

17/10 / 70

Dear Dr. Hayes,

Thank you for your two letters, which reached me with some delay, as I am at present in Italy. I am enclosing a small sample of threoninex, (dl-) about 1.2 gms, which I hope will enable you to carry on with your research until you get your supply. You don't need to bother about restitution, I am only sorry I have a small amount myself and cannot send you the 2 gms. As concerns biotin, I have very limited quantities myself and only in solution, which make it difficult to send a sample. Anyhow, you will find that BDH supplied regularly biotin vials containing 0.1 microgram each, and Xi Ashe Laboratories, 22 Victoria St., London, supply biotin in vials of 25 micrograms each. I have never investigated the biotin needs of 58-161, since I have found that my culture either backmutated to biotin independence, or my glucose contained biotin, since the strain could grow with methionine alone. This is no embarrassment however, since, at least for my purposes, methionine alone was a sufficiently good marker, better than any other I have ever tested. In fact, it is extremely difficult to get back mutation for methionine dependence. The order of magnitude of biotin requirements should, anyhow, be ~~low~~ lower than  $10^{-8}$ .

I have started to work with your Proteus cultures, but I have found it difficult, so far, to obtain good markers. On EMB with glucose, fructose, there is no apparent fermentation. My bacteriophage cultures do not attack Proteus, and so I am more or less left with the biochemical deficiencies markers, which I am trying to obtain at present. I shall let you know as soon as I am able to get something done.

I am very glad to hear that you are taking an interest in the problem of recombination, which I find very fascinating, but very difficult indeed.

Yours sincerely