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Hawai`i Preparatory Academy
Waimea, Hawai`i
19 – 23 June 2017

GENERAL INFORMATION and SCHEDULE with INDEX

Complete meeting programs including abstracts will be given to each meeting registrant with registration packets at the Hawai`i Preparatory Academy.

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Sigma Xi, The Scientific Research Honor Society
Agriculture, Food and Renewable Resources
Anthropology and Archaeology
Atmospheric and Hydrospheric Sciences
Cell and Molecular Biology
   (including medical and dental research in these areas)
Chemistry and Biochemistry
Computer and Information Sciences
Earth Sciences
Ecology, Environmental Sciences and Sustainability
Education (STEM)
Engineering, Technology and Applied Sciences
Evolution, Organismal Biology and Biodiversity
General and Interdisciplinary
History and Philosophy of Science
Materials Science
Mathematics
Physics
Psychology
Science and the Arts and Humanities
Social, Economic and Political Sciences
   (including health services)

HA'AI'I

HISTORY of the HAWAIIAN ISLANDS
The first of the volcanic islands that would become the Hawaiian archipelago rose in molten rock and smoke from the ocean some 70 million years ago. It was born at a “hot spot” in the Earth’s crust where Ha`i Island exists today.

Over the millennia, that first island and the succeeding ones that formed from volcanic eruptions at about the same place have inched northwest in a curving line on the huge drifting tectonic piece of the Earth’s crust called the Pacific Plate. The most ancient islands have long since eroded and returned beneath the sea. Others to the east, surviving only as coral atolls or rocks jutting from the sea, are known as The Northwestern Hawaiian Islands. Farther south and east, there are the eight youngest islands — what we call the “main” islands — stretching from Kaua’i to Hawai`i Island, the easternmost of the islands and often referred to as the “Big Island.” The next Hawaiian island, called Lo‘ihi, is already forming about 3,000 feet beneath the ocean surface off the southeast coast of the Big Island. But don’t bother staring

1 Courtesy Big Island Visitors Bureau; originally www.bigisland.org but story no longer available.
In January of 1779, Cook returned and anchored in Kealakekua Bay on the southwest coast of the Big Island in order to refit his two ships, the Resolution and the Discovery. His arrival happened at the time of the annual makahiki celebration, a time of tribute to the God Lono. The Hawaiians saw Cook’s arrival as Lono’s return, and he received a great welcome. After two weeks, Cook and his ships set sail towards Maui, but came limping back just days later with storm damage to the Resolution. Now, the makahiki festival was over, and the Hawaiians were surprised to see Lono return, having sustained such damage. Their greeting was not as generous this time. Thefts of nails and other pieces of iron from the ships increased. When a cutter was found missing, Cook took a chief hostage until the boat was returned. A skirmish broke out between Cook’s men and the Hawaiians, leading to Cook’s death in the shore break of Kealakekua Bay. Today, a monument marks the spot where Cook died. This monument stands officially on British soil.

During this time, there was a young warrior, Kamehameha, born in Kohala at the north tip of the Big Island, who had a vision to unite all the islands under one rule. Kamehameha fought a ten year war to dominate Hawai’i Island, then conquered Maui, Moloka’i, Lanai and finally O’ahu. In 1796, his invasion of Kaua’i was disrupted by a storm and it took another 14 years before Kaua’i came under his control.

Having united all the islands under his rule, King Kamehameha (“Kamehameha the Great”) gave the name of Hawai’i Island to the name of his kingdom. He ruled from his home in Kailua-Kona until his death at about 63 years of age at Kamaka Honu, or “Eye of the Turtle,” today found on the grounds of King Kamehameha’s Kona Beach Hotel.

Soon after the death of Kamehameha I in 1819, his son and successor, Liholiho, heavily influenced by Kamehameha’s favorite wife, the powerful Ka’ahumanu, decided the old “kapu” system should be done away with. This was a ripe moment for American Christian missionaries to arrive. Ka’ahumanu was one of the first converts, and the numbers steadily grew, though there were strong cultural clashes.

Besides missionaries, Hawai’i was flooded with traders, whalers and other foreigners. They established footholds and gained power and influence. By the early 1840’s the Kingdom of Hawai’i was recognized by the United States, France and Great Britain.

Sugar, which was first grown commercially in Hawai’i in 1835, became the principal industry. Much-needed laborers from China, Japan, Portugal, Korea and the Philippines were soon arriving in droves. Immigration continued into the early 1900s. From these mixed ethnic groups evolved Hawai’i’s identity as a cosmopolitan melting pot.

Adding to the mix were the paniolo, the Mexican cowboys who first arrived on Hawai’i Island during the 1830s to help with the growing cattle industry spreading out from Parker Ranch. The paniolo (the word comes from Español, i.e. Spanish) brought with them a small guitar that has evolved into the instrument that is today synonymous with Hawai’i: the ukulele.

Over the centuries, Polynesians introduced plants and animals: dogs, pigs, chickens, breadfruit, bananas, sugarcane, yams, taro, coconuts, gourds, ti and other “canoe plants.”

Hawaiian life was regulated under laws of kapu, a variation of the Tahitian word tapu, or taboo. Society was feudal and defined island by island, often with two or three chiefs vying for control. Beneath the chiefs were other ali‘i (noblemen), and kahuna (priests, healers). Next came the maka‘ainana (commoners) worked the land. At the bottom were the social outcasts or slaves called the kauwamoli.

In 1778, British explorer Captain James Cook, stumbled upon the Hawaiian Islands after seeking the fabled Northwest Passage across North America. His first landfall was on the island of Kaua‘i. He dubbed these the Sandwich Islands after his friend and patron, the Earl of Sandwich.

In January of 1779, Cook returned and anchored in Kealakekua Bay on the southwest coast of the Big Island in order to refit his two ships, the Resolution and the Discovery. His arrival happened at the time of the annual makahiki celebration, a time of tribute to the God Lono. The Hawaiians saw Cook’s arrival as Lono’s return, and he received a great welcome. After two weeks, Cook and his ships set sail towards Maui, but came limping back just days later with storm damage to the
GENERAL INFORMATION

About the same time, another Hawai‘i Island agricultural industry was taking root. The lower slopes of Mauna Loa above the Kona Coast proved to be ideal for growing coffee, and now Kona coffee is world famous.

As more and more foreigners came to Hawai‘i during the 19th century, the native Hawaiian population declined. They had numbered around 600,000 at the time of Captain Cook’s arrival, but by 1850 there were about 85,000, and by 1890 only about 40,000. The main reason for this decline was the introduction of Western diseases for which the Hawaiians had no immunity. The rapid introduction of Western culture was also a factor.

The Hawaiian monarchy remained until 1893, when a group of American businessmen overthrew Queen Lili‘uokalani. It was a sad time for the people as a provisional government headed by Sanford B. Dole took control. In August of 1898, the Hawaiian Islands were annexed as a territory of the United States. The early 1900s were years of relative peace and quiet development. Then on December 7, 1941, Hawai‘i was thrust onto the world stage with the Japanese attack on Pearl Harbor on the island of O‘ahu. Hawai‘i played a principal role in World War II in the Pacific as an American military base. The postwar years saw tremendous growth and economic development. In 1959, Hawai‘i was admitted to the Union as the fiftieth state.

HAWAI‘I’S CLIMATE

Weather on all of the Hawaiian Islands is very consistent, with only minor changes in temperature throughout the year. This is partly due to year-round warm sea surface temperatures. In practical terms, there are only two seasons: the summer months (called Kau in Hawaiian) that extend from May to October and the winter months (Hooilo) that run from November to April. The average daytime summer temperature at sea level is 85°F (29.4°C), while the average daytime winter temperature is 78°F (25.6°C). Temperatures at night are approximately 10°F lower.

The Hawaiian Islands are an incredible collection of many diverse micro-environments, each with its own weather, plants and animals. Nowhere is this more true than on the Big Island. As a result of the shielding effect of the massive volcanoes and varying elevations, there are as many different climate zones on the Big Island as exist along the entire West and East Coasts of the continental United States, stretching from Alaska and Canada to Mexico and Costa Rica. For the full impact of this, you need only explore Hawai‘i Island by car or helicopter to see the beauty of tropical rain forests, cool alpine regions, stony deserts and sunny beaches—all within the span of an hour’s flight or a day’s drive. In Waimea, location of our meeting, the average high temperature for June is 80°F (26.7°C) and the average low is 67°F (19.4°C). Average rainfall for the month in Waimea is 3.4 inches.

HAWAI‘I PREPARATORY ACADEMY, THE BIG ISLAND of HAWAI‘I, and WAIMEA

The Hawai‘i Preparatory Academy is located on the Big Island in Waimea, also known as Kamuela. It can be a bit confusing because there are two more Waimeas in Hawai‘i, one on the island of Kaua‘i and the other on the island of O‘ahu. Each of the eight islands that comprise what one usually thinks of as the state of Hawai‘i is a county within the state. Thus, O‘ahu is O‘ahu County and Maui is Maui County. The Big Island is actually Hawai‘i County but, to keep things from getting too confusing, is usually referred to as the Big Island. At 4,038 square miles, the Big Island is by far the largest of the eight islands that comprise the state of Hawai‘i. In fact, one could fit all of the other seven islands into the geographical area of the Big Island and still have more than half of the land uncovered! The Big Island was formed by the convergence of lava flows from five volcanoes, Mauna Kea (the tallest at 13,796 feet above sea level), Mauna Loa, Kohala (the oldest), Kīlauea (the active one), and Hualālai (where Kona is located). Not only is Mauna Kea the tallest, it is absolutely huge, rising over 32,000 feet from the ocean floor. If one were to convert it to gravel and spread it over the area of the entire state of California, the gravel would be 600 feet deep! Mauna Kea covers half of the Big Island, and has a surface equal approximately to 85% of the other seven islands of Hawai‘i combined.

Because of its elevation, several large astronomical telescope installations have been built atop, Mauna Kea, giving researchers unparalleled access to the northern skies. However, Mauna Kea is considered by many Hawaiians to be the most sacred spot in all of the islands, which has more recently produced clashes between native Hawaiian communities and an international consortium that is seeking to build a new, thirty meter telescope (TMT) atop the volcano. The issue of the TMT is currently in Hawaiian courts and could be resolved by the time this Newsletter is published.

The west, or leeward side of the island, is dry (about 12 inches of rainfall per year in Kailua-Kona) compared to the east, or windward side of the island (157 inches of rainfall per year at Hilo, the second most populous city in the state and also the capitol of Hawai‘i County).

The geography of the Big Island varies considerably. There are lush tropical rain forests and arid deserts, white sand beaches and snow-capped mountain peaks. Islanders grow the famous Kona coffee on the western slopes of Mauna Loa, and raise cattle near Waimea, the location of the Parker Ranch, once the largest privately owned cattle ranch in the world. The Parker Ranch still encompasses 150,000 acres and runs about 25,000 cattle.
The Hawai‘i Preparatory Academy (HPA), founded in 1949, is a coeducational college-preparatory boarding school with grades K-12 situated on two campuses. The Pacific Division meeting will take place on the 200-acre Upper Campus, about two miles south of Waimea. The Upper Campus houses grades 9-12 and sits at the foot of the Kohala Mountains. HPA is about 38 miles north of the Kona airport, a pleasant drive through volcanic lava flows. The Academy sits at about the 2,500 foot level and is close to the boundary between the drier leeward side and wetter windward sides of the island.

ANNUAL MEETING

TRAVEL to the HAWAI‘I PREPARATORY ACADEMY

The Big Island of Hawai‘i is serviced by several airlines and a number of car rental companies. The closest airport is the Kona International Airport at Keahole (code KOA), which is a few miles north of Kona on the west coast of the island. The other major airport serving the Big Island is the Hilo International Airport (code ITO), situated in Hilo on the east side of the island. Airfare can sometimes be significantly different between the two airports. In addition to the cost of airfare, it is important to take into consideration the cost of travel from the airport to HPA. The distance from the Kona airport is approximately 36 miles, about a 49 minute drive. The distance to HPA from the Hilo airport is approximately 59 miles, about an hour and twenty minute drive. Non-stop flights from the West Coast are available to both airports but most flights stop in Honolulu before progressing to Kona or Hilo.

There are three options to get from the airport to HPA, either by renting a car at the airport, arranging in advance for a shuttle, or by taxi. If renting a car, be sure to make your reservation early to secure the best rates. For those arriving at Kona International Airport, Kona Taxi charges an estimated $120 each way ($60 each for two persons, each way). As of 30 December 2016 SpeediShuttle (877-272-5777) quoted an estimated $87 one-way for one person, $93 for two, $99 for three, etc.

The Pacific Division has a Twitter account that can be used in order to make a connection with others looking to share a shuttle from the airport to HPA. Use @AAASPacDiv in order to access the Division’s account and #hparides in order to find each other!

DRIVING to the HPA CAMPUS

The address of the Hawai‘i Preparatory Academy is 65-1692 Kohala Mountain Road (identified as Kawaihae Road by some GPS devices and web sites), Kamuela, HI 96743. Coming from Kona or the Kona International Airport, head north on Highway 19, the Queen Ka‘ahumanu Highway. After driving about 26 miles, you will come to a junction at a STOP sign. Turn right to continue on Hwy 19 (now called Kawaihae Road). In about 7 miles or so you will come to the junction of Highway 250, the Kohala Mountain Road. Turn left onto Hwy 250. Be careful, as Hwy 19 is a fast road and it may take patience to make the left turn! Once on Hwy 250 you will quickly find the HPA campus on the right. Turn into the second entrance, almost past the playing field and track. Stop at the kiosk to identify yourself as participating in the AAAS, Pacific Division meeting. You can also ask the kiosk person for directions from there to the Taylor Commons, where registration will be set up. For a map of the HPA campus, please refer to the inside of the back cover of these Proceedings.

PARKING ON THE HPA CAMPUS

For those driving to HPA, parking will be available at no charge. Drive in the second entrance on the right after turning onto the Kohala Mountain Highway (Hwy 250) and stop at the kiosk for directions.

REGISTRATION

All persons attending the meeting are expected to register for the meeting. On-site registration fees for the full meeting are: professional, $140.00; program planners/presenters, $100.00; K–12, community college teachers, post-docs, students¹, retirees/emeritus, and unemployed $70.00; participating spouses and/or family members, $45. One-day on-site professional registration is $100.00. Note that if you attend more than one day, you must pay the full registration fee.

The first ten K–12 and community college instructors that registered in advance (by 28 May) for this meeting were able to receive, upon request, a $75.00 stipend to help defray their expenses to attend the meeting. The stipend is not available to teachers who register on-site. Note that to receive the stipend teachers must have checked the appropriate box on the Advance Registration Form. We wish to acknowledge and thank Bourns, Inc., Riverside, CA and the Bourns revocable trust for providing the funds that helped to make these stipends available this year.

Students were given the opportunity to apply for travel awards of up to $150 each to help defray their costs for coming to the meeting to present the results of their own research.

About field trips: Due to limited seating in vehicles and the need to inform some destinations of the number of people arriving, pre-registration was required for all field trips. If you didn’t pre-register for a particular field trip in which you are interested in participating, please inquire at the Division’s Registration Center to see if space is still available. At least ¹Students receive a one-year student membership in AAAS, which includes all member benefits including on-line access to Science magazine, with payment of their registration fee for this meeting. Current student members will receive a one-year extension to their membership. Filled out membership form must accompany registration form.
one member of a family group requesting a field trip must be a paid meeting registrant. Participants who are not registered for the meeting will be charged a one-time $10 field trip registration fee in addition to the fee for the field trip.

About workshops: All workshops at this meeting are available without additional charge to meeting registrants.

About refunds: Requests for refunds must have been made in writing and received in the Pacific Division office no later than 3 June 2017. Under extreme hardship conditions beyond a registrant’s control, requests for refunds may be honored beyond this date if presented in writing with an adequate explanation of the hardship that precipitated the request for the refund. A $15 handling fee is applied to all refunds. An additional 3.5% deduction is applied to the total amount for credit card refunds.

REGISTRATION CENTER
The Registration Center will be located in the foyer of the Taylor Dining Commons on the HPA campus (see the campus map on the inside of the back cover of these Proceedings). Hours of operation are as follows:
Monday: 1:00 p.m. – 6:00 p.m.
Tuesday: 7:30 a.m. – 4:30 p.m.
Wednesday: field trips – center closed
Thursday: 7:30 a.m. – 4:00 p.m.
Friday: 7:30 a.m. – 3:00 p.m.

MESSAGES
To leave a message for a meeting registrant or to contact the AAAS, Pacific Division staff, call 541-292-1115 or email rchristi@sou.edu. Please note that the phone will be monitored only between the dates of 14 June and 28 June. Before or after, please use the regular Pacific Division number, 541-552-6869, or email, aaaspd@sou.edu, in order to contact Pacific Division staff.

BREAKS
Mid-morning and mid-afternoon breaks are scheduled each day, as appropriate. Refreshments will be served in or near the Taylor Dining Commons.

ON-CAMPUS MEETING HOUSING
A limited number of dorm rooms at HPA were available for meeting attendees. These are true dorm rooms with bathrooms down the hall or on a different floor. The good news, though, is that all dorm facilities have been recently refurbished and are in very good condition.

Individual rooms each have two beds and can accommodate one or two people (a third if age 11 or under on a mattress on the floor). Included in each room are bed linens and a washcloth and towel. The rooms have internet access and telephones. Washers and dryers are available for use at no cost (bring your own detergent or purchase at the bookstore) for those staying in the dorms.

Included in the basic housing package for four nights (Monday, Tuesday, Wednesday, and Thursday) are 10 meals: Monday pūpū appetizer dinner; Tuesday breakfast, lunch, and dinner; Wednesday breakfast only (field trip day); Thursday breakfast, lunch, and the luau-style banquet dinner; Friday breakfast and lunch, all in the Taylor Commons.

Additional nights in the HPA dorms, both pre- and post-meeting, are available but must have been purchased in conjunction with the basic four-night package. Extra nights available are Sunday, 18 June, including dinner Sunday and breakfast and lunch Monday; Friday, 23 June, including dinner Friday and breakfast Saturday; and Saturday, 24 June, including breakfast Sunday. While there was good availability for Sunday, 18 June and Friday, 23 June, the number of rooms available for Saturday night, 24 June was very limited, so those wishing to book that night needed to do so as soon as possible.

Please note that by applying for on-campus housing, residents agreed to pay any additional fees assessed by HPA to the Pacific Division relating to their stay in one of the dorms, such as lost keys, use of “additional charge” facilities, fines, etc. Parking for those with automobiles is available at no charge on the HPA campus.

OFF-CAMPUS MEETING HOUSING
The nearest motels are 2 to 3 miles from HPA, in the town of Waimea (also referred to by its older name, Kamuela). The number of rooms in Waimea are limited in number, so early reservations were a must. The Pacific Division had no special arrangements with motels in Waimea for meeting attendees. The Division did, however, contract for special meeting rates with the Waikoloa Beach Marriott Resort and Spa, a resort hotel on the beach in Waikoloa, about 15 miles (a 30 minute drive) from HPA. There is no bus service between Waikoloa and Waimea, so a rental car was a must in order to travel back and forth between the hotel and the meeting.

The Marriott recently underwent a thorough and complete renovation, with completion just a few months prior to this meeting. Additional information:

Waikoloa Beach Marriott Resort and Spa
Address: 69-275 Waikoloa Beach Drive, Waikoloa, HI 96738-5711
Phone Number: 808-886-6789
Contracted Rate: $205/night + $15/night resort fee + room tax for up to two persons in a room. Third and fourth adults in room are $45/night each. There is no charge for children 18 and under staying in a room when accompanied by a paying adult. Maximum room occupancy is 4.
Dates available: nights of 19 – 23 June 2016, plus three days either side as available.

On-line reservations were available through https://aws.passkey.com/go/AAAS2017
Phone-in reservations were available by calling Sharon Bianco at 808-886-8123 and mentioning the AAAS, Pacific Division 2017 Annual Conference group when making a reservation directly with the hotel.
Cancellation policy: at least 48 hours in advance of the arrival date.

Amenities (with payment of mandatory resort fee of $15/day):
- self-parking (normally $14/night)
- enhanced high speed internet access
- international long distance calling (up to 60 minutes per day)
- local, inter-island, toll free connect and long distance to the US and Canada
- Blinnk Photography 30 minute photo session with 5x7 souvenir photo
- a daily Hawaiian culture activity
- daily one hour ocean sports snorkel equipment rental for two
- daily 60 minutes ocean sports beach yoga
- 20% discount on regular luau prices
- 15% discount on daily car rental with Enterprise Car Rental (on-line or at the Enterprise rental desk on the premises)
- additional amenities are listed on the hotel website

Check-in: 3:00 p.m.
Check-out: noon.

Proximity to meeting: approximately 15 miles, 30 minute drive.

If staying elsewhere on the Big Island, our suggestion was that you take advantage of hotel search engines such as Hotels.com, Priceline.com or Expedia.com in order to find the best deals.

Reservations for off-campus housing were to be made directly with the hotel of the attendee’s choice. The AAAS, Pacific Division offered the above hotel without endorsement for any specific commercial enterprise.

FOOD on CAMPUS
The only food available on the HPA campus is at the Taylor Dining Commons. All attendees staying on campus are provided with a meals package. Those not staying on the HPA campus were able to purchase the same meals package at a cost of $140. The following meals were available by advance purchase to those without a ten-meal meals package:

- **Pūpū dinner** on Monday evening – $22.
- **Lunches** on Tuesday, Thursday, and Friday – $12 each.
- **Luau-style buffet banquet** on Thursday evening – $35 (student presenters at the meeting without a meals package can each purchase one banquet ticket for $15).

Those not staying at HPA should have ordered their meals, either individually or the ten-meal meals package, by using the On-Campus Meals Only form that was available in the January and April newsletters and also on-line. The deadline for ordering these meals was 3 June. Nothing else is available on the HPA campus. Should you decide at the last minute that you would like to purchase one or more of these meals, check at the Registration Center for availability. There are many eating establishments in Waimea, about 2 to 3 miles from the HPA campus.

MEETING ROOMS, COMPUTERS, and POWERPOINT PRESENTATIONS
Technical sessions will meet in various locations on the HPA campus. All meeting rooms will be outfitted with computers running PowerPoint, and will be connected to standard data projectors. If you are planning to use PowerPoint for your presentation, you must make sure that it will run the way you want on both the Windows and Mac platforms as there are significant differences in the way PowerPoint runs and appear on these two platforms. Only thumb/USB/flash drives may be used to load presentations onto the computers. Should a presenter wish to use their own laptop computer for their presentation, it is possible to connect the laptop directly to the LCD projector via a standard VGA port. It is the responsibility of the presenter doing this to supply any needed adapters to connect their computers to the VGA cable of the LCD projector.

Speakers requiring other specialized equipment such as slide or overhead projectors must make their requests known when they submit their abstracts. If available, specialized equipment will be provided. If rental costs are incurred, payment of these costs will be the responsibility of the requestor.

STUDENT AWARDS FOR EXCELLENCE
The AAAS, Pacific Division offers each affiliated society and section participating in the annual meeting the opportunity to recognize outstanding student participants through the presentation of Awards of Excellence and cash prizes of $150 for first place (minimum judging pool of 3 presentations), $100 for second place (minimum judging pool of 6 presentations), and $50 for third place (minimum judging pool of 9 presentations). This year, due to a generous donation by an anonymous donor, these monetary awards will be increased by a significant amount, but we won’t know exactly how much until we have determined how many of each type of award has been given at the meeting. In addition to the monetary awards, each winner receives a certificate of recognition.

In 2017, seven division-wide awards may be available: Laurence M. Klauber Award for Excellence (unrestricted); Geraldine K. Lindsay Award for Excellence in the Natural Sciences; J. Thomas Dutro, Jr. Award for Excellence in the Geosciences; Presidents Award for Excellence (unrestricted); Rita W. Peterson Award for Excellence in Science Education Research; Best Poster Award (for posters only but otherwise unrestricted); and the AAAS–Robert I. Larus Travel Award, which will provide a reimbursement for travel and other meeting related expenses up to $1,000 for the awardee to attend the national meeting of AAAS in Austin, Texas, 15 – 19 February 2018 for the purpose of presenting his/her winning presentation as a poster. The Klauber, Lindsay, Dutro, Presidents, Peterson, Best Poster, and Larus awards are given to those students whose presentations and underlying research are judged the most significant in the advancement or understanding of science.
To be eligible for a sectional award or one of the division-wide awards, a student must be registered for the meeting prior to the session in which his/her presentation is to be judged, be the primary presenter of the presentation, and be the principal research investigator of the subject of the presentation. Student presentations, both oral and poster, are judged on their abstracts, content, style of delivery or presentation, and audiovisual aids and/or handouts (if used). Sample evaluation forms for both oral and poster presentations are posted on the Division’s meeting web page, http://pacific.aaas.org/2017Hawaii/index.html.

Student awards will be announced at an assembly of the whole, to begin at 5:30 p.m. in the Gates Performing Arts Center. We ask that all students who win awards stay for the group photograph to be taken at the conclusion of the program.

**PLENARY LECTURES**

**Monday, 7:00 p.m. to 9:00 p.m. in the Gates Performing Arts Center.** Join us for this exciting kick-off for the annual meeting with a series of short talks highlighting various aspects of the Hawaiian Islands. Each 25 minute talk will highlight a different aspect of the Islands. Please turn to page 55 in these Proceedings for a complete listing of the times for the presentations and page 61 ff for an abstract for each talk.

**Geological Development of the Hawaiian Islands**, presented by Dr. Richard Hazlett (Department of Geology, University of Hawai‘i at Hilo, Associate Researcher, USGS Hawaiian Volcano Observatory, and Professor Emeritus, Pomona College).

Dr. Hazlett graduated with a PhD in Geology from the University of Southern California in 1986, completing his dissertation on a Miocene volcanic center in the eastern Mojave Desert. He taught Geology for three years at Occidental College and 15 years at Pomona College. Over a period of 13 years he further directed development of a new environmental science program at Pomona. His research in volcanology has included work on seismogenic landsliding (Vesuvius), ash flow tuffs and pumice falls (in the eastern Aleutian Islands). He is presently completing a study re-evaluating the early historical record of eruptions in Kilauea’s southwest rift zone on the Island of Hawai‘i, where he is also appointed as an adjunct faculty member at the University of Hawai‘i, Hilo. He has an Associate Researcher position with the U.S.G.S. Hawaiian Volcano Observatory. Publications include *Roadside Geology of Hawai‘i* (Mountain Press) with Donald Hyndman (University of Montana), and, *Volcanoes: A Global Perspective* (Wiley-Blackwell) with John P. Lockwood. He presently lives in north Hilo on the Big Island.

**Land of Beautiful Blow-Ins: Revisiting the Natural and Human History of Hawai‘i**, presented by Dr. Nina G. Jablonski (Evan Pugh University Professor of Anthropology, The Pennsylvania State University).

Dr. Jablonski is Evan Pugh University Professor of Anthropology at The Pennsylvania State University. A biological anthropologist by training, Jablonski pursues basic research on the evolution of adaptations of primates, including humans, to their environment. For the last 25 years, she has been most intrigued by questions in human evolution not directly answered by the fossil record, foremost among these being the evolution of human skin and skin pigmentation. From an initial interest in the evolution of skin pigmentation, Jablonski has pursued issues surrounding the meanings of skin color in modern life, notably the relationships to health and society. In addition to her scholarly articles on skin and skin color, Jablonski has written two popular books on the subject, *Skin: A Natural History* (2006) and *Living Color: The Biological and Social Meaning of Skin Color* (2012), both published by University of California Press. Jablonski received her A.B. in Biology at Bryn Mawr College in 1975 and her Ph.D. in Anthropology at the University of Washington in 1981. She is an elected Fellow of the American Academy of Arts and Sciences, the American Philosophical Society, and the American Association for the Advancement of Science (AAAS), and a member of the Board on Behavioral, Cognitive, and Sensory Sciences (BBCSS) of the U.S. National Research Council. She has been a member of the AAAS since 1978, and was President of the Pacific Division from 2001-2002.

**Meheau and Microbes: The Science Encoded in Mo‘olelo**, presented by Dr. Kiana Frank (Pacific Biosciences Research Center, University of Hawai‘i, Mānoa).

Dr. Frank grew up in Kailua, Oahu and is a graduate of Kamehameha Schools Kapalama. She received her Bachelors of Science in Molecular Genetics at the University of Rochester, NY and her Masters and Ph.D. at Harvard in Molecular Cell Biology. She is currently an Assistant Professor in the Pacific Biosciences Research Center at the University of Hawai‘i, Mānoa. She studies microbes in the ‘āina (land) - who they are, what they are doing, and their
importance in traditional management - to enhance the productivity, sustainability and resilience of Hawai`i’s aquacultural and agricultural resources. Her inspiration to study microbes came from moʻolelo of Kawaihui, and the desire to pursue it as a career began her freshman year of high school in a seven week molecular cell biology course (the Kamehameha Schools Summer Science Institute). Her current research - focused on Heʻeia Fishpond- evaluates biogeochemical data in the context of moʻolelo, cultural history and fishpond management to explore the connections between science and native science. She believes that science is a strength of her culture and an important tool in our community, not only to drive data-based policy, but to advance our understanding of our place and how we fit into that place.

21st Century Research at the Maunakea Observatories, presented by Dr. Doug Simons (Canada-France-Hawai`i Telescope).

Dr. Simons received his B.S. in astronomy at the California Institute of Technology in 1985, and his Ph.D. in astronomy at the University of Hawai`i in 1990, before working as a staff astronomer at the Canada-France-Hawai`i Telescope (CFHT) for four years. Doug joined the Gemini 8 m Telescope Project in May of 1994 as the Systems Scientist, then managed Gemini’s instrument development program for five years before becoming Gemini Observatory’s Director from 2006-2011. Doug returned to CFHT in 2012 where he now serves as Executive Director. Principal areas of interest include infrared instrumentation and studies of the Galactic center, low mass stars, and star formation regions, education and community outreach.

Tuesday, 12:30 p.m. in the Gates Performing Arts Center.

Dr. Jamie Vernon (Editor-in-Chief, American Scientist and Director of Science Communications and Publications, Sigma Xi) will present the noon lecture, Maximum Impact: Designing Reward Networks for the 21st Century Scientist.

Dr. Vernon is director of science communications and publications and editor-in-chief of American Scientist at Sigma Xi. An experienced molecular biologist and award-winning science educator, he began communicating science as a public speaker and independent blogger. In 2011, he became a regular contributor to The Intersection, a Discover magazine blog about science and policy, where he focused on challenges facing the scientific enterprise—from politicization of science to mental health among graduate students. Jamie arrived at Sigma Xi in 2014 after serving as an American Association for the Advancement of Science (AAAS) Science and Technology Policy Fellow and an Oak Ridge Institute for Science and Education (ORISE) Fellow at the U.S. Department of Energy (DOE), where he developed strategies to measure and communicate the economic impacts of the Department’s $2.7 billion investment in the development of efficient, renewable energy technologies. In 2012, he was appointed co-chair of digital media for the interagency climate communications working group within the White House’s U.S. Global Change Research Program. From 2014 to 2015, he served as interim co-director of operations for Sigma Xi headquarters in Research Triangle Park, North Carolina. Jamie earned a B.S. in zoology from North Carolina State University, M.S. in biotechnology from East Carolina University, and Ph.D. in cell and molecular biology from The University of Texas at Austin.

Tuesday, 6:30 p.m. in the Gates Performing Arts Center.

Dr. Matthew James, President of the AAAS, Pacific Division and Professor of Geology, Sonoma State University, will present the annual Pacific Division Presidential Address, Collecting Evolution: The Galápagos Expedition that Vindicated Darwin.

Dr. James is a Fellow of the California Academy of Sciences, and Professor of Geology and Paleontology at Sonoma State University in northern California. He is a Governing Member in the General Assembly of the Charles Darwin Foundation for the Galápagos Islands. He has been writing about the Galápagos in historical, scientific, and research capacities for thirty-five years. He latest book, Collecting
**GENERAL INFORMATION**

*Evolution: The Galápagos Expedition that Vindicated Darwin*, was published by Oxford University Press on 7 April 2017.

**RECEPTIONS, EVENTS, STUDENT AWARDS, and BANQUET**

**Monday Afternoon Opening Ceremonies.** 4:30 p.m. – 5:30 p.m. at the patio in front of the Taylor Dining Commons. Kumu Liana Aveiro will open the meeting with an oli, followed by Hula Kahiko and Hula Auana dances performed by students of the Halau Waiau.

A Kumu is a master teacher or source of knowledge. An oli is a Hawaiian chant. Hula Kahiko and Hula Auana are two very different types of hula. A Halau is a school. One might, therefore, translate the above program announcement to read, “Master teacher Liana Aveiro will open the meeting with an Hawaiian chant, followed by both traditional and modern hula dancing performed by students of the Waiau Hula School.”

Background information (excerpted from http://www.we-Hawaii.com/Hawaiian_hula_dance.html on 5 May 2017):

There are many schools of hula today on Hawai`i as well as in many countries of the world. The school of hula is called Halau. Students can be small children, who are taught the ancient forms [Hula Kahhiko] and adults who seek to learn Hula Auana.

Hula Kahiko forms are generally more advanced on every level – from the physical to the spiritual. Hula Auana is dedicated to bring happiness and pleasure, in contrast to Hula Kahiko, whose goal is to preserve knowledge and allow contact with higher energies.

For traditional purposes, hula dancers wear beautiful fresh flower leis and tapa clothes when dancing hula. There are many styles of performing Hula as well as various styles of clothing that exist on Hawai`i which are beautiful and inspirational.

For traditional performances Hula dancers meet at a certain time of the year on Big Island Hawai`i near the Haleuma`uma`u crater to dance for the goddess Pele or on Kauai Island in the oldest existing Hula temple, where the 90th generation of Hula dancers still pray to the goddess Laka.

**Monday Pūpū Dinner.** 5:30 p.m. – 6:45 p.m. in the Taylor Dining Commons. Cost: $22.00, tickets purchased in advance.

This first dinner of the meeting is designed to continue the process of acculturating meeting-goers into Hawaiian culture. Pūpūs are various types of finger food appetizers, served on a platter or buffet style. This dinner features traditional Hawaiian pūpūs, such as garlic roasted pesto chicken wings, tofu poke, pipi kalua tinono and local fruit.

This meal is included with the basic four night housing/meals package and also the ten-meal package for those staying other than HPA. All others needed to purchase a ticket in advance. If you didn't purchase a ticket in advance but have decided you would like to attend this meal, please check at the Registration Desk to see if any tickets are still available.

**Tuesday Viewing of Student Science Fair Projects.** 2:00 p.m. – 4:30 p.m. in the Taylor Dining Commons.

Junior high and high school students on the Big Island have been invited to display at this meeting projects they have presented at science fairs this past academic year. Please stop by to see what they've done! The displays will be part of Poster Session 1 at the front of the dining hall.

**Tuesday Evening Dessert Reception and Star Party.** 7:30 p.m. at the HPA Energy Lab.

These events follow directly after the close of the AAAS, Pacific Division Presidential Address. Please join us for a convivial time of being welcomed to HPA and the annual meeting as well as networking and visiting with old and new friends. We are pleased to announce that, weather permitting, members of the West Hawai`i Astronomy Club, in cooperation with the Canada-France-Hawai`i Telescope, will have a number of telescopes set up to enable meeting registrants to view various celestial bodies during the evening. Keep your fingers crossed for clear skies! All meeting registrants and their families are invited to these events. Be sure to wear your name badge this evening.

The reception ends at 8:45 p.m. The Star Party will continue for a while longer.

**Thursday Afternoon Announcement of Student Award Winners** begins promptly at 5:30 p.m. in the Gates Performing Arts Center.

In a break from tradition, the winners of student awards will be announced before dinner at this late afternoon meeting. We ask that all students who win awards stay for the group photograph to be taken at the conclusion of the program.

**Thursday Evening Luau-style Buffet Banquet and Entertainment.** 6:30 p.m. in the Taylor Dining Commons.

Join us for a delicious luau-style buffet dinner featuring a variety of luau foods, such as white rice, teri pineapple chicken, bulk turkey laulau, vegetarian long rice, sweet potato with coconut ginger glaze, kalua pig, traditional friedahi poke, garlic shoyu ahi poke, taro salad, cucumber and tomato poke, imitation crab salad, shoyu garlic edamame, lomi salmon, Keala Ola Farms organic spring mix, Kamuela hot house cucumbers, house made papaya seed dressing, haupia, and lilikoi bars. After dinner, entertainment will be provided by Big Island slack key guitarist John Keawe and his wife, Hope, who will demonstrate a bit of hula.

Banquet tickets are included as part of the cost of the four-day basic housing/meals package at HPA and also the ten meal package for those staying somewhere other than HPA. For those not holding either of these packages, tickets were available for purchase in advance for $35 each (presenting students, $15 each). The deadline for ordering banquet tickets was 3 June. Should you find that you would
like to join the evening's activities but do not have a ticket, check at the Registration Desk to see if any are still available. No other food will be available at HPA this evening.

BUSINESS MEETING
Monday Afternoon Business Meeting of the Council of the Pacific Division. The Council of the Pacific Division will hold its annual business meeting starting at 12:00 p.m. on Monday, 19 June in the Student Union at HPA. The Council will elect officers, Council and Executive Committee members, discuss programs for the 2018 annual meeting, and transact other business as is required by the Division’s by-laws. This is an open meeting and Pacific Division members with an interest in the governance of the Division are invited to attend.

WORKSHOPS
Workshops are available to all meeting registrants at no additional charge. Should a non-registrant wish to attend one of the workshops, he/she must register for at least the day of the program in order to be eligible to attend. For full details about workshops, including days, times, and locations, please turn to "Workshops" on page 1534 in these Proceedings.

FIELD TRIPS
All field trips are open to meeting registrants and their families. At least one member of a family group must be registered for the meeting. Unregistered family members will be charged an additional one-time-only $10 field trip registration fee. This fee is paid only once for this meeting, regardless of how many field trips a non-registered participates in.

Due to limited space, advance registration was required for all field trips. If you didn’t sign up for a trip you would like to go on, ask about availability at the Registration Center.

Links to information about various stops on individual field trips will continue to be available for a period of time at pacific.aaas.org/2017Hawaii/FieldTrips17.html.

Wednesday, 21 June

(1) Around the Island, 8:30 a.m. to about 8:00 p.m.
Depart the HPA campus from the parking area above Taylor Commons promptly at 8:30 a.m. This educational tour will proceed in a clockwise direction around the Big Island, and is planned to include a drive-through of historic Honaunau, the Place of Refuge, then onto a tour of the Kona Living History Farm and then back south to the Kona Commons Shopping Center for lunch, which is on your own. Following lunch, we’ll travel a short distance to the Kaloko-Honokōhau National Historical Park to view the historic fish ponds and petroglyphs. Afterwards, we’ll travel to the Parker Ranch Shopping Center for a bit of time for shopping and/or eating dinner on your own. Please note that dinner is not available at HPA today.

Includes transportation and admissions. Lunch and Dinner are on your own. Cost: $80.00 per person.

(2) Kona Historical Tour, 8:00 a.m. to about 6:30 p.m.
Depart the HPA campus from the parking area above Taylor Commons promptly at 8:00 a.m. The trip will proceed south from HPA to the coast and down toward Kona-Kailua. The first stop is at St. Benedict’s Painted Church, south of Kona. From there we will proceed to Mahānā O Hōnaunau, the Place of Refuge, then onto a tour of the Kona Living History Farm and then back north to the Kona Commons Shopping Center for lunch, which is on your own. Following lunch, we’ll travel a short distance to the Kaloko-Honokōhau National Historical Park to view the historic fish ponds and petroglyphs. Afterwards, we’ll travel to the Parker Ranch Shopping Center for a bit of time for shopping and/or eating dinner on your own. Please note that dinner is not available at HPA today.

Includes transportation, buffet lunch at Nani Moa Gardens, and entry fees. Dinner at the Queen’s Marketplace is on your own. Cost: $100.00 per person.

(3) Kīlauea Volcano, 8:00 a.m. to about 9:00 p.m.
Arrive at the Taylor Commons by 7:15 a.m. to prepare your own sack lunch for this trip, earlier if you are also eating breakfast at HPA. Depart at 8:00 a.m. in a school bus for Hawai`i Volcanoes National Park via the newly refurbished Saddle Road. Don Swanson of the United States Geological Survey (USGS), leader of this trip, will join us at the USGS Hawai`i Volcano Observatory (HVO). Once our day is done, we will drive to the Kīlauea Military Camp for dinner on your own before heading back to HPA.

This trip introduces the geology and volcanology of the summit area of Kīlauea Volcano. The trip features both the lava flows that Kīlauea is famous for and also its explosive activity, an important but little acknowledged aspect of Kīlauea’s eruptive style.

We start at the U.S. Geological Survey’s Hawai`i Volcano Observatory, where we discuss the origin of the summit caldera and its recent eruptive activity. We go inside the observatory to learn about monitoring the volcano and then to a nearby outcrop of explosive deposits, one of which is from an eruption in 1790 that killed hundreds of people nearby. We then drive around the caldera, viewing Kīlauea Iki Crater and the lava lake formed in 1959. We turn down the Chain of Craters Road and walk on the July 1974 lava flow to observe its vent and a forest inundated by the flow. Farther down the road at Mauna Ulu, we discuss the 1969-74 eruption, walk along part of its fissure system, and puzzle over why spatter is preserved on only one side of the fissure. We walk to Devil’s Throat, little more than 100 years old, and talk about the origin and evolution of such craters. Finally, we walk cross-
country into the Koaʻe fault system, one of the world’s most active extensional faulting regimes, which has opened more than 30 m in the past 700 years. This fault system connects the east and southwest rift zones and, as such, is an important but under-appreciated element of the volcano.

Walking is across uneven terrain, and good shoes or boots are recommended. Long pants protect from sharp rocks. The trip will last all day. We will be on our feet most of the day; the round trip into the Koaʻe fault system will take 45-60 minutes. After we leave the observatory, there is only one toilet, at Mauna Ulu, about halfway through the trip.

Trip includes transportation, make your own lunch at HPA, and entrance fees. Dinner at the Kilauea Military Camp is on your own. Cost: $70.00 per person.

**(4) Kona Coffee Tour, 8:30 a.m. to about 7:30 p.m.**
This tour is designed to inform participants about the Kona Coffee industry on the Big Island. We will depart from the parking above Taylor Commons promptly at 8:30 a.m. Prior to our departure participants will need to make their own sack lunches, so plan on arriving at Taylor Commons no later than 7:45 a.m. to accomplish this, earlier if you are eating breakfast at the commons.

Our first stop will be at the Hamakua Macadamia Nut Company in Kawaihae, on the coast about 20 miles from HPA. From there we will travel south to below Kona for a tour of the Kona Living History Farm, where we will also eat our lunches. Afterwards, we will visit the Holualoa Kona Coffee Company and tour the Kona Joe Coffee Company. Dinner will be on your own at a stop on the way back to HPA.

Includes transportation, make your own sack lunch, and admissions. Note that dinner is on your own. Cost: $75.00 per person.

**(5) Reef Teach Snorkeling, 9:00 a.m. to about 3:00 p.m.**
The ReefTeach Program at Kahaluu Bay aims to educate visitors and residents alike on how to avoid damaging corals and take care of turtles and reef animals. ReefTeach is a volunteer powered program that was initiated in 2000 by the University of Hawaiʻi Sea Grant College Program for West Hawaiʻi. In 2006 the UH Sea Grant College Program was joined by another partner, The Kohala Center, and ReefTeach has continued to expand into a visible, robust, and effective reef protection program. Today, well-trained and dedicated ReefTeach volunteers of all ages educate visitors about what corals are, about the different types of fish and invertebrates in the bay, and about the ecology of the reef. They also inform visitors and residents of turtle basking behavior and help reduce disturbances to turtles in the bay. (Information above excerpted from “About the Kahaluu Bay ReefTeach Project,” courtesy of The Kohala Center, and may be found at http://hbmpweb.pbrc.Hawaii.edu/tkc/reefteach-approved).

We will depart HPA promptly at 9:00 a.m. and head south to Kahaluu Beach State Park, where the ReefTeach Program is housed on the Big Island. After a time of orientation, participants will be able to snorkel in the waters of Kahalu‘u Bay, which is shallow and calm, making it ideal for novice snorkelers. The bay is home to a rich diversity of fish and other marine organisms, which make snorkeling an amazing experience. Snorkeling tips may be found on this web page: http://www.Hawaiisnorkelingguide.com/kahaluu_beach_park_snorkeling.html.

There are rest rooms, a snack bar, showers, and rentals at Kahaluu Beach State Park. Bring your own snorkeling gear or you can rent it for $13.50 at the park.

After snorkeling, we will stop along the road for lunch on your own before returning to HPA.

Includes transportation and ReefTeach program. Lunch is on your own, as is snorkeling gear rental. Cost: $40.00 per person.

**Saturday, 24 June**

**(7) Kilauea Volcano, 8:00 a.m. to about 9:00 p.m.**
Arrive at Taylor Commons by 7:15 a.m. to prepare your own sack lunch for this trip, earlier if you are planning on eating breakfast at the commons. Depart at 8:00 a.m. for Hawaiʻi Volcanoes National Park in a school bus from the parking above Taylor Commons. We will travel to the Park via the newly refurbished Saddle Road. Richard Hazlett, assistant at the U.S. Geological Survey (USGS) Hawaiʻi Volcano Observatory will join us to lead this trip. Once our day is done, we will drive to the Kilauea Military Camp for dinner on your own before heading back to HPA.

This trip introduces the geology and volcanology of the summit area of Kilauea Volcano. The trip features both the lava flows that Kilauea is famous for and also its explosive activity, an important but little acknowledged aspect of Kilauea’s eruptive style.

We start at the U.S. Geological Survey’s Hawaiʻi Volcano Observatory, where we discuss the origin of the summit caldera and its recent eruptive activity. We go inside the observatory to learn about monitoring the volcano and then to a nearby outcrop of explosive deposits, one of which is from an eruption in 1790 that killed hundreds of people nearby. We then drive around the caldera, viewing Kīlauea Iki Crater and the lava lake formed in 1959. We turn down the Chain of Craters Road and walk on the July 1974 lava flow to observe its vent and a forest inundated by the flow. Farther down the road at Mauna Ulu, we discuss the 1969-74 eruption, walk along part of its fissure system, and puzzle over why spatter is preserved on only one side of the fissure. We walk to Devil’s Throat, little more than 100 years old, and talk about the origin and evolution of such craters. Finally, we walk cross-country into the Koaʻe fault system, one of the world’s most active extensional faulting regimes, which has opened more than 30 m in the past 700 years. This fault system connects the east and southwest rift zones and,
as such, is an important but under-appreciated element of the volcano.

Walking is across uneven terrain, and good shoes or boots are recommended. Long pants protect from sharp rocks. The trip will last all day. We will be on our feet most of the day; the round trip into the Koaʻe fault system will take 45-60 minutes. After we leave the observatory, there is only one toilet, at Mauna Ulu, about halfway through the trip.

Trip includes transportation, make your own lunch at HPA, and entrance fees. Dinner at the Kilauea Military Camp is on your own. Cost: $70.00 per person.

(8) Reef Teach Snorkeling, 9:00 a.m. to about 3:00 p.m.
The ReefTeach Program at Kahaluʻu Bay aims to educate visitors and residents alike on how to avoid damaging corals and take care of turtles and reef animals. ReefTeach is a volunteer powered program that was initiated in 2000 by the University of Hawaiʻi Sea Grant College Program for West Hawaiʻi. In 2006 the UH Sea Grant College Program was joined by another partner, The Kohala Center, and ReefTeach has continued to expand into a visible, robust, and effective reef protection program. Today, well-trained and dedicated ReefTeach volunteers of all ages educate visitors about what corals are, about the different types of fish and invertebrates in the bay, and about the ecology of the reef. They also inform visitors and residents of turtle basking behavior and help reduce disturbances to turtles in the bay. (Information above excerpted from “About the Kahaluʻu Bay ReefTeach Project,” courtesy of The Kohala Center, and may be found at http://hbmpweb.pbrc.Hawaii.edu/tkc/reefteach-approved).

We will depart HPA promptly at 9:00 a.m. and head south to Kahaluʻu Beach State Park, where the ReefTeach Program is housed on the Big Island. After a time of orientation, participants will be able to snorkel in the waters of Kahaluʻu Bay, which is shallow and calm, making it ideal for novice snorkelers. The bay is home to a rich diversity of fish and other marine organisms, which make snorkeling an amazing experience. Snorkeling tips may be found on this web page: http://www.Hawaiisnorkelingguide.com/kahaluu_beach_park_snorkeling.html.

There are rest rooms, a snack bar, showers, and rentals at Kahaluʻu Beach State Park. Bring your own snorkeling gear or you can rent it for $13.50 at the park.

After snorkeling, we will stop along the road for lunch on your own before returning to HPA.

Includes transportation and ReefTeach program. Lunch is on your own, as is snorkeling gear rental. Cost: $40.00 per person.
GENERAL SESSIONS

Monday, 19 June 2017

Opening Ceremonies
PATIO in FRONT of
TAYLOR DINING COMMONS
Monday
4:30 p.m. – 5:30 p.m.

Kumu Liana Aveiro will open the meeting with an oli, followed by Hula Kahiko and Hula Auana dances performed by students of the Halau Waiau. Please refer to page 14 in these Proceedings for further details.

Pūpū Buffet Dinner
TAYLOR DINING COMMONS
Monday
5:30 p.m. – 6:45 p.m.

This first dinner of the meeting is designed to continue the process of acculturating meeting-goers into Hawaiian culture. Pūpūs are various types of finger food appetizers, served on a platter or buffet style. This dinner features traditional Hawaiian pūpūs, such as garlic roasted pesto chicken wings, tofu poke, pipi kalua tinono and local fruit.

This meal is included with the basic four night housing/meals package and also the ten-meal package for those staying other than HPA. All others needed to purchase a ticket in advance at a cost of $22.00. If you didn't purchase a ticket in advance but have decided you would like to attend this meal, please check at the Registration Desk to see if any tickets are still available.

Public Plenary Lecture Series*
GATES PERFORMING ARTS CENTER
Monday
7:00 p.m. – 9:00 p.m.

Please refer to page 12 in these Proceedings for additional information about these speakers and also page 61 for an abstract for each presentation.

1 Geological Development of the Hawaiian Islands, presented by RICHARD HAZLETT (Department of Geology, University of Hawai`i at Hilo, Associate Researcher, USGS Hawaiian Volcano Observatory, and Professor Emeritus, Pomona College).

2 Land of Beautiful Blow-ins: Revisiting the Natural and Human History of Hawai`i, presented by NINA G. JABLONAKI (Evan Pugh University Professor of Anthropology, The Pennsylvania State University).

3 Mehe`au and Microbes: The Science Encoded in Mo`olelo, presented by KIANA FRANK (Pacific Biosciences Research Center, University of Hawai`i, Mānoa).

4 21st Century Research at the Maunakea Observatories, presented by DOUG SIMONS (Canada-France-Hawai`i Telescope).

Student Awards Judges
Organizational Meeting
STUDENT UNION
Monday
9:00 p.m.

*The public is invited to attend this program at no charge.
Tuesday, 20 June 2017

Public Plenary Noon Lecture*
GATES PERFORMING ARTS CENTER
Tuesday
12:30 p.m. – 1:30 p.m.

5 Maximum Impact: Designing Reward Networks for the 21st Century Scientist, JAMIE VERNON (Editor-in-Chief, American Scientist and Director of Science Communications and Publications, Sigma Xi, the Scientific Research Honor Society). Please refer to page 13 in these Proceedings for additional information about Dr. Vernon and also page 61 for an abstract for his presentation.

Display of Junior and Senior High School Science Fair Projects
TAYLOR DINING COMMONS
Tuesday
2:00 p.m. – 4:30 p.m.

Please refer to page "Tuesday Viewing of Student Science Fair Projects. 2:00 p.m. – 4:30 p.m. in the Taylor Dining Commons." on page 14 in these Proceedings for information about this program.

AAAS, Pacific Division Presidential Address*
GATES PERFORMING ARTS CENTER
Tuesday
6:30 p.m.

6 Collecting Evolution: The Galápagos Expedition that Vindicated Darwin, MATTHEW J. JAMES (Department of Geology, Sonoma State University, Rohnert Park, CA). Please refer to page 13 in these Proceedings for additional information about Dr. Vernon and also page 61 for an abstract for his presentation.

Welcome Reception and Star Party
ENERGY LAB
7:30 p.m.

Immediately following the AAASPD Presidential Address will be a dessert reception sponsored by Sigma Xi. Family members of meeting registrants are invited to attend.

Telescopes and guides for the Star Party, weather permitting, are being provided by the members of the West Hawaii Astronomy Club and the Canada-France-Hawaii Telescope. They will be set up in the area of the Energy Lab so it should be easy to enjoy both events at the same time.

Please wear your registration badge to this event.

*The public is invited to attend this program at no charge.

Thursday, 22 June 2017

Student Award Judges Meeting
STUDENT UNION
Thursday
2:00 p.m.

Announcement of Student Award Winners
GATES PERFORMING ARTS CENTER
Thursday
5:30 p.m.

Information about this event may be found on page 14 of these Proceedings.

Luau-Style Banquet
TAYLOR DINING COMMONS
Thursday
6:30 p.m. – 9:30 p.m.

Dinner service will begin about 6:30 p.m. Be sure to bring your dinner ticket with you in order to verify your attendance at this festive event. Tickets to the banquet were included in the cost of the housing/meals and also the ten-meal meals packages. The cost for those not holding one of those packages is $35 and needs to be purchased in advance. Students in competition for Awards of Excellence were invited to attend the banquet at the reduced rate of $15. This discount was also factored into the prices for the housing/meals and ten-meal meals packages for presenting students. Following dinner will be entertainment by local island slack-key guitarist John Keawe and his wife, Hope. Additional information about this event may be found on page 14 of these Proceedings.
I. SYMPOSIA

Tuesday, 20 June 2017

Turbulence Conference at Mauna Kea (TCM-2017): Recent Advances in Turbulence Research

ENERGY LAB
Tuesday
8:15 a.m. – 3:00 p.m.
continues on Thursday
8:15 a.m. – 3:00 p.m.
and continues again on Friday
8:30 a.m. – 3:00 p.m.

Program organized by: Frank G. Jacobitz (Mechanical Engineering Department, Shiley-Marcos School of Engineering, University of San Diego), Kai Schneider (Institut de Mathématiques de Marseille (I2M) du Centre de Mathématiques et d’Informatique, Aix-Marseille Université, Marseille, France and Katsunori Yoshimatsu (Institute of Materials and Systems for Sustainability, Nagoya University, Nagoya, Japan).

Program sponsored by the Pacific Division Section on Engineering, Technology, and Applied Sciences.

The turbulent motion of fluids is an important mechanism for the transport and mixing in many engineering applications and geophysical environment. This symposium includes work on recent advances in turbulence research from theoretical, experimental, and field studies. In addition to oral and poster presentations in the mornings, the symposium will include time for discussions and joint work during the afternoon and evenings of the conference days.

Session Chair: Frank G. Jacobitz

8:15 Welcome

8:30 7 Transitional-Turbulent Spots and Turbulent-Turbulent Spots in Boundary Layer, JAMES M. WALKACE1*, XIAOHUA WU2, PARVIZ MOIN3, JINHIE SKARDA4, ADRIAN LOZANO-DURAN3, and JEAN-PIERRE HICKEY3 (1Department of Mechanical Engineering, University of Maryland, College Park, MD; 2Department of Mechanical and Aerospace Engineering, Royal Military College of Canada, Kingston, ON, Canada; 3Center for Turbulence Research, Stanford University, Stanford, CA).

9:10 8 Influence of Small but Finite Viscosity on the Statistics in the Log-Law Region of Wall-Bounded Turbulence, YUKIO KANEDA (Department of Natural Science, Aichi Institute of Technology, Toyota, Japan).

10:00 BREAK

10:30 9 On the Structure Orientation in Homogeneous Turbulent Shear Flows, Part I: Analysis Method Development, ADAM F. MOREAU1*, JOYLENE C. AGUIRRE2, FRANK G. JACOBITZ2 (1Electrical Engineering Department, Shiley-Marcos School of Engineering, University of San Diego, San Diego, CA; 2Electrical Engineering Department, Shiley-Marcos School of Engineering, University of San Diego, San Diego, CA).

10:50 10 On the Structure Orientation in Homogeneous Turbulent Shear Flows, Part II: Application to Stratified and Rotating Shear Flows, JOYLENE C. AGUIRRE1*, ADAM F. MOREAU2, FRANK G. JACOBITZ2 (1Mechanical Engineering Department, Shiley-Marcos School of Engineering, University of San Diego, San Diego, CA; 2Electrical Engineering Department, Shiley-Marcos School of Engineering, University of San Diego, San Diego, CA).

11:10 11 On the Scale-Dependent Helicity in Stably Stratified Turbulent Shear Flows, FRANK G. JACOBITZ1*, KAI SCHNEIDER2, and MARIE FARGE3 (1Mechanical Engineering Department, Shiley-Marcos School of Engineering, University of San Diego, San Diego, CA; 2Institut de Mathématiques de Marseille, Aix-Marseille Université, Marseille, France; 3Laboratoire de Météorologie Dynamique, Ecole Normale Supérieure and Paris Sciences et Lettres, Paris, France).

11:45 LUNCH
1:30 Round Table: Questions and Perspectives

3:00 BREAK

Symposium continues Thursday morning at 8:15 a.m. Please refer to page 25 of these Proceedings for schedule.

Galápagos 2017:
Galápagos and Hawai‘i
GERRY CLARK ART CENTER
Tuesday
8:20 a.m. – Noon
Thursday
8:20 a.m. – 12:10 p.m.

Program organized by Matthew James (Sonoma State University, Rohnert Park, CA).

Program sponsored by the Pacific Division Section on Ecology, Environmental Sciences, and Sustainability.

This two half-day symposium provides opportunities for speakers with research interests in both the Galápagos Islands and the Hawaiian Islands. The range of topics covers conservation biology, zoology, botany, paleontology and geology, and evolutionary biology. Holding the symposium on the Big Island of Hawai‘i affords an opportunity for interactions between researchers with expertise in two of the world’s best known archipelagoes, that also have played pivotal roles in shaping evolutionary theory and testing policies and procedures in conservation biology.

Session chair: Inti Keith

8:20 Introductory Comments, MATTHEW JAMES

8:30 12 KEYNOTE PRESENTATION: Working on an Old Question “How Many Visitors can the Galápagos Hold?”...The Sustainability of the Islands Depends on Key Decisions Now, ARTURO IZURIETA VALERY (Charles Darwin Foundation for the Galápagos Islands, Santa Cruz Island, Galápagos, Ecuador).

9:30 13 A New Look at Galápagos Fouling Communities, INTI KEITH*, JAMES T. CARLTON¹, and GREG M. RUIZ² (¹Charles Darwin Foundation – Marine Biology Department, Charles Darwin Foundation, Santa Cruz, Galápagos Islands, Ecuador; ²Williams College and The Williams College - Mystic Seaport Maritime Studies Program, Mystic, CT; ³Smithsonian Environmental Research Center Edgewater, MD).

10:00 BREAK

10:30 14 Taxidermy and Taxonomy: A Tale of Two Galápagos Giant Tortoises, MATTHEW J. JAMES (Department of Geology, Sonoma State University, Rohnert Park, CA).

11:00 15 From the World to the Galápagos and from the Galápagos to the World: Understanding the Biodiversity Impacts of Plastic Pollution in the Galápagos and Potential Solutions, JUAN PABLO MUÑOZ-PÉREZ (Universidad San Francisco de Quito USFQ, Extensión Galápagos USFQ, Galápagos Science Center GSC, Ecuador).


Symposium continues Thursday morning at 8:20 a.m. Please refer to page 25 of these Proceedings for schedule.

Social Responsibility of Scientists in the Technological Age
CASTLE LECTURE HALL
Tuesday
8:50 a.m. – 4:30 p.m.

Program organized by Raghavan Jayakumar (Lawrence Livermore National Laboratory (ret’d.), Livermore, CA) and Jesse J. Thomas (San Diego State University (retired), San Diego, CA).

Program sponsored by the Pacific Division Section on Science and the Arts and Humanities.

The technological age has brought unprecedented benefits to society. Given the scope and speed of these developments, though, society may not have the ability and/or time to fully understand long-term impacts and react appropriately. For example, DDT, upon the discovery of its anti-arthropod activities, was widely used to help control diseases such as malaria. It was only years later that its sinister side was realized with the discovery that it accumulated within food chains causing reproductive failure in bird populations and problems in other species as well. The development of CFCs led to widespread use of these compounds as refrigerants, only to later be determined a causative factor in the development of holes in the ozone layer. The development of newer chemicals such as neonicotinoids for insect control and glyphosate and atrazine for weed control has environmentalists...
worried that sensitive ecosystems and even entire biospheres may be endangered by these newer chemical and genetic engineering technologies. The thesis of this symposium is that science, as an expression of human life, should embody ethics and responsibility. Technology, being an outcome of science, should be considered a scientific responsibility. This symposium will focus on the approach scientists and technologists might take to fulfill this responsibility by discussing such questions as:

- Should scientists and technologists adopt the principle of “First, do no harm”?
- Should scientists assume responsibility for the consequences of their research and control technological development or leave it to others such as funding agencies and corporations?
- How can scientists help society with risk assessment in order to help shape public policy on science and technology?
- How can scientists help stake-holders develop holistic solutions that protect the environment?
- How can scientists ensure that genetic and cyber technologies do not imperil human dignity and human rights?
- How can present and future scientists be educated on the risks of various newer technologies and their social responsibilities toward them?

Morning session chair: Jesse J. Thomas

8:50 Introductory Comments

9:00 17 Ethics in a Decaying Universe, ARNOLD O. BENZ (Institute for Astronomy, Zurich, Switzerland).

9:30 18 Who Will Bell the Cat – Identifying Who is Responsible, RAGHAVA JAYAKUMAR (Retired Physicist, Lawrence Livermore National Laboratory, San Diego, CA).

10:00 BREAK


11:00 20 A Neurobiological Argument for a Scientific Ethic, JESSE J. THOMAS (Retired, Department of Religious Studies, San Diego State University, Murrieta, CA).

11:30 21 Good Scientific Conduct in Post-Normal Science, TOM BORSEN (Department of Development and Planning, Aalborg University Copenhagen, Copenhagen, DK).

12:00 22 The Art of Birthing: From Bioethics to Politics with Assisted Reproductive Technologies, DEBO-RAH KALA PERKINS (Graduate Theological Union, Woodside, CA).

12:30 LUNCH

Afternoon session chair: Raghavan Jayakumar

1:30 23 Academic Responsibility, Writing for Public Impact, and the New World Order, SCOTT SLOVIC (Department of English, University of Idaho, Moscow, ID).

2:00 24 That Which Is Right, and that Which We Do: How To Combat HARKing, P-Hacking, Data Hoarding and Other Such Practices by Researchers? BINOD SUNDARARAJAN (Rowe School of Business, Faculty of Management, Dalhousie University, Halifax, Nova Scotia, Canada).

2:30 25 Bridging the Gap Between Science and Political Decision Making, HUGO ESTRELLA (Pisa University, Pisa PI, Italy).

3:00 BREAK

3:30 26 Civilizations Crisis – The Need for Social Responsibility, JOHN SCALES AVERY (Department of Chemistry, University of Copenhagen, Copenhagen Denmark).

4:00 Roundtable Discussion

High Altitude Climate Change Trends and Alpine Ecosystem Impacts in Hawai`i

SCIENCE ROOM 41

Tuesday
1:20 p.m. – 5:00 p.m.

Program organizers: Fritz Klasner (Natural Resources Program Manager, Office of Mauna Kea Management, University of Hawai`i, Hilo, HI) and James Juvik (Department of Geography and Environmental Studies, University of Hawai`i, Hilo, HI).

Program sponsored by the Pacific Division Section on Ecology, Environmental Sciences, and Sustainability.

This program will present a discussion of tropical alpine and sub-alpine ecosystems in high mountain areas of Hawai`i as influenced by ongoing rapid climate change. Papers will focus specifically on high altitude vegetation ecotones, seabird habitat,
Session chairs: James Juvik and Fritz Klasner

1:20  Introductory Comments

1:30  27 The Impact of Global Warming Trends at High-Elevation in Hawai‘i: The 100-year Record, MARIE M. McKENZIE, THOMAS W. GIAMBELLUCA, and HENRY F. DIAZ. (Department of Geography, University of Hawai‘i at Mānoa, Honolulu, HI).

2:00  28 High-altitude Permafrost and Microclimates in Cinder Cone Craters on Maunakea, Hawai‘i, NORBERT SCHORGHOFER1,2, MATTHIAS LEOPOLD1, JAKE MARTIN13,4, AMANDA MORELLI14, and KENJI YOSHIKAWA5 (1Institute for Astronomy, University of Hawai‘i, Honolulu, HI; 2School of Earth and Environment, University of Western Australia, Perth, Australia; 3Princeton University, Princeton, NJ; 4Universidade Federal de São Paulo, São Paulo, Brazil; 5Water and Environmental Research Center, University of Alaska, Fairbanks, AK).

2:30  29 Defining Plant Community and Climatic Variation Across the Hawaiian Treeline Ecotone, ALISON AINSWORTH12 and DONALD DRAKE2 (1Pacific Island Inventory and Monitoring Program, National Park Service, Hawai‘i National Park, HI; 2Botany Department, University of Hawai‘i at Mānoa, Honolulu, HI).

3:00  BREAK

3:30  30 Endemic and Invasive Arthropod Communities of High Elevation Maunakea: Biodiversity Trends and Threat Management, JESSE EIBEN1*, HEATHER STEVER2, and JORDEN ZARDERS2 (1College of Agriculture, Forestry, and Natural Resource Management and 2Tropical Conservation Biology and Environmental Science Graduate Program, University of Hawai‘i at Hilo, Hilo, HI).

4:00  31 The Spatial Distribution of Wēkiu Bugs (Nysius wekiuicola) Within a Cinder Cone on Maunakea Volcano, Hawai‘i, JESSICA KIRKPATRICK1* and JESSE EIBEN2 (1Tropical Conservation Biology and Environmental Science Graduate Program and 2College of Agriculture, Forestry, and Natural Resource Management, University of Hawai‘i at Hilo, Hilo, HI).

4:30  32 Management of Endangered Birds in Alpine Ecosystems in Hawai‘i, CATHLEEN NATIVIDAD BAILEY1*, KATHLEEN MISAJON2, CHARLOTTE FORBES-PERRY3, RAINA KAHOLOAA1, JOY TAMAYOSE1, DARCY HU4, and CARLSCHWARZ1 (1National Park Service, Haleakalā National Park, Makawao, HI; 2National Park Service, Hawai‘i Volcanoes National Park, Hawai‘i National Park, HI).

Mechanisms of Tumor Progression and Cancer Therapeutics
DYER LIBRARY
Tuesday 1:20 p.m. – 5:00 p.m.

Program organized by Cheryl Jorcyk (Department of Biological Sciences, Boise State University, Boise, ID).

Program sponsored by the Pacific Division Section on Cell and Molecular Biology.

Cancer is a large group of different diseases, all involving uncontrolled growth of cells in the body. During tumor progression, cells proliferate, form malignant tumors, invade to nearby parts of the body and metastasize, or spread, to more distant parts of the body through the lymphatic system or bloodstream. This program will provide scientific presentations addressing different mechanisms of tumor progression and metastasis, as well as mechanistic discussions on established and emerging cancer therapies. This symposium is designed for all types of biomedical researchers, undergraduate and graduate students, physicians and oncologists, nurses, pharmacists, and others who research or manage patients with cancer.

Session chair: Cheryl Jorcyk

1:20  Introductory Comments

1:30  33 The Rationale Behind an Anti-Inflammatory Therapeutic for the Treatment and Possible Prevention of Metastatic Breast Cancer, CHERYL L. JORCYK (Department of Biological Sciences, Biomolecular Sciences Program, Boise State University, Boise, ID).

2:00  34 Therapeutic Targeting of Chemokine Signalling: Breaking the Nexus between Inflammation and Cancer Metastasis, ALBERT S. MELLICK (Ingham Institute for Applied Medical Research, Liverpool, Australia and Faculty of Medicine, University of New South Wales, Kensington NSW, Australia).

(time italicized and underlined) identifies a student presentation
* identifies the speaker from among several authors listed
63 (bolded number) is the abstract number
abstracts contain complete contact information for authors
2:30  35  *A Co-Evolutionary Strategy to Direct the Discovery of Novel Anticancer Drugs that Overcome Multidrug Resistance, JENNIFER S. FORBEY and CAROLYN DADABAY* (Department of Biological Sciences, Boise State University, Boise, ID; Department of Chemistry, The College of Idaho, Caldwell, ID).

3:00  BREAK

3:30  36  Nullomers: The Smallest Sequences that Don’t Exist in Nature, New Anticancer Peptides, GREG HAMPIKIAN (Department of Biological Sciences, Boise State University, Boise, ID).

4:00  37  Preparation, Analysis of Activity, and Mechanistic Investigations of Novel Doxorubicin Analogs, DON L. WARNER (Department of Chemistry and Biochemistry, Boise State University, Boise, ID).

4:30  38  Bioactive Hirsutinolides Isolated from Vernonia cinerea, LENG CHEE CHANG, JAMES TURKSON, MENGKE ZHANG, DIANQING SUN, SUPAKIT WONGWIWATTHANANKIT (Department of Pharmaceutical Sciences and Department of Pharmacy Practice, The Daniel K. Inouye College of Pharmacy, University of Hawai‘i at Hilo, Hilo, HI; Natural Products and Experimental Therapeutics and Cancer Biology Programs, University of Hawai‘i Cancer Center, University of Hawai‘i at Manoa, Honolulu, HI).
Thursday, 18 June 2016

Turbulence Conference at Mauna Kea (TCM-2017): Recent Advances in Turbulence Research
ENERGY LAB
Thursday
8:15 a.m. – 3:00 p.m.
continues Friday
8:30 a.m. – 3:00 p.m.

This symposium is continuing from Tuesday. Please refer to page 20 of these Proceedings for details.

Session Chair: Kai Schneider


9:05 40 Universal Aspects of Contravariant and Covariant Vector Elements in Turbulent Flows, KIYOSI HORIUTI*, KOUDAI MATSUHITA, and YOSHINORI TSUDA (Department of Mechano-Aerospace Engineering, Tokyo Institute of Technology, Tokyo, Japan).

9:40 41 Ocean Surface Stress Feedback in Tropical Cyclones and Over Frontal Eddies, W. TIMOTHY LIU*, XIAOSU XIE, and WENQING TANG (Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA).

10:00 BREAK

10:25 42 Global Flow Generation and Angular-Momentum Transport by Turbulent Helicity, NOBUMITSU YOKOI (Institute of Industrial Science, University of Tokyo, Tokyo, Japan).

11:00 43 Wavelet Regularization of Three-dimensional Incompressible Euler Flows, NAOYA OKAMOTO*, MARIE FARGE2, KAI SCHNEIDER3, and KATSUNORI YOSHIMATSU4 (1Center for Computational Science, Nagoya University, Nagoya, Japan; 2Laboratoire de Météorologie Dynamique, Ecole Normale Supérieure and Paris Sciences et Lettres, Paris, France; 3Institut de Mathématiques de Marseille, Aix-Marseille Université, Marseille, France; 4Institute of Materials and Systems for Sustainability, Nagoya University, Nagoya, Japan).

11:20 44 Anisotropic Pressure Correlation Spectra in Turbulent Boundary Layer, YOSHIYUKI TSUJI1* and YUKIO KANEDA2 (1Department of Energy Engineering and Science, School of Engineering, Nagoya University, Nagoya, Japan; 2Department of Natural Science, Aichi Institute of Technology, Toyota, Japan).

11:55 LUNCH

1:30 Round Table: Questions and Perspectives

3:00 BREAK

Symposium continues Friday morning at 8:30 a.m. Please refer to page 33 of these Proceedings for schedule.

Galápagos 2017:
Galápagos and Hawai’i
GERRY CLARK ART CENTER
Thursday
8:20 a.m. – 12:10 p.m.

This symposium is continuing from Tuesday. Please refer to page 21 of these Proceedings for details.

Session chair: Terri Maness

8:20 Introductory Comments, MATTHEW JAMES

8:30 45 Juvenile Survival of Nazca Boobies: Effect of Age and Sex, TERRI J. MANESS1* and DAVID J. ANDERSON2 (1School of Biological Sciences, Louisiana Tech University, LA; 2Biology Department, Wake Forest University, Winston-Salem, NC).

9:00 46 Teaching Island Biogeography in the Field, ROBERT DAVID SIEGEL (Department of Microbiology and Immunology, Program in Human Biology, Center for African Studies, and Woods Institute for the Environment, Stanford University, Stanford, CA).

9:30 48 Modeling Future Groundwater Recharge under Climate Change using Stakeholder-Defined Scenario Planning on Maui, Hawai’i, LAURA BREWINGTON* and VICTORIA KEENER (East-West Center, Honolulu, HI).

10:00 BREAK

11:00  50  Abundances and Trends of Forest Birds in Hawai`i Volcanoes National Park, SETH W. JUDGE1*, RICHARD J. CAMP2, DANIEL E. SEDGWICK1, CARINE L. SQUIBB1, and PATRICK J. HART1 (1University of Hawai`i at Hilo, Department of Biology, Hilo, HI; 2Pacific Island Ecosystems Research Center, U.S. Geological Survey, Kīlauea Field Station, Hawai`i National Park, HI).

11:30  Closing Comments, MATTHEW JAMES

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New Challenges in Environmental Sciences, Heredity and Development, and Evolution
CASTLE LECTURE HALL
Thursday
8:20 a.m. – 12:00 p.m.

Program organized by Roberta L. Millstein (Department of Philosophy, University of California, Davis, CA).

Program sponsored by the Pacific Division Section on the History and Philosophy of Science.

The history and philosophy of biology examines conceptual, methodological, and ethical assumptions across the biosciences. Three areas of biology that have received particular attention include environmental sciences (such as conservation biology), development and heredity, and evolution. Yet new scientific, theoretical, and technological findings raise new challenges in each of these areas. We seek to clarify and address these challenges.

More specifically, we will engage with the following areas and topics:
• The history of genetic hitchhiking in evolution; and
• Understanding the concept of “mismatch” in evolutionary reasoning.

Session chair: Sarah M. Roe

8:20  Introductory Comments

8:30  51  How To Misunderstand Heredity By Misunderstanding History, RON AMUNDSON (Philosophy (Emeritus), University of Hawai`i at Hilo, Hilo, HI).

9:00  52  The Hitchhiker’s Guide to Genetic Variation, ROBERT A. SKIPPER, JR. (Department of Philosophy, University of Cincinnati, Cincinnati, OH).

9:30  53  An Optimal-Environments Account of Evolutionary Mismatch, RICK MORRIS (Department of Philosophy, University of California, Davis, Davis, CA).

10:00  BREAK

10:30  54  The Algorithmic Turn in Conservation Biology: A Case Study in Scientific Progress, JAMES JUSTUS (Department of Philosophy, Florida State University, Tallahassee, FL).

11:00  55  Grey Wolves and the Endangered Species Act: Concordance All the Way Down, ROBERTA L. MILLSTEIN (Department of Philosophy, University of California, Davis, Davis, CA).

11:30  56  The Ethics of Gene Drive, TINA RULLI (Philosophy Department, University of California, Davis, Davis, CA).

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Recent Advances in Pharmacology, Toxicology, and Medicinal Chemistry
SCIENCE ROOM 41
Thursday
8:20 a.m. – 5:00 p.m.

Program organized by Kristen Mitchell (Department of Biology, Boise State University, Boise, ID) and Jozef Stec (Department of Pharmaceutical Sciences, College of Pharmacy, Marshall B. Ketchum University, Fullerton, CA).

Program sponsored by the Pacific Division Sections of Cell and Molecular Biology, and Chemistry and Biochemistry.
The development of novel therapeutic strategies is a long and complex process that requires a detailed understanding of mechanisms that regulate homeostasis, along with an appreciation of the delicate balance that exists between the pharmacological and toxicological effects of chemical compounds. This session will focus on recent advances in understanding the pharmacological and toxicological effects of known drugs, drug candidates, other chemicals and environmental contaminants. Investigators are invited to present research on the identification of targets for new drug development, new drug screening strategies, discovery and development of potential drug candidates as well as elucidation of novel mechanisms of drug action. Emphasis will also be placed on the identification of mechanisms of toxicity for drugs, chemicals and environmental contaminants, as well as novel approaches to toxicity testing.

Morning session chair: Kristen Mitchell

8:20 Introductory Comments

8:30 57 Natural Products: A Source for Targeting the Endocannabinoid System, ABIR EL-ALFY1,2*, KRISTINE MANLIMOS1, NIDHI PATEL1, JENNIFER KENDRECK1, KDUSE RAGASSA1, and Ehab A. Abourashed3,4,5 (1Department of Pharmaceutical Sciences, College of Pharmacy, Chicago State University, Chicago, IL; 2Department of Biomedical Sciences, University of South Carolina School of Medicine Greenville, Greenville, SC; 3School of Pharmacy, Medical College of Wisconsin, Milwaukee, WI).

9:00 58 Experimental Identification and Computational Characterization of a Novel Extracellular Metalloprotease Produced by Clostridium sordellii, MICHAEL J. ALDAPE1*, AOXIANG TAO2, DUSTIN D. HENEY1, ERIC S. MCINDOOE1, JOHN M. FRENCH1, and DONG XU2 (1Veterans Affairs Medical Center, Boise, ID; 2Idaho State University-Meridian Health Science Center, Meridian, ID).

9:30 59 Mycobacterial Alternative Ribosomes – New Drug Targets? SLADJANA PRISIC1, ALLEXA DOW1, and CELESTE YERGIN (Department of Microbiology, University of Hawai`i at Manoa, Honolulu, HI).

10:00 BREAK

10:30 60 Chemical Probes for the Orphan Nuclear Receptors: Steroidogenic Factor-1 (SF-1) and Liver Receptor Homolog-1 (LRH-1), JOZEF STEC (Department of Pharmaceutical Sciences, College of Pharmacy, Marshall B. Ketchum University, Fullerton, CA).

11:00 61 Passive Immunization Strategy for the Treatment of Streptococcal Necrotizing Soft Tissue Infections, C.L. LAMB1, E. PRICE1, D.L. STEVEN1,2, A.E. BRYANT2, S.E. HOBDEY1* (1Idaho Veteran Research and Education Foundation and 2Department of Veteran Affairs, VA Medical Center, Boise ID).

11:30 62 Improved Therapy for Castration Resistant Prostate Cancer (CRPC) Via Targeting of AKR1C3, PHUMVADEE WANGTRAKUL-DEE1*, DANIEL TAMAE1, TIANZHU ZANG1, BARRY M. TWENTER2, MICHELLE SANCHEZ2, JEFFREY D. WINKLER2, and TREVOR M. PENNING3 (1Department of Systems Pharmacology and Translational Therapeutics, University of Pennsylvania Perelman School of Medicine, Philadelphia, PA; 2Department of Chemistry, University of Pennsylvania, Philadelphia, PA).

12:00 LUNCH

Afternoon session chair: Jozef Stec

1:30 63 Integrin Control of Notch Signaling, ALLAN ALBIG1,2*, BRYCE LAFOYA1, MIKE DETWEILER2, JACOB CROW3 (1Program in Biomolecular Sciences, Boise State University, Boise, ID; 2Department of Biological Sciences, Boise State University, Boise, ID).

2:00 64 Biocatalytic Conversions of Natural Products – Utility in Drug Discovery and Development, Ehab A. Abourashed (Department of Biopharmaceutical Sciences, School of Pharmacy, Medical College of Wisconsin, Milwaukee, WI).

2:30 65 Computational Toxicity Scoring Using Big Data: A First Step Towards Rapid Assessment of Drug-Induced Anticholinergic Risks, DONG XU (Department of Biomedical and Pharmaceutical Sciences, College of Pharmacy, Idaho State University, Meridian, ID).

3:00 BREAK

3:30 66 Hepatic Stellate Cells as a Novel Cellular Target for Dioxin Toxicity, KRISTEN A. MITCHELL (Biomolecular Sciences Graduate Program, Department of Biological Sciences, Boise State University, Boise, ID).

4:30 68 Exploding Popularity of Electronic Cigarettes: Risk Factor for Osteoporosis? SARA J. HEGGLAND (Department of Biology, The College of Idaho, Caldwell, ID).

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**The 2014-2016 Mass Coral Bleaching Event in the Pacific Islands – Impacts, Resilience, Hope, and Actions**

DYER LIBRARY
Thursday
8:30 a.m. – 5:30 p.m.

Program organizer: Russell “Rusty” E. Brainard (NOAA Pacific Islands Fisheries Science Center, Ecosystem Sciences Division, Coral Reef Ecosystem Program, Honolulu, HI).

Sponsored by the Pacific Division Sections on Atmospheric and Hydrospheric Sciences; Ecology, Environmental Sciences, and Sustainability; and General and Interdisciplinary Studies.

Over the period 2014-2016 (and possibly into 2017), coral reefs experienced the longest lasting (2.5-3 years) and likely the most damaging and widespread global coral bleaching event ever observed. Across the vast Pacific Ocean, repeated mass coral bleaching and mortality events were observed in Hawai’i in the North Pacific in 2014 and 2015, in Samoa in the South Pacific in 2015, in the Mariana Islands in the Western Pacific in 2014 and 2015, in Kiribati and the Line and Phoenix Islands of the Central Pacific in 2015-2016, across much of the Great Barrier Reef and portions of the Coral Triangle in 2016, across Micronesia in 2016, and elsewhere around the globe. The early stages of this global bleaching event appeared associated with the so-call ‘Blob’ of anomalously warm water across the eastern North Pacific in 2013-2015 and later tightly associated with the extreme 2015-2016 El Niño warm event. This symposium aims to bring together a diverse range of speakers to discuss all aspects of this devastating coral bleaching event, including: the causative warm water events, the observed vulnerabilities, resistances, and resilience of different coral taxa under varying environmental conditions, lessons learned from laboratory and mesocosm response experiments and numerical models, reasons and needs for hope and optimism, and actions that local communities and global society can take to reduce the frequency, severity, and impacts of future mass bleaching events to increase the likelihood of persistence of coral reef ecosystems and marine biodiversity in the face of climate change.

Session chairs: Russell "Rusty" Brainard and C. Mark Eakin.

8:30 Introductions, Agenda, and Goals for the Symposium

8:40 69 Two Years and Counting: Monitoring and Documenting the Ongoing Global Coral Bleaching Event 2014-2017 (And Beyond?), C. MARK EAKIN (*), ANDREA M. GOMEZ 3, GREGOR HODGSON 3, RICHARD VEVERS 2, JACQUELINE L. DE LA COUR 3, GANG LIU 5, ERICK F. GEIGER 5, SCOTT F. HERON 6, WILLIAM J. SKIRVING 6, KYLE V. TIRAK 6, and ALAN E. STRONG 7 (*Coral Reef Watch, NOAA/NESDIS/STAR, College Park, MD; 2Coral Reef Watch, NOAA/NESDIS/STAR; Ecosystem Science Lab and NOAA-CREST, City College of New York, New York, NY; 3Reef Check, Marina Del Rey, CA; 4The Ocean Agency, Sydney, New South Wales; 5Reef Check, Del Rey, CA; 6Coral Reef Watch-ReefSense, NOAA/NESDIS/STAR, Kirwan QLD and Global Science and Technology Inc., Greenbelt, MD; 7Coral Reef Watch-ReefSense, NOAA/NESDIS/STAR, Kirwan QLD and Global Science and Technology Inc.).

9:00 70 Advancing Spatial Management of Herbivores to Increase Reef Resilience, ANNE ROSINSKI (*), LISA WEDDING 3, and GRACE GOLDBERG 2 (*University of Hawai’i at Manoa, Honolulu, HI; 3Stanford University, Center for Ocean Solutions, Stanford, CA; 4University of California Santa Barbara, Marine Science Institute, Santa Barbara, CA).

9:20 71 Snapshots of Coral Bleaching on Blonde Reef, Hilo Bay, JULIA STEWART (Department of Marine Science, University of Hawai’i at Hilo, Hilo HI).

9:40 72 Temporal Trends in Coral Bleaching Severity Related to Ocean Temperature Variation from 2014-16 at Wai‘īopa‘e, Hawai’i, KATIA CHIKASUYE (*), JENNA BUDKE 3, JOHN BURNS 3, and MISAKI TAKABAYASHI (*University of Hawai’i at Hilo, Hilo, HI; 2Hawai’i Institute of Marine Biology, Kaneohe, HI; 3University of Hawai’i at Hilo, Hilo, HI).

10:00 Questions/Discussion

10:15 BREAK
10:30 73 Temperature Trajectories During Historic and Recent Coral Bleaching Events on the Great Barrier Reef, SCOTT F. HERON1,2,3,*, TRACY D. AINSWORTH4, JUAN CARLOS ORTIZ5,6, PETER J. MUMBLY5,6, ALANA GRECH4, DAISIE OGAWA4, C. MARK EAKIN1, and WILLIAM LEGGAT4,7,8 (NOAA/NESSDIS/STAR Coral Reef Watch, College Park, MD; 2Global Science and Technology, Inc., Greenbelt, MD; 3Marine Geophysical Laboratory, James Cook University, Townsville, Australia; 4Australian Research Council Centre of Excellence for Coral Reef Studies, James Cook University, Townsville, Australia; 5Marine Spatial Ecology Lab, School of Biological Sciences; 6Australian Research Council Centre of Excellence for Coral Reef Studies, James Cook University, Townsville, Australia; 7Australian Institute of Marine Science, Townsville, QLD, Australia; 8CSIRO, Marine and Atmospheric Research, Hobart, TAS, Australia).

10:55 74 A Re-Assessment of Summer Thresholds of Heat Stress in a Warming Ocean Following Repetitive Annual Widespread Bleaching on the Great Barrier Reef, NEAL E. CANTIN1,*, CRAIG STEINBERG1, SCOTT HERON3, RACHEL PEARS2, WILLIAM SKIRVING4, CLAIRE SPILLMAN3, MICHELLE JONKER1, SAM NOONAN1, SCOTT BAINBRIDGE1, VERONIQUE MOCELLIN1, MELISSA ROCKER1, PEDRO FRADE1, JESSICA STELLA2, JESSICA BENTHUYSEN1, MIKE HERZFELD4, MATHIEU MONGIN4, MARK BAIRD4, LINE BAY1, and BRITTA SCHAFFELKE1 (Australian Institute of Marine Science, Townsville, QLD, Australia; 2Great Barrier Reef Marine Park Authority, Townsville QLD, Australia; 3Coral Reef Watch, US National Oceanic and Atmospheric Administration, College Park, MD; 4CSIRO, Marine and Atmospheric Research, Hobart, TAS, Australia; 5Bureau of Meteorology, Earth Systems Modelling, Melbourne, Australia).

11:20 75 Seeing the Coral Bleaching on Australia’s Great Barrier Reef in a Broader Context, HUGH SWEATMAN3,4, ALISTAIR CHEAL5, MIKE EMSLIE5, KERRY JOHNS6, MICHELLE JONKER3, IAN MILLER3, and KATE OSBORNE (Australian Institute of Marine Science, Townsville, Queensland, Australia).

11:45 76 A Torres Strait and Northern Great Barrier Reef Persistent Thermal Refugia from Mass Coral Bleaching, CRAIG STEINBERG1,*, HEMERSON TONIN1, MIKE HERZFELD5, TRISTAN SIMPSON3, SCOTT BAINBRIDGE1, JESSICA BENTHUYSEN1, WILLIAM SKIRVING2, SCOTT HERON4, CLAIRE SPILLMAN3, RACHEL PEARS2, EDUARDO KLEIN9, CHAOJIAO SUN3, NEAL CANTIN1, and RICHARD BRINKMAN1 (1Australian Institute of Marine Science, Townsville, QLD, Australia; 2CSIRO, Marine and Atmospheric Research, Hobart, TAS, Australia; 3Torres Strait Regional Authority, Thursday Island, QLD, Australia; 4Coral Reef Watch, US National Oceanic and Atmospheric Administration, College Park, MD; 5Bureau of Meteorology, Earth Systems Modelling, Melbourne, Australia; 6Great Barrier Reef Marine Park Authority, Townsville QLD, Australia; 7Universidad Simón Bolívar, Caracas, Venezuela).

12:10 Questions/Discussion

12:25 LUNCH

1:15 77 Climate Change and the Future of Guam’s Coral Reefs, LAURIE J. RAYMUNDO1, DAVID R. BURDICK2, VALERI LAPACEK1, and JAMES FIFER1 (University of Guam Marine Laboratory, Mangilao, GU; 2Guam Long-Term Monitoring Program, University of Guam Marine Laboratory, Mangilao, GU).

1:25 78 Exploring Climate Change in the Phoenix Islands Protected Area (PIPA): Recovery, Resilience, and Risks, RANDI ROTJAN3,4,5, and SANGEETA MANGUBHAI4,5,6,7 (Biology Department, Boston University, Boston, MA; 3New England Aquarium, Boston, MA; 4Fiji Program, Wildlife Conservation Society, Suva, Fiji).

1:35 79 A Coral Reef Bleaching Proxy Reveals Variability and Change in Thermal Tolerance across Space and through Time, NATHANIEL MOLLICA8, ANNE COHEN9,10, HANNAH BARKLEY2, RUSSELL BRAINARD2, RANDI ROTJAN4, and SIMON THORROLD1 (MIT-WHOI Joint Program in Oceanography, Woods Hole, MA; 2Woods Hole Oceanographic Institution, Woods Hole, MA; 8NOAA Pacific Island Fisheries Science Center, Ecosystem Sciences Division, Honolulu, HI; 4Boston University, Marine Program, Boston, MA).

2:00 80 El Niño-driven Biogeochemical and Ecological Changes on a Central Pacific Reef, HANNAH BARKLEY3,4, ANNE COHEN3,4, RUSSELL BRAINARD2, THOMAS DECARLO5, ELIZABETH DRENKARD4, KEVIN LINO5, GEORGE LOHMANN3, NATHANIEL MOLLICA1, THOMAS OLIVER2, HANNY RIVERA5, BERNARDO VARGAS-ÁNGEL1,2, and CHARLES YOUNG2,4 (Woods Hole Oceanographic Institution,

* identifies the speaker from among several authors listed

1100 (time italicized and underlined) identifies a student presentation

63 (bolded number) is the abstract number
Woods Hole, MA; 3NOAA Pacific Islands Fisheries Science Center, Ecosystem Sciences Division, Honolulu, HI; 3MIT-WHOI Joint Program in Oceanography, Woods Hole, MA; 3Joint Institute for Marine and Atmospheric Research, University of Hawai‘i at Manoa, Honolulu, HI).

2:25  81 El Niño-associated Catastrophic Coral Mortality at Jarvis Island, Central Equatorial Pacific, BERNARDO VARGAS-ÁNGEL1,2, ROBERT WISE1,2, THOMAS OLIVER1,2, DIONE GORMAN1,2, STEPHEN ROWLEY1,2, and ANNE COHEN3 (1Joint Institute for Marine and Atmospheric Research, University of Hawai‘i at Manoa, Honolulu, HI; 2Coral Reef Ecosystem Program, NOAA Pacific Fisheries Science Center, Honolulu, HI; 3Woods Hole Oceanographic Institute, Woods Hole, MA).

2:50  Questions/Discussion

3:00  BREAK

3:15  82 Why Palau Did Not Have Coral Bleaching in 2015-2016: A Preliminary Assessment, PATRICK L. COLIN1,2, TRAVIS SCHRAKEME1,2, BRIAN POWELL1,2, ERIC TERRILL2, DAN RUDNICK2, and SONIA ROWLEY1 (1Coral Reef Research Foundation, Koror, Palau; 2University of California at San Diego, Scripps Institution of Oceanography, La Jolla, CA; 3University of Hawai‘i at Mānoa, Department of Oceanography, Honolulu, HI; 4University of Hawai‘i at Mānoa, Hawai‘i Institute of Marine Biology, Kāne‘ohe, HI).

3:40  83 Coral Bleaching That Occurred Off Kahe Point and Nānākuli, O‘ahu in 2015 and Follow-up Observations Made in 2015, STEVE L. COLES (Department of Natural Sciences, Bishop Museum, Honolulu, HI and Hawai‘i Institute of Marine Biology, University of Hawai‘i, Kāne‘ohe, HI).

3:55  84 Impacts of the 2015 Coral Bleaching Event on the Unique Embayments of O‘ahu, HI, KEISHA BAH and KU‘ULEI RODGERS (Hawai‘i Institute of Marine Biology, University of Hawai‘i, Kāne‘ohe, HI).

4:05  85 Defining Drivers of Susceptibility to and Recovery from Unprecedented Mass Coral Bleaching in the Main Hawaiian Islands, THOMAS OLIVER1*, COURTNEY S. COUCH1, RAFAEL RITSON-WILLIAMS2, KUIDA MEIER2, and HAWAI‘I CORAL BLEACHING COLLABORATIVE (1Pacific Islands Fisheries Science Center - Ecosystem Sciences Division, National Oceanic and Atmospheric Administration, Honolulu, HI; 2University of Hawai‘i at Manoa, Hawai‘i Institute of Marine Biology, Kāne‘ohe, HI).

4:30  86 Defining Drivers of Susceptibility to and Recovery from Unprecedented Mass Coral Bleaching in the Northwestern Hawaiian Islands, COURTNEY S. COUCH1*, JOHN BURNS1, GANG LIU1, KANOEKAI STEWARD1, TIFFANY NICOLE GUTL1, C. MARK EAKIN1, RAN DALL KOSAKI1 (1University of Hawai‘i at Mānoa, Hawai‘i Institute of Marine Biology, Kāne‘ohe, HI; 2Coral Reef Watch, NOAA/NESDIS/STAR, College Park, MD and Global Science and Technology Inc., Greenbelt, MD; 3Marine Science Program, University of Hawai‘i at Hilo, Hilo, HI; 4Coral Reef Watch, NOAA/NESDIS/STAR, College Park, MD; 5NOAA Papahānaumokuākea Marine National Monument, Honolulu, HI).

4:55  Questions/Discussion

5:10  Discuss Special Issue

5:25  Closing Comments

The Humanities and the Changing Environment
SCIENCE ROOM 42
Thursday 9:20 a.m. – 11:30 a.m.

Program organized by Robert L. Chianese (Department of English, California State University, Northridge, CA).

Program sponsored by the Pacific Division Section on Science and the Arts and Humanities.

Poets, Writers, Artists, Philosophers, Historians and other Humanists have noticed, described and reshaped our cultural views of Nature and the Environment for centuries. Today they have a new challenge in how they see, understand, and depict what we as human beings have done to the planet while science explains how radically we have altered it to its detriment.

How should humanists present the world in their various works–as still strikingly beautiful or damaged and suffering under our ecological violations? Should glowing images and passages of remaining gorgeous nature be recommended for our appreciation as a way to motivate people to save it, or...
should images of unhealthy changes we have wrought be offered for our disturbing contemplation? How should we employ the past as an ecological referent for where we are now? How can we conceive of the changes in external “nature” have wrought?

Also, can we humanists forge and promote actual imaginative and innovative humanities-based solutions to the crisis that have real practical benefits? Do the Humanities themselves have to evolve their scope, social commitment, and relationships to the sciences in order to address this issue? And, how might the standard humanities requirements and curricula adapt to this focus?

Session chair: Robert L. Chianese

9:20  Introductory Comments

9:30  87 Image and Experience at the Dawn of American Ecological Modernism, CARL A. MAIDA (Institute of the Environment and Sustainability, University of California, Los Angeles, Los Angeles, CA).

10:00  BREAK

10:30  88 Mythical Landscapes and Fictional Realities: Geography and the New West in Annie Proulx’s Wyoming Stories, KIRSTEN MØLLEGAARD (English Department, University of Hawai‘i at Hilo, Hilo, HI).

11:00  89 Representational Art Can Reveal Unique Climate Change Solutions: Artists in the Service to the Environment, ROBERT L. CHIANESE (Department of English (emeritus), California State University, Northridge, CA).

Thinking Philosophically Across the Sciences: Analogies, Models, and Mechanisms

CASTLE LECTURE HALL
Thursday
1:20 p.m. – 5:30 p.m.

Program organized by Roberta L. Millstein (Department of Philosophy, University of California, Davis, CA).

Program sponsored by the Pacific Division Section on the History and Philosophy of Science.

As society and the sciences become increasingly specialized, it becomes ever more difficult to talk to one another across the sciences. We explore a number of ways in which we might cross scientific disciplines by examining a number of different areas of science and thinking about the various ways in which the sciences could potentially find common ground: models, analogical reasoning, mechanisms, incorporating citizens into science, and policy issues.

More specifically, we will engage with the following areas and topics:

- Models and conceptual frameworks in forest regeneration;
- Appropriate use of analogy in Pacific archaeology and anthropology;
- Experiments using analogue models: the common conceptual basis and the wide variety of examples;
- Invoking mechanisms and using common scientific tools across disparate domains of science;
- The relationship between explanatory models in cognitive science, exploring whether ‘integrated’ models (such as those in predictive hierarchical processing) are in tension with functionally specialized/modular architectures;
- Citizen science and the philosophy of science of Paul Feyerabend; and
- Using models to understand Near-Earth Object impact hazards.

Session chair: Roberta L. Millstein

1:20  Introductory Comments

1:30  90 Appropriate Use of Analogy and Pacific Archaeology and Anthropology, MADS RAVN (Vejle Museums, Denmark and Kon-Tiki Museum, Oslo, Norway).

2:00  91 Models and Conceptual Frameworks in Forest Regeneration Studies, WALTER P. CARSON* and SUSAN G. STERRETT** (1Department of Biological Sciences, University of Pittsburgh, Pittsburgh, PA; 2Department of Philosophy, Wichita State University, Wichita, KS).

2:30  92 Experiments Using Analogue Models: The Common Conceptual Basis and the Wide Variety of Examples, SUSAN G. STERRETT (Department of Philosophy, Wichita State University, Wichita, KS).

3:00  BREAK

3:30  93 Reimagining the Unity of Science in the 21st Century: Discovering Mechanisms Across the Sciences, STUART GLENNAN (Department of Philosophy, Religion and Classics, Butler University, Indianapolis IN).

4:00  94 Dissolving Tensions Between Architectural Claims in Cognitive Science, ZOE DRAYSON (Department of Philosophy, University of California, Davis, Davis, CA).
4:30  95 Using Models to Understand Near-Earth Object Impact Hazards, ERIK M CONWAY (Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA).

5:00  96 The Citizen Science Movement According to Feyrerabend: Taking Advice from a Madman, SARAH M. ROE (Department of Philosophy, Southern Connecticut State University, New Haven CT).
Turbulence Conference at Mauna Kea (TCM-2017): Recent Advances in Turbulence Research
ENERGY LAB
Friday
8:30 a.m. – 3:00 p.m.

This symposium is continuing from Thursday. Please refer to page 25 of these Proceedings for details.

Session Chair: Katsunori Yoshimatsu

8:30 97 Passive Scalar Spectrum and Intermittency Effects at Very High Schmidt Number, Toshiyuki Gotoh* and Isumi Saito (Department of Physical Science and Engineering, Nagoya, Institute of Technology, Nagoya, Japan).

9:20 98 Multiscale Statistics of Trajectories with Applications to Football Players and Particles in Fluid Turbulence, Kai Schneider*, Benjamin Kadoch, and Wouter Bos (1Institut de Mathématiques de Marseille, Aix-Marseille Université, Marseille, France; 2IUSTI-CNRS, Aix-Marseille Université, Marseille, France; 3LMFA-CNRS Ecole Centrale de Lyon, Université de Lyon, Ecully, France).

9:50 BREAK

10:25 99 Scale Similarity of the Particle Clustering in the Inertial Range of Turbulence, Takeo Ariki*, Kyoh Yoshida, Keigo Matsuda, and Katsunori Yoshimatsu (1Institute for Materials and Systems for Sustainability, Nagoya University, Nagoya, Japan; 2Institute of Physics, Faculty of Pure and Applied Sciences, University of Tsukuba, Ibaraki, Japan; 3Center for Earth Information Science and Technology, Japan Agency for Marine-Earth Science and Technology, Yokohama, Japan).

11:00 100 Enhancement of Cloud Radar Reflectivity Factor Due to Turbulent Clustering of Settling Water Droplets, Keigo Matsuda, Ryo Onishi, and Keiko Takahashi (Center for Earth Information Science and Technology, Japan Agency for Marine-Earth Science and Technology, Yokohama, Japan).


11:55 LUNCH

1:30 Round Table: Questions and Perspectives

3:00 BREAK

Program organized by Barbara A. Jones (IBM Research, San Jose, CA).

Program sponsored by the Pacific Division Sections on Materials Science and Physics.

We present speakers who will describe their work on two-dimensional materials and surfaces, which are interesting from both a scientific and an applications point of view. By systematically varying the structure, either by separating layers, or adding/subtracting atoms, or straining the materials, forefront techniques allow new and surprising physical properties to emerge. The Scanning Tunneling Microscope can be used to move individual atoms, and engineer a structure with unusual magnetic and other properties. The second speaker describes isolating 2D monolayers from layered materials, which result in greatly improved electrical properties. A third will describe the calculations on these systems, which use high performance computing centers, and which give unusual insight into these materials.

Session chair: Barbara A. Jones

8:25 Introductory Comments

8:30 102 Designer Quantum Matter, Hari Manoharan (Department of Physics, Stanford University, Stanford, CA).

9:00 103 Systematic Design in Hybrid Chalcogenide Layered Materials, J. Nathan Hohman (Molecular Foundry, Lawrence Berkeley National Laboratory).

9:30 104 Surprises in the Behavior of Magnetic Atoms on Surfaces, Barbara A. Jones (IBM Research – Almaden, San Jose, CA).
## II. WORKSHOPS

**WORKSHOP**

*Writing for Science and Technology*

**GERRY CLARK ART CENTER**

*Tuesday*

1:30 p.m. – 4:30 p.m.

Organized by *Alicia Takaoka* (English Department, University of Hawai‘i at Hilo, Hilo HI; ajwilson@hawaii.edu).

This is a hands-on workshop with discussion and activity for all participants. By gathering real world examples of scientific discoveries across a broad range of audiences and sharing teaching techniques, we can shape students into better writers and researchers. This workshop aims to gather perspectives for teaching writing across disciplines, writing to multiple audiences, and writing as discourse. The first hour of the workshop will feature a panel of students in different majors at University of Hawai‘i Hilo. These students will share their research experiences and their perspective on science as communication. They will also discuss the pros and cons of approaching scientific writing as discourse. The next hour will be built on approaches to teaching scientific writing and best practices for teaching scientific writing across disciplines. Sharing personal experiences and anecdotes can lead to the development of stronger teaching techniques to reach a broader range of students. We will also spend this time discussing broad concepts that should be incorporated in our writing classes. Some concepts that will be discussed include networking and the locus of responsibility as scientists and researchers. The third hour will consist of brainstorming in task-based group activities for participants interested in identifying plagiarism, writing in discipline-specific citation styles, science as discourse, science as outreach, and writing for different audiences. We will also share our conclusions with the group about best practices for teaching writing across disciplines and concepts to teach to our students.

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<th>Tuesday, 20 June 2017</th>
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<td><em>Writing for Science and Technology</em></td>
<td><em>AAAS STEM Career Development Workshop</em></td>
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<td><strong>GERRY CLARK ART CENTER</strong></td>
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Organized by *Josh Henkin, Ph.D.* (Career Counselor/Founder, STEM Career Services, https://stemcareerservices.com, josh@stemcareerservices.com).

NOTE: This program includes topics which are addressed in courses offered in the AAAS Career Development Center. For a complete listing of courses, please visit the Career Development Center website at: https://careerddevelopment.aaas.org.

This workshop is divided into three one-hour talks focused on developing skills that are essential for transitioning from a research/academic role to a career outside of academia. One of the key messages contained in these talks is to realize the importance of gaining experience outside of the laboratory throughout your academic training. This can come in the form of volunteer positions, internships, part-time jobs and more. To build on this premise, each of these three sessions will focus on introducing skills to the audience that are essential in taking a strategic approach to career planning, improving networking skills to find mentors, jobs and more... and learning how to effectively communicate your technical and nontechnical skills on your resume and during a job interview. This will allow a prospective decision maker to easily understand your unique capabilities and why you are the “perfect” fit for a position. Anyone who is considering a career outside of academia will not want to miss these presentations.

**Session 1 – Strategic Career Development**

This session explores the skills and best practices in starting a job search to transition from an academic environment to one of many non-academic career paths. It introduces strategies for career planning, emphasizing an ongoing process for professional development throughout your career. Additional topics covered include finding a mentor and learning about the diverse world of careers available outside of academia.

**Session 2 – Nonstop Networking**

Although more than 70% of jobs are obtained through networking, many people find it to be one of the most challenging aspects of their job search. Fortunately, networking is a skill that can be practiced in order to gain comfort and proficiency. This session reveals a logical
approach to networking for both introverts and extroverts. You will learn a variety of techniques to become more comfortable networking as well as how to identify networking opportunities and incorporate them into daily activities.

Session 3 – Resume and Interview Tips from a PhD Hiring Manager

What does a hiring manager look for in a resume and seek from candidates during an interview? What is the best way to communicate your technical and transferable skills to an employer on paper and in conversations? A good resume tells an interesting story about you that is customized to the employer’s needs. The more intriguing the resume, the more likely an employer will schedule an interview and make a job offer. This session provides actionable tips and best practices for creating an effective resume and preparing for an interview that will entice employers and land you a job.

Friday, 23 June 2017

WORKSHOP

Adapt or Perish: Academic Research is Losing the War for Public-Sector Support

DYER LIBRARY

Friday

8:00 a.m. – Noon

Organized by Rodger Bailey (BaileyGroupInternational, 31217 Bailard Rd., Malibu, CA 90265; baileygroupint@gmail.com).

The support mechanism for academic-based research has changed little since the early 1950s when the funding for research shifted away from private patronage to public patronage. While this paradigmatic shift brought many advantages to researchers, it also created a welfare-like system, where public-sector researchers became almost solely dependent upon the largess and whims of an ever more politicized public policy making process.

What can public-sector researchers do to affect the public policy that affects them? The presenters of this workshop will give attendees an inside view of the sometimes surreptitious political realities of what actually drives our public-policy making process, both today and into the future. Specifically, the presenters will address case-specific strategies that attendees may implement to more effectively adapt to the tribulations of (1) decreased government funding (grants), (2) increased regulatory hurdles and (3) a growing anti-science bias from both sides of the political isle.
III. CONTRIBUTED ORAL PRESENTATIONS

1100 (time italicized and underlined) indicates a student presentation
* indicates the speaker from among several authors listed
63 (bolded number) indicates abstract number

Quick Directory of Sponsoring Sections
for these Oral Presentations

Anthropology and Archaeology ................. page 41
Cell and Molecular Biology .................... page 36
Chemistry and Biochemistry .................... page 39
Computer and Information Sciences .......... page 36
Earth Sciences ................................ page 37
Ecology, Environmental Sciences, and Sustainability . page 37
Education .......................................... page 41
Engineering, Technology, and Applied Sciences . page 40
Evolution, Organismal Biology, and Biodiversity ... page 38
General and Interdisciplinary Studies .......... page 41
History and Philosophy of Science ............ page 41
Materials Science ................................ page 39
Mathematics ....................................... page 41
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Social, Economic, and Political Sciences .... page 41

Tuesday, 20 June 2017

ORAL SESSION 1
Cell and Molecular Biology
Computer and Information Sciences
SCIENCE ROOM 42
Tuesday
8:55 a.m. – 11:30 a.m.

Organizer for the Cell and Molecular Biology Section: Kristen Mitchell (Department of Biology, Boise State University).

Organizer for the Computer and Information Sciences Section: Position currently vacant.

Session chair: Kristen Mitchell

Cell and Molecular Biology

8:55 Introductory Comments

9:00 105 Secondary Metabolite Gene Clusters in Marine Sponge-Associated Bacteria on Hawai‘i Island, FRANCIS SAKAI-KAWADA1*, JONATHAN AWAYA1,2, and COURTNEY IP2 (Department of Molecular Biosciences and Bioengineering and 2Biological Department, University of Hawai‘i at Manoa, Honolulu, HI).

9:20 106 Y-STR Analysis of Modern DNA in Preparation for Evaluation of Ancient Human Remains from Mallorca, Spain, RALUCA GOSMAN*, KAI SEELY1, and AMELIA AHERN-RINDELL (Department of Biology, University of Portland, Portland, OR).

9:40 107 Regulation of Hub Cell Quiescence in the Drosophila Testis Stem Cell Niche, TIFFANY TRAN1*, ZELALEM DEMERE1, JHANAVI SIVAKUMAR1, LINH PHAM2, MARGARET DE CUEVAS3, LEAH GREENSPAN3, and ERIKA MATUNIS3 (1Department of Biology, Johns Hopkins University, Baltimore, MD; 2Department of Biological Sciences, Humboldt State University, Arcata, CA; 3Department of Cell Biology, Johns Hopkins School of Medicine, Baltimore, MD).

10:00 BREAK

10:30 108 Expression Profile of Novel Candidates in Neural Crest Development, JACQUELINE CELY1*, GUS GOMEZ3, ALAN LEUNG2, and MARTIN GARICA-CASTRO4 (1Department of Biomedical Sciences, University of California, Riverside, CA; 2Department of Molecular, Cellular, and Developmental Biology, Yale University, New Haven, CT).


Computer and Information Sciences

11:10 110 Tree Comparator: A Tool to Compare Tree-Based Classifiers, PRATIKSHYA MISHRA*, NATALIA KHURI1, and SAMI KHURI1 (1Department of Computer Science, San Jose State University, San Jose, CA; 2Department of Bioengineering, Stanford University, Stanford, CA).
ORAL SESSION 2
Earth Sciences
Ecology, Environmental Sciences and Sustainability
Evolution, Organismal Biology and Biodiversity
SCIENCE ROOM 42
Tuesday
1:15 p.m. – 5:00 p.m.

Organizer for the Earth Sciences Section: Jad D’Allura (Chemistry Department, STEM Division, Southern Oregon University, Ashland, OR).

Organizer for the Ecology, Environmental Sciences, and Sustainability Section: Richard Van Buskirk (Department of Environmental Studies, Pacific University, Forest Grove, OR).

Organizer for the Evolution, Organismal Biology, and Biodiversity Section: Julia Ruppell (Department of Biology, Pacific University, Forest Grove, OR).

Session chairs: Richard Van Buskirk and Julia Ruppell

1:15 Introductory Comments

Ecology, Environmental Sciences, and Sustainability

1:20 111 Feeding Ecology of Neonates and Young of the Year Hammerhead Sharks (Sphyrna lewini) from the South Soast of Jalisco and Colima through Diet and Stable Isotope Analysis, ALEJANDRO ROSENDE PEREIRO1* and ANTONIO CORCOS1 (Departamento de Estudios para el Desarrollo Sustentable de Zonas Costeras, Universidad de Guadalajara, San Patricio-Melaque, Jalisco, México).

1:40 112 Mosquitoes in Hawai’i: Engaging the Public Using the iNaturalist Citizen Science Platform, DURRELL D. KAPAN, (California Academy of Sciences, San Francisco, CA).

2:00 113 Influences of Rapid ‘Ōhi’a Death on the Current and Future Status of Hawai’i’s Forests, R. FLINT HUGHES (Institute for Pacific Islands Forestry, USDA-Forest Service, Hilo, HI).

2:20 114 Nanosensor Arrays for Asymptomatic Diagnosis of Citrus Greening Disease (Huanglongbing), HUI WANG1, PANKAJ RAMNANI1, TUNG PHAM1, CLAUDIA C. VILLARREAL1, GANG LIU1, and ASHOK MULCHANDANI2* (Key Laboratory of Modern Precision Agriculture System Integration Research, Ministry of Education and Key Laboratory of Agricultural Information Acquisition Technology, Ministry of Agriculture China Agricultural University, Beijing, P.R. China; 2Department of Chemical and Environmental Engineering and Materials Science and Engineering Program, University of California Riverside, Riverside, CA).

2:40 115 The Presence of Extended-Spectrum Beta-Lactamase (ESBL)-Positive Californs in Utah Birds, VLADYSLAV BOYKO1*, JOSH SIEFKE1, ZACH TOMNEY1, BRADY WEBB1, KEN SLATER1, OSCAR PETRUCCI1, and RUHUL KUDDUS1 (Department of Biology, Utah Valley University, Orem, Utah; 1Department of Chemistry and Biochemistry, Utah Valley University, Orem, Utah).

3:00 BREAK

3:20 116 A Social Influence Approach for Enhancing Resident Engagement in Invasive Species Control, REbecca Marie NiEMIEc1* and FRANCES KINsLOW BREWER1* (Emmett Interdisciplinary Program in Environment and Resources, Stanford University, Stanford, CA; 1Big Island Invasive Species Committee, Hilo HI).

3:40 117 The Creation of a Marine Park – 20 Years of Research on the Intertidal Mudflats of NW Australi, ROBERT HICKEY (Department of Geography, Central Washington University, Ellensburg, WA).

Earth Sciences

4:00 118 Preliminary Comparison of Stream and Groundwater Characteristics of Western Cascade and High Cascade Volcanic Terrains in the Cascade-Siskiyou National Monument, Oregon, JAD A. D’ALLURA1*, KIERAN McCANN2, and KENDRA MADARAS-KELLY1 (Chemistry Department, STEM Division; Southern Oregon University, Ashland, OR; 1Department of Geological Sciences, University of Oregon, Eugene, OR).

4:20 119 Volcanic Rocks of the High and Western Cascade Volcanic Series, Southeastern Portion of the Cascade-Siskiyou National Monument, Southwest Oregon, JAD A. D’ALLURA1* and MARTIN HARRIS2 (Chemistry Department, STEM Division; Southern Oregon University, Ashland, OR; 1Department of Geological Sciences, University of Oregon, Eugene, OR).

1000 (time italicized and underlined) identifies a student presentation
* identifies the speaker from among several authors listed
63 (bolded number) is the abstract number
abstracts contain complete contact information for authors
Evolution, Organismal Biology,
and Biodiversity

4:40  120 Lepiota of Hawai‘i: Documenting an Understudied Group of Hawaiian Macrofungi, **JEFFERY STALLMAN** (University of Hawai‘i at Hilo, Hilo, HI).
Thursday, 22 June 2017

ORAL SESSION 3
Chemistry and Biochemistry
Engineering, Technology, and Applied Science
Materials Science
Physics
Davenport Music Center Chorale Room
Thursday
8:35 a.m. – 11:50 a.m.

Organizer for the Agriculture, Food, and Renewable Resources Section: Position currently vacant.

Organizer for the Chemistry and Biochemistry Section: Owen McDougal (Department of Chemistry and Biochemistry, Boise State University, Boise, ID).

Organizer for the Engineering, Technology and Applied Science Section: Frank Jacobitz (Mechanical Engineering Department, Univeristy of San Diego, San Diego, CA).

Co-organizers for the Materials Science Section: George Quainoo (Department of Chemistry, STEM Division, Southern Oregon University, Ashland, OR) and Vilupanur Ravi (Department of Chemical and Materials Engineering, California Polytechnic University, Pomona, CA).

Organizer for the Physics Section: Ellen Siem (Chemistry Department, STEM Division, Southern Oregon University, Ashland, OR).

Session chair: Vilupanur Ravi

8:35 Introductory Comments

Chemistry and Biochemistry

8:40 121 Ultrafast Dynamics of Cyanine Dimers Labeled in Duplex DNA, LONI KRINGLE1*, NICO-LAS SAWAYA2, JULIA R. WIDOM3, ALÁN ASPURU-GUZIK2, MICHAEL G. RAYMER1, and ANDREW H. MARCUS1 (1Department of Chemistry and Biochemistry, University of Oregon, Eugene, OR; 2Department of Chemistry, Harvard University, Cambridge, MA; 3Department of Chemistry, University of Michigan, Ann Arbor, MI; 4Department of Physics, University of Oregon, Eugene, OR).

9:00 122 Phenanthroline-based Ligand’s Potential Antitumor Activity in Copper (II) Complexes’ against Glioblastoma, JOCELYN D. RODRIGUEZ1,2, ISAAC O. KEHINDE2, JACK F. EICHLER3, TYLER LANDRITH4, and EMMA WILSON5 (1Department of Chemistry and 2Department of Biomedical Sciences, University of California Riverside, Riverside, CA).

9:20 123 Scope and Optimization of the Double Knorr Cyclization: On Route to Novel 1,8-Diazaanthraquinones as Potential Antituberculosis Agents, ALLAN M. PRIOR1 and DIANQING SUN (Department of Pharmaceutical Sciences, The Daniel K. Inouye College of Pharmacy, University of Hawai‘i at Hilo, Hilo, HI).

9:40 BREAK

Materials Science

10:10 124 Graphene-MoS2 Heterostructure Based Field-Effect Transistor for Volatile Organic Compounds Sensing, TUNG PHAM1, PANKAJ RAMNANI1, YOUNGWOOW RHEEM1, and ASHOK MULCHANDANI1,2* (1Department of Chemical and Environmental Engineering and 2Materials Science and Engineering Program, University of California Riverside, Riverside, CA).

10:30 124a Corrosion of Metals in Molten Salts, VILUPANUR A. RAVI1,2,3 (Department of Chemical and Materials Engineering, Cal Poly Pomona, Pomona, CA).

Agriculture, Food, and Renewable Resources

10:50 125 Nanosensor Arrays for Asymptomatic Diagnosis of Citrus Greening Disease (Huanglongbing), HUI WANG1, PANKAJ RAMNANI1, TUNG PHAM1, CLAUDIA C. VILLARREAL2, GANG LIU1, and ASHOK MULCHANDANI1,2* (1Key Laboratory of Modern Precision Agriculture System Integration Research, Ministry of Education and Key Laboratory of Agricultural Information Acquisition Technology, Ministry of Agriculture China Agricultural University, Beijing P.R. China; 2Department of Chemical and Environmental Engineering and 3Materials Science and Engineering Program, University of California Riverside, Riverside, CA).
**Engineering, Technology, and Applied Science**

**11:10 126** Sensitivity Analysis in Two-dimensional Modeling of Spent Nuclear Fuel Assemblies, IMANE KHALIL*, QUINN PRATT, and HARRY SCHMACHtenBERGER (Mechanical Engineering Department, Shiley-Marcos School of Engineering, University of San Diego, San Diego, CA).

**Physics**

**11:30 127** Revised Schwarzschild Solution to Accommodate Space Expansion, THOMAS E. CHAMBERLAIN (Independent Researcher; Los Angeles, CA).
CONTRIBUTED ORAL PAPERS – Thursday

ORAL SESSION 4

Anthropology and Archaeology

Education

General and Interdisciplinary

History and Philosophy of Science

Mathematics

Social, Economic, and Political Sciences

DAVENPORT MUSIC CENTER CHORALE ROOM

Thursday

1:25 p.m. – 4:40 p.m.

Organizer for the Anthropology and Archaeology Section: Sang-Hee Lee (Department of Anthropology, University of California, Riverside, CA).

Organizer for the Education Section: Position currently vacant.

Organizer for the General and Interdisciplinary Section: Crystal Goldman (Geisel Library, University of California, San Diego, La Jolla, CA). Can both read the same way?

Organizer for the History and Philosophy of Science Section: Roberta Millstein (Department of Philosophy, University of California, Davis, CA).

Organizer for the Mathematics Section: Liljana Babinkostova (Department of Mathematics, Boise State University, Boise, ID).

Organizer for the Social, Economic, and Political Sciences Section: Carl A. Maida (UCLA Schools of Dentistry and Medicine, University of California, Los Angeles, CA).

Session chair: Sang-Hee Lee

1:25 Introductory Comments

Anthropology and Archaeology

1:30 128 Saint Death, Syncretic Religions, and Human Remains: When, Where, and How Human Remains Are Used in Religious Practice, ELIZABETH MILLER (Department of Anthropology, California State University Los Angeles, Los Angeles, CA).

1:50 129 Innovative Science Teaching: 3D Hominin Fossil Prints, DEBRA BOLTER1,9 and JOEL HAGEN2,9 (1Anthropology Department and 2Computer Graphics Department, Modesto Junior College, Modesto, CA).

Mathematics

2:10 130 Preparing Students for Business, Industry, and Government Careers, MICHAEL DORFF1,9 and SUZANNE WEEKES2,9 (1Department of Mathematics, Brigham Young University, Provo UT; 2Department of Mathematical Sciences, Worcester Polytechnic Institute, Worcester MA).

Education

2:30 131 Astrophotography, a Portal for Engaging non-STEM Majors in Science, MARIO A. DE LEO-WINKLER*, GABRIELA CANALIZO and GILLIAN WILSON (Department of Physics and Astronomy, University of California, Riverside, Riverside, CA).

2:50 BREAK

Session chair: Crystal Goldman

General and Interdisciplinary

3:20 132 The Multiple Intervention Library Orientation, CRYSTAL GOLDMAN8,9, DOMINIQUE TURNBOW9, and AMANDA ROTH9 (Geisel Library, University of California, San Diego, La Jolla, CA).

3:40 133 Revealing Hidden Figures in STEM: Using Displays for Engagement, ZOE PETTWAY UNNO* and BREE RUSSELL (USC Libraries, Science and Engineering Library, University of Southern California, Los Angeles, CA).

Social, Economic, and Political Sciences

4:00 134 Polygamy and State Failure, DANIEL SELIGSON (Melvillean Press, Palo Alto, CA).

History and Philosophy of Science

4:20 135 Whither Applied Mathematics within Science (Providing New Science? Or, Rather, Just Confirming Earlier Science?)? DANIELLE MIHRAM1,9* and G. ARTHUR MIHRAM2,9 (1University Librarian, University of Southern California, Los Angeles, CA; 2Princeton, NJ).
IV. POSTER PRESENTATIONS

189 poster number is also the abstract number
193 (number italicized and underlined) identifies a student presentation
*identifies the presenter from among several authors listed

Boards on which to attach poster presentations will be situated in the Taylor Dining Commons. The poster boards are 48” wide x 36” tall. The maximum allowable size for a poster is 48” wide x 39” tall. The boards each have numbers on them that coincide with the numbers assigned to the posters in this program (see number to the left of the title of each presentation). You must use the appropriately numbered space on your board for your poster. Please use map tacks (provided) to attach your poster to the board. Do not use tape!

Posters for the Tuesday afternoon session can be set up starting at 1:15 p.m. and must be in place no later than 1:55 p.m. Posters for the Thursday morning session can be set up starting at 8:15 a.m. and must be in place no later than 8:55 a.m.

All presenters must be present with their posters for the duration of the session in which they are presenting in order to discuss their research with interested parties.

All posters must be removed within 15 minutes of the close of the session in which they were presented.

Presenters assume full responsibility for the security of their poster and other materials. Unclaimed posters and other materials will be discarded at the close of the technical sessions on Friday afternoon.

Quick Directory of Sponsoring Sections for these Posters

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Tuesday Afternoon, 20 June 2017 in Taylor Commons

Poster Session 1
TAYLOR DINING COMMONS
Tuesday
2:00 p.m. – 4:30 p.m.

Cell and Molecular Biology

136 Sugar Substitutes Decrease Species Richness and Diversity of Gut Microbiota, KATHERINE LANTAU and HOLLY C. PINKART* (Department of Biological Sciences, Central Washington University, Ellensburg, WA).

137 Effects of Dihexa on Learning and Memory in Rat Models of Depressive Behavior, DAKOTA K. KLIAMOVICH*, CASSIDY M. JOHNSTON*, and MICHAEL F. SARDINIA (Department of Biology, Whitworth University, Spokane, WA).

138 Cathepsin K Initiated Drug Delivery System for Bone, SYDNEY ADAMS*, PRICELLA GARCIA*, AKISHIGE HOKUGO†, KENZO MORINAGA‡, KAI SONG§, and ICHIRO NISHIMURA‡ (UCLA Pre-College Science Education Program; †The Weintraub Center for Reconstructive Biotechnology, UCLA School of Dentistry, Los Angeles, CA).

139 Hybrid Carbazole-Piperidinol Analogs Inhibit Proliferation of Human Cancer Cell Lines, LISSA S. TSUTSUMI, DIANQING SUN, and GHEE T. TAN* (Department of Pharmaceutical Sciences, The Daniel K. Inouye College of Pharmacy, University of Hawai`i at Hilo, 200 W. Kawili St., Hilo, HI 96720; lissa3@hawaii.edu, dianqing@hawaii.edu, gheetan@hawaii.edu).

140 Osteoclast-Expanded Supercharged Natural Killer Cells vs. Primary Activated Natural Killer Cells, CHLOE BULQUENA*, NICOLE ADEOLA ODUFALU*, NICK OHANIAN†, KAWALKIT KAUR†, PAYTSAR TOPCHYAN*, JESSICA CHIANG†, and ANAHID JEWETT† (UCLA Pre-College Science Education Program and †Division of Oral Biology and Medicine, UCLA School of Dentistry, Los Angeles, CA).

141 An Anomalously Large Protein Provides Possible Insights in Mosquito Sperm, KORBIN M. KLECKZKO*, CATHERINE D. THALER, and RICHARD A. CARDULLO (Department of Biology, University of California, Riverside, Riverside CA).
142 Do Changes in the Receptor Expression Contribute to the Higher Efficacy of Cannabinoid Analgesics? MALIK ELKOUBY1*, JESSICA ESPINOZA1*, YATENDRA MULPURF1, and IGOR SPIGELMAN2 (1UCLA Pre-College Science Education Program and 2Division of Oral Biology and Medicine, UCLA School of Dentistry, Los Angeles, CA).

143 Cytotoxic Constituents of Xylaria sp., a Fungal Endophyte of Morinda citrifolia Linn (Noni), MD AFJALUS SIRAJ* and GHEE T. TAN (Department of Pharmaceutical Sciences, The Daniel K. Inouye College of Pharmacy, University of Hawai’i at Hilo, Hilo, HI).

144 Three-Dimensional Spherical Dental Mesenchymal Stem Cells (dMSCs) Have Higher Osteo/Odontologic Potential, ODINAKA ONOH1*, KIMBERLY SANCHEZ1*, SUNG HEE LEE2, and KI-HYUK SHIN2 (1UCLA Pre-College Science Education Program; 2The Shapiro Family Laboratory of Viral Oncology and Aging Research, UCLA School of Dentistry, Los Angeles, CA).

145 Changes in Susceptibility and Survival of Antibiotic Treated ACL Rupture Model of Post-Traumatic Osteoarthritis, MELANIE E. MENDEZ1,2*, DEEPA K. MURUGESH1, NICHOLAS HUM1, ALLISON HSIA1, BLAINE AL CHRISTIANSEN2, JAMES THISSEN1, CRYSTAL JAING1, and GABRIELA G. LOOTS1,2 (1Physical and Life Sciences Department, Lawrence Livermore National Laboratory, Livermore, CA; 2Quantitative and Systems Biology Department, University of California Merced, Merced, CA; 3Department of Orthopedic Surgery, University of California-Davis Medical Center, Sacramento, CA).

146 G9a Epigenetically Regulates Pro-Inflammatory Cytokines in Dental Pulp Stem Cells, JORDAN WISE1*, APRIL TORRES1*, ABDULLAH ALSHAIKH1, SONIA KIM2, and MO KANG2 (1UCLA Pre-College Science Education Program; 2UCLA School of Dentistry, Los Angeles, CA).

147 PolyU-Specific Endonuclease May Play a Role in Programmed Cell Death, JOEL M. FUERTE*, KRIS DIAS, and TED KARGINOV (Department of Cell Biology and Neuroscience, University of California, Riverside, CA).

148 Quantitative Analysis of Gene Expression in UV-inducible Archaeal Virus SSV1, ANGELA VAN ECKEN (Department of Biology, Center For Life in Extreme Environments, Portland State University, Portland, OR).

Chemistry and Biochemistry

149 Methylated Sugar Residues in Arabinogalactan-Proteins of the Moss Physcomitrella patens, MARIAH GOMEZ* and EUGENE NOTHNAGEL (Department of Botany and Plant Sciences, University of California, Riverside, Riverside, CA).

150 Utilizing Photodissociation and Radical Chemistry to Shed Light on the Protein Aging Process, SONIA V. GOMEZ*, DYLAN RIGGS, and RYAN JULIAN (Department of Chemistry, University of California, Riverside, Riverside, CA).
Thursday Morning, 22 June 2017 in Taylor Commons

**Poster Session 2**

**TAYLOR DINING COMMONS**

**Thursday**

9:00 a.m. – 11:30 a.m.

**Anthropology and Archaeology**

151 *From Shell Middens to Shell Mounds: Ancient Development of an Anthropogenic Landscape on Santa Cruz Island, California,* KRISTINA M. GILL1,2*, JON M. ERLANDSON2, JESSICA PEAK3, and AMBER VANDERWARKER1 (1Santa Barbara Botanical Garden, Santa Barbara, CA; 2Museum of Natural and Cultural History, University of Oregon, Eugene, OR; 3Storrer Environmental Services, Santa Barbara, CA; 4Department of Anthropology, University of California Santa Barbara, CA).

152 *Changes to Brain Shape and Intracranial Blood Flow in Positional Plagiocephaly,* CODY UPTON1*, GARY D. RICHARDS2, REBECCAS. JABBOUR1, RACHEL HENLEY1A, HALEY RIBOTA2A, JAKE-LIN ESCOBAR1A, and JULIA MCDONALD1A (1Department of Biology, Saint Mary’s College of California, Moraga, CA; 2Department of Biomedical Sciences, A.A. Dugoni School of Dentistry, University of the Pacific, San Francisco, CA; 3Allied Health Science Program, Saint Mary’s College of California, Moraga, CA).

**Evolution, Organismal Biology, and Biodiversity**

153 *Invertebrate Diversity in the Great Salt Lake Ecosystem Revealed by DNA Barcoding,* SABRINA HANEY* and JONATHAN CLARK (Department of Zoology, Weber State University, Ogden, UT).

154 *Molecular Characterization of Invasive Phytophthora Species,* SHANIAH PEREIDA*, PRIYA RAVINDRAN, and MICHAEL D. COFFEY (Department of Plant Pathology and Microbiology, University of California, Riverside, Riverside, CA).

155 *Do Queen Cuticular Hydrocarbons Inhibit Worker Reproduction in Bombus impatiens?* VICENTE MELGAREJO*, KEVIN J. LOOPE, and ERIN W. RANKIN (Department of Entomology, University of California Riverside, Riverside, CA).

**Ecology, Environmental Sciences, and Sustainability**

156 *Stress, Sprint Speed, and Respiration in Coast Range Fence Lizards (Sceloporus occidentalis bocourtii),* AMANDA DUKES1A* and DAVID L. CHAMBERS2* (Department of Biology, Saint Mary’s College of California, Moraga, CA).

157 *Does Road Dust Cause Ipomopsis aggregata Stigmas to Close?* MARIA DIAZ1*, NICKOLAS M. WASER2*, MARY V. PRICE2* (1Bournes College of Engineering, University of California Riverside, Riverside, CA; 2School of Natural Resources and the Environment, University of Arizona, Tucson, AZ).

**Education**

158 *Teaching STEAM: When Artists Lead The Way,* MAL-LORY J. PRATT* and EMILY BOSANQUET (Liberal Arts Department, Pacific Northwest College of Art, Portland, OR).

159 *Integrating Marine Science Research into Hawai’i Island Middle School Classrooms to Inspire Community-based Ocean Conservation,* TARA SPIEGEL1*, SARA SMITH2, JENNIFER WALKER2, and RACHEL BERGREN2 (1Ke Kai Ola-The Marine Mammal Center, Kailua Kona, HI; 2The Marine Mammal Center, Sausalito, CA).

160 *Pathway to Success: Early Research Engagement Fosters Success and Community for Transfers in STEM,* NHI TRAN1*, ALEJANDRO CORTEZ2*, and RICHARD A. CARULLO3 (1College of Natural and Agricultural Sciences, 2Dynamic Genome Program, University of California Riverside, Riverside, CA).

**General and Interdisciplinary**

161 *With Dignity: Observations of an Effective Transfer of Design and Building Instructions of an Assistive Latrine Aid Device for Landmine Survivors in Rural Uganda,* SHANNON M. BAILEY1A*, MARGARET ARACH ORECH2, and FRANK G. JACOBITZ1 (1Mechanical Engineering Department, Shiley-Marco School of Engineering, University of San Diego, San Diego, CA; 2Uganda Landmine Survivors Association, Kampala, Uganda).
162 Scriptable Documentation Environment for Reproducible Research and Teaching in the Cloud, Gordon David Mosher\textsuperscript{1} and Thomas Girke\textsuperscript{2} (\textsuperscript{1}Department of Statistics and \textsuperscript{2}Department of Botany and Plant Sciences, University of California, Riverside, Riverside, CA).

Physics

163 Searching for Supersymmetry in Multi Jet Topology at CMS Detector at $\sqrt{s} = 13$ TeV, Felix Marcia and Owen Long (Department of Physics, University of California, Riverside, Riverside, CA).

Engineering, Technology, and Applied Science

164 Evaluation of the Efficiency of an ARM-based Beowulf Cluster versus a Traditional Desktop Computing for High Performance Computations, Nick D. Addiego\textsuperscript{1}\textsuperscript{*}, Shannon M. Bailey\textsuperscript{1}, David E. Mayhew\textsuperscript{2}, and Frank G. Jacobitz\textsuperscript{1} (\textsuperscript{1}Mechanical Engineering and \textsuperscript{2}Computer Science Departments, Shiley-Marcos School of Engineering, University of San Diego, San Diego, CA).

165 A Novel Application of Electroflotation to Concentrate Disperse Populations of Low Tolerance Pathogens from Environmental Samples, Lena M. Diaz\textsuperscript{1}\textsuperscript{*}, Daniel Jenkins\textsuperscript{1}, Yong Li\textsuperscript{1}, Tamara McNealy\textsuperscript{3}, and Tzuenn-Rong Tzeng\textsuperscript{4} (\textsuperscript{1}Department of Molecular Biosciences and Bioengineering and \textsuperscript{2}Department of Food Science and Human Nutrition, University of Hawai‘i at Mānoa, Honolulu HI; \textsuperscript{3}National Institute of Health, Washington DC; \textsuperscript{4}Department of Biological Sciences, Clemson University, Clemson, SC).

Social, Economic, and Political Sciences

166 Gender Difference in Drowning Victimization, Stephen J. Morewitz (Department of Nursing and Health Sciences, California State University, East Bay, Hayward, CA).

167 Gender Difference in Homicide Victimization, Stephen J. Morewitz (Department of Nursing and Health Sciences, California State University, East Bay, Hayward, CA).
**V. SCIENTIFIC MAKER EXHIBIT**

189 exhibit number is also the abstract number
193 (number italicized and underlined) identifies a student presentation
*identifies the presenter from among several authors listed

Tables on which to set up exhibits will be in the Taylor Dining Commons in the same area as the poster displays. Electricity is available for those who requested it. Before setting up an exhibit that uses electricity, the exhibitor must have had the exhibit checked for safety and approved by personnel of the Pacific Division of AAAS or the Hawai`i Preparatory Academy. The tables each have numbers on them that coincide with the numbers assigned to the exhibits in this program (see number to the left of the title of each presentation). You must use the appropriately numbered table for your exhibit. Nothing is to be hung on walls. Electrical cords must be taped down to prevent tripping.

Set-up of exhibits can begin at 8:15 a.m. All exhibits must be in place no later than 9:00 a.m. Exhibitors must stay with their exhibits at all times in order to answer questions and oversee their equipment. The exhibit ends promptly at 11:30 a.m. All exhibits must be removed by noon.

*Presenters assume full responsibility for the security of their exhibits.* Unclaimed exhibits and other materials will be discarded at the close of the technical sessions on Friday afternoon.

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**Scientific Maker Exhibit**

**TAYLOR DINING COMMONS**

**Thursday**

9:00 a.m. – 11:30 a.m.

168 *Hacker Calculus: Was Isaac Newton a Hacker?* JOAN HORVATH* and RICH CAMERON (Nonscriptum LLC, Pasadena CA).

169 *Project PANOPTES, JOSH WALAWENDER*¹, OLIVIER GUYON², NEMANJA JOVANOVIĆ², WILFRED T GEE³, and the PANOPTES TEAM (¹W. M. Keck Observatory, Kamuela HI; ²Subaru Telescope, National Astronomical Observatory of Japan, Hilo, HI; ³Department of Physics and Astronomy, Macquarie University, NSW, Australia).

170 *Arduino Based Ratiometric Nephelometric Turbidity Analyzer,* MICHAEL JASSOWSKI* and EILEEN JASSOWSKI (Primo Ponies, El Dorado, CA).

171 *Personal Health Scoreboard,* SAI YAMANOOR* and SRIHARI YAMANOOR* (Individuals, Newark, CA).

172 *Raspberry Pi based Bird Monitor,* SAI YAMANOOR* and SRIHARI YAMANOOR* (Individuals, Newark, CA).