



What is biotechnology?

- Biotechnology uses life forms or processes to solve a problem or make a product.

What is bioinformatics?

- 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

Biotechnology / Bioinformatics Discovery



Summer Teachers Workshop A Success

August 4-14th OKCCC's biotechnology labs were buzzing with eager high school teachers.

Teachers participating in the BBDiscovery project were busy learning new skills and techniques and practicing new labs that they will utilize in their classrooms this upcoming school year.



One of the 17 teachers who participated this summer.

Activities included:

- Internet searches for biotech topics
- Internet use for bioinformatics
- NSTA's Science Inquiry Toolkit
- Field trip to Genzyme, a local biotech company
- Field trip to the Noble Foundation, an Ardmore plant biotech research facility
- Brainstorming session with Susie Stevens, Latta HS teacher who uses biotech in her classes
- Using equipment that will be going out in the loaner kits during the school year
- Drop in visit by former biotech program student Matt Gonzales. He spoke about his current internship and job opportunities available for trained biotechnicians

In addition to hands on lab experiences, teachers interacted with various guest speakers. Patrick Wilson, Genetic Counselor and Delphine Dorsey, RN, OUHSC, Children's Hospital spoke about their work with sickle cell anemia patients. Our next speaker was Amber Nolen, State Genetics Education Coordinator, OK State Department of Health. She discussed genetic testing and ethical dilemmas. Our last speaker was Dr. Phillip Comp, Director of GCRC, OUHSC. He spoke about clinical research projects in OKC.

See page two for photos of the workshop.

Biotech Teachers Workshop Roster

Not only were Oklahoma City Public Schools well represented but several new school districts came on board. This fall the grant expanded to Ardmore, Millwood and Western Heights school districts.

Teachers who gave up their last two weeks of summer freedom were: **Don Bell** (Douglass), **Barbara Burton** (Douglass), **Bessie Bryant** (NE Academy), **Chet Hundley**

(Western Heights), **Cindy Haney** (NW Classen), **Danita Hundley** (Western Heights), **Elizabeth Rutledge** (Capitol Hill), **Jana Jean** (Santa Fe South), **Jane White** (Star Spencer), **Jennifer Lynch** (Jackson MS), **Julie Appel** (Ardmore), **Lulla Wilson** (John Marshall), **Omar Campos** (Santa Fe South), **Paurieta Anderson** (Millwood), **Rosemary Bradley** (NW Classen), **Sandra McKinney** (Southeast) and **Teresa Trail** (Capitol Hill).

Summer Workshop Photo Gallery



Pipetting technique



Alu & mtDNA experiment



She is one happy teacher



Touring the Noble Foundation



Calibrating the pipette



Loading gels



Demystifying electrophoresis



Genzyme's cryo tanks



Left: touring Noble Foundation greenhouse.

Right: results from amylase experiment.



Checking out a Genzyme bioreactor

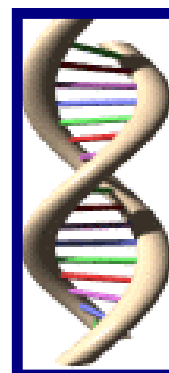
Focus on Biotech Strand at NSTA Convention

NSTA will hold its South Midwestern Area regional convention in Kansas City, MO from November 13—15th.

Of the four professional development strands listed; one is biotechnology. To see a complete listing of workshops, dates and times click on the following link

http://nsta.org/conventionbrowse2/&Meeting_Code=2003KAN&strand=Biotechnology

Interestingly, several of these workshops are similar to activities we did during our summer workshop.



New teachers, schools and districts join BBDiscovery

New teachers and school districts have joined the project. We'd like to extend a welcome to Paurieta Anderson, Millwood High School, Chet and Danita Hundley, Western Heights High School, Julie Appel, Ardmore High School, and Omar Campos, Santa Fe South High School.

OKCPS Adds Biotech Class to Curriculum

Beginning Fall 2003, several Oklahoma City high schools will offer a biotechnology course to their students. These high schools include: John Marshall-teacher Lulla Wilson, NW Classen-teacher Cindy Haney, Pathways-teacher Teresa Randall, Star Spencer-teacher Jane White and Douglass-teacher Barbara Burton. Class enrollments were capped at 25 students and many had students waiting for a spot on the roll sheets.

Biotechnology is offered as a full year course. The course description states "students will explore the emerging field of biotechnology, which uses life forms or processes to make a product or solve a problem. The course will include study of selected basic biotechnology concepts and techniques, commercial applications, laboratory workplace skills, career exploration, bioethics, and bioinformatics. Students will be performing laboratory and computer experiments in an inquiry mode and be exposed to our local biotechnology/biomedical research enterprise. This course was developed with a partnership with Oklahoma City Community College biotechnology department.

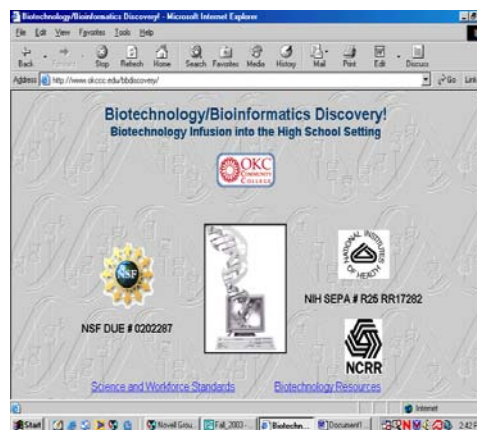
Even though some schools had equipment, additional support in terms of consumable materials and loaner equipment came from OKCCC and the BBDiscovery grants.

Website updated and more user friendly

As the project grows so does our website! Many new changes have taken place. Please check it frequently as we are always updating it and adding more resources.

- **Partners link** has been updated and linked to email addresses for fellow participants .
- **Biotechnology resources link** is being totally revamped. It will be broken down into specific areas within biotech as well as types of activities they cover.
- A **photo gallery link** has been added. If you have any classroom photos you'd like to submit for uploading, contact Teresa. Be sure and use the "student photo release form" located under the **forms link**.
- For those with multimedia capability, a new link called **PowerPoint** has been added to the home page. Currently it contains 5 classroom ready PowerPoint presentations over various biotech techniques. If you or a student develop a new one send it to us for use on the website and we'll give you credit.
- The **Professional Development link** contains frequently updated information about upcoming conferences and teacher opportunities.
- The **newsletters** are also available on the website in pdf format.
- For easier communication, the new **list serve link** will take participants directly to their email box in order to send out group emails. Anyone may subscribe to the list serve. To do so, they'll need to go to <http://listserv.okccc.edu/academic.html>.

www.okccc.edu/bbdisccovery

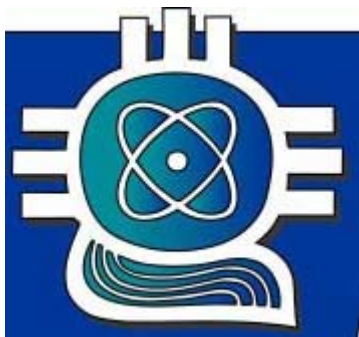


Fall Teacher Training Held in September

On September 27th a follow up workshop was held for BBDisccovery teachers. Those teaching full year biotech courses met early to discuss the status of their course and share ideas on classroom activities and labs.

New lab activities and skills were introduced. The first activity was an introduction to spectrophotometers. Teachers used the Spec 20 to determine the maximum absorbance of bromophenol blue, and then collected data to construct a standard curve. The final activity continued the amylase lab from August, performing amylase assays.

NSF teachers who attended were: Cynthia Haney (Northwest Classen), Jane White (Star Spencer) and Jana Jean (Santa Fe South). NIH teachers were: Barbara Burton (Douglass), Chet and Danita Hundley (Western Heights), Jennifer Lynch (Jackson MS), Sandra McKinney (Southeast), Don Bell (Douglass) and Lulla Wilson, (John Marshall).



Teachers and students attend SACNAS Conference

The Society for Advancement of Chicanos and Native Americans in Science (SACNAS) October national convention was attended by Teresa Randall, BBDISCOVERY project coordinator and Pathways Middle College instructor and her student Frank Tanner. Jana Jean, Santa Fe South instructor and her students Jamie Gonzalez and Jessica Duncan also attended. The mission of SACNAS is to encourage Chicano/Latino and Native American students to pursue graduate education and obtain the advanced degrees necessary for research careers and science teaching professions at all levels. For over 29 years, SACNAS has provided strong national leadership in improving and expanding opportunities for minorities in the scientific workforce and academia; mentoring college students within science, mathematics and engineering; as well as supporting quality pre-college science education. SACNAS' annual National Conference and K-12 Teacher Workshops, summer research opportunities, E-mentoring Program, and online internship/job placement resources are tools that help a diverse community of undergraduate and graduate students, professors, administrators, and K-12 educators achieve expertise within their disciplines.



L-R: , Jessica Duncan, Jamie Gonzalez, Teresa Randall.
Back: Jana Jean, Frank Tanner

Teachers networked with other educators from across the country and attended many workshops featuring science education within the cultural contexts of students. Oklahoma's students had the opportunity to visit with many college representatives from diverse areas of science, engineering and math plus they attended workshops on writing a scientific paper, giving an effective scientific speech and composing a large format science poster using PowerPoint.



Frank visits with a scientist about a career in neurosurgery.

First Year BBDISCOVERY Project Summary

The 2002-2003 school year kicked off the beginning of BBDISCOVERY. Here is a summary of what occurred:

- 450 students were engaged in biotech activities
- Kits were used in a variety of classes ranging from astronomy, biology, chemistry, physics, botany to physical science
- 5 schools submitted data
- 17 teachers received biotech training
- 2 distance learning events occurred; a bioinformatics workshop and biotech lab skills outreach to Tulsa School of Science & Technology
- 2 tours of OKCCC's biotech labs with career information about the biotech program
- Sponsored National DNA Day celebration; 14 teachers and 155 high school students attended.
- Project website and list-serve established.



Besides SACNAS, the annual Balloon Fiesta was taking place!



BBDisccovery'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.

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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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- Visit NSF at www.nsf.gov
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Partnered with Oklahoma City Community College.