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Benefiting the community by promoting and supporting interdisciplinary research at the interface of people, Earth, and the environment.

OFF THEY GO!

Three Students who worked on the SMU-Smithsonian *Sea Monsters* Exhibit



Myria Perez is all about fossils. After working in SMU fossil preparation labs her entire undergraduate career, and serving on the *Sea Monsters Unearthed* exhibit planning committee, she received her bachelor's degree with a double major in Geology and Anthropology from Dedman College. She then joined the fossil preparation laboratory of the Perot Museum. Notably she was chosen as one of 125 **American Association for the Advancement of Science-IF/THEN® Ambassadors**, talented women innovators whose outreach will inspire girls to consider STEM careers. Myria was among the more than 120 IF/THEN® Ambassadors whose images were 3D printed. The resulting statues were displayed at North Park Mall. Myria is now a fossil preparator in the Smithsonian Institution's *FossilLab* in the *David H. Koch Hall of Fossils – Deep Time*. She was recently featured on the National Museum of Natural History's *Expert is Online: Fossil Preparation with Myria Perez*.

Between *Deep Time* and *Sea Monsters* at the Smithsonian is the African Voices Hall. The SMU team was asked to bridge

between the two fossil exhibits by providing a window exemplifying the global extent of modern scientific collaborations, the importance of outreach, and the benefits of engaging students. **Jaime da Silva**, pictured at left, an SMU Lyle School mechanical engineering major from Angola, joined the team to 3-D print an arm bone of the dinosaur *Angolatitan* to place in the exhibit window.

Now finishing his Ph.D. at SMU, Jaime works on sophisticated photonic instruments for use on asteroids. He was recently the first author of a paper, recommended as an editor's choice, in *Applied Optics*. Dr. Matt Siegler, Adjunct Faculty with SMU Earth Sciences and Research Scientist with the Planetary Science Institute, who is involved with the latest Mars rover, said of Jaime's work, "Our team proposed Jaimie's resonator cavity as a way to make tiny, extremely low power seismometers for landing on Jupiter's moon Europa. With that size and power, every accelerometer on the spacecraft could be a broadband seismometer."



In order to show a life reconstruction of the dinosaur highlighted by the 3D printed arm bone, SMU's Guild Hall master's student **Clayton D'Mello**, pictured at right, undertook the 3D anatomical reconstruction of *Angolatitan* for his thesis project. He also created a 2-D reconstruction of *Angolatitan* to be placed in the exhibit window. After Clayton's graduation from SMU in 2019, he joined the game development company Studio Wildcard in Redmond, Washington, as a concept designer and illustrator. As part of a team, he contributes to the design of prehistoric and fictional flora and fauna in the game *Ark Survival Evolved*.



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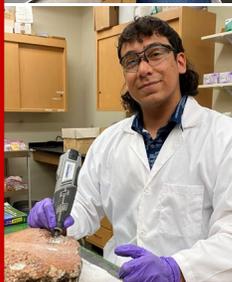
Senior **Chanel Stinson** (Environmental Studies and Anthropology) is researching fashion sustainability, waste, and pollution.



Sophomore **Boden Svang** is investigating stable oxygen, carbon, and hydrogen isotopes in mastodon tooth enamel.



Senior **Dylan McAden** is building cradles for Cretaceous marine reptile fossils prior to their return to Angola.



Senior **Juan Pablo Esparza** is studying stable carbon and oxygen isotopes and coexisting organic carbon in Pennsylvanian soil nodules.

ISEM SUPPORTS STUDENT RESEARCH



Ph.D. student **Adam Johnson** is conducting an archaeological survey of Hawaii including radiocarbon dating of sites.



Ph.D. student **Jerod Aguilar** is asking two questions concerning the origin of life: (1) How did weathering of Earth's surface impact biosphere initiation, and (2) was the formation of soils and organic compounds synonymous?



Ph.D. student **Julia McIntosh** published "Mixed-layer Illite-Smectite in Pennsylvanian Paleosols: Assessing Sources of Illitization in the Illinois Basin" in the Swiss open-access journal *Minerals*.

ISEM HOSTS FRIENDS OF NORTHERN DINOSAUR DISCOVERIES DINNER



ISEM Senior Fellow **Dr. Anthony Fiorillo**, with his book *Alaska Dinosaurs: An Ancient Arctic World* and numerous technical scientific publications, is a leading authority on Alaskan exploration and paleontological research. In fact, his work extends across high latitudes to Asia. In addition to all the dinosaurs he discovered and named from Alaska, he and his colleagues recently named the duckbilled dinosaur *Kamuyasaurus* from Japan. In recognition of Tony's affiliation, ISEM hosted a Friends of Dinosaur Expeditions dinner at which Tony presented results of his latest expeditions and explained the significance of his work through his striking photographs and discussion of his discoveries.



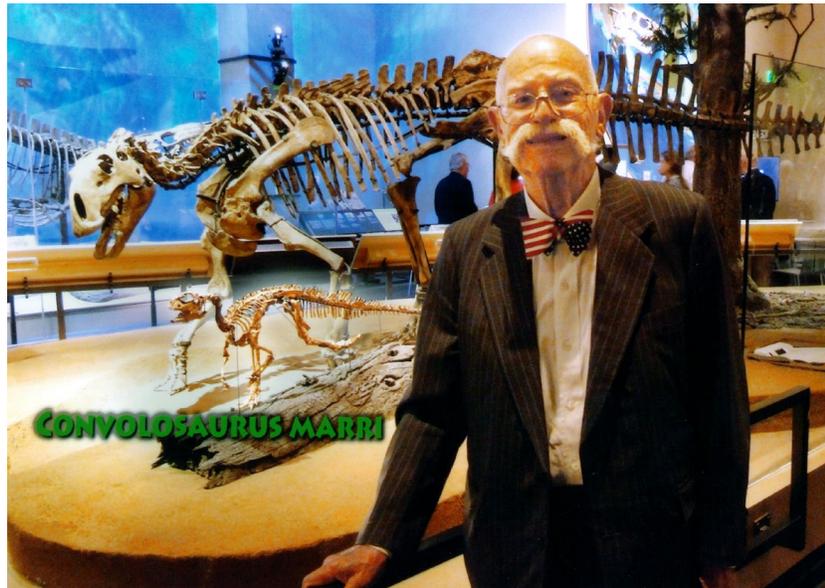
Closer to home, avid fossil hunter Bradley Carter discovered some odd bones in the 96 million-year-old Woodbine Formation of Tarrant and Denton counties. Brad donated the fossils to SMU. Once there, the fossils were scanned by Mike Polcyn and curated by Dale Winkler who assembled an international research team for their study. Bradley and the team determined the fish belonged to an evolutionary lineage that existed millions of years with little change, including its relatives found in waters off Africa and Indonesia today. They represent in fact an extinct member of a "living fossil" lineage. **Link:** (<https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0259292>).



Artwork by Zubin Erik Dutta.

DR. RAY H. MARR, 1930 - 2021

Dr. Ray H. Marr joined the ISEM Board of Trustees in 2007 and remained a valuable member until his passing in 2021. His interest was in helping students to perfect their learning skills, especially at the undergraduate level. To that end, he provided scientific equipment and supported the Marr Undergraduate Scholars, whose research projects were presented each year to a university audience with Dr. Marr in attendance. He was an avid traveler and video producer. He participated in six ISEM learning trips. A videographic record of each trip was produced by his Shade Tree Studios (<https://www.smu.edu/Dedman/Research/Institutes-and-Centers/ISEM/Research/ISEMExcursion>). He also produced two documentary videos about paleontology. As a result, the Texas dinosaur *Convolosaurus marri* was named in his honor and is on display at the Perot Museum of Nature and Science.



Ray Marr with *Convolosaurus marri*



Iceland: A Crucible of Power, 2006

Located atop the Mid-Atlantic Ridge, the spreading center for the Atlantic Ocean Basin, geothermal energy in the form of hot water is abundant.



Hot Rocks: Studying Geothermal Potential in the Greater Yellowstone Area, 2007

A study of the regional geology and geothermal resources in northwestern Wyoming.



Big Sky and Badlands: Tour of the Dakotas, 2008

A tour of southwestern North Dakota, northwestern South Dakota and southeastern Montana.



The Channeled Scablands, 2013

A tour through Washington, Idaho, and western Montana along the Channeled Scablands, a unique feature of Earth's surface formed by the bursting of an Ice Age glacial dam and the ensuing gigantic flood.



Big Bone Lick, Kentucky, 2014

Big Bone Lick, Kentucky, is considered the Cradle of North American Vertebrate Paleontology. A behind the scenes tour of Big Bone Lick State Park and the Cincinnati Museum.



Italy's Supervolcano, 2015

A study of the active and ancient volcanoes of Italy, starting at Mount Vesuvius in the south to Sesia Supervolcano in the Italian Alps in the north.

Marr Scholars Featured at Annual Celebrations 2016-2019

