October 22, 1951.

Dr. M. Doudoroff,
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University of California
Berkeley 4, California.

Dear Mike:

As you know, Roger spent the weekend with us, and we had a fine time. One experiment didn't work, however, -- we tried to test Roger's pet idea about the basis of non-oxidising S^r mutants in coli. Unfortunately, none of our S^r mutants agreed with Umbreit's description of cultures whose growth was not improved by aeration.

I hope you enjoy "Velvet Bacteriology"-- Roger told me he was suggesting some class experiments with it. Streptomycin resistance of P. fluorescens ought to work rather well, but I haven't tried this particular system. I'll be interested to hear how it works out.

This letter is mainly to ask about the progress of your work with the block to glucose-utilization in the coli mutants. Roger mentioned that you had pretty well ruled out hexokinase as the key step, but had given up the problem for the moment. I would appreciate it very much if you could send a summary of the experiments. The Lac_3- mutant is an important example of pleiotropic gene effects, and it seems unfortunate to have to be sloppy about saying "no lactase, amylomaltase, "glucozymase????".

If I could ask a second favor, could you send me back a culture of W-108 (the original Lac_3-) if you still have it? We're putting away our culture collection now, and I have this stock only in one possibly doubtful lyophil tube. I'm doing some experiments on crossing glucose x galactose--negatives to get some genetic evidence on the role of the hydrolytic galactosidase in lactose fermentation. There seems to be another case of "direct fermentation" brewing, but I'll have to look into the adaptations more closely. But I won't be too surprised if the extracted galactosidase is partly an artifact, such that its intracellular function is less simple. The same seems to be pretty clear for amylomaltase, from your comparison of the complete utilization of maltose with the hemiplegic behavior of the dried preps.

Be sure to get Roger to narrate a discussion we had with one of our local leading lights on the possibilities of a genetics of actinomycetes.

Sincerely,

Joshua Lederberg