

WFL Diary

University of Wisconsin27 September 1951Dr. Joshua Lederberg

WFL visited Joshua Lederberg in his laboratory in the Genetics Department at Wisconsin in connection with his recent request for further support for his work. In WFL's diary of 27 August 1951, a general review of his record on the three years of grant in aid support was made with the tentative conclusion that his record seems to be one of the best to date for this program.

At the present time Dr. L's laboratory is unchanged from what it was two years ago and is rather crowded despite its efficient organization. In the next year, however, he has been assigned extra space, but appropriately feels that this should become fact before he approaches us for longer term assistance. On the basis of WFL's conversation with him it was decided that it would be best to make a 21-month appropriation of \$8,000 to run from ¹⁹⁵² January 1, 1951, to September 1, 1953, approximately three-quarters of this amount to be used for the salary of a research assistant, Mr. Palmer D. Skaar, who is just getting his Ph.D. with Someborn at Indiana. The remainder of this amount is for general expenses connected with his research work over this nearly 2-year period. In this conversation Dr. L brought up the fact that he is strongly assisted by his wife, who took her Ph.D. in Wisconsin a few years ago, having previously trained at Hunter College in Botany. The fact that she is his wife makes the subject somewhat touchy, but WFL met her and was pleasantly impressed. Dr. L has not made any request for her salary as technical assistant to his program, but he did want to know whether we had any objections to his possibly so doing two years from now. WFL stated that we saw no reason that this should be an adverse factor, as the basic mode of judgment was in selecting a good man and backing the latter's judgment in the matter of how he spends his available research money for technical assistance.

Dr. L has been rather successful in his search for research funds, obtaining \$1,000 from the A. E. C., now terminated; \$4,300 from the U.S.P.H.S., as well as the salary of Mrs. Lederberg on a Chemical Corps. contract. In addition to this the W. A. R. F. makes \$4,600 available to him yearly. His present request therefore is almost entirely related to obtaining the salary of Dr. Skaar, who wishes to study the mechanism of inheritance of antigens in bacteria.

As WFL has visited various laboratories he has heard with increasing frequency that L is really first-class, this opinion coming for example from Novick and Szilard, Bernard Davis, as well as Burris and Wilson at Wisconsin. He has tremendous energy and intelligence and has recently, for example, collected the basic publications in the field of bacterial genetics and had them issued in a book by the University of Wisconsin Press by the photostat technique, thus making these reprints widely available for use in courses.

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WFL will describe only two of his experiments in detail because of lack of space, but there is little doubt that L has about as many ideas per minute as the Szilard and Novick team.

e? In one of these experiments he places a solution of one strain of *B. coli* on one side of a cellophane membrane and another strain on the other side. This was to test whether or not they could exchange chromosomal material through the membrane and was negative in result. He then added bacteriophage to one of the strains, which lysed the bacteria, whereupon their genetic qualities passed through the membrane and were incorporated into the other bacteriophage resistant strain. Thus, it would seem that either small, living "L forms" passed through the membrane, or, more probably, that nucleoprotein particles passed through, acting much after the fashion of Avery's "transforming substances." It is obvious that this is a fundamental experiment of great significance.

His second experiment gives positive proof in the neatest fashion that streptomycin resistant bacterial individuals are present in a streptomycin susceptible strain, thus indicating that streptomycin does not induce any mutations but rather merely selects out those individuals which are spontaneously resistant. The proof of this is so neat that it is worth recording. First of all he grows the streptomycin susceptible strain on a Petri dish so that they grow up in colonies. By lightly pressing a velvet cloth onto the plate he makes a "photostat" so to speak of this first plate, by then placing the infected growth onto a fresh Petri dish. As this second dish contains streptomycin, only those transferred colonies grow that are resistant to this drug, which in turn tells him which of the colonies on the original plate (which has never seen streptomycin) are spontaneously resistant. Now, by using a needle point, he picks up the resistant colonies from the original plate and thus obtains a pure culture of streptomycin resistant bacteria that have never in the course of their life seen or heard of this drug, and hence were obviously originally present in the susceptible strain or else mutated to the resistant form quite spontaneously.

WFL has no doubts or reservations about Joshua Lederberg and warmly recommends a back-of-the-book appropriation of \$8,000 over the next 21 months. At the end of this period an appropriation of \$15,000-\$20,000 over three years would seem to be in order.