

# IPHY Student Board

Trying to figure out life after graduation? Come listen to the various paths taken by CU faculty. This is a perfect opportunity to learn about your options after graduation as well as to meet faculty in a small group setting.

Semester Newsletter

Issue N° 1 - Summer 2011

**Dr. Monique LeBourgeois'**  
*lab examines if sleep patterns in children can reveal behavioral tendencies.*

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**Instructor Marie Boyko**  
*teaches IPHY 1950, a lower division writing class that fulfills the lower div. writing requirement with a scientific focus*

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**Dr. Tom Johnson**  
*has been awarded the distinction of AAAS Fellow.*

**Dr. Rodger Kram's**  
*research plays a key role in debate about athletes with prosthetic limbs.*

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### By the numbers:

IPHY Majors: 1600

IPHY Labs: 18

IPHY Faculty: 36

*IPHY fun fact:  
Narcoleptic dogs fall asleep when overstimulated*

### IPHY Board Member Spotlight:

### Graduate **Nicole Gordon**

My name is Nicole Gordon, and I'm a graduate student in the IPHY program. I'm currently in Dr. Enoka's Neurophysiology of Movement Lab. The lab is interested in better understanding the neuromuscular mechanisms that limit the production of physical activity on both an acute and chronic level. I'm currently intrigued by how handedness (left- or right-handed) and hand dominance (dominant vs. non-dominant arm) influence the time an individual is able to perform a submaximal fatiguing contraction and whether the rate-limiting adjustments that occur during the task are similar across handedness and dominance. I'm also a TA for the undergraduate Neurophysiology course which focuses on how the nervous system controls human movement. The IPHY major has provided me with excellent opportunities to gain research and teaching experience as well as helping me gain a better understanding of my strengths and weaknesses.



## Departmental News

Dear IPHY students,

We, the IPHY Student Board, have decided to start a newsletter in order to keep everyone updated on departmental news, research, undergrad academic reminders and in contact with their major. As the representatives of the undergraduate IPHY department, we would like to see everyone connected. This newsletter will not only keep you informed of departmental activities, but will also create direct means of communication between students and the department. If you would like to contribute to the newsletter, please contact:

Danielle Duncan (Chair) at  
danielle.duncan@colorado.edu

or

Marie Boyko (Faculty Advisor) at  
marie.boyko@colorado.edu

Cheers!  
IPHY Student Board



### Lab focus: Monique LeBourgeois

On the East CU Campus, ARC A45-47, Monique LeBourgeois recruits and screens potential participants for her research into the normal developmental changes in sleep and circadian physiology, as well as the health and developmental consequences of stressing these two systems. Employing a longitudinal design, she studies the same children for 4 consecutive years during early childhood.

However, her research is done predominantly outside of the lab. Dr.

LeBourgeois and her research team spend about 100 hours in the homes of her subjects collecting data on children's sleep, circadian rhythms as well as emotional, behavioral and cognitive development.

The biggest challenges she faces mainly involve the challenge of working with children; they don't necessarily want to wear electrodes or chew on the cotton sticks used to collect saliva. However, her team is very adept at connecting one-on-one with the children to the point that they are familiar with the researchers and even enjoy the experience. She aims to make the family as comfortable as can be and the process as easy as possible.

Interested in getting involved?  
Fill out an application at  
[www.colorado.edu/intphys/research/sleepdevelopment.html](http://www.colorado.edu/intphys/research/sleepdevelopment.html)

## IPHY Class Focus: Scientific Writing 1950

Did you know you could satisfy your lower-division writing requirement within your own major (and get IPHY elective credits in the process)? You can! IPHY 1950, Introduction to Scientific Writing in Integrative Physiology, is a hands-on class that meets in a computer lab and gives you practice writing research and lab reports, research-based thesis papers, and articles about science for popular media. Immediate feedback during class helps you improve, and team activities introduce other IPHY majors.

IPHY 1950 is being offered in summer 2011, Term A, and in one or both semesters during the academic year; it is taught by Senior Instructor Marie Boyko, who brings her experience in scientific publishing to help you polish your writing skills and apply them to science. If you want to learn to read scientific research articles, and write about what you enjoy studying, IPHY 1950 is for you.

## Advisors!

To make an advising appointment go to [www.colorado.edu/aac](http://www.colorado.edu/aac) and select "Academic Advising" on the left.

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Don't forget to periodically check your degree audit!

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## Dr. Tom Johnson

Professor Tom Johnson has been awarded the distinction of AAAS Fellow for his contributions in developing the *C. elegans* model for understanding the genetics of longevity.

The AAAS is the largest scientific membership organization in the world.

Each year a few hundred are nominated by their peers for elevation to Fellow status which is one of the highest honors conferred by the AAAS and ranks among the major awards and recognitions that can be obtained in the United States.

Dr. Johnson became interested in science at a young age. His mother strongly encouraged academic success, and would even show Tom photos of university buildings. He loved a photo of MIT, which is where he later completed his undergraduate degree and this influence is seen in his choice to teach at the university level. His family was inspirational in his interest in aging research; he grew up in a multigenerational household in Denver where his great grandmother owned the apartment complex where his family as well as aunts, uncles, and other relatives in all walks of life have lived. This path towards his passion is reflected in his advice to current IPHY undergrads; "Follow your heart. There are so many opportunities that all require commitment and work, so emotional satisfaction in your work is very important. Follow your passion and the money will come."

In his research, he is most proud of proving that mutations to a single gene (the age-1 gene) can postpone aging. This was not the original intent of his research. Actually, he originally intended to prove that this was an erroneous concept. But after six years of research into the topic (alongside David Freidman), the data spoke for itself and he couldn't deny the groundbreaking results. He is currently (as of 10 years) looking into why there were differences between genetically identical individuals in their aging trajectories. Why, for example, do identical twins not die on the exact same day?

Dr. Johnson believes that the study of aging will continue to expand, with no upper limit to longevity. Lifespan has increased a quarter of a year every year since 1840 and there is no evidence of this pattern ceasing. Tissue engineering is now capable of

creating 2/3s of a finger, as well as generating new skin tissue; obviously, the potential of this field is huge.

## Dr. Rodger Kram

Dr. Rodger Kram, his former Ph.D. student, Alena Grabowski and collaborators have published a study that found that amputee runners with prosthetic limbs do not have an unfair advantage over runners that have their biological limbs. In fact, prosthetic limbs impart a slight disadvantage.

Dr. Kram is also the lead author of a debate on the topic that was recently published in the *Journal of Applied Physiology*. Their work was inspired by Oscar Pistorious' successful bid to try out for the 2008 Summer Olympics in Beijing. The study has received extensive media attention including coverage in [The New York Times](http://www.nytimes.com).

## Thinking about taking Nutrition?

Nutrition used to be a favorite class: upper division but not necessarily geared towards the hard sciences. But not so anymore.

This coming fall will offer IPHY 2420, an introductory nutrition course for freshmen and sophomores. Following in spring will be IPHY 3440, a sports nutrition course open to only IPHY majors, which will be a smaller course of around 30-45 students. The upper division will involve research papers and presentations on various nutritional aids as well as weekly assignments involving analysis of current research.

## And finally...

What would you, as an IPHY undergrad, like to see from the department or Student Board?

Would you be interested in submitting to the newsletter or joining the board?

Email Danielle Duncan (chair) or Marie Boyko (Faculty Advisor) with any questions!