Fall 2018 Event Re-Cap

BASIC SCIENCE AND MINI-SYMPOSIA

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 in-service 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 visiting our online registration page at www.utsouthwestern.edu/STARS/register.

Our first mini-symposium of 2018 began with Inferring Protein Function from DNA that took place on September 10th. Dr. Vincent Tagliabracci, Assistant Professor, Molecular Biology led the symposium by presenting his research on “Expanding the Kinome” followed by “Know Thy Self, Know Thy Enemy: Mechanisms of Human Disease Gleaned from Bacterial Pathogens” presented by Dr. Neal Alto, Assistant Professor, Microbiology. Closing remarks were provided by Dr. Joel Goodman, STARS Director and Professor of Pharmacology.

On the heels of the mini-symposium came our all-day Basic Science Symposium over Autism Spectrum Disorders on October 13, 2018. The morning presentation session started with Dr. Cassandra Newsom, Associate Professor, Psychiatry giving an introductory talk with “What is Autism?” Soon after, Dr. Gena Konopka, Associate Professor, Neuroscience presented “Autism Pathophysiology: Neural Transcription Networks.” Following Dr. Konopka was Dr. Maria Chahrouj, Assistant Professor, Eugene McDermott Center for Human Growth and Development, Neuroscience, Psychiatry with a presentation over “The Genetics of Autism.” Lastly, Drs. Katherine Bellone and Stephen Elliott, Associate Professors, Psychiatry with information over the “Diagnosis and Treatment of Autism.” In the afternoon, five groups of participants attended breakout sessions over the following topics: “Neural Circuits” Dr. Christine Ochoa, Postdoctoral Researcher Fellow, Neuroscience; “Behavioral Evaluation and Treatment” Hayden Mbrow and Savanna Sablich, Graduate Student Researchers, Clinical Psychology; “A Blood Test for Autism” Dr. Dwight German, Professor, Psychiatry; “Choose Your Haystack: Different Approaches for Finding Autism Genes” Islam Oguz Tuncay, Graduate Student Researcher, Cell Biology.

The last mini-symposium of 2018 was focused on Immunotherapy and took place on November 5th. Dr. Yang-Xin Fu, Professor, Pathology, Immunology, Radiation Oncology began the event with a presentation over “Adapting Conventional Therapies to Immunotherapy: Challenges for Personalized Medicine” followed by “Cancer Immunotherapy: Clinical Considerations” by Dr. David Gerber, Professor, Internal Medicine, Clinical Sciences. Dr. Melissa Ellerman, PDA Outreach Committee Co-Chair, and Haley Barlow, SPEaC Representative, spoke to the participants about The Science Policy, Education and Communication (SPEaC) Club and the Postdoctoral Association at UT Southwestern (PDA).
On December 8, 2018 our teacher in-service consisted of a workshop on Incorporating Structural Biology into the Classroom.

Dr. Michael Reese, Assistant Professor, Pharmacology, Biochemistry, introduced the topic of macromolecular structure and additionally provided detailed lectures over cytoskeletons, molecular motors, and rational drug design.

Dr. Eva LaDow, Senior Lecturer at UT Dallas, Neuroscience presented information to participants over incorporating structure into a classroom. Dr. Ryan Hibbs, Assistant Professor at UT Southwestern, Neuroscience, Biophysics, discussed the GABA\(_\text{A}\) structure and neuropharmacology.

Participants performed four activities over PyMOL basics, cytoskeletons and motors, the GABA\(_\text{A}\) structure, and rational drug design.

ABOUT THE EVENT

The 9th Annual Uplift Science Fair took place at the T. Boone Pickens Biomedical Building at UT Southwestern Medical Center on January 26, 2019. It is a network-wide event that hosted 203 projects, 285 student attendees, approximately 500 family attendees, 69 judges, and a combination of 56 volunteers and Campus Fair Coordinator attendees with collaboration from the STARS Program.

The students, known to Uplift as scholars, competed to advance to the regional science fair as their families and other students attended breakout sessions while the judges reviewed their projects.

The event is comprised of three major portions: Primary School Competition, Middle School Competition, and High School Competition.

PHOTOS FROM THE FAIR

High School STARS Award Winners pictured with — far left: Richard Harrison, Uplift Education Chief Academic Officer; far right: Lynn Tam, M.Ed., STARS Assistant Director

Primary Judging

Physics Breakout Session
The Dallas ISD STEM Expo was held this year at the Kay Bailey Hutchison Convention Center on February 2, 2019. The event holds the title of being the largest STEM Expo in Texas. Thousands of students, their families, and teachers came to learn about diverse fields within the STEM disciplines.

Students were exposed to a myriad of presentations and exhibits from 3D Printing, architecture, aviation and space, engineering in the oil and gas field, coding and circuitry, augmented reality software, and drone technology, to name a few.

Students learned how to calculate their own carbon footprint and attendees had the option to receive blood pressure and vision screenings.

There were also seven district championship competitions at the Expo such as the Math Olympiad, VEX Robotics, Digital Tech Fest, Bridge Building, First Lego League, First Lego League Jr., and chief among them the Science Fair where several STARS Staff members were in attendance.

245 projects were entered with 218 student attendees, approximately 500 parents and family members, 17 UT Southwestern Medical Center judges, with 60 DISD campuses represented.

Dr. Goodman, Kristie Conner, and Pearlie Crawford held a booth and demonstrated a fun exercise to students in which they were given a “rainbow straw” created from mixing vinegar and sodium carbonate with a universal indicator which demonstrates a vibrant rainbow density column.

Dr. Goodman presented the UT Southwestern STARS Award to two groups of students. In the project category for Environmental Engineering, Janavi Chadha and Jacob Acosta won the award for their work over “Using Environmental Sensors to Optimize Urban Farming Choices.” The second award was given to Eric Flores and Gabriel Vargas in the Mathematics category for their project in “Geo Brilliant-ultimate solution to Geometry.”

For future registration to the Dallas ISD Stem Expo please go to: https://www.dallasisd.org/stem

References

**WHAT IS BIOMEDICAL SCIENCE?**

Biomedical science is a scientific discipline that merges the fields of biology and medicine together to focus on the health of animals and humans.

Students who choose biomedicine as their major in college study many different topics such as biochemistry, cell and molecular biology, anatomy and physiology, histology, epidemiology, and pharmacology while also gaining hands-on laboratory work while in school.

Biomedical scientists make valuable contributions to existing research literature everyday and are on the cutting edge of medical advancements in the study of cancer, AIDS, and other infectious diseases.

In high school, students who are focused on pursuing a career in biomedicine must obtain a fluency in biology, chemistry, physics, calculus, and trigonometry.

Students must additionally be good communicators and strong writers. Having these traits are extremely necessary to produce coherent and well executed scientific research articles.

**Reference:**

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**Irving Biomedical Sciences Academy Science Fair**

The Irving Biomedical Sciences Academy Science Fair was held on January 24, 2019 and showcased scientific research from their students. 127 projects were entered and 200 students were in attendance. 250 family members came to support the competitors and 40 volunteers lent their efforts towards the logistics of the event. 20 judges from UT Southwestern judged the projects throughout the day.

Shanivi Srikonda pictured with her work over the “Genetics of C. elegans in Relation to Behavioral Expression”

UT Southwestern STARS Award Winners Shanivi Srikonda and Isaac Ventura pictured with STARS Director Dr. Joel Goodman and Assistant Director Lynn Tam
This summer, STARS will have 64 participants (six teachers and 58 students) in the Summer Research Program. This eight week program is designed to give teachers and students an opportunity to work side by side with a faculty host in a research laboratory. An important function of this program is to help teachers rekindle their love of science and to encourage students in North Texas to pursue science related fields. Teachers give poster presentations and develop classroom activities related to their research experience. Students give poster presentations and act as emissaries at their schools the following year by giving talks outlining their research. The summer experience takes place in biomedical research laboratories only and does not include any clinical or shadowing opportunities. Participation is limited by funding resources.

To learn about prior biomedical research projects, please visit our website.

2019 STARS SUMMER RESEARCH PROGRAM

The STARS Summer Science Camps for rising 9th, 10th, and 11th grade students and middle and high school teachers are two week non-residential summer camps where students learn concepts through hands on labs, health careers information, project based challenges, and science lab tours.

I. Biology — June 6th (teachers) / June 10th (students); camp ends June 21st
II. Chemistry — June 26th (teachers) / June 28th (students); camp ends July 12th
III. Physics — July 17th (teachers) / July 22nd (students); camp ends August 2nd

EXPLORING POST AT UT SOUTHWESTERN

The explorers (Post — high school students, Club — middle school students) meet monthly at UT Southwestern Medical Center in Lecture Hall D1.502 from 6:00pm to 7:30pm. Interested students may attend for free and yearly Exploring membership is $34. Parents are always welcome!

2019-2020 Exploring Officers
(left to right)
President: Priya Mandava
Admin. VP: Gabriela Castaneda
Programs VP: Nathan Paul
Secretary: Nicholas Hirai

SUMMER CAMP INFO

To participate in the summer camps, students and teachers must complete an application process. The application time frame begins in mid-February and ends on April 1st every year.

Breakfast and lunch are provided to all participants in the camps. STARS does not provide transportation; participants are responsible for their daily transportation to and from the camp.
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STARS Programs

SYMPOSIA
Basic Science Symposia
Mini-symposia

OUTREACH
Bureau of Science Fair Judges
Research Assistance
Science Ambassadors
Student Mentoring

SUMMER RESEARCH
Summer Research Program for Teachers
Summer Research Program for Students

TOURS
UT Southwestern School of Health Professions
UT Southwestern Medical Center
Parkland Health and Hospital System of Dallas
Children’s Medical Center — Dallas

IN-SERVICE SESSIONS
Biology Labs Made Easy
Teaching CRISPR

SUMMER SCIENCE CAMPS
Biology
Chemistry
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Use the QR code to go to our STARS linktree with all of our popular links in one convenient place