage in three rotations through different labs in the field of microbiology. Each rotation is three months long and culminates in a presentation of the work I accomplished while there. This gives me the ability to work with faculty in the diverse biological departments on campus, including researchers like Daniel Buckley who is the newest author on Brocks Biology of Microorganisms. In my first 8 months at Cornell I have sat in on two different Nobel laureate lectures, interacted with scientist leading their fields, and rotated through 3 completely different labs.

My first rotation was in the lab of John Helmann, who is the chair of the microbiology department and the Editor of Molecular Microbiology. John’s lab currently focuses on 2 distinct aspects of bacterial biology, metal ion metabolism and cell wall biosynthesis in *Bacillus subtilis*, specifically. My mentor during that time was Azul Pinochet Barros who is a graduate student (soon to be Dr.) focusing on metal ion homeostasis mechanisms in Johns lab. Cells must purge accumulated intracellular metals at the risk of binding incorrect metal cofactors. This is known as mismetallation, a process where proteins which contain metal binding sites accidentally bind the wrong ion, inducing a conformational change which impacts protein activity. Together, we worked on understanding the role that iron overload plays in *B. subtilis* mutagenic rates.

Continued on next page!
My second rotation was in Tobias Dörr’s Lab, he is the newest member of the microbiology department and completed his post-doctoral fellowship at Harvard Medical School. Tobi’s work seeks to understand how bacteria build and maintain healthy cell walls through various cellular processes such as division, and how they can facilitate the rise of population level antibiotic resistance in natural and artificial contexts. For cells under constant threat such as free-living bacteria, maintaining a tight defensive is crucial to the survivability to the cell. Bacteria accomplish this by the use of a cell wall, which tightly regulates the extracellular factors that enter the cell and is tightly regulated by the cell itself. Paradoxically, a bacterial cells best defense is our best offense. Humans began to employ beta-lactam antibiotics (like penicillin) in the 1940’s to combat many bacterial pathogens such as syphilis and cholera. The unforeseen effects of this treatment were the rise of antibiotic resistance in human pathogens. In the Dörr lab I worked with a strain of Vibrio cholerae isolated from the most recent outbreak in Haiti, to determine how antibiotic resistance proliferates in bacterial populations. Using repeated rounds of beta lactam exposure, I generated a strain of cholera that had a 100-fold increase in growth on concentrations of chloramphenicol between 1-10 µg/mL. This same strain was also viable on a concentration of 20 µg/mL of chloramphenicol, a previously unobserved phenotype. This work will help us to understand how single cells are generating resistance phenotypes, and how those cells provide a pathway to population level immunity.

I am currently writing to you from my third rotation at Cornell, in Brian VanderVen’s lab where my peers passionately and tirelessly work on Mycobacterium tuberculosis, the causative agent of tuberculosis (once called consumption), which to this day has no cure and in 2015 caused 1.8 million deaths and infected a further 10.4 million people. As my final rotation at Cornell I will be choosing which lab I would like to join in May, and my hope is that I can use the things I have learned while I have been here to expand our knowledge of bacterial biology and hopefully make a difference in the world someday.
Revision to Environmental Science Minor!!

Beginning Fall 2015, the Environmental Science Minor has been 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 have 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 and go see Dr. Johnson for more info!

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<td>Pre-requisite courses: 2-4 credits for BIOL/GEOL majors, 7 credits for others</td>
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<td>Advanced Courses: 11 credits for all others</td>
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RESEARCH WITH PROFS

Dr. Glenn Johnson – Conservation of Threatened Species

231 Timerman Hall, 267-2710, johnsong@potsdam.edu

The Wood Turtle in the Northeastern United States: A Status Assessment and Conservation Strategy

I am participating in a turtle project that has begun several years ago, 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. Five students participated last Fall and I am hopeful a similar number will be interested this 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 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.

Beginning in 2019, I will be partnering with folks throughout the northeast on a new project with spotted turtles. If interested in learning more, please contact Dr. Johnson.
**Dr. Laura Rhoads**

As a cell biologist, I examine the behaviors of cells in response to their environment. The metabolic and signaling pathways of cells change in response to environmental toxicants, and I am interested in learning more about how these toxicants influence cells. I am looking for a student interested in working with *Tetrahymena* (pictured), single-celled free-swimming protists that can be cultured and manipulated in the lab. You will learn how to cultivate these cells in the lab, expose them to various conditions, and use both microscopic and biochemical techniques to study the effects of toxicants on the protists. Ideally the student will have had cell physiology and/or genetics. Please contact me by email (rhoadsls@potsdam.edu) if you are interested and provide me a list of courses you have taken and what your interests are.

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**Dr. Robert Ewy - Research experience on environmental effects on plants**

**Needed Fall 2018:** The willows are scheduled for harvest this fall and I need help in taking measurement prior to harvest. I will also now have enough material to try to make pellets, so if you are interested in producing biofuels, see me. I am also looking for students interested in studying the medicinal properties of willow. There are numerous papers written on using willow extracts to treat a variety of ailments, but little is known about maximizing production of these extracts. 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. You can earn research credit via Biology 485 or an internship.
Invasive Species in the North Country
Purple Loosestrife (*Lythrum salicaria*) is an invasive species that has infested much of the North Country and the St. Lawrence River valley. We did 4 weeks of data gathering in the summer of 2017, and plan to repeat that this upcoming summer. We were out in field from mid-July to mid-August mapping all the locations of purple loosestrife, and there were MANY! Dr. Rogers and 1-2 paid research assistants will spend 3-4 weeks during the summer of 2018 surveying the major County Routes 68 and 37 to document the extent of purple loosestrife using GPS. During the spring and fall semesters following this research, analysis will be done using GIS techniques to map the full extent and intensity of the invasion of Purple Loosestrife. We will also be studying the effects of an introduced beetle into one of the infestations to see if we can get a biological control for this species established in the North Country. Students from all majors are encouraged to apply.

Dr. Jan Trybula – Molecular Ecotoxicology

I study molecular environmental toxicology. That is a fancy way of saying using molecular techniques of DNA or protein genetics to study how pollutants in the environment disrupt the genetics of various organisms. Of course, my species of interest are dragonflies, but I’m willing and able to work on just about anything. Currently we are looking at the genetic variation in populations of Drosophila fruit flies to act as models for some preliminary testing before we start toxicity exposures. The ultimate long-term goal is to find the gene variants that confer resistance or susceptibility to toxins in the environment.
**Dr. Romey: Faculty Profile/Research**

Dr. Romey is looking for one or two highly motivated students who want to do behavior research on the general subject of animal grouping (why and how animals form schools and swarms). Typically, people in my lab spend a part of their time collecting animals (minnows or water beetles) in local streams. Then we film them in the lab and use computers to analyze their motion. Projects can also be done using simulation models to try to recreate how the animals are behaving. Some of the fun research tools you can use in my lab include: high quality video and computer equipment, 3-D printers, robots, and kayaks. If interested, and willing to work hard, contact Dr. Romey at his office (Stowell 204) or email him at romeywl@potsdam.edu.

Also, check out the following URL for an article, or his website for more information (https://www.potsdam.edu/academics/AAS/biology/Romey). Dr. Romey and one of his students recently published a paper (Romey, W.L. and Kemak, C. 2018. Animal Behaviour. 135: 147-152). Check it out on Google Scholar.

Can you identify these two invertebrates found in a tropical rain forest on our 2018 trip to Belize?? See Dr. Romey to collect your prize!
Biology major Jean MacAvery kicked off her Presidential Scholars research project this month by traveling to Parishville-Hopkinton Central School to recruit participants. Jean’s project, advised by Dr. Kate Cleary, is investigating the impact of domestic cat’s hunting habits on native birds, mammals, and amphibians in the North Country. Her research will test the efficacy of two commercially available hunting deterrents on cats - the BirdBeSafe collar and the CatBib. To carry out this research, Jean needs to recruit 30 owners of cats who are known hunters - these participants will be given collars and asked to collect any prey items the cats bring home over a 2-week period later in the spring. Jean and Dr. Cleary will collect and identify the prey remains, analyze the data, and develop educational outreach materials presenting the results to distribute at the Humane Society, local veterinarian’s offices, and conservation organizations.

On March 9, Jean and Dr. Cleary visited two sections of Mr. Michael White's Biology class to speak to students about the possibility of participating in the project. The students were excited and had plenty of funny cat stories to share! The hope is that participating students will get a taste of how amazing and fun biology research can be, and eventually become future biology majors at SUNY Potsdam.

If you are the owner of a hunting cat who is interested in participating in this study, please contact Jean MacAvery (macavejm199@potsdam.edu)

See the Project Flyer on the next page!
RECRUITING:
HUNTING CATS

For SUNY Potsdam Student Biology project studying cat collars meant to prevent overhunting by outdoor cats

Needed: four weeks of collection of cat prey; two weeks of having cat wear collar or bib. All materials will be provided by researchers at no cost to the owner, all prey will be collected weekly by researchers

If interested, please contact: SUNY Potsdam junior Jean M. MacAvery at macavejm199@potsdam.edu

Funding provided by SUNY Potsdam Presidential Scholars Program
A Baird’s tapir caught on one of our camera traps we deployed at the Belize Foundation for Research and Environmental Education (BFREE) on our 2017-2018 trip to Belize!

Here’s another one we saw at the incredible Belize Zoo and Tropical Education Center!
## Requirements for Graduation

### Biology (BS)

Name: ____________________________

Student ID No: ______________________

Expected Graduation Date: ______________________

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### REQUIRED CHEMISTRY COURSES

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### REQUIRED PHYSICS COURSES

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### REQUIRED MATH COURSES

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<tr>
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### BIOLOGY ELECTIVES

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<th>Course</th>
<th>Title</th>
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CHEM 342 (Organic Chemistry II) is highly recommended for careers in health sciences, molecular biology, or physiology.

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

No more than 4 cr of BIOL 475, 485, or biological internship may be used toward elective hours.

* If you take both BIOL 300 lab and BIOL 311 lab, one will count toward your Biology elective hours.

** MATH 141 & 142, Integrated Calculus IA & IB, together count as equivalent to MATH 151, Calculus I

Must have a 2.0/S or higher in all major courses, including cognates.
### Requirements for Graduation

**Biology (BA)**

Name: ________________________________  
Student ID No: ________________________________  
Expected Graduation Date: ________________________

Required Biology Courses: 22  
Biology Electives: 15  
Chemistry Courses: 12  
Total Hours Required: 49

#### REQUIRED BIOLOGY COURSES  
(22 hours)

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#### REQUIRED CHEMISTRY COURSES  
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#### BIOLOGY ELECTIVES  
(15 hours)

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No more than 4 cr of BIOL 475, 485, of biological internship may be used toward elective hours.  
*If you take both BIOL 300 lab and BIOL 311 lab, one will count toward your Biology elective hours.

**Must have a 2.0/S or higher in all major courses, including cognates.**
### BIOLOGY SPECIALIZATION REQUIREMENTS

**Biology Required Courses (13 hours)**

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**Biology Electives (6 hours)**

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College requirements are 19 hours in the Specialization. All electives after the first-year sequence must be 300 or higher.