Molecular Biology: Corporate Citizenship and Potential Profit

The very success of molecular genetics rendered it an academic discipline. . . . As a subject matter for scholarly research, it is far from exhausted. And indeed its technological exploration, for instance, in eugenics and euphenics, has as yet barely begun. But its appeal as an area of heroic strife is gone.—GUNTHER STENT, The Coming of the Golden Age.

Nutley, N.J. In formal ceremonies on 24 September, Hoffmann-La Roche, Inc., the Swiss-owned pharmaceutical giant, dedicated a new $14 million building next to its corporate headquarters here to house the Roche Institute of Molecular Biology, the company's showpiece venture into the support of basic research. While the Institute itself may not represent a milestone of the Golden Age, it does indicate the extent to which molecular biology, even in its most basic forms, has evolved into a science that offers the potential of practical applications.

Now in its fourth year of operations, and still the only large-scale industry-supported center for fundamental research in biology, the Roche Institute supports some 70 doctoral-level workers, many of them veterans of the NIH, on its $4.5 million annual budget. While Hoffmann-La Roche picks up all the tabs, both company spokesmen and Institute scientists take pains to emphasize that the Institute charts its own course. At the dedication ceremony, the Institute's director, Sidney Udenfriend, former chief of the Laboratory of Clinical Biochemistry at the National Heart and Lung Institute (NHLI), read from the Roche Institute's charter the provision that "Scientists at the Institute will enjoy independence in their choice and pursuit of research problems, guided solely by the scientific importance of a project." Indeed, the various collection of work already published by scientists at the Institute contains nothing that could be called market-oriented.

In fact, were it not for the association with the company, the Roche Institute might pass for a segment of a university, in terms of structure, appearance, attitudes, and working conditions. It is divided into three departments: physiological chemistry, headed by Udenfriend; biochemistry, headed by Herbert Weissbach, a colleague of Udenfriend's at the NHLI and associate director of the Roche Institute; and cell biology, headed by Arthur Weissbach, also from NIH. The three grades of staff positions at the Institute correspond to assistant, associate, and full professor, with tenure awarded to the top two grades. The Institute supports a number of postdoctoral fellows and visiting faculty, and staff members are encouraged to accept, on Roche time, part-time teaching assignments at nearby universities and medical schools.

No Hardware Problem

The Institute differs from today's university department in one significant way—affluence. Though the new building is not equipped with spigots for hot and cold running radionucleotides, there is obviously no need for a researcher to scrounge, either for equipment or materials. As one of the staff put it: "If I needed an ultracentrifuge for my private use, I would have to justify it, but there would be no problem."

Moreover, researchers at the Institute are afforded access to many of the facilities of Hoffmann-La Roche's massive applied research enterprise, including x-ray crystallography, mass spectrometry, nuclear magnetic resonance, large-scale preparatory facilities, and a farm for large animals for immunology. Institute scientists need only submit a memo to the company's organic chemistry division for synthesis or analysis of unique compounds.

Other amenities of employment include liberal provisions for travel and technical assistance—assistant members receive two free trips to conferences anywhere in the world each year, as well as the full-time services of one technician. Salaries, while ample, reportedly do not far exceed the market value of the scientists for academic positions. Postdoctoral fellows receive $11,500, and one assistant member, who just joined the Roche Institute after several years as a postdoc, reports that his salary is a few thousand more than he would have received from a university department, but a few thousand less than he was offered by medical schools.

The same researcher said, however, that the Roche Institute offers a good many advantages unobtainable in academia. There is no soft money—9- or 10-month employment and live off your own grant for the rest—as many universities offer these days, no writing grant applications and having your research career depend on the outcome, and no teaching responsibilities. "It's really exciting for a young scientist," he said. "You have just about every opportunity possible."

The lack of administrative responsibility, along with the combination of access to industry's facilities and academic-style freedom, appears to have lured many of the senior staff to Nutley. In some cases it did take some luring, for as Herbert Weissbach told *Science*, "One institute can't change the stigma of working for industry."

To what extent employment at the Roche Institute is actually "working for industry" is a key question. The commitment of Hoffmann-La Roche to the support of basic research appears sincere enough. In addition to the Roche Institute, the parent Swiss company supports a sister facility, the Basle Institute of Immunology, headed by Niels K. Jerne.

Although no formal agreement was written to guarantee the continued support of the Institute, the company's rhetoric would seem to preclude demands for accountability, at least in the near future. "The Institute," says a company booklet, "represents a long-range commitment to fundamental research, designed to yield substantial benefits to humanity in terms of scientific progress."

Closing the Institute or demanding payoffs from the scientists' work might also be complicated by the mileage in public relations that Hoffmann-La Roche has attempted to clock with this venture. Last year, for example, in response to a reporter's questions concerning the company's drug advertising policies, a spokesman for Hoffmann-La Roche replied, "Just as no fair-minded person would question a surgeon's advice because of the fee he will receive after an operation, it is neither fair nor accurate

to impugn the motives of a company like Hoffmann-La Roche, which has pioneered civic, social and scientific innovations [including] the Roche Institute of Molecular Biology."

Public relations alone, however, would hardly justify the massive expenditure. Speaking at the dedication ceremony, the company's president and chief executive officer Robert B. Clarke said that "Many times since we announced plans for the Roche Institute for Molecular Biology 4 years ago, we have been asked 'What's in it for Roche?' . . . Obviously, we hope for products, possibly in the distant future, but what is truly 'in it for Roche' is a renewed dedication to our long-held belief that, as a leader for many years in pharmaceutical research, we must not be content with the pursuit of the ordinary; we must reach for the stars. This is our interpretation of enlightened corporate citizenship." Clarke went on to discuss the company's social obligations, should "we advance our knowledge into fields such as genetics, antiviral agents, and other areas provocative of social controversy."

Indeed, the belief that entirely new forms of marketable therapy, the eugenics and euphenics mentioned by Stent, may emerge from basic molecular biology, lies at the heart of the Roche approach to basic research. Meanwhile, the company might expect a few incidental payoffs from time to time. Scientists at the Institute are encouraged, though not obliged, to discuss ideas with the rest of the Hoffmann-La Roche staff, with a view toward practical applications. At the ceremonies, John J. Burns, the company's vice president for research, remarked that "We are most pleased with the warm scientific collaboration which has developed between the scientists in the Institute and those in the Roche research laboratories. Collaborative programs are already under way on new approaches to cancer research and to mechanisms involved in narcotic addiction."

Whether Hoffmann-La Roche will be rewarded with a new Librium or Valium from its support of esoteric research remains to be seen.

—ROBERT J. BAZELL

ABM Debate: Learned Society Split by Old Grievance

A strange departure from the customary dry diet of academic journals is contained in the current issue of *Operations Research*, a learned quarterly published by the Operations Research Society of America. Instead of anodyne articles on games theory or linear programing, subscribers are presented with a quasi-judicial inquiry into the debate waged 2 years ago over the antiballistic missile system (ABM). The subject of the inquiry is the performance not of the ABM, but of the participants in the debate, in particular the group of MIT-based scientists who argued against the ABM.

The inquiry's verdict is that the critics presented false or misleading arguments to congressional committees, and its implication is that their conduct fell below the professional standards to be expected of an operations researcher. The 8000 members of the Operations Research Society of America (ORSA) have not yet had opportunity to react to the inquiry, which was undertaken by a committee appointed by the ORSA council, but ructions within the society are already apparent. Five of the 13-man council have protested the inquiry, and the society's founder, Philip M. Morse of MIT, has threatened to resign. The report, Morse said in a letter to the Boston *Globe*, suggests that ORSA "is on the side of ex-Senator Joseph McCarthy, is pro-military, and supports the assumption that the expert always knows best."

The inquiry is the work of a six-man committee appointed by the ORSA council in November 1969. The group, called the ad hoc committee on professional standards, was chaired by Thomas E. Caywood, president of ORSA that year, and had as members five previous presidents, one of whom is editor of *Operations Research*. The committee prepared two documents, one of them a set of professional guidelines for the practice of operations research, and the other, published as an appendix to the first, an analysis of the ABM debate intended to exemplify how the participants in the debate deviated from the guidelines.

The appendix also served a second purpose, found to be compatible with the first, which was to address a complaint laid before the council by Albert Wohlstetter, professor of political science at the University of Chicago. Wohlstetter, who worked for 9 years with RAND, the Air Force think tank, was one of the few scientists outside the Administration to give evidence in favor of the ABM during the 1969 Senate hearings. In testimony before the Armed Services Committee, Wohlstetter conflicted with an opposing witness, George W. Rathjens, professor of political science at M.I.T., on the percentage of Minuteman missiles that would survive a Russian first strike, Wohlstetter claiming a figure of 5 percent, and Rathjens 24 percent. Argument between the two continued in the pages of the *New York Times* and in correspondence with Senator Stuart Symington (D–Mo.), and was still unresolved when Wohlstetter wrote to Caywood in November 1969 asking that ORSA "appoint a panel to consider some aspects of professional conduct during the ABM debate this spring and summer."

The first and last few paragraphs of Wohlstetter's letter of complaint are printed in *Operations Research*; the bulk of the letter, which is omitted, suggests that the panel should confine its attention to certain narrow areas of the ABM debate, in particular the points of difference between Wohlstetter and Rathjens.

Operations research, a group of techniques originally developed during the World War II, has not entirely outgrown its military heritage, and many members of ORSA necessarily have past or present connections with the military establishment. ORSA is not ideally positioned to adjudicate a debate that directly pitted the Department of Defense against its critics, but its council