



College of Natural Sciences & Mathematics Newsletter

MARCH 2017 / nsm.fullerton.edu

College of NSM: Office of the Dean

Dean

Dr. Marie Johnson
mariejohnson@fullerton.edu

Associate Dean

Dr. Mark Filowitz
mfilowitz@fullerton.edu

Assistant Dean for Student Affairs

Dr. Colleen McDonough
cmdonough@fullerton.edu
MH 488 (657) 278-4158

Department of Biological Science

MH-282 (657) 278-3614
Dr. Sean Walker, Chair
swalker@fullerton.edu

Department of Chemistry & Biochemistry

MH-580 (657) 278-3621
Dr. Peter de Lijser, Chair
pdelisjer@fullerton.edu

Department of Geological Sciences

MH-254 (657) 278-3882
Dr. Phil Armstrong, Chair
parmstrong@fullerton.edu

Department of Mathematics

MH-154 (657) 278-3631
Dr. Stephen Goode, Chair
sgoode@fullerton.edu

Department of Physics

MH-611 (657) 278-3366
Dr. Jim Feagin, Chair
jfeagin@fullerton.edu

In this Issue:

Celebrating Black Scientists.1	
In the News.....	2- 6
Uzbekistan Flyer.....	7
Publications & Presentation.8	
Student Spotlight.....	9-10
Career Center.....	11
NSM ICC and Clubs.....	12

Contributions of Black Scientists Honored at President's Reception Dr. Joel Abraham-Keynote Speaker



“Celebrating Black Scientists” was the theme of Cal State Fullerton’s Black History Month Reception, hosted by President Mildred García Feb. 7 in the Titan Student Union. “We applaud the African-American men and women, who despite systemic racism, were able to achieve this country’s greatest breakthroughs in the field of science, medicine, astronomy and beyond,” said García in her opening remarks. “Now it is our turn to celebrate those legacies, stand on their shoulders and as Titans, reach higher to be the change we wish to see on campus, throughout this great nation and the entire world.”

García paid tribute to the late Dr. Jewel Plummer Cobb, CSUF’s president emeritus and professor of biology recognizing her legacy as a world-renowned cell biology and cancer researcher and the first African-American woman to lead a major university on the West Coast. Dr. Joel K. Abraham, associate professor of biological science, served as the event’s keynote speaker. His talk examined the need to address the underrepresentation of blacks in science, technology, engineering and math (STEM) from an anti-deficit model. “Too few of our students are choosing STEM majors, and too many of our students who have chosen a STEM major end up leaving it before graduation,” said Abraham. “Those who do stay too often face direct or implicit bias that hinders their advancement.

See more at: <http://news.fullerton.edu/2017wi/Black-History-Month-Reception.aspx>

NSM in the News

OC Fossil Study Reveals Hidden History of Crocodiles in California

In Orange County's ancient past, crocodiles lived here and existed longer in this area than anywhere else in California, a new Cal State Fullerton fossil study reveals. The student-led fossil study of Orange County and California, which included examining teeth of extinct crocodiles and horses by geology graduate Michelle Barboza and fellow researchers, discovered that the large aquatic reptiles lived in California for almost 10 million years after what previous research has shown. "Crocodiles aren't well-studied in California, and before this study, scientists thought they went extinct 16 million years ago," said Barboza. "Our study shows this hidden history of crocs living in Orange County and in California up until 6 million years ago." Barboza is the lead author of the study, which outlines the discovery extending the presence and history of crocodiles in California. She conducted the collaborative study for her undergraduate thesis, graduated in August with a bachelor's degree in geology, and is now a graduate student at the University of Florida studying vertebrate paleontology. The fossils studied are from collections at the John D. Cooper Archaeological and Paleontological Center — a partnership between CSUF and OC Parks — the Ralph B. Clark Regional Park Interpretive Center in Buena Park, Natural History Museum of Los Angeles and San Diego Natural History Museum. The study was published today in *PaleoBios*, an open-access, peer-reviewed journal at UC Berkeley. Co-authors are James F. Parham, assistant professor of geological sciences, who directed the study; undergraduate geology major Brian Kussman; geology graduate student Gabriel-Philip Santos; and Jorge Velez-Juarbe of the Natural History Museum of Los Angeles.



Michelle Barboza, a Class of 2016 graduate, examines a fossil horse tooth in her right hand and a fossil crocodile tooth in the other. Both fossils are from Orange County.

Photo courtesy of James F. Parham

See more at: <http://news.fullerton.edu/2017/wi/crocodile-study.aspx>

NSM in the News

Abrupt Sinking of Seal Beach Wetlands: Past Quakes at Fault

A Cal State Fullerton faculty-student study shows evidence of abrupt sinking of the wetlands near Seal Beach caused by ancient earthquakes that shook the area at least three times in the past 2,000 years — and it could happen again, the researchers say. The paleoseismology study reveals that the wetlands at the National Wildlife Refuge Seal Beach, a nearly 500-acre area located within the Naval Weapons Station Seal Beach and next to the communities of Seal Beach and Huntington Harbor, are susceptible to rapid lowering in elevation during large — over 7.0 magnitude — earthquakes. “Imagine a large earthquake — and it can happen again — causing the Seal Beach wetlands to sink abruptly by up to three feet. This would be significant, especially since the area already is at sea level,” said Matthew E. Kirby, CSUF professor of geological sciences. Kirby and colleague Brady P. Rhodes, CSUF professor emeritus of geological sciences, and alumnus Robert J. Leeper, whose master’s thesis is based on the research findings, led the study. The researchers mentored numerous CSUF geology students and collaborated with geologists and earthquake experts, including those from the U.S. Geological Survey (USGS). See: <http://news.fullerton.edu/2017/wi/sealbeach-wetlands-study.aspx>



Inside a Cal State Fullerton lab, geology graduate Robert J. Leeper prepares sediment samples from the Seal Beach wetlands for various types of analyses.



Matthew E. Kirby, Cal State Fullerton geological sciences professor, right, and CSUF graduate Robert J. Leeper conducted research in the field, where they extracted a 20-foot-long sediment core from the Seal Beach wetlands.

GWPAC / Physics in the News

“Woman of the year in STEM for the CA Senate”



2017 Women of the Year

6:30 PM Doors Open
7:00 PM Dinner Served
7:30 PM Program Begins

Saturday, March 25
Walter D Ehlers Event Center
Heritage Hall
8150 Knott Ave
Buena Park, CA 90620

PROGRAM WILL END BY 10PM

Arts
Corky Nepomuceno

Business
Kris Hanna

Community
Pam Keller
Laura Montague

Environment
Angela Lindstrom

In Memoriam
Mary Hicks

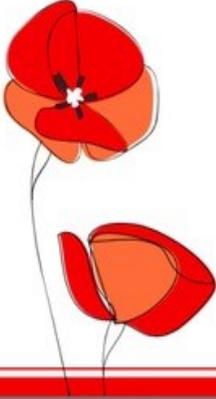
Future Leaders
Ansley Wozab
Ellen Kim
Kelly Tran
Esther Jeong

Health
Nahla Kayali
Dr. April Lopez

Science & Technology
Jocelyn Read

Education
Nancy Buck

Philanthropy
Carrie Flanders



Physics' and GWPAC's Jocelyn Read was named “Woman of the year in STEM for the CA Senate” on March 25 at Walter D. Ehlers Event Center in Buena Park, Ca.

Jocelyn Read is the Chief Editor of the LIGO Magazine <http://www.ligo.org/magazine/> LIGO Magazine is published twice a year by the LIGO Scientific Collaboration and details the latest research, news and personalities across the diverse group of members.” Please read the message from the editor on the link below.

<http://www.ligo.org/magazine/LIGO-magazine-issue-10.pdf#page=4>

GWPAC / Physics in the News



Photo: NRAC

Data from the Green Bank Telescope in West Virginia (shown) and Arecibo Telescope in Puerto Rico help researchers use pulsars to study gravitational waves.

Gravitational Waves: Hints, Allegations, and Things Left Unsaid

By Gabriel Popkin

APS April Meeting 2017 — If the APS April Meeting 2016 was a champagne-soaked celebration for gravitational wave scientists, the 2017 meeting was more like spring training — there was lots of potential, but the real action is yet to come.

The Laser Interferometer Gravitational-Wave Observatory, or LIGO, launched the era of gravitational wave astronomy in February 2016 with the announcement of a collision between two black holes observed in September 2015. “I’m contractually obligated to show the slide [of the original detection] at any LIGO talk for at least another year,” joked Jocelyn Read, a physicist at California State University, Fullerton, during her presentation at this year’s meeting.

The scientific collaboration that operates the two LIGO detectors netted a second merger between slightly smaller black holes on December 26, 2015. (A third “trigger” showed up in LIGO data on October 12, 2015, but ultimately did not meet the stringent “five-sigma” statistical significance standard that physicists generally insist on.)

The detectors then went offline in January 2016 for repairs and upgrades. The second observing run began on November 30, but due to weather-related shutdowns and other logistical hurdles, the two detectors had operated simultaneously on only 12 days as of this year’s meeting, which limited the experiment’s statistical power. Collaboration members said they had no new detections to announce.

See <http://www.aps.org/publications/apsnews/201703/waves.cfm> for the entire article.

Physics in the News

Outstanding Student Scholarly and Creative Activities Awards for Undergraduate Students



Alyssa Garcia, Nick Demos, and Haroon Khan (all three supervised by Geoffrey Lovelace in GW-PAC) have won the Outstanding Student Scholarly and Creative Activities Award for an Undergraduate Student in CNSM and Engineering. Their achievements will be celebrated during the Award presentation on Student Creative Activities and Research Day, Wednesday, April 12th from 1:00 – 1:30pm (TSU Pavilion A).

Anaheim Duck's Annual S.C.O.R.E Event



This is the Anaheim Duck's annual [S.C.O.R.E Event](#) that took place March 6. The team's efforts were highlighted in a [Fox Sports video](#)—check them out around the 1:10 min mark.

For the 3rd consecutive year, staff Physicists Shovit Bhari and Robert Wright along with students Todd Yeakley and Matthew Jackson awed and entertained some 4000 kids for almost 3 hours.

Physics highlight about Shovit and Bobby at the Honda Center:
<https://physics.fullerton.edu/departments/highlights/642303-shovit-and-bobby-return-to-the-honda-center-for-the-duck-s-annual-education-event>

Thanks guys for another great event!

USA – Uzbekistan Collaborative Research in Leibniz Algebras 2017 Summer International Research Experience for Students Institute of Mathematics, Uzbekistan Academy of Sciences

Overview

The USA-Uzbekistan Collaborative Research in Leibniz Algebras is a National Science Foundation funded program that gives U.S. students summer research experience in Uzbekistan, the birthplace of algebra, under the mentorship of a world-renowned mathematician Shavkat Ayupov. The students will spend ten weeks at the Institute of Mathematics of the Uzbekistan Academy of Sciences joining Dr. Ayupov's research group and engaging in research on topics in Leibniz Algebras.

How to Apply

Visit www.fullerton.edu/usuzcr1a
for application and more information
Application Deadline: March 31, 2017

Program Benefits

- \$3,500 Stipend
- Travel allowance up to \$1,800 provided
- Housing, meals and local transportation provided
- Overseas health & travel insurance provided
- Opportunity to engage in cutting edge research
- Many professional development activities
- Trips to ancient Silk Road cities

Program Eligibility

- U.S. citizen or permanent resident
- Current junior or senior undergraduate students or full-time graduate students
- Must enroll as a college-level student in Fall 2017
- Mathematics major with a minimum 3.0 GPA
- Participants may not take courses during program

Program Dates

- Pre-Departure Orientation
- Flight to Tashkent, Uzbekistan
- Trip to Samarkand, Bukhara, & Khiva
- Summer Research
- Flight to Los Angeles, California
- Welcome Back Dinner

May 30, 2017 – May 31, 2017
May 31, 2017 – June 2, 2017
June 3, 2017 – June 9, 2017
June 10 – August 12, 2017
August 13, 2017
August 17, 2017

Send application materials and any questions to: Dr. Zair Ibragimov, Program Director, at usuzcr1a@fullerton.edu



Publications and Presentations

Biology



Dr. Misty Paig-Tran's students *Raj Bolla* (grad student, working on bio-inspired manta ray filters) and *Catlin Stapp* (Undergraduate, working on bio-inspired armor based on fish scales) both have been selected to represent CSUF in the all CSU research competition in April.



Geology

Barboza, M.M., J.F. Parham, *G.-P. Santos*, B.N. Kussman, J. Velez-Juarbe. 2017. The age of the Oso Member, Capistrano Formation, and a review of fossil crocodylians from California. *PaleoBios* 34:1-16.

<http://news.fullerton.edu/2017/wi/crocodile-study.aspx>



Chemistry Biochemistry

In collaboration with Dr. Zhen Yu at Cal Poly Pomona, Dr. Zhuangjie Li received an ARI (Agricultural Research Institute) research grant of \$69,758 for a research project titled "Removal of Water Contaminants Associated with Agricultural Applications". This one year project will focus on removing pesticide contaminants from water using nanotechnology.



TIP OF THE DAY
Add a couple tablespoons of baking soda to cold water when washing fresh vegetables. This removes pesticides, dirt and wax.



NSM Student Spotlight

Name: : Eduardo Chavez

Major: Geological Sciences, B.S.

Expected Graduate Date: June 2017

I would like to nominate my student Ed Chavez for student spotlight. Ed is a BS geology major graduating this summer. He is an LSAMP scholar and AAPG student chapter president. He is working with me on his senior thesis developing a geochemical method for provenance studies in collaboration with New Mexico State University. Ed is going to start a PhD this fall at Texas Tech University.

Vali Memeti, Assistant Professor
Department of Geological Sciences



Tell us a one thing that you are interested in.

My name is Eduardo Chavez. I am a geological sciences major and am currently finishing up my senior year. In regards to geology, I am particularly interested in geochemistry and its many applications to large-scale geologic questions. Apart from geology, I am an active musician and have been playing classical and jazz guitar for 12 years.

How has the College of NSM prepared you for your future career plans?

My undergraduate thesis advisor, Dr. Vali Memeti, has been an enormous help in my academic development. It was through Dr. Memeti and her graduate student Dustin Williams that I met my soon-to-be Ph.D. advisor, Dr. Cal Barnes. Being a part of the Memeti lab has pushed me to be a better scientist and an all-around better academic.



What kind of research have you done?

My senior thesis involves developing a new method for determining the source-rocks of sediments through geochemistry using an instrument called LIBS (laser-induced breakdown spectroscopy). Typically, source-rock studies use age dating in order to correlate sediments to their parent-rock; however, this method is costly and time consuming. If determining source-rocks through geochemistry demonstrates to be successful, it will cut down on the costs and time normally associated with source-rock studies.



NSM Student Spotlight

Name: Ed Chavez

What have been your major awards or accomplishments as a CSUF student or NSM major?

As of Fall 2016, I have been selected as an LSAMP (Louis Stokes Alliance for Minority Participation) research scholar. LSAMP has played a vital role in funding my research.

On April 20th, I will be awarded the Outstanding Major Award – B.S. in Geology by the geological sciences department.

What campus involvement have you been apart of?

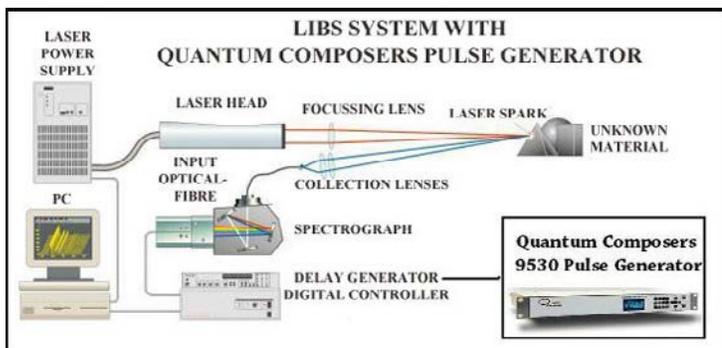
I am currently the American Association of Petroleum Geologists (AAPG) CSUF student chapter president. AAPG is a professional development club aimed at students who would like to be involved in the petroleum or resource geology industries. The AAPG CSUF Student Chapter participates in beach clean-ups, organizes rock-hounding events, hosts guest lecturers, and aids students in presenting their research at local conferences.

What advice would you give to your fellow NSM Students?

To my fellow NSM students – be involved. You are only an undergraduate student once, and there is much more to the academic experience than simply showing up to class.

What are your plans for after you graduate and how have you come to this decision? (Graduate school, medical school, career plans)

I am proud to announce that I have accepted a position as a Ph.D. student at Texas Tech University under the supervision of Dr. Cal Barnes and will begin my Ph.D. track this upcoming summer.



NSM CLUBS AND ORGANIZATIONS

NSM.fullerton.edu/student-resources/get-involved



Contact any of the organizations below to find out their meeting and activity information.

American Medical Student Association (AMSA): Is committed to improving health care and healthcare delivery to all people; promoting active improvement in medical education; involving its members in the social, moral and ethical obligations of the profession of medicine; assisting in the improvement and understanding of world health problems; contributing to the welfare of all pre-health professional students.

AMSA@fullerton.edu

Biology Graduate Club (BGSC): Offers opportunities for association and interaction between students, faculty, and the administration of CSUF. bgsc.csuf@gmail.com

Chemistry and Biochemistry Club (CBC): provides information pertaining to opportunities and careers with the fields of Chemistry and Biochemistry, familiarizes students with department opportunities, and conducts community outreach. csuf.cbc@gmail.com

Geology Club: Unites geology majors and others by providing related information and volunteer activities on and off campus. geologyclub@fullerton.edu

Latino Medical Student Association Pre-Medical Latino - Undergraduate Society (LMSA PLUS): For Anyone interested in medical school can join LMSA, you do not need to be of Latino/Latina heritage!

lmsa.plus@exchange.fullerton.edu

Math Club: Encourages students to start joint research projects with each Faculty and attend conferences nationwide for observation and / or presentation. csufmathclub@gmail.com

NSM Inter-club Council (NSM-ICC): NSM clubs and students collaborates with each other and Associated Students (ASI) to provide events and travel funding to all NSM and CSUF students. The NSM – ICC organizes the NSM Symposium, Meet and Eat with the Deans and Chairs. nsmicc.csuf@gmail.com

Physics Club: organizes lecturers from guest speakers as well as several events a year. All CSUF students are welcome. Physicsclub.csuf@gmail.com

SMART Girls Support Group (Sisters in Mathematics and Academic Relations in Teaching): holds monthly meetings, study sessions, and provides access to advisors. Learn how to be successful in math courses, relate undergraduate courses to high school teaching connect to school tutoring in schools and networking. Males may join as associate members. csufsmartgirls@gmail.com

STEM Outreach Club: Build a community with your peers. Form study-groups. Get involved in the community. Help promote science. And much more! ALL MAJORS WELCOME! csufmentor1@gmail.com.

SUCCESS (Students United with Community Collaborators to Enhance Success in Science): consist of students from all STEM disciplines who are interested in undergraduate research who collaborate together to hold workshops and events for CSUF students. SUCCESSatCSUF@gmail.com