



Earthly Delights

Downtown museum brings science alive

By Sandra Sarr

Photography by Doug Dugas

Beyond the looming dinosaur bones deep inside Lafayette Science Museum, a boy stands at a plate glass window transfixed by the scene on the other side. He watches six young women and men at sleek metal tables peering into microscopes. Into dishes go whole bones, remains of small animals, like frogs and rodents, that offer clues to what life was like thousands to millions of years ago. The boy calls his father over and together they track the movements of students in the low-lit lab who clean, examine, and catalog fossils for research and display. It is a glimpse of what paleontologists do in a laboratory.



Where there's a window was once just a wall. Behind that wall was a storage room full of shipping crates. Now, it's a fully equipped paleontological preparatory lab, transformed through an innovative partnership between the Lafayette Science Museum and the Geology Museum at the University of Louisiana at Lafayette.

UL Lafayette students collect fossils in the field and prepare them in the lab under the leadership of paleontologist Dr. James E. Martin, a research professor in the University's School of Geosciences. He's also curator of paleontology in the UL Lafayette Geology Museum housed within the Lafayette Museum of Science. With funding

from grants and contracts for collecting specimens in Oregon, Martin has hired 12 UL Lafayette undergraduate and graduate students. They work in the laboratory 20 hours a week during the school year and nearly double that during summer months.

"It helps bring science alive for the public," said Coty DuBois, a junior from Abbeville, La., who works with Martin in the museum and in the field.

A working natural history museum requires three elements: a research component, with a lab for preparing specimens; a collections area; and a display area. Prior to the partnership, the museum was primarily a display area for traveling

Opposite page: Matt Richard, a geology student in his junior year, removes fine rock from the teeth of a small herbivore to reveal its jawbone. The specimen was discovered at Fossil Lake in south-central Oregon.



Geology students Alexis Blair and Kristin Ball study specimens within the federally certified collection repository in the downtown museum.

exhibits. Now it has a federally certified collection repository, a permanent collection, and meets all of the U.S. Department of the Interior requirements for official museum status.

Camel Bones

This past summer, the same UL Lafayette students working in the lab traveled to a south-central Oregon desert, where they met up with Martin at Fort Rock Fire Guard Station near Fossil Lake. It's a pay-dirt region for paleontologists in search of Ice Age relics.

The most notable specimens they pulled from the ground are Miocene-Eocene seven-million-year-old camel bones from a 14-foot-tall beast resembling a modern-day giraffe. The UL

Lafayette group found more bones of a single camel in the Oregon desert this year than have been found anywhere in the United States.

No complete giant camel skeletons are known to exist. Martin is not positive, but he believes the giant camel is a *Megatylopus*. They are not common and their skeletons are particularly rare.

Martin and his students brought the front legs and part of the rib cage of the ancient camel to Lafayette. They know the bones belong to one camel because of the way they fit together. They trucked the bones from Oregon to Louisiana in plaster casts to protect them en route.

Some of the specimens collected from Oregon will go on display for the third and final installment of Fossil Giants, an exhibit set to open in spring 2016. The first in the series more than doubled attendance at the Lafayette Science Museum in 2014, according to Kevin Krantz, director of the Lafayette Science Museum.

Layers Like Pages

In the Ice Age paleontology world, Fossil Lake is a hotbed for those on a quest for the raw material of Earth's story. Martin, who's led student expeditions to Fossil Lake since 1990, is the only scientist with a permit from the U.S. Bureau of Land Management to remove specimens from there. Fossils found on public land are public property; they require a federal permit for removal.

The Fossil Lake desert, once grassland, became a 200-foot-deep lake after volcano activity and catastrophic flooding. Animals got trapped and couldn't get out. That's what preserved a multitude of relics in the region.

UL Lafayette students were required to learn about the region prior to the expedition and gained an understanding of its comparative paleontological importance. With its abundance of prehistoric specimens, Fossil Lake is "a place that spoils you," said Zack Guidry of Milton, La., a junior majoring in geology who works with Martin in the field and in the museum.

Martin examines layers of fossil-containing rocks, one layer containing a group of fossils deposited on the layer before.

"We read these layers much like the pages of a book to deduce the history of life on our planet. Within these pages are remarkable creatures, many of which no longer exist and many that have spectacular structures," he said.



Student Matt Richard consults specimens in the repository. Scientists use them for research and comparison when identifying new finds.

Martin follows the same protocol at every dig site. First, he maps it, establishing sections that are essentially successions of rock layers. The purpose is to make sure students separate fossils from each layer so they can see how creatures changed from one layer to another, how they changed through time. He determines where to dig, based upon fossils that are present.

Crawling on their hands and knees for hours at Fossil Lake, Martin and his students pored through powdered ash, searching for remnants of prehistoric giant sloths, saber-tooth cats, mammoths, giant camels, small amphibians, rodents, and horses.

To students' untrained eyes, the Fossil Lake desert looks like a vast stretch of sand at first. When Martin explains what he sees, they learn to look with care and "read" what they see.

Martin teaches students who join him in Oregon and other sites to understand the environmental conditions where once-living creatures are represented by their fossil remains. This is done best by looking at relics of smaller animals, like rodents, because they tended to stay in one area, while large animals roamed.



Lafayette Science Museum

433 Jefferson Street

Hours Monday: Closed

Tuesday - Friday: 9 a.m. - 5 p.m.

Saturday: 10 a.m. - 6 p.m.

Sunday: 1 p.m. - 6 p.m.

Admission

Adult (18 - 61): \$5

Seniors (62+): \$3

Children (4 - 17): \$2

Children under 4: Free

Lafayette public school students

and teachers: Free

Private/out-of-parish schools:

\$1 per student/teacher,

\$2 per chaperone

Working as a team, students gain hands-on experience in how to extract fossils from the field and document specimens. By the end of the trip, they can identify most objects they find and name any bone in a small animal's body.

This past summer, the UL Lafayette students learned how life at Fossil Lake changed during the Ice Age and how it mirrored environmental changes during that time period.

Weeks of rain dampened the group's efforts but not its spirits.

"It was wet out there. It was hot. It was cold. And it was the experience of a lifetime, as promised. You get excited about things again and incorporate what you learn in the field," said Cathy Bishop, a UL Lafayette geology instructor who spent time at the Fossil Lake dig.

Bunking at the U.S. Bureau of Land Management's Fire Guard Station, students ate meals together, starting with breakfast. After packing their gear for the day, they piled into Chevy Suburban 4x4s, also supplied by the BLM, to travel to the Fossil Lake area by 8 a.m. After a full day in the field, they arranged what they found and cataloged it all.

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... A brief history of a natural partnership ...

Dr. David Borrok, director of the School of Geosciences, remembers the first time his mother took him to the Denver Natural History Museum and how the huge fossils blew his mind.

"It changes your perception as a child of what was and what can be," he said.

So, it's no surprise that he's in charge of a geology museum.

When the School of Geosciences moved to Hamilton Hall from Madison Hall on campus, Borrok began to explore options for where to house the University's Museum of Geology's thousands of fossils, minerals, and gemstones acquired over about 50 years.

An inkling of possibilities for a museum-university relationship came in 2012 when Tim Deux, a professor of geology at UL Lafayette, and Kevin Krantz, Lafayette Science Museum administrator and curator of exhibits, mounted a small exhibit of the University's minerals collection at the science museum.

"People loved it. Not long after that, we heard that the University was looking for a new home for its Museum of Geology," Krantz said.

Borrok, Krantz and Dr. James E. Martin, a research professor in the University's School of Geosciences, talked about possibilities and eventually secured approvals for the University's Museum of Geology to be housed in the Lafayette Science Museum building owned by Lafayette Consolidated Government.

"It was an unprecedented arrangement. So, naturally it took time to work through the details," Krantz said. The University's museum moved downtown in 2013.

With the first of a three-part dinosaur exhibit, attendance doubled in 2014. The museum is on track for a 25 percent increase in visitors in 2015. On a day of free admission during Festival International, about 7,000 people from all over the world flowed into the 10,000-square-foot gallery space to see the dinosaur exhibit and learn about the creatures' origins.

The museum includes exhibit space, research space for UL Lafayette students and faculty, and a lab for processing specimens. "The museum historically rented traveling exhibitions from other museums. I'm proud to have real science going on here in the museum. There's no shortage of scientific expertise in this area. We showcase those resources," Krantz noted.

"Without Jim Martin's help, we wouldn't have been able to tell the story. With his vast knowledge, he has generated content that's awe-inspiring to our visitors. He has breathed life into our projects, and hired and directed students in the research lab," Krantz said.

He said Martin's relationship with the Madsen family of Utah, which owns the fossil casts of dinosaur bones on display, made the three-part exhibit possible for the museum. The museum is working on an arrangement to permanently house that collection.

"It's a multi-million dollar collection. Really, it's priceless," Borrok said.

Meanwhile, the permanent collection grows with the bone specimens Martin and UL Lafayette students discover on expeditions.

Caitlyn and Cade Buccholz count bones in a Moabosaurus' neck.



Paleontologist Dr. James E. Martin stands next to a chasmosaurus at the Lafayette Science Museum.

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“We’d be up until about 10 at night curating. It’s an important part of the learning process,” said Matt Richard, a junior from Grand Chenier, La.

A lot of Fossil Lake history is not yet understood, but Martin chips away at it, returning year after year, publishing papers, and working on a

book manuscript about it. He’s made it his life’s work to understand the secrets held within the earth and to reveal them to inquisitive minds.

Bringing home the bones

Martin personally knows the lifetime value of hands-on experience as a student. He went to work as a field assistant for the Museum of Geology, South Dakota School of Mines and Technology, in 1967, when he was 17 years old, and hasn’t stopped since. He’s done field explorations in Antarctica, Argentina, Australia, Europe, New Zealand, and North America with discoveries that earned him the Royal Geographical Society of London/Discovery Channel Europe, International Discovery of the Year Award in 1999.

He was inducted into the South Dakota Hall of Fame in 2008, and the James E. Martin Paleontology Research Laboratory, a 33,000-square-foot educational facility, was dedicated in

his honor on the South Dakota School of Mines and Technology campus in 2011.


Although he has spent five decades in the field and has earned some of the top awards in his profession, students can occasionally stump him with their discoveries.

“Those were the times we felt good, when we’d show Dr. Martin something and he’d have to look under the microscope to identify it. But that was rare,” UL Lafayette junior Alexis Blair said, as she worked in the museum lab after returning from the Oregon dig.

Martin intends to keep returning to the Oregon high desert site, where more UL Lafayette students will accompany him as members of the expedition team.

“By understanding the past, we may have at least a fighting chance to predict the future. Understanding how creatures changed, why they became extinct, and how their environments changed are germane to the human condition and its prognosis,” he said.



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