September 16, 1949.

Dr. Howard B. Newcombe,
Atomic Energy Project,
Chalk River, Ont., Canada.

Dear Howard:

Dr. Michael Doudoroff, from the University of California, spent some weeks here on a Guggenheim fellowship, and was interested to try some experiments in K-12 recombination. We decided to test for the dominance of streptomycin-resistance in heterozygous diploids, along the lines that I believe I already discussed with you. We think that you may be interested in the results, of which please feel free to make any use you wish.

A W-677 sr stock [W-1177] was produced by plating into nutrient agar with 100 units streptomycin. As you may remember, W-677 is a multiply marked stock: TLB1- Lac1- Mal_1- Xyl- Gal- Ara- Mtl- V_1^r which I have been using for segregation and crossover studies. By crossing with W-478, a B-M- Het stock, a number of heterozygotes were obtained, identified by their segregating Lac+ and Lac-. However, all the heterozygotes tested were pure SR, and gave no sensitive segregants. This behavior parallels that of Mal, as mentioned in my PNAS paper. SR was therefore tested for linkage to Mal. In this cross, with parental couplings:
[Mal- SR]; [Mal+ sr^+] , 30 Mal+ and 52 Mal- were tested :

	SR	+
Mal+	8	30
Mal-	44	0

which shows a distinct linkage of Mal to SR.

In these tests, a less intense linkage of Mal and of SR to Lac was also noted, e.g.:

	Lac+	Lac-
Mal+	17	14
Mal-	6	23

In analysing these figures, take into account an adjustment of the Mal segregation which is about 20:1 Mal-:Mal+. In order to collect more material, Mal+ are picked disproportionately to the frequency with which they appear. Although a linkage or interaction of Mal to Lac of some kind is apparent, I have not been able to map it. I have come to the conclusion that there is some mechanism for the elimination of part of the chromosome introduced from the Mal+ parent and that this distorts the segregations both in the "normal" prototrophs, and in the persistent diploids. All this does not "explain" the genetics of sr, but puts it in the same dilemma as Mal, on which I have been working for some time.

Yours sincerely,

Joshua Lederberg