MASSACHUSETTS INSTITUTE OF TECHNOLOGY
DEPARTMENT OF BIOLOGY
CAMBRIDGE 39, MASSACHUSETTS

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Dr. S. Spiegelman
Department of Microbiology
University of Illinois
Urbana, Illinois

Dear Sol,

Thank you for your letter, the graphs, and the preprint. Before commenting on the results with Pl, one word about the preprint. It seems to me the conclusion about nonrandom messenger formation would be stronger if it could be shown that changes in conditions during infection do not affect the results. This can be done with T4 mutant aml22, which in E. coli B mades no DNA, no phage proteins, and continues to made early enzymes. Here, the 15' messenger may resemble the 5' messenger. Write or call if you want the pair of phages (T4 and T4aml22).

Re the beautiful data with Pl and Pldl: we would like, in addition to the experiment with nonfractionated RNA, to see also the values for the negative fractions in the earlier experiment, in order to understand how much significance the peaks on fractions 1 and 3 have (compared with the maximum of fraction 2).

Now for the other experiments:

1. We are sending more Pl and Pldl (end of the week), as well as a pair of strains, 2.0S0 and 2.0S0(Pl), which are $i^{+}z^{-}y^{+}$. Also, 2.0S0 R, a lac^{+} revertant from 2.0S0, in case you wish to compare pick up of lac messenger in the same experimental setup. [2.0S0(Pl)-R lac^{+} is easily isolated on EMB lactose agar, if needed.] The system: (Pl + 2.0S0) should provide messenger of the Pl vegetative variety if infection is done at multiplicity of 1 and at 37°. $CaCl_2$, 2.5 x 10^{-3} M, is needed for adsorption. (Annealing to Pldl in comparison with Pl might give size of deletion in Pldl.) 2.0S0(Pl) as well as [2.0S0(Pl) + Pl] should provide the messenger for immunity.

2. The uninduced E. coli B should make messenger i^{+}. Any label picked up by Pldl here should give an upper estimate of i^{+} messenger.

3. You may not have been aware that the phage Pldl 60 i^{-} that you have used carries $i^{-}z^{+}y^{del}$ (reason: it is the highest yielder of transducing phage). Of course, one would like to know the size of the messenger picked up by z^{+} DNA and compare it with the size of that picked up by $z^{+}y^{+}$ DNA, in order to find out if "one operon - one messenger" holds. There seem to be 2 approaches:

a) If you can separate the RNA from DNA after the pickup, you may measure in a sucrose gradient the size of the messengers picked up by Pldl $z^{+}y^{+}$. This is the most direct way. (Reannealing the

messenger with different DNA's (different deletions) may also give the answer).

b) If (a) is not feasible, then one may try to get an answer by cross-annealing messengers z^+y^{del} and z^+y^+ with the two corresponding Pldl DNA's in all combinations. (There is always the uncertainty of the effects of nonhomologous regions attached to RNA or DNA on the efficiency of pick-up). At any rate, we will also send you a bacterium lac^{del}(Pldl z^+y^{del}), as a source of messenger, and (later) a phage which is Pldl z^+y^+ as an alternate source of DNA.

4. Homology. There is good evidence of poor pairing between the lac region of E. coli and that of Shigella. The enzymes differ in many respects and at many genetic sites. It would be nice to compare the pickup of coli messenger by the DNA of Pldl Sh with that by $Pldl_{coli}$; quantitation will probably be difficult, but one possible result is -- no pickup at all. We shall soon send you also this phage, $Pldl_{Sh}$, in good amount.

5. What are the chances of doing kinetic analysis with the pick-up system? Does DNA have to be always in excess, or can one try to saturate it with excess messenger, then see how much RNA is picked up by how much DNA, and calculate the relative size of lac and Pl-lac)?

These are some of the thoughts we got in the "excited state" produced by your results. Let us know the answers. Naomi would like to come to Urbana for several days and see the whole procedure in action. Please let us know if and when it would be convenient. She could bring bacterial stocks and more phage.

Sincerely yours,

sel/na S. E. Luria