ASLI ZEYNEP UNAL

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EDUCATION

University of California, San Diego

June 14, 2013 **Bioengineering; Biotechnology**

- **Design Thesis:** *Modeling a Biointegrated Percutaneous Transdermal Anchor for Osseointegrated Prosthetics*
    - URL: http://beweb.ucsd.edu/courses/senior-design/projects/
    - Username/Password: seniordesign / sd2012-13
    - **Provisional Patent**: *Permanent Percutaneous Skin Interface for Osseointegrated Prosthetic*
- **Revelle College Area of Focus**: *Literature and Writing*

PUBLICATIONS

Author

- Effects of hydrophobic and hydrophilic photoactive polymers on lipid cubic phase (In progress)

- Layer-by-layer deposited lipid bilayers on silicon-silicon dioxide electrode show similarities to myelin (In progress)

- Bennett CL, Yingzhang Y, Vignali M, Lo RS, Mason AG, Unal A, Saifee NPH, Fields S and La Spada AR. **Senataxin interactome analysis reveals evidence for self-association, ubiquitin-SUMO post-translational modification, and mutant-specific novel peptide interaction.** Molecular Brain / PLoS One – (Accepted 2013)

- Kuske CR. Dunbar J. Gallegos-Graves. Eichorst SA, Weber C. Steven B. Xie G. Liu k. Ticknor L, Challocmbe J. Unal A. Balasch M. Zak. D. **Soil Metagenomics and Carbon Cycling in Terrestrial Ecosystems** (DOE Genomic Science Conference)

Acknowledgement

- Weber CF, Balasch MM, Gossage Z, Porras-Alfaro A, Kuske CR. **Soil fungal cellobiohydrolase I gene (cbhI) composition and expression in a loblolly pine plantation under conditions of elevated atmospheric CO2 and nitrogen fertilization**. Applied and Environmental Microbiology (Published 2012)

- Eichorst SA, Kuske CR**. Identification of Cellulose-Responsive Bacterial and Fungal Communities in Geographically and Edaphically Different Soils by Using Stable Isotope Probing.** Applied and Environmental Microbiology- (Published 2012)

- Kuske CR. Eichorst SA. Weber CF. **Cellulolytic fungi in geographically and edaphically different soils based on phylogenetic and functional gene markers** – Applied and Environmental Microbiology (2011)

EXPERIENCE

Los Alamos National Laboratory and Center for Nanotechnologies (CINT)

Advisors: Srinivas Iyer, Gautam Gupta, Rashi Iyer

Post-Baccalaureate June 2012 – Present

- Investigated characteristics of lipid based biomaterials
- Collected and analyzed data pertaining to the effects of hydrophilic and hydrophobic polymers on lipidic cubic phases
- Developed novel methods to build layer-by-layer assembled multilamellar bilayers in both 2D and 3D for exploration of myelin properties and functions as well as the generation of synthetic myelin
- Collaborated with a multi-disciplinary team of biologists, materials engineers, and physicists
- Conducted neutron scattering experiments using proton accelerator at the Lujan Neutron Scattering Center and was Invited to Neutron Scattering School
- CINT: Built series of enzymatic biofuel cells to achieve voltage and current high enough to charge a simple cell phone

The LaSpada Lab at UCSD Skaggs School of Pharmacy and Sanford Consortium for Regenerative Medicine

Advisor: Craig Bennett

URL: http://laspadalab.ucsd.edu/Pages/default.aspx

Student Research Assistant September 2010 – December 2011

- Studied the effects of mutations of the Senataxin protein, which cause Ataxia with Oculomotor Apraxia type 2 (AOA2) and Amyotrophic Lateral Sclerosis type 4 (ALS4)
- Contributed to the creation of yeast two-hybrid screens of human brain expression libraries
- Seeded and maintained cell-cultures for long periods of time and used them for immunoprecipitation, western blots, and microscopy

Los Alamos National Laboratory

Advisor: Cheryl Kuske

Student Intern April 2009 – December 2010

- Contributed to the Department of Energy supported Free Air Carbon Enrichment (FACE) program by collecting and analyzing data about the effects of elevated carbon and/or nitrogen levels on microbial communities from soil samples from several different ecosystems (Project URL: http://www.bnl.gov/face/faceProgram.asp)
- Generated DNA libraries by extracting DNA from soil samples nationwide
- Analyzed the effects of the Deepwater Horizon oil spill in 2010 on local microbial communities

Canyon Vista Pool Association

Head Lifeguard May 2005 – September 2008

- Managed scheduling, assisted patrons, inspected snack bar
- Maintained pool chemistry, backwashes

- Corresponded between board members, lifeguards, and patrons
- Taught swimming lessons from Level 1-6
- Coached intramural swim team

RELEVANT SKILLS

- **Materials Synthesis Techniques:** spin-coating, chemical vapor deposition, layer-by-layer lipid deposition, plasma cleaning, Pattern Etching
- **Characterization Techniques:** Fluorescence Recovery After Photobleaching (FRAP), Small Angle X-Ray Scattering (SAXS) Small Angle Neutron Scattering (SANS), Fluorometry, Mass-spectrometry, Dynamic Light Scattering, Sanger Sequencing, Pyrosequencing, Electrical Impedance
- **Programs and Computer Languages:** LabVIEW, Matlab, Mathematica, C/C++, Python, SolidWorks, ImageJ, Igor, ZView/Zplot, Microsoft Office
- **Biology Techniques:** western blot, immunoprecipitation, cell-culture, cardiac perfusion, mouse and fly genotyping, transfection, PCR, qPCR, DNA transformation, genome library creation, PicoGreen assay, Nanodrop spectroscopy, computer sequence analysis programs (Sequencher, Bioedit and Fincon, MgRast Blasts, Silva aligning), DNA Extraction and Purification, Plasmid Preps, Gel Extraction/Gel electrophoresis

ACTIVITIES

- National Society of Women Engineers (2009-2013)
    - *Head of high school Outreach program (2011)*
- UCSD Biomedical Engineering Society (2013)
- UCSD Engineering World Health (2012-2013)
- Volunteer for Los Alamos Public School's Science Fair (tutor)
- Soccer and Volleyball, painting, acting (Extra in the movie Brothers (2009))

CLASSES OF INTEREST

- **Engineering**: Fluid Mechanics, Biosystems and Process Control, Systems Biology and Bioengineering, Bioengineering Mass Transfer, Biomolecular Engineering, Chemical and Molecular Bioengineering Techniques, Bioprocess and Bioreactors, Tissue Engineering
    - ***Built complete model of bacterial metabolic pathways under direction of Bernhard Palsson***
    - ***Extensive analysis upon building and testing the Hodgkin-Huxley Neuron Model under Lev Tsmiring***
- **Other:** Brain Damage (Dr. Vilaynur Ramachandran), **Independent Study (physiology and blood flow with Dr. Pedro Cabrales)** and Area of Focus in Literature and Writing