

# Connection

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Newsletter of Bio-Link • The National Advanced Technological Education Resource Center for Biotechnology

## Eighth Annual Summer Fellows Forum

BIO-LINK'S EIGHTH ANNUAL Summer Fellows Forum 2006, once again hosted by the National Center located at City College of San Francisco (CCSF), was held from June 1 through June 5 at the Clark Kerr Campus conference site in Berkeley, California. Sixty-five Fellows (community college instructors and high school teachers) from across the nation were selected by Bio-Link's Regional Directors to participate in the weeklong forum. The forum entitled "New Frontiers in Biotechnology" consisted of a variety of concurrent workshops, informal meetings, and a dinner banquet.

As in the past, this year's forum afforded each fellow the opportunity to profile their program at their school or college, to network and to share ideas and



Drs. Elaine Johnson and Bart Gledhill, Bio-Link Director and Bio-Link Deputy Director, present a plaque of appreciation to keynote speaker, Matthew Gardner, BayBio President, at Bio-Link's eighth annual Summer Fellows Forum dinner banquet.

discuss issues that will continue to build the link between education and industry. The fellows participated in workshops given by guest lecturers, who donated their time and supplies. And now for the first time, many of the forum workshop PowerPoint presentations are available on the Bio-Link website for review. Thank you to all the presenters, everyone appreciated your efforts!

The following presenters and workshops included: **Ellyn Daugherty** of San Mateo High School, *Resources for Introductory Biotechnology Programs*; **George Cachianes** of Lincoln High School, *Learning the Biotech Business* workshop; **Drs. David Gilchrist and Barbara Soots** of UC Davis, *Agricultural Biotechnology: Past, Present, and Future*; **Mike Fino** of MiraCosta College, *Lessons in Biomanufacturing Quality and Regulation*; **Michael Collins** demonstrated Vernier equipment and

products; Bio-Link Consultant **Joseph Mattoon**, *Learning Objects*; Bio-Link Consultant, **Kathie Whelchel**, moderated *Internship Opportunities in Biotech Programs* panel that included **Dr. Craig Caldwell** of Salt Lake Community College, **Dr. Rob Hatherill** of Del Mar College, **Dr. Nick Kapp** of Skyline College, **Dr. Rollie Otto** of Lawrence Berkeley Lab and **Ashley Wildrick** of San Diego Workforce Partnership; **Ron Mardigian** and **Dr. David Palmer** of BioRad, *Real Time PCR*; **Andrea Cortez** of Genentech, *Cell Culture in Process Development*; **Dr. Sandy Porter** of

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In a reflective moment, workshop presenter, Dr. Sandy Porter and participant Dave Menshew contemplate the deeper meaning in a record from GenBank.

**www.bio-link.org**



## New Territory — Are We Ready?

HOW TIME FLIES and how life changes. This has been a time of major change and intensive growth. At every turn there seems to be another opportunity – from alternative fuels to personalized medicine. In addition, funding opportunities continue to increase. Bio-Link was on the cutting edge with the funding of the Bio-Link ATE Center for Biotechnology in 1998. Now there are biotechnology programs literally sprouting up all over the country. Each has its own flavor addressing the needs of the local workforce. This year's Summer Fellows Forum was an example of the growth in numbers and the increased diversity of the participants. We are looking forward to the coming year of expanded partnerships and cross-fertilization with other ATE Centers.

Bio-Link will soon be requesting every program in the nation to respond to a survey. We have baseline data that we gathered when Bio-Link was an infant. At that time we did not even know what programs existed across the nation. Now we are a strong network of enthusiastic workforce promoters. Programs at community and technical colleges not only prepare the skilled workforce, but also, through Bio-Link have a national support system and vehicle for dissemination of best practices.

The National Science Foundation Advanced Technological Education program is alive and well. In addition, some significant funds for biotechnology skills building has been provided by the Department of Labor, State Initiative, industry partners, and private foundations. It is with great optimism that we move into this year's activities. We want to know what you want and need. Are we ready? The answer is yes, but only if we continue to work together.

# EIGHTH ANNUAL



Forum workshops encourage and inspire attendees and create partnerships for the upcoming academic year.

*Continued from page 1.*

Geospiza, Inc., *Bioinformatics and the Coming Plague*; North Central's Regional Director **Lisa Seidman** of Madison Area Technical College, *Back to Basics*; **Dr. Denneal Jamison-McClung** of American River College, *Building Phylogeny Trees*; CCSF's **Philip Jardim** moderated Stem Cell Certificate Program panel that included CCSF's **Golnar Afshar**, **Alex Zambon**, and **Dr. Carin Zimmerman**; South Central Regional Director **Dr. Linnea Fletcher** of Austin Community College and **Dr. Edie Leonhardt** of CCSF moderated the *Bridge to Biotech* panel that included CCSF's **James Lewis**, **Rob Reed**, **Rob Yung**, and **Dr. Carin Zimmerman**; **Drs. Russ Read**, **Patricia Dombrowski**, and **Janet Paulson** of the National Center Biotechnology Workforce, *Preparing the Diversity Needs for the 21<sup>st</sup> Century*; Northwest Regional Director **Dr. Guy Hamilton** of Shoreline Community College, **Yvonne Harris** of Harry S. Truman College, **Mary Pat Huxley** of Applied Biological Technologies Initiative, **Dr. Gail O'Kane** of Minnesota State Colleges and Universities, **Dr. Lisa Seidman**, and **Dr. Luanne Wolfgram** of Johnson County Community College, New Frontiers in Community College Programs; Southwest Director **Jim DeKloe** and **Dr. Ed Re** of Solano Community College, **Mousa Ghanma**, **Dr. Nick Kapp** and Evan Leach of Skyline College, *Bio Processing* and a panel of members from BABEC, BayBio, SF Works, CCSF and American River and Skyline College, *Building Regional Collaboratives*.

Some thirty others from CCSF and bay area industry also attended Bio-Link's Eighth Annual Dinner Banquet on June 7. CCSF's Dr. Wing Tsao, Dean of Science and Math and Kristin Charles, Associate Dean of Grants and Resource Development greeted and welcomed the fellows and guests. Bio-Link Director, Dr. Elaine Johnson introduced keynote speaker, Matthew Gardner, Bay Bio President whose talk was entitled "The Arrival of a True "Industry": Biotechnology and its Changing Workforce."

— Lisa Huffman  
National Center

**Plans are underway for Bio-Link's Summer Fellows Forum 2007 to once again be hosted at the Clark Kerr Campus. If you are interested in attending, look for the upcoming announcements and application at [www.bio-link.org](http://www.bio-link.org) or in the Spring 2007 Connection.**

# SUMMER FELLOWS FORUM



## AgrowKnowledge Faculty Attend Summer Fellows

We are pleased to report that six AgrowKnowledge faculty members (see list at right) attended this year's Summer Fellows Forum. In response to the interest from our sister ATE Center AgrowKnowledge, Bio-Link created an agricultural track including biopharmaceuticals, biofuels, and bioinformatics using agricultural examples. Workshop examples included an AgBiotech presentation with DNA isolation from strawberries. The sessions focused on bird flu and building phylogeny trees. Other sessions included basics, internships, learning object creation, and biomanufacturing. We are happy that AgrowKnowledge faculty could be part of the ongoing and exciting network of biotechnology educational leaders. As we continue our NSF-ATE Programs, we hope that Bio-Link and AgrowKnowledge will be able to take advantage of each other's partners and expertise.

## SUMMER FELLOWS FORUM PARTICIPANTS

### Regional Directors\* and Fellows

#### Northeast Region

Tim Dubuque  
Vijay Raja  
Bruce Van Dyke

#### Southeast Region

Sandra Payne  
Rebecca Westbrooks  
Bill Woodruff\*

#### North Central Region

Carie Fisher  
Yvonne Harris  
Nirmala Kotagal  
Ellyn Mulcahy  
Gail O'Kane  
Wendie Palazzo  
Barbara Pederson

Lisa Seidman\*  
Beth von der Heydt  
Kathie Whelchel  
Luanne Wolfgram

#### South Central Region

Larry Britton  
Vimlarani Chopra  
Linnea Fletcher\*  
Rob Hatherill  
Megan Hoch  
Gary Igo  
Rupa Iyer  
Doc Khalsa  
Bridgette Kirkpatrick  
Larry Loomis-Price

Stephanie Patterson  
Anne-Marie Schlender

#### Northwest Region

Guy Hamilton\*  
Susan Hoyne  
Joseph Mattoon  
Stephanie Tatem Murphy

#### Southwest Region

Carina Anttila-Suarez  
Leslie Blackie  
Craig Caldwell  
Thomas Chen  
Jim DeKloe\*

Michael Dunn  
Mike Fino  
Mary Pat Huxley  
Richard Johnston  
Carey Kopay  
Edie Leonhardt  
Ying-Tsu Loh  
Dave Menshew  
Susmita Sengupta  
Tracy Stevens  
Janice Toyoshima

#### AgrowKnowledge

Bradley Burkland  
Harley Hepner  
Cathy Hughes  
Gary Olsen  
Gary Shupe  
David Wells

## Northwest

Northwest regional members of Bio-Link organized a one-day forum bringing together the regional biotech training programs, Bellevue CC, Bates Technical College, Seattle Central CC, and Shoreline CC, with industry and legislative representatives on April 20. The goal was to increase understanding of the types of biotech training that currently exist in the Puget Sound region. In addition, the future direction and needs of industry were discussed to help educators think about how they can tailor their programs to better serve students and employers. 48 educators, legislators, and industry representatives attended the summit at Shoreline Community

College. Dr. Lee Huntsman University of Washington President Emeritus, Executive Director of the Life Sciences Discovery Fund Authority and Dr. Elaine Johnson, Bio-Link National Director, gave keynote addresses. Panel discussions and breakout sessions addressed the current state of community college education and future directions to keep up with industry needs. Feedback has been extremely positive and if you are interested in seeing the summary report from the breakout sessions please contact Guy Hamilton at ghamilto@shoreline.edu.

In October 2005, Washington State Governor Christine Gregoire, announced nine industry skill panel grant awards,

one of which is Life Sciences, to keep Washington workers globally competitive. The Life Sciences Industry Skill Panel will develop a comprehensive bioscience action plan for the Puget Sound region connecting existing and new businesses with the developing educational programs at community and technical colleges, the University of Washington, and the variety of science programs offered through the K-12 school system. Partners include the Seattle-King County Workforce Development Council, the Puget Sound Regional Council, Prosperity Partnership, the Seattle-King County AFL-CIO, and Bio-Link regional members Shoreline, Bellevue, Edmonds, and Seattle Central Community Colleges.

Shoreline Community College (SCC) is working with Xactagen a start-up biotech company. Xactagen currently has four employees and rents laboratory space from SCC while carrying out its proof of patent work. Xactagen CEO, Dr. Bob Finney, works with SCC biotech students, teaching selected topics in each of the SCC core biotech classes. Additionally, selected students have completed internships with the company. Xactagen has established a scholarship fund to provide a stipend for interns and to cover the cost of their tuition.

— Guy Hamilton  
Northwest Regional Director

## Northeast

The Northeast Region of Bio-Link at New Hampshire Community Technical College (NHCTC) in Portsmouth, has for years recognized the need for education and training in biopharmaceutical biomanufacturing, one of the most significant sectors of the biotechnology industry. Significant because biomanufacturing is a money making sector of biotechnology and because of the great number of technician jobs available in biomanufacturing. In fact, seventy-five percent of the biomanufacturing workforce is comprised of technicians employed in ten biomanufacturing jobs or career paths, including: process development (which entails discovery research), upstream processing or cell culture, downstream processing or purification, quality control microbiology and biochemistry, quality assurance, metrology, validation, facilities and environmental health and safety.

From the inception of Bio-Link, the Northeast Region's weeklong summer workshops focused on biomanufacturing. As funding for regional Bio-Link workshops ceased, a Department of Labor grant in which NHCTC became the Center of Expertise in Biomanufacturing for the National Center for the Biotechnology Workforce funded the weeklong summer workshop in 2005. And this summer, NHCTC ran a DOL and NSF-ATE funded weeklong biomanufacturing conference, BIOMAN 2006. The first annual BIOMAN conference hosted 40 high school teachers and community college and university faculty from 16 states and Puerto Rico.

The reason for NHCTC's focus on biomanufacturing is that sector of the biotechnology industry has matured rapidly in the Northeast since the beginning of NHCTC's program in 1994, moving from research and development to commercial production of

about 130 biopharmaceuticals, with about 300 in the pipeline moving to commercial production. Most of NHCTC's student graduates have taken up biomanufacturing as their first biotechnology job and as a career path. We have about two hundred graduates working at biomanufacturing companies; most of our graduates are still with the company that first hired them and have moved up the ladder to supervisory positions or laterally into another biomanufacturing career path.

In Fall 2005, the Northeast Region of Bio-Link received close to \$3 million dollars from the NSF ATE program to create a regional bio-manufacturing center, the Northeast Biomanufacturing Center and Collaborative (NBC<sup>2</sup>). The overarching goal of the center is to build the biomanufacturing education and training and workforce infrastructure for the Northeast. The Northeast Region has more global companies than any other

region of the United States and many of these companies are on the NBC<sup>2</sup> Advisory Board. Because the NBC<sup>2</sup> is working with these companies on building curriculum and instructional materials for ten biomanufacturing jobs referred to earlier, we are creating a Global Biomanufacturing Curriculum (GBC). The GBC is a repository of biomanufacturing curriculum and instructional materials. Faculty and teacher members of the NBC<sup>2</sup> can withdraw or deposit curriculum into the GBC.

Please visit [www.biomanufacturing.org](http://www.biomanufacturing.org) to learn more about the Global Biomanufacturing Curriculum and to become a member of the Northeast Biomanufacturing Center and Collaborative (NBC<sup>2</sup>) or contact Sonia Wallman ([swallman@nhctc.edu](mailto:swallman@nhctc.edu) or 603-559-1581).

— Sonia Wallman  
Northeast Regional Director

## South Central

The Region is hopping with biotech initiatives. In Texas, Governor Perry's six-cluster initiative includes biotechnology was the first area funded this summer. Austin Community College (ACC) and WorkSource will develop two enhanced certificates in fields that use biotech, medical diagnostics and bioinstrumentation. San Jacinto College in Houston is starting a program to train workers, and the University of Houston is starting a degree program in Biomanufacturing.

Biotech Clubs are booming. This last year was busy for the Montgomery College Biotechnology Institute (MCBI) and their program was awarded "Exemplary" status by the Texas Higher Education Coordinating Board (THECB), which oversees workforce programs and reviews programs. This is the first "Exemplary" designation for any biotechnology program in the state.

The MCBI program continues to work closely with the South Central Region Bio-Link center at ACC. In September, Montgomery College welcomed 50 teachers, administrators and business representatives to the (First) Annual South-Central Region Biotech Fly-In, and co-sponsored workshops with the NABT and the Texas WorkSource Commission over the summer. Following ACC's lead, and using many of their materials, "Introduction to Biotechnology" is now offered at two high schools for dual-credit. These classes, filled to capacity, indicate increasing interest in biotechnology at the secondary level. MCBI director, Larry Loomis-Price, was pleased to be invited by ACC to the Summer Fellows Forum in Berkeley.

The MCBI focus is on outreach and recruitment. Backed by NSF's "Biotech SUCCESS" grant (ATE0401988), they explore new ways to reach potential students, such as mentoring biotech clubs

at high schools nationwide. Their handbook helps teachers mentor such clubs. It is available in electronic form and will be available at the ATE/PI conference in Washington, DC. To download the handbook go to (<http://wwwapps.mhnmccd.edu/biotech/index.htm>).

The MCBI's newest program is generating outreach to Hispanic students. Materials published in Spanish include introductory labs and the biotech program brochure. The program includes field trips and laboratory exercises with simultaneous Spanish translation. MCBI wants to talk to anyone else conducting bi- or multi-lingual outreach in biotechnology. Please contact them at [MCBIOTECH@NHMCCD.EDU](mailto:MCBIOTECH@NHMCCD.EDU). [www.uh.edu/admin/media/newsroom](http://www.uh.edu/admin/media/newsroom).

The Clinical Laboratory Science (CLS) program in the College of Health Professions at Texas State University, San Marcos earned a Beckman Coulter Genomics Educational/Research grant, allowing the addition of a CEQ 8800 automated capillary sequencer. Assistant Professor Rodney E. Rohde, MS, SV (ASCP) is establishing a Clinical Molecular/Genomics Diagnostics laboratory for his research in antibiotic resistant bacteria and virology (<http://www.txstate.edu/~rr33>). CLS students will use the equipment in many courses, including Molecular Diagnostics. Professor Rohde has been an adjunct professor since 1995 at ACC's Biology and Biotechnology departments.

The CLS Program was initiated in 2003 as an articulation agreement between the ACC Biotechnology department and Texas State University. Their collaboration has been a "win-win" situation for many reasons. For example, the CLS program takes advantage of industry contacts built by ACC through its exemplary internship program. ACC had a student intern placed with Professor Rohde, and allows interested

students to transfer to a four-year university for a Bachelor's degree. Professor Rohde helps with other items for the two programs and with curriculum development on the ACC Biotechnology Advisory Board. We feel that this critical and important partnership between Texas State University and ACC will meet this exciting new challenge. For more information about the two programs, go to: <http://www.health.txstate.edu/cls/> <http://65.198.166.58/biotech/default.asp>.

In Louisiana, high school teachers trained at Bossier Parish Community College graduated as its first class of students completing the Technical Certificate in the Area of Biotechnology this past summer. The graduates included one high school student who received dual credits. Laboratory-intensive courses included lab methods and equipment, safety, solution preparation, regulations and QA/QC, cell culture techniques, and molecular biology-recombinant DNA technology.

Students spent seven weeks this past summer in internships in basic medical research, forensics, and quality control of radioisotopes used in PET scans. Faculty now teach a survey course designed as an entry course for students seeking an Associate Degree in Biotechnology, which is under development. Also, the faculty presented a weeklong Biotech Institute for teachers with topics about microbiology, protein structure, fish protein fingerprinting, water analysis including PCR, GMO design and testing, and forensics serology.

At Northern New Mexico College (NNMC) student intern Jeremy Espinosa, a recent graduate of NNMC, completed his summer internship at NCGR (National Center for Genome Research [www.ncgr.org](http://www.ncgr.org)), a bioinformatics company in Santa Fe. NNMC will continue these opportunities next year at their New Mexico

facility and in collaboration with colleges in the Midwest and Arizona. Jeremy will be presenting his research at SACNAS.

Oklahoma City Community College (OCCC) hosted the "Frontiers in Genomics" workshop this summer from Cold Spring Harbor Laboratory's DNA Learning Center, providing top-notch professional development for 24 faculty and teachers, with two components: genome annotation with Uwe Hilgert, and RNAi in *C. elegans* with Greg Chin and Bruce Nash.

The following week, Don Bell, Charlotte Mulvihill and three biotechnology teacher-leaders held an academy for 23 high school students, who worked in teams on topics of GM foods, amylase, or bioinformatics. Also, Don Bell conducted four weeks of workshops for high school teachers participating in their Biotechnology/Bioinformatics Discovery! outreach project. One result was that on the first day of school in August, 2000 students extracted DNA in their first biology class. Another result is that the word has spread about the project and OCCC has scheduled several workshops to meet the demand. Thanks to a National Science Foundation grant, their project now includes preservice teachers, and they have seen a powerful "ripple effect."

OCCC hosted the Bio-Link South Central Regional Conference on September 14-16. Elyn Daugherty, who just published her high school biotech text and lab manual, joined us from California. Partial funding came from the community college outreach portion of Oklahoma's INBRE grant from the National Institutes of Health and from BioRad.

Last but by no means least, Charlotte Mulvihill received notice that she will receive the National Association of Biology Teachers Association's 2006 "Biotechnology Teaching Award" in October. Congrats Charlotte! — *Linnea Fletcher*  
*South Central Regional Director*

## North Central

Minnesota has not historically been known as a hotbed of biotechnology education, but the state has been coming on strong since 1999. Today, the Minnesota State Colleges and Universities system – which includes 25 two-year colleges and seven state universities – offers two-year degree programs in renewable energy production, biomedical technology, nanotechnology, prebioinformatics and biotechnology, and many certificate and four-year degree programs that focus on the biosciences. As these programs develop, Minnesota institutions and organizations increasingly turn to Bio-Link as a key resource.

Since 1999 colleges have sent representatives to the Bio-Link Summer Fellows Program: Anoka-Ramsey Community College in 2001 and 2004, Minneapolis Community and Technical College in 2005, Rochester Community and Technical College in 2006.

Bio-Link has agreed to provide assistance on two NSF Advanced Technological Education (ATE) grant initiatives that involve Minnesota colleges. Bio-Link will provide assistance on an ATE project grant to Anoka-Ramsey Community College, St. Petersburg Community College in Florida and Edmonds Community College in Washington State. The grant will fund development of a suite of new certificate programs, including clinical research data management, documentation management and quality systems management. Bio-Link Director Elaine Johnson also is assisting with an ATE center planning grant led by Dakota County Technical College in Rosemount, Minnesota, aimed at creating a Midwest Regional Center for Nanotechnology Education.

– Gail O’Kane  
Minnesota State Colleges  
and Universities

## Bio-Link Clearinghouse Welcomes New Web Editor

There have been some changes to the Bio-Link Clearinghouse this year beginning with the hiring of a new web editor, Carie Fisher, in January. Carie has a Bachelors of Science degree in Biology from Indiana University and a Masters of Science degree in Science Communication from the University of Wisconsin-Madison. She worked for four years studying sleep in *Drosophila* before joining us part-time at Madison Area Technical College, the North Central Regional Bio-Link Center.

Since starting at Bio-Link, Carie has been busy updating many of the files and links in the Clearinghouse section. She has also contributed to Bio-Link’s website by posting a webpage with an index all of past discussion threads from the Bio-Link Discussion board. Included on this webpage is a PDF with the main questions asked and answers given on the Bio-Link discussion board from the inception of the discussion board in May 2000 to present time. This project was a major undertaking to say the least, but it should benefit all.

Carie has also created a new “Student Opportunities” webpage and a “Faculty Opportunities” web page. These webpages list some of the internships, fellowships, workshops, and online databases that

are related to biotechnology education. The list of opportunities is constantly growing, check back often! Currently, her goal is to make both of these pages more interactive.



Lastly, if you are looking for a new textbook or lesson plan for your classroom, look no further than Bio-Link’s Clearinghouse. The Clearinghouse section is full of useful materials to enrich your teaching experience, plus it contains links to other biotech resources. Similarly, if you have materials/links you think others may find useful, please send them to [cefisher1@matcmadison.edu](mailto:cefisher1@matcmadison.edu). Bio-Link is always looking for new materials to post on the Clearinghouse and this is an especially good method of disseminating results of grant projects. If you have not done so already, subscribe to the Clearinghouse! It is easy to subscribe, simply follow the link below and fill out and submit the “subscribers” form.

– Lisa Seidman  
North Central Regional Director

Contact Carie ([cefisher1@matcmadison.edu](mailto:cefisher1@matcmadison.edu)) with questions, comments, or submissions.

Bio-Link homepage: <http://www.bio-link.org>

Bio-Link Discussion board index: <http://www.bio-link.org/discuss.htm>

Student Opportunities web page: <http://www.bio-link.org/intern1.htm>

Faculty Opportunities web page: <http://www.bio-link.org/intern2.htm>

To subscribe to the Clearinghouse visit: <http://www.bio-link.org/resSubscribe.htm>

## Bio-Link’s Family Expands...

### Welcome Wanda

Joining the National Center office staff this past May, Wanda Blake brings over 20 years of operations expertise and management experience with an extensive background in finance and food service operations, having served as Finance Director at several non-profits in the San Francisco Bay Area. Her Bio-Link duties include: contract administration; developing, planning and organizing strategies for the business plan; fund source development; and projections for continuing and promoting the Resource Center’s operations and goal.

Wanda earned her B.S. in Business Administration at Golden Gate University, and also received an A.S. in Hotel and Restaurant Management from City College of San Francisco. For eight years Wanda was responsible for finance, administration, operations, information technology and human resources in the non-profit sector. While Wanda enjoyed many years in the non-profit sector she decided to fulfill her interest and passion for food and return to the private sector in July 2005. We are delighted to have Wanda on board and welcome her to the family!



## BIOMAPS – Converging Efforts to Develop the Pipeline of Biotechnology Employees

Skyline College, a member of the Northern California Biotechnology Center (NCBC), will lead a consortium of community colleges, industry representatives, high schools, regional occupation programs and career projects as the Biotechnology Instruction Organizations Map Articulated Pathways for Success (BIOMAPS). Recipients of a \$450,000 two-year grant from the California Community Colleges Chancellor's Office, and led by William Watson, Director of the Skyline Center for Workforce Development, this team of educators, business leaders and scientists will expand and improve opportunities for students from middle school through college to become aware of the applied field of biotechnology, to develop fundamental lab skills, and to experience the workforce environment which will prepare them for careers in this socially and economically important industry. Professors from local community colleges (Skyline College, College of San Mateo and Cañada College of San Mateo County and Laney College of



Skyline Biomanufacturing students recently hosted Carlmont High School students for hands-on experiences.

Oakland, as well as the Career Ladders Project) will work with educators from NCBC, Bio-Link, the San Mateo County Regional Occupation Program (ROP), and Gene Connection: Chem Connection; teachers from San Mateo High School, Carlmont High School and Capuchino High School; and industry/workforce representatives from BayBio Institute and the Skyline Center for Workforce Development to coordinate articulation agreements between community college and high school biotechnology programs as incentives for high school students to continue biotechnology career explorations in the

community colleges. These articulation agreements will be able to resource a recently published biotechnology curriculum adaptable to several levels of conceptual and skill-building education, "Biotechnology: Science for the New Millennium," by Elyn Daugherty, founder of the San Mateo High School Biotechnology Career Pathway. In addition, partners will reach out to counselors

and students in middle schools to bring the excitement of a science career to students and suggested, modular pathways by which they can attain that goal. Unique to the program are bus tours of the biotechnology "rich and famous" – a trip for students to visit several biotechnology companies and, enroute, hear from employees about the type of work they do. The tour will culminate in practical experience in a college biotechnology lab. For more information about BIOMAPS, please contact William Watson at [william.watson@smccd.edu](mailto:william.watson@smccd.edu) or 650-738-7035.

– Pat Seawell  
Gene Connection:  
Chem Connection

### Bio-Link in a Blog!

Last summer I decided that a blog would be an interesting way to disseminate some of the materials developed during Geospiza's NSF funded project (DUE-0127599). Blogging has proved to be a wonderful way to quickly write and publish information about our materials and topics in biotechnology and bioinformatics. When I was asked to join *ScienceBlogs*, a blogging network, related to *Seed* magazine, I read a few *ScienceBlog* articles, and said yes.

*ScienceBlogs* has 49 blogs by scientists, mathematicians, and journalists from diverse fields covering a wide range of topics such as cephalopods, biotechnology, influenza, and global warming. *Nature* magazine's list of the top 50 science blogs (<http://tinyurl.com/h7z4r>) includes 25 blogging with *ScienceBlogs* (including yours truly).

On any given week, over 400,000 unique visitors come to *ScienceBlogs*. It is a way to let the world know about Bio-Link and its amazing accomplishments. I have written articles about Bio-Link and posted them to my blog (<http://tinyurl.com/jehpg>) and I plan to write more. I have heard some amazing stories in the past ten years that I've been associated with Bio-Link and I think it's time to share more of those stories with the world. If you have a Bio-Link story to share, let me know ([digitalbio@gmail.com](mailto:digitalbio@gmail.com)). Or, if you would like to publish it on my blog, as Jim DeKloe did, I can arrange that. How will the world know what community instructors, and community college students are able to accomplish, unless we share that information?

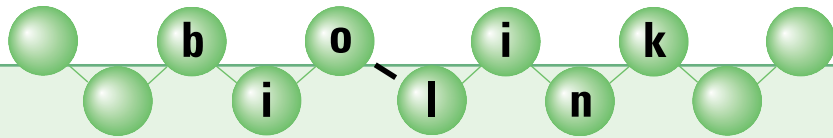
– Sandra Porter, Geospiza, Inc.



### Twin (Bio) Links

We are pleased to welcome two new members to the Bio-Link family: Gregory Jeanne and Joseph James Martinez born November 22, 2005 in Oakland, California, to *Connection* Editor, Lisa Huffman and husband Jose Gregorio Martinez. Gregory

weighed in at a healthy 6 pounds-8 ounces and one minute later "little" brother Joseph at 6 pounds-13 ounces. According to the proud parents, the boys might become *biotechies* as they already show preference to their science toys!



## NATIONAL RESOURCE CENTER

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**Bio-Link** is committed to program improvement, instructor enhancement, communication, program assistance, and supporting school-to-career activities in the biotechnology area.

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- Calendar of Events
- Curriculum Clearinghouse
- Internships
- Jobs
- Online Courses
- Virtual Laboratory
- Web Links, and more . . .

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