



Night at the Museum Holiday Party

Wallace Atrium was buzzing with life as UCMP held its "Night at the Museum" Holiday Party on December 3rd, 2015. More than sixty people attended the event to celebrate the holidays and recognize the generosity of UCMP supporters. Friends of the museum, UCMP staff, faculty, and students enjoyed great conversation, delicious food and specialty drinks fitting for the occasion: The Trilobite, Rise of the Angiosperms, and the Minty Mammoth Mojito. A highlight of the evening was the special behind-the-scenes tours of the collections showcasing the research projects being conducted at UCMP.

At each station, presenters showcased research projects and provided guests with up-close looks at fossils and insights into the equipment used in research. The stations were as follows:

- **Diane Erwin** and **Marwa W. Ibraheem** presented fossil insects from Stewart Valley.
- **Dori Lynn Contreras** presented comparative morphology among tropical plant fossils.
- **Ashley Poust & Mackenzie Kirchner-Smith** described applications of 3D scanning technology on vertebrate fossil bones.
- **Jeff Benca** showed experimental work recreating the intense radiation scenario thought to affect early gymnosperms in the Permian.
- **Mark Goodwin** and **Tony Huynh** presented computer visualizations



Charles Marshall in front of the T. rex at "Night at the Museum" Holiday Party

using data from CT scans of fossils.

- **Sara El Shafie, Danielle Heinz** and **Elyanah Posner** showed bird and other fossils from the McKittrick collection stored in the Campanile.
- **Erica Clites, Holly Seyler, Patrick Garcialuna, Anne Zavala** and **Lillian Pearson** highlighted invertebrate fossils found at Point Reyes, showed fossils that are part of the EPICC project, and discussed ongoing relationships between the UCMP and the National Parks.

We thank **Nick Spano** and **Peter Kloess** for assistance with registration and 2016 calendar pick-up, and we appreciate the time spent by the many UCMP students and staff who made the evening possible. 🎉

Awards

Congratulations to Curator **Seth Finnegan** who received a 2015 **Packard Fellowship for Science and Engineering** from the David and Lucile Packard Foundation. As one of just 18 Fellows named, the honor recognizes the nation's most innovative early-career scientists and engineers. Each Fellow receives a grant of \$875,000 over five years to pursue their research. Seth is in his 4th year as an Assistant Professor in Integrative Biology.

Lucy Chang won the 2015 Geological Society of America Geobiology and Geomicrobiology Division Best Student Oral Presentation award for her presentation at the GSA Annual Meeting in Baltimore, MD.

—continued in Awards page 7

The Newsletter Team at UCMP provides the news in a variety of formats. If you are interested in receiving printed newsletters or email only, let us know!

Please provide your email address to Chris Mejia at cmejia@berkeley.edu



Director's Letter

I am excited to report that the close of 2015 saw the launch of our two most recent collections-based grants. The first is a \$2.5 million NSF Advancing Digitization of Biological Collections (ADBC) Thematic Collections Network (TCN) grant, which will web-mobilize 1.6 million specimens to document ecological and evolutionary change in Eastern Pacific Invertebrate Cenozoic Communities (EPICC). This was just one of two TCNs awarded last year, and only the third paleontological one ever awarded. We are especially excited because this effort will help unite the greater community of paleontological research collections – our partners are the University of Alaska, the Burke Museum in Seattle, the University of Oregon, the California Academy of Sciences, the Los Angeles County Museum of Natural History, the Cooper Center in southern California, the Paleontological Research Institute in upstate New York, and the Smithsonian Institution. Strikingly, many of these institutions are staffed by UCMP alumni/ae, so we already have a well-developed rapport.

The second grant is just one of five NSF ADBC Partner to Existing Networks (PENs) awarded last year, with Diane Erwin leading the

digital mobilization of our Cenozoic insect collection. Importantly these grants will fund undergraduate and graduate student work in the collections, providing them state-of-the-art training in 21st century collections practices, from specimen handling, digitization, to large-scale collaborative activities.

I also want to call out two of our collections staff, Diane Erwin and Pat Holroyd, who have each now served UCMP for 20 years – congratulations! Their commitment, knowledge of our collections and user communities, and research and collections skills are invaluable to our missions of research, education, and service.

In the last newsletter we bade a formal farewell to Dave Smith and Josh Frankel, but I am delighted to introduce Helina Chin, who started in UCMP in July in the role of graphics communication specialist.

Finally, at least at the time of writing, I am pleased to report that our endowment, which operates on a 5-year average payout, has now recovered from the 2008 financial crisis. Luckily this will offset a 10% permanent cut in State funds that will take effect next financial year. Thanks again for all your support as we, sadly, become an ever increasingly private museum sitting in the world's best public university.

Sincerely,
Charles Marshall

Who is UCMP?

Director: Charles Marshall

Assistant Directors:

Mark Goodwin Lisa White

Curators:

Anthony Barnosky	Jere Lipps*
Roy Caldwell	Cindy Looy
William Clemens*	Charles Marshall
Seth Finnegan	Kevin Padian
Carole Hickman*	Leslea Hlusko
Tim White	David Lindberg*
James Valentine*	

Curatorial Associates:

Walter Alvarez Roger Byrne
Lynn Ingram

Admin. Assistant: Chris Mejia

Museum Scientists:

Erica Clites Ken Finger
Diane Erwin Patricia Holroyd

Education & Public Outreach:

Jessica Bean Helina Chin
Trish Roque Anna Thanukos

Edited by Lisa White

Layout & graphics by Helina Chin

For the broader UCMP community, visit the UCMP website: www.ucmp.berkeley.edu; Understanding Evolution:

www.understandevolution.org; and Understanding Science: www.understandingscience.org

*emeritus/a

Summer Adventures!

Over the summer of 2015, our faculty, staff and students took flight to conduct exciting research all over the globe! Below are photo highlights from their journeys.

Visit http://www.ucmp.berkeley.edu/about/ucmpnews/16_04/summeradventures to read their full stories!



Emily Orzechowski in the field on San Nicolas Island



Marianne Brasil and Telsa Monson in the caves at Sterkfontein, South Africa



Jessie Atterholt with her students at the Raymond M. Alf Museum



Dori Contreras holding a Permian conifer branch with Amanda Cantrell, Tom Suazo on the cliffside near Las Cruces in New Mexico

Read more about their adventures at http://www.ucmp.berkeley.edu/about/ucmpnews/16_04/summeradventures

Faculty in the Spotlight

In December **Tony Barnosky** and **Liz Hadly** attended the United Nations Conference on Climate Change (COP21paris.org) in Paris to premiere a movie opening, "Demain." The movie was inspired by the research of Tony, Liz, and their colleagues on tipping points. The film opens with Tony and Liz summarizing global change issues facing the world today. Tony states, "The movie is all about solutions and is very uplifting. It features solutions being implemented in San Francisco and Oakland, in addition to many other places around the world." It was produced by and stars Mélanie Laurent (a well-known French actress) and Cyril Dion. The movie is getting rave reviews in Europe and the English version, "Tomorrow", has an anticipated release date of spring 2016. Members of the **Barnosky Lab** continue to be sought after for interviews in response to their ongoing research documenting the dramatic loss of megafauna and the significant impacts on landscapes and ecosystems.

In August, **Carole Hickman** was honored by resolution of the Council of the American Malacological Society as an Honorary Life Member in recognition of her research, service to the Society, and her teaching and mentorship. While there, she also presented a paper on adaptations of extremophile



Tony Barnosky and Liz Hadly from the film "Demain," Courtesy of Mars Films.

bivalves to life at ancient and modern methane seeps in a marine mollusk symposium. In June, she presented a paper on the future of systematic monography at the Annual Meeting of the Western Society of Malacologists at Cal State Fullerton.

Kevin Padian spent a week at UT Austin with **Jim Cunningham** working on the functional morphology and flight of the giant pterosaur *Quetzalcoatlus*. He was also at Ghost Ranch, New Mexico, where the crew unearthed four new skeletons from the Triassic Hayden Quarry. Joining the field party were UCMP alums **Randy Irmis**, **Sterling Nesbitt**, and **Sarah Werning**, as well as UCMP undergraduate **Ben Kligman** and UT graduate student Adam Marsh, who visited UCMP for several weeks in spring 2015.

Welcome

Welcome to **Julia Sigwart**, a Museum Associate and sabbatical visitor from Queen's University Belfast, Ireland. Julia is an Associate Professor and Director of the university marine station in Portaferry, Northern Ireland. With full support for the next three years from a Marie Curie Fellowship, Julia will be based at UC Berkeley collaborating with UCMP Director **Charles Marshall** and Professor Emeritus **David Lindberg**. Julia's research focuses on macroevolution in marine invertebrates, using both fossil and living species.



Visiting Egyptian research scholar Marwa W. Ibraheem and museum scientist Diane Erwin at the Calistoga Petrified Forest



Rosemary Romero studying sea lettuce



Jun Lim collecting plant specimens from the Big Island of Hawaii



Natalia Villavicencio at the Swedish Museum of Natural History



Ashley Poust in the field with students from Augustana College

Read more about their adventures at http://www.ucmp.berkeley.edu/about/ucmpnews/16_04/summeradventures

What's New in the Collections

Fossil Insect Digitization

UCMP joins the ADBC Thematic Collections Network Fossil Insect Collaborative as a **Partner to an Existing Network (PEN)** along with seven institutions funded by the National Science Foundation to digitize and image the nation's largest collections of fossil insects. **Diane Erwin** spearheads the Berkeley Fossil Insect PEN (BFIP) team which was "buzzing" in the summer and throughout the fall semester

Holocene fossils that were not fully curated. Currently, only 16 of the 147 original USGS cabinets still have fossils in them, and that number is swiftly dwindling. Volunteers **Don Pecko** and **Kathy Zoehfeld**, continued to help Erica curate fossils with locality information that were never assigned USGS locality numbers. The group added 150 of these new localities, with several hundred more to go.

Graduate student **Zixiang Zhang** pioneered a new georeferencing technique while transferring collection localities and geologic sections marked on USGS topographic maps into electronic format in our UCMP database.

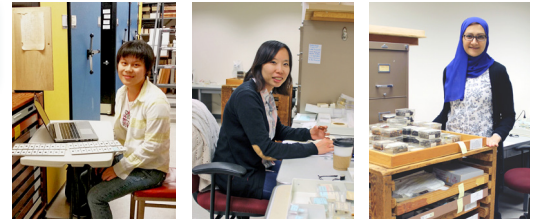
The georeferencing techniques developed over the summer will also be applied to the ~12,000 localities that need to be updated as part of the EPICC project (see below). Erica states "I'm pleased that we are able to capitalize on all of the hard work done by many UCMP students and volunteers on the USGS project I had the privilege of supervising. We continue to make UCMP's invertebrate fossils more accessible to the public

and researchers through digital photographs and online specimen records on www.ucmp.berkeley.edu"

databasing UCMP's insects in amber, many from Mexico given to UCMP by the Danish archaeologist Frans Blom. The BFIP team (see photos top right) also imaged insects preserved in mid-Miocene lake sediments from Stewart Valley, Nevada. Diane and Marwa's station was a popular stop with UCMP friends and visitors during the December holiday party.

NSF collections project ending

The former USGS Menlo Park invertebrate collection is now almost fully integrated into UCMP's invertebrate collection. Over the summer under the guidance of **Erica Clites** undergraduate students **Patrick Garcialuna, Pranav Idnany, Lesly Ann Llarena, Holly Seyler, Louis Trevino** and volunteer **Laura Handy** worked to rehouse, catalogue and label thousands of Pleistocene and



The Berkeley Fossil Insect PEN team working on the fossil amber and Stewart Valley collections. Clockwise from top left are Lin Wang, Winnie Hsiung, Marwa W. El-Faramawi, Iyawanna Hazzard, Meralina Morales and Diane Erwin.



Image of a small fly from Stewart Valley, NV. Photo credit: Marwa W. El-Faramawi.

and researchers through digital photographs and online specimen records on www.ucmp.berkeley.edu"

New large-scale digitization project begins

In the Fall of 2015, UCMP started work on a new four-year NSF funded project called **EPICC: Eastern Pacific Invertebrate Communities of the Cenozoic**, funded by the Advancing Digitization of Biological Collections (ADBC) program at the NSF. UCMP is the lead partner among the eight institutions mentioned in the Director's Letter to digitize 1.6 million invertebrate specimens from the eastern Pacific Ocean. The project will capture specimen photographs, as well as standard locality information.

The data will be served on the web via the iDigBio portal (<https://www.idigbio.org/portal>).

Part of EPICC's outreach plan involves the making of four virtual field experiences in collaboration with the Paleontological Research Institute. Viewers will be able to explore the outcrops, view the fauna, and see



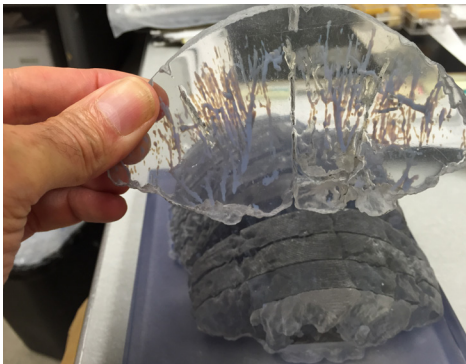
The summer 2015 Regatta crew takes a break from rehousing and curating fossils. From left to right: Museum Scientist Erica Clites, undergraduate student Pranav Idnany, graduate student Zixiang Zhang, undergraduate student Anne Zavala, graduate student Nicolas Spano, and undergraduate students Patrick Garcialuna and Holly Seyler. Photo courtesy of Erica Clites

the field evidence that underpins the paleoenvironmental interpretations of the selected regions. The first will be centered on the late Neogene Kettleman Hills outcrops on the edge of the Central Valley, with its amazing sequence of marine faunas, capped by a spectacular marine to terrestrial transition.

Our ongoing work will soon be available to view online at <http://www.epicctcn.org>. Check back for updates mid April.

Staff Updates

Mark Goodwin is continuing to work in Ethiopia thanks to a \$53,400 National Science Foundation (NSF) Catalyzing New International Collaborations grant with UCMP alums **Greg Wilson** and **Randall Irmis**. For several weeks in January-February 2016, Mark conducted fieldwork with colleagues from the University of Oklahoma, Addis Ababa University, and Mekelle University in Ethiopia to investigate non-marine Mesozoic ecosystems from the Northwestern Plateau, Ethiopia.



3-D printed sections of a pachycephalosaur fossil

Mark's work in Montana with colleague **Jack Horner** at the Museum of the Rockies has led to the description of a new pachycephalosaur from the Hell Creek Formation of Montana. The 3D printing of the fossil reveals intricate details of an internal vessel network in the characteristic pachycephalosaur dome. Mark returned to the farm of Dan and Lila Redding, long time supporters of UCMP fieldwork in the Judith River Formation along

the Montana-Alberta border, in August to confirm the stratigraphic position of earlier UCMP localities and prospect nearby exposures for future work.

Lisa White reports excellent progress is being made on the Understanding Global Change (UGC) project with UGC post-doctoral scholar **Jessica Bean** who is leading the development of the new conceptual framework for the website. During the workshops with Bay Area science teachers and with educators and docents at the Smithsonian National Museum of Natural History, Jessica and Lisa tested the framework and shared teaching resources associated with the site to very positive reviews. The site is slated to launch Fall 2016.

Pat Holroyd, Brian Rankin and **Howard Hutchison** joined colleagues from Texas and Arizona to explore the Uinta Basin of Utah for middle Eocene mammals and turtles. Expect to see some of these finds in research presented at the Salt Lake City SVP meeting in a special middle Eocene symposium.

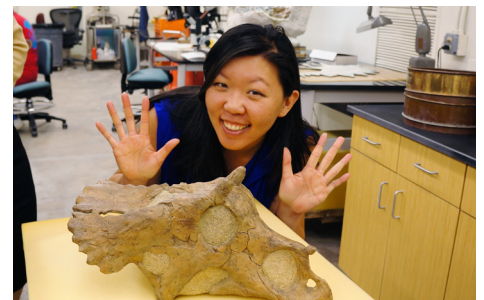
Helina Chin joined UCMP as the new Graphics Communication Specialist in the Education and Outreach team in July 2015. After completing the Science Illustration Program at CSU Monterey Bay, she accepted an internship at the Smithsonian National Museum of Natural History in the Botany Department under Museum Illustrator Alice Tangerini. She handled historical botanical illustrations and SEM negatives of dinoflagellate specimens, scanning and digitally retouching them for inclusion into the online database. She is excited to support the work and research done at UCMP.



Mark Goodwin, Ashley Poust and Lisa White with METALS Students at Egg Mountain in Montana. Note the UCMP Director lurking in the background. Photo credit Mark Goodwin

Minority Education

Lisa White guided high school students to some of **Mark Goodwin's** field areas in the Upper Cretaceous of Montana as part of the NSF-funded **METALS** program (Minority Education through Traveling and Learning in the Sciences). Students and faculty collaborators from the University of New Orleans and the University of Texas at El Paso were given an opportunity to explore the geological and paleontological history along the Montana Dinosaur Trail, and the trip included a stop to Yellowstone National Park en route to Montana. **Ashley Poust** was an instructional assistant on the trip and UCMP Director **Charles Marshall** and family also came along. While in Hell Creek the group joined **Greg Wilson** and students in Greg's University of Washington field program to explore early mammals.



Helina Chin with a cast of UCMP baby triceratops skull soon to be displayed at the Smithsonian National Museum of Natural History

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—continued from Awards page 1

Sara ElShafie won the 2016 Ray Huey Award for Best Student Poster in the Division of Ecology and Evolution at the Annual Meeting of the Society for Integrative and Comparative Biology at Portland, OR.



Sara ElShafie holding a Pacific Giant Salamander (*Dicamptodon ensatus*) in the Portola Redwoods State Park, CA.



Calendars are still available! Get yours for \$10 (plus postage). Please email Chris Mejia at cmejia@berkeley.edu or call 510-642-1821 to get your copy today!

In Memoriam Elton L. Puffer



Distorsio sp. shells collected by Puffer

It is with great sadness that we report the passing of alumnus and friend of the UCMP Elton L. Puffer.

Elton's research covered analyses of faunal compositions, expedition results, and taxonomic treatments of molluscan genera and species in Texas and the Gulf of California. One of Wyatt Durham's students, Elton often co-authored with another UCMP student, William E. Emerson, who would become Curator of Malacology at the American Museum of Natural History in New York.

UCMP is greatly indebted to the Elton Puffer Estate for a substantial gift to UCMP, support crucial to our collections as State support continues to dwindle.

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- _____ New _____ Renewal



New year, New look!



2015 was an eventful year at the UCMP with new projects underway and existing projects moving into high gear.

We welcomed new staff, graduate students, and post-doctoral scholars and many things were accomplished in the summer and fall months.

This year, we debut a new look for the newsletter and report on the range of activities leading into more exciting things yet to come in 2016!

Keep up with UCMP News on our website, Facebook and Twitter (@ucmpberkeley)

Calendar of Events

April 6, 2016 and every 1st Wed. of the Month

East Bay Science Cafe
Fossil Foraminifera: What are they?
Primary informers about how our planet worked in the past. Presented by Ivo Duijnstee.
<http://scienceatcal.berkeley.edu>

April 16, 2016

Cal Day!
Get first hand experience with fossils from the UCMP collections. Hope to see you there!

July 25 thru 29, 2016

Think Evolution VIII Workshop on evolutionary explorations with biologists, paleontologists and educators at UC Berkeley.

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