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CSU MATTERS

COLORADO STATE UNIVERSITY



MONTHLY UPDATE FROM
THE OFFICE OF THE PRESIDENT

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AN EDUCATIONAL
AFTERLIFE

FUSION GOES SMALL-
SCALE AND EFFICIENT

ARTHRITIC BEAR GETS
STEM CELLS

STUDENTS

MOTIVATED BIOLOGY STUDENT GIVES CONTRABAND AN EDUCATIONAL AFTERLIFE

Austin Colter, a Colorado State undergraduate, recently toured a vast warehouse near Denver that holds wild-life specimens – including mounts of exotic and endangered species – after they have been illegally imported to the United States and confiscated by federal officials.

Colter, a junior in fish, wildlife, and conservation biology, was astonished to learn that the beautiful specimens are forever relegated to the National Wildlife Property Repository, a way of removing illegal items from the black market.

Unless, that is, the confiscated animal products are routed to educational institutions.

Inspired by this knowledge, Colter asked that dozens of wildlife specimens be permanently loaned to CSU's Department of Biology. He then worked with Associate Professor Shane Kanatous to bring 105 items to the new Biology Building's central collections space; from there, they will be studied and appreciated by hundreds of CSU students each year.

The preserved items, which found a new home on campus in February, include a giant sperm whale tooth, a full-sized African bontebok, a zebra head, a small leopard, and a disarmingly lifelike cobra posed to strike.

Colter had an emotional response as he watched a staff member's children excitedly view the wildlife specimens. "That's why I did this," he said, "for education." ■



Student Austin Colter spearheaded the effort to bring specimens to CSU. Photo: John Eisele, Colorado State University

RESEARCH


ARTHRITIC BEAR GETS STEM CELLS

An arthritic polar bear at a Washington zoo is the latest high-profile avatar of Colorado State's longstanding focus on translational medicine, or therapies provided to animals that also hold promise for human patients.

Dr. Valerie Johnson, a CSU veterinarian, recently treated Boris – an elder statesman at Point Defiance Zoo & Aquarium in Tacoma – with stem cells derived from the bear's fat in an effort to relieve his arthritis pain. Boris is the first polar bear in the world to receive stem-cell treatment for joint disease, officials said.

Johnson and her veterinary colleagues are conducting research with stem cells to determine how the remarkable cells may be used to treat inflammatory disease, infections, and other ailments that afflict both animals and people. The cells are isolated from bone marrow, blood, and fat, and are replicated in a lab before reinjection into damaged joints and tissue. With this approach, veterinary patients like Boris may help guide new treatments for people with arthritis.

The university's new C. Wayne McIlwraith Translational Medicine Institute, now under construction, is designed to help identify, develop, and move such veterinary treatments into the human medical sphere. ■



Dr. Valerie Johnson described Boris as an amazing, majestic creature. "The size of his paws is unbelievable," she said. Photo: Point Defiance Zoo & Aquarium

STUDENTS

CSU SHOT-PUTTER WINS SECOND NATIONAL CHAMPIONSHIP AT TRACK AND FIELD FINALS

Star CSU shot-putter Mostafa Hassan made history at the NCAA Indoor Track and Field Championships in March, when he became the first CSU and Mountain West athlete to win back-to-back national titles in a single sport.

For the second consecutive year, the senior engineering major from Cairo, Egypt, claimed the title of national collegiate champion at the indoor track and field finals. He hurled the

shot 68 feet, 5 inches, about 2 feet farther than that thrown by his closest competitor.

Hassan came to CSU with encouragement from an assistant track coach, Karim Abdel Wahab, who trained in the same Egyptian youth track club. Hassan also is the top-ranked shot-putter in Africa. ■

RESEARCH

FUSION GOES SMALL-SCALE AND EFFICIENT

Nuclear fusion occurs when atomic reactions between light elements produce heavier ones, and the difference in mass is released as energy. The process replicates in the center of the Sun and gives our favorite star its power.

Now nuclear fusion is happening – on a micro-scale – in the lab of University Distinguished Professor Jorge Rocca. He, his students, and colleagues built a unique tabletop laser and have used it to achieve record-setting efficiency for the generation of neutrons, the chargeless sub-atomic particles resulting from the fusion process. The work is detailed in a new research paper published in *Nature Communications*.

The team produced a record number of neutrons per unit of laser energy, about 500 times better than previous experiments. Making fusion neutrons efficiently, at a small scale, could lead to advances in neutron-based imaging, and neutron probes to gain insight on the structure and properties of materials. The results also contribute to understanding interactions of ultra-intense laser light with matter. ■



The target chamber (front) and ultra-high density laser (back) used in the micro-scale fusion experiments at CSU. Photo: CSU Advanced Beam Laboratory

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