

January 15, 1948.

Dr. O.T. Avery,
Rockefeller Institute Hospital,
New York, N.Y.

Dear Dr. Avery,

Since my establishment here at Wisconsin, I have been occupying myself with applying the genetical techniques Tatum and I have learned with *E. coli* to the problem of gene-enzyme relationships in this bacterium. To that end, I have been studying mutations affecting lactase activity, and it may suffice to mention now that a plurality of them have been found, somewhat to my surprise. I would have predicted that all the mutations affecting a single enzyme would involve the same gene. The problem: is there indeed but a single enzyme?

I am addressing this letter to you to enquire whether you still happen to have a sample of p-nitrophenol-b-galactopyranoside, reported by Goebel and yourself nearly two decades ago (JEM 50, 1929). It occurred to me that this compound, in view of the pH shift in the absorption spectrum of p-nitrophenol, might be a useful chromogenic substrate to assay galactosidase activity. If possible, I would like to test this notion on a small sample (1-2 gms.) before undertaking a large scale preparation. While I would like to ask for this quantity, I could run tests on, say, a tenth that amount. If you can find the bottle, your cooperation would be greatly appreciated.

Best regards,

Sincerely,

Joshua Lederberg
Assistant Professor of Genetics

enzyme

lactase \rightarrow galactose + glucose

Lac₁ +
Lac₂ -

Lac₁ -
Lac₂ +

	<u>lactase</u>	<u>lactase</u>	<u>β-N₅</u>	<u>β-N₅</u>
Lac ₁ +	+++	+++	+++	+++
Lac ₁ -	+++	-	+++	++
Lac ₂ -	+++	-	-	-

lactase enz. \rightarrow galactose + glucose
β-N₅ \rightarrow galactose + glucose