he thinks people may have been in Australia long before the Mungo 3 man lived. "We do not know when humans first arrived, and this date on Mungo 3 is an important way of saying that."

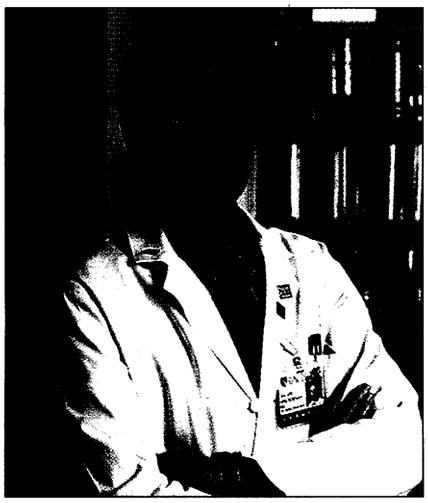
—CARL ZIMMER

Carl Zimmer is the author of *At the Water's Edge*.

CLINICAL RESEARCH

Shutdown of Research At Duke Sends a Message

Last week was a roller coaster for Joanne Kurtzberg, a transplant researcher at Duke University's Medical Center in Durham, North Carolina. First she heard—from a nurse—that her study using placental cord blood as a stem cell source had been suspended. "One of the OB-GYN doctors had come down the hall and said we couldn't consent any more patients," Kurtzberg recalls. Most other clinical researchers at Duke



Under scrutiny. Snyderman plans to re-review hundreds of clinical trials.

received similar shocks as word raced around the building that the Office for Protection from Research Risks (OPRR)—a federal watchdog agency that is part of the National Institutes of Health in Bethesda, Maryland—had lifted the center's authority to do federally funded research. Four days later, the immediate crisis eased when OPRR lifted the sanctions.

But the reverberations will continue at Duke and elsewhere. OPRR had suspended the Duke studies after months of urging administrators to correct "serious deficiencies" in procedures for monitoring consent and keeping records. Although the agency has now accepted a reform plan put together by chancellor for health affairs Ralph Snyderman and medical school dean Edward Holmes, OPRR director Gary Ellis notes that Duke still needs to re-review many projects for compliance with human subjects protection rules. That could take weeks. And with this action—the second shutdown of research at a major clinical center it has ordered in as many months—OPRR has put every federally funded U.S. research institution on notice that its right to conduct clinical research could be summarily yanked.

As though to underline the warning, the President's National Bioethics Advisory Commission (NBAC) also released a statement last week identifying defects in the U.S. system of protecting human research subjects. In a 4 May letter to President Clinton, NBAC chair Harold Shapiro describes gaps in enforcement and promises to deliver a "comprehensive report" in a few months loaded with recommendations for improvement.

OPRR isn't waiting for such advice. In focusing on Duke, it has targeted one of the nation's top biomedical centers. Duke has been aggressively adding staff and facilities —including a special center for industry-funded studies called the Duke Clinical Research Institute—to increase the number of clinical trials it manages. It now has 2000 in its portfolio, says medical center spokesperson Nancy Jensen. In December, OPRR sent nine experts to take a close look at Duke's procedures for monitoring the welfare of patients participating in this burgeoning research enterprise. After poring over records and interviewing staff, the team found no evidence that any patients had been harmed but concluded that the institution needed to tighten its practices.

Immediately after the site visit, OPRR sent a six-page letter to Snyderman listing 22 problems and asking for major changes. In February, OPRR followed up with another letter, warning that fixes offered by Duke were "unsatisfactory." For example, OPRR had asked that members of a panel that clears proposed experiments—the Institutional Review Board (IRB)—be better educated on relevant federal law. Duke responded by suggesting that it might invite IRB members to an annual lecture and brief them on useful Internet sites. Not good enough, OPRR said. Instead, it called for "provisions to ensure that all IRB members periodically receive interactive or didactic training from expert consultants working in the field of human subject protection."

OPRR also faulted Duke for allowing administrators to serve in a conflicted role as voting members of the IRB, for keeping sketchy records, and for failing to staff the IRB adequately. Duke responded in April and May with more suggestions, but OPRR officials again failed them. On 10 May, citing a "lack of progress" and a "failure of leadership," OPRR halted clinical trials.

Snyderman, who says he had no inkling OPRR was considering such drastic action, estimates that "hundreds" of trials were affected. Some clinicians were faced with the possibility that they would have to delay enrolling patients while their projects were rereviewed. Kurtzberg, for example, learned that her study offering experimental therapy to infants with a neurological disorder may fall in that category. She's still not sure when enrollment will resume.

Duke's medical chiefs may take comfort in knowing that they are not alone. Last month, OPRR shut down the Veterans Administration hospital in Los Angeles for similar reasons, and 5 months earlier, the Rush Presbyterian St. Luke's Medical Center in Chicago (*Science*, 2 April, p. 18, and 6 November 1998, p. 1035). Asked if this signals an escalation in enforcement, perhaps in response to congressional urging, OPRR chief Ellis responded, "that's for others to comment on." However, he noted that at a hearing last year, a prominent congressman called OPRR's enforcement efforts "pathetic" and "absurd." Ellis added, "With intense interest in human studies from Congress, the President's National Bioethics Advisory Commission, and advocacy groups, this is no time for dawdling." —ELIOT MARSHALL

PLANETARY SCIENCE

Space Rock Hints at Early Asteroid Furnace

Long before Earth or any other planet had formed around the sun, a vast cloud of dust began to coalesce into asteroids. Most of the drifting chunks were the kind of stone-cold rubble that Han Solo had to weave through in his clunky old spaceship in *Star Wars*, but others were big enough, and hot enough, to ooze lava. For decades, planetary scientists had suspected that radioactive decay stoked the furnace of these hefty asteroids, some of which later merged into planets. But the embers that would identify the heat source have long since died out.

Now comes the first hard evidence of what melted large asteroids in the early solar system. On page 1348, a team led by planetary scientist Gopalan Srinivasan of the Physical Research Laboratory in Ahmedabad, India, reports that a 4.57-billion-year-old meteorite—a fragment of an asteroid that developed a molten interior and crust in the early days of the solar system—bears the unmistakable signs of a radioactive heat source. The rock once contained enough of the radioactive isotope aluminum-26 to have melted. "They've got the smoking gun," says Stuart Weidenschilling of the Planetary Science Institute in Tucson, Arizona.

Thought to have been blown into our so-

lar system on the winds of a nearby supernova explosion or, perhaps, spawned by particles from the young sun, ^{26}Al was first proposed as a heat source for the early solar system back in 1955. With a half-life of 730,000 years, ^{26}Al could have melted early asteroids, then disappeared long before our own planet grew to full size. But it wasn't until the mid-1970s that researchers found indirect evidence for ^{26}Al's existence: the presence of its decay product, magnesium-26, in calcium-aluminum–rich inclusions, the first specks thought to have formed in our solar system's primordial gas cloud and

Clue to early solar system. A rare isotope hints at the energy source responsible for melting the parent asteroid that spawned this ancient meteorite, found in India.

preserved in ancient meteorites. But researchers came up empty-handed when they looked for ^{26}Mg in meteorites from parent asteroids that once had molten interiors. Complicating the search, these so-called differentiated meteorites make up fewer than 5% of those that hit Earth.

Lucky for Srinivasan and his colleagues, just such a meteorite thundered into the desert state of Rajasthan in western India on 20 June 1996. Called Piplia Kalan after a nearby village, the 42-kilogram meteorite resembles basalt, and its tiny crystals suggest it cooled rapidly after melting. Auspiciously, one section contained crystals of plagioclase, an aluminum-laden mineral that might once have been rich in ^{26}Al. And compared to most other differentiated meteorites, the grains contained little magnesium. That led Srinivasan and his team to think they had a good shot at finding the ^{26}Mg produced by ^{26}Al decay, which would be swamped by common magnesium in most plagioclases. Indeed, ^{26}Mg levels in four grains of Piplia Kalan were up to 3% higher than the usual amount in terrestrial plagioclase. By cosmic chemistry standards, says Srinivasan, "this excess is very significant."

The finding "strengthens implications that ^{26}Al was the heat source" at the heart of asteroids, says Glenn MacPherson, a geochemist at the Smithsonian Institution in Washington, D.C. For connoisseurs of asteroid history, it also suggests how long it took for the parent body of Piplia Kalan to melt and cool after the formation of the solar system. Like measuring time according to sand in an hourglass, our solar system's initial allotment of ^{26}Al can be extrapolated from the ^{26}Mg in calcium-aluminum inclusions. The tricky part is that in molten rock, the hourglass wouldn't collect falling sand, so to speak, because any ^{26}Mg would have been elbowed out of minerals that prefer aluminum atoms. After the molten rock cooled into crystals, however, the ^{26}Mg would become trapped and begin to accumulate; its abundance would reveal that of ^{26}Al during crystallization. By comparing ^{26}Mg abundance in the calcium-aluminum inclusions to the vastly smaller amount in Piplia, the team estimates that 5 million years must have elapsed before the plagioclase in Piplia crystallized. This time span for accreting and melting the parent body jibes with computer models of the process, providing "a real shot in the arm for theoretical work," says geochemist Richard Carlson of the Carnegie Institution in Washington, D.C.

The hunt is on for longer lived isotopes, such as samarium-146, manganese-53, and iron-60, that may have been trivial heat sources in the early solar system but, by their abundance in differentiated meteorites, could help narrow the window on when asteroids began solidifying. Such radiometric dates "will help explain processes operating 4.6 billion years ago in the inner solar system," says Srinivasan. And that, notes Carlson, could help us better understand modern features of our solar system, such as the chemical composition of different planets.

–ERIK STOKSTAD

CREDITS: (TOP) G. SRINIVASAN; (BOTTOM) DAVE CHESKIN/PRESS ASSOCIATION NEWS

ENVIRONMENTAL POLICY

EPA's Piecemeal Risk Strategy on Way Out?

In diagnosing the ailments afflicting the Florida Everglades, researchers at first painted phosphorus as the archvillain: The nutrient, they concluded, nurtured the cattails that choked the saw grass and sent many species into decline. Among the staunchest advocates of this message were Environmental Protection Agency (EPA) scientists, who since the 1970s had trained a harsh light on phosphorus

ScienceScope

Opening New Vistas British astronomers have secured $36 million for a new telescope that will map the southern skies. The 4-meter Visible and Infrared Survey Telescope for Astronomy (VISTA) will be located in Chile and capture more than 100,000 stars and galaxies in every 10-minute exposure, researchers announced. "This will be the largest telescope fully dedicated to surveys," claims Jim Emerson of the Physics Department at Queen Mary and Westfield College in London, who heads an 18-university consortium planning the instrument.

Britain's Joint Infrastructure Fund coughed up cash for the project, which will flag interesting objects that can be studied in depth by more powerful telescopes. VISTA's broad scope "will unquestionably identify many unusual [objects]," says astronomer Bruce Margon of the University of Washington, Seattle. But planners are still figuring out exactly where to put their new eye on the sky, which is expected to see first light in 2004.

Altered Food Redux A study that stirred concerns over the safety of genetically modified (GM) foods in the United Kingdom was seriously flawed, a scientific panel has concluded. Last year, biochemist Arpad Pusztai (below) sparked controversy by publicizing preliminary data suggesting that rats fed transgenic potatoes had stunted growth and suppressed immune systems (*Science*, 19 February, p. 1094). But this week, an anonymous six-member panel convened by Britain's Royal Society concluded that poor experiment design and a host of other problems rendered Pusztai's data—which had not been peer reviewed—"inadequate."

Pusztai is disappointed in the panel's conclusion and says there still "needs to be a scientific debate about testing GM food." And Derek Burke, a former head of the government's Advisory Committee on Novel Foods, says the controversy has "done a great disservice to the GM debate." But whether the panel's findings will help calm the continuing storm over altered foods—which has prompted calls for everything from labeling to import bans—remains to be seen.

Contributors: Michael Balter, Dennis Normile, Govert Schilling, Helen Gavaghan