

FSD

(a nonprofit organization, founded in 1978)

Foundation for Science and Disability Newsletter

President's Corner



October 2008

With all the bad news about earthquakes, hurricanes, and stock market zigzags, or controversies like the new movie, 'Blindness', that some are protesting and some consider allegorical, let's take a break for a bit of good news from FSD.

Yes, since our last report, the Foundation has proceeded ahead on several fronts. The web site has been updated (see it at <http://stemd.org>). The Articles of Incorporation were renewed. And the progress of our past student-grant awardees continues.

Ryan McKindles of Marquette University received the 2008

student grant. He wrote up a description of his research project for the Notes from Student Awardees section further below. Cassandra Quave, Cheryl Fogle, My Lien Nguyen, and Melodi King also provided notes on their recent activities.

Looking ahead, it might be worthwhile to write up some of our past history and post it on our web site, or maybe a Facebook site, along with a listing of past grant awardees and FSD officers. Ed Keller sent me a box of records from the early days of FSD, so it's up to me to get a start on that. Many of you probably have recollections that never

made it into those old records. Let me know. We can talk about putting it all together.

Of course, all of our future plans depend on recruitment of new members and renewal of current/past members. So please fill out the membership form at the end of the newsletter and send it back to Robert Van Etten.

A final note. Elections for President and Treasurer will be coming up again next year. So now is an opportunity for you to email us a nomination or to submit one at the next annual meeting.

Inside this issue:

President's Corner	1
Notes from Students	2
Cassandra Quave	2
Cheryl Fogle	2
My Lien Nguyen	3
Melodi King	4
Ryan McKindles	4
Past Student Awards	5
Annual Mtg. Minutes	5
Membership Renewal	8

Richard Manekin
10/10/08

The Unbroken Unity of Life

All known forms of life need leucine. The organisms that synthesize it use an enzyme called isopropylmalate dehydrogenase. The enzyme uses a coenzyme, nicotinamide adenine dinucleotide (NAD⁺). Apparently, this property of leucine biosynthesis is at least as old as the last common ancestor of modern life.

Science 310, 454 (2005)

Notes from Student Awardees

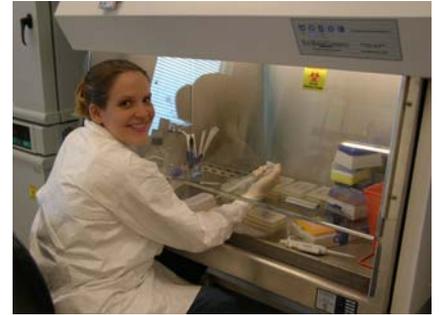
Cassandra Quave

I will graduate from Florida International University this December (2008) with my doctorate in Biology. During my tenure at FIU, I have published six peer-reviewed scientific articles and three book chapters and given 22 presentations at local and international scientific conferences. I have been honored with prestigious awards for these presentations, including the Fulling Award for the best contributed oral paper by a junior professional at the annual meeting of the Society for Economic Botany (2007) and the Graduate Student Poster Award at the meeting of the American Society of Pharmacognosy (2008). I am also a member of the Editorial Board of the *Journal of Ethnobiology and Ethnomedicine* and peer-review papers from four other scientific journals in my field. While at FIU, I was the PI on a highly competitive pre-doctoral NIH grant (Ruth L. Kirschstein National Research Service Award for Individual Predoctoral Fellowships (F31) to Promote Diversity in Health Related Research). I have also recently been awarded the Ruth L. Kirschstein National Research

Antipathogenic potential of medicinal plant extracts

Service Award for Postdoctoral Training in Complementary and Alternative Medicine (F32). I will use this funding to support my postdoctoral work at the University of Arkansas for Medical Sciences in Little Rock, AR starting in January 2009.

The focus of my doctoral research was to investigate the anti-pathogenic potential of natural products derived from Italian medicinal plants. In particular, I studied the capacity of plant extracts to inhibit growth, biofilm formation, and quorum sensing in multidrug-resistant isolates of *Staphylococcus aureus*. The issue of staphylococcal biofilms is one close to my heart and stems from personal experience with such infections. I was born with multiple congenital birth defects of my skeletal system. In particular, I was missing my right fibula, and my right femur and tibia were severely underdeveloped. Due to this condition, doctors decided to amputate my leg below the knee at the age of three. Unfortunately, I



developed a severe, and life threatening staphylococcal infection after the amputation which resulted in the loss of bone and tissue on the distal end of my stump. I was fortunate to keep my knee, but the lack of tissue to serve as a cushion on the distal end of my stump has greatly impaired my mobility and I am not able to engage in high impact activities such as jogging.

During my upcoming postdoctoral training, I plan to continue my work on natural products that have shown preliminary in vitro activity in the disruption of staphylococcal biofilms. I will employ in vivo techniques with murine infection models to gauge the therapeutic efficacy of these compounds. One of my career goals is to discover and develop novel drugs that can be used in combination with existing antibiotics to disrupt and eliminate staphylococcal biofilm-related infections.

Cheryl Fogle

Spear tips of Great Plains Paleoindian hunters

I am a Ph.D. candidate in the Department of Anthropology at the University of New Mexico located in Albuquerque. I am studying the stylistic similarities and differences among stone projectile points (spear tips) that were made and used by prehistoric, Late Paleoindian hunters of the Cody Archaeological Complex who inhabited the American Great Plains approximately 9000 years ago. My data collection requires

me to visit museum collections. So far I have examined projectile points in three museums, Texas Archaeological Research Laboratory Austin, University of Colorado Boulder, and University of Wyoming, Laramie. I intend to travel to the Smithsonian Institution National Museum of Natural History to examine collections later this academic year.

I recently presented a paper based

on my research at the Plains Anthropological Conference held in Laramie Wyoming October 1-4, 2008 and I think that a quick summary of that paper will neatly explain my research for newsletter readers. My research resolves a hotly contested debate about whether the projectile points were produced by individuals from one society, or by members of two different, contemporaneous,

cultural groups. Archaeologists traditionally name distinctive projectile points after towns near the sites where they were first discovered. Two projectile point types of the Cody Complex were defined some 60 years ago. The Scottsbluff point type refers to a stemmed projectile point with a lenticular (flat) cross section that was originally found near Scottsbluff, Nebraska. The Eden point type, originally discovered near Eden, Wyoming, refers to another stemmed projectile point with a diamond-shaped cross section that is both thicker and narrower than the Scottsbluff point type. In the late 1970s, the archaeologist Joe Ben Wheat excavated the Jurgens Site near Kersey, Colorado, and designated projectile points found there as Kersey points. Although very similar to Scottsbluff and Eden Points, Wheat felt that Kersey points were products of a different, earlier, cultural group than the Cody Complex creators of Scottsbluff and Eden points.

Archaeologists have long known that the Kersey type contains projectile points having both lenticular and diamond-shaped cross sections.

In my paper, I describe several width and thickness measurements for these three projectile point types: Kersey, Scottsbluff, and Eden. Kersey points with lenticular cross sections were compared to Scottsbluff points. Kersey points with diamond-shaped cross sections were compared to Eden points. My data analysis shows that there are no statistically significant differences between Kersey points found at the Jurgens site and projectile points recorded as Eden or Scottsbluff. I conclude that the Kersey type is unnecessary because the projectile points from the Jurgens site can be classified as belonging to either the Scottsbluff or the Eden types. This research shows that the projectile points from the Jurgens site were produced by individuals from the same cultural group as those who

made the projectile points found at other sites in New Mexico, Colorado, and Wyoming.

I would like to take this opportunity to thank the Awards committee of the Foundation for Science and Disability for supporting my dissertation research. Since I am totally blind, I have used FSD funds to hire student research assistants to give me access to nonvisual information such as handwritten catalog records and the color of the stone used to make the artifact; I have also had my research assistants take photographs. I have hired Anthropology students who have passed laboratory courses with at least a B average. FSD funds have been used to pay these assistants a salary that I set at \$10/hour for between two to five days at each institution. Although this arrangement requires me to train a new assistant at each location, it represents cost savings because I do not have to pay travel costs to bring a student with me from Albuquerque.

My Lien Nguyen

Ethnobotanical Studies

I have completed three post-doctoral positions since graduating from the University of Hawaii in May 2005. They were at U of Hawaii at Manoa and one-year teaching post-docs at Wellesley and Vassar colleges. The teaching post-docs were great experiences and exposure to working at small liberal arts colleges.

In addition to continued involvement on a current NSF project (Ethnobotany Segues to Science, at UH-Manoa) and one in review (in collaboration with the Botanical Research Institute of Texas), in November, I will travel to Vietnam for a National Geographic Society funded project. The project is in collaboration with colleagues at the Institute of Ecology and

Biological Resources in Hanoi - "Exploring local indigenous knowledge of plant diversity among the Van Kieu and Pa Ko ethnic communities for biocultural conservation and sustainable development in central Vietnam." Specifically, it is in the Dakrong Nature Reserve situated in Quang Tri province, about 60 km (as the crow flies) from Hue city.

The personal side of the Vietnam trip is that my mother will be making the flight as well. This will be her first trip back to Vietnam since we left as refugees in 1975. We will fly together to Ho Chi Minh City (Saigon) and make trips to various cities where we have family, but she will not be making the trip to Hanoi nor for the field

work in central Vietnam.

However, I have made a decision to leave academia and return to Rochester, NY to be closer to my family and build a life that I believe will be enable me to have greater health. Currently, I am studying for the Pharmacy College Admissions Test and applying to a new school of pharmacy here in Rochester. If I am not admitted to pharmacy school, I may pursue science-high school teaching, for which I am still NY-state certified. Another option I am considering is to apply my experiences and credentials in disability studies and adapted sports/recreation to serve a local organization.

Melodi King

After graduating with a BS degree in Chemical Engineering in the spring of 2007, at the University of Arizona, I moved across the country to work for Merck in Philadelphia. Working for Merck really helped me learn about my priorities in life. While Merck provided me with an extremely supportive

Chemical Engineering Studies

environment and stable income, I found that I was still unhappy because I wasn't with my family. After a year on the east coast, I came back to my my family and friends in Tucson, AZ. In August I started a PhD program in Chemical Engineering at the University of Arizona with an excellent fellowship in

sustainable engineering through the Science Foundation of Arizona. I'm extremely passionate about sustainability issues and am planning on pursuing research related to prediction of environmental/human health issues using computational chemistry.

Ryan McKindles

There is evidence that vibration used as a general sensory stimulant can improve muscle control in persons who have suffered stroke. Previous research has shown that after stroke sensory input and motor commands produced by the cortex still exist, however these signals do not achieve sufficient threshold to produce correct muscle coordination (Foltys et al, 2003). Current laboratory research suggests that applying vibration to muscles of the forearm improves shoulder stabilization during reaching in subjects having suffered a stroke. It is hypothesized this increase of nonspecific sensory information, such as vibration, to the central nervous system (CNS) lowers the threshold and allows the motor signals to cause activation. However, what is still not understood are the location and neural mechanisms of this phenomenon.

Proposed research will use three specific imaging modalities to investigate the neural effects of the

Investigation of increased reach stabilization post stroke with enhanced nonspecific sensory feedback

sensory-motor cortex, spinal cord, and cerebellum. The first part of the study will use electroencephalography (EEG) to explore the cortical effects of forearm vibration during a stabilization task. This modality will provide temporal understanding of the underlying physiology of the sensory-motor cortex. Second, the lack of functional spinal imaging makes the integration of electromyography (EMG) and tendon tapping essential to understanding the neural circuitry of the spinal cord. The latencies of muscle activity after a tendon tap during applied vibration will allow insight in to spinal circuitry excitability. Lastly, functional magnetic resonance imaging (fMRI) and use of blood oxygen level-dependent signals give very high spatial resolution of the brain. This is favorable to combine with the EEG temporal recordings and is the only way to map neural activity of the cerebellum.

Together these three experiments will allow an insight into the change



of neural activity when using vibration to enhance sensory feedback and hypothetically lower activation thresholds. Moreover, they will continue with the theme of research in the Neuromechanics Laboratory at Marquette University by providing a better understanding of how the sensory-motor centers of the CNS work to aid in the creation of new rehabilitation techniques for persons with spinal cord injury and stroke.

Foltys H, Krings T, Meister IG, Sparing R, Borojerd B, Thron A and Topper R. Motor representation in patients rapidly recovering after stroke: a functional magnetic resonance imaging and transcranial magnetic stimulation study. Clin Neurophys 114: 12: 2404-2415, 2006.

Student Grant Awardees since 1990

1990	Wendy Pava, Birgit Wolz, Elaine Hall	2000	Jennifer Last
1991	Kevin Wilkins, Shan Ming Lee	2001	Cassandra Quave
1992	Meghal Antani, Lynn Hanninen, Mara Frohlinger	2002	My Lien Nguyen
1993	David Fass, William Hylton	2003	Mark Woods
1995	Chris Tromborg	2004	Jessica Mahood
1996	Anne-Michelle Singleton	2005	Cheryl Fogle
1997	Leslie Harper	2007	Melodi King
1998	Maura O'Modhrain	2008	Ryan McKindles
1999	Joseph Barbera, Byunggyoo Kim		

Our next annual meeting is February 12-16, 2009
at the AAAS conference in Chicago

Minutes of the Annual Meeting of the Foundation for Science and Disability (FSD) February 16, 2008

Hynes Convention Center, 2nd Level, Rm 205
Boston, MA 94102

Call to Order - 9:00 am

Attendees:

Angela Foreman (alfnts@rit.edu)
Ted Conway (taconway@vcu.edu)
Angelique Dorazo Sanders (asanders@aaas.org)
Hal Frost (halfrost@charter.net)
Vasana Maneeratana (vasana.maneeratana@gmail.com)
Virginia Stern (vstern@aaas.org)
Laureen Summers (lsummers@aaas.org)
Robert Van Etten (robvanetten@comcast.net)
Richard Mankin (rmankin@nersp.nerdc.ufl.edu)

Copies of the agenda were distributed. Each attendee gave brief descriptions of their current professional activities.

Minutes

The minutes from the last meeting (February 17, 2007 - San Francisco, CA) were reviewed and approved as posted at <http://www.ars.usda.gov/sp2UserFiles/person/3559/annmeetminute07.html>.

Treasurer's Report

Robert Van Etten presented a report for the 2007 calendar year.

	2007	2006
Initial Assets		
Cash on hand	9748.57	10,857.42
Total Assets	9,748.57	10,857.42
Income		
Dues + contributions	805.00	55.00
Contributions	--	--
Interest	--	--
Total Income	805.00	55.00
Expenses		
Newsletters	--	163.85
Student Awards	--	1,000
Bank Service Charge	--	0
Total Expenses	--	1,163.85
Net Income	805.00	-1108.85
Net Balance	10,553.57	9,748.57

There was discussion about possible ways to earn income on part of the savings. It was decided to place \$1,500 into a Certificate of Deposit each quarter of 2008, which could then be redeemed or rolled over as needed, depending on expenses.

Science Student Grant Committee Report - Richard Mankin

Committee - Richard Mankin, Betty Weaver. Two of 14 applications met the grant acceptance criterion. After some discussion, a grant was awarded to Ryan McKindles of Marquette University for the project, "Mapping the spatiotemporal properties of the somatosensory cortex in people with spinal cord injury and stroke."

Officer Nominations (None)**New Business**

There was discussion about the process of renewing the FSD Articles of Incorporation as a nonprofit agency in Washington DC. Several sets of papers have been returned this year, and it has proven difficult to contact knowledgeable individuals by phone, letter, or email. Laureen Summers has volunteered to assist Robert Van Etten in finishing the renewal process.

Richard Mankin volunteered to write an article in the Science Education for Students with Disabilities Newsletter about the Foundation for Science and Disability Student Grant program. Laureen Summers volunteered to write an article about the EntryPoint Program for the Foundation for Science and Disability Newsletter.

In discussions about the student grant program, it was decided to include a section about other financial support that the student receives, and to require that the student provide a report at the end of their award year describing the progress made and any publications or awards that resulted from their project.

Submitted April 6, 2008
Richard Mankin

Foundation for Science and Disability 2008 Dues Notice

Dues Schedule:

Student \$5.00

Regular \$25.00

Contribution _____

Total _____

Please make checks out to:

Foundation for Science and Disability

and mail to:

Robert Van Etten

4981 SE Sterling Circle

Stuart, FL 34997

Please list a change of address, if any, and / or list any comments for the Board of Directors below. Also, please forward us your email address if you have not already done so.

Foundation for Science
and Disability

503 NW 89 St
Gainesville, FL 32607

Phone:
352-374-5774

E-mail: rmankin1@aim.com

The Foundation for Science and Disability was founded in 1978 to promote the integration of persons with disabilities into the mainstream of the scientific community. A major focus of FSD has been the removal of barriers that restrict opportunities to develop careers and conduct scientific research. The Foundation also provides grants to students with disabilities who are conducting research in the fields of Science, Technology, Engineering, or Mathematics.

The logo for the Foundation for Science and Disability (FSD) consists of the letters 'FSD' in a large, bold, teal-colored serif font. The letters are slightly shadowed, giving them a three-dimensional appearance.

President: Richard Mankin (rmankin1@aim.com)

Treasurer: Robert Van Etten (robvanetten@comcast.net)
