

GÖTEBORGS UNIVERSITET

Medicinsk-Kemiska Institutionen

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Dr. Maxine Singer
National Institutes of Health
BETHESDA, M.D. 20014, U.S.A.

Dear Maxine,

Thank you for your nice letter. I guess that you must now be back from Greece again and I hope that you have enjoyed your stay there not only scientifically but also from a more touristy point of view. How about your seven year old? How did she like Greece - the sun and the mountains and the blue sea of the clever Ulysses?

I don't know about the weather in Greece but we have had a most extraordinary summer in Sweden. Consequently I have been extremely lazy and I have spent over a month away from the lab sailing in the Swedish archipelago which by the way has a certain likeness to the Greece world of islands.


Your scientific results seem very pertinent and interesting to me. If I understand you correctly you propose that the RNase II forms a complex with its polymer substrate and that this enzyme-substrate complex remains intact until the polymer is chewed up. It would in other words not be possible to chase out a labelled polymer from the complex by adding excess cold polymer once the enzyme-substrate complex had been formed. This would mean either that the polymer substrate is heterogenous in length and that the enzyme has a strong preference for a certain-(shorter)-chain length or else that the substrate is so altered in the enzyme-substrate complex that the affinity of the enzyme for the bound substrate is very much increased. If the enzyme has no other activity towards the substrate but that of an exonuclease proceeding from the 3'-end this again would mean that shortening the chains increases the affinity.

Your methods for preparation of nuclease free ribosomes and for the isolation of the poly U-ribosome complex look very nice and useful. The increasing protection of poly U as the ribosome and tRNA move down towards the 3'-end is really an exciting finding. I am sure that it will eventually become a very important analytical tool once you have tied up the loose ends that you mentioned.

Regarding our own activities I have written up the stuff on the enzyme-substrate complexes with valyl-AMP and tRNA_{val}. It has been accepted by the J.B.C. and will appear at the end of this year (I hope). I am presently writing up the purification procedures for the enzymes which is dull work. Our main project right now is to purify that fraction of tRNA_{val} that can form a complex with the valyl RNA synthetase in order to study the mechanism of complex formation. This business of forming a stable complex with its polynucleotide substrate is clearly something rather special for the valine enzyme from yeast. Furthermore only a fraction of the tRNA_{val} chains seem to be able to form this stable complex. The important question is of course if this phenomenon is relevant to the normal enzyme-substrate recognition process in the formation of amino acyl RNA or whether it is some kind of biological "artifact" if you like.

With best regards to you and your family

Sincerely


Ulf Lagerkvist