and Atmospheric Administration.

Administration officials are expected to have few other new science initiatives to tout, however. At NSF, for instance, a request for $40 million toward a heavily instrumented $70 million jet to study the upper atmosphere was denied by White House budgeteers to make room for the computer initiative. In addition, agency officials have again shelved plans for a $25 million Polar Cap Observatory in northwest Canada after being thwarted for the past 2 years by Senator Ted Stevens (R–AK).

Congress isn't likely to add funds for such projects. But lawmakers can be counted on to find extra funds for NIH, seen by pinched budgetmakers as having earned several years' worth of increases last year. With strong backers in key positions on the appropriations committees and broad support from a host of lobbying groups, who are calling for another 15% increase, NIH's budget traditionally emerges from Congress fatter than it arrived—no matter which party is in power. This year is likely to be no exception, although some legislators question whether biomedical bureaucrats could effectively spend another major windfall. "A 15% increase [for NIH] would be an even larger victory this year" than last, says a congressional aide. **–DAVID MALAKOFF**

With reporting by Jeffrey Mervis and Eliot Marshall.

PALEOANTHROPOLOGY

Did Early African Hominids Eat Meat?

Food is one of modern humans' all-consuming passions—and that was perhaps even more true for our early ancestors, who had to work much harder for their calories. But exactly what delicacies tempted the early hominid palate has long been a subject of debate, fueled by the fact that anthropologists had to infer ancient diets from indirect evidence such as tooth wear and jaw and tooth shape. Now on page 368, researchers use a clever new method based on the chemical makeup of teeth to determine the kinds of food an early hominid ate in African woodlands 3 million years ago.

Paleoanthropologist Julia Lee-Thorp of the University of Cape Town in South Africa and graduate student Matt Sponheimer of Rutgers University in New Brunswick, New Jersey, examined carbon isotopes in the tooth enamel of *Australopithecus africanus*, a small-brained hominid that walked upright but was probably also at home in the trees. Researchers thought that this species subsisted on forest fruits and leaves, but the isotopic clues show that it ate a varied diet, including either grassland plants or animals that themselves fed on grasses.

Other researchers are excited about the work. "The data are just fascinating," says paleoanthropologist Margaret Schoeninger of the University of Wisconsin, Madison. Adds paleoanthropologist John Kingston of Yale University: "This [direct analysis] is what we want to see." Many theories of human origins invoke a switch to a meat-rich diet to explain the sudden swelling of brain power in our own genus, *Homo*; the new data raise the possibility that meat-eating is not the exclusive province of *Homo* but a strategy adopted by more primitive species too.

The isotope analysis offers a glimpse into ancient animals' diets and habitats, because different kinds of plants use carbon slightly differently. Trees, bushes, and shrubs, called C_3 plants, select against the heavier isotope, carbon-13 (^{13}C), when they convert carbon dioxide into sugars and tissues. C_4 plants such as tropical grasses and sedges, on the other hand, use ^{13}C more easily and have more of it in their tissues. Herbivores incorporate the isotopic signature of these plants into their bodies, and meat eaters absorb the signature of their prey.

To find out what *A. africanus* ate, Sponheimer and Lee-Thorp compared the carbon isotope ratios of four hominid specimens with those of 19 other creatures found in a bone-filled cave about 325 km north of Johannesburg. The data fell into three clusters. One group of animals, including a three-toed horse and a warthog, had relatively high ratios of ^{13}C to ^{12}C, marking them as grassland feeders. Another group, including a rhinoceros and an impala, had low ratios and probably got most of their food from the forest. In the middle were the scavenging hyenas—and the hominids. Thus *A. africanus* must have gotten at least some food from eating grass, grass seed, or the meat of grass-eating animals. "Maybe their hearts and homes were in the trees," says Sponheimer, "but their bellies were tied to the open areas."

And they may have been filling those bellies with meat, although they lived half a million years before the first known meat-eating humans. The tooth wear patterns of *A. africanus* lack the telltale scratches of a grass eater, so the isotope data suggest that it ate some sort of grass-eating animals, says isotope geologist Paul Koch of the University of California, Santa Cruz. No one is suggesting australopithecines ate like the clawed hyenas, but they could have hunted small animals or scavenged already-dead carcasses, he says.

Schoeninger accepts the isotope ratio data but is not so sure that *A. africanus* ate meat. She notes that the early hominids thought to have eaten meat, 1.8-million-year-old *Homo* specimens found in East Africa, had much smaller teeth and chewing muscles. To her, *A. africanus*'s big teeth and powerful jaw suggest that it mainly ate nuts, cracking them open with its teeth. The extra ^{13}C could have come from grass seeds or grass-eating insects, she says. Isotopic ratios of other elements, such as oxygen or strontium and calcium, might eventually separate the carnivores from the herbivores, she says.

Open wide. Tooth enamel from *Australopithecus africanus* (*top*) found in a South African cave (*above*) reveals this early hominid's diet.

Whatever they were eating, the work shows that *A. africanus* spent some time in open areas rather than in dense forests, although it was apparently adapted for climbing. And clearly the hominids were willing to try a range of foods: They had a wider range of isotope values than all but one of the other animals. These hominids, although they may not have been our direct ancestors, apparently possessed one of the key traits of our lineage, says anthropologist Jeffrey McKee of Ohio State University in Columbus: "They were adaptable. They weren't specialized animals." **–GRETCHEN VOGEL**

CREDITS: (RIGHT) DARRYL DERUITER; (INSET) WILLIAM H. KIMBEL/INSTITUTE OF HUMAN ORIGINS