



#### 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*



## Hold the Date! 2004 Summer Workshops Planned

**July 19-23 or August 2-6th: Foundations Workshop**— designed to help teachers develop and increase the use of biotechnology in the science classroom.

**August 9th-13th: Advanced Topics Workshop**— for teachers who have completed a BBDiscovery workshop or summer institute. This will be a product driven workshop for those teachers planning on teaching a full year biotechnology course.

At the BBDiscovery **Foundations Workshop**, enter into a stimulating week with your fellow teachers to explore the world of biotechnology and its role in human health and disease as well as agriculture. You will practice and use nationally-developed biotechnology activities that meet both PASS and NSES standards and promote inquiry. Participate in lab activities, observations, small-group discussions and field trips to local biotech industries. Interact with teacher mentors and guest speakers. Receive templates, student worksheets and answer keys to desktop activities. Teachers who join this project will obtain continued support throughout the school year in the form of ready-to-go kits of biotechnology activities complete with equipment and supplies, in-class assistance from grant personnel, and paid professional development. AP molecular biology labs are included in the project package. Plus save your district money by using project equipment and supplies.

Register online at [www.okccc.edu/bbdiscovery](http://www.okccc.edu/bbdiscovery)

**Advanced topics** will involve activities that can be used directly in your classroom, and provides loaner equipment, materials, and support staff when you get back to school. Modules presented include desktop activities, exploring emerging issues in biotechnology, extended wet labs (with an inquiry component), use of bioinformatics, how to develop bioethics discussions with your students, and introduction to guest speakers available for your classroom. You will also be involved in sessions on grant writing, poster and electronic presentations and developing a syllabus for high school biotech programs. Everyone will leave with products to take back to school!

## Capstone Visits

A variety of field trips were provided this Spring.

- In March, OKCCC hosted an internationally known bioterrorism speaker. Several high schools attended the lecture.
- Also in March, Santa Fe South toured the Noble Foundation in Ardmore, a world leader in agricultural biotechnology research.
- In April the OKCCC biotech program hosted DNA Day. Area High Schools came to OKCCC and interacted with Amber Nolen, State Genetics Education Coordinator on a genetics counseling problem. Students also viewed a live web cast from the Genome Center titled "Life in the Lab".
- In May all four high schools with a full year biotech course attended "Research Day in Research Parkway".
- Throughout the semester thirteen high schools visited the OKCCC campus and toured the bio-

## Research Day in Research Parkway

On May 12th, students and teachers attended this capstone as culmination to a years worth of hard work. The goal for the day was to expose students to the biomedical research that is occurring right here in Oklahoma City. Approximately 55 high school juniors and seniors were in attendance.

Presbyterian Health Foundation opened up their state of the art conference room for our gathering point. Douglass, NW Classen, John Marshall, and Star Spencer students were welcomed by Mr. J.R. Caton and then broke up into small groups to tour local labs and facilities. While touring, students gathered information to report back to the entire group.

Labs that participated were:

1. Genzyme: The company's areas of expertise include cell, gene and protein therapies, drug discovery and development, surgical biomaterials, diagnostics, and genetics and genomics.
2. Dianon Systems, a Lab Corp company: is a leader in oncology and genetic testing.
3. OU Health Sciences Center: which provides research space for faculty researchers.
4. Inoveon: delivers solutions to detect, stage and monitor diseases affecting the eye - diabetic retinopathy, macular degeneration, and glaucoma.
5. Hyalose: works with hyaluronic acid to create novel molecules and study polymer synthesis.
6. Analytical Research Lab: offers a full range of professional laboratory services, both analytical and microbiological, as well as consulting services, research and development and forensic legal support.
7. Pure Protein Lab: focuses on the production of large quantities of immune surveillance proteins and provides unique insight to the inner workings of diseased cells.

A special thanks to OKCPS NSF partner David Clark for helping out that day.



## Year End Summary

Spring 2004 saw a flurry of activity. In January, project coordinator Teresa Randall left to pursue her Ph.D and Don Bell, Douglass science teacher, came aboard as the new coordinator. Since January 17th, the following activities occurred:

- 1,000 high school students were exposed to grant biotech activities and modules.
- A total of 42 modules were requested.
- Both AP Biology labs, transformation of pGreen Plasmid and DNA patterns, were in high demand.
- Schools served include: **Ardmore** (J. Appel), **Capitol Hill** (Powdar & Rutledge), **Douglass** (B. Burton), **John Marshall** (L. Wilson), **Millwood** (P. Anderson), **NE Academy** (B. Bryant), **NW Classen** (C. Haney), **Pathways** (T. Randall), **Santa Fe South** (J. Jean), **Southeast** (S. McKinney), **Star Spencer** (J. White), and **Western Heights** (C. & D. Hundley).
- A variety of capstone activities were provided (see page 3).
- 13 schools had site visits to the OKCCC campus as well as the biotechnology program and labs.
- Other schools outside materials and support. Yukon HS, and Mus-



NW Classen teacher showing her student proper micropipetting technique.



OKCPS received lab materials. They included Moore HS, Mustang HS.

## Three BBDISCOVERY Participants Named States Top Science Educators

This past October the Oklahoma Science Teachers Association (OSTA) held its annual meeting. OSTA's mission is to promote excellence and innovation in science teaching and learning for all. During the conference they name Oklahoma's outstanding science educators. Jennifer Lynch, Jackson Middle School & project participant, was named outstanding middle school teacher. Don Bell, former Douglass HS teacher and current BBDISCOVERY project coordinator, was named outstanding high school teacher. Dr. Charlotte Mulvihill, OKCCC biotechnology program coordinator and BBDISCOVERY PI, was named outstanding college professor. A big congratulations go out these deserving folks!

## Participants active in biotechnology workshops



June 6-9th Charlotte Mulvihill, Grant PI and Bessie Bryant, NE Academy teacher/participant will attend the Annual International BIO Conference in San Francisco, CA. The focus is for attendees to experience the journey the biotechnology industry has made—from the past, through the present and into the future. A series of panelists will be featured during the conference. They have been invited to give a presentation to the Teacher Leader group on the BBDiscovery Project, with a focus on diversity.

*Bessie Bryant, NE Academy, on a recent biotechnology industry tour.*



*Don Bell in action in the lab!*

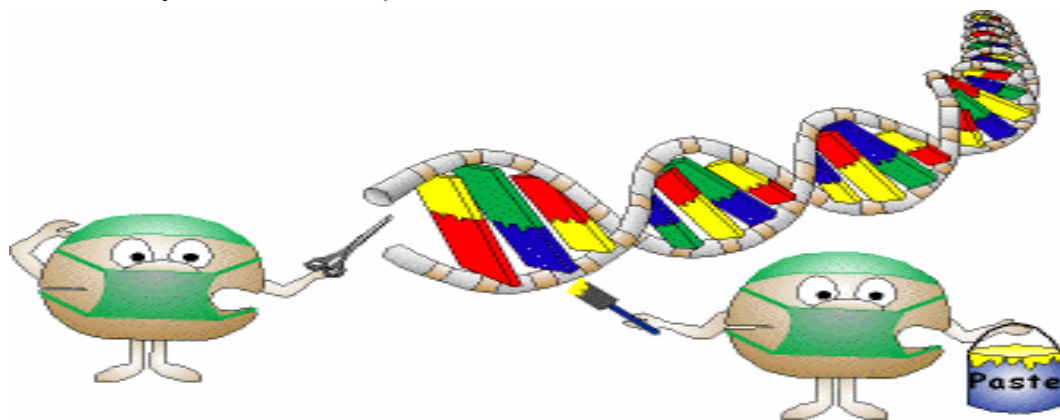
Don Bell, grant coordinator, has been named a Bio-Link fellows and will attend the 6th Annual Bio-Link Fellows Forum June 3-10th. Participants will learn new skills and techniques, examine and test exemplary curriculum models and course material, engage in dialogue about ethical, legal, and social issues in biotechnology and learn how to disseminate this information within their own regions.

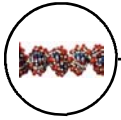
Next in July, Teresa Randall, capstone coordinator will attend a five day workshop Genomics: from Mendel to Microchips sponsored by UCDavis. The course is designed to introduce teachers to genomics and provide hands-on genetics activities for the classroom.



## Open House Tours

Spring found the OKCCC biotech lab and classrooms buzzing with visitors. Open house tours highlighted the campus, biotech lab facilities, classrooms and the BBDiscovery project. Among the visitors were the Oklahoma Science Teachers Association executive board, the Oklahoma Metro Science Consortium as well as teachers and students on campus for DNA Day festivities in April.





# BBDiscovery

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.

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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](http://www.okccc.edu/bbdiscovery)**

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