

Events Calendar

Hang it up as a reminder to attend these great upcoming programs!

Keep an Eye on Biodiversity Page 3

See how the Museum is trying to increase biodiversity awareness!

Class of 2009 Page 5

Read about the exciting and diverse internships of the class of 2009!

The Making of *SILAVUT* Page 6

Uncover a new way to think about global climate change!

Plant Hunting Adventure Page 7

Learn about the discovery of a plant that had been lost for 115 years!



A 'Deep Time' global warming laboratory in the Canadian High Arctic

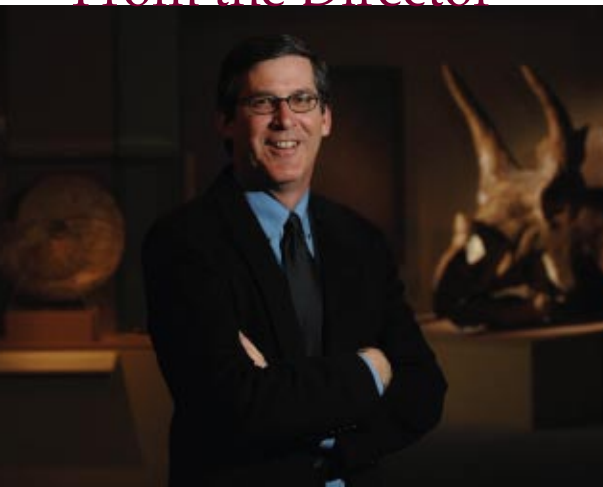
By Jaelyn Eberle, Curator of Vertebrate Paleontology

News of global warming is all around us – on the radio, in the newspaper, and on television. Among the earth's most sensitive regions to global warming, the Arctic is experiencing temperatures rising at almost twice the rate as the rest of the world. The million-dollar-question: What are the impacts of this warming on Earth's biota – the plants and animals, including humans?

Paleontology and geology play a crucial role in understanding the impacts of climate change on earth's life and landscape. Among the best 'deep time' laboratories to gauge the biotic impacts of Arctic climate change, early Eocene (ca 52 million-year-old) fossils on Ellesmere Island, Arctic Canada (~79° N) preserve evidence of lush swamp forests inhabited by alligators, giant tortoises, and a variety of mammals that included primates and tapirs. Because the fossil-bearing rocks on Ellesmere Island were well above the Arctic Circle during the Eocene, this environment experienced months of continuous sunlight and darkness, the Arctic summer and winter, respectively.

Funded by the National Science Foundation and the National Geographic Society, University of Colorado Museum of Natural History paleontologist Jaelyn Eberle and colleagues Mary Dawson (Carnegie Museum of Natural History), Howard Hutchison (UCMP Berkeley), and the late Malcolm McKenna (American Museum of Natural History and UCM) have spent several years studying the mammals that once inhabited the early Eocene Arctic swamp forests. Eberle has completed seven field seasons in the Canadian High Arctic. In addition to determining the relationships of the Arctic fossil mammals to both living and extinct species, study of their teeth, in particular the pattern of cusps (bumps) and valleys preserved on a tooth's chewing surface, can say a lot about the diet of ancient mammals. As the old adage goes, 'You are what you eat!' Taking this a step further, Eberle and Coloradan colleagues Henry Fricke (Colorado College) and John Humphrey (Colorado School of Mines) have analyzed carbon and oxygen isotopes locked within a tooth's enamel structure that provide valuable information concerning diet and paleoenvironment. Eberle has just been awarded a new grant from the National Science Foundation to support three more years of Arctic field research, traversing the Arctic from east to west (from Ellesmere Island to Alaska).

Visit the Museum's website (<http://cumuseum.colorado.edu/>) to read the rest of this article and learn more about how Jaelyn's research is contributing to understand global warming.



It is an honor to be the new Director of the University of Colorado Museum of Natural History. I began my duties this March, having come from the California Academy of Sciences in San Francisco. While at the Academy, I was the Executive Director and led the process to recreate that venerable institution; I also held an endowed chair in Diatom Studies at the Academy.

The programs, collections and people of the University of Colorado Museum of Natural History are amazing in terms of their breadth, depth and impact. The intellectual and physical resources at the Museum are quite impressive. Moreover, the potential of the Museum, in the context of a large, public university is fantastic. The University, Boulder community, and regional partners offer many opportunities for collaboration. The vibrant research community, educational and outreach programs as well as an exciting lineup of future exhibitions, all are ways the Museum meets its mission everyday with a wide array of audiences. We will soon present a new Biodiversity Hall and related programs. A special exhibition featuring the Joe Ben Wheat textile collection will run an entire year and have three different iterations.

However, to leverage our own resources, and those of partners and funders, we need to have in place a thoughtful, ambitious, yet realistic strategic plan to guide us. We look forward to engaging many of you as we discuss our aspirations, mission-related goals, and future directions for the Museum. We will reach out beyond our traditional supporters to learn what the general public expects and needs from the University of Colorado Museum of Natural History. It will be a great opportunity to set the course for the Museum. I hope to meet more of the Museum's visitors and supporters over the next months, in the course of your visits and through the planning process.

Thank you for your continued support of the University of Colorado Museum of Natural History.

Sincerely,
Patrick Kociolek
Director

Upcoming Exhibits

Evolution: Here and Now

McKenna Gallery, September 15, 2008 - August 15, 2009.

This exhibit presents the cutting-edge research of six University of Colorado scientists who approach the study of evolution from diverse directions, presenting multiple lines of evidence that converge to tell the story of life through time.

The Return of the Corn Mothers

Second Floor Gallery, October 13, 2008 - January 30, 2009.

This exhibit is a photo documentary on the stories of non-traditional women from New Mexico, Colorado, Texas, and Arizona.

Day of the Dead Altars Exhibit

Anthropology Hall, October 22 - November 7, 2008

An emotive exhibit of altars installed by local artists and community members.

Plan Ahead

If you would like to make a bequest to the Museum please call the CU Foundation Office of Planned Giving (303) 541 1335 or send a message to planned.gifts@cufund.org

Do not miss this!

Tour and Workshop for Kids

In conjunction with the exhibit SILAVUT Inuit Voices in a Changing World.

The museum will offer a new tour and workshop for elementary school children, which focus on the science, art and culture of Inuit and other inhabitants of the Arctic. For more information call (303) 492 4843.

Discover your world

Take a Child Outside Week

September 24-30, 2008

The Museum will have self-guided activities to extend and connect your Museum visit to Boulder's natural outdoor wonders. For more information call (303) 492 4843.

OBJECT OF THE MONTH Discover a new and amazing object every month from the Museum's collections! Visit <http://cumuseum.colorado.edu/>

Monitoring Our Changing Global Biodiversity

by Robert Guralnick, Curator of Invertebrate Zoology

Our planet is in the midst of a biotic crisis of unprecedented size and speed that may lead to half the Earth's species going extinct by the end of this century. The ability to track environmental changes in relation to changes in the diversity and distribution of Earth's organisms is essential for our planet's well-being.

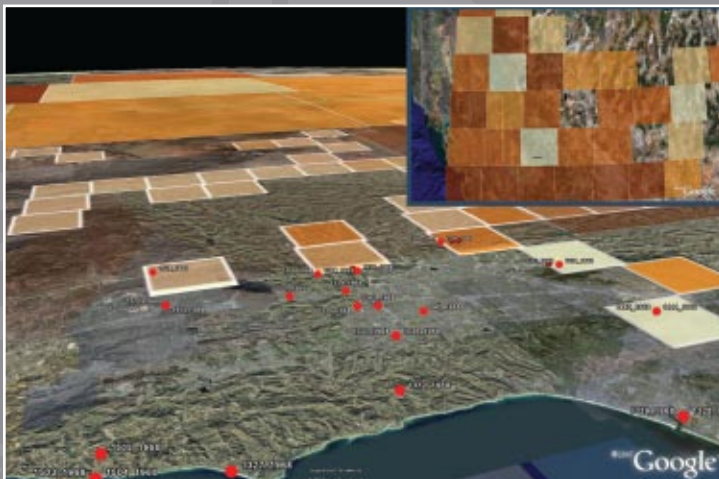
A major barrier to advancing our biodiversity knowledge is lack of biodiversity data in many regions of the world. Although more biodiversity records are steadily being acquired, it is still difficult to find past and current biodiversity data for anything but well-studied taxa that occur in well-studied areas. A partial solution to the problem is a global mechanism that facilitates the sharing of three centuries worth of biodiversity data held in natural history collections throughout the world. In this regard, the Global Biodiversity Information Facility (GBIF) has developed a worldwide information infrastructure through which natural history collections can publish their databases, becoming part of a global network of shared biodiversity data that any user with Internet connectivity can access.

My lab has tackled the daunting challenge of both increasing the quantity and quality of global biodiversity databases, and building the

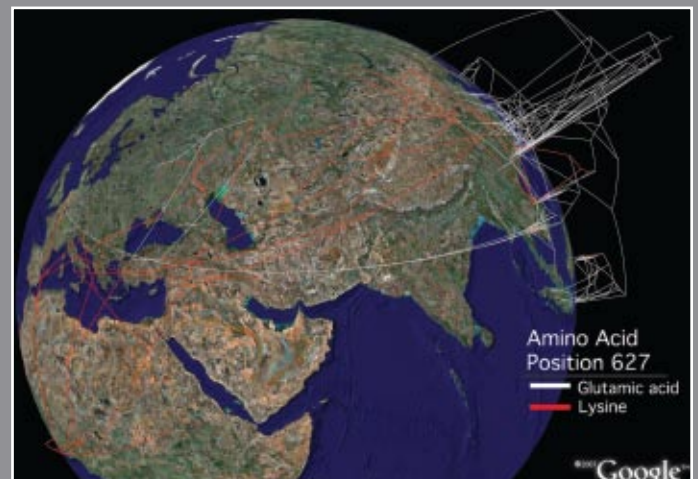
tools needed to explore this data and use it for biodiversity assessment. This includes distributing 315,000 of the University of Colorado Museum of Natural History's biological occurrence records to the GBIF portal; developing tools that increase the utility of all GBIF data; and tools that allow us to begin quantitative assessment of how well biodiversity has been sampled for different groups of organisms across different regions of the world. For example, we were part of an international collaboration to develop Biogeomancer (<http://www.biogeomancer.org>), a web tool that converts textual locality descriptions into latitude and longitude values, that can be used for mapping. We also developed GBIF-MAPA (<http://gbifmapa.austmus.gov.au/mapa/>), in collaboration with the Austrian Museum, to explore biodiversity patterns across space and time, and to assess where to go to find more biodiversity.

These tools are just the start of the Museum's efforts towards developing a global, collaborative infrastructure for biodiversity assessment. Such an infrastructure can help us meet the challenge of monitoring global biodiversity. As importantly, we can extend biodiversity data to a much broader audience than is reached using traditional methods, which is crucial to our ability to combat the accelerating biodiversity crisis.

Read more about Rob's work on mapping biodiversity at <http://cumuseum.colorado.edu/>



A screenshot from the KML of Species Occurrence Record Density (K-SORD) tool. In the foreground are individual record distributions of *Thomomys bottae* (Botta's Pocket Gopher) in western North America; at further distances from point-of-view are progressively larger boxes that summarize record density in the given area. Darker tones represent greater density of records. **Inset** The same region of western North America as viewed from altitude.



Screenshot of the spread of H5N1 avian influenza lineages across the Eurasian continent. Here, we illustrate the mutation of a key amino acid that may be involved in changing transmissibility among mammals. The lineages colored red have that mutation while white lineages do not - at the same point that phylogenetic lineages spread westward out of Eastern Asia.

A MUSEUM MEMBERSHIP IS A WONDERFUL GIFT Call (303) 492 3396 for more information.



Public Section: Past, Present, and Future

This past spring, the Museum hosted two very special events. Beginning in February, the Museum collaborated with the CU Art Museum to host Kate Breakey: Small Deaths, an exhibition of large format, hand-colored photographs. The exhibition featured Breakey's stunning work from the collection of the Wittliff Gallery of Southwestern & Mexican Photography, Texas State University, San Marcos. This exhibit, the first collaboration between the two campus museums, also brought Kate Breakey to the Museum for an opening night reception and lecture.

At the end of April, the Museum hosted the Annual Conference of the Association of College and University Museums and Galleries, featuring a welcome address by the Chancellor, George "Bud" Peterson, and the keynote address by Ford Bell, President and CEO of the American Association of Museums. Museum professionals from around the nation met at the Museum for a day of educational sessions, networking, and exploration, culminating in a closing reception at CU's Fiske Planetarium and Science Center. The Conference was very successful with many attendees commenting on the excellence of the Museum's exhibitions, facilities, and staff.

This coming year, the Girls At the Museum Exploring Science (GAMES) program will continue to engender excitement about science in 4th and 5th grade girls. Thanks again to generous funding from the Boulder Valley School District's Impact on Education and the CU Outreach Committee, the Museum will bring girls from four elementary schools to the Museum for 7 weeks of visits with scientists and exploration of museum research.

Also this Fall, the Museum will present its Fifth Annual Day of the Dead Celebration. This popular event is the result of collaborations among UCB departments and programs (Ethnic Studies, Center for the Study of Ethnicity and Race of the Americas (CSERA), the BUENO Center for Multicultural Education, the Center for Multicultural Affairs); students groups (Museum Club, Pi Lambda Chi Latina Sorority); as well as artists and community members (Jerry Vigil, and Carmen Epstein), to name a few. With record visitation numbers, and participants from diverse ethnic backgrounds, the Museum's Day of the Dead Celebration has become a multicultural tradition to celebrate life. Visit the Museum's website for a complete list of this year's events.

All of these events underscore the Museum's increasing leadership in collaborations and programming at the local, regional, and national level, with organizations of all types.

GIFT STORE Members always receive a 10% discount!

MFS Student Internships

Mel Barton Mel is interning at the Denver Museum of Nature & Science. Her internship duties consist of field collection of fossils in Bridger, Wind River, and Sandwash Basins, as well as cataloging, inventorying, and organizing parts of the collection. She is also continuing the research on White River mammal paleoecology she began in 2007.

Carolina Eichinger Carolina is doing an internship at the WOW! Children's Museum in Lafayette. She will be organizing and managing various special events, including the annual fundraiser, the New Year's celebration and other smaller events. She will also be working with the Morrison Natural History Museum to design a hands-on, kid-friendly exhibit for the WOW! Children's Museum.



Carolina Eichinger

John Hankla John completed his internship at the Indianapolis Children's Museum, where he worked in the Paleontology collections. He helped with overall organization of the collections as well as preparing the department for their upcoming field season.

Kristina Horton Kristina is doing an internship for Durango Nature Studies, a non-profit organization in Southwest Colorado that offers environmental educational programs to the four-corners community. She is working as Summer Camp Director and will be running four week-long sessions with students in K-6th grade, two of which Kristina will be responsible for teaching.



Erin Baxter

Jeff McClenahan & Erin Baxter Erin and Jeff are working together to build a website that highlights the American Museum of Natural History's current field research on 16th and 17th century Spanish Missions, survey work in the Great Basin, and the discovery of the earliest pottery on the North American continent.

Melissa Reed-Eckert As an intern with the Bureau of Land Management, Melissa will monitor the use of artificial kit fox dens in the Grand Valley of the Colorado Plateau. Kit foxes are completely reliant on dens for shelter from the extreme heat of summer and to escape predation from coyotes and red foxes. The BLM is constructing artificial dens for this purpose.



Lauren Trainer

Wendy Schultz Wendy is completing her internship at the Field Museum of Natural History. Her main tasks have involved processing outgoing loans and in-coming returns. She has caught up on all the paperwork, updated the database and packed fossils for shipment.

Isabel Tovar Isabel is continuing to address outstanding deaccessions, accessions, and NAGPRA claims at the Denver Museum of Nature & Science. She is also taking part in a general deep clean and inventory of materials in storage in preparation for major construction and a collections move.

Laureen Trainer Laureen is working at the Longmont Museum and Cultural Center where she has developed and written two tours for their new permanent history exhibit on the Front Range. She is also developing teacher workshops in conjunction with this exhibit. In addition, Laureen is working at the Denver Art Museum developing docent material for their spring training and helping with hands-on activities for an upcoming exhibition.



Wendy Schultz

Suzanne White Suzanne is doing an internship in the exhibits department at the Denver Museum of Nature & Science. She is assisting the exhibits team by providing research, writing, and graphics support for the upcoming traveling exhibit from the American Museum of Natural History entitled Dinosaurs: Ancient Fossils, New Discoveries.



Suzanne White

DO YOU WANT TO BE A VOLUNTEER EDUCATOR? Contact the Education Coordinator at (303) 492 4843.



The Making of *SILAVUT Inuit Voices in a Changing World*

Until recently, most people have been unaware of the changes affecting the Arctic climate. The Arctic is very vulnerable to the environmental change that is occurring there at twice the rate as the rest of the earth. Since most of the region is at freezing temperature, a slight increase in temperature causes melting, severely impacting animal, plant, and human populations. Intimately connected to the environment and extremely knowledgeable about their surroundings, the Inuit have valuable observations of environmental change to share with humanity.

Despite a great amount of scientific research into Arctic climate and climate change, few studies include input from the Inuit, who have been living in this environment for over a thousand years. Dr. Shari Gearheard, a research fellow with the Cooperative Institute for Research in Environmental Sciences (CIRES) at the University of Colorado curated this exhibit. Gearheard has worked with Inuit communities of Clyde River, Nunavut (located in Northern Canada on the North side of Baffin Island) for over a decade, conducting research and learning from their experiences with environmental change. Gearheard's work also seeks to find linkages between traditional Inuit knowledge and scientific knowledge. This exhibition presents both Gearheard's research and interviews with Inuit elders.

The exhibit SILAVUT, which means "our climate" or "our weather" in Inuktitut, was developed in collaboration between the community of Clyde River, the National Snow and Ice Data Center (NSIDC), and the University of Colorado Museum of Natural History with support from the National Science Foundation. On display during the International Polar Year, this exhibit is part of the many broad scientific programs focused on research in the Arctic and the Antarctic from March 2007 to March 2009. According to Betsy Sheffield, Services Representative at the University of Colorado's NSIDC, and Assistant Curator of the exhibit, "NSIDC is delighted with the release of SILAVUT. Dr. Gearheard's research and data have been very popular at our data center, and interpreting it as an exhibit will increase the visibility of the traditional data collected from Inuit elders on the changing environment in Nunavut."

SILAVUT Inuit Voices in a Changing World exhibit will be on display in the Changing Gallery through March 15, 2009. A special event with the participation of Shari Gearheard and Ilkoo Angutikjuak will take place on September 17th, 2008. See the events calendar for more details.

MUSEUM TOURS Contact the Education Coordinator at (303) 492 4843 for information.



Plant Hunting for *Aliciella* (Gilia) *sedifolia*, the stonecrop gilia

by Tim Hogan, Collections Manager, Botany

In early July of 2007, Tim Hogan of the University of Colorado Herbarium and Luke Tembrock, a former student employee now working at the Denver Botanical Gardens, spent a week of fine weather in the San Juan Mountains, searching for the very rare stonecrop gilia (*Aliciella sedifolia*).

Stonecrop gilia is an alpine endemic, known from only two sites in the San Juans of southwestern Colorado. In 1892, C. A. Purpus collected the species in at an uncertain type locality. (The "type locality" is the site from where a species is first described). This Holotype (or first described specimen) is held at the University of California, Berkeley Herbarium (UC). In the case of *Aliciella sedifolia*, there is limited information on the original historical label, and its exact location has been a mystery for over a hundred years. It was not seen again until the species was "rediscovered" in 1995 on Half Peak, about five air miles from the suspected type locality by Sue Komarek, a botanist from southwestern Colorado.

Luke and I spent the first day of our trip in an alpine basin southeast of Silverton, making general collections for the herbarium and familiarizing ourselves with the lovely San Juan flora. Lush carpets of paintbrush, penstemons, and many other wildflowers delighted us as we cataloged our finds. The next day we traversed a 12,000' ridge above the basin, looking intently for our quarry. We didn't come upon the fine gravel habitat in which Komarek had discovered her plants, and by early afternoon found ourselves ascending loose gravel up a 13,000' peak. When we topped out and observed the flat summit plateau with – yes – fine gravels, our hopes rose. After ten minutes of searching, a striking blue plant emerged from the pea-sized gravels, and a plant "lost" for 115 years had been found!

Read the full article on Tim's fascinating search for this rare stonecrop at <http://cumuseum.colorado.edu/>



Photos: Luke Tembrock

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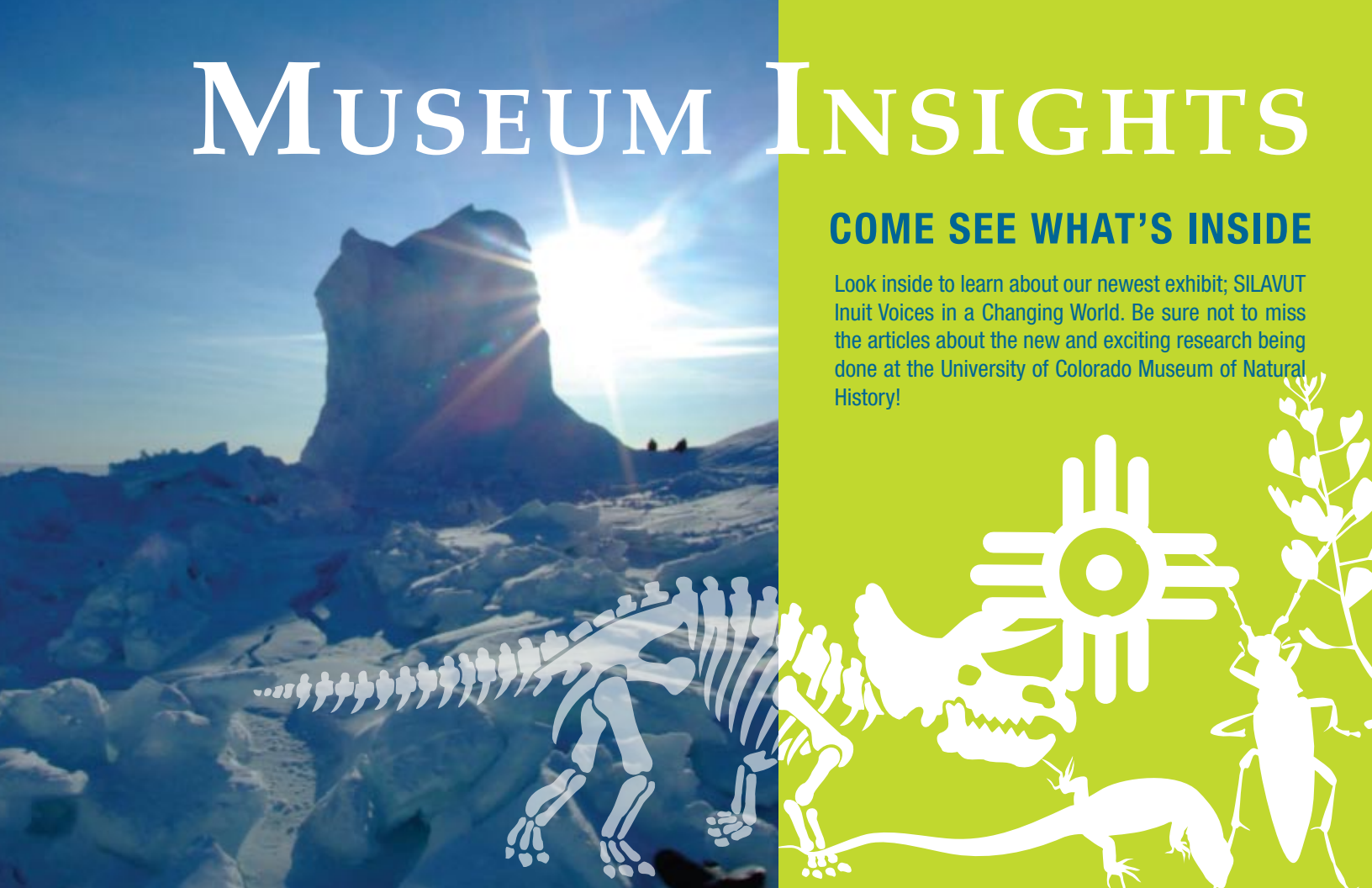
Mail to:

University of Colorado Museum of Natural History
218 UCB
Boulder, CO 80309-0218

MUSEUM INSIGHTS

COME SEE WHAT'S INSIDE

Look inside to learn about our newest exhibit; SILAVUT Inuit Voices in a Changing World. Be sure not to miss the articles about the new and exciting research being done at the University of Colorado Museum of Natural History!



218 UCB, Boulder, Colorado 80309-0218

On the Boulder Campus in the Henderson Building at 15th and Broadway. Visitor parking is available at Euclid and 18th at the AutoPark. An RTD bus stop is located at 14th and Broadway.

Museum Hours:

Monday-Friday 9:00 am-5:00 pm

Saturday 9:00 am-4:00 pm

Sunday 10:00 am-4:00 pm

Colorado
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