Theoretically, WARF, which owns the WiCell patents, could try to prevent people from buying similar cells from, say, Sweden or India, because the Wisconsin patents cover both the substance of the cells and the method for deriving them. But WiCell says it will not object to the use of other embryonic stem cell lines as long as the other providers’ conditions are generous, too.

Thompson has promised that by next week, NIH will post on the Web a detailed registry describing the 64 stem cell lines that qualify for federally supported research.

—CONSTANCE HOLDEN

Klausner Quits NCI to Head New Institute

Richard Klausner, director of the National Cancer Institute (NCI), announced this week that he has resigned, effective at the end of the month. He will become the first director of a new philanthropic outfit in Washington, D.C., the Case Institute of Health Science and Technology, established with $100 million in support from America Online founder Steve Case and his wife, Jean Case. “One of the great things” about the new job, Klausner said, is that he will remain close to NCI and continue to run an intramural lab there. The Case Institute, according to Klausner, will invest in a spectrum of health projects ranging from developing tools for molecular biology to bioinformatics and even methods of improving water quality in the developing world.

Klausner’s departure had been rumored for months, although he denied as recently as 3 weeks ago that he was leaving (Science, 31 August, p. 1569). In an interview the day before he announced his departure at a meeting of the National Cancer Advisory Board (NCAB), Klausner denied any connection between his move and a clampdown on NCI management by the Department of Health and Human Services, including revocation of large salary increases he had approved for NCI’s top administrators.

New foundation. After 22 years at NIH, Klausner is moving on.

Norm Augustine, the planning should be carried out by a board representing several federal agencies and led by someone of the White House’s choosing. The report also urges NSF to set up its own astronomy advisory panel and to build closer ties to nonfederal players.

No one disputes the need for greater coordination of the field. But another advisory body at NSF isn’t practical, says Robert Eisenstein, chief of NSF’s math and physical sciences directorate. And, he adds, “if we

A mixture of relief, praise, and criticism greeted the publication last week of a much-anticipated report on support for astronomy in the United States. As Science reported 2 weeks ago (31 August, p. 1566), a panel of the National Academy of Sciences argued strongly against merging the astronomy programs of NASA and the National Science Foundation (NSF)—a possibility the White House had asked the academy to consider. But the panel has stirred up debate with recommendations to improve coordination of federal astronomy programs, while highlighting flaws in NSF support for the ground-based portion of the discipline.

The relief came from the panel’s rejection of the idea of wholesale restructuring, on the grounds that multiple funding sources strengthen the field. But the panel noted that the growing influence of NASA, the interdependence between space- and ground-based telescopes, and the increasing role of state and private funds and facilities require “systematic, comprehensive, and coordinated planning.” According to the panel, chaired by former aerospace executive

Image not available for online use.

Clearer vision. Report says that greater cooperation will help private facilities such as the UC Observatories/Lick Observatory.

do it for astronomy, there are 40 other directors that will say, ‘What about us?’” Joseph Miller, director of the University of California Observatories/Lick Observatory in Santa Cruz, likes the idea of more community input at NSF. But he’s troubled by the prospect of an interagency body setting priorities for the bulk of the country’s astronomy portfolio. “We fear this could turn into some top-down monolithic program” that leaves little room for independent voices, says Miller, whose facility is funded by the state and by private foundations.

Apart from better coordination, most of the recommendations focus on the need to improve NSF’s management of U.S. astronomy. The agency has lagged in supporting new instruments and allocating research grants as ground-based optical and infrared astronomy facilities have proliferated, the report notes. The Augustine panel suggests that NSF come up with its own strategic plan, including timelines and objectives, an open bidding process for all new facilities, and a more comprehensive accounting system for each project. It also suggests that NSF could learn from media-savvy NASA about how to publicize its scientific discoveries.
Eisenstein acknowledges that tight funding and a focus on large facilities have resulted in “a big squeeze on grants.” But he says that accepting unsolicited proposals from academics for new facilities, rather than holding open competitions, has served astronomy well by encouraging creative ideas.

However, both Eisenstein and Miller agree that the academy report could be a boon to a long-discussed proposal for NSF to pay for additional instrumentation at private observatories in exchange for blocks of time on those telescopes, which NSF would then dole out to researchers. “We need to start with practical things, and I have high hopes for this,” says Miller. Eisenstein says he hopes to find enough money in NSF’s 2002 budget, now under review by Congress, to begin funding the exchange program, assuming that both sides can agree on how to structure the arrangement. “The burden of proof is on us—with the full cooperation of the community—to figure out a way to implement this [program],” says Eisenstein.

Miller and a group of directors of private observatories say that such an agreement would be a welcome sign that NSF is listening to them. And they hope that the Augustine report will foster a new era of greater cooperation. “At least this gives us a mandate to make the best use of funds in a coordinated way,” says Paul Goldsmith, director of the National Astronomy and Ionosphere Center in Arecibo, Puerto Rico.

Andrew Lawler

Painting a Picture of Genome Evolution

Normally, we associate evolution with organisms growing more complex as they acquire new genes over time. But as a new analysis of the genome sequences of two bacteria shows, genes can be lost as well as gained during evolution. Even more intriguingly, the work provides snapshots capturing gene decay in the act and thus illuminates the actual genomic changes that occurred over tens of millions of years of evolution.

The research, which is described on page 2093 by microbiologist Didier Raoult of the Marseilles School of Medicine in southern France and his colleagues, focuses on two pathogenic bacteria: Rickettsia conorii, the culprit in Mediterranean spotted fever, and R. prowazekii, which causes typhus. These organisms diverged from a common ancestor 40 million to 80 million years ago, and evidence of accumulated mutations in a gene shared by the two indicates that R. prowazekii is evolving more rapidly. To explore how the two grew apart, the Raoult team sequenced the complete 1.3-billion-base-pair genome sequence of R. conorii and then compared it to R. prowazekii’s genome sequence, which was determined 3 years ago by Charles Kurland of the University of Uppsala in Sweden and his colleagues.

The two Rickettsia are good subjects for this analysis partly because both are obligate intracellular parasites, which means they can survive only in the cells of their insect vectors or in the cells of animals they infect, such as humans. Thus, they rarely encounter other species with which they can exchange genetic material, making it easier to trace how their individual genomes change over time.

Scientists have long predicted that, for a minute bacterium trapped in an animal’s cell, shrinking the genome can preserve energy and improve efficiency. The new analysis by the Raoult team gives a stamp of approval to this theory. It shows that R. prowazekii’s genome is smaller overall—1.1 billion bases compared to its cousin’s 1.3 billion. It also has one-tenth as much repeated DNA and far fewer active genes; whereas R. conorii has 1374 such genes, R. prowazekii has only 834.

What’s more, remnants of nearly half the genes that no longer function in R. prowazekii remain in its genome. The arrangement of this “junk” DNA even mirrors the configuration of the active genes in R. conorii. “It was like having one of the two being the ancestor of the other one and then seeing what has happened during all these years,” says Raoult.

“This [sequence] is telling us something about evolution that maybe we already should have known,” says David Walker, a pathologist at the University of Texas Medical Branch in Galveston, referring to the fact that bacterial genes decay. Because remnants of many of the genes lost by R. prowazekii stay behind in the pathogen’s genome, he adds, the new sequence could shed light on why genes degrade and how their functions change as they do.

Andrew Lawler