

T H E G R A D U A T E S C H O O L

UNIVERSITY RESEARCH COMMITTEE

REQUEST FOR RESEARCH SUPPORT FOR THE YEAR 1958-59 MUST BE IN THE GRADUATE SCHOOL OFFICE NOT LATER THAN JANUARY 17, 1958

(Please submit forms in duplicate)

Jan 15, 1958

Name LEDERBERG Joshua Date \_\_\_\_\_  
Last First Middle Initial

Department Medical Genetics

Title of project Genetics of Bacteria

Results to date: 1. Preliminary evidence that the flagellar antigenic phase of Salmonella can be altered by exposure of the cells to acriflavine. As there is other evidence that the 'phase' depends on the functional state of a chromosomal factor, this is a rather exciting lead for developmental genetics.

2. No success to date in attempts to transfer genetic markers to protoplast recipients by DNA; these experiments continuing. A number of wall-defective mutants have been isolated. So far, these are all auxotrophic for diaminopimelic acid; others have not yet been characterized.

3. Preliminary evidence that crossing-over is reciprocal in clones from single zygotes in E. coli. In contrast to other markers, the F agent (which determines sexual compatibility) is distributed to the entire exconjugant clone in  $F^+ \times F^-$  crosses, suggested that it is an extranuclear particle.

4. A variety of Hfr stocks have been isolated, and characterized as having different patterns of genetic exchange.

5. In certain complex situations, segregation of prophage in coupling with linked Gal markers has been found.

Procedure - indicate the essential working plans:

We propose to continue along the same lines as used for the current program. (1) requires proof that the alteration is an induced change of phase, rather than selective survival of cells already in one phase. (2) may need a new approach, possibly the use of cells damaged, but still viable, after ultra-sonication (for the occurrence of which Dr. Rotman had some evidence). We will also try preparations made from transducing phage, as well as from intact donor bacteria. New mutant blocks will also be sought, particularly for auxotrophs responding to nucleotide-amino acid conjugates (in cooperation with Strominger at Washington University). (3) we intend to apply the interrupted mating technique developed by Jacob (Paris) for the analysis of these Hfr's, and to attempt to reconcile certain differences in detailed interpretation. But as already stated, no radical departures are contemplated in advance.

The work is all intra-mural laboratory work, the essential facilities for which are at hand. We are somewhat hampered, at present, in chemical operations; for the coming year the work will continue to be carried out in the Genetics Building, with cooperation where indicated, with other faculty.

Budget - (OVER)

Budget -

Staff\* | are incumbents in the laboratory

Research Assistants (A \$1920; Acad Yr \$1600)

Ann K. Cook	A	1920
Alan Richter	A	1920
Yukinori Hirota *	A	1920
-----**	A	1920

Other \*arriving Febr. 1958

\*\* probably L. Valerie James (U.S., Bacteriology, Melbourne Univ.)  
of whom I have a very high estimation from my observations during my  
visit to Melbourne.

\$ 7 600

\*List names only if it is fairly definite the person will be  
available; otherwise open positions should be indicated.

Hourly Help

\$ 1 000

Supplies and Equipment

\$ 320

TOTAL REQUEST

\$ 8 920