

October 13, 1958

Dr. Maurice Ogur
Associate Professor
Biological Research Laboratory
Southern Illinois University
Carbondale, Illinois

Dear Dr. Ogur:

Thank you for your manuscript on the mutation rate in yeast. It is a useful application to the problem of the rate of formation of the aer of mutants and I do not have any very profound criticism of it. The derivation on the continuous model is of course as you have already indicated already implicit in previous treatments. I am enclosing an even more abbreviated version which I think saves a few unnecessary steps. I could not give you an expert criticism of the stochastic treatment. I would certainly think it should be in an appendix if at all. But isn't this case covered by setting one growth rate equal zero in Armitage's treatment at page 17 in his section 2.3? If you have gone beyond this the point should be made explicit.

Certainly one would like to get a more direct attack on the question of the differences in the rate of this mutation among different stocks. I don't suppose that the media which Ephrussi used were so nicely selective as your own. He was relying upon the incidence of the mutants in a crude qualitative way to reflect the mutation rate.

There is one feature of your model that I don't recall having been covered. Don't you suppose it's likely that the newborn aer mutant will still retain some phenotypic capacity for oxidation and thereby be capable of a limited number of generations of further increase. The obvious effect of this will be to exaggerate the inoculated mutation rates over their true values and this would not be a serious difficulty for most purposes if one could be sure that this phenomic delay were constant for all the strains.

Yours sincerely,

Joshua Lederberg
Professor of Medical Genetics

JL/jp

P.S. Are you acquainted with Kendall's papers on the stochastic models? The references include: "On the Choice of a Mathematical Model to Represent Normal Bacterial Growth." Journal of the Royal Statistical Society, Series B (Methodological), 14:41-44, (1952); "Les Processus Stochastiques de Croissance en Biologie." Annales de l'Institut Henri Poincaré, 13:43-108 (1952); "Stochastic Processes and the Growth of Bacterial Colonies." Symposia of the Society for Experimental Biology, no. 7:55-65 (1953).