BIOTECH PATENTS

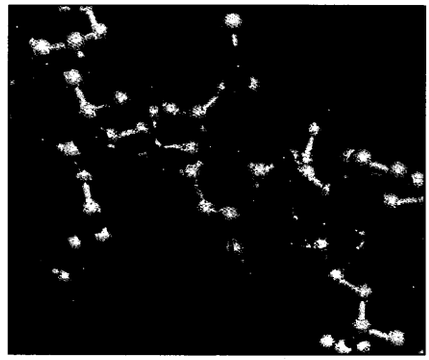
Genentech, UC Settle Suit for $200 Million

SAN FRANCISCO—A bitter episode in biotech history was finally put to rest last week when South San Francisco biotech pioneer Genentech agreed to pay the University of California (UC) $200 million to settle a long-running patent suit. UC and Genentech were locked in a court battle over UC's claim that the company's $2 billion drug, Protropin, had infringed its patent on engineered human growth hormone. The deal, which includes a $50 million donation toward a research building at UC San Francisco—the campus that holds the disputed patent—will result in payments of $17 million each to five former UCSF scientists.

UC's claim was the subject of an 8-week trial last spring that ended with the jury deadlocked 8 to 1 in favor of the university. Because Genentech survived that first round so narrowly, many viewed the retrial, scheduled to begin on 3 January, as a "slam dunk" for UC, says San Francisco patent attorney Richard Osman, who followed the case closely. If UC had won, damages could have topped $1 billion. But the outcome was far from assured, says Zach Hall, vice chancellor of research at UCSF, and "whoever had won, the other side would have felt aggrieved." The settlement, he adds, "provides a basis for future cooperation and allows us to put behind us whatever bad feeling may have been engendered by this dispute."

Genentech is not admitting that it infringed UC's patent, says the company's chair and chief executive, Arthur Levinson. "I can't tell you that I know for a fact that we were not [infringing the patent], and I think if you were to ask the UC folks, they probably couldn't say with 100% assurance that we were. The way we approached this was largely as a risk mitigation exercise. We could have ended up paying more than $200 million, and we could have ended up paying nothing." Investors apparently liked the deal; after news of the settlement began to leak out on 15 November, shares of Genentech stock began a 4-day climb from $71.75 to close Friday at $87.06.

In addition to the $50 million toward the new research building—which will be on UCSF's new Mission Bay campus and which Genentech will name—the company is paying UC $150 million in cash. Based on a UC formula for distributing royalties that was in place when the patent was issued, UC's general fund will get $30 million, UCSF will receive an additional $35 million, and the remaining $85 million will be split equally among five scientists who first cloned the gene for human growth hormone. They are the three inventors named on the patent—former UCSF professor Howard Goodman, who is now at Harvard; his former postdocs Peter Seeburg, now director of the Max Planck Institute for Medical Research in Heidelberg, Germany; and John Shine, now executive director of the Garvan Institute of Medical Research in Sydney, Australia—and two collaborators, John Baxter of UCSF and his former postdoc Joseph Martial, now of the University of Liege in Belgium. The university's legal fees, which Hall estimates at $20 million to $24 million, have already been paid by UCSF and the five scientists from other patent income, including more than $41 million from the human growth hormone patent.



All friends together. Zach Hall (*below*) hopes collaboration will flourish after settlement of suit over patent on human growth hormone (*above*).

The settlement ends a case that burst into public view last April when Seeburg took the stand for UC during the trial and offered explosive testimony. He said that when he was working as a scientist at Genentech in 1979, he had used growth hormone DNA that he had cloned while a postdoc at UC, and subsequently removed from his former lab, to make the DNA vectors from which Genentech produces Protropin. What's more, he testified that he and former Genentech scientist David Goeddel, now chief executive officer of the South San Francisco biotech company Tularik Inc., had agreed to misrepresent the source of the DNA in a 1979 paper in *Nature*. Goeddel has vigorously denied that they used the UC material or struck any such agreement. Legal experts have questioned whether Seeburg's testimony was relevant to the underlying patent case, and some have argued that it shouldn't even have been admitted in the trial (*Science*, 11 June, p. 1752).

Regardless of the relevance of his testimony, Seeburg's court appearance has had personal repercussions for the prominent German scientist. Following his testimony last spring, the Max Planck Institute opened an investigation of whether he had committed scientific misconduct 20 years ago. The results of that investigation, which have not yet been made public, were delivered to Max Planck president Hubert Markl last week.

The settlement will avoid a replay of the spectacle of two well-respected scientists challenging each other's veracity under oath about the origins of the growth hormone DNA. UC and Genentech have agreed that despite the wealth of evidence that has been presented, it will never be known for sure where the DNA in the Genentech clone came from. In the end, says Levinson, "there is no way you could conclude one thing or the other that would satisfy 100% of the people." And maybe with a new UCSF research building that carries Genentech's name, and the legal case finally closed, most people eventually will cease to care. —MARCIA BARINAGA

GEOSCIENCE FACILITIES

NSF Proposes Marriage Of Rocks and Waves

Despite their common subject—the planet Earth—practitioners of geology and geophysics generally keep their distance. The lone field geologist stomps over "her" mountain or favorite outcrop, hauls back some rocks, and tells her fellow geologists about them at a meeting of the Geological Society of America. The geophysicist pores over the squiggles of seismic waves, increasingly gathered by consortia of his colleagues, and reports his results at a meeting of the American Geophysical Union. But that may be chang-

CREDITS: (TOP TO BOTTOM) ALFRED PASIEKA/PHOTO RESEARCHERS; UCSF NEWS SERVICES

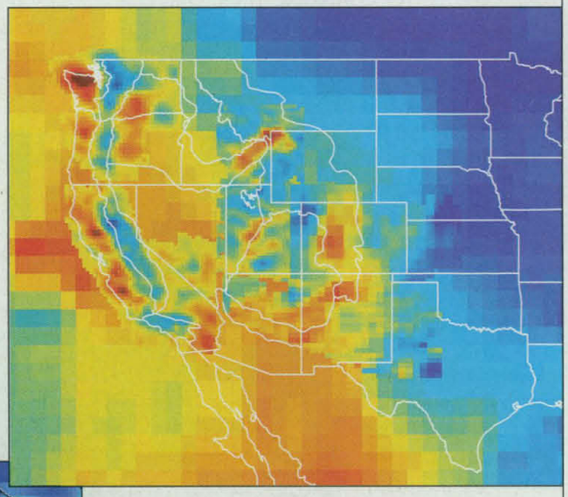
ing: The National Science Foundation (NSF) has proposed a $75 million project for its next budget in which the twain would meet.

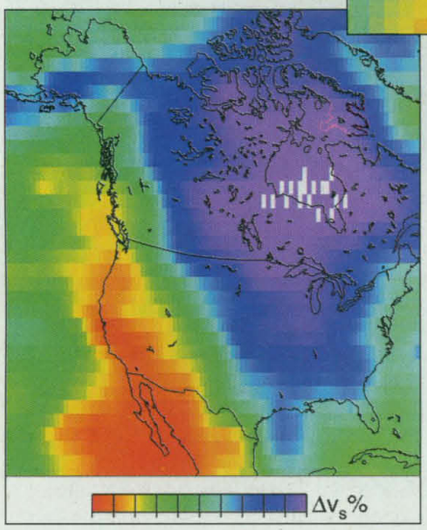
The project, dubbed EarthScope, would create a downward-looking geophysical "telescope" to probe the continent from the surface to its very roots and beyond. NSF would like to make a $19 million downpayment in fiscal 2001 on a 4-year, two-part effort that would create a network of scientific instruments to analyze the continent over a range of spatial and temporal scales. Geophysicists seeing the subsurface in unprecedented detail would presumably join geologists dissecting surface rocks to answer questions that neither group can answer alone, such as how and why classic geologic provinces came to be juxtaposed.

"Times are changing, and I think people are changing," says Karl Karlstrom of the University of New Mexico, Albuquerque, who describes himself as a dyed-in-the-wool field geologist. "I think 10 years from now we'll look back on this as a time of major change in the way [earth] science gets done." Still, many scientists are worried that operating costs could take a big bite out of the money available for traditional "small" science. "I would hate to see that suffer," says Clark Burchfiel of the Massachusetts Institute of Technology, who works on the geology of the Tibetan Plateau.

NSF's 2001 budget proposal, now under review, would fund two elements of the project. USArray would be the "Bigfoot" of seismic networks, 400 mobile seismometers scattered to form a 1000-kilometer-square array that would be marched around the country. Embedded within the 1000-kilometer array would be a higher powered "telescope" of 2400 instruments targeted on individual faults, magma chambers, and mountains. After the seismic waves from earthquakes and explosions are formed into three-dimensional images and combined with geology, geochemistry, and topographic measurements, researchers might see how North America has been put together, what's holding up the Rockies, or how the Cascade volcanoes are being fueled from below. At a far smaller scale, the San Andreas Fault Observatory (SAFOD) would drill down 4 kilometers into the central San Andreas to find how continental blocks grind past each other to produce earthquakes.

Both SAFOD and USArray had been knocking around as separate concepts for 5 years or more with bleak funding prospects, according to Herman Zimmerman, acting director at NSF's Earth Science division; even one of these projects was too much for the division's $100-million-a-year budget. Then, last year, division staff decided to bundle them under the EarthScope banner and seek support via NSF's Major Research Equipment account, which each year typically contains four to six projects. Since 1995 the account has funded large facilities beyond the reach of any division or even directorate, such as the $290 million LIGO, the Laser Interferometer Gravitational-Wave Observatory in Washington State and Louisiana, which was dedicated last week. EarthScope "would be an observatory for the entire community," says Zimmerman. A presentation to the White House Office of Management and Budget earlier this month "went very well," Zimmerman told a recent EarthScope town meeting. The $75 million over 4 years would cover the hardware and its deployment; the geosciences directorate, of which earth sci-





CREDITS: (TOP TO BOTTOM) E. HUMPHREYS AND K. DUEKER/S. GRAND

A better view. Just as the shift from global *(bottom)* to regional *(top)* seismic imaging brings out detail 100 kilometers down, the USArray seismic network would further sharpen the view. Red shows slower seismic velocities; blue faster.

ScienceScope

Replay A University of Arizona (UA), Tucson, immunologist dismissed for scientific misconduct will get a second chance to plead her case. Arizona Judge Stephen Villarreal ruled on 16 November that former Regents Professor Marguerite Kay was wrongly denied legal representation during a hearing that led to her dismissal (*Science*, 5 November, p. 1076). Villarreal ruled that the university erred in barring Kay's attorney from speaking at the hearing and should grant a new one.

Kay feels vindicated. But Villarreal did not comment on the misconduct allegations or say that the UA must rehire her. UA attorney Jane Eikleberry says Kay will get a new hearing, though administrators "have not resolved" whether it will include another review of misconduct evidence.

Getting Credit High-tech executives have won a lengthy extension of a coveted tax credit. The House and Senate voted last week to give the R&D tax credit —which allows companies to deduct research expenses—a new 5-year lease on life. The credit expired 30 June, and industry had lobbied hard to avoid another single-year renewal of the perk, saying such short extensions wreak havoc with financial planning. Although backers failed to make the credit permanent, Representative James Sensenbrenner (R–WI), head of the House Science Committee, said the 5-year extension will finally "put an end to the start-and-stop approach" that long bedeviled the policy.

Feeding the Debate With activists dressed up as monarch butterflies protesting outside, the Food and Drug Administration (FDA) kicked off a three-stop listening tour about genetically modified food in Chicago last week. The meetings were set up to explain FDA's approval policy for transgenic crops, which critics say is lax (see p. 1664).

Overwhelming interest forced FDA to find a larger venue just 2 days before the Chicago session, and many of the speakers came out strongly against biotech crops. But that doesn't signal an impending change of public opinion in the United States, says Mike Phillips of the Biotechnology Industry Organization, who sat on one of the meeting's panels. "There are hundreds if not thousands of zealots," says Phillips. "But did the average man on the street come in and say anything? The answer is no." Crowds are expected at the remaining two hearings, in Washington, D.C., on 30 November and Oakland, California, on 13 December.

ences is part, has committed to providing funds for operating costs and science support.

In future years, NSF would like to expand EarthScope with two instruments that would give an even broader view of Earth. The Plate Boundary Observatory (PBO) would place a dense concentration of instruments along North America's major tectonic plate boundary from Alaska to Mexico, looking for the stress buildup that drives earthquakes. And over it all would be InSAR, a satellite-borne Interferometric Synthetic Aperture Radar that would check strain accumulation every 8 days with 100-meter resolution. EarthScope planners hope PBO might get under way in 2002 or so and InSAR soon after that.

Support for EarthScope ranges from enthusiastic among geophysicists to guarded among geologists. "We're beginning to sense that, for some of our problems, the only solution is complex, multidisciplinary studies," says seismologist David Simpson of IRIS, a consortium of seismological research institutions in Washington, D.C., that is expected to put in a bid to build and operate USArray. "These are big problems; they've got to be attacked in an integrated big-science way. EarthScope engages a much, much larger community than just the seismologists." Despite his reservations, Burchfiel agrees that "there's a lot of great science to be done, [but] it's science in a somewhat different mode than some people are used to. The geophysics community is clearly trying to integrate geology and geophysics for better science. That's the way it has to go."

Whether it goes that way as soon as the project's backers hope depends first on winning a spot in the president's budget that appears in February, followed by a congressional nod later in the year. In the meantime, everyone would probably agree with Zimmerman's bottom line: "This is not an easy thing to pull off." **–RICHARD A. KERR**

DATABASES

Scientists Decry Antipiracy Bill

Responding to a furious lobbying campaign, the House last week put off a vote on a bill that critics say could severely hinder how everyone from molecular biologists to environmental scientists uses electronic databases. Scientific groups are hoping a less restrictive proposal emerges when Congress returns in January.

The issue arose 3 years ago, when the World Intellectual Property Organization floated a draft treaty that would impose civil and criminal penalties for using information in a commercial database without the database owner's approval. The initiative was put on the back burner, however, after the U.S. National Academy of Sciences and other organizations complained that the treaty might undermine "fair use," a legal privilege that has long allowed open access to many kinds of data for educational and research purposes (*Science*, 25 October 1996, p. 494). Most troubling to these groups was the prospect that companies which repackage data freely available from the government—weather statistics or gene data, for example—could claim ownership of the raw information.

Congress has since struggled to forge a consensus on how to protect commercial databases without overly restricting academic access (*Science*, 14 May, p. 1129). The latest overture, Representative Howard Coble's (R–NC) Collections of Information Antipiracy Act (HR 354), would prohibit for 15 years or more the use of data in a way that would harm a database's market. Backing the bill, which was approved by the House Judiciary Committee in May and was headed for a possible floor vote last week, are groups such as the National Association of Realtors, which wants to protect its Multiple Listing Service, and Reed Elsevier, which owns LEXIS-NEXIS and many scientific journals.

University, library, and scientific groups, however, contend that Coble's bill is deeply flawed, particularly its definition of databases as "collections of information." That sweeping term, critics say, could encompass tiny collections such as a handful of species names or even individual facts. And that could allow database owners to impose fees or other constraints on researchers hoping to create new data sets or manipulate the information—for example, by plugging weather data into a climate model. Another problem, they say, is that the bill would permit nonprofit uses of data "that do not materially harm the primary market," without explaining what would constitute "harm." According to a 1 November letter to House members from Association of American Universities (AAU) president Nils Hasselmo and signed by 12 other groups (including AAAS, *Science*'s publisher), HR 354 "would place a shroud of uncertainty over today's customary and accepted practices." An investigator who drew on a commercial database—which could mean any of Reed Elsevier's journals, for instance—could wind up violating copyright law if he or she let postdocs and grad students incorporate the data into their work, says AAU executive vice president John Vaughn. "We don't want to have to bring lawyers into the lab," he says.

The AAU and other groups have thrown their weight behind an alternative bill, HR 1858, crafted by the House Commerce Committee. HR 1858 would, among other differences, protect collections of facts but not discrete facts themselves; and it would allow more leeway for researchers, penalizing them only if they misuse data as part of "a consistent pattern engaged in for the purposes of direct commercial competition." The bill's approach is more in line with an academy report released last month, "A Question of Balance: Private Rights and the Public Interest in Scientific and Technical Databases." However, the Judiciary Committee bill, which is favored by House Majority Leader Dick Armey (R–TX), has dominated discussions so far.

Storm brewing. Scientists say antipiracy bill would place restrictions on access to information in commercial databases, such as this weather center run by Intellicast.

CREDIT: *EOS, TRANSACTIONS, AMERICAN GEOPHYSICAL UNION* **80** (22), PP. 245, 250–251 (1999); WSI CORP.

With HR 354 failing to pass before the House adjourned, some observers expect members to try to work out a compromise bill. The Senate also appears eager to move on database protection: Orrin Hatch (R–UT), chair of the Senate Judiciary Committee, last January signaled his intention to open debate by introducing several proposals into the *Congressional Record*. "We think if something happens, there could be fairly quick action," says Skip Lockwood of the Digital Future Coalition. **–JOCELYN KAISER**