Charlie Cantor Gets Kicked Upstairs

Amid charges of absenteeism and scientific inefficiency, the head of DOE's Lawrence Berkeley human genome lab departs

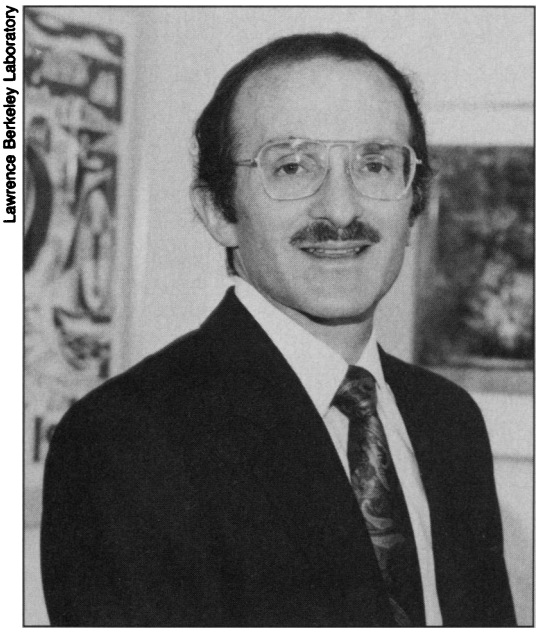
TWO YEARS AGO CHARLES CANTOR, a well-known geneticist, was hired away from Columbia University to Lawrence Berkeley Laboratory to head the Department of Energy's human genome lab there. Cantor was expected to lead the lab and the entire DOE part of the genome project into scientific eminence. But those hopes haven't been realized, and 3 weeks ago Cantor was removed as director of the lab, leaving the DOE genome effort without a leading scientist in charge of research.

The official view of these events is rosy: a promotion for Cantor to a new position as principal scientist for the entire DOE genome effort, including the national labs at Livermore and Los Alamos in addition to Berkeley. Cantor will retain other ties to the DOE genome project as well—chair of its coordinating committee and as vice president of HUGO, the international genome organization. "As the project grows," says Charles Shank, the director of Lawrence Berkeley Laboratory (LBL), "Charles Cantor is playing a central role for DOE."

But people on the scene at the LBL genome lab say the story has a dark side. Under Cantor, they say, the LBL part of the genome project has gone nowhere—falling behind the other DOE efforts and behind the outside labs doing genome work. Cantor spent little time running the lab, these observers say, concentrating on being a globe-trotting spokesperson while he left day-to-day management to geneticist Cassandra Smith, his colleague and girlfriend.

"From Charlie's behavior," says University of California at Berkeley chemistry professor John Hearst, who was instrumental in recruiting Cantor but later became critical of him, "it appears he lost interest in the day-to-day running of a scientific lab and was more interested in flying around the country giving talks."

All this is a far cry from the hopes that greeted Cantor when he arrived at Berkeley a year ago to become professor of molecular and cell biology in addition to his job at LBL. Technically Cantor was the equal of genome lab directors at Livermore and Los Alamos. But he was by far the most eminent of the three: member of the National Academy of Sciences, associate editor of the *Journal of Molecular Biology*, and author of a widely used biophysical chemistry text. Indeed, he was brought in partly to give the DOE genome effort scientific credibility.



Lawrence Berkeley Laboratory

Absentee. *Charles Cantor*

But it didn't work out that way. "There was very little progress at the level of mapping genes or even developing procedures to better map them," says Hearst. "And that was the major focus of the [Human Genome] proposal." Outside laboratories, particularly the one led by Maynard Olson at Washington University, "were doing so much better that it looked like the Berkeley effort had stalled," he adds. "It was an embarrassment to the Berkeley biological community."

The other DOE labs also had the jump on LBL. Each lab chose one chromosome to concentrate on. Livermore has already cloned a significant portion of chromosome 19 and Los Alamos has cloned some 60% of chromosome 16. But LBL has cloned almost none of chromosome 21, according to Glen Evans who heads human genome work at the Salk Institute. Evans also pointed out that Los Alamos and Livermore both have computer databases that are up and running, while LBL has not. Evans did note, however, that the engineering side of the LBL effort, involving such things as robotics and pulsed-field gels, is "moving along fine."

What went wrong at LBL emerged from numerous interviews with LBL and Berkeley scientists, few of whom are willing to be quoted for the record: "It's inappropriate to render harsh criticism of such a superb scientist as Charles in a public forum," says Shank. Yet *Science* has learned that Shank himself commissioned a panel of outside scientists to conduct a confidential review of Cantor's LBL efforts. The panel's report is said to have been critical.

At the heart of the problem was Cantor's absence. "Cantor has been very much an absentee person," said a scientist familiar with the operation of the genome lab. "He travels a great deal. We might see him once a week at a seminar. For the day-to-day running he was simply not there. It was strictly Dr. Smith."

Smith accompanied Cantor from Columbia to become senior scientist at LBL and associate professor in residence in the department of molecular and cell biology. She had no official authority to run the lab, Shank says: "Smith has never been authorized to run day-to-day operations of the laboratory. Cassandra has her own research project. As research leader she has the same judgment as any of the other Ph.D.'s. But she was not put in charge of the project."

Authorized or not, Smith ran the lab, insiders say. One reason for her influence was the lack of countervailing authority from senior research staff. Cantor had been expected to recruit senior, faculty-level scientists to aid in running the genome lab. But, in fact, none were hired.

Smith was not a well-liked manager, insiders say; relations between her and the staff were strained. Staff scientists were sometimes required to perform menial tasks such as making DNA size standards for gel electrophoresis, while people with less training were at times given more important, even leadership, roles. Ph.D.-level scientists complain of having been ordered around like technicians, moved frequently, and transferred from project to project without regard to interests or skills. "Projects are likely to appear or disappear almost momentarily," one scientist complained. "She organizes and disorganizes groups on a virtually day-to-day basis."

In this atmosphere, the turnover rate was high. Four of seven or so staff scientists quit; a fifth was arranging for a transfer when Cantor departed. Even among the clerical staff, there was a high turnover.

Sylvia Spangler, a Cantor assistant and

caretaker of the lab until a new director is found, acknowledges there was a high turnover rate that "probably reflected some negative interactions." In many cases, Spangler said, "the question of independence was very strong," adding that "people who think highly of themselves have a limited capacity to be controlled by others."

Smith denies that projects were frequently changed, though she does say that focusing on some projects and abandoning others is part of successful science. Frustration among the staff, she says, was caused partly by the fact that slow setup of the LBL lab required Cantor's Columbia group to move to Berkeley in two parts, with those who moved first having their work disrupted by the arrival of the second group. It was largely those in the first group who were unhappy, she says. By comparison, those in her separate campus lab, which was set up without disruption, had no complaints.

Cantor springs to Smith's defense. He acknowledges that he did count on associates, including Smith, to run much of the lab's daily operation, but adds "it is completely unfair to point the finger at Dr. Smith as the person responsible for the difficulties of running the day-to-day lab."

Many of the problems in management, in science, and in recruiting, Cantor says, stem from LBL's slowness in getting lab space ready for him and his group. "To transport an active and working group across the country into a situation where labs are being renovated, making equipment impossible to install, and facilities aren't available—the group naturally gets very frustrated." And, Cantor adds, "it is very difficult to recruit people if you don't have space to offer them." Some of the promised space, he says, wasn't ready until this April.

But Cantor acknowledges that space problems were only "part of it. The other part, I was personally overwhelmed between responsibilities at Berkeley . . . and international and national responsibilities I was carrying out." In his role as spokesperson, a role for which many say he is well qualified, Cantor will be able to concentrate on those national and international responsibilities.

That leaves the question of whether LBL can find someone to get the genome lab back on track—a top scientist and a good organizer. One candidate being considered by Shank's search committee is Caltech's Leroy Hood. But whoever the replacement is, his task will be to concentrate on the science. ■ PAUL SELVIN

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NSF Peer Review: Under Pressure

For years, researchers have been complaining that top-flight research proposals are going unfunded because there are too many applicants chasing too few funds. Now comes a plea from the other side of the fence. Senior staff members of the National Science Foundation, in a bluntly worded report,* warn that NSF's peer-review system is groaning under the weight of record numbers of proposals and that project officers are so swamped they can no longer do their jobs properly. The proposed remedy: In the near term, simplify and shorten grant proposals; in the long term, increase the size and duration of the average award and reduce the variety of grants the foundation provides—in part by incorporating into the regular awards system politically popular programs that currently support women, minorities, and other specific sectors of the community.

Part of the problem is easily explained: The number of NSF project officers has remained constant over the past decade, but the number of proposals reviewed each year has increased by about 40%, notes the report, which was written by a task force established by former director Erich Bloch. Not only are there more researchers submitting proposals, but a growing proportion of individual investigators are sending in multiple submissions. These include quick resubmission of proposals that have been turned down—as much as 30% of all reviewed proposals are resubmissions—and requests for small, short-term grants to maintain an adequate level of funding. And initiatives launched in the early 1980s—such as programs of special grants designed to increase opportunities for women, minorities, young investigators, and researchers in undergraduate schools—have added to the burden. Last year, some 18% of all the proposals submitted to the foundation sought funds through these programs.

As most researchers are painfully aware, NSF's budget has not kept pace with this flood of applications: Only 31% of the proposals reviewed between 1987 and 1989 were funded, compared with 38% at the beginning of the decade. Moreover, average grant sizes have remained essentially unchanged for a decade at $65,000 and they last on average only 2 years.

The task force did come up with one slightly less gloomy statistic—42% of principal investigators who applied for funds in 1987–89 succeeded in getting at least one proposal funded. That's only a slight drop from 45% in 1980–82. The reason, of course, is all those multiple submissions.

This increased workload is having a predictable impact on NSF staffers. "Many of the very best NSF program directors . . . admitted that they no longer have enough time to read and study proposals carefully," the report states. Moreover, "The growth in the number of [principal investigators] conducting research, coupled with federal funding constraints, is leading to a system that supports only 'safe proposals.' "

The task force offers some Band-aids to improve matters in the short term. These include a requirement that proposals for individual investigator research projects should be no longer than ten pages and that budgets submitted with proposals include only an estimate of total costs. Budget details should be provided only after a project officer has decided to recommend funding.

For the longer term, the task force floats some more radical proposals:

- There should be only three types of research grants for individual investigators: Standard Research Grants that would be awarded for 3 years with an option to renew once without additional external review; Starter Research Grants for investigators with no prior federal research funding; and Strategic Research Grants, lasting 1 year at a maximum of $50,000, for feasibility studies and exploratory research.
- Programs that currently span several directorates, such as Presidential Young Investigator Awards and Research Opportunities for Women, should be "mainstreamed." They would be subsumed into the three types of individual investigator awards, and project officers would be responsible for ensuring that the objectives currently served by these programs are met.
- The distribution of resources between the three types of individual investigator awards should be reassessed every 3 years to ensure that all contenders for NSF funds are being well served. ■ COLIN NORMAN

*"Report of the Merit Review Task Force" (National Science Foundation, Washington, D.C., 20550).