

## Lederberg Assumes Office at Rockefeller

Dr. Joshua Lederberg, Nobel laureate and then chairman of the Department of Genetics at the Stanford University School of Medicine, was elected president of Rockefeller University on January 19, 1978. He officially assumed the office on July 1. He has been on the faculty of Stanford's School of Medicine since 1959, holding the titles of professor of biology and professor of computer science. For the past four years, he has been the principal investigator of the DRR-supported Stanford University Medical Experimental Computer—Artificial Intelligence in Medicine (SUMEX-AIM).

Dr. Lederberg, who was born in Montclair, New Jersey in 1925 and attended Stuyvesant High School in New York, received his B.A. degree from Columbia College in 1944. After two years at Columbia University's College of Physicians and Surgeons, he took a leave of absence to do research with Edward L. Tatum at Yale University. He never returned to medical school. While at Yale, where he received a Ph.D. in 1947, Dr. Lederberg discovered the mechanism of genetic recombination in bacteria, demonstrating for the first time that a form of sexual reproduction occurs in these microorganisms.

Eleven years later, in 1958, at the age of 33, he was named corecipient of the Nobel Prize in Physiology or Medicine for his research into the organization of genetic material in bacteria. The other recipients of the prize that year were Dr. Tatum and Dr. George Beadle for their discovery at Stanford

in the 1940s that genes act by regulating specific chemical processes.

A member of the National Academy of Sciences, and a charter member of its Institute of Medicine, Dr. Lederberg has been active on several government advisory committees and boards dealing with problems of mental health and retardation. He is also a member of the Advisory Committee for Medical Research of the World Health Organization, and is on the board of trustees of the Natural Resources Defense Council, which is concerned with environmental health.

Dr. Lederberg played an active role in the Mariner and Viking missions to Mars, sponsored by the National Aeronautics and Space Administration. He has been a consultant to the Arms Control and Disarmament Agency and contributed to the successful negotiation of the treaty on biological weapons disarmament. He is a director of the Center of Advanced Study in the Behavioral Sciences, Stanford, California, and of the Institute for Scientific Information in Philadelphia. He is also chairman of the board of Annual Reviews of Palo Alto, California, a cooperative nonprofit scientific publisher.

His interest in improving communication among scientists, the general public, and government policymakers has prompted Dr. Lederberg to write extensively for lay audiences. Among his publications are articles distributed by the Washington Post Syndicate on the social impact of scientific programs.



*Nobel laureate Dr. Joshua Lederberg, recently appointed president of Rockefeller University, at his laboratory at Stan-*

*ford, where he was previously Joseph D. Grant Professor of Genetics.*

He has been awarded honorary Doctor of Science degrees by Yale, Columbia, University of Wisconsin, Albert Einstein College of Medicine, and an honorary M.D. by the

University of Turin, Italy.

Dr. Lederberg succeeds Dr. Frederick Seitz to become fifth president of Rockefeller University, founded in 1900 by John D. Rockefeller, Jr.

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## Lederberg Discusses Role at Rockefeller

Following is an exclusive interview between Nobel laureate Dr. Joshua Lederberg, new president of Rockefeller University, and Derek V. Goodwin of the *Research Resources Reporter*.

*Reporter:*

**You officially enter as President of Rockefeller University this month. How are you finding the transition?**

*Dr. Lederberg:*

Challenging is an understatement. I view my first year as a very necessary interval for self-education on the history, traditions, and current problems of the university in order to understand its research program in considerable detail. What I have already begun is a fascinating and interesting task, going through research activities, laboratory by laboratory, to understand not only what each lab is doing, but how they relate to one another, and in turn, how they relate with other institutions. I also have to learn the fiscal mechanics of the institution, to comprehend what kind of policies will be necessary in order to maintain its viability. I must be a useful partner in the discussion of policies, appointments, improvements, and resource allocations.

*Reporter:*

**As an administrator, you were recently characterized by *Science* as inexperienced. For this reason, the editors said, your appointment "comes to the surprise of many colleagues in biomedical research."**

*Dr. Lederberg:*

Thank you. I view that as a thoughtful compliment by those of the academic world, although it's not quite true. I've had substantial responsibilities in connection with the department here in the medical school and as a member of the executive committee of the school, not to mention the administration of the SUMEX resource, which is supported by the Division of Research Resources. The most attractive aspect of my new situation is just the possibility of manageable size. Rockefeller is the right size to be an extremely important instrument in the conduct of research in this country, and yet not so big as to be overwhelming.

*Reporter:*

**Do you still plan to be involved in what is commonly termed "bench science?"**

*Dr. Lederberg:*

Well, not directly. There are one or two projects that I have in the pipeline for which I have very able people at the point of development—developing them to where they would be just right to continue by themselves. But any role I would have in directing them would be a transitional one, just to be sure that they were well-launched. My connection with science I think will be almost entirely through my colleagues at the university, rather than trying to compete with them in the actual conduct of science in the laboratory.

In terms of my involvement with SUMEX-AIM, it will remain a very important mode of communication with others in the scien-



tific community. Dr. Edward A. Feigenbaum will take over here as principal investigator for the resource and technical manager for its activities. He is also the chairman of the computer science department and has been closely associated with the project from its very inception, so that's not as big a change as it may seem. I expect to remain hooked into SUMEX-AIM with a terminal in my office in New York, so I've been asked to stay on as chairman of the executive committee, which is the steering committee for the SUMEX-AIM program. I really see no obstacle in continuing to do so.

For the record, my own experience with computer-based communications is that it is a superior method of communication for

both technical and managerial purposes.

*Reporter:*

**In announcing your appointment in January, officials at Rockefeller University spoke of your concern for strengthening communications between scientists and the public. Would you care to comment?**

*Dr. Lederberg:*

Well, I think scientists are in very important and authoritative positions, but also privileged ones. The conduct of their work depends on social sense and backing—and I mean enthusiastic backing. There are many purposes competing for the public dollar.

The "house of science" will not maintain its foundation unless its work is articulated. Very deep public understanding is needed. We, as scientists, must continue to explain why scientific investments are made and why scientists and academic people generally should be given privileged positions in society. Personally, I feel it is both immoral and unrealistic to expect to sustain the demands of science on the basis of an unarticulated and unjustified base. In one sense of putting my feet where my mouth is, I've made considerable effort in this area of communication. Now, many scientists are so preoccupied with their research and the important things they do, with their work and their own sophistication. Often they can't understand the linkage between what they are doing and a whole body of knowledge, how it must continue to grow, expand, and become more integrated. They forget what it looks like from the other side—how mystifying the claims of science or its privileges may be to other people. Science needs to be articulated, defended.

*Reporter:*

**You mention the slow, growing nature of research. Is it possible to communicate the importance of the basic research effort to the general public, even if it has no direct societal application?**

*Dr. Lederberg:*

Yes, and I think it can be done at two levels. First of all, the enthusiasm for discovery and for inquiry—in and of itself—is important to convey. I don't think every discovery needs to be surrounded by a long *spiel* about how important this is going to be, and so forth. The simple facts of the situation are persuasive in themselves. I think we need a broader overview that looks at not one research item at a time but, rather, at the overall activity. This story of basic research must also be articulated and justified in terms of social cost and benefits. Those are the two factors.

*Reporter:*

**Do you feel scientists should generally intensify their efforts to communicate?**

*Dr. Lederberg:*

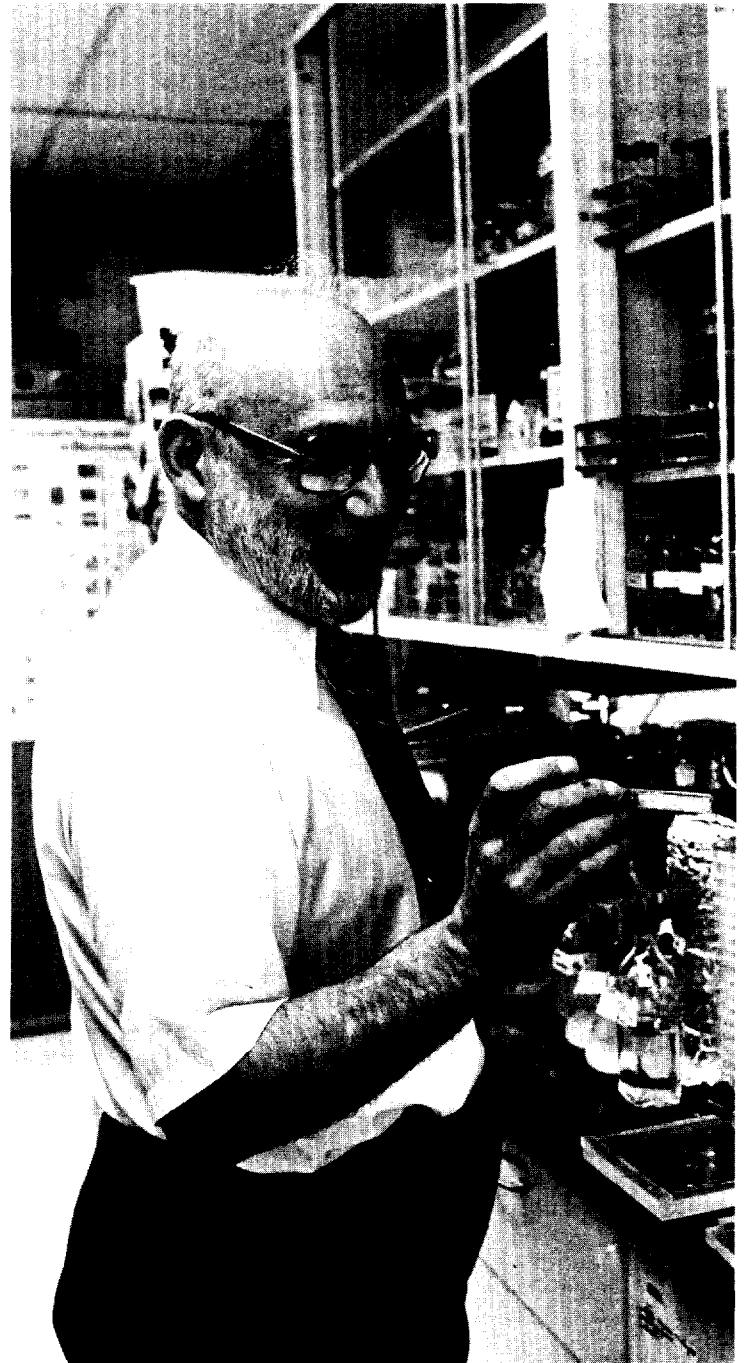
It isn't necessary to put every scientist on the defensive and say, "Look, you have got to spend a lot of your time defending your work." Science is a seamless web. The enormous range and variety of contributions to science, and the totality of the enterprise, need justification. It is not dissectable.

*Reporter:*

**In recent appearances, both President Carter and his science advisor, Dr. Frank Press, have said that the quality of scientific equipment and the percentage of faculty members who are young "has been falling off rapidly in recent years." Would you care to comment?**

*Dr. Lederberg:*

I think both of those are serious issues, the latter even more grave and urgent. While you can be frustrated or delayed by not having the best instrumentation, that is a temporary setback. I think we are in danger of losing a generation of scientific talent under the crunch of many forces.



In the areas of clinical investigation and the interface between basic research and clinical applications, it's a complicated story. There are contrary pulls in many directions. It's a very serious proposition. The numbers of MDs who are going on with serious research is declining all the time. Their possibilities of career development are under very severe pressure, and one can understand some of the positive reasons for this in terms of deflections toward other kinds of goals. It requires very urgent and immediate attention. The pendulum swings back and forth to extremes.

Ten years ago some of the research training programs in clinical specialties were undoubtedly abused. These programs would

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turn out people who did *not* go into research, but financed their specialty training through that medium. But the very abrupt shutting-off of these programs has not fostered career patterns for clinical investigators. For the central areas of medical research, it is very, very gloomy. It has had a drastic effect on motivation for clinical investigation.

*Reporter:*

**Is it correct to say that the concern you just voiced weighed heavily in your decision to accept your appointment at Rockefeller University, which is considered to be a stronghold for the training of scientific talent?**

*Dr. Lederberg:*

Yes. I wanted to be able to do something about that, and I saw at Rockefeller a particularly crisp and defensible situation. Universities with academic medical centers are driven every which way simultaneously in trying to understand their functions and roles. Increasingly, in trying to run hospitals, they develop enormous systems complicated by political and legal problems that are connected with the present state of patient care; its financing, politics and community problems. Also, connected with the training of specialists, different perceptions of social needs exist between medical specialties. How do you make an academic enterprise out of all that, tying it to the educational functions of a university? It is an extremely complicated situation. Now the Rockefeller University is a much purer situation, since it is not directly involved in medical education. It does not train MDs for the MD degree. It focuses entirely on research at both pregraduate and postgraduate levels. The patient-care responsibilities are very modest in comparison, and those are entirely for research purposes.

*Reporter:*

**Like the Rockefeller General Clinical Research Center?**

*Dr. Lederberg:*

Exactly. Even though we have a small hospital, it is entirely a clinical center. Most other places have large patient-care flow. On top of that, thanks to the Division of Research Resources, we have support for clinical investigation as an uncomplicated responsibility. I'm in the course of giving a great deal of thought and study to the concept of clinical research, and clinical research centers, and how they can be integrated into other activities. In fact, I have just written to Dr. (Thomas G.) Bowery, head of DRR, for some advice on that.

*Reporter:*

**How do you assess the contribution of this division to the scientific community?**

*Dr. Lederberg:*

Indispensable. We would be in sorry shape without it—over a whole range of things that it is doing, from the research resources, the development of instrumentation and equipment, to helping develop a community, as well as providing the hardware which is at the center of it. In other situations, scientific instrumentation which would be simply unattainable from any other source has been put together under the Biotechnology Resources Program, the General Clinical Research Centers, and the Animal Resources Program. It all comes from that division. It's a necessary counterbalance to the project orientation which occupies most of the research budget in this country, which has, of course, a very important role in providing quality control on individual projects. In terms of equipment and tools to do the work, without the division I don't know where we would be.

*Reporter:*

**After leaving Rockefeller, if you would like to see one mark that you have made, or one significant contribution, what would it be?**

*Dr. Lederberg:*

Well, I take a very conservative view since the opportunities for great change, movement and growth are really very limited today. I would be content to protect and conserve Rockefeller's present traditions. But, I would be even more delighted to find that I was able to pull it together in such a way as to achieve an even more effective integration of its basic sciences, clinical research activities, and concerns for public health. I would like to see these related to public policy and connected with the outside world, and other institutions, in a constructive, evolutionary process. The institution can do that. I think I have the resources to help and that's my firmest intention: to guide the university into a more self-conscious and socially responsible set of attitudes and postures. But to do this will take time, money, and the dispelling of some myths.

*Reporter:*

**Myths?**

*Dr. Lederberg:*

I'll give you an example. The university was founded on the patrimony of John D. Rockefeller Sr., and for many years its total operating funds came from that source. The university is still privileged to have a substantial endowment, but the myth that it has no financial problems, that it can survive either without social accountability or without social support, is very damaging. The fact is that the present configuration, the internal resources of the university, can barely cover a third of its annual budget. I think it has to be understood that the Rockefeller University is no longer Rockefeller's university. It is a public institution that was launched through the generosity of a particular family of very great wealth. But it's very much on its own at the present time. It must continue to get and seek public support, if it is going to continue to function. I have to mention, parenthetically, that I recently read some reference to the fact that institutions were generally unable to provide total support of gifted investigators, but somehow Rockefeller was able to do that. I think that the sense of unlimited resources, which was true 50 years ago, is totally out of tune with the present circumstances. This kind of attribution is not only anachronistic, it is positively harmful to the strenuous efforts that we have to sustain to stay afloat. However, we do have unique possibilities of contributing to the progress of health sciences and their human applications, and I am quite confident that we will justify our case for social support. **R**