

# Santa Clara BioNews

Winter 2007 volume 3, issue 1

Santa Clara University Department of Biology

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## UPCOMING EVENTS

### *Bio 100 – Hot Topics in Biology Spring 2007 edition!*

The theme for this spring's Hot Topics course is **Evolution in Action**. Evolution is truly a unifying theme in the life sciences. Join a different professor each week to talk about evolutionary concepts and examples, in fields ranging from molecular biology to ecology. The course meets from **4:35 to 6:00 on Monday** afternoons. Learn something new, have some cookies, meet students and faculty, and pick up 2 units of upper division credit – without ever having to take an exam! (Note: This course can be taken repeatedly.)

## INTERNSHIP OPPORTUNITIES

### Summer Internships - Genencor

Genencor's summer internship program is designed to provide a positive learning environment for college students. (Several SCU students have done successful internships at Genencor.) Working as part of a multidisciplinary team, you will make a measurable contribution to Genencor's research projects while completing a unique and specific project. The internship lasts approximately 3 months. Interns are paid a competitive hourly rate and are responsible for their own housing and transportation for the summer.

To apply, please include a cover letter with your application outlining which of the following project areas of interest to you: *Biochemistry/Biophysics, Enzyme Development Technology, Molecular Biology, Enzymology, Physical Chemistry, Enzyme Solubility-Recovery Studies, Protein Purification.* Send your resume to: [internships@genencorcareers.com](mailto:internships@genencorcareers.com) **Applications close Friday March 23, 2007**

### Summer Internships - Roche

A highly successful college internship program has been in existence at Roche Palo Alto for many years. Our full-time ten-week internship program provides an opportunity for undergraduate juniors and seniors to gain hands-on experience in a focused, highly productive setting. Internships have been offered in Biology, Biochemistry, Cell and Molecular Biology, Analytical Chemistry, Medicinal Chemistry, Pharmacology and Genetics/Genomics.

To apply, please e-mail your resume and cover letter to [paloalto.interns@roche.com](mailto:paloalto.interns@roche.com). Please include a college major or area of interest in the subject line of the e-mail. **The deadline is February 28, 2007.**

## The Bio News "Staff"

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## FACULTY NEWS

### New lecturers in the Biology Department



**Dr. Frances Jackler** is currently teaching *Bio 28: Human Sexuality*, a non-majors course. Fran has a B.S. in Psychology from City College of New York, and a PhD in Neuropsychology from City University of New York, and has authored numerous research articles in neurobiology. She previously taught *Bio 28* at SCU for the summer session, but the course is being received very enthusiastically this winter quarter. *Bio 28* examines the biological foundations (anatomy, physiology, and neurobiology) of human sexuality, sexually transmitted diseases, and psychological and social aspects of sexuality. This course is being considered for the "ethnic studies/women's and gender studies" requirement of the core, a first for a biology course at SCU!



**Dr. Tracy Ruscetti** will be teaching *Bio 175: Molecular Biology* during the spring quarter. Tracy has a B.S. in Biology from New Mexico Institute of Mining and Technology, and a PhD from Louisiana State. She is currently a visiting scholar in Radiation and Cancer Biology at Stanford



University School of Medicine, following a position as a Staff Scientist at Los Alamos National Laboratory. Tracy has published numerous papers in molecular and cellular biology, received grants from the National Science Foundation for research and education projects, and taught university-level courses in cellular and molecular biology, and biotechnology.

## FACULTY SPOTLIGHT



### Dr. Janice Edgerly-Rooks By Andrew Vu (SCU '09)

Dr. Janice Edgerly-Rooks, a Professor in the Biology Department, is well-known for her enthusiasm for nature. Growing up in New England, Dr. Edgerly-Rooks discovered her love

for nature through exploration. With a childhood filled with expeditions through creeks and ponds, she naturally developed a fascination for nature, and especially for animals and insects. While in college in New York, she decided to dedicate herself to science after taking animal behavior and physiological psychology courses. Eventually, she began doing research on caterpillars, and immersed herself in entomology, animal behavior, and ecology.

### *"The Big Idea in Biology is Evolution"*

At Cornell University, Dr. Edgerly-Rooks began studying web-spinning insects, also known as embiids, for her PhD work. Her research mainly focuses on the behavior and ecology of web-spinners, and looks at issues such as the social aspect of sharing silk. Her research experience at Cornell was different from most labs in that everyone in the lab worked on their own project. Dr. Edgerly-Rooks worked alone on her web-spinner research, getting grants and traveling the world to collect data. Now at SCU, she continues to study the behavior and ecology of web-spinning insects, and involves many students in her research.



Dr. E-R demonstrates a blow-gun in Ecuador!

Dr. Edgerly-Rooks finds insects to be incredibly diverse and interesting, and considers herself fortunate to study the evolution of insects, an interest that has allowed her to travel the world to places such as Trinidad and Tobago, Australia, and Ecuador. She also considers herself lucky to be able to have a husband who shares a common interest in nature. Her husband, a wildlife artist whom her students refer to as "Jungle Ed", has been extremely supportive of her, and joins her in the field to collect data, take photographs, and draw.

Dr. Edgerly-Rooks remembers her PhD experience as one that forced her to become independent, a characteristic that she tries to inspire in her students. She also aspires for students to learn to use the scientific method to solve new problems



Dr. E-R looking for insects in Ecuador ("You can't always look things up in a book"), and to develop teamwork and professional skills through projects such as poster presentations in her Animal Behavior course.

Dr. Edgerly-Rooks teaches Bio 22 and 23, and upper division courses on Biology of Insects, Animal Behavior, and Environmental Biology in the Tropics.

## ALUMNI PROFILE

### Charmaine Gallego, SCU'95 By Sara Forrester (SCU '07)

Charmaine Gallego graduated from SCU in 1995 with a B.S. in Biology and a pre-med emphasis. After taking time off to gain work experience, Charmaine entered the University of the Pacific to study Pharmacy. In 2001 she graduated with a PharmD. She currently is a Pharmacy Manager at a Long's in Sunnyvale. I sat down with Charmaine to learn more about this SCU Biology alum and her path towards a career in as a pharmacist.



**Charmaine, what led you to choose Pharmacy as an undergrad?** Well, I started out “pre-med”, but as time progressed I realized that being a doctor and going to medical school was not what I wanted, more what my family wanted. So, I started looking at other career options and Pharmacy seemed like something I would be interested in. To gain more experience in the field and to test it out I started working as a Pharmacy Ancillary at a Long’s Drugs. While working I established a close relationship with one of the pharmacists, who became my mentor and inspired me to seriously consider getting a PharmD. My relationship with her and my experiences at Long’s propelled me into choosing to pursue Pharmacy Graduate School.

**Can you expand more on what you did after graduation?**

I spent time working, getting experience in the industry to see if Pharmacy was really something that I enjoyed. This is very important, to try out the field before you jump into it. You want to find out if this work and career field is something you enjoy or not. Obviously, I’ve primarily worked as a retail pharmacist, so I cannot speak to other types of Pharmacy positions and what they require, but regardless, experience is very important to helping you discern if the field is a good fit. I also took extra classes at West Valley and SJSU to fulfill some Pharmacy pre-requisites that I had not taken at Santa Clara. For example, many schools want you to take Economics and Speech, both of which were not part of the Biology curriculum. I spent time deciding if Pharmacy was what I truly wanted.

**What was Pharmacy School like, and how did your SCU education and Biology degree help you succeed?** SCU gave me a great foundation. The classes at SCU prepared me for going on in education. Specifically, the labs from my Biology classes were helpful in allowing me to transition successfully into the U of P Pharmacy Program. Pharmacy school was challenging though. The program was three years, where as most are four, so things move along quickly. Taking time off between SCU and graduate school was instrumental in allowing me to be energized and motivated to keep up with the quick curriculum. As for school itself, the first year was a refresher, getting all the students to the same level, the second year we delved into Pharmacy specific courses, and the third year we did our rotations and internships. SCU gave me a solid base from which to grow and the Biology courses prepared me for level of detail in grad school. U of P was not a shocking transition; SCU prepares you well to pick up and move along and succeed.

**What is a normal work day like for you?** Right now I work for a 24 hour pharmacy, and supervise four part-time pharmacists. During the week I work either the morning or evening shift; I have another Pharmacist who covers the weekends. During the day I do many different things - there’s never a dull moment. I divide my time between managing the Pharmacy and working as a pharmacist. I interact with patients a great deal, calling people about their prescriptions, filling prescriptions, doing drug orders, consulting, and working with insurance companies. Combined with the Pharmacy work is my role as a manager,

I do all the things managers do: work with schedules, staffing, implementation of policy and procedure, and answering emails and questions. I’ve learned how to very effectively multi-task, to get things done efficiently. What I enjoy most is the constant action at my job. I’m always doing different things. Then after all the work during the week, I get the weekends off. I’m not on call - I work regular hours and get to go home at the end of the day and have the weekends to do what I want to do.

**What do you enjoy most about your job, and what skills make one successful in this field?** I think Pharmacy is a great field! You can do so many different things with a PharmD. You can work in a hospital, in industry, for an insurance company, in the corporate world, or as a retail pharmacist. I enjoy working for Long’s in a retail capacity, and cannot see myself doing anything else. To work as a Pharmacist you need to be a good “people person”, who can clearly articulate ideas, and work with a diversity of people. What’s interesting is that when I started out I would not have thought of myself as stepping into the role of a leader, but it is something that I discovered I enjoy doing. In general, Pharmacy seems to be a great career, especially for women. The hours are very flexible, it’s an interesting job, it’s a stable career and it pays well. You can have a rewarding career in healthcare, even if you are not a doctor. Pharmacists are becoming increasingly important as liaisons to patients. We often spend more time with patients than doctors, talking to patients about medications they are on, and scanning for possible complications.

**What would you recommend to people interested in pursuing Pharmacy?** The biggest thing is to “get your feet wet” by trying out a position in the field, be it as a Pharmacy Ancillary or something else. Trying out the profession will allow you to evaluate whether or not you enjoy the work before you invest all the time and money in a graduate program.



## The MCAT: Planning for Success

By Michelle Pesce (SCU '09)

It was not so long ago that you and I were sitting in a large classroom surrounded by many unfamiliar faces waiting to take the dreaded SATs or ACT. No one really enjoyed spending an entire Saturday morning answering critical thinking questions from the verbal skill or reading comprehension sections. Some students had undergone rigorous preparation for this exam, but most students relied on their own basic reasoning skills to answer the questions correctly. Finally, after an entire stressful morning of “you may begin” and “stop testing,” you were ready to spend the rest of the day forgetting about the test!

Now, many of us will face the MCAT - the Medical College Admissions Test - a vital component of an application to medical school. Like the SAT, it is supposed to test skills necessary for future success, in this case as a medical student and, eventually, a physician. The MCAT is a test of “analytical reasoning” with four sections: Physical Sciences, Biological Sciences, Verbal Reasoning, and the Writing Sample.

The Physical Sciences section emphasizes knowledge in the areas of general chemistry, organic chemistry, basic physics, analytical reasoning, and data interpretation. Unlike the SAT, the MCAT is not math-intensive, and requires a basic knowledge of algebra and trigonometry. In fact, many of the formulas needed are found on the test. Most students have completed courses in General and Organic Chemistry and Physics by their junior year before taking the MCAT. Memorization of scientific concepts will not guarantee success on the MCAT; one must take the basic knowledge of the coursework and apply them to the concepts presented in the Physical Sciences section. Many of the questions appear in journal or article format, requiring reading comprehension and careful extraction of information.

The Biological Sciences section emphasizes more biology than chemistry content. Topics such as cell division, enzymatic activity, virus activity, muscular and skeletal systems, and the lymphatic, nervous, respiratory, circulatory systems are included. A human physiology or anatomy class can be helpful preparation for this section. Organic chemistry also shows up in nomenclature, stereochemistry, spectroscopy, and knowledge of hydrocarbons, amino acids, proteins, and lab techniques. So, think twice before torching those Organic notes at the end of sophomore year!

The MCAT also tests knowledge beyond the natural sciences. The Verbal Reasoning section involves critical reading of sophisticated journal articles and passages that typically would not be read for leisure. The required writing sample consists of two 30 minute essays that test the ability to compose a thoughtful and cohesive statement in a time crunch. A recent survey indicated that the Verbal Reasoning portion of the MCAT was the most challenging and difficult for students. Those who excel on this section definitely have an edge on the overall exam.

When should all of this become a concern? Students wishing to attend medical school immediately after graduation in 2008 should take the MCAT in 2007. You can typically use scores for 2-3 years after taking the MCAT. There are many approaches to when a student takes the exam, depending on after college plans or mastery of the science material.

Unlike the SAT or the ACT, some sort of preparation is probably necessary to maximize your score on the MCAT. There are MCAT prep classes administered by some universities, or by companies such as Kaplan, Princeton Review, and Peterson's. For example, Kaplan offers a wide variety of options to help students prepare such as classroom

programs, private tutoring, online programs, summer intensive courses, and preparatory books and software. The classes provide an overview of the exam with assistance in all areas of the exam, or more specific courses that focus on strictly Physics, Verbal skills, or Organic Chemistry. The advantage to taking an online course is to be able to go at your own pace. A Kaplan course typically costs \$1000-\$1200, depending on the type of course. Also keep in mind that registering for the MCAT \$210, not factoring in any applicable late fees.

The MCAT has recently undergone some changes. It is no longer a paper test, instead being administered electronically on the computer. In addition, the MCAT is now scored on a new scale. Each section receives a score from 1-15, and the Writing Sample essays are assigned a letter from J-T, with T being highest. Each section and essay is compiled into a raw score at the end. Depending on the pool of students taking the MCAT, scores may be adjusted to reflect a student's performance among those who tested on that particular day. On average, the composite score for the MCAT is an 8 on the multiple choice sections and an N for the Writing Sample. To be most competitive, a composite MCAT score of 10-11 is necessary, and a score of 12 indicates top performance.

Although it may seem that everyone is undergoing extensive MCAT prep, practice testing is probably the best method of preparation for the MCAT. If you're curious, you can test your abilities at Kaplan's free practice test on March 3<sup>rd</sup> to see what you are up against. You wouldn't want to go too long without experiencing that all-too-familiar feeling of jitters before taking a test that could change your entire life! But, hey, relax; it is “just a test”...

### General MCAT information

Official MCAT Web Site: [www.aamc.org](http://www.aamc.org)

Kaplan Web Site: [www.kaptest.com](http://www.kaptest.com)

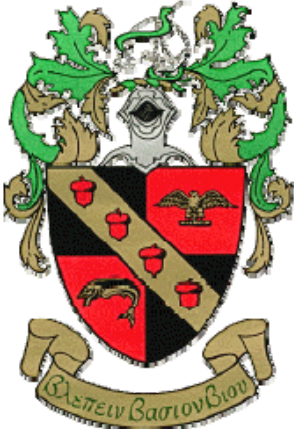
Sign up for the “Pre-Med Edge” newsletter

March 3<sup>rd</sup> FREE Practice MCAT Registration  
Site: [www.kaptest.com/practice](http://www.kaptest.com/practice)

Free Complete Online Practice Test:  
[www.e-mcat.com](http://www.e-mcat.com)

# TriBeta/Club Bio

For more info on upcoming events contact:  
Kacey Gilford [kgilford@scu.edu](mailto:kgilford@scu.edu) or  
Audrey Krizek [akrizek@scu.edu](mailto:akrizek@scu.edu)



## Tri Beta Applications

It's time to submit applications for Tri Beta! Tri Beta is the national honor society for biology students.

To learn more about Tri Beta, the requirements for eligibility, and the application process, please see

<http://www.scu.edu/cas/biology/students/Tri-Beta-Honor-Society.cfm>

To download an application form click here:  
<http://129.210.228.129/cas/biology/students/upload/TriBetaApplication-2.pdf>

**Applications are due by 5pm Friday April 13th.**

We'll look forward to receiving your applications.  
Michelle Marvier [mmarvier@scu.edu](mailto:mmarvier@scu.edu)  
Faculty Advisor to TriBeta



## Spring Quarter 2007

### Non Majors Courses

Bio 2 Health/Human Disease Murray TR 8:00 -9:45 ALMSC 120  
Bio 5 Endangered Ecosystems L+L Sudame TR 11:50-1:35 DALY 203  
Bio 5 LABS TUES OR THURSDAY 2:15-5:00 ALMSC 125

### Biology intro series

Bio 23 Invest Evo/Eco L+L Marvier MWF 10:30- 11:35 DALY 206  
Bio 23 Invest Evo/Eco L+L Dahlhoff MWF 11:45-12:50 ALMSC 120  
Bio 23 LABS WEDS 2:15-5:00 ALMSC 260,262  
Bio 23 LABS TUES OR THURS 8:30-11:30 ALMSC 260,262  
Bio 23 LABS TUES OR THURS 2:15-5:00 ALMSC 260,262

### Upper Division Courses

Bio 100 Hot Topics W 4:45-6:00 ALMSC 120  
Bio 104 Human Anatomy Rossinni TR 11:50-1:35 ALMSC 120  
Bio 104 LABS TUES OR THURS 2:15-5:00 ALMSC 310  
Bio 115 Human Repro & Devel. Grainger MWF 9:15-10:20 DALY 201  
Bio 122 Neurobiology L+L Sabatier TR 9:55-11:40 ALMSC 120  
Bio 122 LABS TUES, WED or THURS 2:15-5:00  
Bio 131 Agroecology L+L Eisinger MWF 10:30-11:35 DALY 202  
Bio 131 LABS TUES OR THURS 2:15-5:00 ALMSC 302  
Bio 133 Ecol Cal Plant Comm L+L Matzek TR 11:50-1:35 ENGR 108  
Bio 133 LABS TUES OR THURS 2:15-5:00 ALMSC 361  
Bio 165 Animal Behavior L+L Ederly-Rooks MWF 1-2:05 DALY 202  
Bio 165 LABS WED OR THURS 2:15-5:00 ALMSC 127  
Bio 171 Evolution L+L Preston MWF 11:45-12:50 DALY 201  
Bio 173 LABS MON OR WED 2:15-5:00 ALMSC 361  
Bio 175 Molecular Biology L+L Ruscetti MW 2:15-4 DALY 317  
Bio 175 LABS MON & WED 4:15-5:45 ALMSC 301  
Bio 178 Bioinformatics Seshagiri WED 7-10pm ALMSC 256  
Bio 187 Biology of Aging Plonka THUR 6-9pm  
Bio 189 Topics in Cell & Molec Miller FRI 2:15-3:50 ALMSC 120

### Summer Session I

Bio 2 Health/Human Disease Murray TR 8:00 -9:45 ALMSC 120  
Bio 112 Pathogenic Micro L+L Murray MTR 8-10:10 ALMSC 120  
Bio 112 LABS TUES & THURSDAY 10:20-1:20 ALMSC 361  
Bio 124 Human Physiology L+L Courtney TWR 3:20-5:30 ALMSC 220  
Bio 124 LABS TUES OR THURSDAY 2:15-5:00 ALMSC 359

### Summer Session II

Bio 4 Light & Life L+L Preston MTR 10:20-12:30 ALMSC 120  
Bio 4 LABS TUES OR THURSDAY 1:30-4:30 ALMSC 120