



# Scientific Notation

Purdue Science Student Council

<http://pssc.science.purdue.edu>

Spring 2006  
Issue I

## Greetings From President of PSSC

If there's anything I've learned from physics, it's that CHIP homework takes too much time to complete. I also learned that time is relative, so if I had been doing my physics homework on a high-speed rocket in space, it might have taken me a few Earth years to finish it, so I really have no right to complain.

College is full of moments you wish you could just breeze past, such as that last horrible exam or those deliciously awkward social gatherings, but remember that our time at Purdue is limited. Here at Purdue Science Student Council, our goal is to help you make the most of your college experience. Every year, we host a

graduate school fair, research symposium, 5k run, and other activities. This semester, we are planning new initiatives to enrich science at Purdue, such as an informational pamphlet for College of Science students and a science quiz bowl tournament. I encourage you to look out for and take advantage of these opportunities to learn, develop new skills, or just have fun. There are other ways to get involved with science as well, such as through undergraduate research, joining a science organization, or finding a summer internship.

Science is a dynamic field, so as scientists, we too must be ready to embrace change and new developments. We might not be able to alter the space-time continuum in our favor, but at least we can still explore beyond

our current bounds. And one day, maybe, just maybe, we'll figure out exactly what CHIP stands for.

Henry Chou, Junior  
College of Science

## New CS Building Nearer to Completion

Students walking past Third and University on their way to class took note as the new computer science building drew closer and closer to completion. The 100K square foot site, named in honor of Richard and Patricia Lawson for their \$4.7 million donation towards its creation (Richard having received his computer science master's degree from Purdue in '68), gave the computer science department much to anticipate.

Scheduled to have its grand opening in the fall of 2006, the Richard and Patricia Lawson Computer Science building will boast four classrooms, five instructional labs, and four research labs. Its labs include a geometric modeling and graphics visualization lab (containing room for a huge virtual

reality theater) and two team project instructional computer labs. It will also have a commons area and café.

The building, which began construction in 2004, will be a new spot for not only computer science majors but other programs as well. One of the focal research projects is to be the matter of computer security.

Every day the new Lawson Building looked more and more complete. Workers completed the bricklaying and worked to finish installing windows. As work continues on the interior of the structure, excited students and faculty can see it will only be a matter of time.

Kelley Harris, Freshman  
College of Science

## Undergraduate Researchers:

Apply now for the 2006 Undergraduate Research and Poster Symposium to be held April 11th in the PMU Ballroom. This is an exciting opportunity to gain research presentation experience, meet other researchers, have fun and win CASH AWARDS! The registration deadline is March 10. Please share this information with other interested students.

See the website below for details regarding this event.

[http://www.science.purdue.edu/current\\_students/research\\_daily/index.asp](http://www.science.purdue.edu/current_students/research_daily/index.asp)

## College of Science Calendar

<i>IU @Purdue Basketball Game</i>	Feb 28 2006
<i>Spring Break</i>	Mar 11 2006
<i>PSSC Science Quiz Bowl</i>	Mar 25 2006
<i>Spring fest</i>	Apr 8 2006
<i>MCAT Exam</i>	Apr 22 2006
<i>Grand Prix</i>	Apr 22 2006
<i>Finals</i>	May 1 2006

## Staff Members

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## Science Discovery

For those of you interested in doing some volunteer work, perhaps you should consider Science Discovery.

Science Discovery is a Purdue Science Student Council program in which students volunteer to visit local schools and present science experiments. Science discovery teaches children about the joys of science through fun and interesting presentations which relate to the material being taught in the classroom.

Science Discovery offers the

perfect opportunity for students considering a career in education or those just wishing to help out in the local schools to help young people develop an interest in science. Since most of the lessons are taught at elementary schools, all that is required of volunteers is the most basic of scientific knowledge. As committee co-chair Jenny Wagoner says, "The presentations are fun and easy and anyone is welcome to teach the kids." So if you are at all interested in working with children and helping to foster a love for science in these young students, think about Science Discovery and volunteer some time.

For further information you can contact Jenny Wagoner (jwagoner@purdue.edu) or Daniel Schoettner (dschoett@purdue.edu).

David Sietsma, Freshman  
College of Science

## So You Want to be an M.D.

If only getting straight A's and taking an eight hour exam during Grand Prix Weekend was enough to get into medical school...

Premeds take the MCAT in the spring of their Junior year. During the summer, they fill out the AMCAS (American Medical College Application Service) on-line. AMCAS will send the application to participating medical schools in the United States and Puerto Rico. Also during the summer, premeds ask professors to write recommendations for med school: two science and one non-science.

After six weeks, the AMCAS application will be processed. The schools will then send out information about their program and a secondary application. This application asks more personal information and requires an essay.

Once the secondary application is submitted, students will have to wait 1-2 months to hear back from the school. This time, they will send a letter of rejection or a letter asking you to come for an interview. Usually one month notice will be given before the interview.

The interview is believed by many to be the most stressful part of the application process. A small panel will ask questions about your academic life, extracurricular activities and opinions on current events. The school will let the student know if they have been accepted by sending out letters a few weeks later. If a letter is never received, it means that they are still trying to decide or the student has been put on a waiting list.

Mike Frossard, Junior  
College of Science

*For questions and comments, please send an email to pssc@science.purdue.edu*

*Also visit pssc.science.purdue.edu for updated calendars, news, and events relating the College of Science*

## Get Involved with Research

Currently, there are a myriad of opportunities on and off campus for undergraduates to participate in scientific research. For instance, there are still numerous internships available in both the academic and industrial fields around the nation and even several abroad opportunities. These companies and schools frequently recruit at Purdue during the school year, so keep an eye out for informational seminars and recruiters. For all the biology students on

campus, there is an annual Howard Hughes Research Internship, which allows students to participate in a lab during the summer. The duration of the internship is ten weeks, and there is also a \$3000 stipend. As importantly, there are five positions reserved for freshman as well each year. This internship allows new and continuing students to gain valuable experience, giving interns the opportunity to conduct research without the distraction of classes and academics although interns could opt to register for a

summer class or two if he or she chooses to.

As a previous participant of the Howard Hughes Internship program, I can say that it was a beneficial research experience. After which, I continued to work in the lab the following semesters. Please contact your advisor for more information on this and other internships around campus.

Kiet Ma, Junior  
College of Science



## Undergraduate Research Spotlight

Kyle English is a senior in Physics that has spent three summers on different research projects at the following places: Walther Oncology Center at IU Medical Center in Indianapolis and the Indiana Blood and Marrow Transplant Clinic (IBMT) at St. Francis Hospital in Beech Grove. He also performed research during his freshman year at the PRIME Lab particle accelerator in Purdue's Physics Department.

How did you hear about this type of research?

My advisor informed me of the research in the Physics department. I was presented with a few different opportunities, talked to the professors in charge, and made a decision on which one seemed the most interesting.

Describe your research projects.

At PRIME Lab, I was merely an operator. I had no experience, so I went in and made sure the accelerator ran smoothly. The accelerator was used to measure how much of a certain element was present in a geological sample.

At the Walther Oncology Center, I investigated stem cell homing by way of measuring induced chemotaxis. I did a retroviral transfection to increase the number of CXCL-12 receptors in rat stem cells. CXCL-12 is a cytokine believed to increase stem cell homing. After increasing the amount of receptors, I treated these cells, along with control cells, with CXCL-12. I observed using FACS (fluorescent activated cell scanning) that the cells with the increased receptors did in fact migrate more than the control cells. This project is accepted pending revision in the journal Stem Cells and Development.

I had two projects at the IBMT clinic. Both involved reviewing the history of recipients of bone marrow transplants within the past 5-15 years. In the first project, I looked at all 15 years of patients. I investigated the occurrence of VOD (veno-occlusive disease of the liver) with relation to pre-existing risks and treatment drug regimen. I found that the accepted prophylaxis for VOD, ursodiol, did not conclusively work. In the second project, I looked at the past 5 years of data and investigated the occurrence of GVHD (graft vs. host disease) in transplant patients. GVHD occurs when the white blood cells of the recipient reject and attack the donor stem cells. I related the occurrence of GVHD to certain drugs, and found that some drugs, like methotrexate, conclusively reduce GVHD occurrence.

How did you decide that this research was right for you?

I had no idea that this research was right for me. On the contrary, I did not know what kind of research I wanted to do. I am a Physics major, but liked investigating biology more. However, having no experience, I did not know what I would like. I kept my mind open and tried many different aspects of research. Even though I liked the project I did at IU, I wanted to try out other aspects of research as well. This is why I went to a different institution the next year. Sometimes I think I should have stayed at the Walther Oncology Center and followed up my experiments, but I am glad that I was able to experience other parts of the research community.

How have your classes at Purdue prepared you for your lab work?

Physics classes, believe it or not, have helped me more than any other. Although I did not learn the information that would have been useful in the lab, I learned how to think about and attack problems. I was able to learn all the information from reading literature and experiment procedures, but knowing how to attack the problems was a great asset. However, since I did not have Biology until my sophomore year, I did have to learn all the material before I could progress with my first summer project. This held me up for about a week, and it took some time to understand everything. If I would have known what a retroviral transfection was before my project, I would have understood what I was doing more. As a result, I understood what a retroviral transfection was a little better when we went over it in my future Biology classes.

*"I had no idea that this research was right for me. I kept my mind open and tried many different aspects of research."*  
Kyle English

Hayley Knollman, Senior  
College of Science

## Like Math? Statistics? Then this Club May Be for You

Ever hear the word actuary and wonder, "What the heck is that?" Well, an actuary is someone who uses statistical analysis to try and predict the financial consequences of a risk. The most common applications of Actuarial Science are for insurance contracts and pension plans. Also, did you know Purdue has an amazing Actuarial Science program? To supplement the difficult curriculum composed mainly of math, statistics, economics, and management courses, most Actuarial Science majors join the Purdue Actuary Club. The club provides a good way for students to interact and organize study groups for the main hurdle to enter the profession; a series of very difficult actuarial exams. The main purpose of the

club is that they get companies to come to Purdue specifically to recruit Actuarial Science students. There are approximately 20 companies that come each year to hire for full-time and internship positions. How many majors can you think of that actually provide that for their students? So if you're willing to work hard and you enjoy math and business then Actuarial Science and the Purdue Actuary Club may be for you. If interested in joining check out the website below or look for callout fliers in the fall.

<http://web.ics.purdue.edu/~actuary/>

Brad Raatz, Junior  
College of Science



"I'd like to buy extinction insurance."

## Tough Class?

For most of us, the first round of exams has come and gone. And while it may be tempting to forget how much we struggled until the next wave is upon us, you'll be better off in the long run if you figure things out now. So if your lecture is huge and your T.A. is confusing, check out Supplemental Instruction. I know what you're thinking, that you already have way too many classes to add anything else to your schedule, but SI really works! Studies have shown that students who regularly attend sessions get higher grades than those who don't. Sessions are interactive and usually have a smaller group setting compared to lectures. They're also free and completely optional, so you can come whenever it fits into your schedule. Leaders who run

sessions also attend lectures for that course, so they really know what's going on and can offer lots of helpful hints and study skills. All in all, they're someone who knows exactly what it's like to be in your shoes and is eager to help you make it through. Check out the website below for more information. What have you got to lose?!

[www.cla.purdue.edu/asc/si](http://www.cla.purdue.edu/asc/si)

Chris Kenrick, Senior  
College of Science

*Anyone who would like to voice their opinions about the College of Science and/or contribute to the Scientific Notation, please email [kma@purdue.edu](mailto:kma@purdue.edu) or check out the next PSSC callout.*