August 7, 1953

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Dear Jacques:

I hope you will pardon my not having answered your several recent letters but by now I am sure you must be accustomed to my poor capacities as a correspondent. On my return from Europe this spring I was overwhelmed with a mass of accumulated unfinished business and a lot of teaching which has continued through the summer. Virtually all the energy which remained beyond these tasks were employed to keep experiments going in the lab.

Let me briefly summarize some of our findings to date. First, with respect to the β-galactosidase, I noticed in your manuscript that you sent to me that you gave a value of 1.6×10^6. This agrees very well with our value of 1.66×10^6. This assumes that our methods for nitrogen determines are equivalent. We use a micro-nessler method (Lanni). This level of purity is achieved by starch ionophoresis. We have an estimation of the molecular weight and it is in the neighborhood of 300,000. As a matter of fact, the enzyme can be spun down in preparative Spinco and in point of fact, we use this now routinely to concentrate the enzyme. We thus now prepare enzyme without any amonium sulfate fractionations. We can recover virtually all of the enzyme in the pure state "untouched by human hands".

With respect to the "preinduction" phenomenon I can say little more than I have already told you. We have confirmed the experiment that I performed with you in Paris. Namely that there is no preinduction effect with the butyl-β galactoside. We have ruled out the possibility of small amounts of free galactoside being the causative agent.

Our experiments with stimulatory effects of extracts from preinducted cells are progressing to the extent that we now understand much better the conditions for testing the activity of the extracts and also for the preparation of active material. We should soon (as soon as my people come back from vacation) know something about the nature of the active agent here.

We have looked into the question of constitutivity and its probable cause. At present our experiments indicate that it has none. We cannot find anything which has reasonable inductive activity in extracts from the constitutive mutant. On the other hand we can inhibit enzyme synthesis in the constitutive mutant by preparations from inducible strains. This inhibition is overcome by lactose. We have purified the active agent on a starch column but at the present time I better not say anything about its constitution since I think we are pretty close to having good definite information on this question.

I am writing up now our starch column analysis of the various α-glucosidases and the β-fructosidases of yeast. The story remains more or less the same except for a few peculiarities which I will not bother to detail here.

There are several things that I would like to have from you people. We have been finished for some time with the tracer story on precursor and have been waiting for a manuscript from Mel so that we could send the two papers in together. I might add, by the way, that the best figure (less than 2.3%) we have obtained was done with the starch column and with further purification by specific precipitation. Is it your wish that we still keep to this arrangement with respect to these papers?

I would also like from Mel something which he promised to send, namely a description of his synthetic procedures so that we can undertake here to manufacture them in large quantities.

Finally, I expect to be in Paris with Helen in the early part of September as well as in the latter part of September. We are on our way to the middle East. Please let me know whether you and your people will be away from Paris any time during the month of September so I can arrange my trip accordingly.

With love to all,

Sincerely yours,

S. Spiegelman

SS:rjs