Like us on Facebook:
CSB | SJU Chemistry Department

CSB | SJU CHEMISTRY

KJNB Sports Director Zach Brown, p. 3

The Cavendish Chronicle

Volume 31, Issue 1

Fall, 2015

Inside this issue

The Making of a Medical Scientist

Fields Makes Strides in Lab

Daryl Fields

There is an old saying that warns against living in interesting times, but change can often be a very good thing. For **Daryl Fields, BCHM '10**, this year has brought some exciting new developments. The M.D./Ph.D. student at the University of Wisconsin-Madison finished work on his Ph.D. project, a major accomplishment in itself. Because he had a year left before he was expected to return to the M.D. portion of his program, he took the opportunity to do post-doctoral research halfway across the country, at the University of Florida.

In just a few remarkably productive years, Fields managed to get four research papers to publication, with two more currently in review. His project dealt with the underlying causes of central sleep apnea. Sleep apnea is a common condition in which breathing stops for several seconds to minutes during sleep; it can occur many times during the night and leads to excessive fatigue. In central sleep apnea, the disorder arises because the brain stops sending signals to the muscles that control breathing. The work that Fields did led to the development of a (*continued page 4*)

Jakubowski Part of STEMWiki Team

A team of scientists from across the country has been awarded an NSF-IUSE grant to develop new online content for the STEMWiki. The project, based at University of California-Davis, will include contributions from collaborators at the University of Arkansas, Diablo Valley College, Howard University, Hope College, and CSB/SJU. **Dr. Henry Jakubowski** was part of the grant-writing team.

The National Science Foundation – Improving Undergraduate STEM Education grant, for approximately $28,000, (*continued page 2*)

Jakubowski

Student Wins Congressional Study Abroad Scholarship

Bonglack at her internship last summer

Emma Bonglack, Bchm '17 was one of nine CSB students to receive the Benjamin A. Gilman International Scholarship for fall semester 2015. The award will help cover the costs of studying abroad. Bonglack is studying in France this fall.

The Gilman Scholarship Program, named after U.S. Rep. Benjamin Gilman (NY), is sponsored by the Bureau of Educational and Cultural Affairs and funded by congress. The award is competitive; the program's funding rate was just below 30% for applicants hoping to study abroad in academic year 2015-16.

Approximately 55% of CSB|SJU students spend a semester abroad, taking advantage of a choice of nineteen programs. Additional students participate in one of twenty short-term study abroad programs.

Jakubowski Part of Successful NSF Grant-Writing Team

Students and Faculty Find Success in Ardolf Science Center

(*from page 1*) will fund improvements in STEMWiki content, including the introduction of ancillary homework and formative assessment modules. Education in STEM, an acronym for Science, Technology, Engineering, and Mathematics, has long been considered a national strategic priority.

Jakubowski's plans include the addition of new biochemistry chapters to his existing Biowiki content. In addition, he will be adding new interactive models and graphs. These tools will allow students to develop concepts of protein biochemistry.

Junior Presents Research at Conference

Giinther in lab

Rejene Giinther, Chem '17 presented her poster "Octanethiol and Decylthiocyanate Adsorption on Gold" at the Seventh Annual Conference for Women in Physical Sciences (WoPhyS), October 15-17 at the University of Nebraska-Lincoln (UNL). Giinther traveled to Lincoln with her research advisor, **Dr. Annette Raigoza**, to participate in the event.

WoPhyS is intended as a vehicle for undergraduate women to present their research and interact with leaders in the field. The conference was co-sponsored by UNL's Materials Research Science & Engineering Center and the Nebraska-Kansas NSF-EPSCoR (Experimental Program to Stimulate Competitive Research)program.

Radio Head

Chemistry Major and Education Minor Zach Brown Keeps the Ball Rolling at KJNB

Senior chemistry major **Zach Brown** has a lot on his plate. An executive board member for KJNB, the radio station of CSB/SJU, he still finds time to run a few more reactions in lab while he prepares to start teaching high school in a few months.

Brown, who is also the sports director for KJNB, has been involved with the radio station since his first year of college. After getting his start on a sports talk show, "The Horn", that he co-hosted with a friend, he convinced the station manager to try airing a Johnnie baseball game. It was the first live sports broadcast by KJNB in some time, and it led to many more baseball games on the air, plus frequent coverage of volleyball, Blazer softball, and Blazer hockey. The latter sport has been the most consistently covered over the last few years, with broadcasts about once per week.

Brown frequently provides color commentary during games, although he is not always on hand for a broadcast. He has trained other staff to handle the games, as well, so the tradition will not die out when he graduates. He and his staff also conducts interviews with coaches and athletes, so that there is material to air during breaks.

In addition to his work with Johnnie and Blazer sports, Brown has also co-hosted a show with his twin sister, communications major Gretchen Brown. The show features music and conversation about events on campus, and is appropriately entitled "Twin Talk".

Brown has also taken full advantage of opportunities available in the chemistry department. He has done undergraduate research for the past two years, working in the lab of **Dr. Alicia Peterson**. Brown has studied the reaction kinetics of hydro-dehalogenation reactions in aqueous samples using a heterogeneous rhodium catalyst. The method shows promise for the environmental remediation of aquatic systems that have been contaminated by halogenated organic compounds through industrial, commercial, or household use.

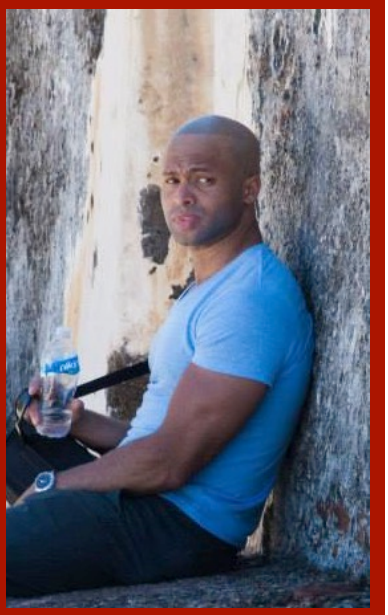
Not only is Brown finishing up his chem degree this fall -- a semester early -- but he is also completing an elementary education minor. He looks forward to student teaching in both chemistry and advanced placement chemistry at Apollo High School in St. Cloud in the spring. Depending on where he is ultimately hired after that, he may find himself teaching biology or physics, too.

Although he has been inspired by a number of teachers over the years, Brown's commitment to teaching ultimately comes from a desire to spread his enthusiasm for science.

"When I help somebody find that 'ah-ha' moment," said Brown, "It's the best feeling in the world."

KJNB streams live at www.kjnb.org and is available at channels 6 and 8 on campus.

M.D./Ph.D. Program A Rewarding Choice



Fields takes a break.

The promise of new hope for a range of neural disorders

Far right: exploring the Florida terrain

(*from page 1*) new drug therapy; UW-Madison's technology transfer office is now working on obtaining patent protection and seeking industry partners for additional clinical trials.

Usually, post-doctoral training is used as a means to gain expertise in areas complementary to a researcher's graduate training. Fields' research focus at Florida will be on the process of cachexia, or how late stage metastatic cancer causes muscle wasting. This condition, difficult in itself, is particularly dangerous when it affects the muscles involved in breathing. That situation can lead to further complications such as respiratory infections. Because cancer drugs generally suppress the immune response, these minor infections can be life threatening.

"I'm hoping to advance our understanding of how cancer causes muscle wasting," said Fields, "and hopefully discover novel drug targets to prevent it from happening."

This year has brought good financial news, too. Fields' early graduate career was funded by a United Negro College Fund/Merck Fellowship. Fields has now been awarded a fellowship from the National Institutes of Health that will cover the remainder of his studies.

Fields credits his education at CSB/SJU for getting him started on a path to success, noting the number of his fellow graduates who were well-prepared for industry, Ph.D. programs or the health professions. Initially attracted to CSB/SJU by the close-knit community, he still enjoys keeping up with former classmates.

After graduation from medical school, Fields intends to continue with research, but plans to change direction one more time.

"I hope to run a lab focusing on drug therapies for neural control disorders," he explained. There has been remarkable progress in the understanding of how adaptive the central nervous system can be, and that offers great promise for doctors and their patients. Fields will focus on ways to improve motor function in patients suffering from incurable neural disorders. Diseases such as amyotrophic lateral sclerosis (Lou Gehrig's disease) affect thousands of people in the United States; the more common multiple sclerosis affects hundreds of thousands.

Fields is intrigued by the idea that physician scientists have the skill set to customize treatment for individual patients, in effect leading to the possibility of personalized medicine. For patients with some very debilitating diseases, his work will offer hope in the years ahead.

"I am currently studying in Cannes, France. My friends and I decided to take a trip to Barcelona for the Halloween weekend. This building is mounted on Barcelona's highest peak, which gives the greatest view of Barcelona." – Raymond Twumasi, Chem '17

"Here is a picture of Katie Schmitz and I in front of Athens Community School. We visited there this morning and every time they referred to ACS it was hard not to think of the American Chemical Society!" – Thomas O'Toole, Chem '17

"Annecy is a small town in France. The building I am in front of is the Old Prison, which has been in place since the 12th Century, and a few friends and I took a short weekend trip to visit this commune as a getaway from the ever so busy Côte d'Azur. " – Emma Bonglack Bchm '17

"Here's a photo of the dental clinic I worked at near Otavalo in Ecuador this summer. The clinic was in a community building, which our group took part in renovating, in the mountains in a rural Yambiro community. This was for the Ecuador Gender and Culture program." – Heather Kaluzniak, Bchm '17

"I am on the Ireland-Galway program. In late October, we took an excursion to Northern Ireland. Near the town of Bushmills in County Antrim is Giant's Causeway, which is an area of hexagonal basalt columns often mentioned in the top ten most impressive geological formations in the world. Surrounding the columns is a cliff where you can look out to the Atlantic Ocean. I chose the picture because it was one of the many places we have seen that we may only get to see once in our lives." – Luke Morrey, Bchm '17

Forero Bello

New Faces in Ardolf Science Center

Adhikary

Berhanu

Forero Bello is New Manager of the Chemistry Stockroom

By Alex Messner

This past summer, the chemistry department welcomed Paola Forero Bello as the new laboratory manager in Ardolf. As a laboratory manager, Forero Bello is responsible for buying and disposing of chemicals, insuring that all instruments are working properly, and preparing solutions for all labs. In addition, she is currently teaching a section of the introductory lab, Chem 201, and will be teaching a section of Chem 202 in the spring.

Forero Bello, a native of Colombia, graduated from Universidad Pedigógica Nacional in Bogota with a bachelor's degree in chemistry. She went on to pursue a master's in chemistry at Tennessee State University, with a concentration in biochemistry. Her favorite course was medicinal chemistry, however. In addition, Forero Bello worked as a teaching assistant where she performed tasks, such as preparing solutions, similar to those in her current position. While she does admit that her chemistry and education courses helped prepare her for her current position, she believes that much of her learning has come from everyday life lessons.

Forero Bello's favorite part about her current position is the diversity every day. She greatly enjoys the combination of teaching and managing, as well as her fellow coworkers whom she feels are very friendly and easy to work with. When asked why she enjoys chemistry, Forero Bello responded, "Chemistry is everywhere. Even when we breathe, there is chemistry going on."

Two New Term Faculty for 2015-16 Academic Year

The chemistry department has two new fixed-term faculty teaching this year. Dr. Anu Adhikary is teaching Chem 125, Chem 251 and Chem 203 lab. Adhikary grew up in a village in West Bengal, India. He earned a B.Sc. in chemistry from Ramakrishna Mission Residential College, a small school of 2000 students affiliated with the University of Calcutta, followed by a M.Sc. in chemistry from the Indian Institute of Technology, Kharagpur. He was recently awarded a Ph.D. from the University of Cincinnati, working under the supervision of Dr. Hairong Guan. His pastimes include singing, sketching and photography.

Dr Workalemahu Berhanu comes from Addis Ababa, Ethiopia. He obtained a B.Pharm. from Addis Ababa University, then completed a M.Sc. in pharmaceutical analysis and quality control. He was hired as a lecturer in the Department of Pharmaceutical Chemistry, teaching pharmaceutical analysis courses and labs, part of the medicinal chemistry program. In the fall of 2011, he completed a PhD in chemistry at the University of Central Florida. He did post-doctoral work in the Department of Chemistry and Biochemistry at the University of Oklahoma. Dr. Berhanu is married with a young daughter at home.

FoCuS Scholarship Program Continues into Fourth Year

The Chemistry Department's FoCuS program welcomed its fourth cohort group during the summer of 2015. These students participated in a summer bridge program, making the transition to college easier. In addition to taking Chem 125 and 201 as a group during the summer, students also participated in outreach to Boys & Girls Club and made an industry Visit to Microbiologics in St. Cloud.

FoCuS Class of '19 at Microbiologics

FoCuS was made possible by a $600,000 grant from the National Science Foundation to CSB/SJU, with **Dr. Kate Graham** as Principal Investigator (PI). A PI typically writes a proposal for a grant, then oversees the project if the grant is awarded. Graham does much of the interviewing of potential scholars herself, with help from **Drs. Annette Raigoza, Ed McIntee, Alicia Peterson**, and **M. A. Fazal**. In addition, **Dr. Henry Jakubowski** has assisted with planning outreach programs.

Currently, 46 students, ranging from first years to seniors, are part of the program. These students have been very active in research, with nine off-campus research presentations by cohort members so far. In fact, 50% of FoCuS scholars have held a STEM-related job, internship or research position after their first year of college. All of the members of the FoCuS Class of 2016 (the first group in the program) have held such positions by senior year.

Grad Launch

(*continued fom page 8*)

Marie Nilles-Melchert is working as an au pair in Sweden. **Joseph Pollei** works as a pathology aide at Abbott Northwestern Hospital. **Carmen Probst** has deferred enrollment in graduate school at the University of Virginia while she gains some experience working at Upsher Smith. **Levi Salzl** is employed by Legend Technical Services as a chemist. **Erica Sinner** is in graduate school in chemical biology at Johns Hopkins University. **Tom Steichen** works as an analytical chemist for General Mills. **Mel Quintanilla** is in the health sciences post-baccalaureate research program at Yale University. **Mai Chee Vang** is working as a clinic assistant at Health Partners.

Biochemistry graduates are pursuing a similar mix of interests. **Ellen Black** is enrolled in dental school at the University of Minnesota. **Bailey Drewes** is in graduate school in nutritional sciences at Cornell University. **Emmanuel Freeman** is working as a lab technician at Ardent Mills. **Samantha Hurrle** is in the master's program in biomedical sciences at University of Iowa. **Amy Knutson** teaches secondary science with Teach for America. **Syn Lim** is enrolled in the histology technician program at the Mayo Clinic. **Josh Lorenz** is in medical school at Medical College of Wisconsin. **Jamia Moss** is a medical student at University of the West Indies - Mona. **Justin Sachs** is a Project Manager at Epic Systems in Madison, WI. **Christian Wilmore** has been working as a basketball referee for FIBA.

The Cavendish Chronicle

Editor: Chris Schaller
cschaller@csbsju.edu

Story Credits: Alex Messner

Photo Credits: Alicia Peterson, Annette Raigoza, Ed McIntee, Tommy O'Laughlin, CSB/SJU chemistry and biochemistry students

CSB | SJU Chemistry
Ardolf Science Center
37 South College Ave.
St. Joseph, MN 56374

The College of Saint Benedict | Saint John's University

Alum Notes

Check out the archive!
http://employees.csbsju.edu/cschaller/cavendish/Cavendish.htm

Elizabeth Nesset Ferguson, Chem '99 has accepted a new position as Chair, Department of Surgery & Anesthesia, Arizona College of Osteopathic Medicine. Nesset Ferguson was previously the Program Director, General Surgery Residency Program for the Maricopa Integrated Health System in the Phoenix area.

Bridget Charbonneau, Chem '01 recently gave birth to a lovely baby girl. Charbonneau works as an Associate Consultant for Global Scientific Communications with Eli Lilly.

Chris Brueske, Chem '00 is taking time to be a stay-at-home father to his son, Linus, born in September. Brueske was previously Deputy Chief Operating Officer for the Public Health Laboratory of the State of Minnesota.

Paige Armbrister, Bchm '14 began medical school at University of the West Indies (UWI) last fall. Based on her first-year performance, she was awarded a UWI Open scholarship, covering full tuition, as well as a scholarship from the Dr. Meyer Rassin Foundation of Doctors Hospital, Nassau, Bahamas.

Felicia Burns, Chem '13 has started graduate school in organic chemistry at Syracuse University. Burns had previously worked as a Quality Development Associate at Ardent Mills.

Grad Launch

What the Class of 2015 is Doing Now

Chemistry students from the Class of 2015 have found a range of opportunities after graduation. **Gabe Amon** has deferred medical school at University of Minnesota – Duluth for a year while he served in the Benedictine Volunteer Corps in Rome. **Cameron Axberg** is pursuing environmental interests in Conservation Corps. **Jeff Bowers** is working as a medical scribe in Rochester. **Tim Doyle** is working at Legend Technical Services. **Autumn Flynn** enrolled in graduate school in chemistry at Emory University. **Alex Frie** is in graduate school in environmental sciences at the University of California, Riverside. **Brianne Gibson** is working as the stockroom fellow, a new position in Ardolf Science Center. **Clare Johnston** has gone to graduate school in chemistry at University of Minnesota. **Sam Klinker** is at University of Minnesota - Duluth medical school. **Ben Kor** is in medical school at Creighton University. **Anna Luke** started graduate school in chemistry at University of Minnesota. **Jack Luke** works for the Minnesota Department of Natural Resources. **Katherine Maguire** is teaching at Aquinas American School, Madrid, and working on a masters in international education. **Ian Manion** is working as a lab technician while enrolled in classes at Southwest University, Beibei, China. **William McCue** entered graduate school in medicinal chemistry at the University of Minnesota.
(*continued on page 7*)