

Sixteenth,
 June,
 1947

Dear Lederberg,

My apologies for not having answered your various letters earlier. I expect that you will already have heard from Dr Darlington about the draft of your proposed paper for "Heredity".

I am not sure whether I do fully understand the problem you raised about estimating the absolute map distances from the multiple cross-over frequency in a four strand system. I don't know whether I am being singularly stupid about it -- I hope not.

About your last set of data. They agree as well as could be expected with a linear order

B₁ B-M V₆ Lac V₁ T-L
 1 2 3 4

The types you recovered would then have to be

Lac	Type			Crossover Regions
	V ₁	V ₆		
-	r	r	23	3
-	s	r	17	4
-	r	s	1	123
-	s	s	0	124
+	r	r	5	2
+	s	r	1	234
+	r	s	14	1
+	s	s	0	134

Dr J. Lederberg

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The only odd point is that the only two triple crossovers which are recovered both involve region 2 even though this is the smallest region of the four. This anomaly may vanish as more data accumulate.

Incidentally you say that with respect to V6 and Lac the parentals : recombinations are 54.7. Please observe however that owing to the recombination between B-M and T-L, the clones involving Lac and V6 are actually

- r	40	crossovers	3 + 4
- s	1		125 + 124
+ r	6		2 + 234
+ s	14		1 + 134

So you see it is not quite so simple as parentals v. recombinations !

I hope everything goes well.

Best wishes to Mrs Lederberg and yourself,

Yours sincerely,

Dr J. Lederberg,
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Connecticut.