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STERLING HALL OF MEDICINE
333 CEDAR STREET

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Dear Josh,

I wonder if I can bother you again and ask you to send me new transfers of your 1977 (serine auxotroph) and 1975 (serine/lysine). Over the summer, something seems to have happened to our cultures - their absolute requirements for amino acids apparently increased about 2-fold. I've tried everything I can think of to find the reason for this change (checking the Tatum basal medium, the amino acids we use, and reisolating from single cell colonies after plating) with no success.

As a last resort, I first we should try your stocks directly. If they behave as they first did, I shall immediately have some lyophilized cultures made so I shouldn't have to bother you again.

I thought you might like to hear some of our newer data on these strains, which are turning out to be much more complex than we thought - and wrote about in the 2 published papers.

One of my students is working on 1975 and found that it apparently adapts to the utilization of threonine by prolonged culturing in the presence of that amino acid. Actually, this is not really an adaptation because once

the culture is able to grow on threonine, it doesn't lose this ability by repeated serial passage through serine. The new strain grows on threonine, serine, or glycine and, compared with 1975, its requirement for serine or glycine is markedly reduced. We can't explain the reduced serine/glycine requirement as yet. The new threonine-strain is, unfortunately, not very stable and often reverts to wild type.

* Several interesting things have come up concerning 1977.

This serine auxotroph can be converted to a serine/glycine auxotroph in several ways: (a) by prolonged incubation in Tatum basal + ^{high concentration of} glycine; (b) by relatively short incubation in Tatum basal + high concentrations of glycine + glutamic acid; (c) by relatively short incubation in Tatum basal devoid of asparagine but + glycine ± glutamic acid. Thus, asparagine inhibits the "adaptation" and glutamic reverses the inhibition. Why, I don't know.

On the other hand, if 1977 is given Glycylglycine (or several other glycine peptides) in place of serine, it grows almost as readily as on serine and infinitely better than on free glycine. Cells grown up on Glycylglycine apparently are not adapted to growth on free glycine. This problem is now the center of our attention, as you can imagine.

Obviously 1977 + 1975 are much more complex organisms than we thought at first, and we are indebted to you for opening up this field for us.

With best regards,

Topsy Fueton.