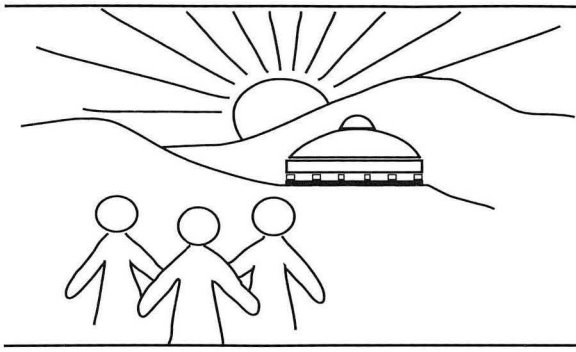
DISCLAIMER



Outreach Newsletter

Lawrence Berkeley Laboratory
Center for Science and Engineering Education

Fall Edition, 1994
Volume 3, Issue 1

A Message from the Coordinator

It is indeed a pleasure to provide you with news regarding the LBL Outreach Program. The program continues its quest to provide enhancement activities to students and teachers in local schools, as well as to those outside of the area. Spring and Summer 1994 presented new challenges for the program. However, thanks to the spirit of the LBL volunteers, we were able to meet these challenges. Our volunteers should be proud of their efforts.

In addition to the special projects, volunteers continue to support schools as tutors, guest speakers, team teachers, and mentors. Some are enlisted to go into elementary schools and read stories to small groups of children. We also have a special group who participate in adult literacy programs. Along with our battery of education volunteers, many LBL staff members work in hospitals and serve on boards to promote curative research. Still others take part in humanitarian projects such as *Habitat for Humanity*, a program dedicated to providing housing for the disadvantaged.

As you learn about our outreach activities, it becomes apparent that LBL employees have a distinct opportunity to make a difference in the education of future generations and in society as a whole. Even as we reflect on past successes, the beginning of a new school year brings LBL greater challenges in its pursuit for more involvement in developing a wide range of education and technology programs. To meet the new challenges, we plan to open the world to children through the Internet, and are hoping to equip schools with computers in order to accomplish this mission. As human resources with expertise we aim to assist teachers in learning the technology needed to teach their students. We shall continue to use our resources to develop curriculum based on our research projects. And last but not least, we must find the time to bring these ideas to fruition. Together, we can realize the mission of the LBL Outreach Program: to utilize the resources of the laboratory to enhance education in our local schools

I would like to personally thank all members of the LBL staff who wil eagerly volunteer, even in what y consider the minutest way. You makes it work.

As we begin our third ye continue the spirit of team effort to 1994-95 Outreach Program succe one in which we may take enorm

Marva O. Wilkins
Outreach Coordinator
Center for Science and Engineeri Education

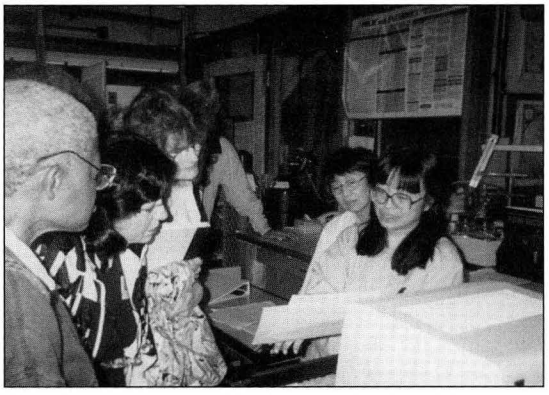
INSIDE

National Teacher Enhancement Project

The teachers represented schools in the Hayward, Oakland, and Richmond Unified School Districts. They were very enthusiastic about the vast resources available to them through LBL.

Twenty San Francisco Bay Area teachers participated in the first phase of LBL's National Teacher Enhancement Project. This project, co-sponsored by the National Science Foundation and the U.S. Department of Energy is scheduled to continue through summer 1996. The focus for the project is Environmental Studies; the 1994 workshop module was "Groundwater Contamination."

The Development Team members for the workshop included: Marva Wilkins, Sarah Block, Rael Dornfest, Preston Holland, Janet Jacobsen, Mark Lasertemay, and Yvette McCullough. The team was responsible for workshop planning and implementation.



The workshop commenced with Roland J. Otto, Head of CSEE, conducting a high energy workshop on journal writing. The remaining schedule of activities included an introduction to groundwater, and lectures on selenium, toxicity, strontium and oxygen.

Sally Benson, Division Director for Earth Sciences, presented a paper on the Kesterson Reservoir, a selenium-contaminated site in the Central Valley. Mark Lasertemay, Toxic Waste Manager, lectured on various aspects of toxicity and hazardous waste-materials. Ron Jones, an Engineer at East Bay Municipal Utilities District, spoke to the group on Water Treatment and Quality. The teachers visited numerous laboratories at LBL, including the Water Chemistry and Bio-Remediation Lab, the Environmental Facilities Analytical Lab, the Fracture Lab, the Porosity Lab, and the Center for Isotope Geochemistry. Field trips to the Kesterson Reservoir, San Luis Reservoir, and Chevron Refinery were major highlights of the program. A workshop on alternative assessment was conducted by Lisa Walenceus, an Educational Consultant. Additionally, teachers ran their own discussion groups and "town meetings" where scenarios focused on how various aspects of groundwater contamination could effect a community.

The teachers represented schools in the Hayward, Oakland, and Richmond Unified School Districts. They were very enthusiastic about the vast resources available to them through LBL.

Yvette McCullough, PhD, a science teacher at Martin Luther King Junior High School in Berkeley, served as the lead teacher for the project. As a science teacher, she was able to clarify and answer technical questions about lectures and workshops.

The contributions to the project by the Earth Sciences and Environment, Health and Safety Divisions were tremendous. In addition to those previously mentioned, other scientific staff from these two divisions included: Andy Yee, Hoi-Ying Holman, Yvonne Tsang, Tetsu Tokunga, Emilio Gonzalez, Susan Monheit, Steve Louie, Peter Zawislanski, Iraj Javandel, Paul Johannis, Peter Persoff, Jiamin Wan, and Tom Johnson.

We are grateful to the LBL staff who graciously participated in this project. They did so with one purpose in mind: to further enhance our educational system. Congratulations on a job well done.

Student Research Program

Summer 1994 marked the third year of the Student Research Program. The program is open to 11th and 12th graders and college freshmen. Twenty-five students participated in the seven-week internship program in which LBL scientists and administrators were mentors (names in parentheses).

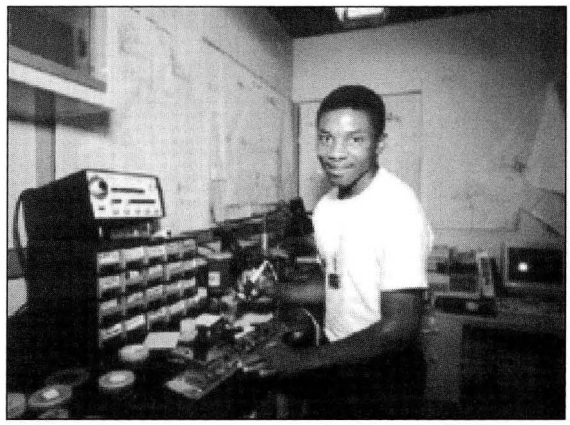
Margaret Agbowo
Holy Names High School
(Jim Lutz; E&E)
"My LBL Summer"
Margaret provided support for a DOE hearing on efficient water heater technology, taking warm air from the environment to heat the water in the tank, thus cutting the amount of electricity, gas, and oil needed to fuel the heater.

Nydia Algazzali
Berkeley High School
(Connie Grondona; EH&S)
"Practice in Health Services"
With the average administrative employee spending between four and six hours (considered to be a high risk amount) in front of a computer, more than comfort comes into play. Nydia surveyed employees, assisted nursing staff in physical examinations, and learned a great deal about ergonomics.

Zakiyyah Bushra Al-Waajid
Skyline High School
(Paul Williams; Life Sciences)
"The National Runners' Health Study"
This study researches the reduction in the incidence of heart-disease associated with running and fitness in general. Zakiyyah was involved in the data-collection portion of this study, as well as assisting the nursing staff in administering physical examinations and tests to subjects. She also learned a great deal about cholesterol, weight, fat content, and their associations with increased or decreased risk of heart disease.

Ike Arum
Oakland Technical High School
(Keith Jackson; MSD)
"Lighting the Way"
Ike spent the summer working with a staff of over 100 persons on the Advanced Light Source (ALS), the brightest light source in the world. It produces the highest quality ultraviolet and soft-x-ray synchrotron radiation for use in scientific and industrial research. Ike worked on electrical systems, diagnostics, and various other aspects of the project.

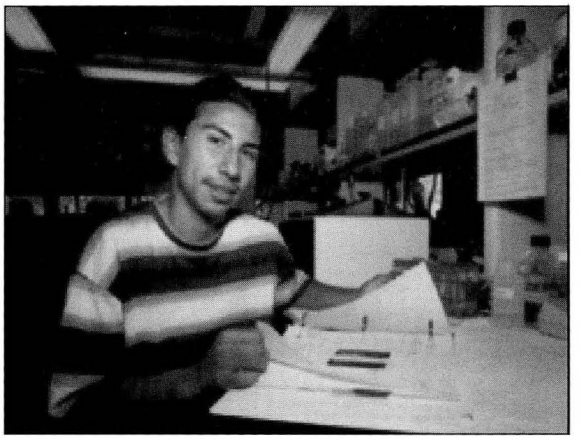
Tara Black
University of California at Berkeley
(Mary—Helen Barcellos-Hoff; Life Sciences)
"Fun with Cells, Part 1"
Tara spent the summer in a cellular research lab of the LBL Life Sciences Division, where she studied the care and feeding of cells. She was responsible for various stages of cell-culturing, preparation for experimentation, and assisting laboratory staff in carrying out experiments.



Ming-chu Chiu
University of California at Berkeley
(Preston Holland; Earth Sciences)
"Between a Rock and a Hard Place"
Ming-chu worked on the Site Restoration Project at LBL, a project to identify the areas in the lab contaminated with chemicals or hazardous wastes and take appropriate steps to clean them up. Ming-chu studied geotechnical reports, extracting relevant information and used AutoCad, a drafting program, to map formations. In the process, she learned about rock-formations, groundwater movement, and waste cleanup.

Elizabeth Ogbu
Wellesley College
(John Byrd; AFRD)
"A Brief Look at Computer Programming: The Improvement of the Data Acquisition Programs Used at the ALS"

Elizabeth's second project was with the Beam Electrodynamics Group (BEG). She worked on possible solutions to resonance echoes created by oscillations that affect beam flow in the Advanced Light Source. She wrote and combined several computer programs to acquire data from the spectrum analyzer and graph it for further study.



Michaela Pangilinan
Pinole Valley High School
(Joel Anne Chassis; Life Sciences)
Fun with Cells
Michaela's mission was to discover the type of abnormality (possibly anemia) present in an otherwise healthy thoroughbred horse. From excellent stock, the horse was in perfect form until it came to competitive racing, at which time performance dropped off significantly. Michaela learned about forming, testing, and redefining hypotheses in a real experimental situation.

Crystal Pierce
DeAnza High School
(Gladys Ureta; AFRD)
"An LBL Experience"
Crystal was assigned to the Advanced Light Source Administration office. She processed and tracked forms and reports associated with LBL business trips. Most importantly, she learned that in the research and development industry, teamwork and interdisciplinary cooperation are vital to the success of a project.

Tanya Ridgle
University of California at Los Angeles
(James Floyd; EH&S)
"IH at Work"
The Industrial Hygiene (IH) Group at LBL is charged with the broad-scoped responsibility of ensuring the best possible environment for employees. Tanya tested respirators, protective facial-masks used by construction and maintenance workers at LBL. Sophisticated computer testing, in concert with physical adjustments and fine-tuning, ensure maximum safety for workers.

Vanessa Riles
Berkeley High School
(G. Shyamala; Life Sciences)
"Fun with Cells, Part 2"
Vanessa studied heat-shock proteins, produced when a cell is placed in a higher temperature situation than their metabolic rate may usually handle. These proteins can interfere with the normal operation of a cell. The importance of this research lies in its application to radiation treatment of patients. Higher levels of radiation may cause heat-shock in cells, resulting in the production of these proteins, causing possible harmful effects.

José Ruiz
Richmond High School
(Cathy Brion; Life Sciences)
"Transgenic Mice"
In this project, Transgenic mice (mice in which a newly introduced gene is present in all cells) are studied to determine if a higher level of HDL (so-called "good cholesterol") decreases heart disease. Fed a high-fat diet, these mice had a lower incidence of heart disease than their normal counterparts in a control group. He learned to prepare DNA, design and perform polymerase chain reactions (PCR) by agarose gel electrophoresis, and interpret results drawn from these and a multitude of other experiments.

Take Our Daughters to Work Day

Early on the morning of April 28, one could already sense the energy that would be felt around LBL throughout the entire day. One could sense it coming up to the laboratory on the shuttle, by car, or even walking, because of the presence of guests that were considerably smaller in stature than are usually seen. And they were being escorted by parents beaming with pride.

At approximately 8:30 am., scores of parents and their children climbed the stairs to Building 66 Auditorium for LBL's first commemoration of " Take Our Daughters To Work Day."

The day started with an assembly. Students were welcomed to the laboratory by Marva Wilkins, Outreach Coordinator, Center for Science and Engineering Education. Pier Oddone, Deputy Laboratory Director gave the students an overview of the laboratory. A panel discussion followed. Judy Campisi, Molecular Biologist, Life Sciences Division, Laura Chen, Architect and Julie Tsvia, Carpenter, both of the Operations Division, and Mary Worth, Division Administrator Life Sciences Division talked about their career paths.

The morning tours consisted of visits to the Firehouse, Advanced Light Source, Positron Emission Topography Laboratory and Machine Shop. The afternoon tours were to Hands-On Universe, Transgenic Mice Laboratory, the National Center for Electron Microscopy. Included in the afternoon events were a walk on observing the Seismology and Geology of LBL and a talk on Journalism at LBL. Along with the planned tours, some children spent time with parents at their various worksites.

Proud parents, hosts, and the children enjoyed the high spirits of the event while having lunch in the sunshine on the patio. Memorable to many was the scene of parents taking their young children to their worksites following lunch.

Throughout the day students were greeted by eager volunteers ready to give them tours of their respective facilities or a talk on various aspects of the laboratory.

Accolades to the "Take Our Daughters To Work" Committee. Those illustrious and diligent members are: Sarah Block, Pamela Coxson, Michael Goldstein, Eileen Kraskouskas, Brennan Kreller, Janet Jacobsen, Rachel McGee, Natalie Roe, and Marva Wilkins.

Thanks to Pier Oddone, Darlene Gonzales, Ann Marie Piche, Donald Nodora, Doug Vaughn, and Michelle Gachis for the key roles they played in planning and implementing this activity.

Special thanks to the numerous LBL staff who put together packets, staffed the registration desk, and worked as tour hosts and guides, chaperones, and facilitators. Our gratitude is also extended to the staffs of the LBL Cafeteria and Transportation Services.

We Thank You for Having Attended

Volunteer Appreciation Day

on

Wednesday, November 16, 1994

We Look Forward to Your Continuing Support

When asked what they would have changed about the day, one child responded: "I wish we were able to go to every workshop"

New Explorers

Summer 1993, Lawrence Berkeley Laboratory (LBL) became a partner with *The New Explorers Program*, a public television series which exposes viewers to the modern frontiers of science. Using science scenarios which follow the scientific process, videotapes are used in the classroom to heighten student interest in science and to serve as supplements to various themes imbedded in the science curriculum.

With LBL as the lead partner, two Tape Support Groups, comprised of teachers from Oakland Unified School District, were selected to develop guides for two new tapes in the series. The tapes were: *Spiral of Silence*, a DNA study of deafness for a family in Costa Rica and *Restless Earth* , a study of earthquakes. These guides can be adapted for use at various grade levels. In addition to using the tapes and guides in their classrooms, teachers bring their students to the laboratory to get first hand experience in the two areas covered. LBL scientists who served as consultants for the two groups were Sylvia Spengler, Life Sciences Division, and Pat Williams, Earth Sciences Division.

The Tape Support Groups continue to do a superb job in developing and implementing this program.

Summer Youth

The Richmond Summer Youth Employment Training Program (SYETP) provides summer employment and enrichment opportunities for youth, ages 14-25. This summer marks the second year LBL has participated in this program.

Through the efforts of Jacques Pryor Stores, and Romy Perry, Reception Center, fifteen Summer Youth Trainees were placed in jobs throughout the laboratory. Jacques and Romy recruited mentors for this program, interviewed the applicants, and matched students with mentors. They also planned and implemented enrichment activities for the trainees. These activities, held in conjunction with the Student Research Program, included: "A Visit with Dr. Seaborg", "How to Build a Computer", and "The Paradigm". The program culminated with a luncheon and student presentations about their summer experiences.

We thank the Administration Division for supporting Jacques and Romy in their efforts to provide this invaluable service to the youth participants, the LBL mentors, and SYETP.

Our hats are off to Jacques and Romy for a job done exceptionally well. They are true assets to the laboratory.

Acknowledgements

SRP Summer Mentors
Gloria Acosta
David Balgobin
Ken Barat
Mary Barcellos-Hoff
Jack Bartley
Mona Bernstein
Paul Blodgett
Marie Bowman
Cathy Brion
John Byrd
Joel Anne Chasis
Aloke Chatterjee
Jan-Fang Cheng
Rob Connelly
Shamly Dhiman
William Fawley
James Floyd
Carl Gould
Connie Grondona
Eric Hall
G. Shyamala
Everett Harvey
Jill Hatier
Lawrence Heilbronn
Preston Holland
Shahla Ighani
Keith Jackson
Jeremy Jokulsky
Christine Kurata
Gloria Lee
Jian Li
Stephen Lowry
Jim Lutz
Leticia Menchaca
Jack Miller
Davina Moussa
Angelica Olcott
Eric Page
Mary Ann Piette
Chad Praul
Seno Rekawa
Yolanda Reyna
John Rosen
Eddy Rubin
Jack Salazar
Carol Sampson
Duncan Scott
Dave Shepherd
Belinda Shanks
Michael Siminovitch
Jim Smithwick
Henry Stauffer
Andreas Stonas
Alline Tidwell
Gladys Ureta
Paul Williams
Mary Worth
Cary Zeitlin
Chin Zhang
Life Sciences Administration
Staff of OSRA

Special Thanks
Gerald Davis
Asha Dornfest
Laurel Egenberger
Eileen Engel
Aziza Gaines
Aliya Gerstman
Jimmy Johnson
Eileen Kraskouskas
Brennan Kreller
Mark Lasartemay
Nancy Lau
Lawrence Lawler
Karin Levy
José López
Roland J. Otto
Romy Perry
Catherine Pinkas
Jacques Pryor
Yvonne Roberts
Glenn T. Seaborg
Mari Shine
Ana Tully
Marlene Ware
Lynellen Watson
Computer Technical Support

Editor
Marva O. Wilkins

Design, Layout, and Graphics
Rael J. Dornfest

This work was supported by the U.S. Department of Energy, Office of University and Science Education Programs, under contract no.

DE-AC03-76SF00098

PUB - 739 Rev. Fall 1994
Vol.3 No.1

Department of Energy laboratories are equal opportunity employers.