



BIOTECHNOLOGY TIMES

Winter 2006

A biannual newsletter from the UC Davis Biotechnology Program

Marianne Hunter, Editor

Also posted at: www.biotech.ucdavis.edu and www.deb.ucdavis.edu

A MESSAGE FROM THE DIRECTOR

Welcome to the second edition of Biotechnology Times. We apologize for the delay, but we had a change in staff over the last year and a half. Dr. Erica Chedin is now working for the School of Medicine and Jennifer Lee works in the Development Office for the Dean of the College of Biological Sciences. They are doing very well in their new positions and we want to thank them for doing an outstanding job for the Biotechnology Program.

We welcomed two new members of the Biotech team this fall. **Carey Kopay** is the Assistant Director of the Biotech Program and **Marianne Hunter** is the executive administrative assistant and event manager. Carey is also heading up a new educational consortium called **BioTech SYSTEM** (see page 4). We have also made a few changes in the membership of the Biotechnology Advisory Committee (BAC - see page 3). We really want to extend a heartfelt thank you for Professors **George Bruening**, **Roy Doi** and **Don Carlson** for all of their years of service. George will still serve on the BAC, but not as chair. **Bruce Hammock** agreed to serve as interim BAC chair.

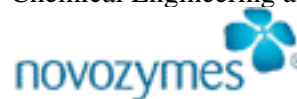
In June 2005, the **NIH Biotech Training Grant Executive Committee** selected a stellar group of NIH and Biotechnology Fellows (see page 2). We were able to fund 12 scholars for the 2005-06 term due to the financial support of the NIH-NIGMS, Industry and Campus Deans. You may hear about their research at the Retreat in Napa on April 8. Just a reminder we are submitting the Training Grant renewal in May, so we need letters of support from the campus and industry.

The **Designated Emphasis in Biotechnology (DEB)** continues to grow and develop. We now have over 80 students enrolled (see website: www.deb.ucdavis.edu). A number of students have completed industry internships. Some have even jumped into entrepreneurial activities such as the Business Development Certificate, Big Bang and Little Bang. Many of our students have graduated with their PhDs ... some going to industry while others staying in academia (more on pages 2 & 4).

The Advanced Degree Program (ADP) for corporate employees continues to grow. We added one new student, **Alex Davies**, this fall from Antibodies Inc., in Davis, while graduating two (**Mariah Connelly** and **Rick Fitch**). We welcome two new students to Biochemical & Molecular Biology grad program for the fall of 2006: **Jim Langston** from Novozymes and **Sharlene Velichko** from Berlex.



In addition, the College of Engineering is a new partner. We have added two majors: Chemical Engineering and Materials Sciences.



We are hoping to recruit more companies involved in the near future. By the way, we have created a new brochure, too.

We were very busy last summer with courses, workshops and conferences. We co-hosted the **NSF-funded Summer Institute in Bioinformatics** for community college and high school science teachers in August. We presented two short courses: **Advanced PCR Techniques** in August and **DNA Microarrays** in September. In 2006, we plan to add two more: **Flow Cytometry** and **Proteomics** (see page 5). In addition, we co-sponsored the **Transgenic Animal Research Conference V** in Granlibakken, Lake Tahoe from August 14 - 18. Although the project management was challenging, all the events were very successful.

Outreach to the community is an important mission and **Picnic Day** is a great opportunity. We had a great time in 2005 and many DEB students volunteered their time. We are already planning for the Biotech Event on April 22, 2006. We need volunteers and industry donations!

We look forward to a great 2006.

With warmest regards,

Judy Kjelstrom



Picnic Day 2005

DEB GRADS SINCE JUNE 2005

The Biotech Program maintains an excellent database on all DEB students who have gone through the program. This makes it easier when the NIH Training Grant comes up for renewal or when tracking statistics for other administrative purposes. It also gives us an idea of how successful the program has been when we look at the end of every school year and see how many students have graduated with a Designated Emphasis in Biotechnology along with their Ph.D. Graduates receiving a DEB in 2005 are:

Amanda Ellsmore Fischer (Plant Biology) - She is doing research at Seminis Seed Co. in Woodland.

Ze He (Chemistry) - He is an Assistant Professor in Biochemistry at Central Connecticut State University

Jie-Ren "Jerry" Ku (Chemical Engineering) - Currently a post doctoral researcher. He is applying for faculty positions, eventually wants to start his own company.

Ryann Muir (Plant Biology) - She is enrolled in Law School at Boston College

Sheetal Singh (Biochemistry & Molecular Biology) - She is currently a post doctoral researcher on campus.

Bob Ward (Food Sciences) - He is an Assistant Professor in Food Science and Technology at Utah State University.

Jennifer Weidhaas (Civil & Environmental Engineering) - Now living in Idaho and working for an environmental consulting firm.

BIOTECHNOLOGY TRAINEE FELLOWSHIP RECIPIENTS FOR 2005-2006 SCHOOL YEAR

Deciding on the new trainee fellowship recipients for the 2005-2006 school year turned out to be quite a challenging task. All of the applicants were outstanding!

NIH Fellows:

Suzanne Balko Barber, Chemical Engineering (Tonya Kuhl; Preceptor) "The Forces and Theory of Membrane Fusion"

Allison Dickey, Chemical Engineering (Roland Faller; Preceptor) "Examining Small Molecule Interactions With the Phospholipid Bilayer Through Molecular Dynamic Simulations"

Corey Dodge, Chemical Engineering (Professor Karen McDonald, Preceptor) "Cell Culture for Rapid Prototyping of Plant-produced Therapeutic Proteins"

Gian Oddone, Chemical Engineering (David Block; Preceptor) "Optimization of Heterologous Protein Expression in *L. Lactis*"

Jennifer Warren, Civil and Environmental Engineering (Stefan Wuertz, Preceptor) "Establishment and Maintenance of Novel Genes in Bacterial Populations by Conjugative Horizontal Gene Transfer (HGT)"

The Biotechnology Program would like to thank Genentech, Monsanto and Scios, Inc. Each provided a \$20K fellowship for the 2005-2006 school year in support of the training Program.

Biotech Fellows (Funded by campus & industry):

Laura Higgins, Molecular, Cellular and Integrative Physiology (John C. Rutledge; Preceptor) "Monocyte Activation in the Postprandial State"

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Vannarith Leang, Chemical Engineering (Robert Powell; Preceptor) "Empirically Finding the Rate of Coalescence in Various Biosystems"

Riccardo LoCascio, Microbiology (David Mills; Preceptor) "Metabolism of Flavonoids by Probiotic Lactic Acid Bacteria and Bifidobacteria Strains and Their In Vivo Effects"

scios

Vu Bao Trinh, Biochemistry and Molecular Biology (Yohei Yokobayashi; Preceptor) "Engineering genetic switches based on RNA interference"

First Year Biotech Fellows:

Dominik Green, Biochemistry and Molecular Biology (R. Holland Cheng - Preceptor)

Connie Jen, Biochemistry and Molecular Biology

Barbara Nellis, Chemical Engineering

DEB - DID YOU KNOW?

◆ The DEB website (www.deb.ucdavis.edu) lists students and their research areas.

◆ Currently there are 23 graduate programs linked to our DEB.

◆ We have 86 DEB students.



DEB Pizza Chalk Talk held approx. once a month. DEB students and their mentors present a short talk on their research. No PowerPoint Allowed!

BIOTECH ADVISORY COMMITTEE

The Biotechnology Advisory Committee (BAC) consists of a group of faculty members. Each member is involved in an area of basic research which utilizes modern biotechnologies. The BAC serves an important role as a program advocate to the Administrator for the UC Biotech Program Director (Judy Kjelstrom).

As of January 2005, **Alan Bennett** will serve as the Office of Research Oversight, he is the Associate Vice Chancellor in the Office of Research - Technology and Industry Alliances (TIA) and a Professor of Plant Sciences-Vegetable Crops in the College of Agriculture and Environmental Sciences.

Current members include: **Gary Anderson**: Chair and Professor of Animal Science; **George Breuning**: Professor Plant Sciences and previous BAC Chair; **Bruce Hammock**: Interim BAC Chair, Distinguished Professor of Entomology in the College of Agriculture and Environmental Sciences and the Cancer Research Center in the School of Medicine; **Kit S. Lam**: Professor of Medicine, Chief, in the Division of Hematology/Oncology Department of Internal Medicine and Professor, Department of Chemistry in the Section of Math and Physical Sciences in the College of Letters and Science; **Paul Luciw**: Professor Medical Pathology in the School of Medicine and Associate Director of Research Programs for Center for Comparative Medicine (CCM); **Karen McDonald**, Associate Dean in the College of Engineering, Professor Chemical Engineering and Materials Science; **Richard Michelmore**: Professor of Genetics, Plant Sciences - Vegetable Crops in the College of Agricultural and Environmental Sciences; Founding Director and the Novozymes Chair in Genomics in the UC Davis Genome Center in the Division of Biological Sciences; **Martina Newell-McGloughlin**: Director of the UC Systemwide Biotechnology Research and Education Program and Adjunct Professor in the College of Agricultural and Environmental Sciences; Co-Director of the NIH Training Program in Biomolecular Technology; **Fern Tablin**: Professor of Anatomy, Physiology and Cellular Biology in the School of Veterinary Medicine and Co-Director of the Center for Biostabilization; Program and **Tilahun Yilma**: Professor of Virology in the School of Medicine; Pathology, Microbiology & Immunology in the School of Veterinary Medicine and Director of the International Laboratory of Molecular Biology for Tropical Disease Agents and **Judy Kjelstrom**, Director of the Biotechnology Program is an ex-officio member.

ADVANCED DEGREE PROGRAM (ADP)

We have recently updated the Advanced Degree Program (ADP) for Corporate Employers brochure. The ADP program is offered through the **Biotechnology Program**, the **College of Biological Sciences** and the **College of Engineering** in conjunction with **Graduate Studies**. It is designed to meet the special needs of corporate students while maintaining the campus' high standards for graduate education.



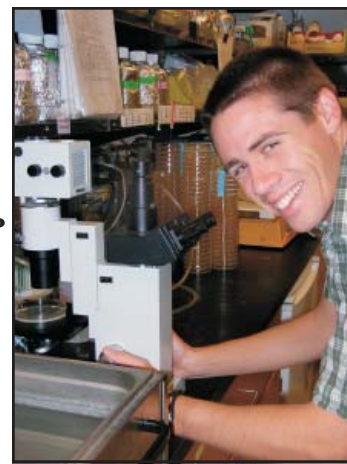
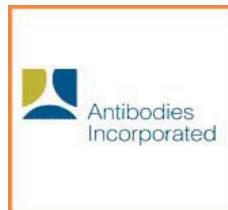
Katherine Tran - Berlex Biosciences (Hammock Lab) is featured in the new ADP brochure



The ADP was established here at UC Davis and enables employees at regional biotechnology, biomedical or bioscience corporations to pursue a doctoral degree in either Biochemistry & Molecular Biology, Genetics, Molecular Cellular & Integrative Physiology or Plant Biology. In the College of Engineering, two majors are offered: Chemical Engineering or Materials Science.

For more information regarding the Advanced Degree Program for Corporate Employees, please see the Biotechnology Program's website at: www.biotech.ucdavis.edu, under the "Education link select "ADP - Advanced Degree Program".

Alex Davies - Antibodies Inc. (Kaplan Lab) is in the new ADP brochure as well



ENTREPRENEURSHIP

The Business Development Certificate offered through the Graduate School of Management is a one year program in Business Development for graduate students in science and engineering. This program provides an introduction and hands-on experience in developing new business ventures designed to commercialize research. Some of the required courses are technology management, innovation and entrepreneurship. Although not required, this is an additional opportunity for students in the DEB who have an interest in translational research. This program is listed on the DEB website under "Education" at : <http://www.biotech.ucdavis.edu/links.cfm#Edu>

Ying Peng, a DEB student in the Genetics Grad Group (Pamela Ronald's lab), completed the certificate program in 2005. She thought this experience enhanced her Ph.D. work.

The **Big Bang Business Plan Competition**, run by the MBA students in the Graduate School of Management, as well as the **Little Bang Poster Competition**, run by UC Davis CONNECT, are additional vehicles for our students to learn about business. Jie-Ren "Jerry" Ku, a DEB student from Chemical Engineering (Pieter Stroevé's lab) was on the second place team - "All Best Materials" for the 2005 Big Bang competition.

We had Li Peng and Daniel Scott in this year's Little Bang Competition. Awards were presented at the Sacramento Regional Technology Association (SARTA) Tech Index Luncheon on February 7.



BIOTECHNOLOGY INTERNSHIPS

A key feature of the DEB is its requirement for a research internship at a cooperating biotechnology company or a cross-college site. Several DEB students have already completed their internships and some are about to start theirs.

In 2005-2006, Genentech offered three internship slots in Research and will soon offer engineering slots in their Product Operations (PRBP), Organization for the DEB students. In 2005, the following students completed their internships (MCB 282):

BIOTECHNOLOGY INTERNSHIPS (Cont.)

Agilent - **Ruixiao Lu**, Statistics (David Rocke) and **Ze He**, Chemistry (Michael Toney)



Alza - **Jerry Ku**, Chemical Engineering & Materials Science (Pieter Stroevé)

Amgen - Daniel Scott, Chemistry (Michael Toney)



Bayer - **Esra Talu**, Chemical Engineering & Materials Science (Marjorie Longo & Robert Powell)

Monsanto - **Tamara Peoples Holst**, Biochemical & Molecular Biology, (Sean Burgess)



Novozymes - **Tian Bao**, Chemical Engineering (Kit Lam & Pieter Stroevé)

Scios - **Tim Cao**, Biomedical Engineering (Abdul Barakat) and **Lauren Lee**, Biochemistry & Molecular Biology (Kit Lam)



BioTech SYSTEM

The UCD Biotechnology Program is a co-founder of the BioTech SYSTEM. It is a new consortium for biotech education, training and mentoring for K-14 teachers and students in the Greater Sacramento Valley. It is an association formed from partnership between organizations within the Solano, Yolo and Sacramento Counties coming together to support science education and training in the greater Northern California region. **Carey Kopay** is the founding Director.

Our partners include:

High Schools: Davis, Vacaville; Marysville; Benicia; Rodriguez High; Casa Robles High; Del Oro, Pioneer; Health Professions High School; St. Hope/Sacramento High

County Office of Education/ROP: Solano COE; Yolo COE

Community Colleges: Solano Community College; American River College; North Valley & Mountain Biotechnology Center

University Partners: UC BREP; Edward Teller Education Center/Lawrence Livermore National Labs; CSU Sacramento, Biological Sciences

UC Davis: Biotechnology Program; College of Biological Sciences; College of Agriculture & Environmental Sciences (Barbara Soots : Biotechnology in the Classroom); Center for Biophotonics Science & Technology, Med Center; Center for Virtual Care; School of Education (Rick Pomeroy: Young Scholars Program)

Community Organizations: SACTO; SARTA

Industry Affiliates: Genentech; Monsanto/Calgene; Novozymes; BioRad and MMI Genomics, Inc.

For more information on this organization, please see the BioTech SYSTEM website at www.biotechsystem.org or contact **Carey Kopay**, at ckopay@ucdavis.edu or info@biotechsystem.org.

TEEN BIOTECH CHALLENGE

One of the key projects for the BioTech SYSTEM will be the 2006 Teen Biotech Challenge co-sponsored North Valley & Mountain Biotech Center, UC Davis Biotechnology Program and UC BREP on May 18th. The Teen Biotech Challenge is designed as a science challenge where high school science students demonstrate their understanding of how biotechnology impacts their lives and the importance of biotechnology in the future. The project came about as a result of a discussion about how broad the term biotechnology has become in our daily lives.



This competition requires that participants complete a research project on a selected topic within the scope of biotechnology. Students will use this research to design a web page that illustrates and discusses major aspects of biotechnology with their chosen area of focus.



Entries will be evaluated based on quality in web design, information content and creativity. Winners will be chosen within each topic area and awarded cash & prizes. For more information, visit the website: <http://www.arc.losrios.edu/~biotech/TBC2005/>

We are looking for additional sponsors from campus units, industry, etc. and hope to get our DEB faculty and students involved in this outreach effort!



FUTURE EVENTS

April 8, 2006 - 15th Annual Biotechnology Training Retreat in Napa

April 22, 2006 - Picnic Day, Biotech Event in 148 Briggs Hall
Student volunteers needed!

May 8, 2006 - 2006-07 Biotech Fellowship Applications Due.



2005 Biotechnology Training Retreat in Napa, poster presentation by Amanda Fischer, a recent DEB graduate.

2006 Summer Short Courses:

Flow Cytometry (July)

Lead Instructors - Dr. Barbara Shacklett & Carol Oxford, School of Medicine (partner with FloCyt)

Facility - Tupper Hall

Advanced PCR Course (July)

Lead Instructor - Dr. Christian Leutenegger, Co-sponsor: The Lucy Whittier Molecular Core Facility

Facility - Genome & Biomedical Sciences Facility and Tupper Hall



2005 PCR Course

Proteomics Course (August)

Lead Instructor - Dr. Brett Phinney

Facility - Proteomic Core Facility

DNA Microarrays Course (September)

Lead Instructor - Dr. Satya Dandekar, Co-Sponsored by DNA Microarray Core Facility and Dr. Katrin Stapleton, Affymetrix, Inc.

Facility - DNA Microarray Core Facility



2005 DNA Microarray Course

Full information will be provided on our website: <http://www.biotech.ucdavis.edu/SummerCourses/courses.cfm> when dates are finalized.

We also need speaker suggestions for MCB/ECH 294 for Fall 2006. Please contact us with any suggestions you might have for interesting seminar speakers!

DEB alumni, please send us your personal updates for the newsletter! Feel free to include honors or positions that you may have received, as well as any special events (new baby, new job, etc.). Please contact the Biotechnology Program at biotechnprogram@ucdavis.edu and we will be happy to include it in the next newsletter!

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