in its own right," he says. "If each of these things is amazingly successful, we will have a foundation, and the integration will happen almost naturally." He adds that he's been through similar transitions before, when he set up the Princeton Materials Institute, and before that at Exxon, where he organized a center for the study of complex systems. Efforts to yoke separate disciplines to a common vision always pass through a "valley of death" before they begin to succeed, he says.

But Lamont's passage through the valley may leave some scars. At least one longtime researcher will leave this fall—in part, he says, because of the new direction at Lamont. Broecker has threatened to leave as well, although he now says he will wait through the summer to see if the situation improves. Both Crow and Eisenberger say that Lamont may soon get a separate director. "What we're finding is that the task of running the Earth Institute as a whole and running Lamont is quite difficult," Crow says. Eisenberger says he is open to possible management changes: "It wasn't me who insisted on both jobs."

Even those who are most upset by the changes at Lamont endorse the concept of the Earth Institute, however. "The rationale is good," says the researcher who is leaving this fall. "It does identify what some people say is the key problem of the 21st century. Regardless of where I sit, it's an interesting experiment."

–Gretchen Vogel

HUMAN GENOME PROJECT

Funders Reassure Genome Sequencers

COLD SPRING HARBOR, NEW YORK—J. Craig Venter, president of The Institute for Genomic Research in Rockville, Maryland, dominated an international meeting* of genome researchers here last week, although he wasn't even present. Scarcely a session went by without a reference to Venter's stunning announcement, just 4 days before the meeting began, that he plans to team up with the Perkin-Elmer Corp. of Norwalk, Connecticut, to form a new company to sequence the human genome in 3 years (*Science*, 15 May, p. 994). Because many of the meeting participants are involved in a vast public program to do the same thing by 2005, the subtext of the gathering was: What does Venter's proposal do to our plans?

Virtually everybody here seemed to reach the same conclusion: Because of uncertainties surrounding Venter's approach and fears about data-hoarding by a private venture, the public effort should be stepped up. The strongest response along those lines came from the United Kingdom's Wellcome Trust, one of the world's largest sources of biomedical research funds. On 13 May, it announced that it will double its investment in the international sequencing project. And Francis Collins, the director of the National Human Genome Research Institute (NHGRI), assured meeting participants that the U.S. Human Genome Project (HGP) will continue as planned. "It is critical that we not retreat from our goal," Collins said.

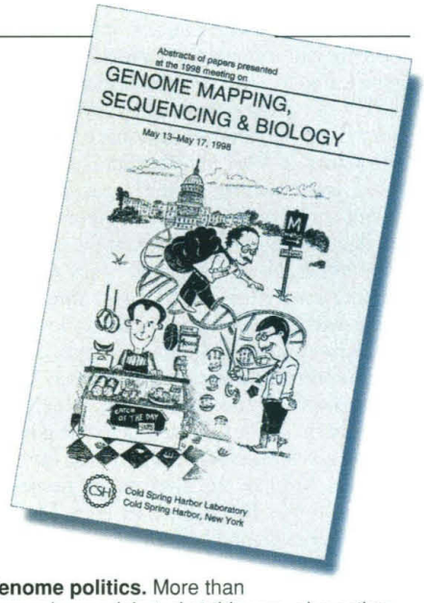
The Wellcome Trust's program director for genetics research, Michael Morgan, said that the trust now plans to put $325 million into completing about one-third of the total human genome sequence by 2005. If necessary, he added, it may be prepared to sequence as much as half the genome. The work will be done at the Sanger Centre near Cambridge, U.K. Morgan emphasized that the increase had been in the works for months, but said at the meeting that the decision to publicize it "was to a certain extent a response to the announcement" by Venter and Perkin-Elmer.

The Wellcome Trust hoped its announcement would allay fears that Venter's plans would jeopardize the international sequencing effort, yet produce a genome that falls short of the original standards for completeness and accuracy. These require that there be no more than one mistake per 10,000 base pairs and, ultimately, no gaps in the sequence data. The new company will take a brute-force approach, sequencing the entire genome at once using a battalion of new machines being developed by Perkin-Elmer. Some researchers have argued that this strategy will leave too many gaps and ambiguities.

Collins cited those concerns last week, noting that "there is a great deal of uncertainty and debate about whether this particular strategy will be able to give us the product desired." He confirmed that NHGRI will go ahead next year with plans to establish a cooperative research network of about a dozen sequencing centers, at a total cost of $90 million. "There will be no backing away from the notion that this is our major effort," he said at the meeting.

Even Venter agrees that "right now, they should keep doing what they are doing until they have had a chance to scientifically evaluate [the new approach]." Although he maintains that his company's sequence will be as accurate and as complete as the publicly funded genome, "it's fair to have that skepticism," he said after the meeting. He said he plans to test the new approach by sequencing the genome of *Drosophila*.

Aside from concerns about quality, reaction to Venter's announcement has been tinged by fears that the new company will stake a proprietary claim on much of the genome. Venter has said that the company will patent only 200 to 300 genes, but others don't want to depend on that promise. As Glen Evans, who runs a sequencing center at the University of Texas Southwestern Medical Center at Dallas, puts it, "we don't want Craig Venter to become the Bill Gates of biology." Morgan says the Wellcome Trust shares that concern: "Our concern is that biotechnology companies may try to Hoover up basic sequence data. ... We will challenge any such patent applications."



Genome politics. More than research was debated at this annual meeting.

For the most part, genome researchers were cheered by both the Wellcome and Collins announcements. "It was good to let everybody know where we are going," says Rick Myers, co-director of Stanford's human genome sequencing center. "It would be horrible if the [HGP] gets derailed." A few worried, however, that NHGRI is not doing enough. Evans, for example, says that sequencers should now focus on producing data faster than Venter can and, for the time being, worry less about accuracy and piecing that data together. He also argues for more funding, pointing out that in the most recent awards, the sequencing centers didn't get what they asked for to scale up their programs. Still, some think the Perkin-Elmer venture will be a boon to their own efforts. The new company "will help galvanize us and [make us] work together," predicts Myers.

–Elizabeth Pennisi

With reporting from Nigel Williams.

* The 1998 Genome Mapping, Sequencing, and Biology Meeting, 13–17 May.