July 14, 1961

Dear Arthur,

Forgive me for the delay in replying to your very welcome letter of 14th June. It was indeed exciting news; I am delighted to know that the DNA works with your enzymes.

We have some DNA from the yeast in progress of purification and it requires one further column chromatography and then I shall send it to you. There should be about 10 milligrams of this material for you. I hope that this will be ready at the end of next week and I shall ship it as I did the cytochrome $\underline{b}_2$.

We have had in mind melting point and pH studies on the DNA from the cytochrome, but I have been rather worried about possible wrong results due to denaturation. Although end group analysis indicates a minimum weight of about 10,000, when the samples are stored and then run in the centrifuge the sedimentation coefficient obtained is much greater than expected for such a small molecular weight. Furthermore, obvious aggregation occurs on storage in dilute salt solution. It seems to me that this phenomenon would complicate melting point determinations. These are the sort of problems which I would like to discuss with you when I come to Stanford. I think the best thing to do is to keep you supplied with as much of the DNA as you require and for us to use what is over here for the physical studies. Recently I have been using acridine orange for staining nuclei. This gives a brilliant green fluorescence with DNA. To my delight, the crystals of cytochrome $\underline{b}_2$ also give the same brilliant green fluorescence when they contain the DNA. We have recently crystallised the enzyme free of DNA and this crystalline variety shows no fluorescence. Since fluorescence is dependent upon particular spatial relationships, it suggests that the DNA in the cytochrome is arranged so that acridine orange molecules may bond with it.

Thank you very much for your kind invitation to visit you. I shall be delighted, of course, to give a seminar. Perhaps it would be appropriate if I talked about our studies on cytochrome $\underline{b}_2$, but if opportunity allows I would also like to tell you about our further work on formation of nicotinamide adenine dinucleotide in nuclei, the properties of the enzyme and our general picture of the function of the nucleus in the cell.

My present schedule is attached. Unfortunately I have to be back in Adelaide on or about September 3rd for lectures which I give in the 3rd term here. However, I hope that I may at least have the three days with you at Stanford. I shall write from London giving you further details. Perhaps you could let me know the best way to reach Palo Alto. I am greatly looking forward to our reunion.

With kind regards,

Yours sincerely,

R. K. Morton
Professor of Agricultural Chemistry