

# STARS NOTES

SCIENCE TEACHER ACCESS TO RESOURCES AT SOUTHWESTERN

## Fall 2007 STARS Events

All STARS activities and events are offered free of charge to teachers in the state of Texas.

STARS SYMPOSIA consist of a series of lectures given by scientists and physicians currently doing research at UT Southwestern Medical Center and affiliated institutions. The science symposia and inservice sessions are excellent resources for teachers to learn about cutting-edge research in the biomedical sciences, to discover new classroom activities, and to obtain professional development credit at the same time. If you wish to attend any event, please pre-register by calling 214-648-9505 or visiting our online registration page at [www.utsouthwestern.edu/stars](http://www.utsouthwestern.edu/stars)

### Mini-Symposium: Systems Biology: New Insights Into Biology – Sept. 10, 2007

Biology often seems random & unpredictable. But usually it is not: rules govern biological phenomena but it is often very difficult to 'see the forest through the trees.' Two assistant professors of Pharmacology spoke at this meeting to elucidate how biologists are developing new ways, using awesome computer power, to make sense of randomness and to derive new rules governing life. Steven Altschuler, Ph.D., spoke about *Precision and Sloppiness in Cell Populations*, and Guroel Suel, Ph.D., gave a talk on *The Gambling Cell: Probabilistic Behavior in Differentiation*.

### Basic Science Symposium: Embryonic Development – Oct. 13, 2007

Where do our tissues and organs come from? Organogenesis involves a complex choreography that mystified early researchers. Recent work has revealed molecules that get secreted or lie on the cell surface that direct cells to certain locations and causes them to undergo differentiation to form mature tissues. This symposium included a discussion on the development of blood vessels and blood cells, as well as the development of the kidney. The morning session began with a presentation on the *Role of Wnt Signaling in Kidney Formation* by Thomas Carroll, Ph.D., Assistant Professor of Internal Medicine. Rita Perlingeiro, Ph.D., Assistant Professor of Developmental Biology gave the next talk on *Origins of Hematopoietic and Endothelial Progenitors*. The afternoon session started with a lecture on *Embryonic Stem Cells and Blood Development* by Michael Kyba, Ph.D., Assistant Professor of Developmental Biology, and Ondine Cleaver, Ph.D., Assistant Professor of Molecular Biology, ended our day with a look at *Reciprocal Signaling Between Blood Vessels and Embryonic Tissues*.

### Mini-Symposium: Vital Signs – Nov. 5, 2007

A Special Thanks to the Museum of Nature and Science for partnering in this special event. What are doctors looking for when they test for vital signs during a routine examination? Parents, teachers, and high school students participated in a

session answering that very question led by James Wagner, M.D., Associate Professor of Internal Medicine, and Celia Jenkins, M.D., Associate Professor of Psychiatry. Meanwhile, Steve Hinkley from the Museum of Nature and Science led a concurrent activity-filled session for middle school students on the same topic.

### Special Event: ScienceFest – Nov. 9, 2007

For the fourth year in a row, STARS and Winston Science collaborated on an exciting experience that was a celebration of science. This convention-style event gave the student participants the opportunity to choose between multiple presentations, activities, and demonstrations.



Mirtha Gonzalez, medical student, helps students with the suture activity.



Fun making fake snow!

STARS and The Winston School extend thanks to all the presenters, participants, and students that made the event possible.

### Teacher Inservice: Microscopy – From Virtual to Reality – Dec. 1, 2007

Virtual instruments allow students to learn how to operate scientific lab equipment directly from a computer screen. The development of four virtual instruments (VIs) is a part of a Howard Hughes Medical Institute (HHMI) grant to

UT Southwestern through the STARS program. VIs are being developed to help students understand the operation of the real instruments and to substitute for them when the physical instruments are not available. Essential funding for the VIs portion of the HHMI grant is generously provided by the Peter O'Donnell Foundation. Development of the VIs has been

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# Science & Health Careers

## Exploring Post at UT Southwestern:

### Fall 2007 Review

Aug. 27, 2007 - Drs. George Lister, Scott Cameron, James Amatruda, and Matt Porteus from the Department of Pediatrics.

Several members of the Department of Pediatrics spoke to the Exploring Post. Dr. George Lister, Chairman of the Pediatrics Department at UT Southwestern gave us an overview of pediatrics and research in the department. Dr. Scott Cameron, Assistant Professor of Pediatrics spoke about his research on roundworms called *C. elegans*. He studies genes that control programmed cell death and cell development, and this is related to childhood leukemia. Dr. James Amatruda, Assistant Professor of Pediatrics, conducts research using zebrafish. The focus of his studies is on trying to understand the causes of cancer and to develop better treatments. The last speaker was Dr. Matt Porteus, Assistant Professor of Pediatrics. He spoke about sickle-cell anemia, a genetic disease common in African-Americans, and the use of gene therapy to correct the genetic abnormality. It was a very stimulating session and provided a good overview of Pediatric research.

Sept. 24, 2007 -

**Skip Garner, Ph.D., Professor of the Eugene McDermott Center For Human Growth and Development**

Dr. Garner's lab develops applied computational biology focused to address topics in research such as cancer and heart disease. The lab's goal is to impact medicine through the use of advanced technologies, such as eBlast. eBlast uses full text similarity searches instead of keyword searches. It can help scientists find references, collaborators, competitors, as well as identifying plagiarism.



*Making Crystals!*

Oct. 29, 2007 - **Richard Baxter, Ph.D., Postdoctoral Research Fellow in Biochemistry**

Dr. Baxter is part of a team that has uncovered the structure of a molecule from the mosquito's immune system that binds to a parasite that causes malaria. The team has focused on TEP1, a protein in the mosquito's immune system. The leader of the team,

Dr. Hans Deisenhofer, won the Nobel Prize for his X-ray crystallography technique. Dr. Baxter gave the Explorers the opportunity to actually make crystals which was very entertaining.



*Visiting the Sleep Lab*

Nov. 26, 2007 - **Chris Sinton, Ph.D., Associate Professor of Internal Medicine**

Dr. Sinton's research focuses on sleep pathology. He treats patients with sleep disorders such as sleep apnea and also conducts research on sleep using rodents. Dr. Sinton gave a

stimulating talk on the meaning of brain waves during sleep and the importance of rapid eye movement (REM) sleep. He also addressed the pros and cons of using sleep medications. He discussed with the Exploring students the importance of naps during the day, individuals who seem to need very little sleep, and the effects of "jet lag" on sleep patterns. He also showed films of narcoleptic dogs who are deficient in a particular brain hormone, orexin, discovered by Dr. Masashi Yanagisawa at UT Southwestern. Finally, Dr. Sinton gave a tour for the students of his laboratory. It was an awesome evening, and everyone was sleepy afterwards!

### Spring 2008 Meeting Dates

January 28, 2008

February 25, 2008

March 31, 2008

April 28, 2008

Location:

5323 Harry Hines Blvd., Dallas, TX 75390, Meeting Room D1.200

Time: 6pm-7:30pm Explorer@UTSouthwestern.edu

Check out the website for more information and pictures from past meetings: [www.utsouthwestern.edu/stars](http://www.utsouthwestern.edu/stars)

(click on Exploring POST)

### Eighth Annual Biotechnology Educator's Conference

## "Biotechnology: The Crossroads of Controversy and Solution"

Thursday, June 12, 2008

8:00am - 3:30pm

Collin County Community College,

Spring Creek Campus

2800 East Spring Creek Parkway, Plano, TX 75074

Register at: <http://www.Region10.org>

Keynote Speaker: Dr. Harold "Skip" Garner  
Professor of Biochemistry and Internal Medicine,  
UT Southwestern Medical Center  
"Translating Genomic Research into Medical Applications"

The Eighth Annual Biotechnology Educators Conference will be held in Plano at the Collin County Community College - Spring Creek Campus on June 12, 2008. The theme for this year's conference will be

"Biotechnology: The Crossroads of Controversy and Solutions." Topics that will be featured will include:

- Organic versus conventional food crops
- Drug delivery systems - present and future
- Electronic resources in biotechnology
- Ethics in nanotechnology
- Hands-on labs

This educational event is targeted primarily to teachers, educators, county extension agents, and outreach professionals and is the collaborative effort of several public institutions committed to providing continuing education.

Cost to attend the conference is \$10.

This fee includes admittance to Dr. Skip Garner's morning keynote address, participation in 3 breakout sessions of your choosing, and conference materials. Lunch will be provided.

## New STARS Staff Member

Meet the newest member of our STARS staff, Kristie Conner! She joined our staff in October 2007 as a STARS education assistant. She previously was employed as a Large Case Manager for a small insurance brokerage firm. Prior to that, she worked for 18 years at Texas Instruments primarily in the Corporate University Relations group, working as a Grants Manager. She also worked in several areas of Human Resources, including College Recruiting and Training and Development. This gave her a wealth of experience in similar programs that STARS offers, as well as, administrative and people skills.



Kristie Conner

Kristie is excited about the opportunity to work at UT Southwestern Medical Center. She says, "I feel like what we do here truly makes a difference for the students and teachers, and that is very rewarding."

She is amazed at how willing and eager everyone has been to share their knowledge with our visiting students. She believes that it makes a great impression on the students, and she knows that it inspires many of them to think about careers in the medical field. Kristie really enjoys participating in the tours, and thinks that it has been a great way for her to learn about the university and a great way for her to learn her way around campus.

Kristie says, "I'm looking forward to the upcoming Summer Teacher and Student programs, as well as working with the Howard Hughes Medical Institute (HHMI) pre-college outreach grant. I still have a lot to learn about the university and about all of the STARS programs that we offer. I look forward to learning it all!"

Feel free to contact Kristie, to welcome her to the STARS Program, register for our events, request science ambassadors or science fair judges, and inquire about the HHMI grant. She is here to help you or your students in any way.

## Spring 2008 Calendar of Events

**Jan. 7, 2008** Monday 5:30 pm - 8:00 pm  
Mini-Symposium: The Cell Cycle - Mitosis  
Lecture Hall, D1.502

**Feb. 2, 2008** Saturday 9:00 am - 3:00 pm  
Teacher Inservice: Virtual Spec20-tacular  
Meeting Room, E1.403  
Limited Enrollment

**Mar. 3, 2008** Monday 5:30 p.m. - 8:00 p.m.  
Mini-Symposium: The Lungs  
Lecture Hall, D1.502

**April 5, 2008** Saturday 9:00 a.m. - 3:00 p.m.  
Basic Science Symposium:  
What's New with Stem Cells  
Lecture Hall, D1.502

### *Other Important Dates to Remember*

**Jan. 18, 2008** - Deadline for Science Fair Judge Requests

**Friday, Feb. 1, 2008, at 4 p.m.**  
Deadline for Summer Research Program Applications

**June 9, 2008** - Summer Research Program Begins

**August 1, 2008** - Summer Research Program Ends

*All events are held on the UT Southwestern South Campus.*

*For directions, call the STARS office or visit the STARS Web page.*

## Fall 2007 STARS Events *Continued from Page 1*

undertaken by Dr. Keneth Meissner, Assistant Professor in the Department of Biomedical Engineering at Texas A&M University. The VIs are based on the LabView environment, a software package developed and donated by National Instruments in Austin for use in the VI projects.

Our fall inservice session highlighted the first of four VIs, the virtual optical microscope. (Future VIs in development are a virtual spectrophotometer, virtual gel electrophoresis apparatus, and a virtual thermocycler.) The day began with an introduction to *How a Light Microscope Works* by Kate Luby-Phelps, Ph.D., Associate Professor of Cell Biology and Director of the Live Cell Imaging Core Facility. Dr. Luby-Phelps is providing archived optical microscopy slides for the Virtual Microscope through the Live Imaging Center that she directs. The next talk

on the *Installation and Use of the Virtual Optical Microscope* was given by Keneth Meissner, Ph.D. at Texas A&M. Then, Rene McCormick, Director of Standards and Quality at the National Math and Science Initiative, presented a lesson that could be used with the instrument, *Determining the Mitotic Fraction: A Virtual Microscope Exercise*. In the afternoon, Dr. Phelps gave a tour of the UT Southwestern Live Cell Imaging Core Facility to the teachers and provided additional samples and lessons for the virtual microscope. Finally, there was an extended discussion with the teachers on potential uses of the virtual microscope in their classrooms.

Check out the following webpage for the samples and more information about the live imaging core lab.  
[www4.utsouthwestern.edu/LiveCellImagingFacility/links.htm](http://www4.utsouthwestern.edu/LiveCellImagingFacility/links.htm)

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Visit our web site at  
[www.utsouthwestern.edu/stars](http://www.utsouthwestern.edu/stars)

# STARS

 **SOUTHWESTERN**  
MEDICAL CENTER  
5323 Harry Hines Blvd.  
Dallas, TX 75390-9137

## PROGRAMS

### SYMPOSIA

Basic Science Symposia  
Mini-Symposia

### OUTREACH

Bureau of Science Fair Judges  
Distance Learning Initiative  
Research Assistance  
Science Ambassadors  
Student Mentoring

### SUMMER RESEARCH

Summer Research Program for Teachers  
Summer Research Program for Students

### TOURS

UT Southwestern Allied Health Sciences School  
UT Southwestern Medical Center  
Parkland Health & Hospital System of Dallas  
Children's Medical Center Dallas

### INSERVICE SESSIONS

Proteins & Enzymes  
Protein Crystal Growth  
Genetics  
PCR & Gel Electrophoresis  
Suturing Techniques

### SCIENCE TRIATHLON

Supported by  
Howard Hughes Medical Institute

## Missed it or Want to See it Again?

If you missed a STARS Basic Science  
Symposium / Mini-Symposium or want  
to share it with your students and/or  
colleagues, you can order a FREE DVD  
of the event(s). Just give us a call or  
email.

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