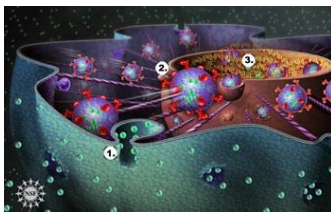




The SDS Biotechnology PAGE

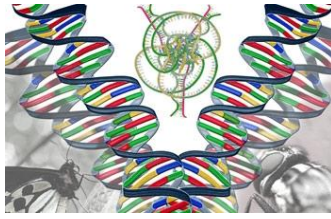
SPRING 2011

Welcome to the Spring 2011 newsletter for the Tulsa Community College Biotechnology Program and past participants in the Stimulating Enthusiasm, Exploration and Discovery in Biotechnology Education (SEEDBED) NSF-ATE Grant, and Medicines, Explorations, and Discoveries in Biotechnology Education (MEDBED), the NIH supplemental grant! This newsletter is an excellent way to communicate with all who support and participate in our programs.



Milestones this Spring Include:

- Three TCC Biotechnology students have been awarded INBRE Summer Student Internships for the summer of 2011.
- TCC biotechnology students in the Molecular Biology and Techniques class have prepared a poster representing a phylogenetic study of the COI gene in a number of invertebrates. The investigation involved PCR, DNA extraction, sequencing and multiple sequence alignments. The students plan to present the poster in the Fall of 2011.
- The NSF Scholarship in Science, Technology, Engineering, and Mathematics (S-STEM) Preparing for Innovation Producing Educated STEMS Scholars (**PIPESTEMS**) grant accepted the second set of applications during the spring of 2011. Several applications were sent in by biotechnology students. Nice work biotechie!
- This spring we continued with active workshops through the \$.5M NIH INBRE grant as part of the National Center for Research Resources through the American Recovery and Reinvestment Act. The new grant Medicines, Explorations, and Discoveries in Biotechnology Education (MEDBED) enhances work begun with the SEEDBED project. A detailed narrative is included in this newsletter.
- Faculty and administrators worked through the year (October 2010 to March 2011) to produce a TCC STEM Strategic Plan. More information can be found in this newsletter
- This Spring 2011, we have six graduates from our program! We are immensely proud of the success of these students!
- Diana Spencer was invited to be on the BIO-Rad Advisory Board in San Francisco. Diana is quite excited about this commitment! Dr. Spencer was also invited to attend the U.S. Department of Education Regional Summit in Houston Texas on March 8-9, 2011. A *Community College Virtual Symposium* will serve as a capstone event for the regional summits on Wednesday, April 27th.
- TCC and the MEDBED team were able to host the BioQUEST investigators at TCC on Friday and Saturday, April 15-16, 2011 presenting *Global Health With C3*. The workshop included high school and community college faculty.



Sticky Ends (Biotechnology Student Progress):

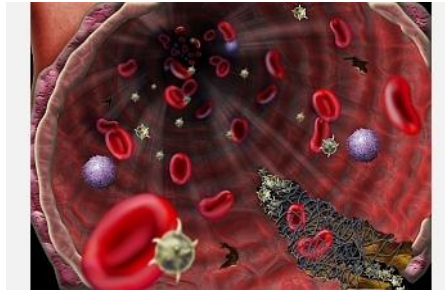
Through our consortium agreement with the OU Health Sciences Center and NIH, four TCC students, three of them biotechnology students, were awarded the IDeA Network of Biomedical Research Excellence (INBRE) summer student paid internships. Sheri Toal was awarded a position in the lab of Kathleen Curtis working in the pharmacology of estrogen, the brain and body fluid balance (OSU/CHS). Ian Schalo was awarded a position in the lab of Sundararajan Madihally studying the fate of adult stem cells on synthetic matrixes (OSU Stillwater). Annette Achterhof was awarded a position in the lab of Gerwald Koehler studying the characteristics of intestinal microbiota in the prairie vole model of autism (OSU/CHS). We wish these students an eventful summer of research!

After initial work with Dr. Dave Wallace at OSU/CHS, TCC Biotechnology has been able to place two students in internships at OSU/CHS during this Spring 2011 Semester. Sheri Toal has been working in Dr. Champlain's lab and Kim Orr has worked in the lab of Dr. Dave Wallace. The students will present a paper or poster showing their research project by the end of this semester.

On March 30, 2011, six Molecular Biology and Techniques students were able to travel to the Henry Bellmon Research Center which houses the OSU Protein/DNA and Microarray Core Labs! Dr. Steve Hartson and Dr. Peter Hoyt were able to host the students with career advice and explanations of the new instruments.

We have had an exciting new addition to the curriculum in Molecular Biology and Techniques. Dr. Heith Crosby, OU PhD candidate and previous TCC Biotechnology student, along with Dr. Ken Miller, Ph.D. Professor and Chair of Anatomy & Cell Biology, shared background and scope of research they are conducting on chronic pain and glutaminase production. Heith then led the students through a Real Time Reverse Transcriptase Polymerase Chain Reaction protocol. The data looked promising and all enjoyed the prospect of continued research collaborations.

In the fall semester, we had three students graduate with biotechnology degrees. Armond Swift is continuing his studies at OSU Stillwater on an SSTEM scholarship while working within the field. Rachel Carter anticipates returning to OU to study zoology and Duane Goins has been employed in a lab at the Oklahoma Medical Research Facility in Oklahoma City. This spring we will have six biotechnology graduates. Donita Gray has completed her studies while being employed as an adjunct professor at TCC and serving as a Project Specialist in the SEEDBED and MEDBED grants. Kim Orr now has a biotechnology certificate to accompany her BS from OSU Stillwater. Victoria Beauregard, Brandi Gruenwald, Heather McDaniel, and Ian Schalo all plan to continue their studies in molecular biology at NSU/BA. Brandi is also employed within the biotechnology field. We congratulate these fine students and wish them the best of biotechnology futures!



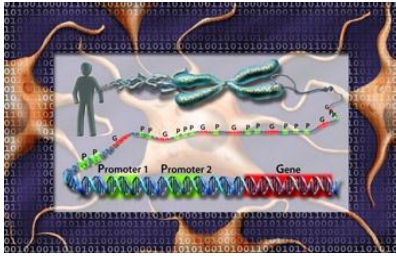
Making Solutions (Secondary Outreach):

Between August 2010 and December 2010, MEDBEd trained 18 teachers from a total of 11 high schools. Workshops were held on October 8 and October 15 at Tulsa Community College on the Southeast Campus in the biotechnology labs. MEDBEd also trained teachers in February and March of 2011. Teachers attending these first two workshops returned to their home schools with approximately \$4000.00 in lab equipment. The total MEDBEd outreach to date has included workshops for 49 schools, 70 teachers and 7,293 science students represented by those participating teachers. In addition to training teachers during workshops, the project specialists have provided additional support to teachers by email and telephone contact as well as in-person trips to high schools to assist with preparation of equipment, reagents, and classroom presentation of the workshop experiments.

TCC Biotechnology was represented at the Oklahoma Science Teacher Association Literacy, Experiments, Assessment, and Professional (LEAP) Collaboration Fall Staff Development Conference. The conference was on Saturday, November 6, 2010 at Howell Hall, University of Central Oklahoma in Edmond, Oklahoma. The OSTA Fall Conference was a time for the NIH INBRE group of educators to share. Diana Spencer presented *Protein Electrophoresis in the High School Classroom* and Donita Gray and Donna Kline presented *Biotech Labs from the Kitchen*. More than 20 teachers attended the two one-hour workshops.

High school students from East Central in Tulsa, Chelsea High School, Drumright High School the Tulsa School for the Arts and Sciences, Jenks High School, Sapulpa High School and Oaks Mission High School attended the March 25, 2011 High School Student Biotechnology Extravaganza. Students were treated to updated research by Drs. Heith Crosby, Steven D. Hartson, Julie H. Marino and R. Thomas Glass. The talks included current research in pain reception and control, heat shock proteins and anti-cancer therapy, gene expression during T-Cell development and forensic dentistry. Following the presentations of the researchers in the PACE Auditorium, the students participated in five hands-on biotechnology learning investigations and were served lunch with scholarship and admission information provided. Approximately 12 biotechnology students, several faculty members and several administrators volunteered their time to help make the day a success. A memorable day was experienced by all of the young scientists.

As a fifth level workshop for the NIH ARRA MEDBEd outreach, the TCC MEDBEd team hosted Global Health with C3: Cyberlearning at Community Colleges. BioQUEST Curriculum Consortium members, Kristin Jenkins and Ethel Stanley presented activities for exploring health using GapMinder, the joy of statistics and a West Nile Virus investigation called Donor's Dilemma. Participants were introduced to the philosophy of the need for cyber investigations and tools to teach phylogeny along with clustalw applications. Community college and high school faculty attended the workshop on Friday and Saturday, April 15-16, 2011. Materials from the workshop are available at http://bioquest.org/tcc_2011/?page_id=20.



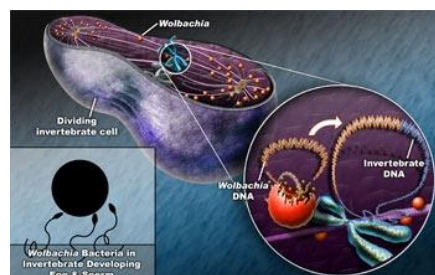
Translations (Community Outreach- Presentations and Workshops):

Diana Spencer has been invited to serve as a faculty co-leader for the DNALC ATE Project, *Genomic Approaches in Biotechnology* through the Dolan DNA Learning Center out of Cold Spring Harbor Laboratory in Cold Spring Harbor, New York. Diana will assist in the delivery of the workshop in 2012 or 2013.

The Tulsa Area Bioscience Education and Research Consortium (TABERC), created through an inaugural meeting at Oklahoma State University Center for Health Sciences continues the mission to develop bioscience research in Tulsa through multidisciplinary and collaborative approaches to undergraduate and graduate education and technical training. Dusti Sloan and Diana Spencer are on the Executive Board of TABERC with representatives from Oklahoma University, Oklahoma State University, Rogers University, The University of Tulsa, Oral Roberts University, Tulsa Technology Center and Northeastern State University. The group is working to provide two summer internships for TCC students. Applications have been filled.

Through our INBRE Oklahoma connection, TCC developed a STEM Strategic Plan. The facilitator, Sean Griffin, and Diana Spencer, the project leader, worked with approximately 15 participants from the four campuses and a variety of STEM fields. The group met every month from October 2010 to March 2011. The goals and passions of many STEM educators were compiled in a dynamic document *The STEM Student Partnership Hub: Empowering a Culture of Scientists, Technologists, Mathematicians, Engineers, and Entrepreneurs in Oklahoma*.

Serving as the INBRE Community College Coordinator, Diana Spencer was able to facilitate speakers at the Oklahoma Association of Community Colleges 2011 Annual Conference on March 3-4, 2011. The program “*Oklahoma Community Colleges: The Destination of Choice*” was a great opportunity for TCC educators to secure professional development. INBRE STEM sponsored workshops included: Dr. Gordon Uno from OU presenting *What Works in Introductory-level College Science Courses, and How We Know*; Dr. Sam Donovan from University of Pittsburgh presenting *Using Cyberlearning Resources and Strategies to Engage Your Students in Science*; and Professor John Poolaw and Gene Pekar from Comanche Nation College presenting *Infusing Culture into STEM Curriculum*. Six faculty members from TCC SEC Science and Math attended the valuable meetings.



The Sequence (Our Web Site):

<http://www.TCCBiotech.org>

The opening page of this web site allows you to click on the SEEDBED icon, the MEDBED icon, or the Biotechnology icon. The biotechnology link leads you into the TCC web site of the biotechnology curriculum. Both links are constantly updated. For the latest news and information on TCC Biotechnology, travel to our TCC Biotechnology facebook page.

An EXCELLENT opportunity to visually compare income per person and life expectancy in the world in the last 200 years is available at <http://www.youtube.com/watch?v=jbkSRLYSojo> . In five minutes your students (and you) can be transformed in understanding world health. Enjoy!

ARTWORK COURTESY OF NSF