

November 11, 1950.

Dr. G. L. Fraenkel,  
Dept. of Entomology,  
University of Illinois,  
Urbana, Illinois.

Dear Dr. Fraenkel:

As you surmised, we have repeatedly isolated bacterial mutants which appear to require unidentified growth factors in yeast extract. Many of these turn out to require unusual combinations or critical concentrations of known factors. However, we have not attempted to analyze all of our mutants, since we are not primarily interested in nutritional research, and some of them may well require unique factors.

It would be rather inconvenient to send you "yeast-extract" mutants as they turn up. However, we will be glad to test uncharacterizable mutants, as they occur, on the concentrates you mentioned. I can hardly promise any results, but if any interesting cultures should turn up, we will be glad to send them to you forthwith.

May I, however, make another suggestion? Current methods make it feasible to search for specific mutants, of the kind you are interested in, provided there is some assurance that the proposed growth factor is a metabolite for the organism studied. If wild-type *E. coli*, or other bacterium, contains  $B_T$ , it should be feasible to search for  $B_T$ -dependent mutants by the use of the penicillin method. Techniques are summarized in detail in Volume III (just published) of *Methods in Medical Research*; Dr. Luria in your Bacteriology Department has probably had some direct experience which might be of additional help.

Since our generalized source of growth factors is yeast extract / peptone, it is rather unlikely that any of our cultures could be  $B_T$ -dependent unless your new factor occurs in these materials.

Yours sincerely,

Joshua Lederberg,  
Associate Professor of Genetics