



The Smilodon

The Newsletter of the Southern California Academy of Sciences
December 30, 2017

OPEN OCEAN KELP BIOFUEL PROJECT PROMISING

by David Ginsburg



A USC student measures kelp growth in association with efforts to develop new approaches for open ocean kelp cultivation for biofuel production. (Photo: D. Ginsburg)

David Ginsburg, SCAS President and USC Associate Professor (Teaching) of Environmental Studies is working with colleagues at USC's Wrigley Institute for Environmental Studies and Marine BioEnergy, Inc. to develop new approaches for cultivating kelp in the open ocean for biofuel production using funding from the U.S. Department of Energy's Advanced Research Projects Agency-Energy (ARPA-E) program.

Giant Kelp (*Macrocystis pyrifera*) grows naturally in the coastal waters of California, and is part of a genus found in temperate waters worldwide. This species is renowned for its rapid growth, with documented rates of up to 1 meter per day with mature individuals that can exceed 50 meters in total length. Giant kelp provides essential habitat and is an important food source for many marine species while sequestering carbon dioxide and producing oxygen as it grows. These characteristics and the fact that it does not require land, freshwater or fertilizer resources have made kelp an attractive source of biofuel since the 1970s.

Growing kelp in the open ocean, as opposed to its native, nearshore habitat, is a challenge. The variables kelp need are not found in one place: sunlight is at the surface, while essential nutrients are found in deeper waters. To successfully enable the large-scale cultivation of kelp in this environment will require the use of autonomous moving structures to 'depth-cycle' kelp to the surface for light and to depth for nutrients on a daily basis.

Currently, Ginsburg and colleagues are testing whether this 'depth-cycling' is biologically viable for the kelp. Depth-cycling tests are being conducted in waters near USC's marine facility on Catalina Island (the Wrigley Marine Science Center), using moored structures nicknamed 'kelp elevators.' Led by USC faculty and staff, the project offers a unique opportunity for undergraduates to engage with experts in applied marine research.

Upon successful proof-of-concept, Marine BioEnergy hopes to deploy large underwater moving kelp farms that move between depths using autonomous, submersible drones for the optimal balance of sunlight and nutrients, before extracting the kelp for fuel production. By combining decades-old kelp biofuel ideas with today's technological innovations, large-scale kelp biofuel may finally become a reality.

PRESIDENT'S CORNER...

For 126 years, the Southern California Academy of Sciences has been an important part of southern California's scientific community. As outlined in our mission statement, we promote fellowship amongst our peers and those interested in science. Additionally, we contribute to the literature through the publication of pertinent manuscripts in The Bulletin, and we encourage and promote scholarship among young scientists.

I'd like to invite each of you to "Save the Date!" for this year's annual meeting, which will be held on May 4, 2018 as a one-day event on the Cal Poly Pomona campus. Symposia themes for 2018 include Desert Ecology, Marine Science and Policy, and Parasitology. Contributed paper presentations will cover a variety of topics ranging from organismal ecology and physiology to conservation biology and ecosystem change. And, finally, we will cap off the day with an evening poster session, which will include our Junior Academy members enrolled in the Research Training Program.

Special thanks to the following people for their outstanding efforts during our 2017 Annual Meeting at SMC: Lisa Collins as Local Committee Chairperson, Kristy Forsgren, Shelly Moore, Danny Tang, all the symposium organizers, and Gloria Takahashi for leading the Junior Academy. I would also like to thank our plenary speaker, Prof. Sharon Walker from UC Riverside. More than 250 people attended the 2017 meeting, which included 45 oral presentations and nearly 70 posters. Awards were given for best student presentations and posters, and five graduate students were presented grants to support their research.

Congratulations and welcome to our newly elected Board member, Amber Brown from the USC Wrigley Institute of Environmental Studies. The following Board members have agreed to continue to serve

as officers; myself as President, Lisa Collins as Vice President, Edith Read as Recording Secretary, Kristy Forsgren as Corresponding Secretary, Karina Johnston as Treasurer, Daniel Pondella and Larry Allen as Editors of The Bulletin, Brad Blood as Editor of The Smilodon, and Shelly Moore as Webmaster. Thank you for your continued support!

If you have scientific papers to publish, please remember that our Academy Bulletin is open to papers in any field of science with relevance to the southern California area, particularly from SCAS members. The Academy publishes papers by members without page charges, so please consider submitting your manuscripts.

I believe the research, scholarship, and professional development opportunities offered by SCAS can greatly enhance the future career choices of students at all levels of their academic career. Your continued participation in and support of SCAS can make all the difference.

Thank you and I look forward to seeing you at the May 4, 2018 Annual Meeting at Cal Poly Pomona!

David W. Ginsburg, Ph.D.
President

**MARK YOUR CALENDAR!!
SCAS' 2018
ANNUAL MEETING**

MAY 4, 2018

**California State
Polytechnic University,
Pomona**

SOLAR SYSTEM'S FIRST INTERSTELLAR VISITOR DAZZLES SCIENTISTS



Artist's concept of interstellar asteroid 1I/2017 U1 ('Oumuamua) as it passed through the solar system after its discovery in October 2017. The aspect ratio of up to 10:1 is unlike that of any object seen in our own solar system. Credits: European Southern Observatory/M. Kornmesser

Astronomers recently scrambled to observe an intriguing asteroid that zipped through the solar system on a steep trajectory from interstellar space—the first confirmed object from another star.

Now, new data reveal the interstellar interloper to be a rocky, cigar-shaped object with a somewhat reddish hue. The asteroid, named 'Oumuamua by its discoverers, is up to one-quarter mile (400 meters) long and highly-elongated—perhaps 10 times as long as it is wide. That aspect ratio is greater than that of any asteroid or comet observed in our solar system to date. While its elongated shape is quite surprising, and unlike asteroids seen in our solar system, it may provide new clues into how other solar systems formed.

The observations and analyses were funded in part by NASA and appear in the Nov. 20 issue of the journal Nature. They suggest this unusual object had been wandering through the Milky Way, unattached to any star system, for hundreds of millions of years before its chance encounter with our star system.

"For decades we've theorized that such interstellar objects are out there, and now – for the first time – we have direct evidence they exist," said Thomas Zurbuchen, associate administrator for NASA's Science Mission Directorate in Washington. "This history-making discovery is opening a new window to study formation of solar systems beyond our own."

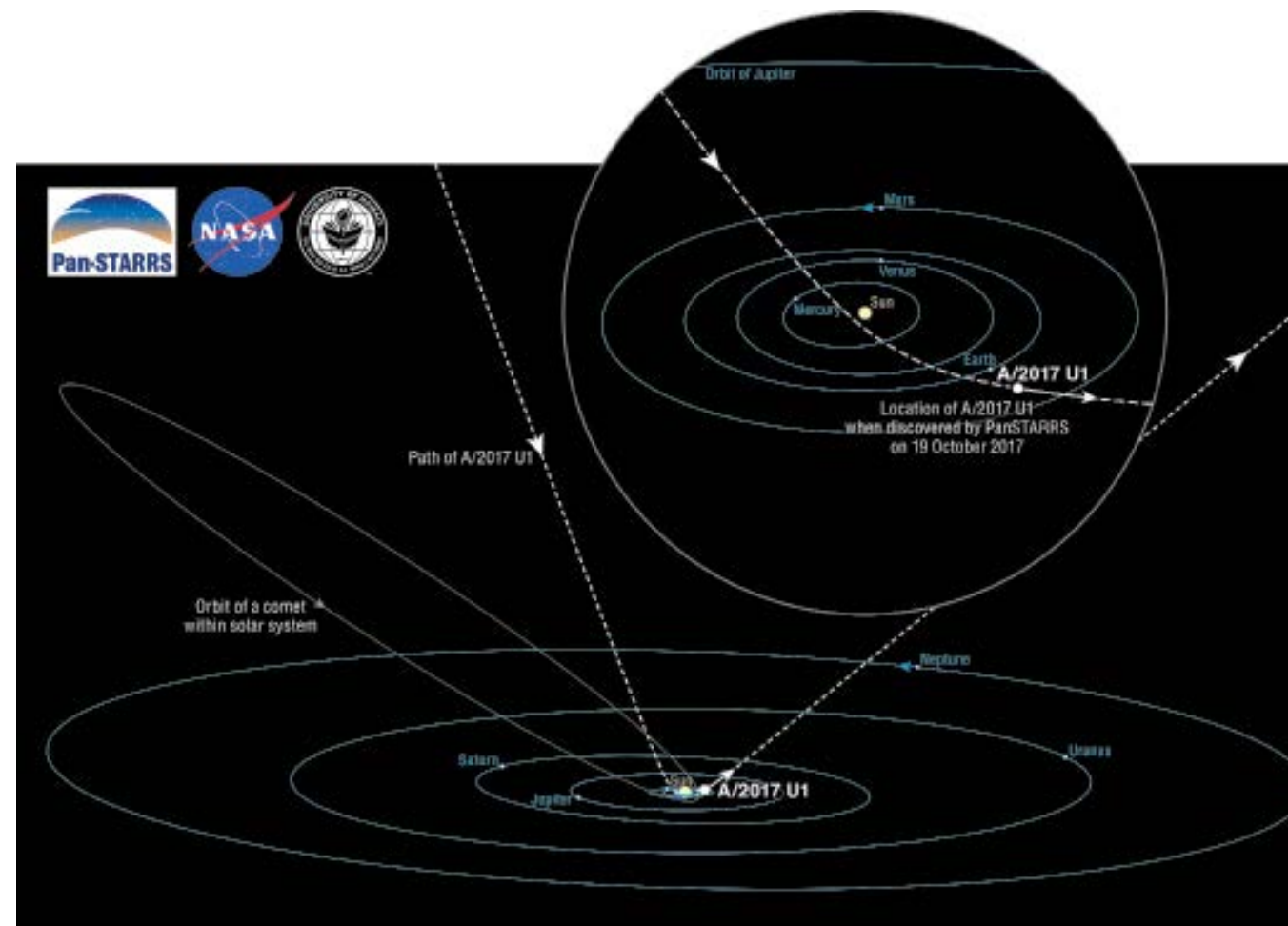
Immediately after its discovery, telescopes around the world, including ESO's Very Large Telescope in Chile and other observatories around the world were called into action to measure the object's orbit, brightness and color. Urgency for viewing from ground-based telescopes was vital to get the best data.

continued on page 4

INTERSTELLAR VISITOR DAZZLES, CONT...

Combining the images from the FORS instrument on the ESO telescope using four different filters with those of other large telescopes, a team of astronomers led by Karen Meech of the Institute for Astronomy in Hawaii found that 'Oumuamua varies in brightness by a factor of ten as it spins on its axis every 7.3 hours. No known asteroid or comet from our solar system varies so widely in brightness, with such a large ratio between length and width. The most elongated objects we have seen to date are no more than three times longer than they are wide.

"This unusually big variation in brightness means that the object is highly elongated: about ten times as long as it is wide, with a complex, convoluted shape," said Meech. We also found that it had a reddish color, similar to objects in the outer solar system, and confirmed that it is completely inert, without the faintest hint of dust around it."



This schematic diagram of our solar system shows the dramatic path of A/2017 U1 (dashed line) as it crossed the plane of the planets (known as the ecliptic), and then turned and headed back out. The inset shows the object's path through the inner solar system, with the short solid segment showing the small two-week-long portion of the path during which the object can be observed by large telescopes. For comparison, the highly elongated orbit of a comet, which is part of our solar system, is also depicted. (NB: the object was reclassified as 1I/2017 U1 by the International Astronomical Union.) Credit: Brooks Bays / SOEST Publication Services / UH Institute for Astronomy

These properties suggest that 'Oumuamua is dense, comprised of rock and possibly metals, has no water or ice, and that its surface was reddened due to the effects of irradiation from cosmic rays over hundreds of millions of years.

A few large ground-based telescopes continue to track the asteroid, though it's rapidly fading as it recedes from our planet. Two of NASA's space telescopes (Hubble and Spitzer) are tracking the object the week of Nov. 20. As of Nov. 20, 'Oumuamua is travelling about 85,700 miles per hour (38.3

INTERSTELLAR VISITOR DAZZLES, CONT...

kilometers per second) relative to the Sun. Its location is approximately 124 million miles (200 million kilometers) from Earth -- the distance between Mars and Jupiter -- though its outbound path is about 20 degrees above the plane of planets that orbit the Sun. The object passed Mars's orbit around Nov. 1 and will pass Jupiter's orbit in May of 2018. It will travel beyond Saturn's orbit in January 2019; as it leaves our solar system, 'Oumuamua will head for the constellation Pegasus.

Observations from large ground-based telescopes will continue until the object becomes too faint to be detected, sometime after mid-December. NASA's Center for Near-Earth Object Studies (CNEOS) continues to take all available tracking measurements to refine the trajectory of 1I/2017 U1 as it exits our solar system.

This remarkable object was discovered Oct. 19 by the University of Hawaii's Pan-STARRS1 telescope, funded by NASA's Near-Earth Object Observations (NEOO) Program, which finds and tracks asteroids and comets in Earth's neighborhood. NASA Planetary Defense Officer Lindley Johnson said, "We are fortunate that our sky survey telescope was looking in the right place at the right time to capture this historic moment. This serendipitous discovery is bonus science enabled by NASA's efforts to find, track and characterize near-Earth objects that could potentially pose a threat to our planet."

Preliminary orbital calculations suggest that the object came from the approximate direction of the bright star Vega, in the northern constellation of Lyra. However, it took so long for the interstellar object to make the journey -- even at the speed of about 59,000 miles per hour (26.4 kilometers per second) -- that Vega was not near that position when the asteroid was there about 300,000 years ago.

While originally classified as a comet, observations from ESO and elsewhere revealed no signs of cometary activity after it slingshotted past the Sun on Sept. 9 at a blistering speed of 196,000 miles per hour (87.3 kilometers per second).

The object has since been reclassified as interstellar asteroid 1I/2017 U1 by the International Astronomical Union (IAU), which is responsible for granting official names to bodies in the solar system and beyond. In addition to the technical name, the Pan-STARRS team dubbed it 'Oumuamua (pronounced oh MOO-uh MOO-uh), which is Hawaiian for "a messenger from afar arriving first."

Astronomers estimate that an interstellar asteroid similar to 'Oumuamua passes through the inner solar system about once per year, but they are faint and hard to spot and have been missed until now. It is only recently that survey telescopes, such as Pan-STARRS, are powerful enough to have a chance to discover them.

"What a fascinating discovery this is!" said Paul Chodas, manager of the Center for Near-Earth Object Studies at NASA's Jet Propulsion Laboratory, Pasadena, California. "It's a strange visitor from a faraway star system, shaped like nothing we've ever seen in our own solar system neighborhood."

For more on NASA's Planetary Defense Coordination Office:
<https://www.nasa.gov/planetarydefense>

To watch a NASA Planetary Defense video on International Asteroid Day:
https://www.youtube.com/watch?v=VYO-mpoC8_s

For interstellar asteroid FAQs:
<https://www.nasa.gov/planetarydefense/faq/interstellar>

Last Updated: Nov. 20, 2017
Edited by NASA's Tricia Talbert

SCAS JUNIOR ACADEMY FALL 2017 NEWS

RTP ALUM UPDATE: VICK LIU

Vick Liu, now a sophomore at MIT, has been busy.

Since leaving Flintridge Prep, he has blended the skills learned as an RTP participant with his desire to help people in desperate need to create TraverPack, a lightweight yet durable sleeping bag that can serve as shelter, garment, and light pack. In September 2017, multiple national media outlets ran stories detailing Vick's efforts to create these packs, from inception to delivery of 300 packs to refugees in Syria. The following article, written by Sara Cardine, appeared in the September 13, 2017 edition of the Los Angeles Times, and provides further details into Vick's process.

For Vick Liu, service has always been at the center of a life well lived.

It was a belief instilled in him as a Boy Scout, one he broadened while attending La Cañada's Flintridge Preparatory School. When he left Prep's hallowed halls last summer to attend MIT, the desire to help others followed him.

He attended a preorientation event for MIT freshman that involved a scavenger hunt through the streets of Boston. Designed to help newbies socialize and discover common interests, it was a watershed moment for Liu.

"Outside the school office there was this homeless person, this old man, sitting with his back to a building, holding a sign. I remember 30 or 40 people walking by him without even looking at him," the 19-year-old Arcadia resident recalled in a recent interview. "This situation struck me. I started thinking what are ways I could use what I'm going to learn at MIT and use the resources that are on campus to help the homeless in Boston?"

In the months that followed, Liu passed out lunches and free T-shirts to anyone on the street who'd have them. But as a New England winter descended, he felt compelled to do more.

"A lunch lasts a few hours. A T-shirt lasts a couple of months," he said. "I was thinking of something that would be maybe a little more long term."

That's when Liu came up with the idea for a lightweight, portable sleeping bag that would provide warmth and contain features practical for use on the streets. He enlisted the help of some fellow MIT students in bringing the concept to life. They sewed the first prototype in his dorm room from material Liu stowed under his bed.

This fall, their creation — TraverPack — has gone through several iterations and found applications far beyond Boston's homeless. The group has launched a GoFundMe campaign to raise \$15,000, enough to send 300 packs to Syrian refugees living in resettlement areas in the country's northwestern region.

The packs will be distributed through the New Hampshire-based NuDay Syria, a nonprofit humanitarian aid organization.

To discover what refugees might need or want in a sleeping bag, Liu contacted former Prep student Shant Armenian, who'd organized an after-school presentation involving Syrians



Vick Liu holding his TraverPack. (photo: Tim Berger, LA Times Staff Photographer)

relocated to Glendale and the greater Los Angeles area. Liu interviewed them about their unique problems so he and his teammates could further refine their prototype.

Consequently, TraverPack is water- and tear-resistant and works in temperatures as cold as 14 degrees Fahrenheit (Liu slept in the snow on his dorm roof to test its capacity). Its configuration of zippers allows the piece to be used as a sleeping bag or blanket,

and it can be zipped onto other units to accommodate families.

It can be worn on the go, and has a drawstring hood and draft collar. A special compartment allows for the insertion of a sleeping pad into the back of the bag, while other pockets allow for the concealment of documents and important items, or for the storage of clothes to create an improvised pillow.

"One of the goals was to make it as versatile as possible," Liu said. "We don't want to give them something they can only use three months out of the year."

As impressive as Liu's first entrepreneurial venture seems, TraverPack isn't the teen's first foray into global philanthropy.

For the Prep science fair, Liu developed an inexpensive, portable blood analyzer that could identify and count blood cells. He later created a 3-D printed cellphone microscope capable of transmitting images of blood sample slides taken in the field.

"You could literally take the blood sample on the spot, and the microscope could take photos and transport them across a village, a country or the world, to a doctor or a laboratory," he explained.

Liu's work won praise at school, county, state and international science fairs. As a sophomore, he presented his work at a microfluidics conference in Germany. In 2015 and 2016, the teenager presented his published findings at consecutive annual meetings of the American Assn. for the Advancement of Science.

Laura Kaufman, chair of Flintridge Prep's science department, never taught Liu but remembers his exceptional performance and attitude.

"He did amazing work at the science fair at all levels," Kaufman said, recalling how Liu coached underclassmen accepted in the L.A. County Science Fair out of a desire to teach them things he wished he'd known.

"He was always looking for ways to make the world a better place," she added.

Matt Linder, an engineer by trade who works as an assistant football coach at Prep, remembered Liu as a thoughtful player always willing to help a teammate. He said he wasn't surprised by the teen's latest venture.

"He's got something — I don't know what it is," Linder said. "I'm very, very interested to see how he turns out. He'll be rich in many different ways."

For now, Liu's goal is to put TraverPack in refugees' hands before winter. After that, the future is wide open.

"As long as I'm making a positive impact, I'm happy with that," he said.

DESIGN AND SCIENTIFIC ACHIEVEMENT: FROM THE PERSPECTIVE OF AN RTP STUDENT

by Hakan Alpay, RTP Participant

The Research Training Program (RTP) provided by the Southern California Academy of Sciences is essentially a timeline and a support group for young high school students looking to sally forth into the world of scientific research. It is largely an individual experience, considering that the job of doing the research itself is the student's, although the meetings provide a much needed opportunity to interact with other students in the program. Personally, I enjoyed this the most because it allowed me to make meaningful friendships with people who are scientifically motivated like myself. The program also provides a schedule complete with milestones to both give the students a sense of progress and also provide deadlines for them to meet. I don't procrastinate as much as I used to, so I am ambivalent toward whether these were. Sometimes I felt like they studies, especially during my

I have been working Power" event in Science years. The event requires one blade assembly using a CD would like for the blades. radial length of the blades extend behind the assembly. scored according to the Beginning in 2015, I had been school using balsa wood difficult to know where knowledge of aerodynamics. trends, and then they would fall apart as I created another blade assembly that contradicted them, and building these precise assemblies without a schedule felt long and discouraging.

I researched online for a solution to this workflow issue, and discovered the RTP program. I decided to apply, and began to look for a mentor. Within a few emails, I discovered Dr. Marilyn Raphael of the UCLA Department of Geography. Dr. Raphael was very knowledgeable of the behavior of wind, especially on a macro scale. She was able to answer some of my questions concerning the construction of the blade assemblies. This gave me a second wind, and I began coming up with new ways to make assemblies, such as 3D printing.

As I went to the RTP meetings, I learned about how to compose an abstract and a scientific paper, and how to present one's findings on a scientific poster. These were valuable lessons, as I am entering the engineering industry, where I imagine it will be expected of me to know these presentation basics. I also enjoyed exploring the venues where the meetings were held, especially the Cabrillo Marine Aquarium.

Frankly, I am quite pleased with my experience within RTP. I learned much that I would not have learned elsewhere prior to college, I conducted interesting research with valuable guidance, and I met others who did the same. I am grateful for all the RTP staff and parents, particularly Mrs. Takahashi, considering the number of students and projects to keep track of. I look forward to applying my experience from this program to my future work within the scientific community.



Hakan Alpay
Student
North Hollywood HGM
2016-17 RTP

Marilyn Raphael
Mentor
UCLA Department of Geography
2016-17 RTP

For more information about the RTP program, or if you have (or know) a student who might be interested in participating, please contact RTP Program Coordinator Gloria Takahashi at myopick@aol.com.

SCAS JUNIOR ACADEMY FALL 2017 NEWS

MY EXPERIENCE IN SCIENCE RESEARCH

by Patrick Kim, RTP Participant



Patrick Kim, a sophomore at North Hollywood High School, preparing a growth medium for an algae culture in Dr. Ochan Otim's lab.

I went on my first camping trip with my family at two years old. Since then, continuing on camping trips every summer, I formed a genuine connection to nature, and I became fascinated with the environment, environmental science, and modern society's effect on nature.

With this fascination, I started to ask questions about the natural world: Are tomatoes really fruits? Is the moon actually made of cheese? As I grew, my elementary questions evolved into more complex ones: Why do species go extinct? How do plants reproduce? My questions eventually evolved into those that I couldn't answer myself, and I looked to teachers, books, and newspapers for answers. These resources only spurred more inquiries, and eventually, scientific research opened up as an opportunity to investigate some of these questions. Soon enough, I became captivated by environmental science research.

Working with Dr. Ochan Otim of Los Angeles City, my research project in the RTP focuses on creating an efficient algae photobioreactor system that is able to take carbon dioxide from the atmosphere and to convert it into biomass.

I am testing factors like algae species, type of bioreactor, the

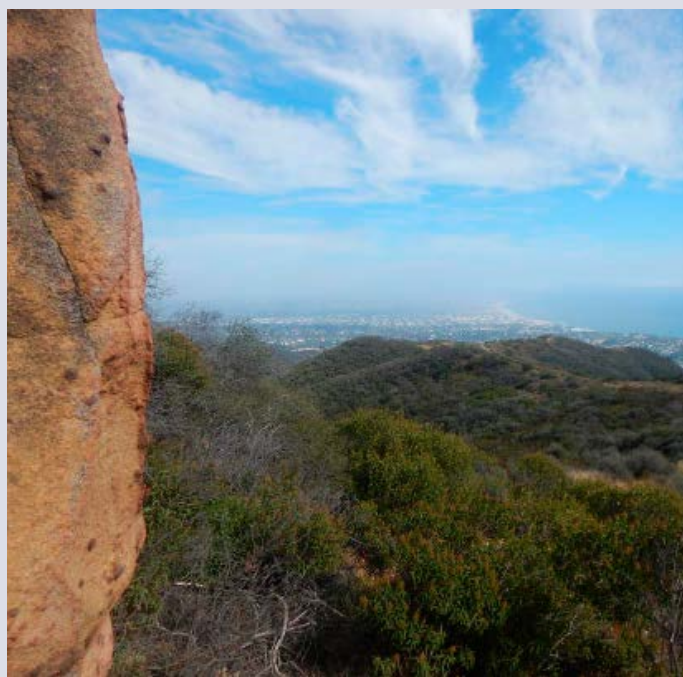
amount of carbon dioxide pumped through the reactor, and type of nutrients fed to the algae, and how each factor affects biomass production. In addition, I hope to look into using treated wastewater as an algae nutrient, and its potential to limit pollution and to boost growth. Creating a cost-effective, efficient bioreactor system could incentivize companies and factories that release large amounts of flue gas into the atmosphere to use a bioreactor system. Just as the spread of solar panels and other methods of conserving energy into average households has reduced energy waste, producing and spreading a cost efficient bioreactor could significantly reduce CO2 emission into our atmosphere.

I hope that the SCAS Research Training Program not only introduces me to the scientific community, but also allows me to present and share my work with both peers and professionals in science research. I am looking forward to my future in scientific research along with the RTP!

FIRST STEPS IN SCIENCE: STARTING IN THE RTP PROGRAM

by Tai Michaels, RTP Participant

Learning about science is one thing. Participating in it, however, is a whole different ballgame. When I heard about the SCAS Research Training Program (RTP) from a friend and decided to apply on a whim, I had little idea what I was doing, but the program has helped me narrow in on a topic to work on with my mentor, Dr. Justin Valliere of UCLA. Though it is still early in the research process, the idea centers around changes in chaparral vegetation types under increasingly intense fire regimens in the modern era. While many have examined factors in the type conversion of chaparral into grasslands, I intend to examine changes in chaparral composition short of total conversion to better understand how past fires impact the current flammability of chaparral ecosystems like those near my community in which I have hiked, camped, and run since before I can remember. Although there is a great deal to be done, I am looking forward to a magnificent year with the RTP.



Pictured right: Example of chaparral community that will be the subject of Tai Michaels' research as an RTP Participant.

FROM THE ARCHIVES...

The following article by Hildegarde Howard announces SCAS' then-new affiliation with AAAS. The article also provides a snapshot of SCAS in 1953. It is interesting as we move forward to consider how the organization has changed in 65 years, and what things are still familiar.



Southern California Academy of Sciences

New Affiliate of the American Association for the Advancement of Science

THE Southern California Academy of Sciences was organized November 6, 1891, by a dozen scientists of the Los Angeles area from different fields of science. Originally called the Southern California Science Association, the present name was officially adopted in 1896. Later, in 1907, the Academy became incorporated.

The aim of the organization as stated in its first constitution was "... to secure a more frequent interchange of thought and opinion among those who devote themselves to Scientific and Natural History studies; to elicit and diffuse a taste for such studies where it is yet unformed; and to afford increased facilities for its extension where it already exists." To these ends public lectures by outstanding scientists were offered, publications were instituted, and sections were established for the scientific specialists.

In its early years, before the eastern scientific societies established contact in the West, the Academy filled a real need for the scientists in this area to meet and exchange ideas. The sections were very active, and held frequent field trips and discussion groups. Meeting monthly in general assembly afforded the opportunity to hear well-known scientists in other fields.

The first publications of the Academy were circulars, reports, and the *Proceedings*, which were published from 1896 to 1901. In 1902 the *Bulletin* was established and has appeared regularly since that date. It is now issued three times a year and is in its fifty-second volume (1953). A memoir series to accommodate larger monographs was instituted in 1938. The memoirs appear irregularly, as funds and appropriate scientific contributions are available. Both *Bulletins* and *Memoirs* are devoted entirely to technical sci-

entific papers that deal largely with the Southwest. The *Bulletin* goes by membership, subscription, or exchange to about 350 persons or institutions all over the world.

The Academy was one of the four founding societies of the Los Angeles County Museum of History, Science, and Art, and collected the first fossils from the Rancho La Brea tar pits to be displayed there. It has maintained close contact with the Museum throughout the years. Monthly dinner meetings are held in the Museum from September through June. The various sections are responsible for the program for these meetings, and procure a representative series of speakers in the various fields of science. Speakers are chosen both for their scientific attainments and their speaking ability, and as a result the lecture series is of outstanding merit.

The Academy today is composed of about 175 active members equally divided between scientists and lay personnel. At least 80 per cent of the membership is local. Although comparatively small, the Southern California Academy of Sciences is entirely self-supporting. All activities and publications are financed by membership dues, sale of publications, and capital investments. Current officers are: President, Sherwin F. Wood, Los Angeles City College; 1st Vice President, Hildegarde Howard; 2nd Vice President, Kenneth E. Stager; Secretary, Lloyd M. Martin; and AAAS Council Representative, W. Dwight Pierce, all of the Los Angeles County Museum.

HILDEGARDE HOWARD
Southern California Academy of Sciences
Los Angeles, California

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Public Comment on Ballona Wetlands Ecological Reserve Draft EIR Sought

The California Department of Fish and Wildlife (CDFW), in partnership with the State Coastal Conservancy and The Bay Foundation, has spent years working with the public and envisioning a plan for the revitalization of the Ballona Wetlands Ecological Reserve (BWER). The Ballona Wetlands were once an approximate 2,000-acre expanse of marshes, mud flats, salt pans and sand dunes that stretched from Playa del Rey to Venice and inland to the Baldwin Hills. Today, BWER is less than 600 acres of open space, all that remains of the former wetlands, now owned by the people of California and managed by CDFW. See Ballona Wetlands Restoration Project web site at <https://www.wildlife.ca.gov/Regions/5/Ballona-EIR> for more information.

CDFW, as the lead agency under the California Environmental Quality Act, is coordinating the preparation of an Environmental Impact Report (EIR) for the proposed Ballona Wetlands Restoration Project. CDFW is soliciting comments on the Draft EIR.

The public comment period for this DEIR has been extended. Written comments will now be received until 5 p.m. PST, February 5, 2018.

THE LAST WORD

In an effort to regularize the publication of this organ, the editorial board of the Smilodon (in consultation with the SCAS Board of Directors) have decided to revise the aforementioned publication's production schedule. The Smilodon will be published twice annually:

April 15 and November 15

To facilitate this schedule, the following deadlines for receipt of articles/input/photographs/etc. will be adhered to.

Deadlines for April 15 (Spring) issue:

Receipt of articles/input:	March 15
Draft Smilodon to Board for review:	April 1
Board comments on Draft Smilodon to editor:	April 8
Smilodon distributed to membership:	April 15

Deadlines for November 15 (Autumn) issue:

Receipt of articles/input:	October 15
Draft Smilodon to Board for review:	November 1
Board comments on Draft Smilodon to editor:	November 8
Smilodon distributed to membership:	November 15

If you have any questions or concerns about this schedule, or better yet, if you have content to provide (this can be an abstract of a paper or presentation you are working on, an idea you want to share or receive feedback on, an essay on a field experience that was singular and noteworthy, a particularly good photo you want to share...), please contact sgraff@psomas.com or bblood@psomas.com. Thank you!

