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Dear Lederberg,

Thank you very much for your last two letters and your new strains, which I have had just the time of testing in the two weeks since I am back to Cambridge.

In trying to repeat your experiments, crossing W 1059 x W 814, I have followed for the first four days, since the mixture was incubated, all possible combinations of sugars, Xylac, Galac etc. besides Malac. I was a little surprised to see practically no trace of recombinants on these media, but I did not give great importance to this discrepancy from your results, because, as you tell me in your second letter, it must be that most of this effect is due to selection of some recombinants, and obviously my cultures show different selection conditions for yours. The mixture had been incubated in ordinary Difco nutrient broth (adjusted at pH 7.3); are you using perhaps a glucose broth ? If so, pH may have an importance in the question. I repeated the experiment, but with no success, even making daily transfers rather than allowing the culture to age. I am interested in this experiment because it may give an idea of the rate of recombination when it is not needed, therefore when it happens spontaneously. I am trying to follow now the effect of pH and salts on recombination in minimal, and I shall let you know about it; though you probably have an experience in the matter.

I could definitely find no trace of greater ultraviolet resistance of the Hfr strain, repeating experiments now. The curve is of multi-hit type. I have not yet any information about X-ray curves.

Did you get 123 through the National Collection of Type Cultures? If not, and if you are still interested in it, please let me know. It is giving me some headaches, because I am held up with it by the fact that I can't find its growth requirements; either they are very complex, or involve growth factors still unknown, or perhaps only unknown to me, or it needs common factors in unusual concentration. It is also very difficult to obtain back mutation to prototrophism.

The cytological analysis is still at its very beginnings. In the same condition is work with antigens ; When I left I had only a serum against K 12, which agglutinated ~~the~~ 123 at a slightly smaller concentration (probably an anticapsular serum).

I should be very interested to have some of your Het stocks, for the following uses: a) testing allelism of some Lac- and $V_1^R$ mutants I obtained in 58-161 and 123 ; and in this case, some hints as to the most expedite way for performing this tests ; b), if I can find time to cope with it, I should like to use Het to ~~test~~ check the very old and ~~probably~~ possibly wrong theory that ultraviolet and X-ray killing is due to the induction of lethal mutations. The Het stock should help to cope with the recessive ones at least, and there were some hints at it in your paper on the Proc.N.A.S. Please don't hesitate to refuse this, if it is of any inconvenience to you.

I am yours sincerely

Luigi Cavalli

I am afraid I have not yet obtained any Hfr recombinants.