STUDENT NEWSLETTER FOR THE DEPARTMENT OF

BIOLOGY

UNIVERSITY OF WASHINGTON

Spring Quarter 2014 *Version 19*

Important Dates for Spring Quarter

Mar 31	First Day of Instruction
Apr 2	Biology Apparel Day
Apr 4	LAST DAY to drop a class without a fee thru MyUW
Apr 7	All courses require entry codes to add, beginning
Apr 9-10	Grad Fair (order stuff) 10:00-5:00 MGH Commons
Apr 13	LAST DAY to drop a class without the use of the ANNUAL DROP
Apr14-May21	Summer Reg Period 1
Apr 17	Spring Career Fair 3:00-7:00 pm Hub Ballroom
Apr 18	Deadline for name in UW Commencement Program
Apr 11	TriBeta's Biology T-shirt Contest Deadline
Apr 20	LAST DAY to add a class through MyUW
May 6-26	Register for Graduation
May 7	Apply for Grad Reg Priority
May 7	Cap & Gown Signups
May 7	Autumn Registration starts
May 7	Biology Apparel Day
May 7	Biology Networking Night
May 16	UGrad Research Symposium
May22-Jun22	Summer Reg Period 2
May 26	Memorial Day Holiday
May 27	Mystery Flower contest ends
Jun 4	Biology Apparel Day
Jun 6	LAST DAY to Withdraw (from all Spr Qtr classes)
Jun 9 -13	Final Examination week
Jun 13	Biology Grad Celebration in Hec Ed 2:30-4:00
Jun 14	UW Commencement in Husky Stadium

UW Commencement — Saturday June 14

On June 14, 2014, the University of Washington will honor the graduating class of 2014 at the University's 139th Commencement Exercises. 5,000 graduates will take the field at the magnificent new Husky Stadium to the cheers and applause of 40,000 family members and friends. It will be a once-in-a-lifetime event in the lives of graduates and parents alike – an experience not to be missed.

President Young, the regents and University deans and leadership, and well over 150 faculty members, all dressed in their finest academic robes, will be there to confer degrees and honor the graduating class. *See page 14 for more information.*

Department of Biology Graduation Celebration — Friday June 13

The Department of Biology's Graduation Celebration will be held at Hec Edmundson Pavilion and start promptly at 2:30 pm. There will be a guest speaker, the hooding of Phd candidates, reading of the names of all the graduating seniors present. Each student will walk across the stage to be congratulated by the Chair, Toby Bradshaw, or Associate Chair, Joe Ammirati.

Linda Martin-Morris reading names on stage left.

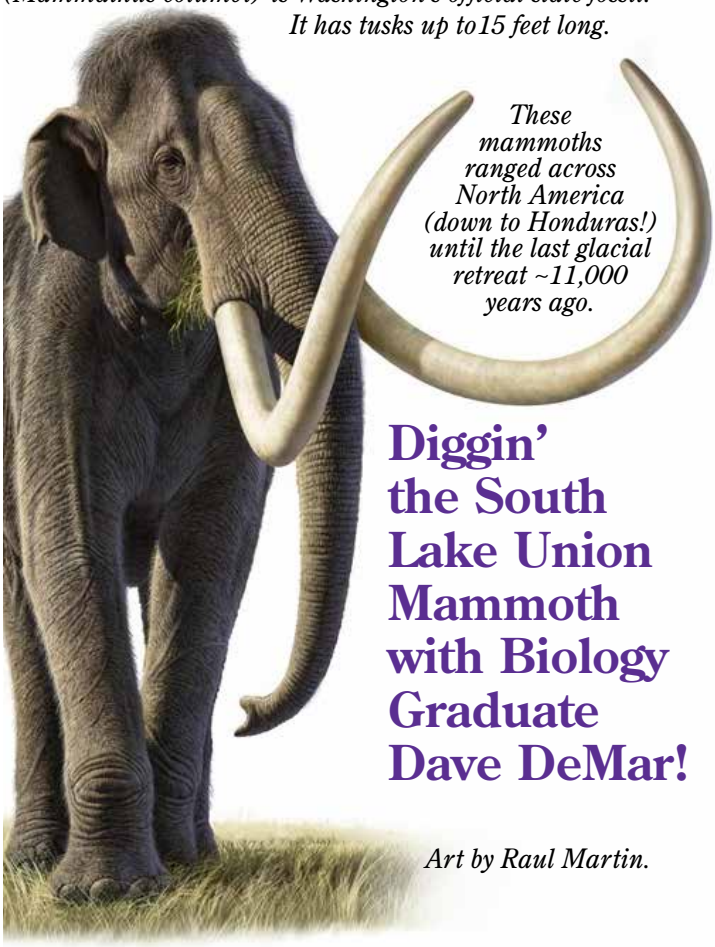
No tickets are required but ALL STUDENTS are required to RSVP by June 9 by filling out the Biology Graduation Celebration catalyst form at: https://catalyst.uw.edu/webq/survey/jgt3/226741

See page 15 for more info about Biology's Celebration Activities planned for Friday.

Mary Pat Wenderoth reading names on stage right.

The Columbian Mammoth

(Mammathus columbi) is Washington's official state fossil. It has tusks up to15 feet long.



These mammoths ranged across North America (down to Honduras!) until the last glacial retreat ~11,000 years ago.

Art by Raul Martin.

Diggin' the South Lake Union Mammoth with Biology Graduate Dave DeMar!

On Tuesday, February 11, 2014, an employee of Transit Plumbing Inc. discovered a Columbian mammoth tusk at a South Lake Union construction site in Seattle.

I heard about its discovery that day but hadn't given it much thought beyond "you never know when or where fossil discoveries are going to turn up".

The following Thursday around 8:30 a.m. I received a text message from Dr. Christian Sidor, University of Washington Associate Professor of Biology and Curator of Vertebrate Paleontology at the Burke Museum, asking if I would like to help excavate the mammoth tusk. I immediately responded "Sure!" thinking what an adventure it would be digging up an ice age animal in the middle of a city.

Most fossil excavations I have participated in involve much older deposits such as those from the age of dinosaurs (66 million year plus) and from places like the badlands of Montana and Wyoming.

Later that day I met with Dr. Sidor at the Burke Museum along with Burke Museum Fossil Preparator Bruce Crowley and Research Associate of Paleontology Bax Barton to load up tools and collect materials such as shovels, awls, paint brushes, burlap strips, and plaster before heading to the site to excavate the tusk. Upon arrival around 3 p.m. we suited up for the construction site excavation by sporting safety vests, goggles, and hard hats.

What I hadn't encountered before was the tremendous amount of news coverage the mammoth tusk would generate. Being in the spotlight was a little unnerving for me but luckily I managed to focus on excavating the tusk and by keeping my distance from the news teams as they interviewed Dr. Sidor and the Burke Museum's Director Dr. Julie Stein.

Our first objective during the excavation was to determine the length of the tusk by exposing its outer margins. We measured its total preserved length at 8.5 feet (2.6 m) which according to Bax is only about half the length of the largest tusks ever found! Dr. Sidor figured that bit of information would satisfy the news reporters during their early interviews until later developments of the dig transpired.

Chief Preparator Bruce Crowley searches for the end of the tusk. Photo courtesy of the Burke Museum.

As we continued to unearth the mammoth tusk helicopters hovered overhead while children off in the distance from the neighboring day care center yelled "dig it up, dig it up". The tusk was waterlogged and soft meaning we would have to be even more careful not to damage it during excavation. The tusk was surrounded by loose stratified sand, rounded pebbles and cobbles sometimes as large as a softball. Above that coarse sediment was a thick layer of grayish clay which was deposited at the bottom of an ice age lake.

As daylight turned to dusk the small ~12 x 12 ft. squared-off pit encompassing the tusk was bathed in light from two bright lamps provided by the construction crew. After shoveling what was likely more than a ton of wet rock from around the tusk we had it fully exposed and on a pedestal.

Several zip ties were wrapped around the tusk to help prevent the enamel from delaminating during the drying process. Subsequently, we placed aluminum foil over the tusk and covered it with plaster soaked burlap strips. After the initial two layers of burlap were added we placed several wooden 2x4s at strategic points around the tusk and a final two layers of burlap for additional support.

At that point, which was after midnight and approximately nine hours of intense labor, all we could do was wait for the

Christen Sidor, Dave DeMar, Bruce Crowly and Bax Barton pose with their wrapped prize! Photo courtesy of the the Burke Museum.

plaster to dry before undercutting the rocky pedestal and flipping the specimen for extraction the following day.

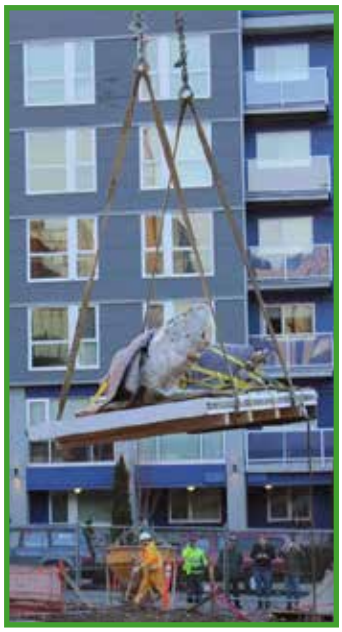
On the second and final day of the mammoth tusk excavation, we prepared for what we hoped would be a successful extraction of the specimen. Ron Eng, Collections Manager at the Burke Museum, joined us at the construction site with a flatbed truck and metal palette for transport of the tusk back to the Burke Museum.

Upon our arrival the construction crew and crane operator readied the crane lurking high above for removal of the tusk from out of the ~30 foot deep pit and onto the flatbed truck. Two of the construction workers attached the palette resting on the flatbed truck to the crane via hooks and rigging and directed it up and over to the smaller pit surrounding the tusk. Once the palette was in place adjacent to the tusk, Dr. Sidor, Bruce and the two construction workers guided the crane operator. I readied the palette with blankets for cushioning and extra rigging for securing the tusk to the palette. We also created a makeshift ramp using 2x4s for guiding the tusk up and onto the palette from its pedestalled position.

Our biggest concern during the tusk's removal was that it would break apart as we separated it from its pedestal. Flipping jacketed fossil bones can be tricky as each situation is unique. Given the delicate nature, size, and spiraling shape of the waterlogged tusk we had to act fast yet gentle when flipping the tusk. The last thing we wanted was for the specimen to fall out of the bottom of the jacket, especially under the watchful eyes of the news crews and numerous excited spectators.

As we prepared to flip the jacketed tusk, Bruce took the tip end while I took the root end. Dr. Sidor and the two construction workers readied the center of the tusk. On the count of three we swiftly flipped the specimen onto the makeshift ramp and pushed it up and onto the palette with relative ease. Thankfully, our major concern of it coming apart wasn't realized as the specimen remained intact revealing nicely preserved ivory on its underside.

Once the specimen was secured to the palette with a blanket on top for added protection, the palette was fastened to the rigging of the crane and hoisted out of the pit. As it slowly made its way up and out of the pit spectators from all around the construction site began cheering and whistling. Those of us at ground zero shared a sigh of relief. Dr. Sidor and I exchanged a welcomed handshake for its successful extraction. Dr. Sidor soon made his way out of the construction site to watch the tusk's final descent onto the back of the flatbed truck and to meet the news teams for questions.



The tusk is hoisted into the air and delivered to a waiting flatbed truck. Photo courtesy of the Burke Museum.

During the two day tusk excavation I also aided Bax in digging an approximately two meter tall vertical trench for sediment samples and description of the lithology (rock types) and stratigraphy (rock layering) of the surrounding rocks. Those collected samples and data are critical for determining the depositional environment (e.g., lake versus stream deposits) the tusk was buried in and for reconstructing the ancient landscape of the area the mammoth once roamed. To determine what plant types may have been around during the life of the mammoth, Bax and I collected 21 small sediment samples at 10 cm interval for fossil pollen. We additionally collected bulk sediment from each of those 10 cm intervals for underwater screenwashing and sieving with hopes that at least part of the contemporaneous microfauna and flora was also preserved.

We are somewhat optimistic in finding additional components of the microfauna and flora in those samples as we already discovered the fossilized remains of a partial insect carapace (likely a beetle) in the clay deposits of the ancient lake as well as plant debris.

Those samples including the Columbian mammoth tusk are now at the Burke Museum waiting preparation and study. The results hopefully will provide a better understanding of what Seattle was like 10's of thousands of years ago.

Marine Biology Quarter at Friday Harbor Laboratories

Spend Autumn Quarter in the beautiful San Juan Islands! Earn UW credits in biology, marine science, oceanography, and creative writing while living the island life at Friday Harbor Laboratories. Interact with faculty in the field, labs, and dining hall and meet students from across the country.

Washington State Ferries in front of the dock at Friday Harbor Laboratories.

Applications are now being accepted for Autumn Quarter!

MAY 15 - early admission review date

JULY 1 - standard application review date

To Apply:

1) Go to: http://depts.washington.edu/fhl/studentApplicationInfo.html

2) Submit the online FHL application form and an electronic version of your transcripts

Select courses from the following options to total full-time enrollment (12 or more credits):

- Marine Biology (5 credits: Biol/Ocean/Fish 250)
- Ichthyology (5 credits: Fish 311)
- Ocean Circulation (3 credits: Ocean 210)
- Reading and Writing the Marine Environment (5 credits: English 365)
- Creative Writing Lab (1-5 credits: English 493)
- Foundations of Ecology (3 credits: Biology 356)
- FHL Undergraduate Seminar (1 credit: Biology 490)
- Research in Marine Biology (2-6 credits: Biol/Ocean/Fish 479, independent research)

OR - if research is more your thing, devote an entire quarter to field and lab-based research with the PELAGIC ECOSYSTEM FUNCTION IN THE SAN JUAN ARCHIPELAGO RESEARCH APPRENTICESHIP (Ocean 492, 15 credits)

Sea anenome

For course descriptions: http://depts.washington.edu/fhl/studentAutumn2014.html

Some summer quarter courses are also still accepting applications.

https://depts.washington.edu/fhl/studentSummer2014.html

Questions? Email fhladmin@uw.edu

Sea star

Morning at Friday Harbor Laboratories.

New Instructional Support Office — Hitchcock Room 302

Instructional Support Office is now open. Wonder what we do?

In early February, Hitchcock 302 opened its doors as the Instructional Support Office. We want to take this opportunity to introduce ourselves and let you know what we do.

What does this mean for Faculty?

Well, it means some of the administrative tasks you used to go to the wonderful people in Hitchcock 318 for, you now walk to the end of the hall to Hitchcock 302. Gretchen, Jeannette and Ben, of Instructional Support are more than happy to help your classes run smoothly.

The following are some of the things you would come to Hitchcock 302 for: Time scheduling, putting together Lab Manuals, checking out office supplies for your classes, copying, requesting evaluations or loaner keys, or picking up, textbooks and transparencies.

What does this mean for Students?

Hitchcock 302 offers you an area to study. In our new space we have several tables and whiteboards for your use. We host TA office hours throughout the week for Bio 180, 200 & 220 and various upper division courses. Come by and check out the calendar outside our office to see if /when your TA(s) office hours are here.

Also, this is now the place to drop off regrades and to pick up your exams from last term.
Just follow the signs!

Hitchcock 318, the Academic Services Office is still where you go for Undergraduate Advising. This split of office tasks does not affect your Biology advisors' ability to guide you on you path to getting your degree. They are, as they always have been, available and eager to help.

Thank you and we look forward to working with you,

The Biology Department Instructional Support Staff

Exam pick-up from Gretchen

Awards & Scholarships Winners — Biology Majors

Ulyana Dashkevych

Megan Kufeld

Biology undergraduate Ulyana Dashkevych has been awarded a Libraries Student Employee Scholarships of $1,000. As many as 12 scholarships are given each year to deserving student employees of the Libraries. The scholarships are funded through a variety of sources including individual donors, the Friends of the UW Libraries and the Allen Endowment.

Biology undergraduate Megan Kufeld, now a junior, has been named a UW President's Medalist in recognition of exceptional academic achievement during her sophomore year. Medals are presented annually to the top student from the freshman, sophomore, and junior classes. Records indicate that Kufeld may be the first varsity athlete to ever receive the medal. The UW administrators who bestowed the honor were surprised as well—to learn that Kufeld was a varsity athlete. They were unaware of her soccer achievements (starting goalkeeper for the Husky womens soccer team) when they selected her. It was her challenging course load and stellar GPA—a 3.95 for her sophomore year, and even higher now—that led to her medalist selection. Last fall, in her first full season as UW's starting goalkeeper, she allowed only 17 goals in 20 games, with 88 saves.

Kufeld's schedule is particularly heavy on science courses. "I'm specifically interested in molecular and cellular biology," she says. "I just think it's so cool that things at the molecular level make us who we are. I find it fascinating how something as small as a protein can make you tall or give you a disease and that you can alter that by introducing something else like a molecular signal or engineered genetic information."

Bryant Elementary Science Fair March 15

Seattle's Bryant Elementary School's 4th and 5th grade Science Fair happened March 15 in the Bryant Elementary Gym & Lunchroom with the mentoring help of Biology and Neurobiology majors. Below is the letter from the coordinator, Ann Marie Patterson.

Thank you so much for promoting our Bryant Elementary Science Fair Mentor opportunity to Biology/Neurobiology students again this year. We were delighted to welcome 15 mentors from your program.

Our students greatly benefited from exposure to adult mentors who are planning to pursue a career in the sciences. UW mentors provided their expertise in the scientific process and served as inspiring role models for our students. Thank you for partnering with us and we look forward to working with you again next year.

The names of the students who participated from your department are listed below. Hopefully their efforts will be highlighted in a departmental newsletter demonstrating their outstanding community outreach that extended over a 8-9 week period of time. Once again, the Departments of Biology/Neurobiology recruited the most mentors!

Aaron Engleberg explaining to mentor Christina Cho (BioChem & History major) and her students about his students' science project on how the group size of eggs effects hatching rate.

Biology: Emily Casal, Robert Hall (2013 grad/mentor), Roxana Rautu, Aaron Engelberg, Willi Obenza, (2013 grad/mentor) Angeline Blattenbauer, Brianna Diaz, Samantha LeDuc (2013 grad/mentor), Jane Kwon, Olga Vintruk, Leah Wener- Fligner

Neurobiology: Minkyung Shin, Walker Short, Mica Rosser, Madi Feil (2013 grad/mentor)

Best regards, *Ann Marie Patterson, Community Volunteer Coordinator/Science Fair Mentor Recruiter*

If interested in mentoring for this fair in 2015, please contact Tom Freng, tfreng@u.washington.edu

Fruit battery experiment: the apples were wired together and used to light up a small bulb.

This experiment was to determine how black and white colors absorb/reflect heat differently.

This experiment was to find out what kind of insects are found on the school grounds.

Biology 403 Students Collaborate with the Center for Emerging and Re-emerging Infectious Diseases

By George Avtandilov, Senior, MCD Biology

Throughout much of history, humans have relied on distilled and fermented beverages for hydration in the fear that water would make them sick. It was not until relatively recently that the true nature of waterborne illnesses was discovered. Many microscopic, parasitic organisms propagate in a cycle of ingestion by the host and expulsion via feces, all while maintaining a presence in the host's body. One such parasite, Cryptosporidium, is the cause of many diarrheal outbreaks worldwide and has become one of the most widespread waterborne parasites in humans. The disease, known as Cryptosporidiosis, is prevalent in areas where water sanitation is substandard. Even well developed nations like the United States are coping with problems associated with the parasite.

There are many Cryptosporidium species that infect mammals, but the main two in human infections are C. parvum and C. hominis. The Cryptosporidium oocyst, an egg-like structure that houses the developing parasite zygote, infects recreational and drinking water via mammalian feces. Once ingested, it releases a sporozoite which invades the epithelial cells of the gastrointestinal tract (primarily the small intestine). Sporozoites are motile and invade the new host's cells, where they divide asexually. Sexual reproduction is required to form a new oocyst, which leaves the host in the feces.

Symptoms of the disease include nausea, abdominal cramps and vomiting. Some clinical signs are diarrhea, dehydration, fever and weight loss. The disease usually lasts between a few days and a few weeks in individuals with normal immune systems. However, individuals with weak immune systems have a hard time fighting off the parasite and may experience severe, unresolvable complications which could lead to death. In those co-infected with HIV/AIDS, the disease may develop into a serious, chronic condition. Repeated exposure in young children is known to cause stunting and higher morbidity than in adults.

The Center for Emerging and Reemerging Infectious Diseases (CERID) at the University of Washington is developing therapeutics for this widespread illness. Dr. Wesley van Voorhies and his colleagues have been developing a new drug in the fight against apicomplexan parasites like Cryptosporidium, Plasmodium and Toxoplasma. The bumped kinase inhibitor (BKI) has been found to inhibit the rate of parasitic adhesion and invasion of host cells by effectively blocking the activity of calcium-dependent protein kinase 1 (CDPK1). This new drug could possibly be very effective in humans, especially those with AIDS since commonly used drugs like Nitazoxanide seem to have little effect.

The van Voorhies lab has made it possible for undergraduates in Dr. Leslie Zeman's histology course (Biol 403) to collaborate with the lab in this novel research by studying the tissues of mice treated with BKI. Kasey Rivas, one of the researchers on this project, was kind enough to do an informative presentation on the lab's current progress. CERID has synthesized 465 BKIs-to-date, some of which are more effective than others in blocking parasitic growth. The drugs are administered orally in variable doses to study toxicity and efficacy. Mice that received one dose of BKI 1561 per day for 5 days developed ruffled, unkempt fur, showed 10-15% weight loss and were generally lethargic. Upon necropsy, researchers found a large amount of food in the stomach with no peristalsis into the intestines. The apparent toxicity of the dosage pattern prompted a reassessment of the approach, with overall lower and less frequent dosage. The lab's goal is to receive approval to test the drug on cows, which would require an ample amount of data and histological sections supporting the safety and efficacy of the drug.

Inflammatory cells around the liver blood vessels. Photo by Lauren Kmiechick.

Many of Dr. Zeman's students have been tasked with sectioning, staining and analyzing various tissues from mice treated with BKI. Five varieties of mice with different dosage patterns were sent by CERID: 1553 low dose, 1553 escalating dose, 1561 low dose, 1561 escalating dose and control (untreated). For most of the students, it was their first time making histological sections, so the learning process was meticulous. Students chose a tissue to examine, then harvested and processed the tissue to prepare for embedding. The embedding process was relatively straightforward; few students had trouble with this. Sectioning was troublesome for many of the students since they had not yet developed a routine in the sectioning process. Sections were stained using H&E. It was not uncommon for students to work in the evenings, or even over the weekends, in the pursuit of a histological section worthy of analysis.

Once the tissues were mounted and ready for analysis, students looked for physiological differences between control tissue and BKI tissue. Two common signs of drug toxicity are necrosis and inflammation. Necrosis is non-programmed cell death caused by some external factor. It usually affects entire regions of a tissue rather than just a single cell. Chemical-induced toxicity is attributable to many cases of organ necrosis. Sensitive organs like the liver are very susceptible, so it is no surprise that over 50% of liver failures are caused by drugs. Some drugs are not directly toxic, but are rather broken down or oxidized into harmful compounds. Many compounds harm cells by peroxidation of biomembrane lipids, or by blocking mitochondrial metabolism.

Signs of necrosis are often times organ specific. Often, cells become eosinophilic with no visible nucleus, or nuclear pyknosis happens in which the cell condenses into a basophilic mass. Fibrosis, synthesis of excess connective tissue, is a very common side effect of necrosis in lungs, liver and heart. Steatosis, abnormally high retention of triglycerides, is also common when certain metabolic pathways become blocked. This can lead to cell death from rupturing of cytoplasm and is most common in the liver. Leakage of cytoplasmic constituents prompts an increase in local blood flow, followed by infiltration of immune cells, primarily neutrophils. Macrophages are also recruited in conditions where cellular contents need to be cleaned up (e.g. steatosis). Inflamed tissues are immediately recognizable in histological sections due to the abundance of these motile cells, which would normally exist in small amounts, if at all.

Spring Class in Climate

Biology 315 with Dr Swann & Dr Buckley

Dr. Abigail Swann
Assistant Professor, Dept. of Biology & Dept. of Atmospheric Sciences

Dr. Lauren Buckley
Assistant Professor, Dept. of Biology

This spring quarter, Dr. Abigail Swann and Dr. Lauren Buckley are teaching BIOL 315: Biological Impacts of Climate Change.

The current unprecedented rate and scale of climate change has raised concern about the effects of climate on the biosphere and the onset of a "6th mass extinction" of life on Earth. This course focuses on biological impacts of climate change, such as changes in species distributions, altered species interactions, phenology (timing of life events), and ecosystem dynamics. The implications of these biological impacts for society, include food security, and public health. The management and preservation of our natural resources are also discussed.

More about Dr Abigail L. S. Swann and her research.
She is an assistant Professor of both the Department of Atmospheric Sciences and the Department of Biology. Research in the Swann lab works to re-define how we consider the roles of plant physiology, structure and function in Earth's climate. While some scientists study climate and others study the biosphere, the Swann lab studies the two as a coupled system, drawing from the best research in both areas to explore critical ecosystem-climate interactions that have profound near- and short-term implications for life and the well-being of the planet.

Biologists have widely documented how plants are influenced by their local environment. Recent findings support the idea that the reverse is also true: plant distribution and functioning control both the local energy balance at the Earth's surface and directly modify regional and global scale climate. Past work by Swann has demonstrated the likelihood of ecoclimate teleconnections, i.e., that biospheric changes in the Arctic, mid-latitudes, and tropics can alter regional energy balance and large-scale circulation of the atmosphere, thereby inducing remote precipitation and biospheric changes. Her research has shown that there can be unanticipated, globally reaching effects from changes in ecosystem distribution, structure and functioning. Questions being reserached in the Swann lab include: How will changes in agricultural areas in the future feedback on climate? What processes control the response of climate to vegetation in different regions on the globe? What is the role of past plant distributions on circulation and precipitation?

Canopy walkway at the Wayqecha Cloud Forest Biol. Station in Peru.

Albedo contrast of deciduous & needleleaf evergreen trees at the Caribou-Poker Creeks ResearchWatershed, AK.

Mixed forest in the Brooks Range, Alaska.

Tropical forest near the Caxiuana Field site at the Ferreira Penna Field Station in Brazil.

Study & win!

Research Commons wants to see your white boards

The Research Commons wants you to show off your white boards study work. There is a contest to win $25 to the bookstore. All you have do was take a picture of the work and post it to Instagram with the tag #myrcwhite-board. (more details about this can be found at http://ow.ly/uwq52)

In the photo on the right are four of six students in Khuntia Porter's study group for Karen Petersen's Biology 453 course, Comparative Anatomy of Vertebrates, winter quarter. Khuntia entered this photo and was winner of the week and then was entered for the Winter quarter drawing of $25.

Botany Club — For Undergrads & Graduates

Are you interested in furthering your botanical interests in a stress-free and fun environment?

Aaron Rosen with Bilda Ramirez and Nicole Larsen in front of their flyer advertising their seed bomb event.

We invite you to join us at The Botany Club for an opportunity to learn about the wonders of Our Green Earth, and to explore methods of sustenance and success, from a plant's perspective.

Future events in the works include seed bombs, tutorials on indoor gardening, and an introduction to CARNIVOROUS PLANTS.

No prior knowledge is necessary and all are welcome.

Like us on Facebook (https://www.facebook.com/pages/The-Botany-Club-at-UW/198908630127686) and email us at clubbot@uw.edu to join our mailing list - also, keep a lookout for our flyers around campus!

Hope to see you here! *The Botany Club at UW*

Competative Major — Biology Dept Admissions ARE Changing

Biology Department Admission Requirements Changing for Summer 2014!

Beginning Summer 2014 admission to the BA and BS Degrees offered by the Department of Biology will be by competitive application process. This process is designed not to limit access to the major but to assist students in careful planning and preparation for success in the Biology Major. Students are encouraged to visit Biology Advising early in their academic career or prior to transfer to begin planning for the major.

Applications for the undergraduate degree programs in Biology will be accepted quarterly. A completed electronic application will be due the second Friday of Autumn, Winter, Spring, & Summer quarters by 11:59pm. Applications received by the system after the quarterly cut off will be considered for the subsequent quarter. The On-Line Application will be available in mid June 2014.

To apply for a Biology Major beginning Summer 2014 you must meet these minimum Application Requirements:

1. Be a matriculated student at the UW Seattle Campus and in good academic standing.
2. Complete the Introductory Biology series or equivalent courses to UW BIOL 180, 200, 220 and have a minimum grade of 2.0 in EACH course.
3. Have a minimum 2.5 Cumulative GPA for any supporting Chemistry, Physics, Math, Biology or other courses intended for use in the Biology major that are complete at the time of application.

Meeting these minimum requirements does not guarantee admission to the Biology major. Other factors in admission include review of personal statement, space availability in the major, and time to degree, set by UW Satisfactory Progress Policy. If you did not earn a 2.0 in each of your Biology Intro courses and a cumulative GPA of 2.5 in prerequisite course work needed to apply to Biology, or if you have academic issues to explain that are larger than a single course or quarter, please see an academic adviser to address these issues prior to application.

Walk-In Advising is Available M-F 9am-12pm and 1-4pm. You may also make an individual appointment by contacting one of the Biology Advisers directly.

Biology Networking Night — May 7 Save this date!

A Networking Opportunity Featuring a Panel of Biology Alumni in Hitchcock 132. Look for postings.

Learn about a variety of professions, get advice about making the most of your time at the UW, and find out what it takes to get a job in different fields. Undergraduates, graduate students, and recent graduates are welcome to attend and network with alumni for their career development.

TriBeta T-shirt contest ends April 11

Tribeta Officers 2013-2014

President
Minkyung 'Monica' Shin

VP of Meetings & Events
Jenna Lebedev

VP of Mentorship
Jacob Mouser

VP of Membership
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VP of Tutoring
Chris Kaperak
Kaylie Lungberg

VP of Community Events
Aseel Alsamarraie

Webmaster
Courtney Chai

2013 T-shirt Winner

2012 T-shirt Winner

Hello Biology students!

Here's to cherry blossoms, spring green, and sunny days! I hope you are looking forward to a great Spring Quarter, my personal favorite! It'll be another exciting quarter with UW Biology and Tribeta, especially as many of our students prepare to graduate this June. Take a look at all the events and services offered by your very own Beta Beta Beta Biological Honor Society!

HONOR SOCIETY: New members will be inducted on April 10th! While Tribeta's events and services are for everyone in the biology department, we also encourage you to consider being part of the Tribeta Biological Honor Society! Anyone can become an Associate Member, while only those that have met the curriculum and GPA requirements may become a Full Member. You can also join the Biology Club, which is open to everyone. Check out our website, http://students.washington.edu/tribeta/join.html for the application. While the deadline to become inducted this year has passed, you are welcome to join now and start reaping the benefits of being a member today! Email officer Taylor with any questions **wilkit51@uw.edu**.

T-SHIRTS: Everyone wants these geeky, stylish UW Biology shirts! **Want your work of biology art to be on the next Biology T-shirt?** Enter by April 11 to the Biology T-shirt Contest for a chance to have your work printed on shirts and to win a free T-shirt**!** These shirts can only be found here, with Tribeta, for $15. Shirts are sold every first Wednesday of the month, so come buy one and wear it to be entered for a prize in the Biology Advising office! Sweatshirts are also available in limited supply. All proceeds go towards funding Tribeta events for the Biology department. Email officer Heather or Jessica with any questions **hzshen@uw.edu** or **jessica.m.latimer@gmail.com**.

MEETINGS: Every quarter, we host engaging lecturers to discuss the innovate research they are doing! This quarter, we will be hosting Dr. Lauren Buckley, who will be talking about her work in studying how biology determines an organism's response to environmental change. Pizza is always provided. Email officer Jenna with any questions or suggestions **lebedj@uw.edu**.

TUTORING: Come to Tribeta Biology Tutoring, either for help with Biology 180, 200, 220, or as a tutor yourself! Our tutors have exceled in the intro series and other Biology courses, so let them help you to do well as well and understand the material. Lounge tutoring hours run Monday-Thursday, 3:30-6:30 PM, in the HCK 4th floor student lounge with snacks provided. The one-on-one tutoring info can be found on the Tribeta website http://students.washington.edu/tribeta/tutoring.html. Email our new Tutoring officers Chris and Kaylie to get involved **chriskaperak@yahoo.com** and **kel93@u.washington.edu**.

MENTORSHIP: Join our mentorship program to connect with an upperclassman that can show you the ropes. We'll set you up with a mentor and will follow up to make sure your questions are answered, whether they are about UW, the Biology major, research, etc. To become a mentor or mentee, email officer Jake **mouserj@uw.edu**.

EVENTS: In order to promote community building within our department, Tribeta will be hosting events like Earth Day clean up, Trivia night, and the annual Spring Barbeque! Everyone is welcome to come and meet others who love biology while doing something that might not be biology-related at all. Contact officer Assel or Nikki with any event ideas or questions **alsamarraiea@yahoo.com** or **barbernikole@gmail.com**.

If you have any questions or want to get involved, feel free to contact me or any of the officers. I hope to see all of you at our events and meetings!

On behalf of the Tribeta Officers, we hope you have an amazing Spring Quarter!

"Monica" Minkyung Shin *UW Tribeta President 2013-2014* minkshin@uw.edu

Free TriBeta Tutoring

UW Intro Biology Series 180, 200 & 220

UW Introductory Biology students: The secret to excelling in Biology 180, 200, and 220 is discussing those new concepts and information with other students or asking your instructors questions to know if you fully and correctly understand the concept.

This is where TriBeta can help! TriBeta Tutors are students who have taken the full 180-220 series, done well, and enjoy teaching. They can help you with material, concepts, study habits and many studying tips!.

Tutoring area in the fourth floor lounge in Hitchcock Hall.

The study lounge also provides snacks FOR FREE.

There are two ways to take advantage:

1) Come to our study lounge on the 4th floor lounge in Hitchcock Monday - Thursday from 3:30-6:30 pm. The lounge is located right above the HCK 3rd floor entrance.

2) Sign up for 1 on 1 tutoring at the following link

http://students.washington.edu/tribeta/tutoring.html.

If you want to do well in the intro series, try us out!

If you have any questions or you would like to apply to be a Tribeta tutor for Spring quarter feel free to e-mail KaylieLungberg, kel93@uw.edu and Chris Kaperak, chriskaperak@yahoo.com.

Eat Dirt!

Happy Spring from the UW Student Farm

These sunny and soggy spring days have seen student farmers hard at work indoors and out, preparing for the first farm season with three spaces in full production! In early March, the Farm received a $22,000 CSF grant to construct a greenhouse at the Center for Urban Horticulture space! Students participating in the Engineers Without Borders RSO will construct the greenhouse. This greenhouse will allow the Farm grow food year around!

Student farmers are also participating in the Environmental Innovation Challenge to design a working aquaponics system prototype. The students present their project this week and compete with other student teams. This season will have four paid student interns. These students will see the entire farm season from April to November.

Farming by the Center for Urban Horticulture.

With spring in the air, there are many ways to get involved on the Farm this quarter and beyond! Come to FarmEd an hour-long active seminar taught by Biology professor, Jennifer Ruesink, every Monday from 8:30-9:30 am at the Botany Greenhouse. Farm work hours follow until 12 noon. For a complete list of our work hours see our website (link below). Join us for our first pizza bake of the season at the Botany Greenhouse on April 11th from 4- 7pm. We will have live music from our very own Laundry Hampers! Like always, please bring your friends and a topping to share. Stay tuned for news about our first CSA, a farm stand, events and workshops.

In sunshine and dirt, UW Farm Team

Have questions? Want more information?
Visit ourwebsite:
http://blogs.uw.edu/uwfarms/
Like us on Facebook:
https://www.facebook.com/UWFarm
Email us: at theuwfarm@gmail.com

UW Paleontology Field Methods & Research (BIOL 475A, 5 credits)

Ever wanted to participate in a real dinosaur dig? Or learn more about their extinction and the rise of mammals? Check out this amazing course for an incredible summer experience of paleontology fieldwork in Hell Creek, Montana. Get your hands dirty learning the basics of field geology and paleontology, excavating mammal and dinosaur fossils, like *Triceratops,* and analyzing data that contribute to research on the extinction of dinosaurs and the rise of mammals.

Summer 2013 Hell Creek, Montana

A five-week intro to paleontological field methods and research, in which students develop skills in collecting, analyzing, and interpreting field data and designing research projects by participating in ongoing paleontological research on the Cretaceous-Paleogene mass extinction. Topics include excavation of fossils, identification and curation of fossils, collection/interpretation of stratigraphic and taphonomic data, and report writing.

If you are a high-energy, enthusiastic student ready for a summer of hard work and discovery, please contact the instructor! (gpwilson@uw.edu)

Emma Harmony collecting tiny vertebrate microfossils.

Course Details (June 23 – July 23):

- Lecture/Lab Component: Intro lectures on principles in field paleontology, geology, and taphonomy as well as the scientific context of the research. Lab sessions to introduce the fossil vertebrates, curate collected fossil specimens, analyze data, and present final reports.
- Fieldwork Component: 2.5 wks (June 28-July 16) at the Hell Creek State Park in NE Montana learning basic paleontology and geology field techniques, gaining context of ongoing research, and engaging in group research projects.
- Course fee of $120 and Program fee of $1,025 cover transportation, meals, lodging, and equipment for fieldwork.
- More info: http://faculty.washington.edu/gpwilson/BIO475_Paleo_Field_Methods.htm
- Entry Code: contact instructor Greg Wilson (gpwilson@uw.edu) for an entry code.

In paleontology, field work is at the frontlines of scientific discovery. The next hill or patch of outcrop could have buried within it the fossilized remains of a dinosaur like *Tyrannosaurus rex*, a new species of mammal, or some other precious find that in one fell swoop will overturn previous ideas about the history of life. In 2013, 11 BIOL 475A students, about half from the University of Washington and half from other universities and colleges (e.g., University of California at Berkeley,

University of Chicago), ventured to the Hell Creek area of eastern Montana. This is a place that has become no less than a paleontological mecca: the first *T. rex* was discovered there in 1902. Other famous dinosaurs, like *Triceratops*, duckbills, and dome-heads, are found there. The rise of mammals is documented there, and it was the epicenter for the debates regarding the extinction of dinosaurs. We spent 2.5 weeks searching in these badlands for more fossil and geological evidence to shed light on this critical episode in Earth history. Students learned how to read the rocks in the area, prospect for fossils big and small, collect fossils big and small, and to design research projects to address questions about animals and ecosystems of the ancient past. Highlights included the excavation of two *Triceratops* quarries, the discovery of a near complete jaw of a tiny ancestor of carnivoran mammals, and the discovery of some research quality lizard specimens. This year we will be venturing into some new areas of exploration in eastern Montana with promise for discovering even more and better specimens. We hope you'll join us!

Most of us think of extinction as this terrible process that has stripped us of amazing biodiversity. On one hand, it's estimated that more than 99.9% of all living things that ever existed are now extinct! On the other hand, extinctions have changed the course of evolution for the better for the survivors. There's no better example of this than the mass extinction that killed off the dinosaurs (except for birds) and allowed mammals to expand into all corners of the earth, all body sizes, and all modes of life. But the truth is we are only beginning to scratch the surface of this event. There are many places around the world where you can find marine fossils that provide important clues to understand this mass extinction event, but there are only a handful of areas that preserve terrestrial fossils, including dinosaurs, relevant to this extinction event.

The BIOL 475 course takes paleo-interested undergrads to one of the most famous and intensively studied of these areas, the Hell Creek badlands in northeastern Montana.

In the 1980s, it was the testing ground for the 'Alvarez hypothesis' that an asteroid wiped out the dinosaurs in a geologic blink of an eye. Although many people are familiar with the asteroid ending, another hypothesis has recently re-emerged. During the last gasp of the Dinosaur Era there was a lot of volcanic activity in India – the lava covered an area the size of Texas and in some places it was stacked 2 miles deep! This has led some scientists to argue that the cause of dinosaur extinction was more like a 'one-two punch' of volcanism and asteroid rather than a single knockout blow from an asteroid. Like any hypothesis, we must collect the data to test it.

BIOL 475 students join us in this research. We collect fossils and look at who's died and when. Were certain species or ways of living (e.g., large herbivores) wiped out completely at the moment of impact? Were some species or groups going downhill before the asteroid hit? Were other groups unaffected? Our research contributes to a critical scientific debate – what really killed the (non-bird) dinosaurs? It also demonstrates how extinction changes the world we live in and the path of species.

Corrina Casey excavates bones from a partial skeleton of Triceratops.

Emily Harmony and Emma Kitchen show off their hands after making a plaster jacket for a Triceratops bone.

Jason Moore and Dave Gossnickle examine the rock layer that preserves evidence of the fallout from the end-Cretaceous asteroid.

The BIG 139th Commencement Ceremony for the Entire University at Husky Stadium:

On Saturday June 14, 2014, the University of Washington will honor the graduating class of 2014 at the University's 139th Commencement Exercises. 5,000 graduates will take the field at the magnificent new Husky Stadium to the cheers and applause of 40,000 family members and friends. President Young, the regents and University deans and leadership, and well over 150 faculty members, all dressed in their finest academic robes, will be there to confer degrees and honor the graduating class.

Students will walk across the stage but no names will be called.

Graduates line up at 12:30, Procession begins at 1:30 then Ceremenony concludes at 4:30.

UW Commencement Graduation Checklist

It's easy to participate in the Big University Commencement. Just follow these steps.

1. Make sure you are eligible (http://www.washington.edu/graduation/eligibility/).
   If you haven't already graduated or applied to graduate, make sure you apply to graduate by April 18. See your advisor.
2. Make the April 18 deadline to have your name printed in the Commencement program. This means:

   Bachelors – Apply to graduate by April 18. See your advisor
   Master's – Submit your master's degree request
   Doctoral – Schedule your doctoral final exam.
   Note: Students who do not wish to be listed in the Commencement program should contact the Office of the Registrar at (206) 543-5378.
3. Come to Grad Fair! Mary Gates Hall Commons, April 9th and 10th, 10:00 a.m. – 5:00 p.m.
   See announcements, frames, rings. Have grad portrait taken, plus photos with Dubs!
4. Order graduation announcements, class rings, diploma frames.
5. Prepare to register and order
   Check with family to determine ticket & parking needs.
   Determine if any guests need disability accommodations.
   Review Cap and Gown information.
   Check with your school, college, or department regarding their celebrations.
   http://www.washington.edu/graduation/other-ceremonies/
6. Complete Registration/Order Form, May 7 – May 25
   Be prepared to pay online with Visa, MasterCard, debit card, or valid checking account number.
7. Pick up your order at the University Book Store (during normal Book Store hours).
   Bachelor pickup: May 29 – May 31.
   Master's, Ph.D., Professional pick-up: June 3 – June 7.
8. Oops! I forgot something! I need extra… No worries, Just come to the Book Store and they will help you out, if possible.
9. Come to Husky Stadium on June 14th at 12:30 p.m., and celebrate!

Ensure you review the instructions you were given when you picked up your order.

Remember to bring your student ticket and I.D. to get into the student line-up area.

Our Third Department of Biology's Graduation Celebration at Hec Ed Pavilion:

On Friday June 13, 2014, the Department of Biology will celebrate the graduating class of 2014 at the Alaska Airlines Arena in Hec Edmundson Pavilion. Approximately 350 graduates will be in attendance with about 2500 of their close friends and family members.

We will have a Guest speaker for the Celebration, followed by the hooding of our PhD Candidates. Graduating student names will be called by Linda Martin-Morris and Mary Pat Wenderoth. Students will walk across the stage and shake hands with the Chair Toby Bradshaw or Assistant Chair Joe Ammirati and walk back to their seats.

Graduates check-in 1:30 - 2:15, Celebration program 2:30 to 4:00.

Department of Biology Graduation Celebration Checklist

It's easy to participate in the Department of Biology's Graduation Celebration.

1. NO tickets are required but all students **ARE REQUIRED TO RSVP BY JUNE 9** by filling out the Biology Graduation Celebration catalyst survey @https://catalyst.uw.edu/webq/survey/jgt3/226741. This survey gives us a count of the students and the number of family and friends coming for the Hec Ed Pavilion staff.
2. Parking needs to be prepurchased on the UW Commencement website May 7 to May 25.
3. This is a Celebration, so nice dress or business casual is recommended. Cap & Gown are not required.
3. Doors open and Check-in starts at 1:30 pm for name tags, name pronouncing card pick-up and getting a corsage.
4. Any seat on the main floor is good.
5. Celebration starts at 2:30 sharp

PreCelebration Events happening earlier in the day:

9:00 am –12:00 pm: BIOLOGY ACADEMIC SERVICES OFFICE Room 318 Hitchcock Hall

Open for Senior Gift pickup and T-shirt sales

11:00–1:00 pm: BOTANY GREENHOUSE TOURS/OPEN HOUSE

Habitat Rooms 2, 5, 6 & 7

Information about signing up for a greenhouse tour will be sent out to all graduates soon.

Biology Advisors — Undergraduate Advising Hitchcock 318

Jason Patterson, Julie Martinez, Janet Germeraad, Andrea Pardo, Tom Freng

The Undergraduate Biology Advising Department
OPEN: Monday thru Friday 8 am to 5 pm.
General Phone: 206-543-9120

We welcome UW and prospective students to contact us with any questions regarding an option in Biology or Neurobiology.

Open walk-in:

Monday - Friday 9:00 am to 12 pm AND 1:00 to 4:00 pm

(office closed 12 to 1) or contact one of our four advisors for an appointment by phone or email. The photo on the right (in the Greenhouse's Desert Room) includes the advisors and the office staff of Room 318. Advisors are: Jason, Janet, Andrea and Tom. Staff is Julie.

Biology Study Area — Hitchcock 220 - All students are welcome!

The Biology Study Area (BSA) is a GREAT place to study with other students, use computers, or read.

Dave Hurley manages the BSA and can even answer your biology questions. If you forgot your textbook, you can check out one from the BSA staff if they have a copy.

The BSA has 27 computers, a Dawg-Print printer, scanners and a copier.

All students are welcome — not just Biology majors!

BSA is open Monday - Friday 8:00 am - 5:00 pm.

Mr Grasshopper doing his research work on one of the computers in the Biology Study Area.

Dave has three returning undergraduate computer support staff, **Nick Clawson Curtis Thompson** and **Meng Meng Zhao** who will be staffing the Biology Study Area and programming, so you may see them around as well.

Mystery Plant — Guess it and win!

This is the Spring Quarter mystery plant and it is blooming right now in and around the greenhouse.

Name the genus species and its common name, then come to Hitchcock Atrium and submit your name & email for a drawing for the prize of a special limited edition, set of eight Biology note cards featuring flowers blooming Spring Quarter in the Greenhouse.

Drawing to be held after May 26.

The hints:

1. *Great fragrance: smell like cinnamon toast.*
2. *Deciduous - usually loses its leaves during annual dormant period.*
3. *Grows on branches with moss, in damp limestone cliffs and in tropical semi-deciduous forest or warm oak forests along streams.*

Advising Available

Biology & Neurobiology

Walk-in Advising

Janet Germeraad • Tom Freng
Jason Patterson • Andrea Pardo
Mon–Fri, 318 Hitchcock Hall
9:00 am–12:00 pm
1:00 pm– 4:00 pm
Closed: 12:00 to 1:00 pm

Website URL:
http://depts.washington.edu/biology/advising.htm

Undergraduate Academic Advising and Office of Minority Affairs & Diversity

141 Mary Gates Hall
206-543-2550
Quick Question hours (*Mon–Fri)*
9:00 am-4:30 pm
or email advice@u.washington.edu
http://depts.washington.edu/uaa/advising/index.php

Biology Study Area (BSA)

220 Hitchcock Hall
Mon–Fri
8:30 am–5:00 pm

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