

January 27, 1948.

Dr. Frank Stodola,  
Fermentation Division,  
Northern Regional Research Laboratory,  
Peoria, Illinois.

Dear Frank,

It's all little strange that our interests should be converging again after all these years, but so it is, and the point of convergence is the mechanism of disaccharide utilization, and in particular the bionic acids.

The genetic study of *E. coli* disaccharases has reached the point that there is either a complex mechanism of lactose utilization, or the postulate of one gene : one enzyme is fallacious. If both these ideas were verified, I shouldn't be at all surprised.

One of the supposedly lactose-negative mutants proved to be unable to assimilate any of the natural hexoses and di-hexoses, but utilized gluconic acid and the pentoses well. At the same time, I have been unable to demonstrate any lactose- or maltose- splitting activity in the mutant, using other mutants which could utilize monoses but not the disaccharides for assay. This suggested that the first hypothesis that has to be tested is that the first step in the utilization of disaccharides by *E. coli* might be oxidation to the bionic acid. Looking through the literature, I found your paper in JBC 171:213 (Nov. '47) where you and Lockwood reached a not very different conclusion. The yields that you reported were so high that you must have a fair quantity of fairly pure maltobionic and lactobionic acid. If you could spare a few grams of each, I would greatly appreciate it. To be usable, the prep. would have to be not too heavily loaded with the original sugars and be substantially free of hexonic ac.

Along the same lines, I would be glad to get my hands on  $\alpha$ -ketoglutaric and on d-xylonic acid. Can you suggest any better source than yourself, or your laboratory. Finally, don't you think we ought to trade places on mailing lists?

Thanks for the Christmas picture-card. I'd like to get to see you in person and meet your family, but the Fates haven't called that card yet.

Yours sincerely,

Joshua Lederberg