



What the heck is biotech?

- Biotechnology uses life forms or processes to solve a problem or make a product.
- Bioinformatics is the use of computers to store, retrieve, analyze or predict the composition or structure of biologically important molecules.

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BBDiscovery! Happenings

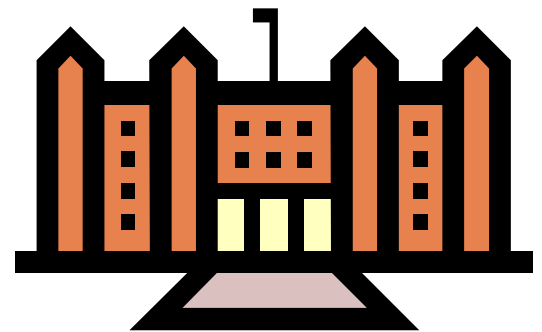


OKCCC to Infuse Biotechnology into High Schools

Biotechnology/Bioinformatics Discovery's purpose is to expand the pipeline of qualified high school students, especially minority students, into the field of biotechnology. The strategy is to infuse high quality biotechnology experiences into high schools. Oklahoma lists biotechnology as a priority growth area, but currently the labor pool of skilled biotechnicians can't meet local demand. Yet the average high school student knows little about the world of biotechnology and its career potential.

The project's four main goals are:

- To increase awareness about biotechnology and its role in biomedical research.



Reaching teachers and students throughout Oklahoma.

- To improve student success in science.
- To make an impact on the Oklahoma biotechnology workforce and industry.
- To improve science literacy.

August Biotech Workshop Slated

Mark your calendars! OKCCC BBDiscovery project will host its two week summer workshop from August 4th through August 15th. The workshop will be held on the OKCCC campus. Participating pro-

ject teachers will earn a \$70/day stipend, plus earn staff development points too.

To reserve your spot contact Charlotte Mulvihill, cmulvihill@okccc.edu, 682-1611 extn.

Career—A chosen pursuit; profession or occupation. A path or course .

Exploration—to travel for the purpose of discovery .

Contact Teresa (trandall@okccc.edu) to schedule a visit to your class.

Career Exploration Visits to Local Schools

On November 15, 2002 OKCCC visited with Bene Eke’s medical career explorations class at **Douglass HS**. Students were provided with two wet lab experiences: dye electrophoresis and DNA extraction. A videotape highlighted biotechnology career information . Charlotte Mulvihill, OKCCC’s Biotechnology Program director, fielded and answered students questions.

Next on November 22nd we visited with **Central Junior High School** (Moore) students. Career day is an annual event and is intended to introduce students to a variety of occupations. OKCCC spotlighted the emerging field of biotech. 150 ninth grade students extracted DNA and had a rousing discussion about the history of biotechnology, uses of biotech products and the future of biotech.

OKCPS Science In-Service Workshop Held

On January 17, 2003 we provided a teacher workshop for OKCPS high school science teachers. Teachers worked with the BBDiscovery module “Demystifying Electrophoresis”.

Thanks to the following teachers for attending: Barbara Burton, Christine Hathorn ,Clifton Ogle, Colleen Smith, Curtis Lowe, Denise Bac-cus-Bowie, Donald Bell, Donald

Romine, Elizabeth Brooks, Gene Williams, George Teague, Heather Little, James Sutter, Jana Jean, Jane White, Jennifer Lynch, Jimmy Porter, John Dixon, Katherine Kohl, Marcella Lee, Matthew Adrian, Maureen Powdar, Mehdi Aria, Philip Burkhalter, Rowshan Malik, Samuel Houston, Sandra Bennett, Sandra McKinney, Tammy Boyd and William Jump. A special thanks to Zeno Warrior for inviting us!



Demystifying electrophoresis.



Running gel chambers.



Waiting for results.

Show Me The Modules!

Did you know that we can supply you with biotechnology curriculum, equipment and lab supplies for each of our modules? The pre-packaged kits are quick, easy and best of all delivered to your door.

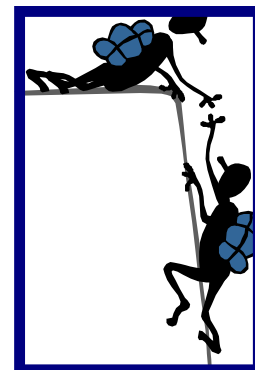
Oh.....and it's FREE too!

Modules we currently offer are:

- Bioinformatics
- Demystifying Electrophoresis
- DNA Extraction
- Human Genome Project

- Immunoassay / forensics
- Seafood Forensics

The BBDISCOVERY website link listed under the graphic contains a description of each kit offered. A synopsis is given, with cross references to subjects the kit would be useful in, the length of time necessary for the activity as well as opportunities for capstone experiences are listed for your convenience.



www.okccc.edu/bbdiscovery/documents/Modules_index.htm

Biotech Modules Get a Workout

The following schools have already been utilizing BBDISCOVERY modules and ready made kits in their classrooms: **Capitol Hill, SAVE Academy, Star Spencer, NW Classen, John Marshall and Jackson Middle School.**

Supporting the interdisciplinary nature of the modules is the fact that they have been used in classes such as astronomy, chemistry, physics, biology, biotechnology and integrated science classes.

Modules and kits in highest demand were DNA extraction and immunoassay. Other modules used with students were the Human Genome Project online activity, demystifying electrophoresis and seafood forensics.

The request form for kits can be downloaded at www.okccc.edu/bbdiscovery/documents/Forms/Kit_request_form.htm.



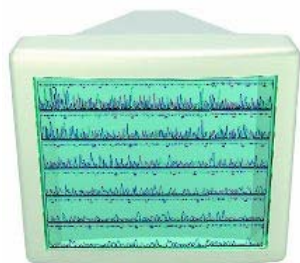
"Results were real obvious"
BBDISCOVERY Teacher

"It was cool, we got to feel what DNA is like" CHHS student

"This is a good activity. It asks more questions than it answered" BBDISCOVERY Teacher

"I liked it because we got to do a real science lab" Star Spencer student

Bioinformatics brought to educators



Bioinformatics is the use of computers to store, retrieve, analyze or predict the composition or structure of biologically important molecules.

Bioinformatics is a rapidly developing field that uses the skills of computer scientists with life scientists to collect, store, and analyze the vast amount of sequencing data produced by the Human Genome Project (see www.genome.gov). In order to introduce this field to science educators, Oklahoma City Community College's Biotechnology program sponsored a March 27 bioinformatics workshop for teachers and students, thanks to grants from the National Science Foundation (NSF) and the National Institutes of Health (NIH).

The workshop presenter was Sandra Porter, Ph.D, a senior scientist at Geospiza of Seattle, a bioinformatics software company. Dr. Porter sometimes describes bioinformatics as the difference between having the data and knowing what the data mean. Her goal is to develop instructional materials that

help students do research with bioinformatics, using the vast store of information freely available in public databases on the web.

Dr. Porter's workshop was entitled "Mitochondria and Chloroplasts as Models for Genomic Biology." Porter gave a general overview of how biologists use bioinformatics today. Then she demonstrated how teachers can use bioinformatics in the classroom to illustrate abstract concepts like protein structure, to do literature research, and even to do real experiments. Then the workshop participants went to the OKCCC computer lab in the training center to try out these activities. We had teacher and student participants from Oklahoma colleges and high schools.

BBDISCOVERY teachers in attendance were: Jana Jean, Lulla Wilson, Angie Reap and Trevor Swink.

Displaced science teachers?

Budget cuts are taking the forefront in Oklahoma's public education effort. One can't open the newspaper and miss the listing of teachers who are being laid off.

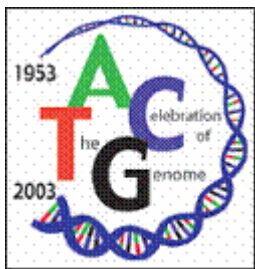
If you know of a displaced science teacher who may be interested in pursuing training as a biotechnician, please pass this article on to them. OKCCC will hold a come and go information session on May 13th from 3:30-6pm in lab 1C7. This session is exclusively for teachers and will provide information about OKCCC's biotech program as well as possible tuition assistance.

Most science teachers have many of the prerequisites and could earn a certificate of mastery in biotechnology rather quickly.

Considerations:

- Many unfilled biotechnician positions in OKC area
- Hands-on curriculum, laboratory-based

Visit OKCCC's website at www.okccc.edu/biotech or contact Charlotte Mulvihill, cmulvihill@okccc.edu, 682-1611 extn. 7225.



DNA Day a Success

April 25th marked the 50th anniversary of the publication of the Watson-Crick paper describing the structure of DNA.

As a local celebration of National DNA Day, the University of Oklahoma Health Sciences Center in partnership with Oklahoma City Community College convened a group of pediatricians, geneticists, high school teachers and their students. The department of Pediatrics provided local transportation, space and lunch at Children's Hospital. Additional support came from the State Genetics Program, Oklahoma State Health Department; Oklahoma Genetics Advisory Council; Genetic Education Committee of Oklahoma; Intergenetics, Inc.; Presbyterian Health Foundation; OUHSC College of Medicine; OUHSC Graduate Student Association; the Children's Medical Research Institute; and Omniplex.

Approximately 14 high school teachers and 155 high school students along with 80 Pediatricians viewed a 25-minute web cast from the Genome center of National Institutes of Health, featuring Francis Collins and James Watson. Participating high schools included: **Bishop McGuiness, Capital Hill, John Marshall, Konawa, Newsome Home School, NE Academy, Oklahoma School of Science and Mathematics, Putnam City West, Wanette and**

Yukon.

Following the webcast, students directed questions to a panel of Oklahoma scientists to discuss issues and concerns arising from the completion of the Human Genome Project. The panelists included Patrick Wilson, genetic counselor; Dr. Michael Anderson, theologian & head of Presbyterian Health Foundation; Dr. Ed Brandt, Professor, OUHSC Health Administration and Policy; and Sharon Vaz, prenatal genetics nurse-counselor. John Mulvihill, Chair in Genetics at OUHSC, moderated the panel.

Another highlight of the day was a slide presentation of "Positive Exposure" by photographer Rick Guidotti during the pizza lunch. Utilizing photography and video interviews, Positive Exposures fosters an understanding of the impact of genetic disease on individuals, families and communities. His exhibit will be on display at the Omniplex until May 30th. Learn more about this non-profit project at www.positiveexposure.org.

The day wrapped up with students touring Oklahoma's premier biomedical research facilities including the General Clinical Research Center, the Oklahoma Medical Research Foundation, and the Biomedical Research Center.

Comments:

- "Very interesting, informative and fun", Konowa student
- "I loved the panel discussion", OSSM student
- "Positive Exposure was amazing", PC West student



Panelists (l-r): Sharon Vaz, Patrick Wilson, Dr. Michael Anderson and Dr. Ed Brandt.



High school audience.



Group tour of OMRF.



BBDiscovery's purpose is to expand the pipeline of qualified high school students, especially underrepresented students, into the field of biotechnology. The strategy is to infuse high quality biotechnology experiences into the high schools.

OKCCC Science & Math Division
7777 S. May Avenue
OKC, OK 73159
Phone: 405-682-1611 extn. 7685
Fax: 405-682-7805
Email:trandall@okccc.edu

Summary of Project Goals

- To increase awareness about biotechnology and its role in biomedical research.
- To improve student success in science, especially among the underrepresented groups.
- To support and enhance the quality of science teaching in participating schools.
- To make an impact on the Oklahoma biotechnology workforce and industry.
- To improve science literacy.

Visit us on the web!
www.okccc.edu/bbdiscovery

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Any opinions, findings, and conclusions or recommendations expressed in this material are those of the authors and do not necessarily reflect the views of NSF or NIH.



- Visit NSF at www.nsf.gov
- Visit NIH at www.nih.gov



Partnered with Oklahoma City Community College.