RANDOM SAMPLES

edited by CONSTANCE HOLDEN

A Record for *T. rex*?

A 65-million-year-old *Tyrannosaurus rex* named Sue, said to be the largest and most complete theropod ever found, will be auctioned off at Sotheby's in New York City on 4 October. The bones have spent the past 5 years stashed in crates because of a legal battle over their ownership. But now that Sue, found in 1990 in South Dakota, is going on the block, scientists are worried that the as-yet-unstudied fossils may pass into private hands. "There's a lot of unease about this," says paleontologist Peter Dodson of the University of Pennsylvania, Philadelphia.

Ironically, Sue was seized by the federal government in 1992 to ensure that the creature would be accessible to science. The bones were discovered on a South Dakota Indian reservation by commercial fossil hunters from the Black Hills Institute of Geological Research in Hill City, S.D. Although the institute paid the landowner, Maurice Williams, a Cheyenne River Sioux, $5000 to excavate the fossil, federal officials seized the bones, claiming that it hadn't been determined that they were rightfully taken, according to Roy Pulfrey, an engineer at the Bureau of Indian Affairs in Aberdeen, S.D. Williams holds his land in a tax-free trust arrangement with the federal government, which means government permission is required to sell it or what's under it, says Pulfrey. After confiscating Sue, the government charged institute head Peter Larson with numerous felonies related to trafficking in illegally excavated fossils. He was convicted of not reporting international financial transactions, for which he received a 2-year sentence, last year. Meanwhile, the courts finally decreed that Williams is the rightful owner of Sue.

TERRY WENTZ/BLACK HILLS INSTITUTE

Disputed dino. Larson, bone spotter Sue Hendrickson, and skull in the field.

Larson's institute intended to restore the skeleton, which once housed a 9-ton dinosaur, and put it on public view at its own museum. But now Williams is putting Sue up for grabs. Sotheby's hopes to keep the fossils in the public realm by promising museums three interest-free years to pay what is expected to be a very high price. "As far as I know, there's never been a test on the open market of what *Tyrannosaurus rex* would fetch," says Dodson. A Texas fossil dealer is advertising a *T. rex*—only 70% complete—at $12 million, and Sue could fetch much more.

Rubble of a Galactic Smashup

Astronomers have discovered a lonely arc of debris that may be a remnant of a high-speed galactic collision. The arc of stars and gas, which seems unattached to any galaxy, is the first of its kind to be found by astronomers but conforms to theoretical models of what happens when two large galaxies collide. The work is described in a paper submitted to the *Monthly Notices of the Royal Astronomical Society*.

Many galaxies have long tails of gas and stars, usually stretched out by friction from slow mergers with other galaxies. But galaxies whirling around in clusters move faster than 1000 kilometers per second—much too quick for a gentle merger. However, a violent encounter could leave something akin to the faint arc, some 260,000 light-years long, spotted by Neil Trentham of the Institute of Astronomy in Cambridge and Bahram Mobasher of Imperial College in London, while searching the Coma Cluster with the University of Hawaii's 2.2-meter telescope on Mauna Kea. Says Trentham, "When two big galaxies bang together at high speeds, you should get these huge arcs of debris shooting out."

The finding is welcome news to Neil Katz, an astronomer at the University of Massachusetts, Amherst, whose simulations of high-speed galaxy encounters have predicted such accumulations of debris. Previous observations, he says, haven't penetrated far enough to pick up the faint arc.

Hot and hotter. The Institute for Scientific Information (ISI) in Philadelphia has come up with a new ranking of hot papers and hotbeds of research in biology. Among individuals, Howard Hughes Medical Institute (HHMI) researcher Bert Vogelstein of Johns Hopkins University is the hands-down winner. He's churned out 22 "high-impact" papers from his work on tumor-suppressor genes between 1990 and 1996, accruing more than 17,000 citations. The winner in citations per paper was David S. Bredt, another Hopkins researcher, who averaged 908 cites apiece for seven papers. Among other highly cited papers are those by Salvador Moncada, now at University College, London, the nitric oxide researcher who, many felt, should have been included in last year's Lasker awards.

Among institutions, HHMI led the pack with 91,269 citations in the 7-year period. Harvard ranked second with 60,532 citations. In the impact department, Wellcome Research Labs led with 736 cites per paper, followed by Hopkins with 635.

TOP 10 AUTHORS OF HIGH-IMPACT PAPERS IN BIOMEDICINE (1990–1996)

		Affiliation	High-impact papers	Citations	Cites per paper
1	Bert Vogelstein	HHMI, Johns Hopkins Univ.	22	17,008	773.1
2	Kenneth W. Kinzler	Johns Hopkins University	12	7,166	597.2
3	Joseph Schlessinger	New York University	11	6,857	623.4
4	Solomon H. Snyder	Johns Hopkins University	10	7,347	734.7
5	David Baltimore	Caltech	10	4,221	422.1
6	Salvador Moncada	University College London	9	7,640	848.9
7	Ronald M. Evans	HHMI, Salk Institute	9	5,234	581.6
8	Frank McCormick	Onyx Pharmaceuticals	9	4,987	554.1
9	Michael Karin	UC San Diego	9	4,772	530.2
10	Tony Pawson	Mt. Sinai Hospital, Toronto	9	4,727	525.2

Tenure for Gupta

A Stanford University anthropologist who studies Indian bureaucracy has learned more than he wanted to know about his own institution during a tenure battle that reflects a split in his field over research methodologies.

Akhil Gupta, whose tenure bid was denied by the dean earlier this year, has now had his wishes granted. Last December, Gupta, 38, was recommended for tenure by his department, but John Shoven, dean of humanities and sciences, twice overruled the decision. Although Shoven declined to comment on his reasons, Gupta pointed to

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letters from anthropologists who were critical of Gupta's methods. Finally, last month, the case was bounced up to the highest level of Stanford's administration—the Stanford Advisory Board, which voted to grant him tenure.

The high-profile case comes at a time when Stanford's anthropology department is deeply divided (*Science*, 20 June, p. 1783). On one side are cultural anthropologists, such as Gupta, who often use "narrative" techniques to analyze culture in terms of gender, race, and power relationships. On the other are physical and biological anthropologists who rely on scientific testing of hypotheses to study human culture and evolution.

For Gupta, the final decision came as an immense relief: "It really was a painful process," but he's "thrilled" with the outcome. He's less thrilled with Stanford's modus operandi: "We need a systematic overhaul of the tenure structure to make it more transparent and more accountable," he says. In the meantime, he has seized the opportunity to get away from it all for a year, studying Indian bureaucracy as a Woodrow Wilson fellow in Washington, D.C.

Smoke Resistance in Asian Arteries

Smoking appears to be more harmful to the arteries of whites than to Chinese, according to a study in the 1 September issue of the *Annals of Internal Medicine*. The next step is to identify the protective factor or factors, and that could lead to new ways of minimizing smoke-related blood vessel damage, the authors say.

YUN FENG ZHENG/THE IMAGE BANK

Springy vessels. Elderly Chinese enjoys unfiltered smoke.

The research was inspired by the fact that, although 70% of Chinese males smoke, coronary artery disease is only 20% as prevalent in southern China as it is in the West. Smoking damages the endothelial cells that line arteries, and helps bring on heart disease by inhibiting arteries' ability to dilate. So Kam Woo of the Prince of Wales Hospital in Hong Kong and colleagues decided to see if Chinese and white arteries actually react differently to smoking.

The subjects were 144 healthy young adult subjects, half Chinese and half British or Australian, who were either smokers (with histories averaging out to a pack-a-day habit for about 8 years); nonsmokers; or "passive" smokers. The researchers tested arterial dilation on the brachial artery in the arm, using ultrasound to measure the "flow increase" that occurs after a blood pressure cuff is released.

Blood vessel dilation in nonsmokers was the same—about 8%—regardless of ethnic group. But smokers differed dramatically: Smoking seemed to have no effect on the vessels of the Chinese, while in whites dilation decreased by about two-thirds. The race difference also appeared in passive smokers.

Woo and colleagues note that the Chinese advantage shows despite the fact that many Chinese smoke locally made cigarettes that are higher in tar and nicotine than those smoked by white subjects. But they suggest that the Chinese may be benefiting from antioxidant-containing teas and high intake of foods such as soy protein and fish oil.

The diet difference is certainly "the simplest explanation," says cardiologist William Parmley of the University of California, San Francisco. But genes are also a possibility, says population geneticist Mark Shriver of the Allegheny University of the Health Sciences in Pittsburgh, who observes that the only way to find out what's protecting the Chinese would be a study of a thoroughly acculturated migrant population.

Gene for Key Vitamin D Enzyme Cloned

Three groups of researchers say they have at long last—and independently—pinpointed a key gene that enables vitamin D to make bones strong. The gene, when mutated, causes a rare form of rickets that does not respond to vitamin D treatment. Finding it is pivotal to understanding how levels of the vitamin are regulated in the body.

In the first report to be published, geneticist Shigeaki Kato and his colleagues at the University of Tokyo describe on page 1827 the gene for an enzyme called $25(OH)D_3$ 1α-hydroxylase that turns vitamin D into an active hormone. Genes for two other hydroxylases that act on the vitamin D molecule have already been identified and sequenced, but this, the most critical one because it activates the vitamin, was hard to pin down because its product is present in such small amounts, says Kato.

When the body needs more vitamin D, the $25(OH)D_3$ 1α-hydroxylase gene turns on. But as soon as the hydroxylase has done its job, the activated vitamin binds to a receptor and together they turn the gene off.

To sustain the activity of the gene, Kato's team bred a strain of mice lacking vitamin D receptors. As a result, Kato explains, activation of vitamin D failed to turn off the hydroxylase gene, and its continued output of messenger RNA enabled them to track the gene down. "What this Japanese group did was clever," says biochemist John Omdahl at the University of New Mexico, Albuquerque.

Francis Glorieux's team at McGill University in Montreal, Canada, has also homed in on the same gene. In a report to appear in the October *Journal of Bone and Mineral Research*, they explain that they raised the activity of the gene to a detectable level by treating rats to make them deficient in vitamin D. A third group, led by biochemist Tatsua Suda of Showa University in Tokyo, also claims to have the gene in hand, says Omdahl.

Dustup at Duke Laser Facility

John Madey, the physicist who invented the tunable free electron laser, has been removed as director of Duke University's Free Electron Laser (FEL) Laboratory in a dispute over how the lab should be managed. Sources say there is conflict over priorities between medical and physics research. Optics professor Robert Guenther has been named acting director.

Madey will no longer be principal investigator at FEL and has been offered the title of "chief scientist" at the Defense Department–funded center. And he is not happy with the new developments. Last week he was in Washington, D.C., discussing his problems with government officials. He will not comment other than to say "negotiations are ongoing," but he is known to be considering taking his laser and locating elsewhere.

Capturing the FEL facility, budgeted at over $3 million a year, was a coup for Duke. Madey built the initial equipment, an infrared FEL called Mark III, when he was at Stanford University and brought it with him to Duke in 1992. He later brought in physicist Vladimir Litvinenko, who is in charge of the center's other laser, a Russian FEL that operates in the ultraviolet range.

The total facility was sold as a medical project, and the goals of the Duke lab were to develop more sophisticated lasers, explore materials, and particularly to develop new surgical techniques and other medical applications. But according to laboratory staffers who asked not to be quoted, the medical promise of the tunable lasers has not panned out as hoped, and some believe it has been oversold. Disagreements over the future direction of the lab have been such that late last year they led, in part, to the shutting down of both machines for over 4 months.

Glenn Edwards, leader of a medical FEL program at Vanderbilt University in Nashville, Tennessee, notes that clinicians are still waiting for their first opportunity to conduct a human trial with a FEL. Nonetheless, he thinks medical applications are moving ahead. The Vanderbilt center recently received two major private grants to continue its investigation of laser surgery, and he hopes a clinical trial will be launched in 1999.