

Southwestern University

DEPARTMENT OF BIOLOGY

The Department of Biology tries 'old' & 'new' ways to communicate with students & alumni:

OLD: su-biology & su-βββ Listserves

**NEW: ALUMNI FACEBOOK SITE
SU (Gtown, TX) Biology Alumni**



Southwestern makes it possible for departments and organizations to create a list-serve. You might ask yourself, why join the Biology, βββ or Animal Behavior list-serves?

1. Faculty routinely post jobs, summer research and internship opportunities .
2. You have a bunch of biologists at your disposal if you want to ask a question!
3. You do not have to worry about "missing" something that goes on in the Department (parties, food, lectures, advising, etc..).
4. The Biology Seminar Series announcements appear here as friendly reminders.
5. You can "route or filter" all the messages to one place and read them at your leisure.
6. and It's FREE!

For more information, see:

<http://www.southwestern.edu/mailman/listinfo/su-biology> or -βββ or -ab!

If you have yet to fall victim to the evil time sink that can be called Facebook, then good for you. However, the phenomenon of on-line social networking seems to have established its permanent presence. It boggles the mind why everyone cares what everyone else might be doing or why the number of applications within the program that deliver "gifts" or "messages" continue to provide that warm fuzzy that might be missing from regular in-person interactions. On the bright side, Facebook does provide a great forum to reach out to people. As a test of its reach, Dr. Burks has established a new site for Biology Alumni and will feature updates from these alumni on webpages and also in *BioScope* (for the first round, see pg. 5). So far, 82 people have joined the site. The site features Discussion Questions such as "if you wish you had taken one class, what would it be?" Currently Immunology leads the votes. Or, "are you local or at SU and wish to give a seminar?" The Department always welcomes alumni as part of the Biology Seminar Series. So...we'll keep you updated on this social experiment as it develops. The site remains open and does not require any "friendships" although we hope that we have cultivated a few of those too!

facebook

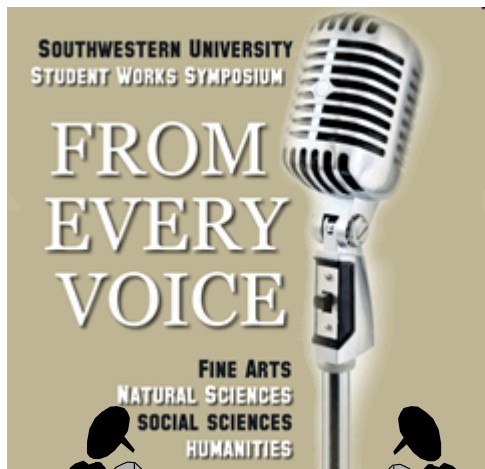
Facebook helps you connect and share with the people in your life.



DID YOU KNOW? The new Southwestern Animal Behavior Society (see pg. 6) also has a Facebook Page.



Think you have a capstone or other research experience worth sharing?

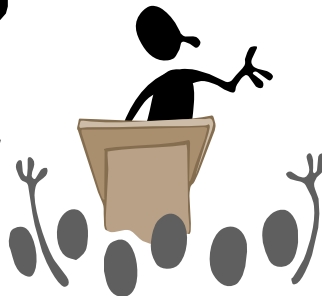
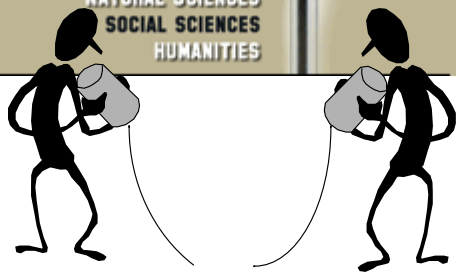


Consider a presentation in the upcoming Student Works Symposium on April 15th

Abstract Submissions Due 3/6/09:

<http://southwestern.edu/academics/studentworks/abstracts/index.php>

Not sure??? Ask a faculty member about the possibility.



SEMINARS

Keep a look out!

Coming soon!

Thurs @ 12

March 12

Noon, FJS 148

Speaker: Alakananda Basu, Department of Molecular Biology and Immunology, University of North Texas Health Sciences Center

Title: "Signal Transduction and Cancer Biology"

March 26

Noon, FJS 148

Speaker: Francis Chu, Postdoctoral Fellow, Washington University and SU Biology Alumnus

Title: "The regulatory pathways controlling biofilm formation in *Bacillus subtilis*"

April 2

Noon, FJS 148

Speaker: Gavin van Horn, Visiting Junior Scholar in Environmental Studies, SU

Title: "A Green Fire Burns Again?: Conflicting Social Values and the Endangered Mexican Gray Wolf"

April 16

Noon, FJS 148

Speaker: Fay Guarraci, Assistant Professor of Psychology, Southwestern University

Title: "Everything You Always Wanted to Know (and Some Things You

Probably Didn't) About Rat Sex."

Questions - contact Dr. Pierce

BIOSCOPE FOCUS: Reports from Sabbatical World



Dr. Sheller has used her fall sabbatical to optimize measurements of the transepithelial resistance (TER) of the epithelial cell lines, MDCK and MCF-7 and is currently monitoring paracellular resistance by measuring the TER across epithelial monolayers grown in tissue culture for up to 8 days. This highlight resulting from a Mellon grant for collaborative research has been accepted for presentation at the American Association of Cancer Research International Meeting, held in Denver, CO April 19-23. The abstract (see below) will be published in the 2009 Proceedings of the American Association for Cancer Research. Using data Dr. Cuevas and Dr. Todd collected over the summer and data collected by Dr. Sheller during her sabbatical.



From Dr. Gonzalez: I have spent my sabbatical year furthering my research on understanding the posttranslational regulation of the error-prone DNA polymerases in *Escherichia coli*. The UmuC polypeptide interacts with the UmuD' polypeptide to form the error-prone DNA polymerase V. UmuC is highly unstable and is degraded by the Lon protease. We have narrowed the Lon recognition site on UmuC from 422 amino acids to ~21 amino acids. Because these error-prone DNA polymerases play a role in bacteria attaining antibiotic resistance, it is important that we understand how they are regulated with the hope of reducing the development of antibiotic resistance (we will never be able to "outsmart" bacteria, so the goal is to minimize their effect). I have accomplished much of this work with the help of undergraduate student Lance Keller. Lance will be presenting this research at the Texas Branch of the American Society for Microbiology meeting the first week in March.



American Association for Cancer Research



Overexpression of claudin-3 tight junction protein in MCF-7 and MDA-MB-415 breast cancer cell lines. Maria C. Todd, Maria E. Cuevas, Brytanie Piana and Rebecca A. Sheller. Claudins, the integral membrane proteins that form the backbone of TJs, are required both for the assembly and function of vertebrate TJs. The 24 members of the claudin family identified to-date show tissue-specific expression and contribute to a diverse array of cellular processes including regulation of TJ barrier function and of ion diffusion through the paracellular pathway. Recent findings of abnormalities in claudin expression in tumors of different types, including elevated claudin-3 expression in ovarian cancers, have indicated a possible role for tight junction disruption in the metastasis of tumor cells. In the current study, we have identified two breast cancer cell lines, MCF-7 and MDA-MB-415, both of which are derived from metastatic deposits, that show marked overexpression of claudin-3 protein. Using small-interference RNA (siRNA), we have suppressed claudin-3 protein expression to that of near normal levels in the MCF-7 cells over a period of 7 days, allowing us to compare the growth rate and transepithelial resistance (TER) – a measure of tight junction strength - of the cells expressing abnormally elevated versus normal levels of claudin-3 protein. Following the siRNA-mediated suppression of claudin-3, we observed a decrease in the growth rate of the MCF-7 cells over a 7 day period. Having established a control TER measurement for MCF-7 cells expressing endogenous (elevated) levels of claudin-3, we are currently assessing TER in MCF-7 cells transfected with claudin-3-specific siRNA. These data combined with the growth rate analysis may shed light upon the contribution of claudin-3 deregulation to tight junction function in metastatic breast cancer cells.



More Biology BUZZ...

Everyone should congratulate Dr. Ben Pierce on completion of a very successful Brown Symposium on science and religion. Several biology students had the opportunity to interact with the speakers and the “buzz” continues around campus.

The Department happily reports that Dr. Andrew Woodward will be extending his Visiting Professorship for another year.

The Biology Department, in cooperation with the Environmental Studies Program, is in the middle of interviewing candidates for an Mellon Foundation funded post-doctoral position. Please come and evaluate the candidates for this “Global Ecologist” position. Look for fliers announcing times.

The Honors Program of the University of Mary Hardin-Baylor invited Dr. Burks to give a campus seminar about the wonders of chocolate on Monday, Feb. 23rd.

Dr. Veronica Martinez Acosta, a former Visiting Professor in our department, recently welcomed her new son, Pablo, into the world (12/3/08). Mom and baby are doing well negotiating the first-year of faculty life at Incarnate Word.

Four students (Colin Kyle, James McDonough, Matt Trawick and Anna Frankel) will be presenting their research at the Texas Academy of Sciences meeting in Junction, TX on March 6th.

The Natural Sciences are hosting 150 5th graders from Block House Elementary in Leander on Friday, April 24th from noon to 2:00 pm. Several students will be giving workshops and demonstrations. If you are interested in helping out, please contact Linda Southwick (southwic@southwestern.edu).



TWO SUMMER RESEARCH POSITIONS:

Dr. Burks has received university funding to support two summer researchers for up to 8 weeks. Students would receive a \$2000 stipend and housing on-campus. Please email Dr. Burks for consideration for these positions.



SMArTeams began its 5th semester at Southwestern, led by Biology Senior Anna Frankel. 3rd - 5th graders from Cooper Elementary come and check out SU on Mondays from 5-6 pm. More info can be found on the webpage of the Office of Civic Engagement. Or, if you are interested in checking out the program, just email Anna (frankela@su.edu).

SU SMARt Mentors:

1. Mallory Forsyth
2. Meredith Liebl
3. Liz Delgado
4. Cameron Clinton
5. Martin Irish
6. Alex Hall
7. Jade Tinker
8. Regan Lemley
9. Julia Von Alexander
10. Jesse Barbour
11. Alana Bergfield
12. Victoria Phillips
13. Sarah Ferraro



10 Alumni Updates via Facebook – what do Biology graduates end up doing?



--Edward
Sherwood

I'm an '81 graduate, Biology Major, I did my PhD in Physiology at Tulane ('86) and did a postdoc in the Cancer Center at Northwestern followed by Med School ('94) and internship at U of Chicago and Anesthesiology residency at Northwestern (I had a hard time leaving school). I've been at UTMB since finishing residency (11 years) and am currently Professor and Vice Chair for Research in the Department of Anesthesiology (we're #9 in the country in NIH funding-going for top 5). I just took over as director of the MD-PhD program at UTMB. I'd be happy to talk with any SU students or graduates who are interested in the program.

I graduated from Southwestern in 2008 with a BS in Biology (minor in Spanish). I am currently completing my Post-Baccalaureate degree in Medicine at the University of California at Berkeley and hope to attend medical school within the next year.

--Amanda Mohammed

--Jamie
King
South

I graduated in 2004, BA Biology and Spanish. I am a dual degree medical student D.O, M.S. at UNTHSC-TCOM, graduating this May. I will be doing an OB/GYN residency starting this summer.

I graduated from Southwestern in 1985. I attended UTHSC Dental School in San Antonio from 1986-1990 and then my Periodontal Speciality Training also at UTHSCSA from 1990-1993. I have been practicing Periodontics and Dental Implants in Plano Texas since then.

--Steve Bass

--Bryan
Clardy
M.D.

- Graduated SU in 1995. BS in Bio/Chem.
- UAMS for med school 1999
- AHEC FS for FP residency 2002
- Board certified in Family Medicine (with surgical OB)
- Board eligible in Disaster Medicine
- Currently clinical assistant professor teaching med students and residents
- Also a DMAT physician on AR-1 through HHS.

--Colin Anderson

I graduated SU in 2006 with B.S. in Bio. I worked nearly a year in Austin, TX at CellzDirect, a biochem lab which is now under Invitrogen. I then went on to Sam Houston State University, where I will graduate in May with a MS in Forensic Science.

--Angie Wiens

I graduated from SU in 2004 with a BA in Biology (History Minor, thus the BA). I am finishing my Masters in Public Health from UTHSC School of Public Health (a neverending thesis!) and currently work full-time in Public Affairs at Planned Parenthood of Houston & Southeast Texas.

--Laura Runyen-Janecky



I am a 1991 graduate of SU. I am now an associate professor of Biology at the University of Richmond, where I teach in the areas of Microbiology and Genetics and run a research lab investigating the mechanisms by which intracellular bacteria survive and multiply within eukaryotic cells.

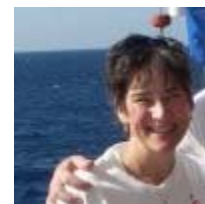


--Heather
Decker
Schultz

I graduated from SU in 2007. I am now finishing up my masters in Medical Microbiology from Texas Tech Health Science Center. We're researching cancer vaccines. I married my college boyfriend and we're now expecting our first child. I'm going to take a little time after my masters to stay home with the baby and decide if I want to go back for my PhD or work with my masters. I really love the benchwork though!

--Jane Stafford

I graduated from SU in 1974 with a BA in Biology and English; then UTMB in 1978. I served in the army six years and for 20 years have practiced OB Gyn in Corpus Christi. I also have three grown children the youngest is graduating from SU this May!

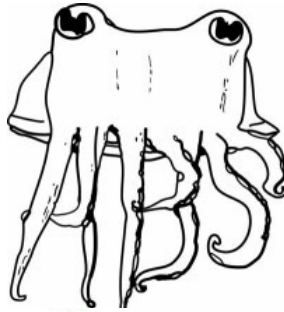


For more,
check out
Facebook Group

Student Groups

Students interested in the study of animal behavior have begun the process to form their own student group on campus. SU-ABS welcomes anyone simple fascinated by animals to join and contribute. Upcoming plans include volunteer opportunities and field trips to places that connect with animals.

Southwestern
University
Animal
Behavior
Society



It's that time again...mark your calendars for the evening of MARCH 31ST at 6pm for our spring PRE-MED INFO NIGHT!! This meeting will be specifically for Juniors and Seniors applying for the upcoming admissions cycle, but any interested pre-medical (or pre-dental) student is invited. We'll be talking about how to apply (TMDSAS and AMCAS systems), tips for the MCAT (just in time for those of you taking it in April..yikes!), helpful hints for interviews and have recently accepted seniors to both medical and dental school available for Q&A.

- Jen Penland
President
- Brittany Ford
Vice President
- Morgan Mingle
Secretary
- Jade Tinker
Treasurer
- Stephanie Henderson
Publicity
- Matt Trawick
Minor Coordinator
- Alex Hall
Web Master

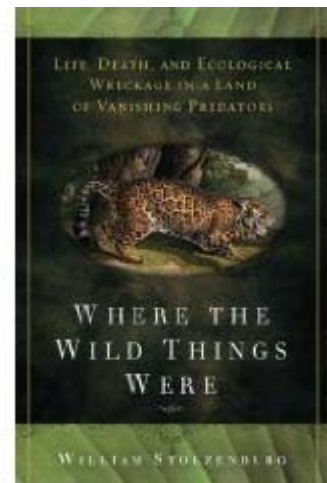
2/17/2009:
**Congratulations to all
recent BBB inductees!!**

Advice from a BookWorm "GO WILD"



INTO THE WILD: In a compelling book that evokes the writings of Thoreau, Muir, and Jack London, Krakauer recounts the haunting and tragic mystery of 22-year-old Chris McCandless who disappeared in April 1992 into the Alaskan wilderness in search of a ra transcendent experience. His emaciated corpse was discovered four months later.

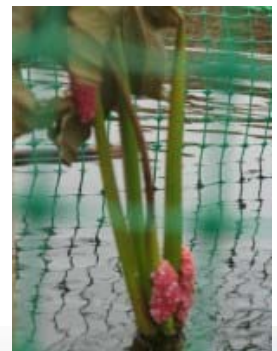
WHERE THE WILD THINGS WERE: In this impassioned debut, wildlife journalist Stolzenburg examines predation's crucial role in the preservation of ecological diversity, painting nightmarish pictures of what happens when top carnivores are exterminated from ecosystems.





TRIP HIGHLIGHTS: Dr. Burks, Colin Kyle & James McDonough Complete Successful Research Trip to Uruguay

1. **November 22nd** – we arrive with minimal stress (minus the drive to Houston) and all of our equipment!
2. **November:** Colin & James give poster presentations about their *P. insularum* research in Texas at the International Shallow Lakes Meeting.
3. **November:** Dr. Burks presides over Biodiversity and Exotic Species session at the meeting and gives 40-minute tutorial presentation.
4. **End of November:** The team goes searching for a native population of applesnails!
5. **December:** James and Colin construct 26(!) enclosures to set up two experiments in a Lake Diario in Uruguay.
6. **Throughout December:** Dr. Burks monitors experiment and counts something like 40,000 applesnail eggs over a month.
7. **December 15th:** Dr. Burks makes new connections at the Montevideo Museum of Natural History and finds type specimens of *P. insularum*.
8. **December 18th:** Dr. Burks finds a native population of *Pomacea insularum* in Uruguay!!
9. **January 11th:** Dr. Burks returns to the US and goes to panel for International Research Experiences for Students,
10. **From Jan – now:** Dr. Burks continues to think of ways to get back to South America.



For more pics, see:

<http://picasaweb.google.com/burksr>





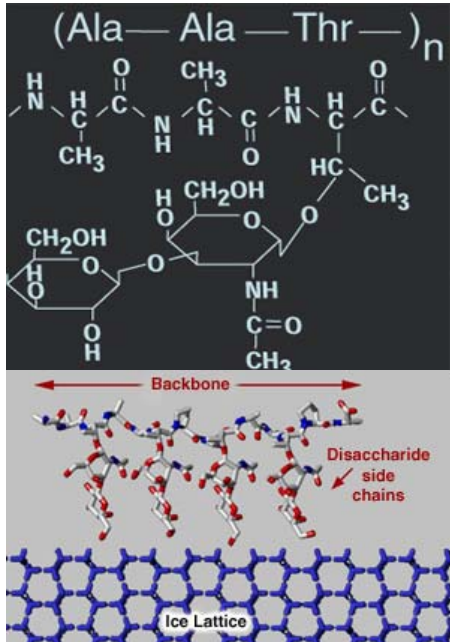
Learn something new from BioScope Magnifications:

Molecule: Antifreeze glycoprotein (AFGP) or ice-structuring proteins allow freeze avoidance and freeze tolerance.

Pathway: Circulatory system of fish that lack both red blood cells and hemoglobin (!)

Organisms: notothenioid fish, including the Antarctic toothfish (*Dissostichus mawsoni*)

Ecosystem: Ocean near Antarctica (below-freezing waters, ~-1.9 deg. C)



<http://www.arctic.uoguelph.ca/cpl/arcticnews/updates/antifreeze/antifreeze.htm>

The basic structure of antifreeze molecules follows a simple repeat pattern (with some variation between types) of three amino acids-threonine (Thr), proline (Pro), and alanine (Ala) (Top Figure) The ability of these molecules to bind to ice crystals is a consequence of this repeating pattern (Bottom Figure).

FROM RANDOM INTERNET SEARCHING:



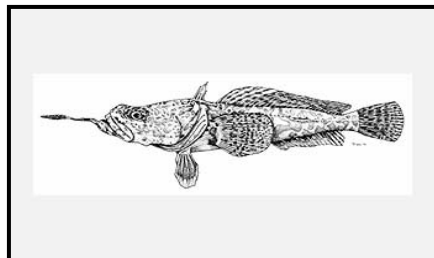
Fangtooth

See more at:

[http://www.pbs.org/wgbh/nova/abyss/ife/bestiary.html](http://www.pbs.org/wgbh/nova/abyss/life/bestiary.html)



DEEP SEA MAY BE HOST TO A VARIETY OF UNUSUAL FISHES (some scary, some less so)



FROM THE NATIONAL SCIENCE

FOUNDATION: The Antarctic brainbeard plunderfish (*Pogonophryne cerebropogon*), a new species recently collected at a depth of 300 m in the Ross Sea. The long chin barbel is used as a lure to attract prey. This species is nearly 15 inches long.

Antarctic toothfish, Antarctic cod



Dissostichus mawsoni in McMurdo

Sound

Scientific classification

Kingdom: Animalia

Phylum: Chordata

Class: Actinopterygii

Order: Perciformes

Family: Nototheniidae

Genus: *Dissostichus*

Species: *D. mawsoni*

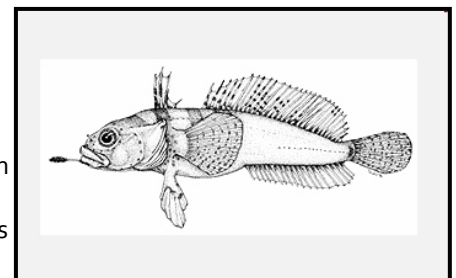
Binomial name

Dissostichus mawsoni

Norman, 1937

http://en.wikipedia.org/wiki/Antarctic_toothfish

The picture below shows the Antarctic gravelbeard plunderfish (*Artedidraco glareobarbatus*), collected at 130 m near Franklin Island in the Ross Sea.



Special Feature – Original Short Story

“Shutdown”

by Dr. Andrew Woodward



It was immensely painful.

In the past, Visual Assistance Holidays were purely optional, enjoyed only by fast-blinking children and the contemplative elderly—people with innocence or age, but little else to their credit.

This time was different. A satellite malfunction meant that the system was down until an emergency replacement could be launched. *Friday at 8:03 am.* He closed his eyes and thought. *3 days and 22 hours, give or take.*

The government had sent extra rations of pain reliever—specifically, the kind on record to best suit his personal physiology. Acetaminophen. *Worthless,* he thought.

The problem was sensory overload. Normally, the wind vector was given with a simple arrow. Now, the challenge was to infer it from the collective rustling of millions (*tens of millions? billions?*) of leaves, or from the cooling feel of localized evaporation on his skin. This was completely overwhelming to his system, causing a headache like none other.

After a brief attempt at walking in the blindingly bright outdoors, he secluded himself inside. The lighting here was too low, but at least did not contribute to the pain. Work was optional until Friday, since so many workers would have trouble concentrating. He, for one, intended to sleep. His girlfriend would chastise him.

She was of a different mettle. And, he thought, she would have an easier time for other reasons. Famously, she had persuaded her primary physician that acetaminophen was inadequate. Because some marginal aspects of neurophysiology remained incalculable from gene sequence and body scans, the government still allowed patient input as a factor in the selection of a pain reliever—in her case, a narcotic.

Still, he worried about her. It was a well-known fact that vehicular accidents increased on Visual Assistance Holidays. Only a few people who opted out of assistance left home on a voluntary holiday; the involuntary situation was surely far more dangerous. Productivity could not be allowed to plummet to zero, he understood, but she should have worked at her home terminal instead of commuting, simultaneously drugged and plagued with visual distractions.

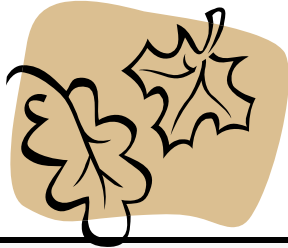
It must have been 50 years since so many light bulbs were turned on at once. He worried that the grid would not suffice to meet the unusual strain. *Maybe that wouldn't be so bad,* he darkly chuckled as he turned off the light and felt his way to the bed.

He dreamed within the scope of the System. *Trees were reduced to their essential qualities—trunk and largest branches—without disjointed swaying movements or a coat of nauseatingly undulating leaves. The path ahead (Where exactly am I going?) was marked and annotated with kilometers traveled, distance to go, and estimated time to completion of the journey. He took many wrong turns in the meandering dream, but the flashing red question mark in the lower right quadrant of his visual field promptly put him back on course each time.* It was soothing and comfortable; unreal, but superior.

Could he sleep for 3 days and 22 hours?

It seemed unlikely, but he would try.

Registration for
Fall 2009 will be here
before you know it:



Note: Human Anatomy in Kinesiology also
now cross-listed with Biology (Organismal)


Spring 2010 Preview
(tentative** courses):

- Organ Physiology (Sheller)
 - 2 labs
- Immunology (Gonzalez)
 - lecture only
- Tumor Biology (Todd)
 - New course
- Endocrinology (Cuevas)
 - 1 lab
- Molecular Biology
 - 2 labs
- Evolution (Pierce)
 - Lecture only
 - Okay for AB majors

Note: Tissue Mechanics in
Kinesiology will also be
cross-listed with Biology
Also, Biochemistry will be
offered by the Chem Dept.

Like
BioScope?
Then
contribute!

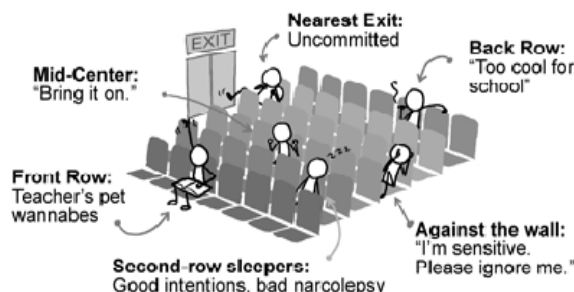
- **MINICOURSES:**
 - Biodiversity – Staff – MWF 10/11 + Ms. Southwick WThF Lab
 - Cell Biology – Dr. Woodward – MWF 10/11 + Ms. Southwick M/Tu Lab
- **NON-MAJORS:**
 - Human Biology Today – Dr. Ard– M/W 1-1:50 + W lab 2-4
- **METHODS**
 - Ecology and Evolution – Dr. Taub - Tu/Th 8:45 – 10:45 am; 1st half and 2nd half
 - Cell and Molecular – Dr. Sheller - Tu/Th 8:45 – 10:45 am; 1st half and 2nd half
- **UPPER-LEVELS:**
 - Genetics – Dr. Pierce - Tu/Th 8:00-9:15 + Th Lab 2:30-5:30
 - Note this can substitute for Evolution for AB Majors on a case by case basis.
 - Plant Physiology - Dr. Woodward –Tu/Th 9:30-10:45 + Tues Lab 2:30-5:30
 - Neurobiology – (lecture only) Dr. Sheller – Tu/Th 1-2:15
 - Microbiology – Dr. Gonzalez – Tu/Th 9:30 – 10:45 + Tues or Wed Lab
 - Cell Physiology – Dr. Todd – MWF 9 – 9:50 am + W lab 2-5
 - Biochemistry – check chemistry schedule


Senior Picnic

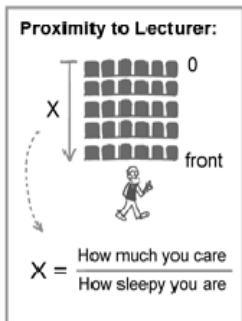
Look for upcoming
announcements



WHERE YOU SIT IN CLASS/SEMINAR
And what it says about you:



WWW.PHDCOMICS.COM



JORGE C-JAM © 2008