

The Biotech Times

An Annual Magazine from the
UC Davis Biotechnology Program

Marianne Hunter, Editor



In this issue

2014-2015 NIH/Biotech Fellows

DEB Internships

Biotechnology Training Retreat in Napa

Fall 2014 Issue



Biotechnology Times

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A Message from the Director



Welcome to the 2014 edition of the Biotech Times. This past year has gone by quickly due to all of the many projects that the Biotechnology Program is involved with. We even hired another administrative assistant to ease the workload. Please welcome Jacqueline Phillips to our Biotech family, she has been a wonderful addition to our team.

Our stellar Designated Emphasis in Biotechnology (DEB) program continues to grow in the number of students, faculty and graduate programs. The DEB currently has ~ 230 PhD students from 30 different disciplines and has 179 DEB graduates. We continue to be the largest DE on campus offering a unique pre-doctoral graduate training program that serves as a powerful recruitment tool for the campus. We continually place over 30 students per year in internships. Most are in California, but some are on the East coast and international. We have a new partnership with Allergan. They are creating an MOU to commit to taking two students per year. Please see the magazine for more information. Other new partners are Sutro Pharmaceuticals, Marrone Bioinnovations, Bayer Crop Sciences, Bavarian Nordic and Xoma. In the spring of 2014, Genentech hosted another Open House for UC Davis in South San Francisco. Our DEB students always have a great time as do I.

Due to restructuring with the MCB department, our DEB courses will soon have their own course codes – DEB 294, DEB 263 and DEB 282 and the Biotechnology Program will coordinate the staffing for the courses. Marianne Hunter is overseeing this huge effort. We owe her a big thank you for her hard work. I guess the DEB graduate program is no longer a pilot program; it is becoming institutionalized.

As stated last year, we received another competitive renewal of the NIH T32 Graduate Training Program in Biomolecular Technology in 2012 for another 5 years. We even received an extra slot from NIH, so we can fund 10 outstanding scholars each year. Please see the section on the Biotechnology Training Grant in the newsletter for more information on each fellow. We are so proud of our 2014-2015 Fellows. They represent the cross disciplinary nature of our program so well.

The Advanced Degree Program (ADP) for corporate employees is still operating, but the great recession slowed our growth. As the economy improves, we hope to add 1-3 new participants in the upcoming year. Two of our current participants graduated this past year with their PhDs. As more companies move into the region, this program will be a great program for retention of excellent employees who wish to earn a doctoral degree. The magazine has more details on the participants.

Our community outreach activities keep expanding. The BioTech SYSTEM, Teen Biotech Challenge, Picnic Day Biotech Event, advisory roles for High School Biotech Academies and the Power House Science Center, Dinner with a Scientist, presentations and campus tours keep Denneal and I very busy. On February 12, 2014, I was asked to testify on behalf of UC Davis to the Assembly Select Committee on Biotechnology Hearing on Pharmaceutical R&D and Manufacturing in California at the State Capitol in regards to the effects of NIH sequestration on university biomedical research and training. Last fall, I was selected as an Inspirational Mentor for the One UCDAVIS Banner Campaign. Please check out the banner at <http://ucdavis.edu/one/stories/mentors/kjelstrom-sahota.html>.

Since 2012, Denneal and I have served on the Education Action Team for the new PowerHouse Science Center in Sacramento. This summer, I was asked to chair the Education Committee as we get closer to breaking ground for the new science center on the Sacramento River. I continue to serve on the Executive Board of Directors so that UC Davis has a strong presence on this important project. This promises to be a wonderful regional hub for STEM research and education and career explorations. In 2012, the Powerhouse Science Center was selected as one of 10 NSF funded PopNet (Portal to the Public) centers in the U.S. for informal science training. I recommended 10 PhD students to be trained at the inaugural Science Communication Fellows. Since then, another 25 DEB students have been trained as Science Communication Fellows. This is a wonderful program for learning how to effectively communicate science to the public. Our communication fellows demonstrated their teaching tools at the Angels for

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A Message from the Director (Cont.)

Hearts “When I Grow Up” event again this summer and were a big hit once more. As a result of our successful Teen Biotech Challenge competition, Dr. Jan Nolta and Dr. Gerhard Bauer from the [Institute of Regenerative Cures](#) in the School of Medicine and the Biotechnology Program wrote a Creativity grant to the California Institute for Regenerative Medicine (CIRM). We are in the last year of a three year grant to provide 10 TBC winners with a paid summer research experience in stem cell biology. We are hoping to be renewed by CIRM because these high school students love the opportunity to do research and present a scientific poster at the annual conference.

Denneal and I continue to be involved in leadership and mentorship issues, especially

for women in STEM. There is a need for strategic career planning, entrepreneurship and advanced level network development. I continue to join my Leadership California alumnae in meetings with delegations of women leaders and entrepreneurs from all over the world. These women are part of the U.S. Department of State’s “100

“We continually place over 30 students per year in internships.”

Women Initiative: Empowering Women and Girls through International Exchanges”. It is an honor to share our Best Practices in education, equity, technology and business development as well

as leadership. Denneal has been very active with the UC Davis [ADVANCE Program](#) to advance opportunities for women faculty. Last year, two of our DEB students, Jeni Lee and Nicole Chaffee did a fantastic job in organizing the Women in Leadership (WiL) STEM series. In partnership with the Biotechnology Program, the

UC Davis ADVANCE Program, AWIS and other groups, we raised awareness of the issues of equity for women, especially in the STEM fields. This year, two new DEB women, Anna Marie Tuazon and Ailsa Dalglish are leading the effort to move from awareness to action.

Enjoy the newsletter.

Cheers,
Dr. Judy Kjelstrom



Genentech’s founders, Herb and Bob immortalized in stone can be found in the South San Francisco campus

NIH-NIGMS TRAINING PROGRAM IN BIOMOLECULAR TECHNOLOGY (T32GM008799) BIOTECHNOLOGY TRAINEE FELLOWSHIP RECIPIENTS

Congratulations to the outstanding students who were selected as the 2014-2015 NIH and Biotech Fellows. There were 30 fellowship applicants this year and all were exceptional candidates!

NIH





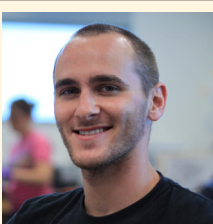



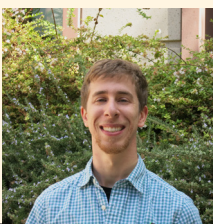

Johnathon Anderson, Integrative Genetics and Genomics (Jan Nolta, Preceptor). Mesenchymal Stem Cell Derived Exosomes as a Novel Therapeutic Platform for Peripheral Arterial Disease
Casey Boosalis, Molecular, Cellular & Integrative Physiology (Pam Ronald, Preceptor). Application of High(er) Throughput Technology for Drug Discovery
Allison Hoch, Biomedical Engineering (J. Kent Leach, Preceptor). Novel 3D Bioreactor Expansion of Bone Marrow Aspirate Preserves Stemness and Multipotency of Mesenchymal Stem Cells
Nicole Nozzi, Chemistry (Shota Atsumi, Preceptor). Microbial Production of Alkaloid Natural Products
Christian Siltanen, Biomedical Engineering (Alex Revzin, Preceptor). Heparin Hydrogel Microdops for Cultivation of Embryonic Stem Cells
Anna Marie Tuazon, Biochemistry, Molecular, Cellular & Developmental Biology (Luis Carvajal-Carmona, Preceptor). Identifying Novel Breast Cancer Susceptibility Genes Using Population Isolates

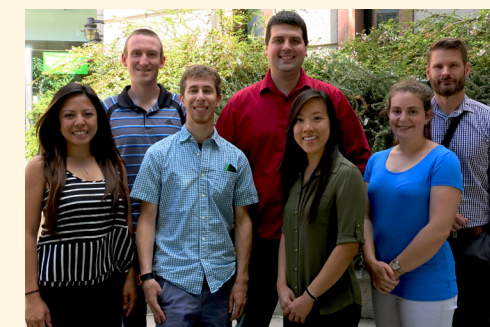
Biotech

Keith Dunaway, Integrative Genetics and Genomics (Janine LaSalle, Preceptor). Epigenomic Effects of Persistent Organic Pollutants
Doug Gettel, Chemical Engineering (Atul Parikh, Preceptor). Lipopolymerosomes as Tools for Compartmentalization/Delivery
Rosanna Kwok, Entomology (Joanna Chiu, Preceptor). The Brahma Chromatin Remodeling Complex and its Role in Regulating Circadian Transcription
Sam Westreich, Integrative Genetics and Genomics (Ian Kort & David Mills, Preceptors). Novel Methods in Metatranscriptomics: Determination of Milk Oligosaccharide Effects on Gut Health

Thanks to Monsanto for their support!

2014-15 NIH & Biotech Fellows

	
Johnathon Anderson	Casey Boosalis
	
Allison Hoch	Nicole Nozzi
	
Christian Siltanen	Anna Maria Tuazon
	
Doug Gettel	Rosanna Kwok
	
Sam Westreich	Keith Dunaway





The Designated Emphasis in Biotechnology (DEB) graduate program is an inter-graduate group program that allows Ph.D. students to receive and be credited for training in the area of biotechnology. There are currently 230 students from 30 different graduate groups. The UC Davis Biotechnology Program is the administrative home for this program.

The DEB provides a nurturing, interactive environment to promote integration of multiple disciplinary approaches to conduct research and to promote learning in biotechnology.

The DEB helps:

- To provide well-coordinated, cross-disciplinary training of graduate students in critical areas of biomolecular technology research.
- To promote interdisciplinary research environments that integrate basic biological science, engineering and computational disciplines.
- To allow cross-disciplinary training and trainee experience in a biotechnology company or cross college laboratory.



There are currently 30 graduate programs affiliated with the DEB

DEB

This program supplements a student's Ph.D. curriculum and those completing the DEB Program will obtain an official designation on their diploma and transcript indicating a qualification in biotechnology.

Course requirements are covered on the DEB [website](#).



BIOTECHNOLOGY INTERNSHIPS (MCB 282)

One of the requirements of the Designated Emphasis in Biotechnology graduate program is interning for at least three months at a cooperating biotechnology company, government agency or a cross-college site. Many DEB students have completed their internships over the past year and several have started this fall. We are sending our students to diverse locations, even international sites.

We wish to thank all of our industry partners who offered internships for our DEB students. See where our students interned during the 2013 -2014 academic year:

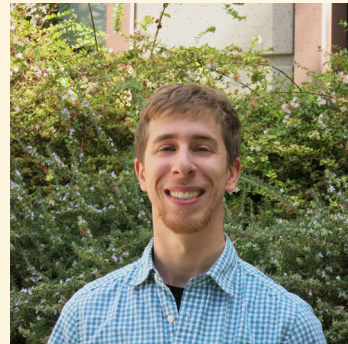
Agilent Technologies (Santa Clara CA)	Arnold Chen
Amplimmune (Rockville, MD)	Alan Lombard
Amyris (Emeryville, CA)	Lisa Anderson
Asahi-Kasei Corp. (Japan)	John Oliver
Bayer CropScience (Sacramento)	Ben Golumb
BioMarin Pharmaceuticals (Novato)	Dawn Fedor
Celgene (San Francisco)	Kateryna Feoktistova, Emily Mills Ko
Emory University (Atlanta, GA)	Kevin Martin
Genentech (San Francisco)	Leif Anderson, Siobhan Halloran, Allison Hoch, Alice Ngo, Shailise Ross, Christian Siltanen
Icon Genetics GmbH (Germany)	Liz Anthony
International Rice Research Inst. (Phillipines)	Daniel Caddell
Monsanto, Calgene Campus	Hossein Gourran, Natasha Worden
Novozymes	Jordan McEwen
OPX Biotechnologies (Boulder, CO)	Gabriel Rodriguez
Seminis Seed (Woodland)	Timothy Butterfield
SI-Bone, Inc. (San Francisco)	Regina MacBarb
Sutro Biopharma (San Francisco)	Abigail Yu
Vital Connect (Campbell, CA)	Katherine Walker



DEB Graduate Students, Sam Westreich and Don Gibson's new Startup Company!

Sam Westreich, a Biotech Fellow in the Designated Emphasis in Biotechnology (DEB) Program, recently disclosed during a Fellows' meeting that he and another DEB student, **Don Gibson**, had a startup company, named **TrueFish, LLC**.

Sam is an Integrative Genetics and Genomics graduate student in Professor Janine LaSalle's lab and Don Gibson is also in the Genetics and Genomics graduate group but is in Professor Siobhan Brady's lab. Sam and Don started TrueFish last fall. According to Sam, "It's a whole new side of research,



totally different from what I do at the lab bench. It's definitely an eye-opening experience; I've quickly learned a lot

Sam Westreich

about all the intricacies that go into launching a company and product."

TrueFish is a startup aiming to provide a new level of transparency in the fish industry. A recent report by the Oceana Institute looking into fraud in the fish industry revealed that more than half of all fish sold in the U.S. is mislabeled, with many cheaper options fraudulently passed off as their higher-end counterparts! Unfortunately, there is currently no viable testing solution on the market.

TrueFish aims to fill that niche, combining new advances in rapid isothermal DNA amplification with the all-in-one packaging of microfluidic chips to create a cheap, affordable, disposable test that can be run anywhere - even in a restaurant or fish market! With concerns of fraud on the rise, TrueFish will help industry purchasers and regulators make sure that they're truly getting what they pay for.

The Biotechnology Program is very proud of Sam and Don and wish them all the best with their new start-up!



Don Gibson

StartUp Weekend Sacramento Women's Edition



This event is the first **women's hackathon** in the Sacramento region and is designed to engage more female entrepreneurs so that they will lend their voices to innovations. During the busy weekend, the participants will be able to receive beneficial coaching from local startups and tech experts as well as have an opportunity to virtually compete in Global Startup Weekend.

The Sacramento StartUp Weekend Women's Edition starts at 6:00pm, Friday, November 14th and runs until November 16. The event is held at The Urban Hive, 1931 H Street in Sacramento. For full

details and to buy tickets, visit: <http://www.up.co/communities/usa/sacramento/startup-weekend/4198>

The Biotechnology Program is a proud sponsor of this event. The Director will be hosting two pre-selected DEB students for the entire StartUp Weekend.

23RD ANNUAL BIOTECHNOLOGY TRAINING RETREAT IN NAPA

On March 22nd, the Biotechnology Program held their 23rd annual Training Retreat for fellowship recipients and their mentors, industrial affiliates and our DEB students and faculty members. The retreat is held each Winter or Spring Quarter at the Christian Brothers Retreat and Conference Center in the Napa Valley. Mark your calendars for the 2015 Retreat which will be held on March 14th!

During the retreat, the fellows and invited industry affiliates give oral presentations on their research. In addition to these oral presentations, poster sessions (open to all attendees) are held to stimulate one-to-one interactions, provide networking opportunities, and possible collaborations.

Every retreat, a bioethics question is presented followed by answers and discussions. **Dr. Martina**

Newell-McGloughlin, the co-Director of the NIH Training Grant in Biomolecular Technology (our grant), always chooses wonderful bioethics topics. This year's topic was on, "The Ethics of Playing Cross Disciplinary Policeman" in which a very lively discussion followed with excellent answers!

Thank you to ***Dr. Amanda Fischer** (Novozymes), **Dr. Yao Luo** (Monsanto-Calgene Campus), **Dr. Christopher Murriel** (OncoMed Pharmaceuticals); **Dr. Erik Zimmerman** (Sutro Biopharma, Inc), and **Dr. Maggie Ostrowski** (Agilent Technologies) for joining us to share information about the latest from their companies and to meet our fellows!

*Amanda Fischer (nee Ellsmore) was a DEB graduate student as well as a Biotech Fellow! It's great to have former students keep in touch!



Dr. Martina Newell-McGloughlin



2013-14 NIH/Biotech Fellows L-R: Keith Dunaway, Chris Chapman, Allison Hoch, Jennifer Lee, Amelia Manlove, Kristen Beck, Siobhan Halloran, Wade Zeno, Abigail Yu, and Nicholas Bokulich

CONGRATULATIONS TO RECENT DEB GRADUATES!

Throughout the 2013-2014 academic year, there were many students in the DEB Program who received their PhDs along with a Designated Emphasis in Biotechnology. These exemplary students took the full DEB coursework, including the 3 – 6 months internship (MCB 282). The Biotechnology Program is very proud of the hard work they put in to achieve their goals and would like to recognize them in this magazine.

Remember – the DEB has a LinkedIn Graduate Group

Remember - Please take a moment to register on the U.C. Davis Biotechnology Career Network so that you can have access to these great resources!

Barbara Bailus (PI: David Segal) – PhD in Genetics, now a post-doctoral researcher at Buck Institute for Research on Aging in Novato, CA

Jesse Bakke (PI: Fawaz Haj) – PhD in Nutrition, now a post-doc at Saint Jude Children's Research Hospital

Barbara Blanco-Ulate (PI: John Labavitch/ Ann Powell) – PhD in Plant Biology, now a Postdoc at UC Davis Viticulture & Enology department

Nicholas Bokulich (PI: David Mills) – PhD in Food Science, now Post-doc in the Martin Blaser lab at NY University's Langone Medical Center

Candace Burke (PI: Lisa Miller) - PhD in Immunology, presently a Scientific Analyst at MoFo

Elenor Castillo (PI: Florence Negre- Zakharov) PhD in Plant Biology, now an Associate Scientist at Sutro BioPharma, SF, CA

Shannon Ceballos (PI: Wolf Heyer) – PhD in Biochemistry, Molecular, Cellular & Developmental Biology, now a post-doc at UC Davis in Prof. Jean VanderGhynst lab & adjunct professor at American River College

Stephanie Crockett (PI: Wenbin Deng) – PhD in Comparative Medicine, now National Science Foundation EAPSI Fellow-Singapore, Nanyang Technological University

Neha Dixit (PI: Scott Simon) – PhD in Immunology, now a Scientist at Nodality Inc. in San Francisco

Matthew Doherty (PI: Bart Weimer) – PhD in Microbiology, now an Adjunct Professor at National University

Kenneth Eum (PI: Jon Sack) - PhD in Molecular & Integrative Physiology posthumously (see article)

Sean Gilmore (PI: Atul Parikh) – PhD in Applied Science in Engineering, now postdoctoral researcher at the UC Davis Med Center and Lawrence Livermore National Lab

Marissa Hirst (PI: Scott Dawson) – PhD in Microbiology, now a Postdoc at E & J Gallo in Modesto, CA

Geetika Joshi (PI: Kate Scow) – PhD in Soils & Biogeochemistry, now Facilitator for Community Engaged Superfund Research at Center for Regional Change, Sacramento



Shannon Ceballos and Mary Moore

CONGRATULATIONS TO RECENT DEB GRADUATES (Cont.)

Nathaniel Kingsbury (PI Karen McDonald) – PhD in Chemical Engineering, now post-doctoral researcher at University of Massachusetts, Amherst

Karen LeGrand (PI: Glenn Young) – PhD in Microbiology, now with US Borlaug Global Food Security as a Graduate Research Fellow at the US Agency for International Development (USAID)

Kristina Mahan (PI: Rebecca Parales) – PhD in Biochemistry, Molecular, Cellular & Developmental Biology, now Post Doctoral Researcher Microbial Physiology Group - Oak Ridge National Lab

Samuel McMahan (PI: Elva Diaz) – PhD in Biochemistry, Molecular, Cellular & Developmental Biology, now a JD Candidate 2016 at University of NH School of Law

Rena Mizrahi (PI: Peter Beal) – PhD in Chemistry, now Senior Scientist at GigaGen Inc., Mission Bay, CA

Mary Moore (PI: Jay Solnick) – PhD in Biochemistry, Molecular, Cellular & Developmental Biology, now a Postdoc at UC Davis Food Science & Technology Dept.

David Olivos (PI: Kit Lam) – PhD in Comparative Pathology now a post-doc in the Dept. of Microbiology & Immunology at Indiana University School of Med at Purdue.

Charity Onore Carniglia (PI: Paul Ashwood) – PhD in Immunology, now Scientist at BioMarin Pharmaceuticals

Richard Osibanjo (PI: Donald Lam) – PhD in Chemistry, now PTD at Intel Corporation, Portland, OR

Mary Saunders (PI: Kit Lam) – PhD in Comparative Pathology

Amy Schroeder (PI: Marty Privalsky) – PhD in Biochemistry, Molecular, Cellular & Developmental Biology, now at Genentech; Regulatory Affairs Intern supporting HER2 group

Zane Starkewolfe (PI: Ting Guo) – PhD in Chemistry, now Associate Director in the UC Davis Venture Catalyst department

Vu Trinh (PI: Robert Fairclough) – PhD in Biochemistry, Molecular, Cellular & Developmental Biology, now post-doctoral researcher in the Fairclough lab at UC Davis

Michelle Tu (PI: Laura Borodinsky) – PhD in Biochemistry, Molecular, Cellular & Developmental Biology, now post-doctoral researcher at Shriners Hospital for Children

Kelly Williams (PI: Ruihong Zhang) – PhD in Biological Systems Engineering, now a Senior Research Associate at Americ Process Inc., in Atlanta, GA.

David Woessner (PI: Scott Dawson) – PhD in Microbiology, now a Scientist at Novozymes in Davis

Diana Wong (PI: Annaliese Franz) – PhD in Chemistry, now a Postdoc – GC, GC/MS Applications Chemist at Agilent Technologies

Cui Jing (Tracy) Zeng (PI: Bo Liu) – PhD in Microbiology, now working for the Department of Justice (DOJ) in Richmond

Zane Starkewolfe and
Vu Bao Trinh



ADP

THE ADVANCED DEGREE PROGRAM (ADP) FOR CORPORATE EMPLOYEES

The Advanced Degree Program (ADP) for Corporate Employees is a program that allows the working professional to complete a doctorate in a number of graduate programs within the Biological Sciences and Engineering programs. The ADP is coordinated by the Biotechnology Program in conjunction with Graduate Studies, the College of Biological Sciences, and the College of Engineering.

The ADP is a very successful academic-industry partnership and one of the highlights of the year is our annual luncheon in which the faculty and administrators interact with ADP students and the corporate mentors. It is also a time to introduce the program to prospective company employees.

Congratulations go to:

Brooks Hayes (BMCDB Graduate Group) from Expression Systems who received his PhD in 2014. Brook's industry mentor was Dr. Thera Mulvania and his UCD mentor was Professor Bruce Hammock.

Shaunese Lambel (Genetics Graduate Group) from HM Clause who received her PhD in 2014. Her industry mentor was Dr. Eileen Kabelka and her UC Davis mentor was Professor Roger Chetelat.



Brooks Hayes
Expression Systems



Shaunese Lambel
HM Clause

- 1 The human brain takes in 11 million bits of information every second but is aware of only 40.
 - 2 If you drilled a tunnel straight through the Earth and jumped in, it would take you exactly 42 minutes and 12 seconds to get to the other side.
 - 3 A medium-sized cumulus cloud weighs about the same as 80 elephants.
 - 4 A single bolt of lightning contains enough energy to cook 100,000 pieces of toast.
-Excerpts from, "1,227 Quite Interesting Facts to Blow Your Socks Off"



BIOTECHNOLOGY EVENT AT PICNIC DAY



This hallmark event has been designed to showcase and celebrate the richness of campus life, the diverse achievements of UCD students, staff and faculty to provide a day of education, information and entertainment to all who attend. The Biotechnology Program Event allows the general public to have a hands-on experience in various biotech-related experiments, including cheese making, DNA extraction, and the new developments for stonewash jeans dye.

To see more photos, click on the link for this year's [Picnic Day Biotech Event](#).

We wish to express our appreciation to all our industry partners for their donations, as well as the DEB graduate students for running the experiments. Industries who donated to the event included: **Genentech, Monsanto-Calgene Campus, and Novozymes.**

Our very own DEB students ran all the experiments and were wonderful UC Davis and DEB ambassadors. Thank you: Jesse Bakke, Douglas Banda, Kristen Beck, Daniel Caddell, Aiza Cathe Go, Adam Contreras, Keith Dunaway, Samantha Feng, John Flynn, Iniyan Ganesan, Doug Gettel, Vicki Hwang, Malgorzata Liro, Nicholas Mahoney, Amelia Manlove, Debika Mitra, Rinti Mukherjee, Shailise Ross, Scott Strobel, Nicholas Thomas, Denise Tran, Ruensern Tan, Mario Parks, Juan Reyes, Hyun Tae Hwang, Tang Tang, Gordon Walker, Toni West, Le Yee, Abigail Yu, Benjamin Yuen!



NSF CREATE-IGERT NEWS

by Denneal Jamison McClung, Associate Director



Launched in 2007, the CREATE-IGERT training program (NSF DGE 0653984) in plant biotechnology supported twenty-seven doctoral trainees at UC Davis and Tuskegee University. Trainees worked at the intersection of molecular biology, engineering and plant sciences, with short technical training courses in plant transformation and protein purification led by Dr. Larry Joh (Program Engineer), a bioethics seminar developed and taught by Dr. Martina Newell-McGloughlin (Co-PI), as well as a foundational lecture course in transgenic plant technologies taught by Prof. Karen McDonald (PI) and Prof. Abhaya Dandekar (Co-PI). After five years of regular funding and two no-cost extensions, we held our final symposium on May 30, 2014, featuring presentations by continuing doctoral trainees, returning alumni and two international keynote speakers (see below).



(L-R) Nat Rattanaporn (TA), Prof. Jean VanderGheynst, Chris Simmons, Dawn Chiniquy, Rachel Kerwin, Ben Lindenmuth, LaKisha Odom, Tim Butterfield, Elenor Castillo, Lucas Arzola, Dr. Larry Joh and Prof. Karen McDonald (Protein Purification, 2009)

Continuing CREATE-IGERT Trainees:

- Geoffrey Benn, ABD (Plant Biology with DEB)
- Marta Bjornson, ABD (Plant Biology with DEB)
- Gregory Chris Bernard, ABD (Integrative Biosciences, Tuskegee University)
- Timothy Butterfield, ABD (Plant Biology with DEB)
- Elenor Castillo, ABD (Plant Biology with DEB)
- Dominique Gales, MS, ABD (Integrative Biosciences, Tuskegee University)
- Hyrum Gillespie, ABD (Plant Biology with DEB)
- Mitch Harkenrider, ABD (Plant Biology with DEB)
- Rachel Kerwin, ABD (Plant Biology with DEB)
- Mark Lemos, ABD (Plant Biology with DEB)
- Sonni-Ali Miller, ABD (Integrative Biosciences, Tuskegee University)
- Steven Samuels, MS, ABD (Integrative Biosciences, Tuskegee University)
- Erica Vonasek, ABD (Biological Systems Engineering with DEB)
- Natasha Worden, ABD (Plant Biology with DEB)
- Steve Zicari, ABD (Biological Systems Engineering with DEB)

CREATE-IGERT Graduates:

- Lucas Arzola, PhD (Chemical Engineering with DEB, 2012)
- Dawn Chiniquy, PhD (Plant Pathology with DEB, 2012)
- J. Mitch Elmore, PhD (Plant Pathology with DEB, 2014)
- Tiffany Glavan, PhD (Microbiology with DEB, 2012)
- Dalya Lateef, PhD (Integrative Biosciences, Tuskegee University, 2011)
- Ben Lindenmuth, PhD (Chemical Engineering with DEB, 2011)
- Patrick O'Dell, MS (Biological Systems Engineering, 2012)
- LaKisha Odom, PhD (Integrative Biosciences, Tuskegee University, 2011)

NSF CREATE-IGERT NEWS (Cont.)

by Denneal Jamison McClung, Associate Director

- Raymon Shange, PhD (Integrative Biosciences, Tuskegee University, 2011)
- Chris Simmons, PhD (Biological Systems Engineering with DEB, 2011)
- Mark Wolf, MS (Microbiology, 2011)
- Tracy Zeng, PhD (Plant Biology with DEB, 2013)

Over the course of our training program, Prof. Karen McDonald (PI) brought together a community of educators and industry partners focused on transgenic plant technologies. PI's/Co-PI's included Prof. Deloris Alexander (TU), Prof. Abhaya Dandekar (UCD), Prof. Walter Hill (TU), Prof. Jesse Jaynes (TU), Dr. Martina Newell-McGloughlin (UCD), Prof. C. S. Prakash (TU), Prof. Pamela Ronald (UCD), and Prof. Jean VanderGheynst (UCD). Key senior personnel serving on the executive committee included Dr. Judy Kjelstrom (UCD) and Dr. David Tricoli (UCD).



(L-R) Dr. Raymon Shange (Degree Awarded 2011), Dr. Lakisha Odom (Degree Awarded 2011), Prof. Karen McDonald, Prof. Tilahun Yilma, Dominique Gales (MS Degree Awarded 2012), and Prof. Judy Kjelstrom (2011 Distinguished Lecture by Dr. Roger Beachy, then Director USDA NIFA)

We owe our sincere gratitude to the members of the CREATE-IGERT External Advisory Board for guidance and encouragement in designing a training program aligned with the professional paradigms (IP, regulatory affairs and bioethics) applicable to emerging plant-based technologies. Members of the EAB included Dr. Linda Castle (Pioneer-HiBred [past]), Hector Cuevas (UC Davis - Office of Graduate Studies [past]), Prof. Bernd Hamann (UC Davis - Dept of Computer Science, COE), Dr. Ning Huang (Ventria Bioscience), Prof. Susan Roberts (UMass - Dept. Chemical Engineering & Institute of Cellular Engineering), Dr. Jos von Boxtel (Arcadia Biosciences, Inc.), Dr. Debbie Yaver (Novozymes, Inc.), and Dr. Lloyd Yu (Planet Biotechnology).

In addition to service on the external advisory board, industry partners played an active role in hosting student interns (trainees and lab affiliates) and visiting UC Davis for research presentations. CREATE-IGERT trainees had the opportunity to attend many plant biotechnology-related industry seminars and networking lunches with industry professionals, including Dr. Alex Day (Kentucky Bioprocessing, LLC), Dr. Roger Salameh (Arcadia Biosciences, Inc.), Dr. Gregg Whited (Genencor), Dr. Lynne Reuber (Mendel Biotechnology, Inc.), Dr. David Lee (Edenspace Systems Corp.), Dr. Magalie Guilhabert (AgraQuest, Inc.), Dr. Paul Roessler (Synthetic Genomics), Dr. Barry Sherman (BiPar Sciences, Inc.), Dr. Paul Bryan (Chevron), Dr. Linda Castle (Pioneer Hi-Bred), Dr. Roger Muren (Nunhems), Dr. Barry Holtz (G-Con, LLC), Dr. Eric Schadt (Pacific Biosciences), Dr. Pam Marrone (Founder/CEO Marrone BioInnovatios, Inc.), Dr. Damian Curtis and Dr. Adrian Duehl (Bayer CropScience), and Dr. Howard Yana Shapiro (Mars, Inc.). Special seminars by academic leaders and research institute directors in the fields of plant-made products, plant biotechnology and renewable energy included presentations by Dr. Charles Arntzen (BioDesign Institute, Arizona State University), Dr. Arthur Grossman (The Carnegie Institute, Stanford), Dr. Blake Simmons (Sandia National Lab/JBEL) and Prof. Susan Roberts (UMass). Of particular interest now is the work of Dr. Michael Pauly (CSO of Mapp Biopharmaceuticals). Mapp Biopharmaceuticals was recently in the news as a developer of one of the experimental Ebola therapeutics, ZMapp. Dr. Pauly visited campus in 2011 and will return in spring 2015 to give an update on current plant-made therapeutics.

NSF CREATE-IGERT NEWS (Cont.) by Denneal Jamison McClung, Associate Director

Through collaborations developed by Co-PI Dr. Martina Newell-McGloughlin, we worked with international universities and research institutes in Ireland to offer trainees 4-6 month internships, as well as conducting a summer short course in global regulatory approaches to genetically engineered plants. Collaborators providing research internships and site visits included Teagasc Oak Park Research Centre, under the direction of Dr. Ewen Mullins, the University College Dublin, under the direction of Dr. James Burke, the National University of Ireland, Maynooth (NUIM), under the direction of Dr. Philip J. Dix, and the National University of Ireland, Galway (NUIG), under the direction of Dr. Charles Spillane. The "Plant Biosciences Policies & Regulatory Affairs" short course was developed in collaboration with Dr. Shane Morris (Natural Resources Canada) and Dr. Charles Spillane (NUIG) and included research site visits at University College Cork (Prof. Fergus Shanahan), Teagasc Oak Park Research Centre (Dr. Ewen Mullins), Trinity College (Prof. David McConnell) and University College Dublin (Prof. James Burke).



(L-R) Elenor Castillo, Tim Butterfield, Prof. Karen McDonald, Hyrum Gillespie, Mitch Elmore, Steven Samuels, Dr. Denneal Jamison-McClung, Dr. Martina Newell-McGloughlin, Natasha Worden, Mitch Harkenrider and Marta Bjornson (Prof. David McConnell Genetics Tour at Trinity College, Dublin, Ireland, June 24, 2013)

In addition to site visits in Ireland, trainees were exposed to global perspectives in agricultural biotechnology scholarly interactions with international experts at the annual CREATE Symposium and Distinguished Lecture. Domestic and international keynote speakers over the course of the training program included:

- 2008 – Dr. Chris Somerville, "Cellulosic Biofuels", (Energy Biosciences Institute) – USA
 - 2009 – Dr. Maurice Moloney, "From Construct to Clinic: Plant-made Pharmaceuticals and Drug Development Using Green Technology", (Founder & CSO SemBioSys [past]) – Canada
 - 2011 – Dr. Roger Beachy, "Opportunities & Challenges in Agriculture and Biotechnology: Who Will Predict the Future?", (Director, USDA-NIFA [past]) – USA
 - 2012 – Dr. Vidadi Yusibov, "High Performance Production System for Vaccine and Therapeutics", (Executive Director, Fraunhofer USA Center for Molecular Biotechnology)
 - 2013 – Dr. Rachel Chikwamba, "Plant-Made Products for Sustainable Solutions in Nutrition & Health – Opportunities & Challenges" (Plant Biotechnology Group, Council for Scientific and Industrial Research (CSIR)) – South Africa
 - 2014 – Dr. Yuri Gleba, "Plant Biotechnology: the Future is in Transient Expression Processes", (CEO Icon Genetics & Nomad Bioscience) – Germany
 - 2014 – Dr. Shane Morris, "EU GM Crop Regulations and Environmental Risk: A Case of the Emperor's New Clothes?", (Major Projects Management Office, Natural Resources Canada) – Canada
- For more details about the CREATE-IGERT training program mission, affiliated faculty, trainees, institutional partners and award information (NSF DGE 0653984) please see <http://create-igert.ucdavis.edu/>.

BIOTECH SYSTEM NEWS by Denneal Jamison-McClung, PhD



The BioTech SYSTEM is entering its 9th year as a regional consortium focused on enhancing K-14 STEM education. Thanks to the support of the biotech community and DEB volunteers, we continue to provide teachers, students and community members with science-based information on biotechnology research and knowledge of related career paths.

Major BioTech SYSTEM activities in 2013-2014 have included Biotech Tour Days, E-mentoring, Career Fairs, the annual Teen Biotech Challenge (TBC) science web design competition and the Personal Genomics Workshop for Teachers.

Biotech Tour Days

During the 2013-2014 academic, ~300 Northern California high school students visited UC Davis to learn about the latest research in life sciences and engineering, and for a look at campus life. Many thanks to the DEB volunteers who gave brief research talks and led campus tours for the school groups: Leif Anderson, Kristen Beck, Andrew Burch, Ailsa Dalgliesh, Destiny Davis, Suchi Desai, Allison Hoch, Nicole De Jesus, Anna Erickson, Jon Flynn, Jenna Gallegos, Hossein Gouran, Jeni Lee, Jordan McEwen, Jessica Moore, Megan Murphy, Maria Peralta, Christian Siltanen, Allison Stevens, John Uhrig, Gordon Walker, Katherine Walker, Donnelly West, Garrick Yuen. Participating high schools included: Pioneer HS (Woodland), Hiram Johnson HS (Sacramento), Sheldon HS (Elk Grove), American Canyon HS (Napa), Antelope HS (Roseville), James Enochs HS (Modesto) and Piner HS (Santa Rosa).

E-Mentoring & Career Fairs

DEB students share their personal academic journeys, career advice and knowledge of STEM opportunities with hundreds of high school and middle school students in the region every year through e-mentoring and career fair participation. Last year, e-mentoring efforts were undertaken for the Sheldon HS Biotech Academy and the Vallejo HS Biotech Academy. We supported regional career fairs, including Douglass MS (Woodland), Lee MS (Woodland) and the regional Expanding Your Horizons (EYH)* event for middle school girls, held at Sacramento State University. Thanks to DEB volunteers that dedicated time to STEM outreach via e-mentoring and career fairs: Lisa Anderson*, Brian Avanzino, Kristen Beck, Daniel Caddell, Aiza Cathe Go*, Nicole Chaffee*, Chris Chapman, Adam Contreras, Mary Corrigan*, Ailsa Dalgliesh, Destiny Davis, Keith Dunaway, Kateryna Feoktistova, Ben Golomb, Siobhan Halloran, James Kurniawan, Timothy Kwa, Jeni Lee*, Malgorzata Liro, Alan Lombard, Amelia Manlove*, Lauren Matelski, Lucas McKinnon, Amory Meltzer, Debika Mitra, Emily Mills, Megan Murphy, Juan Reyes, Amy Schroeder, Jennie Sotelo, Rinti Sucheta, Ruensern Tan, John Uhrig, Erica Vonasek, Katherine Walker, Kay Watt, Donnelly West*, Toni West, John Williamson, and Abigail Yu.

Teen Biotech Challenge

The Teen Biotech Challenge is a web design competition for high school students, with annual participation of ~350-400 high school students across ~10-20 California high schools. Thanks to the on-going support of Community Sponsors (Bayer CropScience, Monsanto, Novozymes, North Valley Biotech Center at American River College, UC Davis School of Veterinary Medicine) and Event Partners (Genentech, SARTA, UC Davis Biotechnology Program), we



2014 CIRM Research Scholar Awardees

BIOTECH SYSTEM NEWS (Cont.) by Denneal Jamison-McClung, PhD

were able to host the TBC Awards Banquet & Symposium, and provide over \$10,000 in cash prizes and awards to participants in 2014. In addition to website awards, contestants were encouraged to apply for a Research Scholar Award. Ten Research Scholar awards were made to TBC 2014 participants and these students dedicated their summers to a stem cell biology research program funded by the California Institute of Regenerative Medicine Creativity Award (2012-2014) and offered through the UC DMC Institute for Regenerative Cures (PI—Gerhard Bauer).

In 2014, over 353 students from 12 California high schools participated in TBC. Student contestants were asked to research a topic and develop an education webpage in one of seven biotech focus areas: Agricultural Biotechnology; Computational & Systems Biology; Drug Discovery & Biomanufacturing; Environmental Biotechnology; Nanobiotechnology; Personal Genomics & Human Health; and Regenerative Medicine. DEB volunteers play a critical role in making TBC an annual success. The work of many volunteers begins with website judging in April and concludes with event hosting in May. Thank you: Johnathon Anderson, Lisa Anderson, Douglas Banda, Marta Bjornson, Kristen Beck, Andrew Burch, Timothy Butterfield, Daniel Caddell, Patricia Castillo, Nicole Chaffee, Adam Contreras, Destiny Davis, Keith Dunaway, Kateryna Feoktistova, Doug Gettel, Shiobhan Halloran, Mitch Harkenrider, Allison Hoch, Hyun Hwang, Vicki Hwang, Julia Jennings, Stefan Kalomoiris, Angelica Kowalchuk, Özge Kurtuluş, Jeni Lee, Ingrid Leth, Wai-Ying Li, Malgorzata Liro, Nick Mahoney, Amelia Manlove, Alice Martinic, Lauren Matelski, Amory Meltzer, Lucas McKinnon, Debika Mitra, Meghan Murphy, Bernadette Nera, Anh Nguyen, Chuong Nguyen, Cody Nunez, Trisha Pfluger, Sonia Reveco, Shailise Ross, Esther Shin, Allison Stevens, Scott Strobel, Tang Tang, Kim Truong, Rachel Anna Valenzuela, Katherine Walker, Donnelly West, Toni West, Sam Westreich, Natasha Worden, Abby Yu, Wade Zeno, Ray Zhang

At the TBC2014 Awards Banquet and Symposium, a panel of DEB student entrepreneurs and recent graduates inspired the audience with their leadership skills and business savvy. Thanks to Dr. Lucas Arzola (Inserogen), Dr. Maelene Wong and Jeni Lee (ViVita) and Kristen Beck (GirlsWhoCode) for sharing stories of their academic journeys and business challenges – we are hoping to inspire the next generation of biotech entrepreneurs!

Personal Genomics Workshop for Teachers

Personal genomics is an area of life science research that generates a lot of human interest among teachers and students alike. In 2014, we continued to offer the Personal Genomics Workshop for Teachers thanks to the sponsorship of a local biotech company, Expressions Systems. Over the course of 3 days in July, regional secondary and post-secondary life science instructors were introduced to free online genomics tools, open access primary literature, the use of social media in the classroom and related resources (ex: NCBI, Clustal Omega, PLOS, Twitter, 23andme, etc...). Together we

developed and beta-tested new activities and story-centered curricula tailored to instructor classrooms. Special thanks to DEB student, Keith Dunaway, for his guest lecture and lab tour on epigenetics! This “train-the-trainers” course is offered free of charge to regional life science teachers and will be held again on July 29th-31st in summer 2015.



Dr. Denneal Jamison-McClung instructing the 2014 Personal Genomics Workshop

DEB PIZZA CHALK TALK 2014-15 SCHEDULE

All DEB graduate students are encouraged to present one chalk talk. It is a venue where students interact with other trainees and present their own research work and hear about the research of other DEB students. See below for the list of 2014-2015 Chalk Talks scheduled.

FALL 2014

- Oct. 22 Shuchi Desai (Microbiology), PI: Shota Atsumi
- Nov. 5 Lauren Matelski (Immunology), PI: Judy Van de Water
- Nov. 19 Rosanna Kwok (Entomology), PI: Joanna Chiu
- Dec. 3 Abby Yu (Integrative Genetics & Genomics), PI: Ian Korf & David Segal
- Dec. 10 Kristen Beck (Biochemistry, Molecular, Cellular & Developmental Biology), PI: Ian Korf

WINTER 2015

- Jan. 14 Özge Kurtuluş (Chemical Engineering), PI: Atul Parikh/Erkin Şeker
- Jan. 21 Nicholas Mahoney (Biochemistry, Molecular, Cellular & Developmental Biology), PI: Chris Fraser
- Jan. 28 Sam Westreich (Integrative Genetics & Genomics), PI: Sean Burgess
- Feb. 11 Zac Lewis (Viticulture & Enology), PI: David Mills
- Feb. 25 Hyrum Gillespie (Integrative Genetics & Genomics), PI: Abhaya Dandekar
- Mar-14 Debika Mitra (Biomedical Engineering), PI: Kent Leach

SPRING 2015

- Apr. 1 Steve Zicari (Biological & Agricultural Engineering), PI: Ruihong Zhang
- Apr.8 Angela Monterrubio (Biochemistry, Molecular, Cellular & Developmental Biology), PI: Veronica Martinez-Cerdeno
- Apr.22 Allison Stevens (Nutritional Biology), PI: Francene Steinberg
- May 13 Nicole Chaffe (Chemistry), PI: Sheila David
- May 20 Maher Elsheikh (Med Microbiology & Immunology), PI: Satya Dandekar

Chalk Talks are strictly for DEB Students and Faculty members.

All DEB students are encouraged to present one chalk talk.

ViVita Technologies

by Malene Wong and Jeni Lee

ViVita Technologies, Inc.'s patent-pending platform technology—the ViVita Process—removes the immunological barriers in animal-derived tissues, rendering them immune-compatible with human patients. Leveraging this technology, ViVita aims to generate off-the-shelf tissue and organ replacements that avoid long-term medication, repeat transplants, and associated patient deaths. ViVita's first product is a vessel patch due to the critical need for a readily available, functional replacement and our long-term strategy to develop increasingly complex, blood-contacting follow-on products. ViVita's platform technology has the potential to revolutionize regenerative medicine, not only by producing the next generation of vascular replacements, but by making off-the-shelf replacement tissues and organs readily available for clinical applications.

The ViVita Process is based off of co-founder and CEO Maelene Wong's doctoral work. For her doctoral thesis, Dr. Wong developed the novel process for cardiovascular tissues, including vessel patches, vessel grafts, and eventually, heart valves. In addition to managing ViVita, Dr. Wong is a postdoctoral scholar in the UC Davis School of Veterinary Medicine. She received her BS in Bioengineering from UC Berkeley and PhD in Biomedical Engineering, with a Designated Emphasis in Translational Research, from UC Davis in 2013. Complementing her graduate studies, Dr. Wong was

a fellow in the Howard Hughes Medical Institute Integrating Medicine into Basic Sciences program.

Jeni Lee obtained her BS in Bioengineering from UC Berkeley before enrolling in the Biomedical Engineering PhD program at UC Davis, with a Designated Emphasis in Biotechnology. Her research interests involve tissue engineering and regenerative medicine; in particular, her PhD thesis focuses on creating robust, tissue-engineered cartilage. Jeni is a student in the Biotechnology Program and was an NIH fellow funded by the Biotechnology Program's NIH T32 training grant.

In 2012, the ViVita team participated in the Biomedical Engineering Entrepreneurship Academy, hosted by the UC Davis Graduate School of Management (GSM). Encouraged by the positive feedback they received, they proceeded to found ViVita Technologies, Inc. in October of that year. They then went on to compete in the Big Bang! Business Plan competition hosted by the GSM, winning both First Place and People's Choice Awards.

Since the Big Bang!, ViVita has grown their advisory board and team, surrounding themselves with an experienced group of life science mentors and advisors, including the Director of the UC Davis Veterinary Open Heart Program, the Director of the UC Davis Transcatheter Aortic Heart Valve Replacement Program, the former R&D Director at Abbott Vascular, two CEOs of medtech startups,

and a seasoned business development expert. Further, ViVita has taken advantage of several local entrepreneurship resources including the UC Davis Engineering Technology Translation Center (ETTC) incubator and QB3 Startup-in-a-Box program. In addition to ViVita's success at the Big Bang! competition, ViVita was semi-finalist in the 2014 Oxbridge Biotech Roundtable OneStart Americas Business Plan Competition, the People's Choice Winner and Life Science Track Second Place Winner in the 2014 UC Berkeley LAUNCH Business Plan Competition, a finalist in the 2014 Silicon Valley Boomer Venture Summit Business Plan Competition, and a finalist in the 2014 SARTA TechCon MedStart Pitchfest.

ViVita is currently seeking a



Judy Kjelstrom, Maelene Wong & Jeni Lee

\$1.5M seed round to conduct pivotal large animal trials, towards 510(k) clearance for market approval and product launch. While a ViVita product may be a couple years away, the resources and support of UC Davis and the startup communities of Sacramento and the Bay Area continue to inspire and empower the ViVita team to drive towards commercial success in regenerative medicine.

BIOTECHNOLOGY SEMINAR SERIES (MCB/ECH 294)

One of the DEB course requirements is the successful completion of at least two quarters of MCB/ECH 294 (Current progress in Biotechnology Seminar Course). This seminar course is also open to the public.

Here is a brief summary of the lecturers for fall quarter (held in 1022 LSA from 11:00 - noon)

Oct. 3: Organizational Meeting

Dr. Judy Kjelstrom (Biotechnology Program Director & DEB program coordinator)
Instructors Prof. Karen McDonald (ECH) & Prof. Ray Rodriguez (MCB)

Oct. 10: Big Bang Kickoff

Niki Peterson – Program Manager, UCD Child Institute for Innovation and Entrepreneurship
Edward Silva – Program Coordinator, Sustainable AgTech Innovation Center, UC Davis
ViVita Presentation (2012 Big Bang! Winning Team)
Dr. Maelene Wong & Jeni Lee, PhD candidate in Biomedical Engineering (DEB Student)

Thursday, Oct. 16: Special Biotechnology Seminar*

Natural products – sources and inspiration for insect control agents
Thomas Sparks, PhD Research Fellow, Discovery Research
Dow AgroSciences LLC *can be attended as a make-up class

Oct. 17: OMICS, BIG DATA, INSIGHTS

Frank N. Lee, PhD IBM BGI@ucdavis co-sponsored seminar

Oct. 24: Discovering Medicine, Discovering Opportunity and Achieving Personal Career Goals

Wendy Nelson, PhD Sr. Director, Head of Manufacturing Genentech, Vacaville

Oct. 31: Microbial community applications in sustainable agriculture and food processing

Christopher Simmons, PhD Assistant Professor, Dept. of Food Science & Technology
UC Davis (DEB grad & CREATE IGERT fellow)

Nov. 7: An Infectious Approach to Biofabrication: Nanoscale Assembly with a Plant Virus Scaffold

James Culver, PhD Professor, Institute for Bioscience and Biotechnology Research & Department of Plant Science and Landscape Architecture, University of Maryland

Nov. 14 : Building a Self-Directed Career: One Man's Journey from Construction, to Aerospace, to Media & Entertainment, to IT Consulting, to Biotechnology

Scott Hamilton, PhD Chief Technology Officer
Sony DADC, New Media Solutions, Marina Del Rey DEB grad & Biotech Fellow

Nov. 21: Semi-Synthetic Artemisinin: Developing Industrial Production of the World's Most Important Anti-Malarial Drug

Chris Paddon, PhD Principal Scientist Amyris Inc., Emeryville

Nov. 28 Thanksgiving Holiday

Dec. 5: From Fermentation to Formulation -- An Integrated Approach to Bioprocess Problem Solving

Corey Dodge, PhD Principal Scientist, BASF, San Diego DEB grad & NIH Fellow

Dec. 12: Modeling Huntington's Disease with Stem Cells

Lisa Ellerby, PhD Associate Professor Buck Institute for Research on Aging, Novato

MIC 292 FROM DISCOVERY TO PRODUCT - WINTER 2014



This course is designed to provide a unique opportunity to gain insight into basic and applied biotechnology at the industrial level. Lectures will be presented by senior scientists/engineers from Novozymes, Inc. (<http://www.novozymes.com>) in Davis California. Appropriate for graduate students in all areas of biology, engineering and agriculture, especially those in the Designated Emphasis in Biotechnology Program. MIC 292 is an approved seminar elective for the DEB program.

MIC 292, held every other winter quarter, commences with a tour of the Novozymes site. We are very grateful to the director, Dr. Debbie Yaver (co-instructor along with Dr. Judy Kjelstrom) for the wonderful tour and real-world biomanufacturing information provided during the course.

This seminar series is open to the public and will next be offered Winter quarter, 2016.

Above Photo: **Dr. Judy Kjelstrom** (Director, Biotechnology Program) and **Dr. Debbie Yaver** (CEO Novozymes) with students from MIC 292 course touring Novozymes

TO...

DEB graduate student, **Lisa Anderson** from the Chemistry graduate group in **Prof. Annaliese Franz's** lab who recently won a student travel award to attend the Algae Biomass Summit and got to go on stage. The 8th annual Algae Biomass Summit took place from September 29 – October 2nd at the San Diego Marriott Marquis and Marina in San Diego, California.



The Algae Foundation awards travel grants to a select few graduate students based on their abstracts and letters of

CONGRATULATIONS

TO

recommendations. This type of assistance is part of the Foundation's core mission to engage in and fund educational outreach, research, development and other activities. The Algae Biomass Summit tracks focus on biology, commercialization, engineering and analysis, finance and policy, and peer-reviewed posters.



AND TO...

DEB graduate student, **Ingrid Leth** from the Chemical Engineering graduate group in **Prof. Karen McDonald's** lab on the birth of her son, Colin!!!



It is with sadness that the DEB Program said good-bye to one of its own, **Kenneth Eum**. Kenneth was a Molecular, Cellular and Integrative Physiology graduate student in **Prof. Jon Sack's** lab. He had completed all his designated emphasis in biotechnology course work, including an internship which he fulfilled with Lawrence Berkeley National Lab. His thesis was concerned with equipping potassium channel voltage sensor toxins with novel functionality.

Kenneth was close to graduating when he met his tragic and untimely death on an isolated strip of beach in Cape Cod during an outing with fellow researchers and drowned. As part of a three-week teaching assistant position, Kenneth taught a neurobiology course at the Marine Biological Laboratory in Woods Hole.

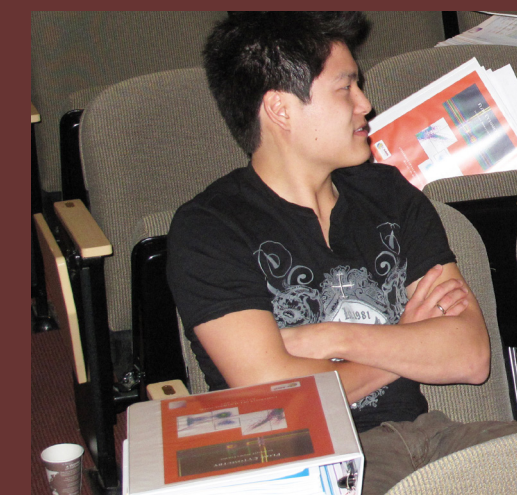
The Marine Biological Laboratory lowered its flag after Ken's passing to honor his memory. A PhD in Molecular, Cellular and Integrative Physiology along with a designated emphasis in Biotechnology was awarded posthumously.

Our hearts go out to his family and loved ones. **He will truly be missed!**

**FAREWELL TO KENNETH EUM
June 30 1987 - June 22, 2014**



Kenneth in the Biotechnology Program's Flow Cytometry Summer Intensive Course



MARK YOUR CALENDARS

2015 EVENTS:

- March 2**
Retreat Attendance Forms Due
- March 6**
Retreat Abstracts & Oral Presentations Due
- March 14**
24th Annual Biotechnology Training Retreat in Napa
- April 18**
Picnic Day: Biotech Event in 148 Briggs Hall
- April 24**
NIH Biotech Training Grant Fellowship Applications Due
- May 20**
ADP Luncheon
- May 22**
Teen Biotech Challenge 2015
- July ~13 - 17**
Flow Cytometry Course
- July ~29 - 31**
Personal Genomics Course
(For HS & Community College Instructors)
- August ~3 - 7**
Proteomics Course



Biotech Program's pumpkin contest entry: Professor "Z" (emeritus) ... the relationships built via the DEB internship program and ADP (Advanced Degree Program for Corporate Employees) doctoral program create new opportunities for public-private scholarly exchange and translational research?

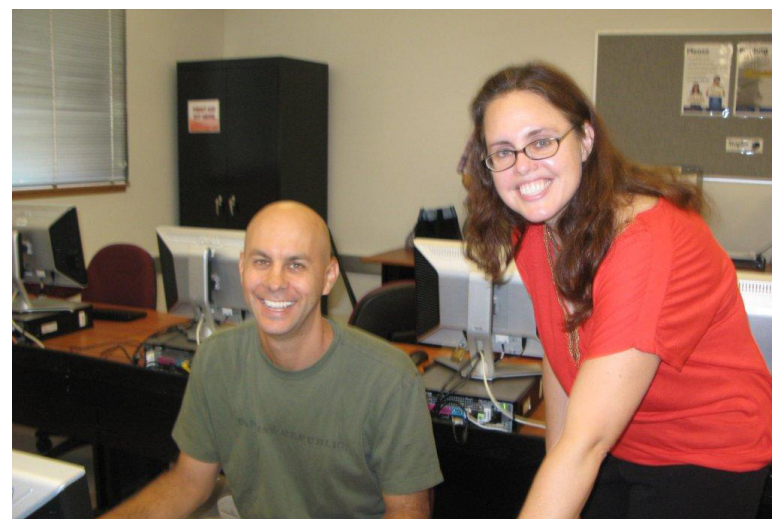
... the Biotechnology Program has long-term relationships with many biotech companies focused on sustainability, including: Amyris; AgraQuest; Arcadia Bioscience; LS9; MarroneBio Innovations; Monsanto; Novozymes and others?

...the Biotechnology Program is a strong advocate for women and underrepresented minorities in **STEM** disciplines. Through the **BioTech SYSTEM** K-14 outreach consortium, the Program engages secondary and post-secondary life science instructors, students and parents throughout Northern California, including socioeconomically disadvantaged communities?

.... our offices were first located in Briggs Hall?

Can you list all 30 graduate groups that are currently affiliated with the DEB Program?

Below: **Dr. Denneal Jamison-McClung** instructing a Train the Trainers course in Bioinformatics.



... **Jacqueline Phillips** takes care of our database, student progress reports, and day-to-day accounting tasks?

... the Biotechnology Program is a Special Research Program of the Office of Research?



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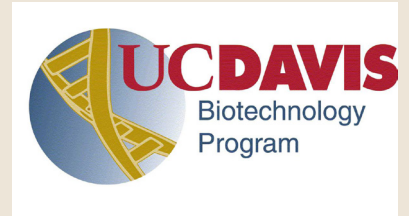
- www.biotech.ucdavis.edu
- www.deb.ucdavis.edu
- www.biotechsystem.ucdavis.edu/index.html
- www.teenbiotechchallenge.ucdavis.edu/index.html

DID YOU KNOW?

... the motto of the UC Davis Biotechnology Program is "*Biotechnology: The Tools to Forge a Better Tomorrow*"?

.... the Biotechnology Program was established in 1986?

... **Jacki** Balderama in our offices handles the seminar logistics and all event management?



L-R: Dr. Denneal Jamison Mc-Clung (Associate Director, Biotechnology Program) & Dr. Judy Kjelstrom (Director, Biotechnology Program)

BIOTECHNOLOGY PROGRAM'S SOCIAL MEDIA SITES

Ways to stay in touch with the Program:

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Dr. Denneal Jamison-McClung, [@yggdrasil13751](https://twitter.com/yggdrasil13751)

Marianne Hunter, [@mythodology](https://twitter.com/mythodology)

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