

September 14, 1948

Dr. M. R. Telle
Department of Bacteriology
Cornell University
Ithaca, N. Y.

Dear Telle:

In the past several weeks, we have been working on a set of coli K-12 cultures of unusual genetic interest. It started with the realization that one of the prototrophs which came up in a routine cross was, very uniquely, heterozygous and segregating for each of the factors which distinguish the parents: B, M, T, L, B₁, Lac, and a few phage resistances. The heterozygote can be maintained as such only on minimal medium; on complete medium it rapidly segregates out giving an array of haploid recombination types. Most of these, naturally, carry nutritional deficiencies and cannot therefore compete with the diploid on synthetic medium. The capacity to produce heterozygotic prototrophs is transmitted at least to the one segregant tested. Crosses of it with standard types gave prototrophs of which several percent were heterozygous. Some of these F₂ heterozygotes, however, are homozygous for some factors in which the parents differed (and may be hemizygous, i. e. heteroploid).

As you might expect we are pursuing the genetic analysis as vigorously as we can. We have a zygote of sorts since there is considerable recombination among the segregants. However, we are probably dealing with some form of chromosomal aberration in view of the suggestions of heteroploidy.

It would be very helpful to have single cell isolations made on this material, particularly by your famous technique of recovering products of successive divisions. The rate of segregation is so high that you would have a fair chance of catching a cell in the act if both daughter cells were taken. It would be especially important to know whether both products of a segregating division were a) viable and b) haploid, and I have no means now of attacking this point without your assistance.

I am writing to you now to ask whether your offer to do this kind of a job on material that merited it were still open, and if you had the time and facilities now to be able to undertake it in the reasonably near future. If you will let me know whether you are interested, I'll send the cultures and further details.

Yours very sincerely,

Joshua Lederberg
Assistant Professor of Genetics