Patent Office, which must decide whether or not to approve Venter's application (see page 485). But assuming for the moment that a patent is granted, there remains the question of whether patents for unmapped genes are a good thing, in any form. Venter argues that a patent ensures that a gene will be available for all researchers and for any company willing to license it.

Simply placing a sequence in the public domain, as most researchers now do when they publish it and submit it to a database, usually means that no company can get a patent on the gene unless it has near-clinical use, such as identifying its expression products or developing a test based on it. Even then, patents based on 'methods of use' tend to be open to challenge. Few companies are likely to risk millions of dollars in development costs on a gene product they may not be able to patent. On the other hand, if Venter's patent turns out to be just the first of a string of ever more specific patents as the gene is progressively characterized, then that is just one more expense and complication, and another question mark for a prospective investor. "What if the gene turns out to be linked to another gene that the French have licensed?" asks one biotechnology lawyer. "I'm not going to invest a million dollars with that kind of uncertainty."

Since June, Venter has found nearly 2,000 more genes, and a second patent application is in the works, something that seems likely to fan the flames of the controversy. Hoping to air some of the issues, the NIH technology transfer office will hold a one-day conference, to which the public and industry are invited, on 14 November. And in the meantime, NIH is considering asking the Patent Office for expedited consideration of the application, which could generate a decision in six months, rather than the usual two years.

Whatever the conclusion, Venter seems to have made his point: cDNA has a place in the genome project. Next month, the Genome Center will consider its first applications for cDNA sequencing. (The Department of Energy and the National Institute of Neurological Disorders and Stroke, where Venter works, have been funding cDNA work for several years.)

"If the patent office allows Venter's application, by far the greatest return on investment would be to patent cDNA," says Thomas Caskey, a Baylor College of Medicine genetics researcher. "It's a huge gamble to make an error on this." The fact that one-fifth of France's new \$20 million genome effort will be aimed at cDNA sequencing, as is much of the UK, European Communities and Japanese programmes, has not gone unnoticed, either. "If the patent office says yes," predicts Caskey, "then it's Katy bar the door."

Christopher Anderson

In space, no one can hear you oink

Washington

THANKS to Congress, US astronauts will soon not only have fewer of those annoying science projects to worry about, but they may also have their choice of Coke or Pepsi in orbit. This news may come as some surprise to the crews, however. Not only did the National Aeronautics and Space Administration (NASA) not ask for an 'advanced liquid dispensing technology evaluation', but agency officials know almost nothing about it. So why is it in NASA's new 1992 budget? Because the soft drink manufacturers lobbied key members of the Senate Appropriations committee, who quietly inserted the language last month into the funding bill.

In total, members of the House and Senate appropriations committees put more than a dozen unsolicited projects into the space budget to steer NASA money into their own home districts, a process known as 'pork barrel' funding. Last week, two peeved congressmen finally decided to take them on. In speeches on the House floor, Robert Walker (Republican, Pennsylvania) and George Brown (Democrat, California) savaged their colleagues for earmarking \$137 million in the budget in the same year that they eliminated or delayed at least ten space science projects, claiming lack of funds.

The earmarked projects "were never requested by the administration, never authorized, and never discussed on the floor," complained Brown. Yet the appropriations committees found themselves unable to afford real NASA programmes such as the space infrared telescope, the orbiting solar laboratory, the aerospace

plane and the flight telerobotic server. "These are all projects that scientists have spent decades planning and developing. These are all projects that could have been funded with a little more restraint on the part of the conferees," Brown charged.

Some of the chief offenders on the Brown and Walker pork barrel hit list are: ■ \$20 million for the Christopher Columbus Center for Marine Research in Baltimore, Maryland, home district of Barbara Mikulski, chair of the Senate appropriations subcommittee for NASA. Although Mikulski failed to get this in the National Oceanic and Atmospheric Administration budget last year, she had better luck this year with NASA. The space agency is now in the marine research field, whether it likes it or not.

■ \$28.4 million for the Consortium for International Earth Science Network in Michigan, home of Bob Traxler, chairman of the House appropriations subcommittee for NASA. Total funding for this project is now more than \$41 million, "all awarded without adequate competitions and virtually no congressional oversight," Brown protested. "NASA itself has little idea where this funding is going."

■ \$22.5 million for the National Technology Transfer Center and \$7.5 million to equip a "classroom of the future" at the 1,400-student Wheeling Jesuit College, both in West Virginia, home of Senate Appropriations chairman Robert Byrd, who has promised to bring \$1,000 million in earmarked projects to the state and is well on his way to succeeding. This year's total from the NASA budget alone is \$42 million.

Christopher Anderson

'Sunlight' sees Sun in a different light

THIS image of the Sun's corona was taken by the Soft X-Ray Telescope aboard the Japanese satellite *yōkō* ('sunlight') after it was launched on 30 August from the Kagoshima space centre in Japan (*Nature* **353**, 102; 12 September 1991). The telescope, a joint experiment between scientists at Japan's National Astronomical Observatory and the US National Aeronautics and Space Administration, reveals details of the X-ray corona. Soft X-rays are produced when the temperature of the gases exceeds about 2 million degrees Fahrenheit. The loop-like structures in the photograph are formed by the Sun's magnetic field shaping hot coronal gases into 'magnetic bottles', and the brightness of the loops indicates the temperature and the density of the gases within them. In visible light, large sunspots would appear under the brightest loops.

NASA

IMAGE
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