



# science connect

winter 2016

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## STUDENT SPOTLIGHT: SHANE KEPLEY, MATHEMATICAL SCIENCES



### **SHANE KEPLEY, SUMMA CUM LAUDE, B.S. MATH, '12**

Shane earned his bachelor's degree (summa cum laude) in mathematics from Florida Atlantic University in 2012 after serving for four years as a paratrooper in the U.S. Army. He is currently a doctoral candidate in Mathematics under Dr. Bill Kalies, a graduate teaching assistant, and also continues to serve in the Florida National Guard.

**What excites you about Math?** I enjoy problems that I cannot solve. I enjoy the creativity and critical thinking that solving a problem requires. I also enjoy the satisfaction of having solved a problem. Afterward, you're the guy. For that problem, you're the expert.

**What advice would you give other students?** Come to school for an education, not just a degree. An education will last you a lifetime and make your life richer. I think the reason that people are often

challenged by math is that they try to memorize for a test and don't understand the theory. Once you get the theory, the math is easier.

**What ingredient do you think is crucial to success?** Hard work. Without a doubt. I like to say to anyone that is having difficulty that hard work is something that you can start right now. It will never fail you. I may not have the natural talent that Michael Jordan has, for example, but if I am willing to work hard enough, I can be a pretty darned good basketball player!

## ON THE COVER: COMMUNITY RECOGNITION

Every day, College of Science faculty and staff make a difference and not just at work. Many Owls volunteer and selflessly share their expertise with our local community. Three of our staff members have been recognized recently.



**Alana Edwards** is one of five extraordinary Palm Beach County women being given Emerald Awards by The Girls Scouts of Southeast Florida. These women represent leadership in the fields of STEM, Financial Literacy, Healthy Living, Environmental Leadership, and Global Citizenship and exemplify these national initiatives of Girl Scouts and serve as role models for today's girls. Alana is being recognized for the many years she has spent mentoring and working with young women in the environmental sciences field. Read more about the award [here](#).

**Jay Paredes** was named "Outstanding Friend of the Year" by the Friends of Arthur R. Marshall Loxahatchee National Wildlife Refuge. He is a long time board member and serves the organization in many ways including being responsible for the internet presentation of the Friends and organizing the photography contests. He also produced a self-guided tour of the preserve that you can enjoy by visiting [here](#). Many of you know Jay for his IT talent but may not know him as an extremely gifted photographer. He is also the Vice President of the Everglades Photographic Society. You can see some of his work [here](#).



**Susan Prince** was awarded "Toastmaster Prince: a Competent Communicator and Leader" by Toastmasters International. The award is the culmination of 21 years of hard work. Susan is a member of FAU's Toastmasters Club and only one of three people at FAU to hold such a distinction. Though she has enjoyed the sense of accomplishment that this award has given her, she is mostly proud of the distinction and honor that her award conveys to FAU's reputation.

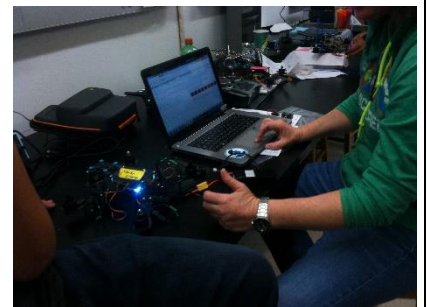
## PHYSICS STUDENTS BUILD DRONES AND SOCIETY



When visiting professor **Dr. Rory Conboye** first developed his class, “UAVs: Science and Society” he didn’t just want to teach students the basic concepts of Physics using drones as a model, he wanted to help them to learn to be conscientious members of society. 21 students filled the first class and together with teaching assistant **Traci Johnson**, Rory introduced the students to a shelf filled with an orderly row of cardboard boxes. These were drone kits. Each student, by the end of the class would have built their own drone and be able to take it home with them. Building the drone would teach them the basic laws of physics; Newton’s laws of motion, moments of force and controls, Benoulli’s principle and basic aerodynamics of flights, etc. Drones, Dr. Conboye explained are exciting and frightening to people. The technology is developing so fast that he wanted his students to be mindful of some people’s fear of new technology. So, a large portion of this WAC program was dedicated to discussing the scientific and commercial uses of UAVs, issues of safety and privacy, and FAA regulations. The class benefitted from several guest lectures. FAU is located very close to an airport, so the guest lecturer from the FAA was timely and informative. Issues of airspace and drones were discussed.



**How were students able to master such a complex project?** We didn’t start with the drone kits, explained Rory. They learned to solder, wrap a coil motor, and measured wind speed on a wing. Several small projects gave the students some practice before the drone kits were even opened.



**After each drone was built was it ready to fly?** No, after checking to make sure that each drone is built correctly and is operable, each drone needs to be programmed.

**What future uses do you see for drones?** Drones may be used to drop life rafts quickly at sea, deliver packages, and explore terrain that would be damaged if explored on foot or in a vehicle.



## FACULTY RESEARCH AND EDUCATIONAL RETREAT AT RIVERWOODS

The Florida Center for Environmental Studies (CES) hosted a Faculty Research and Educational Retreat at Riverwoods Field Lab in Highlands County in October providing Faculty and staff a field day on the Kissimmee River.

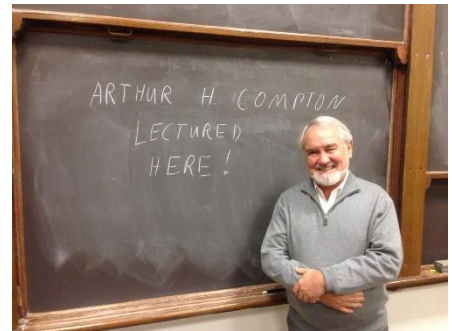
**CES Director, Dr. Colin Polsky and Riverwoods Director Loisa Kerwin** welcomed the group and introduced Riverwoods and its restoration mission. **James Gammack-Clark**, assisted by **Traci Johnson**, did a Geosciences drone presentation and demonstration. Then the group departed for a pontoon boat tour of the restoration project. The tour included a trip through the locks and the opportunity to compare three habitats: the historic river, the C-38 canal that replaced the natural course of the river, and the restored river. Finally, the group got a chance to perform field activities.



For more information about Riverwoods visit the [website](#) or contact Loisa Kerwin at [lkerwin@fau.edu](mailto:lkerwin@fau.edu)

## COLLEGE OF SCIENCE FACULTY SPEAKING INTERNATIONALLY

**Dr. J. A. Scott Kelso, FAU's Eminent Scholar in Science**, gave a series of invited lectures at The Weizmann Institute of Science in Rehovot, Israel on topics ranging from "The Coordination Dynamics of Moving Bodies" to "The Origins of Agency", November 5-11, 2015. In addition to the lectures, Dr. Kelso established a collaboration with the Contemporary Systems Biology group at The Weizmann led by Professor Uri Alon.



**Dr. David F. Bjorklund, Professor in Department of Psychology** and Editor, [Journal of Experimental Child Psychology](#) was presented with an Honorary Doctorate (Doctor philosophiae honoris causa) from the University of Bern, Switzerland.

**Dr. Marian Fadiman, an Associate Professor in the Geosciences Department,** was an invited speaker at TEDxCancún (she also did one a few years ago in Berkeley). She is also the contributor of the book, [Global Chorus: 365 Voices on the Future of the Planet](#), with many well-known names including Jane Goodall, Nelson Mandela, Archbishop Desmond Tutu, Stephen Hawking, Maya Angelou and the Dalai Lama. You can watch the talk [here](#). Closer to home, you can catch Dr. Fadiman February 19<sup>th</sup> when she is the featured speaker during Frontiers in Science Public Lecture Series. The full calendar and more information is [here](#).



## COLLEGE OF SCIENCE NEWSMAKERS



**FISH IN THE STREETS OF MIAMI?** As the world watched, President Barack Obama's news conference about climate change, he drew on South Florida to illustrate a point about the impact.

"As the science around climate change is more accepted, as people start realizing that even today you can put a price on the damage that climate change is doing — you go down to Miami and when it's flooding at high tide on a sunny day, fish are swimming through the middle of the streets, you know, that —

there's a cost to that," Obama said at the climate change conference in Paris Dec. 1. to make education funding a priority.

King tides happen twice a year. And some have spotted fish.

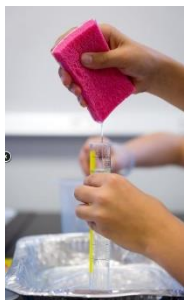
"The king tides have gotten higher in recent years," said **Colin Polsky, director of the Center for Environmental Studies at Florida Atlantic University**, told the Herald. "And the king tides we're seeing more recently have been higher than they were predicted to be." Read more [here](#).

### **MERCURY POISONING: DOLPHINS AND HUMANS IMPACTED**

"This research exemplifies the role of dolphins as an animal sentinel in identifying a public health hazard," **Adam Schaefer, one of the study researchers and FAU Harbor Branch epidemiologist**, explained in the university's release. "It is a unique and critical example of closing the loop between animal and human health." Read more [here](#).



### **EVERGLADES LESSONS NOW NEW FOCUS IN STATE CLASSROOMS**



FAU researchers helped develop an elementary school program designed to teach science students how we are draining water from the Everglades. The program fills a need for a comprehensive approach to teaching "Everglades Literacy" among K-12 students. Read more [here](#).

### **NEW STUDY REVEALS ELECTRIC CAMO IN CUTTLEFISH**

"We've known that open water fish have silvery scales for skin that reflect light from above so the reflected intensity is comparable to the background intensity when looking up, obliquely at the fish, as a predator would," said **Michael Twardowski, Ph.D., research professor at FAU's HBOI and co-author of the study who**

collaborated with co-author James M. Sullivan, Ph.D., also a research professor at FAU's HBOI. "This is one form of camouflage in the ocean." Read more [here](#).

### GENEROUS GIFT



Florida Atlantic University recently received a \$1 million gift from Dr. Walter and Lalita Janke to establish the Walter and Lalita Janke Innovations in Sustainability Science Research Fund, which will support faculty research that advances knowledge and applications relevant for improving environmental sustainability.

"We are extremely grateful to Dr. and Mrs. Janke for their generosity and commitment to supporting sustainability research at Florida Atlantic University," said

**Colin Polsky, Ph.D., director of CES at FAU and a professor of geosciences in FAU's Charles E. Schmidt College of Science.** Read more [here](#).

### MISSION: OCEAN DISCOVERY

The Florida Atlantic University Harbor Branch Oceanographic Institute will unveil its first rotating exhibit to feature the tools scientists and engineers use to explore the ocean at 10 a.m. Jan. 16 in the new gallery at the Ocean Discovery Visitor's Center, 5600 U.S. 1 North, Fort Pierce. "Sight, Sound and Dynamics in the Sea: The Role of Technology in Ocean Exploration" is the first in a series of exhibits featured in the "Mission: Ocean Discovery" program. Read more [here](#).



### CLIMATE CHANGE IMPACT ON SEA TURTLES, FAU BIOLOGIST FEATURED ON PBS NEWS HOUR



PBS News Hour recently featured the work of **Dr. Jeanette Wyneken**, FAU biology professor, and **Alex Lolavar**, Ph.D. student. The national news program focused on their turtle-saving efforts at local beaches at FAU's Marine Research Lab and the Gumbo Limbo Nature Center.

Climate change is threatening sea turtle nests and reducing the number of prospective male mates. If this trend continues over multiple generations, sea turtle diversity may be diminished, along with their ability to reproduce.

Wyneken explains that this "sex ratio bias" occurs because environmental climate determines the sex of a turtle. Hot weather produces more females, while cooler climates result in more males. Wyneken points to another significant problem for the turtles: an increase in storm surges that suffocate and/or completely wash out their eggs.

Watch and read PBS' coverage [here](#). This story is part of the station's series [The Wild Side of Sea Level Rise](#).

### 2015 EXPO A SUCCESS

Congratulations to all that made the 2015 High School Expo a huge success. It was a well-attended and fun-filled day as students, their parents and family members got an opportunity to explore all that FAU had to offer. Invitations to were extended to high school students with a minimum 3.6 GPA. Of the 1662 total

students that registered for the 2015 EXPO, 483 (29%) showed interest in the College of Science. Of the 884 students that attended the EXPO, 218 (25%) stated interest in the College of Science. Of those remaining numbers that attended, a total of 164 were undecided, but the Admissions Office is certain that they also had an interest in the College of Science.

**Stay tuned: planning for the 2016 EXPO is beginning.**



## IN PRINT

Dr. J.A. Scott Kelso, Eminent Scholar in Science, Center for Complex Systems and Brain Sciences and Professor of Psychology was published in two top journals.

The Virtual Teacher (VT) Paradigm: Learning New Patterns of Interpersonal Coordination Using the Human Dynamic Clamp. The paper was coauthored by Dr. Viviane Kostrubiec who was a visiting scientist at the Center for Complex Systems & Brain Sciences. The second author was a postdoc at the Center and now holds a permanent position at the prestigious Pasteur Institute in Paris. The third author was a former postdoc in the early years of the Center and is Full Professor of Neuroscience at CNRS and The University of Toulouse. FAU's international scientific collaborations (this one with colleagues in major French institutions) are proving highly productive. Read the paper [here](#).

Dr. Kelso published a second paper, "The Coordination Dynamics of Social Neuromarkers" with Dr. Emmanuelle Tognoli. You can read it [here](#).

## WHERE ARE THEY NOW?

### DR. GERARD CUOMO, '80



**Dr. Gerard Cuomo** earned his degree in Chemistry from FAU in 1980. He then graduated Northwestern University Dental School in 1984 and is now a recognized author and lecturer for his work related microscope enhanced dentistry. Dr. Cuomo has been practicing dentistry in the Boca Raton area for over 30 years. He was the 2012 recipient of the FAU Distinguished Alumni Award for his extensive involvement in mentoring Pre-Dental undergraduate students. Dr. Cuomo celebrates the start of his fifth year as founder and executive director of the FAU Pre-Dental Mentorship program, "Introduction to Dentistry and Lab." Together with a team of local dental specialists, he teaches a hands-on course designed to not only help college students understand all phases of dentistry, but to become better candidates for dental school. You can find out more about the course [here](#).

## AWARDS

### DISERTATION OF THE YEAR AWARDS

**Shweta Singh's** research project, "Modeling the Targeted Radiotherapy by Utilizing Nano-alpha Emitters to reduce the Radiation Dose to the Patient's Body While Destroying Cancer Cells" was chosen as a Dissertation of the Year and awarded \$1,500.

**Nadar Moshiri's** research project, "Characterizing the Expression Pattern and Function of Group B Sox Gene in the Development of the Drosophila Nervous System" was chosen as a Dissertation of the Year and awarded \$1,500.

### SUMMER UNDERGRADUATE RESEARCH FELLOWSHIP PROGRAM, SURF, PROJECTS AWARDED

Seven projects from our college have been approved for funding through our Summer Undergraduate Research Fellowship Program, SURF.

SURF projects are ten-week, intensive summer immersion research experiences for exceptional FAU undergraduate students. Each SURF award allocates \$3,500 in support of each chosen faculty mentored project. More information [here](#).

#### The supported projects for the 2016 academic year include:

**Faculty Mentor: Dr. Rindy Anderson**, Charles E. Schmidt College of Science Student fellow: Sabah Ali  
Project: "The Male-male Aggressive Function of Low Amplitude Signaling in the Bachman's Sparrow (*Peucaea aestivalis*)".

**Faculty Mentor: Dr. Tiffany Briggs**, Charles E. Schmidt College of Science Student fellow: Raul Ortega  
Project: "South Florida Barrier Island Beach Morphodynamics".

**Faculty Mentor: Dr. Daniel de Lill**, Charles E. Schmidt College of Science Student fellow: Madeline Rubio  
Project: "Synthesis of Lanthanide Coordination Polymers for Use in Environmental Sensing".

**Faculty Mentor: Dr. Evelyn Frazier**, Charles E. Schmidt College of Science Student fellow: Laura DeSouza



Project: “Commensal Species Found in Gopherus polyphemus Burrows within Florida Atlantic University Preserve”.

**Faculty Mentor: Dr. Alex Keene**, Charles E. Schmidt College of Science Student fellow: Shereen Jeyakumar  
Project: “Evolutionary Interactions between Sleep Loss and Hyperphagia”.

**Faculty Mentor: Dr. Daniela Popova**, Charles E. Schmidt College of Science Student fellow: Omar Eldaghar  
Project: “3D-Space Groups – Exploring the Symmetries of Crystallographic Groups and their Applications in Contexts other than Static Physical Objects”.

**Faculty Mentor: Dr. Tara Root**, Charles E. Schmidt College of Science Student fellow: Gino Garlaschi  
Project: “Investigation of Metals Concentrations in Lake Worth Lagoon”.

## GRANTS AWARDED\*

**Loisa Kerwin, CES Asst Director**, has received \$261,760 from the South Florida Water Management District (SFWMD) to manage the Riverwoods Field Lab as a Research and Education Center. Loisa has been managing Riverwoods since 2000. The SFWMD has also awarded CES with \$15,000 to manage the Great Water Odyssey: Online Teacher Training Program (GWO). This is the 10<sup>th</sup> year of the GWO program. Finally, Loisa has received \$30,000 from the FAU Foundation for the development and delivery of a Science Enrichment Program for Under-served Indiantown Middle School Students At DuPuis Nature Center. Check out all of CES programs at: [www.ces.fau.edu/](http://www.ces.fau.edu/)

**Dr. Greg Fields** received a \$10,638 grant from the NIH to study “*TPIMS-HTS for selective inhibitors of Meprin alpha and beta*”. And an award for \$496,240 from the NIH to study “*New probes for matrix metalloproteinade 13*”.

**Dr. Lyndon West** received a \$2,500 grant from The American Society of Pharmacognosy Foundation to study “*Isolation of Novel Polar Terpenoids from Pseudopterogorgia acerosa*”.

**Dr. Alex Keene** received a \$133,778 grant from The National Science Foundation to study “*Regulation of sleep in the Mexican Cavefish*”.

**Dr. James Hartman** received a \$7,000 grant from The Florida Atlantic University Foundation for his Cancer Research.

**Dr. Tara Root** received a \$5,887 grant from Applied Technology and Management Inc. to study “*Hydrologic Monitoring at Pondhawk Natural Area*”.

**Dr. Donna Chamely-Wiik, P.I.** and co-investigators **Dr. Daniel Meeroff, and Dr. Evelyn Frazier** received a \$620,000 grant from The National Science Foundation for STEM retention. The grant will provide for a collaboration with the University of Central Florida and Western Carolina University to increase the number of Science, Technology, Engineering and Mathematics or STEM undergraduates. This collaboration will result in the creation of a consortium to directly address the national need to promote STEM education and to develop a retention model for increasing the number of STEM undergraduate students who will more than likely advance into graduate education and professional careers in the sciences.

**\*To include your grant in this section, please forward the information to Mary Beth Mudrick, [mmudric1@fau.edu](mailto:mmudric1@fau.edu).**

## GRANT FACILITATOR SERVICES

**The Division of Research** announces grant facilitation services for FAU investigators. Grant facilitators can assist investigators in a number of ways, including:

- Finding Funding
- Building a Team
- Strengthening Your Proposal
- Identifying Peer Reviewers

Grant facilitators are assigned to individual colleges/units. If you are interested in assistance, please contact the Division of Research to find the appropriate facilitator 561.297.0777 or [fau.research@fau.edu](mailto:fau.research@fau.edu)

## UNIVERSITY-WIDE ANNOUNCEMENTS

### OWLS NEST CAMPAIGN KICK OFF RESCHEDULED

**New Date: Wednesday, February 3rd.**

**Help support scholarships and College of Science programs**

In 2014, CESCO had a 20% participation rate and raised \$19,621.

In 2015, CESCO had a 41% participation rate and raised \$28,352.98.

The College increased in both participation and dollars raised.

**More information [here](#).**

### SPRING SCHOLARSHIPS DUE

**Due date: Friday, April 15, 2016**

Foundation scholarships for spring 2016 are due in the Dean's office Friday, April, 15, 2016.

### CALL FOR NOMINATIONS

**President's Leadership, Gabor, and Valic Awards**

More information [here](#).

## EXPLORE SPRINGBOARD

### HAVE A SMALL PROJECT THAT NEEDS FUNDING?

Consider using FAU's "Springboard". 30, 60, and 90-day time lines let you set up a campaign and "share" it inside and outside of the university. Put your network to work.

This month's campaign is "Supplies for Sea Turtles". View it [here](#).

## FUNDING OPPORTUNITIES

### STUDENT AND FACULTY AWARDS

**Deadline February 10, 2016 5:00 p.m. All documentation must be received in electronic form.**

Please join Provost Perry in honoring students, faculty and staff that have made outstanding academic contributions in the past year.

Nominations are being accepted for:

Three undergraduate students for scholarships;

Three faculty/staff nominees for the excellence and innovation in undergraduate teaching and advising awards; and

One faculty nominee for the Barnes & Noble service award.

For more information, please contact Mary Beth Mudrick, [mmudric1@fau.edu](mailto:mmudric1@fau.edu)

## **GEOSCIENCES GRANTS PROGRAM**

**Due: Feb. 15**

Grants are made to provide financial assistance to students currently enrolled in Masters or Ph.D. programs to foster geosciences research. For details, click [here](#)

## **NATIONAL ROBOTICS INITIATIVE**

**Due: March 7**

The purpose of this program is to support the development of next generation robotics and to advance the capability of such systems. Learn more about this NSF opportunity [here](#).

## **NIH DRUG DISCOVERY FOR NERVOUS SYSTEM DISORDERS**

**Multiple deadlines**

This solicitation seeks applications directed toward the discovery and pre-clinical testing of novel compounds for the prevention and treatment of nervous system disorders. Read the RFP [here](#).

## **PILOT CLINICAL TRIALS FOR THE SPECTRUM OF ALZHEIMERS DISEASE AND AGE-RELATED COGNITIVE DECLINE**

**Multiple deadlines**

NIH invites applications to develop and implement Phase I or II clinical trials of pharmacological and non-pharmacological interventions in individuals with age-related cognitive decline and in individuals with Alzheimer's disease. Learn more about this opportunity [here](#).

## **NIH WORKSHOP: ASSISTANCE WITH NIH'S ONLINE SYSTEM**

**NIH Assist Application System**, 10:00 - 11:30 a.m. Feb. 3. OIT Computer Lab, Room 146

Learn about NIH's online system for the preparation, submission and tracking of grant applications. ASSIST features multi-user collaboration, pre-population of data from eRA Commons profiles and more. Space is limited to 20. Additional sessions will be offered if there's sufficient interest. To register, click [here](#)

## **FRONTIERS IN SCIENCE LECTURE SERIES**

### **JOIN US FOR THE 16<sup>TH</sup> SEASON OF FRONTIERS IN SCIENCE PUBLIC LECTURE SERIES**

**All lectures are held on Fridays at 3:30 p.m. in the Charles E. Schmidt College of Medicine, Building BC71, Room 126. A reception follows each lecture.**

#### **February 5, "Mercury as a Global Pollutant: Challenge and Perspective"**

Yong Cai, Ph.D., Professor, Department of Chemistry & Biochemistry, Southeast Environmental Research Center, Florida International University, Miami.

#### **February 19 "Re-connecting people to plants: Ethnobotany in Tibet and Africa"**

Maria Fadiman, Ph.D., Associate Professor, Department of Geosciences, Florida Atlantic University, Boca Raton, National Geographic Emerging Explorer.

#### **March 4 "Quantum Computing and Quantum Algorithmic Discovery"**

Martin Roetteler, Ph.D., Senior Researcher, Microsoft Research, Redmond, Washington.

#### **March 18, "New Technology in Radiation Oncology--Advances in Patient Care"**

Timothy Williams, M.D., Medical Director, Department of Radiation Oncology, Lynn Cancer Institute, Boca Raton Regional Hospital, Partnered with FAU Department of Physics Medical Physics program.

**March 25, "Harder, Better, Slower, Strong: Psychological Science Turns a Critical Eye on Itself"**

Simine Vazire, Ph.D., Associate Professor of Psychology, University of California, Davis.

For more information, contact

Mary Beth Mudrick at 561-297-4526 or [mmudric1@fau.edu](mailto:mmudric1@fau.edu).

**COLLEGE OF SCIENCE EVENTS**

Visit <http://science.fau.edu/> daily for our up-to-date calendar of events. Don't see your events listed? Let us know: [mmudric1@fau.edu](mailto:mmudric1@fau.edu)

**WE WANT YOUR NEWS!**

If you have any news you would like to include in future editions of *Science Connect*, please email Mary Beth Mudrick, [mmudric1@fau.edu](mailto:mmudric1@fau.edu).

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