that the site's proximity to an imaging center and other labs would foster collaboration and better experiments. But the university was on less-sure footing when one official claimed that because center opponents are drawn from the "less radical end of the animal-rights movement," their demonstrations are likely to be "less frequent, smaller, and less aggressive." University officials did not explain how that jibed with their decision to bar researchers from testifying on safety grounds.

The inquiry was set to wrap up on 6 December, after which Nixon will compile a report for Deputy Prime Minister John Prescott. Although his boss has embraced the center, Prescott—who is expected to make a ruling early in 2003—has not expressed an opinion publicly. His decision will be final and binding on the university and the council.

–KERI PAGE

Keri Page is an intern in the Cambridge, U.K., office of *Science*.

GENOMICS

Sequence Tells Mouse, Human Genome Secrets

Sequencing a genome is a little like opening a present. Researchers have been tantalized for 3 years as they've unwrapped mouse DNA. Now, they're examining the contents and finding them even more exciting. This week, researchers from around the world describe what they have found so far: discoveries about the mouse genome that are providing insights into our own genetic code and making mice an even better biomedical research tool. "The data are turning out to be as valuable as we hoped," notes Karen Artzt, a geneticist at the University of Texas, Austin.

The mouse genome is only the second mammalian one sequenced to date. The ability to compare it to the closely related human genome "makes the [work] most meaningful," says Maja Bucan, a geneticist at the University of Pennsylvania in Philadelphia. An analysis of the sequence, published in the 5 December issue of *Nature*, is accompanied by five papers delving into the mouse's genetic characteristics and comparing them to those of humans. Some genes and other bits of sequence are similar across the board; elsewhere, there are intriguing differences.

Humans and mice have about 30,000 genes each—about 80% of which match up, reports a team led by geneticists Robert Waterston of the Washington University Genome Sequencing Center in St. Louis, Missouri, and Kerstin Lindblad-Toh of the Whitehead Institute/MIT Center for Genome Research in Cambridge, Massachusetts. But the human genome is longer—with about 3 billion bases, compared to the mouse's 2.5 billion. And the types of genes vary: The mouse has many more genes involved in reproduction, immunity, and olfaction, for example, and the genes in the first two categories have evolved much faster in mice than in humans.

Researchers have taken advantage of the similarities between human and mouse DNA to study where in the body genes are active.

Rodent roundup. The newly analyzed mouse genome and newly assembled rat sequence are helping researchers make sense of humans' genetic code.

"Knowing when and where a gene is expressed facilitates enormously further functional analysis," explains Marie-Laure Yaspo of the Max Planck Institute for Molecular Genetics in Berlin. A team led by Andrea Ballabio of the Telethon Institute of Genetics and Medicine in Naples, Italy, matched mouse sequence against the known genes along human chromosome 21. The researchers tracked the expression of each of these mouse genes—about 160 in all—at several stages of development, viewing expression in three dimensions in whole embryos. They also monitored which of these genes were active in 11 types of adult tissue, such as brain, muscle, and heart. In this way, they identified genes of interest, including one called *Adarb1* that's involved in heart development and might play a role in Down syndrome.

Yaspo and her colleagues took a similar tack in studying genes from chromosome 21, the shortest human chromosome, but they concentrated on brain development shortly after birth. They found that about half the mouse genes were active throughout the brain and half were expressed in specific regions.

Such studies can help researchers determine the functions of normal genes. But the data can also be used to home in on genes that cause disease, says Bucan. Once they find a few candidates, knowing where each candidate is active "will make getting the [right] gene easier," she points out.

Another study took a broad view of human chromosome 21, comparing its DNA and that of the mouse genome. Stylianos Antonarakis and Emmanouil Dermitzakis of the University of Geneva, Switzerland, and their colleagues report that only about half of the more than 3000 conserved sequences turned out to be genes. That other stretches of DNA are maintained through evolution means they must be important, possibly as regulators of gene activity, and could also play a role in human disorders, says Antonarakis. Indeed, notes Lindblad-Toh, "one of the highlights [of this week's reports] is that such a large fraction of the genome is conserved."

Other mouse-centered DNA studies should make the rodent even better suited for genetic studies, says Joseph Nadeau of Case Western Reserve University in Cleveland, Ohio. In one, Claire Wade of the Whitehead genome center compared the draft sequence, which comes from the B6 strain, with DNA from another mouse strain, cataloging the differences between individual bases. She and her colleagues found 80,000 of these single-nucleotide polymorphisms (SNPs), many of them clumped together in SNP-rich regions. These landmarks and their distribution should help researchers locate disease genes, Nadeau notes.

Adding to the genetic wealth, a team from Japan's Institute of Physical and Chemical Research (RIKEN) has released almost 61,000 sequences, called full-length cDNAs, derived from mouse RNA. Many of these sequences represent proteins made by the mouse genome. Surprisingly, the total number of cDNAs proved to be larger than the number of genes, indicating that some genes

CREDITS: (LEFT TO RIGHT) JACKSON LABORATORY; LWA-PAUL CHMIELOWIEC/CORBIS

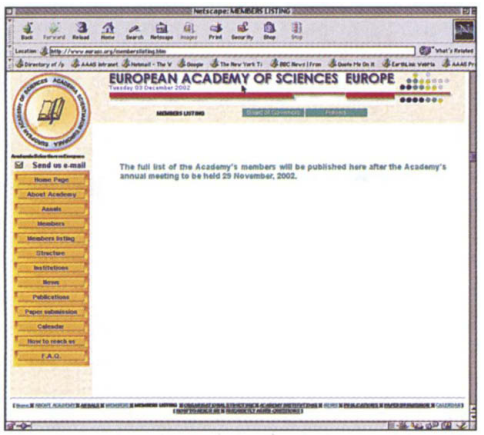
are put together in different ways as they are expressed. "This is a very important point," says project leader Yoshihide Hayashizaki.

While the mouse genome sequencers celebrate their accomplishments, the U.S. team sequencing the rat genome also has cause to cheer. Last week, Richard Gibbs, director of the genome center at Baylor College of Medicine in Houston, Texas, and his colleagues announced that they had completed a high-quality draft of the rat genome. "Mouse and man are fairly far apart," Artzt explains. Having two rodent genomes "will be particularly useful" in interpreting sequences from all three mammalian species—another gift waiting to be pulled out of its box. **–ELIZABETH PENNISI**

EUROPEAN RESEARCH

Mystery Academy Holds First Powwow in Private

BRUSSELS—The headquarters of science academies often are ornate structures and their annual meetings grand affairs involving hundreds of luminaries. Not so the European Academy of Sciences (EAS). Its humble address here is a mailbox on the fifth floor of a drab office building. And its first annual meeting, held on 29 November in a room borrowed from the European Commission (EC), drew 14 people who met behind closed doors.



Stay tuned. As *Science* went to press, EAS had not yet posted its full member roll.

CREDITS: (TOP TO BOTTOM) PALLAVA BAGLA; WWW.EURASC.ORG

The newest academy on the block is not off to an auspicious start. On 31 October, the U.K.'s Royal Society issued a statement warning scientists "to exercise due caution before making financial commitments" to EAS, which began earlier this year as a dues-paying organization but now bestows memberships free of charge. The scientists behind the organization admit that they stumbled out of the starting gate. "We made a few mistakes … that obviously led to misunderstandings," says Philip Carrion, scientific adviser to EAS.

The academy is an attempt to transform a pilot project on technology transfer into a broader forum on research commercialization. Earlier this year, Carrion, a materials scientist at the University of Udine, Italy, and 30 colleagues completed an EC-sponsored project in Krakow, Poland, that helped obtain loans for small businesses by providing them with advanced technology from Western Europe. "We now want to expand" that model through EAS, Carrion says. A society of scholars, he explains, is "very important to assure the industrial partners of our academy that the technology is really state-of-the-art."

A few individuals tapped for membership felt the honor warranted telling the world. For instance, the Cedars-Sinai Medical Center in Los Angeles put out a press release in August announcing neurosurgeon Keith Black's selection to the body. Wolfgang Sigmund, a materials scientist at the University of Florida, Gainesville, says that EAS "described my field of research more accurately than I ever did," and he presumed the organization was legitimate partly because he was the only person at his university offered membership. Others are less charitable. Guenter Albrecht-Buehler, a biologist at Northwestern University School of Medicine in Chicago, says that although he was delighted when the academy nominated him in September, he now has misgivings. He told *Science* that as a precaution he has canceled the credit card he used to make the dues payment of $115.

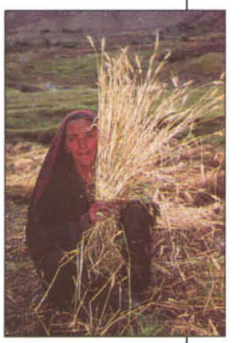
The academy has sought to legitimize itself by applying for membership in the All European Academy, an umbrella organization for national academies from 38 European countries. However, a spokesperson for the All European Academy says that EAS's application was rejected because it is not a national organization. EAS also invited the Royal Society to send an observer to its annual meeting. The society did so; that person was unavailable for an interview before *Science* went to press.

EAS officials barred a reporter from *Science* from attending the meeting. According to participants interviewed after they emerged from the 3-hour event, discussions centered on fundamental issues such as the academy's structure and funding. Apparently, the body has decided to begin publishing annals early next year and intends to hold a nanotechnology meeting in Paris in May 2003.

A total of four of the academy's claimed 250 members attended the gathering, one of whom was Carrion. A second, computer scientist Boris Verkhovsky of the New Jersey Institute of Technology in Newark, told *Science* that he's convinced that "this academy will succeed." Another member present and accounted for, geophysicist Enders Robinson of Columbia University in New York City, says that "there is no such organization in Europe with a similar approach." Few would debate that point. **–PHILIPP WEIS**

ScienceScope

Indian Biodiversity After years of debate, India is close to adopting a biodiversity protection law that regulates foreign access to, and use of, the nation's biological wealth and indigenous knowledge. This week, the lower house of parliament approved a bill requiring overseas collaborators to get permits before conducting research or commercializing discoveries. Some researchers worry that the rules, intended to clarify complex issues, might also add to bureaucratic red tape.



The new rules would require any foreign entity to get permits from India's environment ministry before working with biological resources. The ministry would also assign ownership rights to any related intellectual property. Indian citizens must obtain permission to transfer materials or knowledge to foreign partners.

The new law should bolster collaborations, says Kamaljit Bawa, a biologist at the University of Massachusetts, Boston, and a trustee of the Ashoka Trust for Research in Ecology and the Environment in Bangalore, but it could also delay studies. Researchers in India, he says, already "face far too many hurdles even without regulation." Observers predict that the bill will soon sail through Parliament's upper house.

Drug Abuse Chief? Nora Volkow, a psychiatrist who now heads life sciences at Brookhaven National Lab in Upton, New York, has been offered the top job at the National Institute on Drug Abuse—but she hasn't yet decided if she'll take it. The institute, which will have a budget of $970 million in 2003, has lacked a director since Alan Leshner stepped down last year to head AAAS (publisher of *Science*).

Volkow, 46, trained in her native Mexico and uses brain imaging to study the neurobiology of addiction. She has shown that drug addicts tend to have fewer than normal dopamine receptors. She has also found that dopamine signaling could be linked to obesity. "She's a hot-shot researcher who has quite a vision and is not afraid to express it," says Alan Kraut, director of the American Psychological Society.

Volkow's appointment would also fit with the growing emphasis on linking basic and clinical research, says neuroscientist Eric Nestler of the University of Texas, Dallas. "Nora embodies translational research," he says. Volkow expects to make a decision by 1 January.