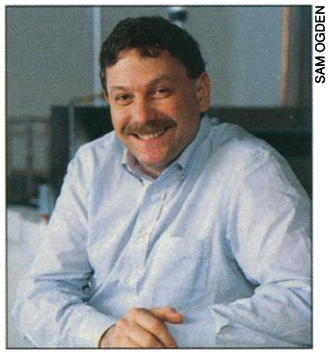
GENOMICS

Whitehead, Three Firms Splice a Deal

CAMBRIDGE, MASSACHUSETTS—"Genomics" is the biotech industry's next unexplored continent: a world where information about people's genes and gene activities will create new ways to diagnose, prevent, and combat disease. Or so researchers and investors hope (*Science*, 7 February, pp. 767–782). Biotech and pharmaceuticals firms are now betting that a good way to stake out commercial territory in this new world is to hire the mapmakers. That's why an unusual new consortium of companies announced last week that it has joined Eric Lander, a gene mapper at the Whitehead Institute for Biomedical Research and the Massachusetts Institute of Technology (MIT), in a 5-year, $40 million effort to develop new "functional genomics" techniques.



SAM OGDEN

Mapping out a deal. Lander lands $40 million for functional genomics.

"Rather than wait and see what happens, we want to pick and choose our path into genomics," says biologist Richard Gregg, a vice president and head of an internal genomics task force at consortium member Bristol-Myers Squibb. "Eric is one of the leaders in thought and technology." A former mathematician and MacArthur Fellow who was elected last month to the National Academy of Sciences, Lander directs the Whitehead/MIT Center for Genome Research, one hub of the massive government-funded effort to locate and characterize the estimated 60,000 to 100,000 genes in the human genome.

Under the deal, announced on 29 April, the New Jersey–based pharmaceuticals giant and two smaller biotech firms—"DNA chip"-maker Affymetrix Inc. of Santa Clara, California, and Millennium Pharmaceuticals of Cambridge, Massachusetts—will give the center equal amounts of cash and equipment for research into faster, more efficient ways to gather and compare genetic data. In return, the companies will receive commercial rights to technologies developed under the program. Most coveted by the firms are automated systems for analyzing, simultaneously and over time, the activities of tens of thousands of genes and proteins in normal and diseased cells. Detailed legal provisions, and the nature of the inventions themselves, will govern which of the firms will get joint or exclusive rights.

The agreement will significantly boost the center's current $14 million annual research budget. That money, most of it from federal grants through the Human Genome Project, has paid for the first rough guides to the 3 billion nucleotides in human DNA: maps studded with thousands of landmarks called "sequence tagged sites" (*Science*, 25 October 1996, p. 540). Lander says he is now eager to see that information put to work in biomedicine. "We've put 7 years so far into building maps and sequences, telling ourselves that this structural genomic information would help change the world. It's time to take that out for a test drive," he says.

Responding to recent concerns that corporate funding could quash the free exchange of scientific data, Lander and the consortium members went out of their way last week to emphasize their "airtight" agreement limiting publication delays to 60 days to allow time for patent filings. Lander, moreover, will divest his stock holdings in both Millennium, which he co-founded in 1993, and Affymetrix, in accordance with the conflict-of-interest guidelines of MIT and the Whitehead Institute.

Industry-university collaborations are common in biotech, and so is "partnering" between pharmaceuticals companies and smaller, idea-driven firms—just last week, for example, Schering-Plough Corp. signed a potential $60 million deal with Myriad Genetics Inc. of Salt Lake City focusing on cancer genetics. But Whitehead Institute director Gerald Fink, a yeast geneticist, says, "It is very unusual to see three companies working together in this way."

Affymetrix President Stephen Fodor predicts, however, that this consortium may well set the tone for future collaborations in biotechnology. "I suspect you will see many of these types of interactions that allow technology to be integrated in new ways by people who ... are not biased by the internal culture of a particular company," says Fodor. "It should be a very powerful way to multiply our resources."

–Wade Roush

NEUTRON RESEARCH

Europeans Plan Their Next Big Source

European neutron-scattering researchers this week announced the next step in their ambitious plan to build the world's most powerful pulsed-neutron source by 2010. On 5 May, a group of five leading research institutions released a feasibility study for the proposed European Spallation Source (ESS), a $1.1 billion neutron facility powered by a 5-megawatt particle accelerator. The 3-year technical study, supported by the European Science Foundation, detailed the technical specifications for the new machine, and the five partner institutions agreed this week to seek funding for a 3-year research and development phase to prove the concept. "In Europe, I think we can do it," says Andrew Taylor of Britain's Rutherford Appleton Laboratory (RAL), secretary of the ESS Council.

The hard part will be to convince European governments to pay for the ESS, but its proponents believe they have a strong selling point in the growing demand for access to neutron beams, from users ranging from individual university researchers to industrial conglomerates. In Europe alone, there are estimated to be roughly 4000 researchers who conduct neutron-scattering experiments in fields including physics, chemistry, materials science, and biology. "What we do is underpin condensed-matter science. ... There is even an applied dimension to it: Understanding how alloys behave under extreme stress at a microscopic level is not a million miles away from designing turbine jet engines," says Taylor.

Europe is currently home to the best of each of the two types of facilities for producing neutrons for research: The Institut Laue-Langevin in Grenoble, France, has the most powerful reactor source, while RAL houses ISIS, the most intense accelerator, or "spallation," source. The ESS would produce neutron pulses that are 30 times brighter than those obtained at ISIS. In 1995, the United States abandoned plans for a more powerful reactor facility, the Advanced Neutron Source (*Science*, 17 February 1995, p. 952), but a new proposal for a National Spallation Neutron Source at Oak Ridge National Laboratory in Tennessee, powered by a 1- to 5-megawatt accelerator, is currently being developed. Japan is also working on two schemes for spallation sources in the 1- to 5-megawatt range.

Like other spallation sources, ESS would use an accelerator to speed protons, bunched together in short pulses, and slam them into a target. The collision generates neutrons by knocking fragments off the target nuclei. ESS's 700-meter linear accelerator would be the most expensive and physically the largest component. Together with the storage rings, it would cost $390 million.

With an energy of 5 megawatts, the proton beam would destroy the solid metal targets used in today's spallation sources. As a result, the target for ESS would have an entirely new design, says ESS Study Group member Tim Broome of RAL. It would consist of liquid mercury, continuously pumped