A Fleet of Dinos

Over the past century, paleontologists have found bones from several hundred tyrannosaurs in China, Mongolia, and North America. This summer, while working in remote areas of Montana, researchers hit a bonanza: five tyrannosaurs —a record number for a single field season.

The finds were made by a large team led by paleontologist Jack Horner of the Museum of the Rockies in Bozeman, Montana. Although the fossils have not been completely excavated, preliminary studies suggest they are relatively complete; some, in fact, appear to retain at least 30% of their bones. One may be 10% larger than Sue, the biggest of these giant carnivores known, which is housed at the Field Museum in Chicago (*Science*, 8 September, p. 1695). What's more, "the preservation on some of them is exquisite," Horner says. Horner attributes the researchers' success to their having selected relatively unstudied areas of Garfield County, Montana. "The idea was to go into areas that were difficult to get into and virtually impossible to get anything out of except by helicopter."

Biggest *Tyrannosaurus rex* yet?

Other experts are pleased. "I'm glad to hear that a large number were found—and are bound for a museum. That's very critical," says Chris Brochu of the Field Museum, who studies Sue. Finding more relatively complete specimens, he adds, could help reveal variation among individuals and perhaps settle the debate about whether the male *T. rex* varied in appearance from the female. More bones also could indicate whether *T. rex* was a scavenger or a predator.

New IOM Members

The Institute of Medicine (IOM) added 60 new members this year, raising the total active membership to 613. Foreign associates now total 56. The list of names is at www.iom.edu

The Yuck Response

Researchers have a hard time locating brain areas involved in human emotions. But a patient with brain damage has provided U.K. researchers with an opportunity to pinpoint regions involved in one basic emotion—disgust.

Imaging of normal brains has shown that disgust activates two particular regions: a part of the cortex called the insula and a subcortical region, the putamen. These areas are damaged in people with Huntington's disease, who have an impaired ability to feel disgust.

Now researchers at Cambridge University have probed this phenomenon in a 25-year-old man with stroke damage specifically in the "disgust" areas. Psychologist Andrew Calder and colleagues showed him pictures of people expressing six different emotions. They found that he had no difficulty recognizing happiness, fear, anger, sadness, and surprise. But he had problems recognizing disgust. Furthermore, it didn't matter how the concept was presented: He was poor at recognizing disgust in retching sounds or in numbers recited in a disgusted tone.

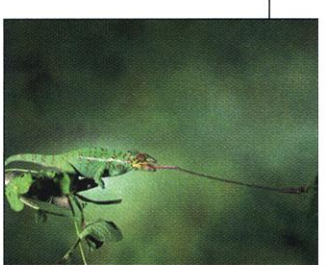
What's more, disgusting photos and disgust-provoking ideas—such as friends who change underwear once a week or feces-shaped chocolate—elicited an "abnormally low" emotional reaction compared with normal controls, the scientists report in the November issue of *Nature Neuroscience*. The man could still intellectually perceive these as disgusting.

Calder speculates that the striking localization for disgust could derive from the fact that it, like fear, is "important for basic survival." An aversive reaction to rotten meat, for example, can be lifesaving. Other major emotions such as anger and sadness show less consistent patterns of brain activation, he says. Jaak Panksepp, a psychobiologist at Bowling Green State University in Ohio, notes that the study shows that the ability to interpret someone else's emotional expression involves the same brain areas as the emotion itself. "I think that many folks experience the emotions of others through corresponding neural system resonances, and this paper is consistent with such a view," says Panksepp.

Face of disgust.

Tongue Power

Imagine picking up a 10-kilogram piece of steak with your tongue. That's more or less what a chameleon can do with its so-called ballistic tongue. Its secret is suction, researchers reveal in the November issue of the *Journal of Experimental Biology*.



Suction at work.

Scientists have determined that other lizards catch prey by using mainly surface tension—the stickiness created when a wet tongue contacts dry prey. But chameleons consume creatures much too large for surface tension alone to handle. So evolutionary biologist Anthony Herrel and colleagues at the University of Antwerp in Belgium and Northern Arizona University in Flagstaff decided to find out what else is going on. Dissecting tongues from several chameleon species, they found that two muscles form a pouch at the tip. Slow-motion film of chameleons capturing crickets, grasshoppers, and other lizards revealed that these muscles retract just before the tongue makes contact with the target.

The team suspected that the tongue pouch was behaving like a suction cup. So they anesthetized chameleons, inserted a glass tube into the pouch, and measured the force required to remove the tube as the pouch muscles were electrically stimulated. It took 10 times greater force to remove a sealed tube than a hollow (nonsuctionable) tube. The team also cut the nerve that controls the pouch muscles and found that although the animals could still extend their tongues, they couldn't latch onto prey. (The nerve later healed normally, says Herrel's colleague Kiisa Nishikawa.)

Those vacuum-generating tongues may be unique, says evolutionary biologist Kurt Schwenk of the University of Connecticut, Storrs. A better understanding of this unusual mechanism, he notes, should help scientists understand how it evolved.

CREDITS: (TOP) MUSEUM OF THE ROCKIES; (MIDDLE) JOE MCDONALD/CORBIS; (BOTTOM) DAVID MATSUMOTO AND PAUL EKMAN/JACFEE