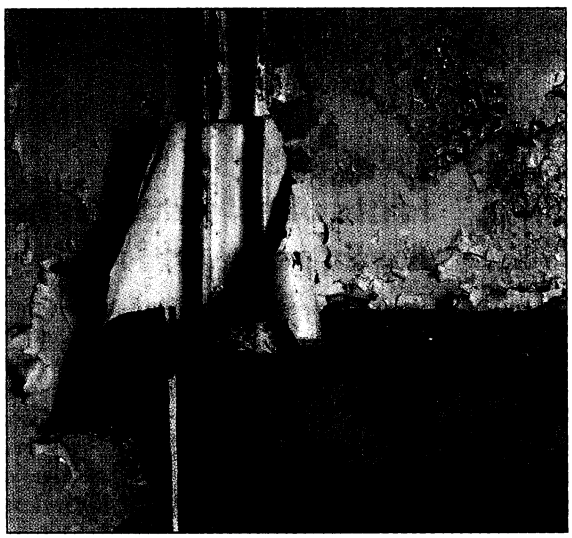
when the study began; in other cases, landlords were encouraged to rent to families with young children. Investigators then measured lead levels in dust and children's blood over 2 years. Families were offered incentives to participate, such as T-shirts and $15 payments for answering questionnaires. Johns Hopkins' institutional review board (IRB) approved the protocol.

The suit claims that researchers waited 9 months to share test results showing that one child had developed blood levels of 32 micrograms per deciliter (μg/dL)—"highly elevated," according to Centers for Disease Control and Prevention standards, which say that 9 μg/dL is safe. Baltimore lawyer Kenneth Strong, who represents the mother, says that the child now has learning disabilities. The second mother charges that she was given test results showing that lead dust levels in her home were low, but not results collected by a different, experimental method showing higher levels. Her child had blood lead levels as high as 21 μg/dL.

Although a lower court found that Kennedy Krieger had no legal obligation to notify the families of the test results, the appeals court disagreed. It also faulted the strategy because it "enticed" families to "potentially lead-tainted housing." "It can be argued that the researchers intended that the children be the canaries in the mines," wrote Judge Dale R. Cathell and five other judges. (A seventh judge dissented from the opinion, but agreed that the case should go to trial.) The research, they conclude, "presents similar problems as those in the Tuskegee" study in which African-American syphilis patients were monitored but not offered treatment.



Too risky. Studying families' exposure to lead paint in old homes was "inappropriate," a Maryland court says.

CREDITS: (TOP TO BOTTOM) SAM KITTNER; ARTHUR S. AUBRY/PHOTODISC

The decision finds that Hopkins' IRB advised the researchers to tweak the design to get it approved and that IRBs in general "are not designed to be sufficiently objective." In Maryland, the decision says, parents should not be allowed to let their children participate in "nontherapeutic research ... in which there is any risk of injury or damage" to health.

The appeals court's scathing indictment surprised other lead-poisoning researchers, who say they have conducted similar studies on lead abatement and that this study was important. The neurotoxic metal is "already out there in hundreds of thousands of older homes," notes Bruce Lanphear of the University of Cincinnati. "We don't really have any other system" to study cleanup techniques, Lanphear says.

Pioneering lead researcher Herbert Needleman of the University of Pittsburgh acknowledges, however, that with such environmental studies "the ethical issues are complex." The key element, he says, is the study's "stopping point" at which study subjects are advised to visit a doctor if their lead level is elevated. University of Pennsylvania bioethicist Arthur Caplan agrees: "You better be watching day to day." He agrees with the court's conclusion that the study's informed consent form didn't fully lay out the risks, although he thinks the comparison to Tuskegee goes too far.

Even more critical than the rhetoric, researchers say, is the court's conclusion that children should not be included in trials that don't have a therapeutic benefit. That troubles University of Kansas Medical Center bioethicist Mary Faith Marshall, who believes that "the court didn't quite get how research works." She argues that nontherapeutic research can have indirect benefits, and that the U.S. human subject protections system seeks to balance all risks and benefits. "The court is just wrong," adds Mark Barnes, a health law attorney at Proskauer Rose in New York City. However, the decision is "binding law" for institutions in Maryland, Barnes says. Indeed, Johns Hopkins is now "looking at the opinion very carefully" to see if it will impact ongoing and future studies that might fall into this category, says spokesperson Joann Rodgers.

Ironically, Caplan notes, this restrictive ruling comes just as children's health advocates and federal agencies are encouraging researchers to include more children in drug trials and study childhood environmental risks. It also comes at a time when concerns about patient protections are at an all-time high, Caplan says: It's "another arrow" launched at the struggling IRB ethics review system. –JOCELYN KAISER

ScienceScope

Klausner Staying Put Despite widely circulating rumors that he is leaving, Richard Klausner says he plans to remain at the helm of the $3.8 billion National Cancer Institute (NCI)—for now. "I am not job hunting, and I'm very happy at NCI," the director of the National Institutes of Health's (NIH's) largest institute told *Science* last week. He explained that he "looked at a job this summer and then decided against it," which he says stirred up the rumor mill. "At some point, I suspect I will move on," added Klausner, but "I have no time frame in mind."

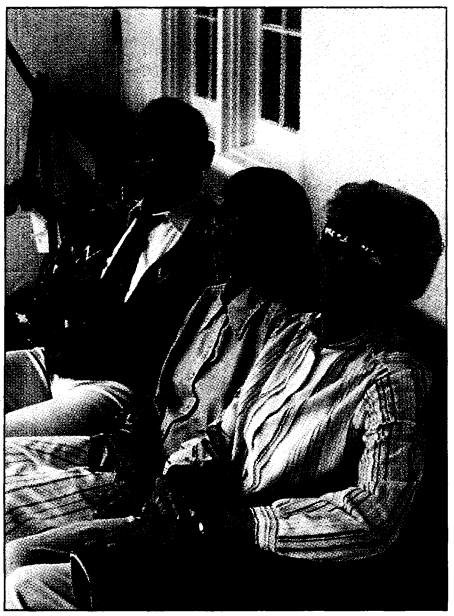
Klausner also denied reports that he's not getting along with the Department of Health and Human Services (HHS) or its secretary, Tommy Thompson. A clampdown by HHS on large salary increases for administrative personnel, concentrated at NCI, has not affected Klausner's rapport with the secretary. "The only pressure I've gotten from Tommy Thompson," Klausner says, "is to please not consider leaving."

Klausner spoke as Thompson was spending 4 days last week touring NIH, where he visited the new vaccine research center and gave blood, among other stops.

Pedal to the Metal It is time to rethink a government-industry partnership to develop superefficient cars, according to a new National Academy of Sciences report. Although the 7-year-old Partnership for a New Generation of Vehicles (PNGV) has made great strides in developing technologies to boost gas mileage, the program won't meet its original goal of tripling the fuel efficiency of family sedans by 2004, according to an annual review led by retired Allied Signal engineer Craig Marks. In addition, the new technologies—from fuel cells to hybrid electric-gas powertrains—face cost, pollution, and technical problems that limit their commercial appeal, the panel concluded.

The government and the car industry —which together pump more than $1 billion a year into PNGV—should rewrite the program's specific goals, the panel recommended, particularly in light of the growing popularity of light trucks and sport utility vehicles, which were not a major focus of the original plan (*Science*, 30 July 1999, p. 680).

Secretary of Energy Spencer Abraham, whose department is PNGV's biggest government backer at more than $100 million a year, welcomed the advice. He's pushing to have a revised PNGV plan in place by next year.



Thank the genes? These siblings may share a "booster rocket" that lets them blast past age 90.

dered, does it stream from hundreds or thousands of genes or very few?

Several groups have identified human genes and regions of mitochondrial DNA that might make small contributions to longevity. In these studies, scientists have picked candidate genes or sequences and then compared the frequency of different variants in long- and shorter lived people. Using this method, they've found, for example, that forms of some genes such as *ApoE* predispose their bearers to cardiovascular disease and Alzheimer's—and thus increase mortality—whereas other versions protect against these same maladies. In addition, studies of model organisms have identified single genes that can dramatically lengthen life-span (*Science*, 6 April, p. 41). But until now, no one has conducted an open-ended search designed to pick up any genetic region that confers exceptional life-span in humans.

To unearth a genetic basis for longevity, Thomas Perls, a geriatrician at Harvard Medical School in Boston, Louis Kunkel, a molecular geneticist at Children's Hospital in Boston, and their colleagues studied 137 sets of extremely old siblings—308 individuals in all. Each set included one person who was at least 98 years old and any brothers or sisters who were at least 91 and 95, respectively. Siblings share, on average, half of their DNA. So, to identify regions that might confer longevity, the researchers searched for shared stretches of DNA present at a frequency higher than expected by chance. This process led them to a hefty tract on chromosome 4.

That a single region of DNA emerges in a study of only several hundred people suggests it is "a master gene": one that contributes significantly to longevity, says immunogeneticist Claudio Franceschi of the Italian National Research Center on Aging in Ancona. Genes that make only small contributions would require much larger sample sizes to detect, he explains.

Leonid Kruglyak, a geneticist at the Fred Hutchinson Cancer Research Center in Seattle, agrees: "Before this, you could argue that a lot of longevity in families was due to environment, not genes. If [the result] holds up in future studies, it suggests that there is a genetic component—and that a single gene contributes a great deal."

Perls suggests that extreme longevity—living 20 to 25 years longer than average—requires "a substantial genetic advantage." Such an advantage would include freedom from genes that predispose to disease as well as "genetic booster rockets," as Perls describes them: genes that slow the process of aging and decrease susceptibility to all age-related diseases.

Experts caution, however, that the Harvard group's data lie at the edge of statistical significance. Because the results are "right on the borderline," says Kunkel, "you really can't believe the data fully until they are replicated by another study."

Thomas Kirkwood, a gerontologist at The University of Newcastle in the U.K., says he likes the group's approach: "Family studies to look for genes that associate with human longevity are definitely the way to go." But he cautions that "the evidence in this analysis is too flimsy to warrant getting very excited." Not only is the statistical significance low, he says, "but the statistical assumptions used to generate it have not been verified."

Although the work is preliminary, David Burke, a mouse geneticist at the University of Michigan, Ann Arbor, says the Harvard study represents a significant advance, because it points toward an area for further exploration: "There are a lot of papers looking at the process of aging in a variety of experimental organisms, and that's great. But any time we can get information about humans, that's extremely valuable."

Perls, Kunkel, and their colleagues are scouting out more long-lived siblings so they can repeat the study. At the same time, they've started a company, Centagenetix, that is trying to find the gene or genes of interest. Hundreds lie in the suspect region, and all are vying for candidacy, says Kunkel. None of the genes implicated in aging by model organism studies reside in the area, so a winner could represent a new physiological pathway or a different member of a pathway already identified, he says.

–EVELYN STRAUSS

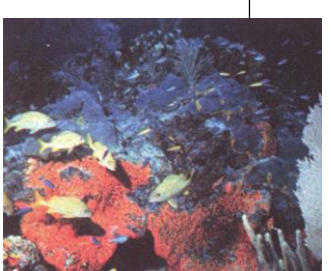
CREDITS: (TOP TO BOTTOM) RICK KOZAK; NOAA

ScienceScope

West Nile Watch The West Nile virus's rapid invasion into North America (*Science*, 24 August, p. 1413) continues, with authorities in two more U.S. states last week detecting the virus for the first time. The appearance of West Nile in dead birds in Indiana and Michigan means that the virus has been found this year in 15 states and Washington, D.C. Meanwhile, Health Canada confirmed detection of the virus in 10 dead birds found in southern Ontario. The number of confirmed human cases in 2001 has grown to seven—in New York, Georgia, and Florida—including one fatal case in Atlanta.

Whole Earth Catalog An enigmatic new organization with the lofty goal of recording all 7 million to 100 million species on Earth within 25 years is gearing up now that it's hired a CEO. The new All Species Inventory chief, Brian Boom, formerly with The New York Botanical Garden, says the effort will be "organismal biology's equivalent to the human genome project."

Launched last fall in California, the All Species project is backed by an intriguing alliance of science and tech figures, including prominent biologists, former *Whole Earth Catalog* publisher Stewart Brand, and Kevin Kelly, co-founder of *Wired* magazine (www.all-species.org). Organizers explain that it won't try to duplicate ongoing species inventories and database projects. Instead, "we're looking for the bottlenecks and the holes in funding," says Boom. He and others mention everything from genetic sampling to training lay taxonomists in developing countries.



The inventory has over a million dollars in start-up money, but it's now moving into a major fund-raising phase, Boom says. The goal is hundreds of millions of dollars, and he claims tentative commitments from unnamed tech industry donors. Planners expect to flesh out the project at a meeting next month in Mexico and another at Harvard in October chaired by biodiversity champions Peter Raven and E. O. Wilson.

Contributors: Jocelyn Kaiser, David Malakoff, Martin Enserink