

From VOA Learning English, this is **Science in the News**. I'm Jim Tedder.

And I'm Caty Weaver. Today, we tell how sleep helps to keep our brains healthy. We have a report about what South African researchers are calling Earth's first-ever comet strike. And we take you to an American aquarium where visitors pay to swim with sharks!

SLEEPING HELPS OUR BRAINS

Ever wonder why we need sleep? Scientists have and now they seem to have found an answer to this age-old question. That answer may lead to new treatments for nerve-related disorders such as Alzheimer's or Parkinson's disease. While we sleep, our brains do much more than just rest. American researchers say our brains could also be doing away with harmful waste. They studied the brains of mice that had had fluorescent dye injected into their cerebral spinal fluid.

Maiken Nedergaard led the study. She is a neurologist with the University of Rochester in New York State. She says our brains have two very different activities.

“When we are aware, the brain cells are working very hard at processing all the information about our surroundings. Whereas when during sleep, really work very, very hard on removing all the waste that builds up when we are awake.”

The researchers say that waste includes toxins – substances responsible for Alzheimer’s disease and other disorders of the nervous system. They also found that during sleep the brain’s cells shrink, permitting waste to be removed more effectively. Doctor Nedergaard says it all ends up in the liver where the toxins are broken down.

“So our study suggests that we need to sleep because we have a macroscopic cleaning system that remove many of the toxic waste product from the brain.”

The brain's cleaning system could be studied only by using a new imaging technology because the test animal must be alive to observe this process. Doctor Nedergaard says the next step is to find out if the human brain has a similar cleaning system.

The results demonstrate how important sleep is in the areas of health and disease. They may lead to treatment to prevent or undo neurological disorders.

WORLD FOOD PRIZE WINNERS RECOGNIZED

The World Food Prize was recently awarded to three developers of genetically modified crops, or GMOs. Mary Dell Chilton, Marc van Montagu and Rob Fraley received the award last month.

The award praises the technology they created for being able to increase the quantity and availability of food. It also says GMOs help deal with a growing world population and changes in weather patterns.

But the selection of the three scientists has been criticized by people who question the safety and value of GMOs.

Genetic engineering can add information to plants to produce different kinds of things, such as a protein that kills insects.

Farmers quickly accepted and supported the new technology, first used in 1996. Nearly all the corn and cotton grown in the United States is made with GMOs.

The World Food Prize organization in the American state of Iowa says 17 million farmers worldwide grew GMO crops in 2012. It says the technology increased production and reduced the usage of harmful chemicals on crops.

But opposition to GMOs has been spreading. In the Philippines, protesters destroyed test fields of rice that had been genetically engineered to produce vitamin A.

EVIDENCE OF FIRST KNOWN COMET STRIKE RECOVERED

South African researchers say they have found conclusive evidence of Earth's first-ever known comet strike. The researchers say this exciting find in rural Egypt could help explain more secrets of the universe.

They say the evidence suggests the comet struck the earth about 28-million years ago, over a desert in western Egypt. They say the small particles of glassy black rock found there are comet fragments.

The South African scientists presented their findings last month at the University of the Witwatersrand in Johannesburg.

David Block is a professor at the university. He says meteor and asteroid strikes are fairly common on Earth. But a comet strike, he says, is rare and exciting.

“Because a comet is this dirty snowball of not only rock, but rock mixed with ice. And the point is that atoms, life-giving atoms of carbon, of oxygen, of nitrogen, of argon, of neon, of krypton, are encoded within this little chemical factory from beyond the solar system. These are grains of cosmic dust which existed prior to our solar system forming. So they contain unique secrets of the chemical compo ((composition)) of the cloud of gas and dust which collapsed to form our sun and the planets around it.”

Some scientists say it may have been a comet strike that killed the dinosaurs 65 million years ago. But, there is no strong evidence of this.

Marco Andreoli is with the South African Nuclear Energy Corporation. He says no one has seen a comet hit and lived to tell about it. That is because comets usually burn every living thing in their path to ashes. But Professor Andreoli says the evidence of this comet strike is clear to him.

“We are looking at something of ... an astronomical phenomenon.”

Jan Kramers of the University of Johannesburg says the scientific community is divided on his team's findings that the rock fragment was a comet. But he says the evidence of this comet strike is clear to him.

"It is probably part of a comet, because it can't be anything else. Coming from the outermost reaches in the solar system, traveling in the gravity of the sun and hitting the Earth by chance. What it did tells you something more. What it did when it hit the atmosphere, it exploded. And that is what comets do when they hit the atmosphere. And this explosion produces an incredible amount of heat which can account for the Libyan desert glass that we found in that region."

The researchers say they hope additional study of the comet fragments will help them learn more about the beginnings of our universe.

SWIMMING WITH SHARKS!

For many people, nothing compares to the excitement of swimming with sharks in the wild. Tour boat operators in South Africa, Mexico and the Caribbean offer such experiences. They also provide cages to protect swimmers from the animals.

Now, several public aquariums in the United States are letting visitors pay to swim with sharks in enclosed areas. Reporter Tom Banse recently visited one such aquarium in the city of Tacoma, Washington. Today we have his report.

On this day, more than 900 people have already asked permission to take a swim in a tank full of sharks. It is all in a day's work for Heidi Wilken, an employee at the Point Defiance Zoo and Aquarium in Takoma. She tells reporter Tom Banse not to worry as he prepares for his turn.

“We've never had any instances of aggression from our sharks. We've done thousands of dives in this exhibit. So I would say you're very safe.”

“When were the sharks fed last?”

“They are fed twice a week - Tuesdays and Saturdays. And you know, we are not prey items for them. In most cases when there are shark bites, it's a case of mistaken identity.”

With those words, aquarium employees help get Tom Banse into a dry suit – special clothing that keeps the person wearing it dry. The large saltwater tank holds 17 sharks of six different species, and a number of smaller fish.

“Walk down that ladder, nice and slow...”

A swim ladder leads divers into an underwater cage. There is enough space for up to four people. Cage divers breathe air from the surface through long tubes.

“Put that in your mouth. Put your face in the water. Take a couple of breaths...”

The water in the tank is warm. Sharks swim slowly by, some as close as two arm lengths away. Before diving, Heidi Wilken told Tom Banse to keep his arms inside the enclosure. “No petting the sharks,” she says.

Then a guide opens the underwater cage doors, wide open. A sand tiger shark with large teeth swims by, looking closely at the group of humans. The biggest shark in the tank is a two and one half meter-long, 200-kilogram lemon shark. This animal makes repeated passes. Less frightening sharks swim nearby.

“...You can see, our sand tiger shark is coming very slowly towards us...”

Aquarium visitors can watch all of this through underwater observation windows. The dive ends after about 20 minutes.

John Houck is deputy director of the Point Defiance Zoo and Aquarium. He hopes shark dives create publicity and eventually turn a profit for the aquarium. But he also says a main goal for doing this is to create a better understanding of the environment and the overharvesting of sharks.

“Many people think that sharks are threatening, obviously. But we believe that it is the sharks who are threatened by us and our practices of harvesting in the oceans.”

Aquariums on America’s East Coast were among the first to offer the chance to swim with sharks. The Georgia Aquarium in Atlanta lets visitors swim with its whale sharks, the largest fish on earth. There are zebra and black-tip reef sharks at the Florida Aquarium in Tampa, Florida. And the Long Island Aquarium in New York offers a swim with sand tigers and nurse sharks. There, as in Takoma, education is an important part of the experience, and divers are urged to help protect sharks in the wild.

This Science in the News was written by Milagros Ardin and June Simms, who was also our producer. I’m Caty Weaver.



And I'm Jim Tedder. You can find transcripts, MP3s and podcasts of our programs on our website, learningenglish.voanews.com. Join us again next week for more news about science on the Voice of America.