Summer 2013 Schedule

June 11- Welcome Back Lunch- 2nd and 3rd year scholars

June 12- Welcome 1st year scholars
Summer research begins- 2nd and 3rd year scholars

June 13- Orientation 1st year scholars

June 14- Low Ropes 1st year scholars
Welcome Dinner 1st year students and families

June 17-21- Week 2
Distribution of potential mentors for 1st year scholars

June 24-28- Week 3
June 25- University Hospital Tour-1st year scholars
June 26- Gross Anatomy Trip-1st year scholars
June 25- Texas Biomedical Research Institute and Center
    For The Intrepid Trips-1st year scholars

July 1-3 Week 4

July 4-5- HAPPY 4th of July!

July 8-12- Week 5
July 12- CTRC Tour

July 15-19- Week 6

July 22- 26- Week 7
July 26- Science Symposium and graduation- 1st year and
    3rd year scholars

Click to visit our website!
http://voelckeracademy.uthscsa.edu/

Click on the link to watch us:
http://www.youtube.com/watch?v=U_Lgz_fGmGI

VBRA Weekly Seminars 2013
For all Voelcker Scholars

June 19- Genomics and Personalized Medicine
    Dr. Carolina Livi

June 26- Non-Invasive Brain Imaging Treatment
    for Neurodegenerative Disorders
    Dr. Donald Robin

July 3- Understanding Mycoplasma pneumoniae
    pathogenesis through CARDS toxin
    Dr. Kannan Thirumalai

July 10- Mouse Models of Chemotherapy Induced
    Cardio Toxicity
    Dr. Greg Aune

July 17- The Importance of Research in Medicine
    Dr. Jennifer Potter

July 24- Modeling Autism-Like Behaviors in Mice
    Dr. Georgianna Gould
Welcome Class of 2013!

Adriana Avendano  
Young Women’s Leadership Academy

Christopher Corona  
Luther Burbank High School

Amanda Dick  
St. Anthony Catholic High School

Meg Garcia  
Young Women’s Leadership Academy

Yugena Gunawardena  
Keystone School

Darley Guzman  
Sam Houston High School*

Karen Jimenez  
Health Careers High School

Jonathon Medina  
The Episcopal School of Texas

Clover Moten  
Thomas Edison High School

Christopher Nash  
The Episcopal School of Texas

Thomas Pecha  
The Atonement Academy

Joaquin Ramirez  
Thomas Edison High School

Kristian Rivas  
William J. Brennan High School*

Corina Rodriguez  
Earl Warren High School

Ethan Shelburne-Dominguez  
Brooks Academy of Science & Engineering*

Maria Silvaz  
Douglas MacArthur High School

Nathan Therien  
Claudia T. Johnson High School

Isabella Torres  
Thomas Edison High School

Jessica Tuholsky  
The Atonement Academy

Thomas Vargas  
Central Catholic

Iman Wallace  
Fox Tech High School*

Adam Wenzlaff  
Tom C. Clark High School

Christina Zhu  
Ronald Reagan High School

Dear Voelcker Scholars,

Welcome to Summer 2013! It is hard to believe that this marks the 5th year of the program’s existence. It seems like just yesterday that we were at a planning meeting over lunch, discussing the need for a program such as this. That first meeting was in March of 2009 and the program began in June of that year. Since then, the program continues to evolve and grow. We are proud to say that we now have 108 students who can call themselves Voelcker Scholars. The program has been successful largely because you have demonstrated academic success, community involvement and commitment to science. We appreciate your efforts greatly and encourage you to continue your commitment to lifelong learning, and to keep in touch as you grow in knowledge and participate in new opportunities and experiences. We are eager to continue to witness the successes of your future!

Your Co-directors,

Irene Chapa, Ph.D. & Sophia Piña, Ph.D.

―Ralph Waldo Emerson

“Science does not know its debt to imagination.”

2013 College Peers

Please help us welcome back VBRA 2009 alums:

Michael Anderson  
Attending TAMU

Elizabeth Arriaga  
Attending Brown University

Elizabeth Santiago  
Attending UNC Chapel Hill

Bria Woods  
Attending Trinity University

*first student to represent this school at VBRA
The Voelcker Biomedical Research Academy (VBRA) provides students with a foundation for success in academia and other post-secondary pursuits. As the diverse cohorts of Voelcker Scholars discover new concepts, explore techniques at the bench-side, and engage in the community at large, they cultivate habits of mind such as intellectual curiosity. Other habits of mind developed in the VBRA such as problem-solving and organizational skills enable Voelcker scholars to approach and analyze challenges scientifically. The capability to think critically, facilitate research, and effectively communicate concepts in a professional manner are necessary lab and life skills that are developed, practiced, and sharpened in the VBRA. I am a member of the inaugural Class of the VBRA. I believe in the mission of the VBRA because I have witnessed and experienced the impact such a program can make on students interested in careers in biomedical research. My passion for this program, and the passion for discovery I recognize in the cohorts that follow my own, inspired me to return to the VBRA and serve as a TA for first-year scholars.

Alum Spotlight
Elizabeth Santiago
Class of 2009
Attending University of North Carolina, Chapel Hill

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Q & A
Alex Hardy
Class of 2010

3rd Place- Intel ISEF in Engineering

Congratulations on your wonderful accomplishment in the competition held in Phoenix, AZ!

What was the topic of your project?
My project was on the role of various cellular uptake pathways in the endocytosis of orthopedic wear particles.

What was the competition like?
The competition was really steep. The best of the best high school scientists from around the globe brought projects in every imaginable field from programming self-driving cars to targeting cancer cells for imaging.

Did your experience at VBRA contribute to your success?
The Voelcker program was invaluable in my being able to compete at ISEF, and understand bioscience in general. Most students don’t have such an awesome opportunity.

What is your most memorable experience at VBRA?
My most memorable experience at VBRA was getting to work with my mentor, Dr. David Dean, directly in developing and carrying out confocal microscopy experiments.

Now that you are embarking on the next step in life, what are your future plans? What studies or career do you plan to explore?
My plans for college include attending Brigham Young University in Provo, UT, where I plan to study physics. After completing my undergraduate degree, I plan to attend graduate school in nuclear engineering and work in the aerospace and energy industries. Despite the differences between my research at VBRA and my intended career path, the knowledge I gained while a part of the program has helped me understand scientific investigation to a degree I hadn’t fully expected. The opportunity afforded me by the VBRA has provided a launchpad from which to start a career.

Is there anyone you want to acknowledge?
I definitely want to acknowledge the help of Drs. David Dean, Irene Chapa, Sophia Pina, John Sohl, and Mrs. Sheri Trbovich. Without them I wouldn’t have had a project or an opportunity to present.
http://www.societyforscience.org/isef/
A biophysical characterization of DNA: Can salt change the shape of DNA?

By: Aysha Demeler, Blanca Hernandez Uribe

The purpose of this experiment was to determine how different sodium concentrations affected DNA anisotropy. Because DNA has a negatively charged phosphate backbone which repels itself and other DNA molecules, the DNA cannot coil/bend freely causing it to be stiff and rod-like in any aqueous solution. Two differently sized DNA fragments were placed into 14 different sodium chloride concentrations in order to neutralize the negative charge of the DNA's phosphate backbone with the positively charged sodium ions, and in turn increasing the flexibility of the DNA. By using an analytical ultracentrifuge, the sedimentation coefficients (or s value) of these DNA samples were measured by sedimentation velocity. The sedimentation coefficient, which is inversely proportional to the DNA's anisotropy, was found to increase with increasing salt concentration. The change in DNA anisotropy was found to be independent of the length of the DNA molecule; however the amount of change is dependent on DNA fragment length. For example, the small strand of DNA (the 208 bp fragment) only changed in s value from 5.2 to 5.7, whereas the larger plasmid fragment changed from 10.4 to 12 in s value. The greatest change observed occurred in both samples between 0 to 20 mM sodium concentration. It was also found that for sodium concentrations larger than 30 mM the s value of the DNA fragments no longer increased. Based on the data obtained, it can be concluded that different sodium concentrations do affect DNA anisotropy.

Pictured: Blanca Hernandez Uribe (left) and her science fair project partner Aysha Demeler
*Blanca Hernandez Uribe- Class of 2012
Grand prize- Alamo Regional Science and Engineering Fair

*Angelina Iyinbor- Class of 2010
Full scholarship to Rice University

*Efosa-Domitar Iyinbor- Class of 2011
2nd place Latin Oratory

*Neil Klein- Class of 2010
Accepted to PRISM Scholars Texas Tech

*Derek Lam- Class of 2010
Scientific research resulting in two publications
http://www.medscimonit.com/abstract/index/idArt/883708

*Joseph Pecha- Class of 2011
High Honor Roll

*Cecille Sorio- Class of 2010
Scholarships to TAMU and Air Force ROTC

*Spencer Brady- Class of 2010
National Merit Finalist, Scholarship to UT Dallas

*Alan Wang- Class of 2011
Brain Bee National Champion (2012)

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**Naked mole-rats** *(Heterocephalus glaber)* are neither moles, nor rats. Similar in size to mice, these remarkable animals are the longest-lived rodents and can live up to 32 years! Scientists are studying these animals in an attempt to understand their impressive long life as well as their resistance to many common diseases.

For further reading:

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*Have an idea for an article? Want to share some news? Contact newsletter:*
*Edrey@uthscsa.edu 210-567-3587*
Welcome Voelcker Biomedical Research Academy Class of 2013!