had terminated. But an OMB official warned on 15 November that the White House is unlikely to support Pluto funding in 2003 and that there is barely enough money to fund a mission to Jupiter's moon Europa, slated for launch around 2008. "The bottom line is we have no good options for planetary science in '03," OMB examiner Brant Sponberg told a National Research Council panel. As a result, he warned, "you guys are likely to lose money [for 2003 planetary efforts], not gain it." That would put the Europa mission, already estimated to cost about $1.1 billion, in jeopardy.

O'Keefe, who has been a defense appropriations aide in the Senate and more recently taught business and government at Syracuse University in New York state, has unusually strong connections to senior Administration officials for a NASA chief. "The Bush Administration clearly didn't want a space cadet," says John Logsdon, a political science professor at George Washington University in Washington, D.C. And that, after 10 years of a strong visionary with limited political clout, could work to NASA's advantage. **–ANDREW LAWLER**

ASTRONOMY

Dusty Young Star Gets New Birth Mates

Astronomers craving their first image of a giant planet beyond our solar system now have fresh targets to explore: newly identified siblings of Beta Pictoris, the most famous dust-shrouded star in the sky. A survey of the motions of nearby stars suggests that more than two dozen stars were conceived in the same womb as Beta Pic, thus exposing the closest and youngest stellar group yet known. Their youth and proximity to Earth make these stars "fantastically suitable for direct searches for warm, newborn planets," says astronomer Ray Jayawardhana of the University of California (UC), Berkeley.

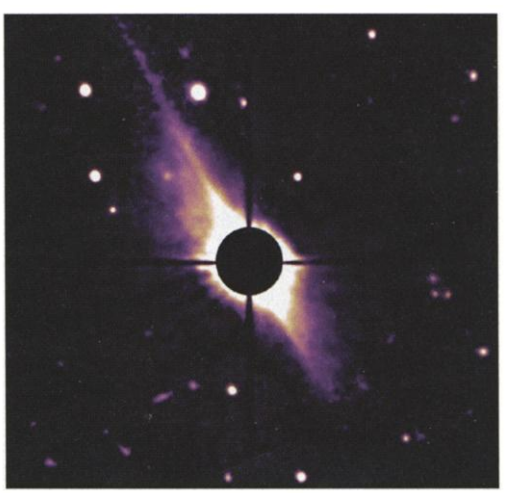
Beta Pic's fame dates to 1983, when the Infrared Astronomical Satellite photographed its vast cocoon of dust—the first glimpse of a suspected planetary system in the making. Theories predict that most stars arise in groups, so astronomers expected the apparently juvenile Beta Pic to have nearby companions hatched in a cluster from the same gaseous nursery. However, the first confirmed nest mates didn't turn up until 1999, when a team analyzed two youthful dwarf stars with trajectories that closely mimicked Beta Pic's path in space. The dwarfs raised hopes that more siblings were out there.

The family has indeed grown, according to a report in the 20 November issue of *Astrophysical Journal Letters*. Astronomers Ben Zuckerman and Inseok Song of UC Los Angeles and their colleagues describe 17 single and multiple star systems moving through space with Beta Pic. The stars were known before, but the team determined that the three spatial components of their velocities all match Beta Pic's three-dimensional motion to within 2 kilometers per second—an expected rate of drift from a dispersing cluster. Each star also exhibits at least one hallmark of adolescence, such as copious x-rays, rapid spin, or a dusty disk of its own. "Used together, the velocities and ages are powerful tools," says Song. "The chance that we have misidentified random stars as members of the Beta Pic group is extremely small."

The clan may hold the most promise for studies of emerging planetary systems, because young planets should be warm enough to shine brightly at infrared wavelengths. Although the stars have wandered to span one-quarter of the sky in the Southern Hemisphere, their average distance from Earth is a mere 100 light-years—the next town over, in cosmic terms. At about 12 million years old, they are younger than stars in the 30-million-year-old Tucana-Horologium association, which along with the Beta Pic group is the closest assemblage known. Another group, TW Hydrae, has the same age as Beta Pic's stars but is twice as far away.

Moreover, Beta Pic's group has the widest cross section of stellar types, including massive stars, dwarfs, and many stars like our sun. "These are the optimal stars to watch the evolution of dusty disks and to look for forming planets, especially if we're trying to make an analogy to our own solar system," Zuckerman says.

Others agree that the group is a boon for attempts to see planets directly. Adaptive-



CREDIT: PAUL KALAS/UC BERKELEY

Nuclear family. Dust-shrouded Beta Pictoris is the most visible member of a newly identified group of nearby young stars.

ScienceScope

Northern Exposure South Korean researchers are preparing to lift the lid on North Korean science with a Web site featuring research from their ultrareclusive neighbor. This month the Korea Institute of Science and Technology Information (KISTI) will begin uploading papers from North Korean scientists onto a Web site. The goal, says Choi Hyun-Kyoo, a researcher at KISTI, is "to improve communication and contacts with the North." The project, which has no formal input from North Korean researchers, will cost $55,000 for the first year.

The bulk of the North's research is defense-related, but Hahn Sun-Hwa, a KISTI senior researcher, says it also claims to do world-class work in chemistry and mathematics. A contingent of North Korean students has twice in recent years won an international "Go" tournament held in Japan, he notes.

Because North and South Koreans often use very different words for the same science, Hahn plans on building a North-South dictionary for the Web site. The content initially will be in Korean, but KISTI hopes to start posting English abstracts as soon as early next year.

Smallpox Lives Health officials have been debating for a decade whether to destroy or preserve the last remaining samples of smallpox—held in secure vaults in the United States and Russia. The U.S. government this week ended the dithering: It will save its stocks for research, says Anthony Fauci, director of the National Institute of Allergy and Infectious Diseases, who participated in Administration discussions.

Fauci says he's argued "for a couple of years that we should retain smallpox" for purely scientific reasons. "We need it to develop animal models of the disease, to conduct in vitro assays of new drug therapies and diagnostic tests, and to completely sequence various strains" for defense against potential variant forms, as well as a new vaccine. It was "verging on naïve," Fauci thinks, to assume—as a World Health Organization (WHO) plan for smallpox destruction did—that the only extant samples were those in official U.S. and Russian labs. He fears some Russian stocks may have fallen into "nefarious" hands.

The WHO's plan called for destruction of official smallpox samples by 2002. That agenda has now been nixed by U.S. bioterrorism concerns. Ironically, a chief designer of the defunct WHO plan is D.A. Henderson, a former smallpox fighter who recently became the top bioterrorism expert for the U.S. Department of Health and Human Services. Henderson could not be reached.

optics systems at the Keck Observatory in Hawaii and the twin Gemini Observatory telescopes in Hawaii and Chile have a shot at resolving the pinprick infrared glows of newly coalesced gas giants in the outer parts of planetary systems around the Beta Pic stars, says astronomer Thomas Greene of NASA's Ames Research Center in Mountain View, California.

Still, Greene maintains, the group's provenance needs more study. Uncertainties in the stars' positions and velocities make it hard to trace their motions back in time to determine whether they shared a birthplace. "If the original cloud was big enough, it could have formed several small clusters with age differences of 5 or 10 million years," he says. It does seem clear that Beta Pic's cluster was a low-mass, loosely bound assemblage that scattered once the stars formed, unlike the tighter Pleiades cluster, Greene says. NASA's Full-sky Astrometric Mapping Explorer, tentatively scheduled for launch in 2004, should track the stars with enough precision to settle the issue, he adds.

In the meantime, Zuckerman and Song believe that further scouring of nearby stars will turn up more relatives. Already, their list contains two stars more massive than the group's namesake. Beta Pic, it appears, is no longer the pick of its own litter.

–ROBERT IRION

ARCHAEOLOGY

Questions Arise Over Second Japanese Site

TOKYO—A team of archaeologists has cast strong doubts on claims that a cave in western Japan contains evidence concerning the extent of early human habitation of the archipelago. The accuracy of the cave findings is also the subject of a suit filed this month by the family of the site's lead scientist, who killed himself after a Japanese news magazine reported that the findings might be bogus. It's the second time in a year that the veracity of an archaeological dig has made headlines in Japan (*Science*, 10 November 2000, p. 1083).

Archaeologist Mitsuo Kagawa led excavations in 1961 and 1962 of the Hijiridaki Cave in Oita Prefecture, on Kyushu Island in western Japan. The digs produced human and animal bones and stone artifacts, some of which Kagawa and his colleagues concluded date back 10,000 years or more. Although the dating has always been controversial, Hijiridaki made its way into Japanese textbooks because it was the only site in Japan where stone tools and human bones have been found together. The cave site was revisited in December 1999 by a research team studying the origins of the Japanese people. After examining both previously and newly collected artifacts, the team issued a lengthy report in June that will be summarized this month in the Japanese journal *Paleolithic Archaeology*.

The report concludes that the bones and charcoal found in the cave are no more than 600 to 700 years old, based on radiocarbon dating. The report does agree that some of the artifacts recovered both in the early 1960s and in the recent excavation are from the late Paleolithic period. But it points to several anomalies. Artifacts ranging from 2000 to 20,000 years old were found mixed together, and in a stratum above the one yielding material that is 600 to 700 years old. The artifacts are made of obsidian, almost certainly from a distant part of Kyushu Island and unlike the chert and rhyolite artifacts found in the area around the Hijiridaki Cave. "The results of the 1999 excavation," the paper concludes, "indicate that the recovered artifacts were not part of the original cave, but were rather the result of a secondary intrusion."

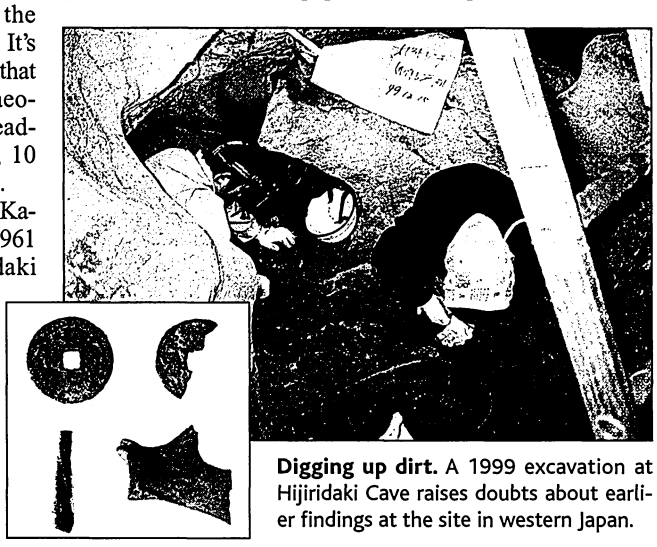
Hideji Harunari, an archaeologist at the National Museum of Japanese History in Sakura City, near Tokyo, and one of the organizers of the recent investigation, believes that "the best explanation for these conditions is that [the 1960s findings] are fake." But Masanobu Tachibana, the team leader and an archaeologist at Beppu University, says he cannot rule out more benign explanations. It is clear, he says, that medieval people used the cave and could have brought in the collection of stone implements for their own purposes: "There are explanations other than Harunari's."

The paper does not speculate further on how the artifacts may have ended up in the cave. And even Harunari says he does not believe that Kagawa was at fault, noting that Kagawa has long held that the Hijiridaki findings needed to be reexamined.

Speaking at an archaeological conference in August 2000, Harunari called the placement of the artifacts "very unnatural." But his comments went unreported until newspaper reporters caught amateur archaeologist Shinichi Fujimura planting artifacts at a second, unrelated archaeological dig in northern Japan last November. *Shukan Bunshun*, a weekly news magazine, ran four articles between January and March of this year suggesting that Hijiridaki might be another example of archaeological fraud. Although the magazine did not identify a culprit, it said that Kagawa was the leader of the 1960s excavations. Kagawa hanged himself on 9 March, leaving a note saying that he was acting "to protest articles alleging our discoveries were faked."

On 1 November his family filed a suit in Oita District Court against *Shukan Bunshun*'s publisher, editor, and the reporter who wrote the stories. The family is seeking $460,000 in compensation and a published apology, claiming that the articles defamed Kagawa and inflicted mental trauma. A written statement from the magazine expresses surprise. "We did not mention an individual's name or print anything defamatory [about Kagawa]," says Seigo Kimata, *Shukan Bunshun*'s editor in chief.

–DENNIS NORMILE



Digging up dirt. A 1999 excavation at Hijiridaki Cave raises doubts about earlier findings at the site in western Japan.

CREDITS: H. HARUNARI

MICROBIAL GENOMES

Sequences Reveal Borrowed Genes

New data emerging from microbial genome sequences are so perplexing that "we can no longer comfortably say what is a species anymore," says Daniel Drell, who manages the Department of Energy's (DOE's) microbial genomes program. Two bugs in particular, described at a recent meeting,* seem to have nabbed enough genes from other organisms that they no longer resemble their supposedly closest relatives—raising fascinating questions about how and why they obtained these new traits.

The genome data may have practical applications as well, notes Drell: Because both microbes also play key roles in geochemical cycles, they may suggest opportunities for cleaner energy sources, more effective pol-

* The Ninth International Conference on Microbial Genomes, 28 October to 1 November, Gatlinburg, Tennessee. *R. palustris*: www.jgi.doe.gov/JGI_microbial/html/rhodopseudomonas/rhodops_content.html; *M. mazei*: www.g2l.bio.uni-goettingen.de/methano.html