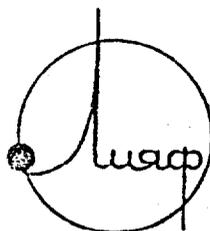


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February 10, 1992

Dear Dr. Lederberg:

During many years my scientific work was connected with the problems which were closely related to your earlier scientific interests. These include the mechanism of bacterial conjugation, so called single-stranded conjugation, mechanism of heterogeneity of progeny of exconjugants, mechanisms of recombination in different pathways and so on.

Enclosed is the recombinational analysis that I have recently presented at Sacle meeting in Paris. Excuse me for the quality of the publication, I had no possibility to look through the proofs. This analysis provides two new conclusions:

- Practically all genes found for RecF pathway of conjugational recombination are necessary to form a normal recombinational product in w.t. cells (regarded as RecBCD pathway).
- We can create such a situation when recombination exchanges will be realized only at the ends of donor DNA fragment after its conjugational enjection that means the situation of very infrequent internal exchanges along the fragment.

The last year I spent 5 months in Dr. A.J.Clark lab. in Berkeley, where we described the situation directly opposite to that described above, a very frequent internal exchanges along that donor fragment, that was provided by a state with a full derepression of SOS functions.

Now, we possess two genotypic states of bacterial cell ($recF^-$ & $recA730\ lexA71$) with the recombination potential that differs about 300 folds (from the point of frequency of recombination exchanges per DNA unit length).

The next step is to increase this difference (I think significantly)

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by exclusion mismatch repair system for these two special backgrounds discussed. Simultaneously, it gives us the prove for the level of recombination as well as a genetic evidence for a principal difference between mechanisms of recombination in these two special genotypes.

I have ideas for several experiments which can give an answer for some principal questions concerning the nature of recombination. These include:

- Determination of the level of recombination (single- or double-stranded DNA) after conjugation at two special cases that elucidates a specific role of RecA protein in organization of recombination exchanges along interacting DNA molecules
- Choice between two possible characters of recombination process: "processive" that means the first exchange forms conditions for the second etc, or "individual" that means the initiation and completion of one exchange is independent of the other
- Determination of the size of intermediate recombinational products (appeared to be closed circular donor DNA fragments) that were proposed to be responsible for a very mysterious phenomenon - heterogeneity of recombinant progeny.

To my mind, all these questions are very fundamental for a modern view of mechanism of recombination and I could not find in literature even attempts to put them.

There are two reasons why I am describing this program to you. Now, the situation in my country does not permit me to continue this study here and nobody knows how long this can be.

- At least, some steps of the program seems to be close to your earlier scientific interests and I am sure that a collaboration with you can give some new pulses in the study.

Any kind of your reaction for my letter including critical notes to my program would be very useful for me and I thank you in advance. Excuse me, please that I don't invite you to visit this country that were more natural for the beginning of our possible collaboration. I hope that I'll have possibility to do this in future when the situation here becomes more stable.

Sincerely



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