



# Talk nerdy to me

Ballistic tongues, AI teachers, female hunters, and more!

*Let's talk nerdy about tricky amphibians, staying healthy at home, women with spears, and more.*

## Sit-and-wait predation

Scientists at Sam Houston State University have discovered the earliest example of an animal that used the “ballistic tongue” style of predation. A few tiny bits of skeleton and soft tissue from the new species were found in chunks of amber in Myanmar.

Researchers named the animal *Yaksha perettii* in honor of a nature spirit from Myanmar folklore (Yaksha), and Adolf Peretti, the mineralogist who discovered the fossil.

Researchers previously thought that *Y. perettii* was a chameleon because it shares features with the

Posted on 12 NOV,  
2020

Laura Reed

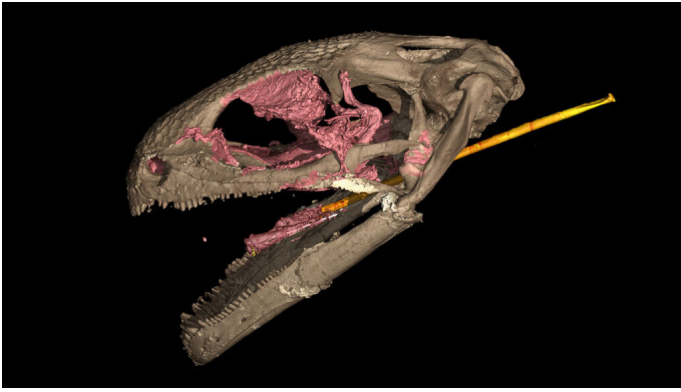
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**Ballistic tongue.** *This 99-million-year-old amphibian used a long bone (shown in yellow) to shoot its tongue out at prey. Courtesy Edward L. Stanley, Florida Museum Of Natural History, VG-STUDIOMAX*

modern reptile. But paleontologist Susan Evans of University College London found that the creature was not a reptile. It was, in fact, a type of amphibian called albanerpetontid.

A known albanerpetontid specimen that had a long, thin bone near its skull made scientists suspect that the animal had a ballistic tongue mechanism. The newly discovered skull that contains the entire tongue apparatus presents strong evidence the animal did catch its prey with a flick of the tongue.

## The case for staying at home

With Japan's large population and dense cities like Tokyo, you might expect big outbreaks of COVID-19. But that has not been the case. Japanese citizens

have managed to curtail the spread of the virus by voluntarily staying home.



**Japanese citizens** seem to have kept COVID-19 infections down by voluntarily staying home.

During the first wave of COVID-19, researchers from **The University of Tokyo Institute of Industrial Science** examined location data from more than 200,000 mobile phone users.

The anonymized data used represented about 2% of the population. The scientists computed human movement and contact rates at a 100-meter grid-cell scale. The data showed that during the first week of the government's state of emergency, beginning on April 7, human mobility reduced by 50%. The effect was a 70% drop in social contacts.

Data on activity at major hub train stations in central Tokyo showed 76%-87% fewer visits compared to pre-pandemic January. The researchers also found that people in greater Tokyo traveled shorter

distances and less often. Both measures dropped by about 50%.

Japanese law does not permit enforcement of a mandatory lockdown. Instead, authorities issued a gradual series of requests to close businesses and work from home. They also enacted aggressive travel entry restrictions.

The study backs up the idea that social distancing is effective in slowing the spread of COVID-19.

## Ancient women hunted big game

The remains of a woman buried around 9,000 years ago were recently unearthed in the Andes Mountains of Peru. The spearpoints and other hunting tools buried with her suggest to researchers that she participated in big-game hunting.

The finding adds to evidence that nearly as many males as females hunted large animals in the ancient Americas.



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**Female hunters** played a large role in food gathering in the ancient Americas. Courtesy Matthew Verdolivo, UC Davis IET Academic Technology Services

Randall Haas and his colleagues at the University of California, Davis, have reported that thousands of years ago, among mobile groups that inhabited the Americas, up to half of big-game hunters were women. Because males are the primary hunters in modern hunter-gatherer populations, the tendency has been to assume this was always the case.

But in 2018, Haas and his team unearthed burial pits in Peru that have changed the way we think about ancient gender roles. They found a 17-to 19-year-old woman who was buried with a set of stone tools for big-game hunting. Remains of a man aged 25 to 30 were found with similar items.

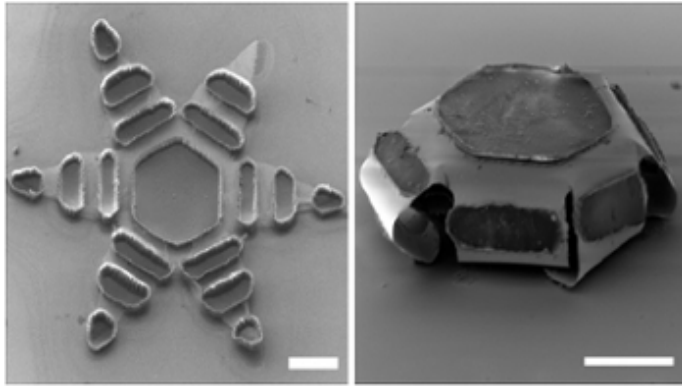
Questions remain about whether the findings accurately reflect ancient females' role in big-game hunts, but Haas' new findings coincide with recent evidence of the existence of warrior women 5,000 years ago in California and 1,500 years ago in Mongolia.

## Getting a grip on the GI tract

The gastrointestinal (GI) tract muscles move extended-release drugs out of a patient's system

before they can get the full dose. Now, researchers have found a way around this problem.

A parasitic worm that digs its teeth into its host's intestines has inspired a team of scientists at Johns Hopkins University to invent a new "theragripper" technology. The theragrippers are about the size of a dust speck. The six-pointed devices are made of metal and a thin, shape-changing film coated in heat-sensitive paraffin wax.



**The open theragripper on the left** can close and attach to an intestinal wall when it encounters internal body temperatures. It can then release a small amount of medication. Courtesy Johns Hopkins University

Thousands of theragrippers can be loaded with medicine and sent to the GI tract. When the wax coating reaches a specific temperature, the devices close and clamp onto the colonic wall. The devices then dig into the mucosa and stay attached to the colon. The medicine is then released gradually into the body.

When the job is done, the theragrippers lose their hold on the tissue and leave the body via normal muscular function.

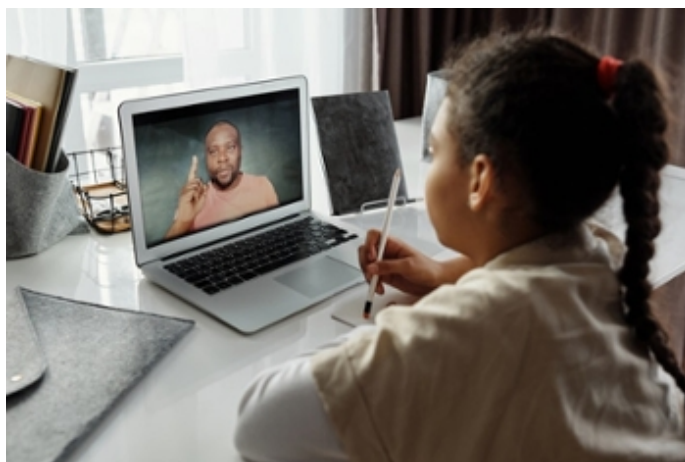
Unlike other smart medical devices, the theragrippers don't require electricity or wireless signals. They release medication autonomously at body temperature.

After testing the technology on animals, the researchers found that subjects treated with the devices had higher concentrations of pain reliever in the bloodstream than the control group.

## AI for education

As the COVID-19 pandemic continues to surge, online learning is becoming the norm. More digital education has created a market for artificial intelligence-based teachers.

The



**The global pandemic** has made online learning a necessity for some. Is this opening the door for AI instructors?

hope is to design AI instructors that facilitate positive learning experiences for real students.

One example of an artificial instructor is Jill Watson, created by a researcher at the Georgia Institute of Technology. Jill was fed thousands of questions and answers gathered from years of online classes. Eventually, the AI was able to answer students' questions without any human assistance.

Researchers from the University of Central Florida wanted to find out how students will perceive AI teachers. They asked respondents to read a news article about an AI teaching assistant used in higher education. The study participants were surveyed about their perception of the technology.

The study found that students were most likely to accept an artificial assistant that was useful and easy to communicate with.

The researchers believe that AI assistants can perform simple repetitive tasks and give teachers more time to meet with students and develop teaching strategies.



# Join the conversation

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### CONTACT

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**Science Node**

Email:

[editors@sciencenode.org](mailto:editors@sciencenode.org)

Website:

[sciencenode.org](http://sciencenode.org)



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