



# Integrative Physiology

University of Colorado  
Boulder

Department  
Newsletter

# IPHY

Issue #15

May 2016

## Special points of interest:

- IPHY students surveyed—see how we are doing!
- Pursue Latin honors-be better positioned for graduate school!
- IPHY freshman, do you want to graduate in 4 years? Tips inside!
- Establish a named scholarship. Anyone can do it!
- Mark your calendars for the Fall Freshman Social on September 15!

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## *A Few Words from the Chair* by Pei-San Tsai

In the spring of 2016, we engaged in an exercise to gauge the internal climate of IPHY. This effort was led by Professor Anne Bekoff with the help of Professors Alena Grabowski and Chris Link, Instructor Tom LaRocca, graduate student Annie Miller, undergraduate student Andrew Granville, and IPHY staff member Jennifer Law. As part of this effort, Andrew and Annie conducted undergraduate and graduate surveys, respectively, on IPHY students. We obtained interesting data that are summarized below.

From the response of 414 undergraduates (24.6% response rate), the 5 most positive features of the IPHY undergraduate program are (1) abundant emails and generous information to undergraduates, (2) diverse research and internship opportunities, (3) abundant seminars and colloquia, (4) free tutoring by the IPHY Club, and (5) excellent teaching assistants. The top 5 areas needing improvement are (1) inconsistent advising, (2) large class size, (3) lack of meet-and-greet sessions to meet faculty, (4) insufficient instructor office hours, and (5) the competitive nature of securing a laboratory research position.

From the response of 13 graduate students (19.7% response rate), the 3 most positive features of the IPHY graduate program are (1) excellent scholarly activity, (2) diverse resources such as travel support and training workshops, and (3) abundant emails and communication on important events. The top 3 areas needing improvement are (1) clearer documentation of the guidelines, timelines and benchmarks to be accomplished at each stage of the graduate program, (2) more graduate courses, and (3) more group activities to build a sense of community. Further, although most graduate students indicated that the social climate of IPHY is very good, a few felt that cultural sensitivity and awareness to harassment could be strengthened.

We are grateful to our students for their helpful survey feedback, and we have brainstormed to come up with some changes to enhance student success. These include more community-building events, novel peer and graduate student mentoring, more streamlined communication, and better outreach to freshmen and sophomores by faculty and the IPHY Club. As the job market becomes increasingly competitive, we aim to improve our students' chances of success by providing not only excellent academic instructions, but also as much network and community support to enhance their career growth and development.



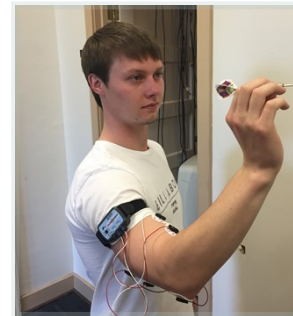
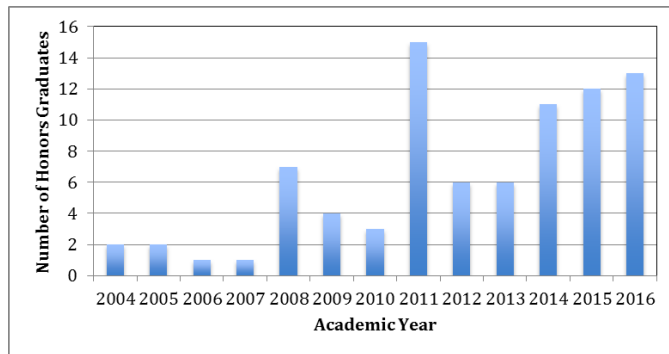
Inclusive Excellence Committee  
(left to right, front to back)  
Anne Bekoff, Chris Link,  
Jennifer Law, Annie Miller  
Alena Grabowski (Andrew Granville  
unavailable for photo)



## IPHY Honors Graduates on the Rise

by David Sherwood

Over the past ten years, the number of Integrative Physiology majors graduating with Latin honors has increased tremendously (see Figure 1), thanks to many hard-working students and dedicated faculty. But what does it really take to graduate with Latin honors, that is, *cum laude*, *magna cum laude*, or *summa cum laude*? Students attempting to achieve Latin Honors are faced with the same challenges faced by our graduate students. They have to go far beyond what is learned in the classroom and develop research questions that will advance scientific knowledge in one of the many sub-disciplines of integrative physiology. They have to design experimental studies, collect and analyze data, and present their findings and conclusions to their faculty committees. So achieving Latin honors at CU-Boulder requires much more than attaining high grades. In fact, the final level of honors achieved depends on the overall GPA, the quality of the thesis and the quality of the oral defense. The Honors Council, made up of faculty from all departments in the College of Arts and Sciences, decide on the final level of honors.



**Figure 1.** The number of Integrative Physiology majors graduating with Latin honors has increased markedly since 2007.

Students graduating with Latin honors have clearly distinguished themselves from the rest of the student population. This is an achievement attained by only 2-3% of the student population of the College of Arts and Sciences, but students clearly feel that the time and energy spent on the project is well worth it. Students have found themselves to be much better applicants for graduate school after pursuing honors because they have had the experience of establishing a research question, planning experiments, collecting and analyzing data, and presenting their findings.

### A Brief History of the Honors Program

The Honors Program has a long and distinguished history at CU-Boulder dating back to the 1920s and 1930s. The Honors Program was officially created in 1931 based on a committee's recommendation considering ways to encourage student achievement beyond grades. By 1932, 15 students had achieved Latin honors by passing qualifying and comprehensive exams. In 1942, 34 students had graduated with Latin honors. In 1945, the senior honors thesis emerged as the key element of the Honors Program. In 1957, the Honors Program received national recognition when the Rockefeller Foundation grants the program \$28,000 to conduct a three-year study and host a national conference on "The Superior Student in the State University". The conference was such a success that in 1958 the Carnegie Corporation funded a national agency based in Boulder, the Inter-University Committee on the Superior Student (the precursor to today's National Collegiate Honors Council). During the 1960s the program became known as a model for other honors programs across the nation. By 1990, the Honors Program was offering 50 courses every year and residential academic programs were centered around honors. By 2013, the number of students in the residential honors program grew to nearly 340 students. Today over 350 students in Arts and Sciences graduate with Latin honors, and over 1000 students take honors classes.

### The Honors Community

The Honors Program does so much more than simply certify graduation with Latin honors. The program creates a sense of community among the students and faculty involved in the program in a number of ways. The program offers over 50 small-enrollment courses taught by some of the most highly regarded teaching faculty on campus. These courses are limited to 16 students and many are taught conveniently in the honors residence halls. Honors courses are open to any student with a B+ average, regardless of whether they will be writing a thesis. Students taking honors courses or writing a thesis are invited to Coffee Hours, which takes place 2-3 times a month. In addition, the program sponsors several student clubs including the Lighter Reading Club and the Honors Writing Club. Students can become an honors scholar by taking 9 credits of honors courses and attending two honors events each semester.



Examples of Recent IPHY Honors Thesis Titles

- An evaluation of antibiotic resistance: Structure-activity relationship studies of tetracyclic indolines as a novel class of resistance-modifying agents for MRSA & analysis of recent FDA regulations on antibiotic use in livestock
- Maternal positioning in the second stage of labor and incidence of spontaneous perineal trauma: A systematic review with meta-analysis of randomized controlled trials
- Changes in human energetics following acute head-down-tilt-bed-rest
- The influence of two-way breathing valves on determining physiological responses during a graded exercise test in recreationally active and endurance trained males
- The effect of *M. vaccae* preimmunization on anxiety- and panic-like behaviors
- Social and cultural factors that influence the knowledge, attitudes, and safe sexual practices of rural Nicaraguan teenagers
- Can a four-week pedelec commuting intervention alter body composition in sedentary individuals?
- Determinants of child health in rural South Africa
- Dietary prebiotics promote anxiolytic-like behavior in the open field test and reduce relative adrenal and spleen weight in Fischer 344 rats
- The effect of focus of attention on learning to kick in Taekwondo
- Investigation of self-reported sleep duration on waist-to-height ratio measures of obesity
- Bacteria for the brain: Subcutaneous immunization with heat-killed *M. vaccae* improves fear-potentiated startle responses and extinction learning in rats
- Could a kangaroo win the Tour de France? The effect of relative crank angle on metabolic efficiency
- Effects of caffeine capsules on dynamic and static balance

## *Reaching out to IPHY Freshmen —Tips and Useful Information by Jia Shi*

After conducting a student survey, the IPHY Inclusive Excellence Committee recommended reaching out to IPHY students and providing them with more information related to their academic pursuits. Kyleen Newman, who switched her major to IPHY at the end of her first semester, said: "IPHY is a major you can study for premed, study abroad and do research. It is a versatile major you can take in all directions. This is what I really appreciate. I know the exact classes to take but I don't know much about IPHY events. I have heard about the IPHY Club from a class announcement, but I don't know any details about it." Another IPHY freshman, Makenna Hodges, commented: "I wish I knew more about different career paths the major can lead to. From this major what can I end up with and what are the steps for me to get there. I applied for scholarships outside of CU but I had no idea about available scholarships at CU Boulder." To make IPHY freshmen feel more connected with the IPHY department, I am providing tips and some useful information below.

*Utilizing professor/instructor' office hours:* Most of you have heard this before, but I can't emphasize enough how valuable it is to talk with your professors/instructors. At first, you may feel uncomfortable talking with them one-on-one. However, you will soon find out they are happy to talk with you and are ready to answer any questions you have!

*Meeting with academic advisors:* Every IPHY freshman should make a 4-year plan. Advisors can help students customize a plan specifically to fit a particular student's needs and schedule. Once you have a 4-year plan, you can determine if study abroad is a possibility and which semester might be feasible to do internships, etc. Additionally, if you follow this plan, you will be able to graduate in four years. This is what Kyleen meant above when she spoke of a 4-year plan as a "security thing". Our first year academic advisors and biology advisors have valuable major information available to you and are working together to help you succeed. Please take advantage of these services and meet with your advisors often.

*Joining the IPHY Club:* This is an effective way to make connections with fellow students and IPHY faculty. The mission statement of the IPHY Club is "to connect students and professionals outside of the classroom, and to enrich the overall experience of majoring in integrative physiology". The IPHY Club is run by an Executive Student Board, and any IPHY student can apply for a board position. If you are interested, please fill out an application at <http://www.colorado.edu/intphys/ugrad/club.html> and email it to faculty advisor Heidi Bustamante ([heidi.bustamante@colorado.edu](mailto:heidi.bustamante@colorado.edu)).



Here are some benefits of joining the IPHY Club:

- Students will have a chance to socialize with departmental faculty, the board members, and other IPHY upper classmen and learn useful information.
- Students can attend informational talks by fellow students or faculty members. For example, the Colorado University Emergency Medical Services coordinator, who is an IPHY upper classman and paramedic, gave a talk about how to become an EMT or paramedic while remaining a successful undergraduate student.
- Students can attend career talks from professionals outside the classroom. Examples of past career talks include requirements and admissions for pharmacy schools, careers in the chiropractic field, and research as a laboratory scientist etc.
- The IPHY Club often hosts reviews for the Anatomy Practical. At these reviews, anatomical models of various body organs are usually available.
- The IPHY club has a free peer-to-peer tutoring program. Tutors are IPHY undergraduate student volunteers who will help fellow IPHY students while reinforcing their own content knowledge. This volunteer experience will also help you build a strong resume.



*Attending IPHY research talks:* All students are welcome and encouraged to attend the IPHY Colloquium. Don't be intimidated by the word "colloquium", it is simply referring to the weekly (i.e. Mondays 12-12:50 pm) research talks by outside invited speakers and sometimes by IPHY faculty and graduate students. The topics range from aging, immunology, sleep physiology, muscle mechanics, biomarkers, substance abuse and just about everything in-between. The colloquium schedule can be found here: <http://www.colorado.edu/intphys/events/colloquium.html>. Understanding areas of IPHY research will help prepare you to identify areas or research labs from which you would like to seek potential mentors (e.g. for doing an IPHY honor's thesis or independent study when you are a junior). You will also feel more connected with your future IPHY courses.

*Finding scholarships:* This website (<https://colorado.academicworks.com/>) has a list of scholarships available predominantly to freshmen (below are a few examples). Don't be discouraged by scholarships for small dollar amounts, every bit helps! You also need to track deadlines closely (the deadline for most scholarships listed is March 1).

- **The Norlin Scholars Program (\$5000):** For students who show strong academic commitment, exceptional creativity, intellectual curiosity and a desire to apply disciplinary learning toward the betterment of humanity. The scholarship is open to entering freshmen and to students who will be in their third year of college with at least junior standing in 2016-17 (includes CU students or transfers).
- **Alan Cogen Scholarship (\$12,500):** To provide financial assistance to help students graduate from CU-Boulder. The scholarship is awarded to incoming freshmen in any college or school with demonstrated financial need and is renewable for up to four years.
- **Marjorie Skiff Rose Scholarship (\$6640):** Available to entering Colorado resident freshmen in the College of Arts & Sciences who demonstrate considerable financial need, a strong academic record, and evidence of personal integrity and good citizenship.
- **Mike and Bobbi Resmo Opportunity Scholarship (\$5800):** For the benefit of an incoming freshman or continuing undergraduate student who has immigrated to the United States of America during their lifetime. The award is based on both academic merit and financial need.
- **Richard A. McCray Scholarship:** To provide one scholarship annually to benefit an Arts and Sciences undergraduate student in natural sciences with at least a 3.5 GPA and demonstrated leadership. Preference given to those with financial need who major in science education. Recipients are selected by a committee appointed by the Dean of the College of Arts and Sciences.

Other useful scholarships websites : <http://www.colorado.edu/artsandsciences/student-resources/scholarships>  
<http://www.colorado.edu/intphys/ugrad/scholarships.html>

A final tip is to sign up for the IPHY Facebook page where you can get the latest news and events in IPHY:  
<https://www.facebook.com/CUBoulderIntegrativePhysiology/>

We hope these tips are helpful to freshmen (or any IPHY students) who wish to build an academic network, and we look forward to working with our students in the coming academic year.





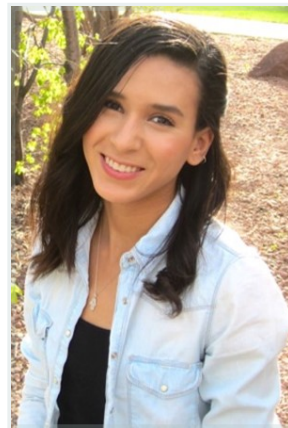
## *Graduate Teaching Assistants in IPHY* by Lameese Akacem

Graduate Teaching Assistants (TAs) in the Department of Integrative Physiology (IPHY) play a significant role in almost every course offered by the department. Their responsibilities range from holding office hours for large lecture-based courses to teaching laboratory and recitation sections for core classes. Together, the department's TAs contribute to the day-to-day success of IPHY courses and are highly involved in the learning experience of IPHY undergraduate students. However, graduate students must overcome many challenges as they take on their teaching responsibilities.

Often graduate students get their first experience with teaching when they begin graduate school. As such, many face a steep learning curve upon starting graduate school and must quickly acquire teaching skills. In order to prepare graduate students to teach, IPHY and the Graduate Teacher Program (GTP) offer a variety of training and resources. As part of graduate student orientation, IPHY graduate TAs participate in a department-specific training in which they are introduced to various teaching methods and strategies. These include active learning and how to make material more manageable for students. All TAs are encouraged to seek out additional teaching support from the GTP. The University of Colorado Boulder is one of a few universities with a program specifically focused on developing graduate students as teaching scholars. Before the semester starts, graduate students are encouraged to attend the Fall Intensive, a 2-day training event organized by the GTP. Workshops at the Fall Intensive are geared specifically towards graduate students who are teaching for the first time and cover important topics like how to hold effective office hours, creating lesson plans, and how to lead recitation sections. Training opportunities from the GTP continue throughout the academic year with weekly workshops on topics ranging from how to engage students, reaching students with diverse learning styles and using technology in the classroom.

In addition to attending GTP workshops, IPHY graduate students of all experience levels are encouraged to complete video tape consultations in which TAs are filmed while they teach. Students then review this video with the Lead Graduate Teacher and come up with a self-improvement plan based on their observations on the video. These consultations are a great way for TAs to see their teaching from another perspective and identify ways that they can improve. Eight video tape consultations were completed for IPHY graduate students this year!

Together, IPHY graduate students are very supportive of each other in becoming great teachers. Experienced TAs share teaching strategies and tips with newer TAs and work together to master course material. IPHY graduate students are dedicated to becoming excellent teachers and take advantage of resources available to them to improve and create the best possible learning experience for IPHY undergraduate students.



*Footnote: Lameese Akacem was the IPHY Lead Graduate Teacher of the Graduate Teacher Program. She recently received her Ph.D. degree in IPHY.*

## *A Circuitous Path to Medical School* by Thatcher Houldin

During my undergraduate career, I struggled to pick a major as no particular career seemed like the right choice. After career counseling and multiple personality tests, I choose business as a major because it is related to many fields and would not peg me into one career. Ironically, the broad nature of a business degree was an issue I later struggled with because I did not have a specific skill set that qualified me for a particular job.

Post college, I held a job as a retail store manager that I was initially excited about, but over time became frustrated that I was not growing toward a career that I was passionate about. Around that time, I tore my right lateral meniscus while trail running, which required surgery and physical therapy. The surgeon's knowledge and skill enabled me to be myself again—to return to work and to the activities that I loved. The experience inspired me to investigate the medical field and the possibility of helping others in the same way.

Soon after surgery, I began shadowing health care practitioners; I enjoyed interacting with patients and was intrigued by the science of the human body. During this time, I was seeing a physical therapist about shoulder pain. He explained that my scapula was sliding too far right, causing the humerus to pinch the shoulder joint. To my delight, I was able to reteach my muscles to hold the scapula in place! The therapist's ability to determine and explain the source of the pain impressed me. From experiences like this, I recognized medicine could be an opportunity to work with people toward a meaningful end in a scientific field.



Five years after graduating from college, I left my retail position and returned to school at the University of Colorado Boulder to complete medical field prerequisites. First semester as an Integrative Physiology major, I took anatomy lecture and lab, which had a huge influence on me. Seeing first hand the digestive system, brain, heart, muscles, and more made me more interested than ever to learn as much as possible about the human body. Each new semester seemed daunting, but even when subjects were challenging, it was such a pleasure to be able to connect with my professors and fellow students and tackle problems in a way that helped me grow. I am hugely grateful for the IPHY department as the teachers have inspired and supported my career decisions throughout this process.



For a time, I was torn between medical school and physical therapy school. Each profession would allow me the opportunity to work with people and make a positive impact. Classes like physiology and endocrinology helped convince me that medical school was the right fit for me. I knew I wanted to continue taking classes like those and further my education of the whole human body. My shadowing and academic experiences have absolutely convinced me that practicing medicine is a union of my passions—understanding the world around me, being challenged every day, and working with and for others.

Now that I have finished this part of my journey and will start medical school in August, I have a few takeaways. Taking time off from school to work for a few years helped me develop a different attitude toward school. One where I was excited to be learning, driven to work hard, and had few distractions outside of my school work. A challenging aspect of medical school is the years of commitment required. I met an older gentleman in my first semester at CU who was sitting in on one of my classes. He noticed my interest in physiology and urged me to go to medical school. I frowned and mentioned the years of my life that I would have to give. He replied by saying yes that was true, but argued that I would deeply enjoy my studies and each year would be a joy and not a burden. While I didn't put much stock in his words at the time, I have since come to believe in them. If I enjoy my time in medical school at all like my two years in the IPHY department, then I will be glad to have spent my time so. Medical school may be a grueling process at times, but I am excited for the journey and all that I will learn, the people I may be privileged to help, and the challenges that I may overcome and grow from.

*Footnote: Thatcher Houldin plans to attend the University of Colorado School of Medicine.*

## **IPHY PhD and My Career** by Jeff Gould

My career path diverged from what typically follows the completion of a PhD in integrative physiology. Usually this path includes further training as a post-doctoral fellow followed by hopes of obtaining a tenure-track faculty position. I wanted to share some of my experiences and perspectives with those of you who are working on completing your undergraduate or graduate degree and contemplating your next move. We all come from a variety of backgrounds, have unique personalities, and have differing viewpoints on what defines a successful career. These differences, coupled with the fact that any job is going to have its inherent ups and downs, can make navigating a career path a subjective and uncertain process. However, I would like to assure you that there are many options out there for you to pursue outside of academia or healthcare as well as pass on some advice I have picked up during my time as a student in the IPHY department.

Many IPHY students, myself included, begin their education bound and determined to achieve some end point. Many undergraduates who I have interacted with in my role as a teaching assistant, for example, have goals to become physicians, surgeons, or other positions as healthcare providers. In addition, many of my colleagues in graduate school set goals to pursue positions in academia as tenure-track professors. Of course it's important to maintain some sort of vision for how you want your career to develop, but I've found a great deal of value in keeping an open mind to the many other opportunities that are available. This is important not only for practical reasons (i.e., there are typically many more applicants than there are seats in medical school classes), but also in the interest of identifying a career path that might be an overall better fit. I began to appreciate this during my first year as a graduate student. When I joined Professor Enoka's Neurophysiology of Movement Laboratory to pursue a master's degree, I did so with the intent of eventually moving on to a career in healthcare. However, my experiences in the lab sparked a genuine interest and passion for basic scientific research. I realized that many of my aspirations for working as a clinician could be fulfilled by a career in science. I could study human anatomy and physiology, I could enjoy the intellectual challenge of solving problems (or at least trying to), and importantly, I had the potential to contribute to people's health and well being by providing new information to better inform clinical practice. I decided to adjust my career goals and continue on to the doctoral program in IPHY. I further developed my research interests to include the changes that occur in the neuromuscular system with advancing age and the fatigue experienced by individuals with multiple sclerosis.



In the process of working on my dissertation and thinking about what would follow, I became aware of career paths in private industry, but many of them didn't seem to quite align with my interests or skillset. So for the time being, I dismissed working in industry as a realistic opportunity and opted to apply for post-doc positions. It was during my final semester as a PhD student that I learned about an opening for an industry position as a research scientist (it wasn't until months later, when I was offered a position, that I fully gained an appreciation for alumni networking). Annemarie Silver, a former doctoral student in Professor Seals' lab and now a principal scientist at ZOLL Medical Corporation, contacted Professor Mazzeo inquiring about any doctoral students who might be interested in the position. Professor Mazzeo passed that information on to me as I was the only PhD student graduating that semester. Much to my surprise, the position was a seemingly perfect fit for me. It was an opportunity to continue studying human physiology, design and perform pre-clinical and clinical trials on a variety of medical devices used in emergency medicine, and improve patient care. I am extremely grateful for the training I received in the IPHY department and Professor Enoka's lab, which fully prepared me for this new chapter in my career as a developing scientist.

In summary, I urge those of you preparing for the next step as an IPHY graduate to approach your career development as a journey by keeping an open mind to opportunities you might not yet be familiar with, and to not constrain yourself to a handful of options that are popular with your peers. Talk to, work with, and get to know as many people in other labs and other related departments as you can; some of them will become lifelong friends and colleagues. Most importantly, enjoy the process of exploring your opportunities, working to advance your career to new levels, and finding success— however it is you come to define it.



*Footnote: Jeff Gould received his Ph.D. degree in IPHY in the fall of 2015.*

## *Establishment of Named Scholarships – Anyone Can Do It!* by Pei-San Tsai

In the spring of 2016, I donated \$10,000 to IPHY to establish a named endowment fund. With growth and interest, this endowment provides \$400 of continuous annual scholarship to students in need, and this amount will increase with the growth of the endowment. I plan to add to this endowment as my financial ability permits.

I established this fund for two reasons. First, I am in a position to give something back to a department that supports my professional development. Second and importantly, there are students who aspire to pursue a career related to human health, but their financial constraints limit their career development. I have noted that as little as \$100 can advance a student's progress by helping them present at a professional meeting, finish a crucial experiment, or pay for part of the tuition to finish within the normative time of their degree without taking out a student loan. My interactions with undergraduate and graduate students constantly remind me of how difficult it is for highly motivated but financially challenged students to complete their college and graduate education.

IPHY gladly accepts any level of support from our donors. Further, the donors can specify the use of the donation for any purpose. If it is for a scholarship (\$300 or more), it will be a named scholarship in the donor's name or the name of the donor's choosing. The donation does not need to reach the minimum level of an endowment (\$10,000) to be a named scholarship. We will also report to the donor on how the recipient has benefited from this fund. Please contact IPHY ([iphyinfo@colorado.edu](mailto:iphyinfo@colorado.edu)) if you wish to establish a named scholarship.



I have established the endowment fund in the name of my recently deceased father, a life-long educator. I hope IPHY alums and supporters will consider establishing a named scholarship to support a future physician, nurse, dentist, scientist, professor, and many more. This will be a true IPHY legacy.





## Mark Your Calendars for the Fall Freshmen Social

by Pei-San Tsai

On the afternoon of September 15, 2016, IPHY will hold a Fall Freshmen Social on the Sewall Lawn. All IPHY students, faculty, staff, and supporters are cordially invited to attend. We will have refreshments, informational booths, door prizes, and fun activities sponsored by the IPHY Student Club. We will have more information as it nears, but please mark your calendars!



## Kudos

**Heidi Bustamante**, Drs. **Steve Hobbs**, **Rodger Kram**, and **Suzanne Nelson** were awarded the Marinus Smith Award. This award was sponsored by the CU Parents Association and given to faculty or staff who have been particularly supportive or instrumental in promoting the success of undergraduate students. Of the 14 awards given during the awards ceremony, four were to IPHY faculty for their mentoring and teaching efforts.

Dr. **Josiane Broussard** has recently received a 1.5-year Innovative Seed Grant from the University to examine the role of the skin as a tool to assess circadian rhythms and function of peripheral metabolic tissues.

Dr. **Josiane Broussard** recently published a paper on the effects of nocturnal free fatty acid inhibition on insulin secretion in a model of diet-induced obesity.

Drs. **Janet Casagrand**, **Teresa Foley**, and **Ruth Heisler** recently received a \$10,000 Transforming Education, Supporting Teaching and Learning Excellence (TRESTLE) Award from the National Science Foundation to develop and study the effectiveness of case studies in the anatomy and physiology courses.

Drs. **Janet Casagrand**, **Teresa Foley**, and **Ruth Heisler** participated in a taskforce spearheaded by the Provost Office for Student Success to investigate various ePortfolio platforms and how this educational tool can be successfully implemented on the CU campus.

Dr. **Marissa Ehringer**'s group recently published a paper in *Behavior Genetics* demonstrating an association between rare genetic variants in nicotinic receptor genes and antisocial drug dependence.

Dr. **Marissa Ehringer** has recently been selected as the president-elect for the International Behavioural and Neural Genetics Society ([www.ibangs.org](http://www.ibangs.org)).

Dr. **Monika Fleshner** was selected as the 2016 recipient of the Arthur C. Guyton Distinguished Lectureship Award from the Association of Chairs of Departments in Physiology.

Dr. **Monika Fleshner** was honored to offer a lecture at the *Gordon Conference on Sleep*, entitled, "Early life prebiotic diet promotes sleep and stress robustness" in Galveston, TX (2016).





Dr. **Alena Grabowski** has recently published a paper in the *Journal of Experimental Biology* showing that during curve-running, the inside leg and affected leg of sprinters with a leg amputation limits maximum speed.

Dr. **Alena Grabowski** has joined an international group of scientists that will measure and analyze data from Markus Rehm, a below-knee amputee long jumper and Paralympic champion.

Dr. **Charles Hoeffler** has recently published a paper in *Science* describing the impact of maternal inflammation on the development of autism in offspring.

The International Dose-Response Society has awarded Dr. **Tom Johnson** the Outstanding Career Achievement Award in the field of dose response.

Dr. **Rodger Kram** recently published a paper in the *Journal of Applied Physiology* on the energetic cost of walking and running up extremely steep inclines (up to 45 degrees!). To do so, he and his students built the world's steepest treadmill.

Thirty IPHY students (graduate and undergraduate) and two faculty (Drs. **Rodger Kram** and **Roger Enoka**) attended the Rocky Mountain meeting of the American Society of Biomechanics held in Estes Park, CO on April 15-16.

Dr. **Monique LeBourgeois** has recently published a paper in *Neural Plasticity* describing developmental changes in sleep spindle characteristics in young children. The first author was undergraduate student Ian McClain, who received support from UROP, BURST, and HHMI to compete this independent research.

As part of a team of researchers from University of Massachusetts Amherst, Dr. **Monique LeBourgeois** recently published a paper in the *Journal of Pediatric Psychology* that links maternal depressive symptoms and SES to sleep disturbance in early childhood.

Dr. **Chris Link** was a coauthor of a recent paper in *Nature Neuroscience* that identified a mechanism by which a common mutation may cause familial ALS (<http://www.ncbi.nlm.nih.gov/pubmed/269986010>).

Dr. **Chris Lowry**, together with Dr. Charles Raison and colleagues at the University of Wisconsin-Madison, has recently published a paper in *JAMA Psychiatry* describing large effect size antidepressant effects of infrared whole body heating in depressed patients.

Dr. **Suzanne Nelson** took a group of four students and collaborated with Dr. Jon Reuter in the U.S. Virgin Islands where she is studying deer disease, genetics, and stress hormones. This is part of an ongoing project with the Virgin Islands National Park to study their deer population.

Dr. **Suzanne Nelson** was cited for her work on the Zero Waste Committee. Since developing and implementing her electronic exams (E-exams), she has saved the department over 90,000 pieces of paper.

Dr. **David Sherwood** published a paper in the *International Journal of Exercise Science* with honors student Ashley Vander Does on why people are different when performing movements with both hands.

Dr. **Doug Seals** presented the CU-Boulder 2016 Distinguished Research Lecture "Can We Achieve Optimal Longevity? From Cells to the Community: The New Translational Physiology of Healthy Aging".

Dr. **Doug Seals** recently published an article in *Aging* showing that a nitric oxide-boosting supplement improved motor and cognitive function in healthy middle-aged and older adults.

Dr. **Pei-San Tsai** published a paper with former IPHY graduate student **Vevian Zhang** in *Frontiers in Endocrinology* describing the resilience of the reproductive brain in genetically compromised animals.

Dr. **Ken Wright's** research was recently highlighted in the CBC Documentary - The Nature of Things "While you were sleeping".

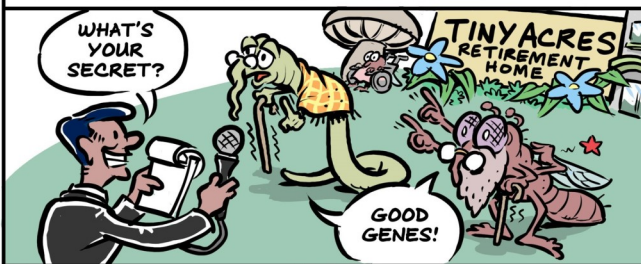
Dr. **Ken Wright's** research team has recently published a paper in *Current Biology* on how short sleep duration impacts the risk for diabetes.



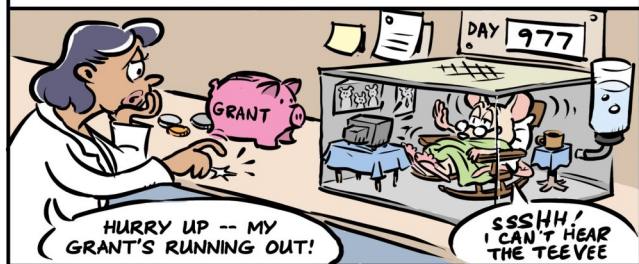
A cartoon representation of Dr. Tom Johnson's research by Leif Saul

## USING STEM CELLS TO SEARCH FOR LONGEVITY GENES

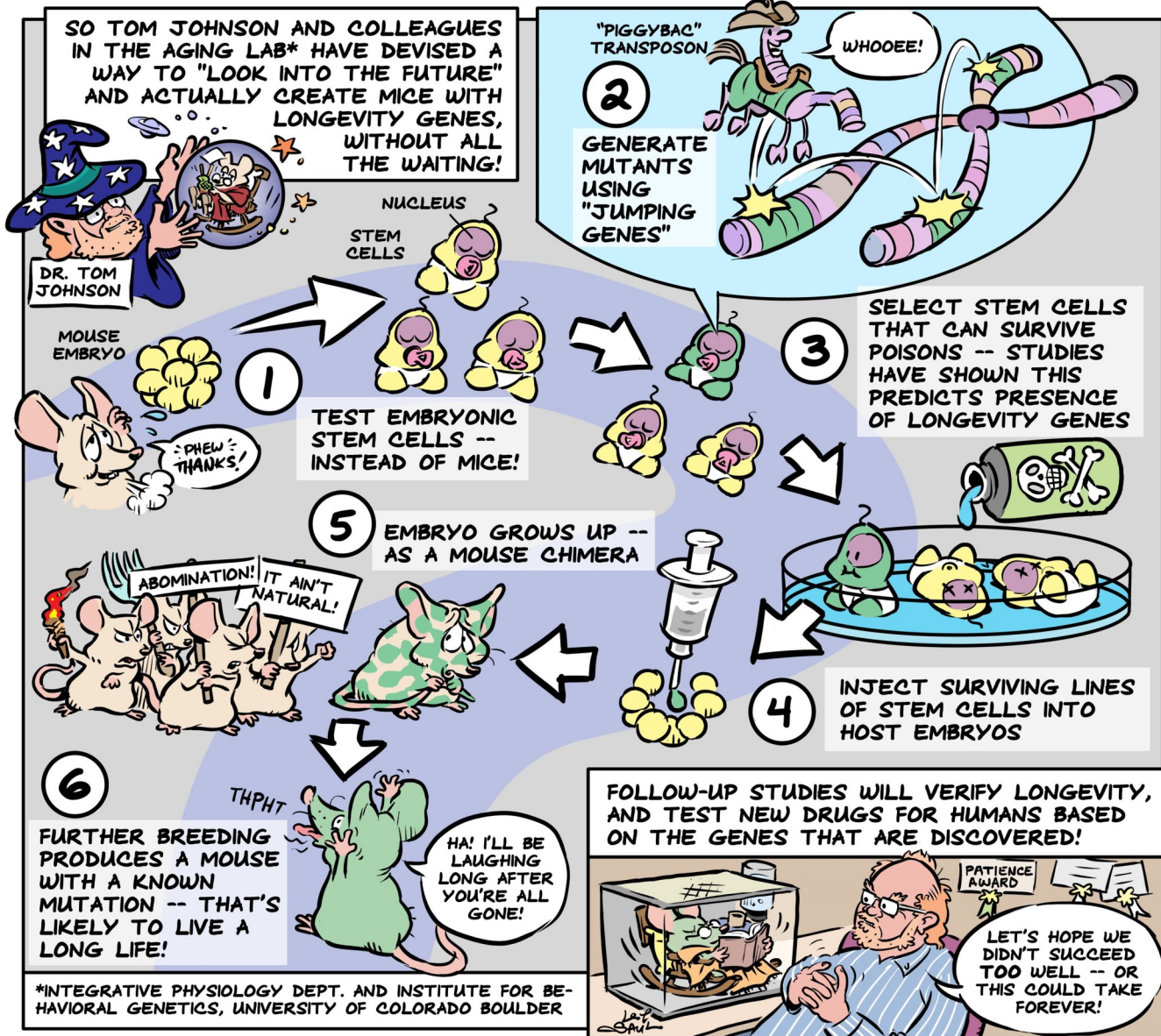
SCIENTISTS ARE STUDYING "LONGEVITY GENES" IN LOWER ANIMALS LIKE WORMS AND FLIES -- IN SEARCH OF INSIGHTS THAT MIGHT SOMEDAY PROLONG THE HUMAN LIFESPAN.



WE COULD LEARN EVEN MORE FROM MICE, OUR CLOSER RELATIVES -- BUT THEY LIVE FOR YEARS, MAKING LONGEVITY STUDIES AN EXERCISE IN PATIENCE.



SO TOM JOHNSON AND COLLEAGUES IN THE AGING LAB\* HAVE DEVISED A WAY TO "LOOK INTO THE FUTURE" AND ACTUALLY CREATE MICE WITH LONGEVITY GENES, WITHOUT ALL THE WAITING!



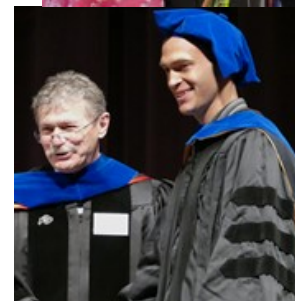
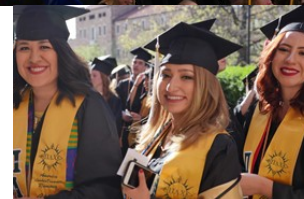
\*INTEGRATIVE PHYSIOLOGY DEPT. AND INSTITUTE FOR BEHAVIORAL GENETICS, UNIVERSITY OF COLORADO BOULDER





## May and August 2016 Bachelor of Arts Graduates

Gauri Adettiwar	Peter Curry	Daniel Heck	Claire Locascio	Kristyn Petracek	Taylor Stoller
Madeline Alm	Linda Dabit	Alexandria Herman	Jackson Long	Haylie Petrick	Maggie Straub
Haley Anderson	Emera Danos	Katherine Hesketh	Libby Looft	Lee Phan	Asher Straw
Kaitlynn Apple	Layne Darling	Mackenzie Hill	Gerardo Lopez	Brittany Piette	Ryan Strzepa
Lauren Argueta	Ashton Davis	Sasha Hill	Perez	Kristopher Pirtle	Shannon
Mary Armbruster	Lauren Davis	Kinsey Hindman	Jessica Lowy	Luca Pomerleau	Stubbenbick
Allison Atkin	Feven Desta	Kyleigh Holloway	Hibaq Loya	Rebecca Popowitz	Sydney Taylor
Tyler Atwater	Helen Desta	Taryn Holmes	Helen Lozier	Alison Pott	Eric Thuc Tran
Morgan Avis	Brent Diehl	Sarah Horan	Xiaojuan Lu	Sharwagya Poudyal	Kevin Tran
Delaney Bacon	Julian Donato	Abigail Horner	Samantha Lunsky	Evan Pratt	Jessica Truong
Aeriel Bailey	Shannon Donovan	Jake Hunnewell	Jordan Ly	Erin Radtke	Tammy Truong
Andres Barandiaran	Hannah Douglas	Emily Hunt	Hanna Magstadt	America Ramirez	Devon Tugman
Jake Barber	Shannon Duffy	Megan Hutchison	Emily Marbas	Jazzmyn Randleman	Stefan Ulrich
Garrett Baylis	Julissa Duran-Malle	Kiet Huynh	Danielle Martin	Sunaina Rangnekar	Katharyn Vaile
Shae Beall	Carolyn Emery	Taylor Irving	Hailey Martin	Katelyn Rankins	Kristen Valente
Kierian Beasley	Mitchell Ernster	Aaron Isaacson	Nicola Maude	Carly Ratekin	Kaitlyn
Yashar Behnam	Kayla Eucker	Emma Jacobs	Derek McCartney	Alison Rettmer	Van Bockern
Lauren Bellendir	Elizabeth Eversbusch	Connor Jacobsen	Samantha Medlyn	Mariah Rickert	Leslie Velasquez
Ashley Bender	Navid Farahani	Nica Jacobson	Cynthia Mendoza	Brandon Ridder	Grace
Lauren Bennett	Ryan Fay	Caitlin Jagiello	Eric Merizon	Caitlin Rinehardt	Ventimiglia
Emily Bernhardt	Micaela Flood	Aimee Jakeman	Madison Merrill	Jaymie Roche	Jordan
Sydney Bernzott	Alexander Flores	Erin Jeanneret	Alexis Micele	Samuel Rock	Vinciguerra
Ushma Bhandary	Victoria Flores	Dalton Jensen	Rahea Miersch	Antonia Rodriguez	Brandi Vinger
Bhoomi Bhatt	Cassidy Forest	Nicolas Johnson	Kaitlin Miller	Gerardo Rodriguez	Nhi Vo
Hannah Biddle	Tyler Fox	Trevor Johnson	Kurt Miller	Heidi Roerber	Linh Vu
Pawan Bishwokarma	Melissa Fresques	Austin Jolly	Rebecca Miller	Rachel Roller	Jasper Vue
Dana Blumer	Dillon Frisco	Hogan Jones	Andrew Min	Paige Roy	Adrienne
Kathryn Bodnar	Xinyi Fu	Kathryn Jones	Amanda Minckley	Sean Rule	Wahlstrom
Spencer Bowling	Edwin Fundingsland	Mackenzie Jones	Jessica Mkrtchyan	Brady Rutt	Emily Walderman
Chloe Braxton	Jazmyne Gallegos	Madeline Jones	Allison Moore	Katya Saenz	Connor Wall
Kai Brewer	Brittney Galli	Luke Karlovich	John Morella	Enkhtsogt	Athena Wallace
Kirby Brown	Caroline Gamwell	Bryn Kastetter	Zackry Morgan	Sainbayar	Destiny Ward
Krystal Brownfield	Whitney Gawlik	John Kearney	Rachel Murphy	Ruth Sanchez	Joshua Weiss
Jesse Bunce	Nicholas Giron	Elizabeth Keil	Shelby Nation	Steven Sares	Jack Wertheimer
Michaela Busch	Myla Giroue	Michaela Keiter	Shelby Neil	Hannah Sayner	Courtney Wham
Lindsey Byers	Lindsey Glova	Lindsey Ketterer	Sophia Nem	Elisabeth Schneider	Tyler Wieman
Yessica Canas	Spencer Goodding	Annie Kim	Amy Nguyen	Samantha Schneider	Chelsey Williams
David Carr	Anne Gostling	Sewan Kim	Katie Nguyen	Amy Schnicker	Matthew
Katie Cartee	Andrew Granville	Kylee Kimball	Lan Nguyen	Lauren Scholz	Wojcinowicz
Trevor Carver	Morgan Green	Stephanie Klein	Sarah Nies	Daniel Schroeder	Haley Wolf
Kate Cedars	Jessica Greene	Oliver Knauer	Michelle Noonan	Kevin Schulte	Laurel Wood
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Nicole Crane	Melanee Hart	Tess Libby	Cayla Paulson	Kaylee Stephenson	Emma
Kelsey Currier	Eric Hatlen	Charity Loar	Kayla Pekarek	Sadey Stillman	Ziobrzynski



## May and August 2016 PhD, MS, and BA/MS Graduates

Lameese Akacem, PhD	Karl Johansen, MS	James Richey, MS
Albert Angiolillo, MS	Philip Kavlich, MS	Hannah Ritchie, MS
Carolyn Ardizzone, MS	Jonathan Lassonde, MS	Benjamin Ryan, PhD
Coral Cabrera-Montalvo, MS	Grace Lincenberg, BA/MS	Allyson Schumacher, MS
Blair Denman, MS	Sarah Morton, BA/MS	Hannah Shapero, MS
Rachel Gioscia-Ryan, PhD	Bryant Pham, MS	Kathryn Thellman, BA/MS







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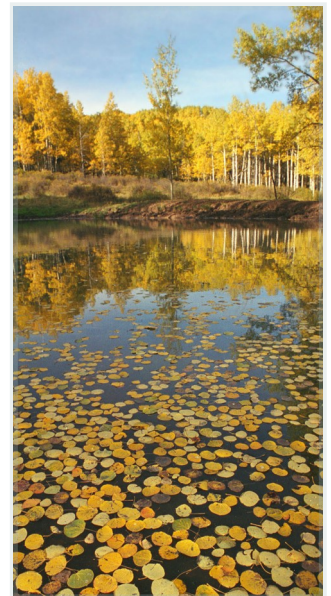
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