FEDERAL SECURITY AGENCY
PUBLIC HEALTH SERVICE

IN REPLYING, ADDRESS THE

March 27, 1952

Communicable Disease Center
Enteric Bacteriology Laboratories
P. O. Box 185
Chamblee, Georgia

Dr. Joshua Lederberg
Department of Genetics
The University of Wisconsin
Madison 6, Wisconsin

Dear Dr. Lederberg:

I must admit that I was a little snowed under by your letter of March 19 and that I do not follow all of your remarks. Nevertheless, I shall answer it to the best of my ability. You will realize, I am sure, that I have not been thinking about the problem of FA nearly as much as you, and therefore, it is difficult for me to follow some of the remarks in your letter.

It was somewhat surprising to me to hear that you had noted spontaneous reversion to the motile form in 4937-50. This culture was tested upon several occasions in semisolid agar and never evidenced any motility. Dr. Seymour Levine of E.H.C. has used the culture and so far as I know has noted no motility in it. It was sent to you because it was a very smooth strain and we had found it suitable for the production of O serum. The so-called nonmotile variant of Kauffmann often gives rise to motile forms. I have a few other apparently nonmotile group B cultures which I will send you. I hope you will not find motile variants in them.

I believe there are several nonmotile cultures of various O groups in the laboratory. I will look into this and see what I can find for you. I presume that you have no objection to nonmotile forms of groups other than B or D.

I can send you a culture of 0901W of Felix. This culture recently was received from Dr. Felix and is in good shape. Our old culture had become somewhat rough, however, I believe that you will find more nonmotile forms in 0901 than you did in 4937-50.

Unfortunately, I believe the nonmotile cultures of S. san diego were not brought to Atlanta. Bruner may have these cultures at Cornell but I doubt it. Probably they are no longer available. You will understand that when one changes laboratories that many things become lost.

I can send you the strain T2 of Almon and Stovall, as well as Typhi 2v of Felix. I never had the strain Typhi T4 but T2 is an

aberrant strain. It lacks the XII_2 component and I suppose is the same as T4.

In speaking of form variation in S. pullorum, why would it not be a good idea to try to obtain motile forms of S. pullorum or S. gallinarum? This would indeed be an interesting and noteworthy achievement. If one can obtain motile forms from nonmotile variants, I see no reason why a so-called permanently and totally nonmotile type might not be made to yield motile forms.

Like you, we have been unable to change the i antigen of the typhoid culture which you sent us. It has been transferred serially in i serum over a period of months. I am very strongly inclined toward the view that phase variation is inherent within the cell. It has always been our experience that when the H antigens of a culture were changed that the power of phase variation remained unchanged.

In regard to your inquiry concerning the manner of use of O serums in experiments to change O antigens, it is very difficult to completely immobilize a culture by the use of O serum. As you know, organisms remain motile after agglutination by O serum. Therefore, all one can do is to place enough O serum in a tube to cause complete agglutination as the organisms grow. This slows down their motility to a remarkable degree, but it does not completely immobilize them. I think you must always expect a very slow migration of organisms when they are exposed to very large doses of O serum. As to the absorbing doses used in the transformation of III,X and III,XV forms, it was always our practice to absorb each of the serums with organisms of the other forms. Organisms having the formula I, III, XIX were never used in the absorptions. I do not know whether these latter antigens would work in transformation experiments.

I do not follow your remarks regarding the contemplated experiments which involve enteritidis plus typhimurium filtrate plus senftenberg serum. Antigen I is a rather minor antigen so that I do not understand exactly what you plan to do.

So far as I know all requests for such materials as have been sent you up to the present time must be directed to this laboratory. If they are directed to other persons they would eventually end here.

With best wishes, I am

For the Officer-in-Charge, Bacteriology Section

Sincerely yours,

P. R. Edwards

PRE:mg

Philip R. Edwards, Ph. D.
Bacteriologist-in-Charge
Enteric Bacteriology Unit

P. S.

The culture of S. aberdeen which Kauffmann formerly used to prepare i serum was supposedly nonmotile. When last I tested it several years ago it showed no motility. I will send you that culture .