

The Salk Institute at a Crossroads

Jonas Salk wanted an ivory-tower sanctuary. Instead he got a high-powered research lab that now faces some tough choices in a difficult real-world environment

La Jolla, California—THIRTY YEARS AGO, JONAS SALK, flush with fame and fortune as the creator of a polio vaccine, began what he considers his most important experiment—a biological research institute where a brilliant cadre of scientists would be free to think and work as they pleased. And it wasn't to be an ordinary center. The Salk Institute for Biological Studies was built far from academia as a striking concrete complex perched on the sun-bleached cliffs above the Pacific in La Jolla. "I wanted to create a crucible for creativity," says Salk. "I wanted to bring out the best of the best."

Today, Jonas Salk's experiment is entering a new phase. As the Salk Institute turns 30, it is clear that it never quite became the sanctuary Salk envisioned. It is a leading research lab in biological science—particularly immunology, molecular biology, and neuroscience—but its researchers are hardly immune to the pressures of the real world. In fact, precisely because of those pressures, the Salk Institute now finds itself at a point where difficult choices must be made.

For years researchers at the Salk have been quite successful in the chase after federal monies for basic research. But the institute has a limited endowment and it has never established strong money-raising ties with the local San Diego community. So, in a climate that is ever more competitive, Salk scientists are even more vulnerable than their academic peers to cuts in research funding. The institute also faces a crushing space crunch, and it lacks the ready supply of cheap labor—graduate students—that teaching institutions have.

And another source of uncertainty is the fact that Jonas Salk's great experiment is under temporary management. Earlier this year, Renato Dulbecco—virologist and Nobel laureate—agreed to become president of the institute for a couple of years after another candidate had turned down the job. Dulbecco is universally admired and respect-

ed at Salk, but not all are sure he is hard-nosed or visionary enough to make the hard choices Salk faces. But even beyond Dulbecco's personal qualities, the difficulties that the institute confronts raise the question of where elite, private research institutions such as Salk, Cold Spring Harbor, and the Woods Hole Oceanographic Institution fit in the landscape of American science.

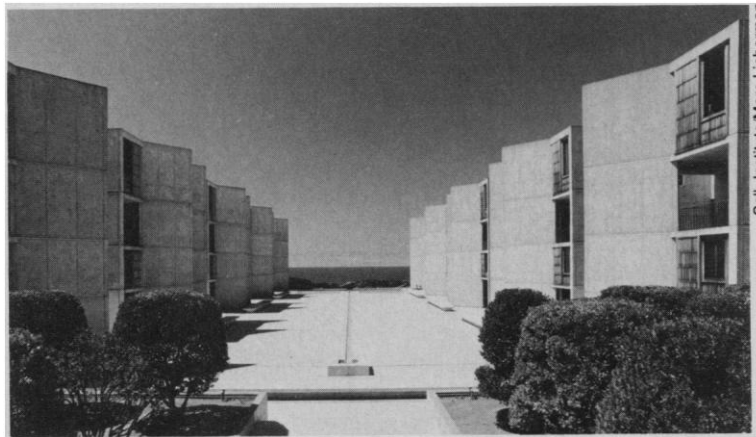
The realities of life at the Salk Institute today are a far cry from the scientific Shan-

de Hoffmann, who had built General Atomics, also in San Diego. When de Hoffmann took over, the Salk had an internal endowment of only \$200,000 and there was talk of operating on 4-day work weeks to cut payroll costs.

De Hoffmann whipped Salk into shape—but it was a shape different from the one Jonas Salk had dreamed of. Gone were plans for studying the interaction between science and society. In their place, de Hoffmann laid

plans for a more conventional research institution—and then set about raising funds to ensure its survival.

Salk professor and Nobel laureate Francis Crick recalls how smoothly de Hoffmann operated in enlisting top scientists in that effort: "We were the front men when millionaires came to town and wanted to meet Nobel laureates. Fred trotted us out, and I learned to ask the right questions—I'd ask them, 'What kind of airplane do you own?' The next day, Fred pushed us aside and the serious negotiations



Idyllic vistas. The Salk Institute, perched above the Pacific in La Jolla, California, faces quandaries in funding, lab space, and leadership.

gri-la Salk had in mind in 1960, when he convinced the March of Dimes to build a lab and provide \$2 million a year to keep it going for a decade. But Salk had envisioned much more than just a lab. He wanted a center that would bridge the gap between science and the humanities—between what C. P. Snow (an early collaborator in the institute) had called the "two cultures."

It didn't take long for reality to intrude. As Paul Berg of Stanford University says: "It has become anything but that early vision of a think tank or an Institute for Advanced Studies, where people were free to contemplate their navels or think great thoughts, overlooking the Pacific Ocean. They're scratching to survive just as much as the rest of us."

Indeed, the institute ran into money trouble almost from the start. By 1970, its finances were in such dire straits that the board of trustees hired a proven manager—former Manhattan Project physicist Frederic

would begin."

Under de Hoffmann, scientific eminences who had built reputations elsewhere—including Crick, Dulbecco, Roger Guillemin, and Robert Holley, became majordomos with huge labs and ample resources. De Hoffmann left them alone for the most part to concentrate on research. Many of them thrived in this environment: Dulbecco and Guillemin won Nobel prizes for their work, and the institute developed a high-powered faculty of 47. Their papers are among the most cited by other scientists—second only to Cold Spring Harbor from 1973 to 1987, according to the 19 March 1990 *Science Citation Index*, published by the Institute for Scientific Information.

But from the time de Hoffmann took office, he rubbed many the wrong way. He ruled with an iron hand, retaining control over every detail down to the color of tiles in the commissary. "De Hoffmann was single-minded, mentally tough, and he had to be in

control of everything—it was the only way he could operate,” says Delbert Glanz, executive vice president of Salk.

By the mid-1980s, however, a new generation of younger scientists who had come of age in the 1960s were in place, and they were unwilling to tolerate de Hoffmann’s methods or his penchant for secrecy about budget and other matters. In what Salk researchers refer to as the “palace revolt,” key young faculty members met with administrators in a series of meetings without de Hoffmann in 1987 and 1988. They insisted on being given information about the institute’s budget and more say in the operations. In spite of the meetings, several were so unhappy that they quit.

But before the demands of the young Turks could be formally presented to de Hoffmann, he stunned them by resigning. It turned out that, in a grotesque twist of fate, de Hoffmann had become infected with HIV during a blood transfusion following coronary bypass surgery. After 18 years as president, he resigned in November 1988. Although people at Salk consider his illness a tragedy, many say outright that it was better for the institute that de Hoffmann left. It was particularly telling that out of 500 Salk employees, only 40 showed up at a symposium in de Hoffmann’s honor in March 1989, 7 months before his death.

In the turbulent time that followed, Dulbecco reluctantly agreed to leave his lab and serve as acting president. From the time Dulbecco moved into the president’s office, “things changed 180 degrees,” says Glanz.

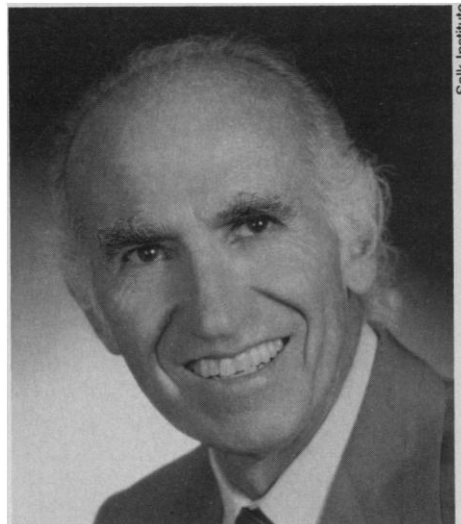
Dulbecco’s style is diametrically opposed to de Hoffmann’s. In place of autocracy has come the reign of committees. Researchers have been encouraged to sign up for duty on 17 committees, ranging from those overseeing faculty appointments and research to those that consider animal welfare and patent and legal issues. An Academic Council of seven elected members participates in major decisions, and two faculty members now sit on the Salk Board of Trustees.

The Salk faculty seems to appreciate both Dulbecco’s managerial openness and his ingratiating qualities. “Renato spends a lot of time working to achieve consensus,” says Walter Eckhart, a senior faculty member who studies oncogene activation and cell transformation.

But it isn’t clear that openness and personal grace are enough to solve the bumper crop of problems the Salk must meet head on. By far and away the most serious concern on Salk scientists’ minds is the almighty research dollar. The Salk has a \$34-million annual operating budget, two-thirds of which comes from the federal government (90% of that from the National Institutes of

Health) and \$1 million a year from the March of Dimes. Although it employs 500 people—200 with Ph.D.’s—it has only a relatively small internal endowment of \$25 million to fall back on in lean times. As Crick notes, “An Institute like this doesn’t have the rich alumni of MIT, Harvard, or Stanford. An institute like this needs constant vigilance.”

By comparison, the molecular biology lab



Founding father. Jonas Salk, who wanted an institute that bridged the gap between science and the humanities; but it never came to pass.

at Cold Spring Harbor—an institution to which the Salk is often compared—employs fewer people (155, including 130 Ph.D.’s) and has a smaller annual operating budget, yet has an endowment that is twice as large as Salk’s.

At the moment Dulbecco’s chief concern is getting more money—particularly the \$18 million needed for a new laboratory building. “It’s a very difficult thing to attract private funds. We have no alumni or football team. We don’t have a hospital with patients to which a private donor is emotionally attached,” he says. “In these respects, we’re in a very weak position compared to everyone else.”

And the institute can no longer count on federal funds to pull it through. Last year, Salk researchers did well, as usual, winning \$20.4 million in awards from the NIH, which put them 76th in a ranking with other institutions, ahead of many larger institutions such as the California Institute of Technology, the New England Medical Centers Hospitals, and Dartmouth.

What worries researchers is that those grants are becoming increasingly difficult to get. What is more, the average dollar amount awarded to Salk researchers is falling by about 12 to 14% (reflecting national trends) at a time when their costs are going up. “Clearly we’ve done well, but the picture

down the road isn’t so good,” says Leslie Orgel, a senior faculty member whose NIH funding was cut by 14% this year. “We’re not vulnerable to going broke, but research at the place could be restricted if funds go down.”

And the younger faculty agree: “One of the major worries is the long-term stability of funding,” says Michael McKeown, a junior faculty member who studies development in *Drosophila* and is a member of the Academic Council. “I worry because the NIH can’t be trusted. The tighter the funding at NIH, the greater the chance your grant will be killed by bad luck—not because it isn’t good science.”

While the same concerns plague researchers everywhere, winning grants is a matter of life and death at the Salk: only researchers who can win their own grants can stay. Unlike other institutions, the Salk has neither an endowment, state funding, hospital income, tuition, or other money to pay salaries for researchers who can’t get their own grants—except for short-term safety nets for young researchers who have just joined the institute. As a result, only researchers with considerable, consistent grant support can survive at Salk—an even more extreme version of the usual “win grants or die” picture.

Money isn’t the only problem, however. Another is the absence of abundant lab manpower in the form of graduate students. For the junior faculty, this is a serious problem, partly because one alternative—postdocs—are so tough to come by. Junior faculty have sought students from the University of California at San Diego as lab personnel, but the biology department there has clamped down recently, allowing only the ten Salk faculty who have adjunct professor appointments there to employ their students.

Many Salk researchers also are feeling the pinch in laboratory space—and, again, it’s the junior faculty who are hurting the most, although some senior faculty also complain. The institute is now housed in two large buildings, which filled up by the mid-1980s as the Salk went through a gradual expansion. With a new wave of recruitments, the space has gotten particularly tight recently.

For some, it can make the difference between staying and leaving. “The older people think this is a magical place and that we’d make any sacrifice to stay,” says Beverly Emerson, a junior faculty member who gives a quick tour of her “puny” lab where she studies the control of gene expression during embryonic development. “It’s not that wonderful. There are big problems in keeping the junior faculty when they know they can get jobs with big labs and graduate

students in other places.”

All of these issues are of concern to Dulbecco, but he thinks they are on their way to being solved. “My diagnosis is that everything’s going quite well,” he bubbles. His optimism is based on a strategy with several prongs. One is aimed at improving relations with the surrounding community for fund-raising purposes. A long-standing joke during the de Hoffmann era was that the Salk

idea, but there’s a creeping realization that it may be industry—not government—that will allow independent research labs to survive in the 1990s. “I’ve come to feel very strongly that the future of academic research institutes is going to depend on industry,” says Kenneth Klivington, assistant to the president for scientific planning. “My guess is the future here has to depend on that.”

Some faculty, however, are concerned. “I

dramatic changes,” says Klivington. “It’s a system that’s still evolving, and I think some of the faculty members are going to be facing some unexpected realities as they get more involved in the administration.”

One of those realizations may be that the Salk does, in fact, need a powerful president willing to make tough decisions about research priorities, funding, and space. “I believe a strong leader won’t be well liked,” says Evans. “Anyone who’s well liked isn’t making the hard decisions.” Some also worry that Dulbecco’s effectiveness is undermined by the fact that he’s only agreed to take the job for a couple of years.

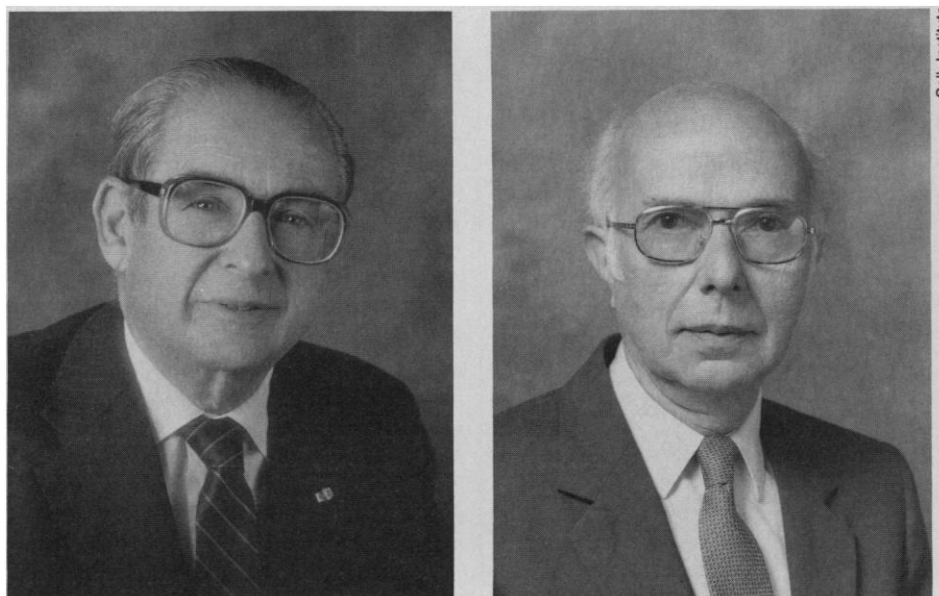
So some faculty have been hoping for a strong successor to Dulbecco. Which is why many members of the Salk family were disappointed when James Darnell of the Rockefeller University turned down an offer to become president earlier this year. The negotiations broke down in part because Darnell wanted a research lab in addition to the presidency—a demand unacceptable to Salk administrators who felt he couldn’t comfortably do both. That’s when Dulbecco agreed to stay on as president for a couple of years, to allow the institute to take its time finding his replacement.

Beyond the question of finding the right leader lurks a more fundamental question—what is to become of private institutions like the Salk? Do they need huge endowments, such as the Rockefeller’s \$500 million, or should they get hooked up to mega-science in the way Cold Spring Harbor has with the human genome project? Or will they have to ensure their survival by inviting industry into their labs or starting clinical programs to attract donors?

While those questions are being asked at the Salk, many of the researchers there say that independent institutes like the Salk are a valuable commodity. “Here I do virtually nothing but my research,” says Charles Stevens, a neuroscientist who left Yale Medical School a year ago to be free of academic obligations. “It’s important to have a place where scientists can come and work unencumbered.” Evans concurs: “This is such an unusual resource. If it dries up, then you’re left with only the conventional way, and that’s dangerous. One needs the diversity—great discoveries only come with diversity.”

The crucial test in the next few years will be in whether the Salk can attract the funding it needs to survive—without sacrificing what is most special about the institute—its independent spirit. Says Jonas Salk, the founding visionary: “I would hope that since we know the institute is an endangered species, that we do everything possible to preserve it—at our own peril.”

■ ANN GIBBONS



Autocrat and democrat. Frederic de Hoffmann (left) and Renato Dulbecco.

Institute was the best kept secret in San Diego—and that was the way de Hoffmann liked it.

That’s why a meeting at the Salk in June was a remarkable sight. Dulbecco invited about 100 leading community members to the institute, where he and Eckhart spent an evening telling them about its operations and research and plans for the new lab.

If the new laboratory is built, it will solve the institute’s space shortage for the time being. It also would allow the institute to expand some research, giving it room to recruit researchers with lucrative grants. A move already is under way, for example, to do more research in AIDS and genetics and a lecture series on bioethics is in the works—much to Salk’s delight.

The administration also is considering proposals to start a new graduate program, which would start small—something like the one at Rockefeller University, which has 125 students. That program might well solve some other problems, but it’s unlikely to be a money-maker.

Another proposal Dulbecco has considered is an expanded program of research liaisons with industry. This is a controversial

do not like the idea of jumping into bed with large companies, because it has to have an impact on the direction of research and what ultimately gets done,” says Ron Evans, a current-generation Salk star who studies gene regulation by steroid receptors and is a member of the Academic Council and the Board of Trustees.

Such worries about specific Dulbecco proposals are only indicators of the ultimate question mark in the Salk Institute’s future: who will lead it? Notwithstanding Dulbecco’s personal popularity and enthusiasm, some are concerned that decentralized management may not be effective. Young researchers’ requests for more space sometimes seem to get bogged down in committee, leaving them frustrated by a cumbersome and time-consuming process.

For all the complaints about de Hoffmann’s style, he did protect researchers from day-to-day concerns about finances and management and single-handedly rationed lab space. But now the responsibility is shared by the researchers, and some say the newly involved faculty is turning operations at the Salk inside out. “It’s a real challenge for the administration to keep up with the faculty during these