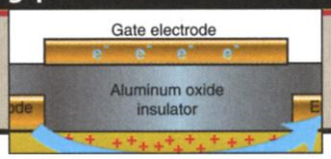
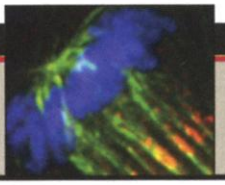
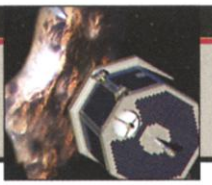






be that of an adolescent, might resemble *H. habilis* simply because it was still growing.

Understanding which species were present at Dmanisi—and their biology—might eventually be key to figuring out how they left Africa in the first place, researchers say. For example, although skeletal remains from African *H. erectus* indicate that this long-legged species was a sturdy walker, the so-far-scanty evidence from *H. habilis* specimens in Africa suggests that it was relatively short legged.

"If the new skull is associated with bones indicating *H. habilis*–like body proportions, we're really going to have to rethink ideas about how the oldest humans spread beyond Africa," says Richard Potts of the Smithsonian Institution in Washington, D.C. "Either this new thing was simply spreading as African habitats spread north into the Caucasus, or a *H. habilis*–like species was present in Eurasia early."

Some of the questions swirling around the new skull might be answered if the site yields leg bones or other skeletal parts. Word is already leaking out from Dmanisi that a few such fossils were found last year. One thing is already clear, says Rightmire: "It wasn't a full-blown *Homo erectus* and a big brain … that enabled people to push out of Africa. The first pushing was done by little people."

–MICHAEL BALTER AND ANN GIBBONS

CANCER RISKS

Acrylamide in Food: Uncharted Territory

More questions than answers emerged from a high-profile group of food experts who met in Geneva last week to consider what should be done about acrylamide. This compound, identified long ago as a potential industrial hazard, has now been found in many cooked foods. The World Health Organization (WHO) responded by sponsoring a safety data review. At the end of a 3-day closed meeting, the WHO experts issued an urgent call for more research, but the most striking aspect of their 12-page summary report, released 28 June, might be how little new information it gives on health risks.

Acrylamide has been used since the 1950s to make paper and dyes and to purify drinking water. Its only known adverse effect in humans—most of whom were exposed in the workplace—is neurological damage. But because it can induce cancer and heritable mutations in lab animals, acrylamide is classed as "probably carcinogenic to humans" by the International Agency for Research on Cancer (IARC) in Lyon, France. Considering the available evidence, "we have to think about the possibility that this could be a human carcinogen," said Swiss health official Dieter Arnold, who chaired the meeting, at a press conference in Geneva.

The news that acrylamide is pervasive came as a shock. In April, Swedish researchers announced that the compound was present at high levels in starch-based foods cooked at high temperatures, such as potato chips and certain breads. Initially dismissed as a food scare, the issue took on new urgency when British, Norwegian, and Swiss scientists obtained similar findings in cereals, French fries, and cookies. To find carcinogens in food is not new, says Arnold. But it is new to find such high levels of a cancer-causing substance—and in staples. The expert group also considered risks for children, who may "take in more acrylamide per kilogram of body weight," says Peter Farmer, a toxicologist at the University of Leicester, U.K.

Risk unknown. High-temperature cooking can produce acrylamide in starchy foods.

Acrylamide binds to nerve cell proteins, interfering with transport of essential materials, says Peter Spencer, a neurotoxicologist at the Oregon Health and Science University in Portland. In rats, he says, protein binding might also be responsible for injury to testes, whereas heritable mutations and tumors are likely related to DNA damage through another mechanism. But extrapolating from animal studies is difficult, and there is no solid evidence of acrylamide-related cancer in humans. The question is whether the levels of acrylamide found in foods pose a serious risk over time.

Although scientists "understand how to measure acrylamide in foodstuffs now," says Laurence Castle of the Central Science Laboratory in York, U.K., they have not set rigorous analytical methods. And almost nothing is known about how acrylamide is formed through cooking, except that it develops at temperatures above 120°C, and amounts increase with cooking time.

Nor is food the only source: Tobacco smoke and environmental exposure are two others. Acrylamide could even be generated naturally in the body. Although minute amounts of acrylamide are present in drinking water, "it is most unlikely that anyone would consume dangerous amounts of acrylamide by drinking tap water," according to Jerry Rice of IARC. Estimating exposure is also tricky, because diets vary among people and across cultures.

For now, no one is calling for a change in dietary habits. The WHO expert committee has recommended cooking food thoroughly but not excessively, eating a balanced and varied diet, investigating ways of reducing acrylamide levels, and setting up an international network to share information. The U.S. Food and Drug Administration (FDA) has developed a methodology and begun testing a limited set of foods, according to an FDA official. McDonald's Corp., meanwhile, has issued a statement claiming that its French fries have been unfairly targeted.

Acrylamide in food has probably been around since fire, says Farmer: "I think it's an achievement of toxicological science to have discovered it now." But the precautionary principle dictates that once you have established the presence of a known carcinogen, you are bound to investigate it. "What we know today may change tomorrow," says Rice.

–GISELLE WEISS

Giselle Weiss is a writer in Allschwil, Switzerland.

HOMELAND SECURITY

Scientists Pan Plans For New U.S. Agency

The U.S. science community has begun putting proposals to create the new Department of Homeland Security (DHS) under the microscope. In a string of hearings last week, research leaders told Congress there were serious flaws with the plans for the department's science and technology programs.

On 6 June, President George W. Bush

CREDIT: PHOTODISC

unveiled a hastily written outline for the new $37 billion antiterrorism agency that made vague references to various government research and development (R&D) programs (*Science*, 14 June, p. 1944). Two weeks later, when White House officials delivered a more detailed legislative proposal to Congress, they had dropped controversial ideas such as stuffing the Department of Energy's Lawrence Livermore National Laboratory in California into the proposed department. And more changes are likely. "This is very much a work in progress," acknowledges White House science adviser John Marburger.

Both the White House plan—and an alternate blueprint put forward by Senator Joseph Lieberman (D–CT)—include plenty of provisions that make researchers nervous. Many biomedical scientists, for instance, oppose giving an agency with a strong focus on border security control over bioterror research, response, and regulatory programs that are now at the National Institutes of Health (NIH) and the Centers for Disease Control and Prevention (CDC). "I'm skeptical that such an odd coupling will work," Tara O'Toole, head of the Johns Hopkins Center for Civilian Biodefense Strategies in Baltimore, Maryland, told the House Energy and Commerce Committee. "It is a very tall order to ask a single agency to develop national security strategy and … create a sophisticated R&D capability."

Others questioned how the new agency would manage research. Both Lieberman and the White House have presented plans that are "unworkable," science policy guru Lewis Branscomb of Harvard University told the Senate Government Affairs Committee. He was particularly skeptical of Lieberman's idea for a multiagency committee to dole out DHS science funding. "I have never seen an interagency committee in the federal government capable of administering anything," said the one-time head of the National Bureau of Standards.

Legislators seemed to relish such blunt talk. Lieberman said he was already thinking about reworking his bill's R&D provisions to accommodate SARPA—a Security Advanced Research Projects Agency modeled after the Pentagon's agile Defense Advanced Research Projects Agency. And Representative Sherwood Boehlert (R–NY), chair of the House Science Committee, said that critics have convinced him that the White House proposal "simply does not give R&D a high enough profile." Boehlert is especially keen for the agency's research portfolio to be directed by a single manager, an idea backed by a new report from a panel that Branscomb co-chaired (*Science*, 28 June, p. 2311).

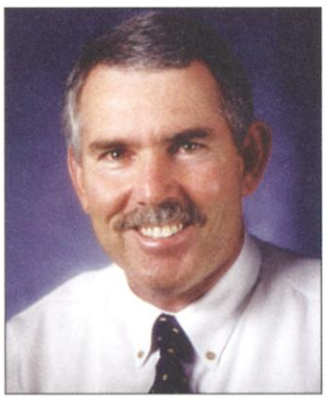
All these ideas will go into the congressional blender, which is expected to spit out a final plan before the end of the year.

–DAVID MALAKOFF

GENOMICS CENTERS

Disease Gene Research Heats Up in the Desert

A new genomics complex with big ambitions got a boost on 26 June when Arizona lured geneticist Jeffrey Trent, scientific director of the National Human Genome Research Institute (NHGRI), back home. Earlier this month, the Phoenix area landed a genomics center that will identify genes active in cancerous tissue. Now, Trent has announced that he will leave NHGRI to head a complementary, newly formed research institute aimed at turning such data into treatments.



Sunny future. Geneticist Jeffrey Trent and two research institutes are setting up shop in Phoenix.

The Translational Genomics Research Institute (TGRI) was formed to provide the research base needed to convince Trent, a senior science adviser of the nonprofit International Genomics Consortium (IGC), to locate the consortium in the Phoenix area. IGC's goal is to determine patterns of gene expression in cancer tissue and put that information in the public domain. Biomedical researchers could then use the information to identify specific cancer-causing genes and ultimately develop drug therapies targeting those genes.

IGC, now located in Scottsdale, Arizona, had been courted by cities with strong biomedical research institutions, including Atlanta and Houston. To get IGC to Arizona, the governor, the city of Phoenix, and private donors put together a start-up package of $92 million for TGRI and persuaded Trent to head it. Arizona had an advantage: Trent grew up in Phoenix, got his Ph.D. at the University of Arizona in Tucson, and once worked at UA's Arizona Cancer Center.

Trent says the new institute will be freestanding but have ties to the state's universities, much like the Fred Hutchinson Cancer Research Center in Seattle or the Salk Institute for Biological Studies in La Jolla, California. Although Trent is the only scientist

ScienceScope

Cloning Indecision President George W. Bush's advisory Council on Bioethics is expected to offer its first thoughts on human cloning later this month—but the outcome has been the focus of extensive behind-the-scenes wrangling this week. A majority of the 18-member group, which began meeting early this year (*Science*, 25 January, p. 601), appears to oppose the complete ban on "research cloning" advocated by Bush and the panel's leader, Leon Kass of the University of Chicago, an informal *Science* survey suggests. But a majority of the panel appeared headed for a controversial compromise: a recommendation to ban reproductive cloning and a 4-year moratorium on research involving cloned embryos, to allow for further public debate and for the government to enact regulations.

Some panel members, however, fear that the group's backing of a moratorium might be a ploy to stall the research altogether and does not reflect the sizable minority on the panel that supports research cloning. "A moratorium is a de facto ban," says one panelist. "If the headline is, 'Bush Committee Bans Cloning,' that's wrong," says another.

In the last-minute maneuvering, at least two panelists have switched positions since the last public meeting, and the issue is generating tension and uncertainty within the council. As *Science* went to press, one panel member said: "Things are shifting around even now."

Indian Ousters The government's leading advocate for reforming India's animal-care facilities, Maneka Gandhi, has lost her Cabinet post after a public feud with the health minister, who was also dropped. Ironically, the reshuffling comes on the eve of a new system to accredit animal facilities, a key element in Gandhi's campaign to reform the country's 600 animal houses.

Indian Prime Minister A. B. Vajpayee had privately scolded Gandhi, who chairs a government animal welfare committee, and health chief C. P. Thakur for fighting over who should operate the accreditation system. That job has been assigned to the Department of Science and Technology.

"Thakur was asked to resign for underperformance, and Gandhi for overperformance," says S. Chinny Krishna, vice chair of India's Animal Welfare Board, who applauded Gandhi's efforts. Although her firing is a "setback … the momentum has been built."

CREDITS: (TOP TO BOTTOM) ALPERN LEHMAN/TGRI; P. BAGLA