STILL

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Dear Josh,

I have just been in Melbourne for our Australian & New Zealand Association for the Advancement of Science meeting, and Sid Subbo has also visited Sydney. He was visiting us to find out some technical procedures in fractionating yeast enzymes and was surprised to learn we had made some observations on one of Ephrussi's organisms, the 'petite' 59RA. A colleague, A. W. Linnane and I presented some work at the Melbourne meeting.

Briefly the position is that we have succeeded in isolating what we believe to be mitochondria from fresh cells of normal baker's yeast. With the exception of fatty acid oxidation they have the properties of animal mitochondria. To our mind the most interesting thing about them is that they will oxidise acetate only when 'spiked' with α-keto-glutarate or to a lesser degree, citrate. In view of the increasing belief by Krebs and others that yeast probably has alternative paths of oxidation besides the classical T.C.A cycle this seems important.

However we have submitted a 'petite' to the same procedures and have found that particles which are similar under the microscope can be isolated. In agreement with Ephrussi we find that cytochrome oxidase is absent. However we have found that succinic and α-glycerophosphate dehydrogenases are present. Except for the absence of the cytochrome oxidase the mitochondria seem the same in the two organisms. The number of them is probably less in the 'petite'.

We think the reasons for the disagreement between our work and Ephrussi's are probably as follows:

(1) He used methylene blue as electron acceptor and we have found much greater activity using 2,6 dichlor phenol indophenol.
(2) He used phosphate buffer as the suspending medium for his cells. We find much greater activity in our preparation when we use sucrose solution as used for animal preparations.
(3) He carried out the disintegration of the cells over a 16 minute period. We shake the cells violently for 20 seconds, and have found that longer periods result in extensive damage of our material.

Sid will probably write and tell you how the problem looks to him. Our other interest at present is our observation that prodigiosin can be isolated as a protein-pigment complex, and that it is attached to the outer layer of the cell. It can be removed without rupturing or otherwise injuring the cell as far as we can see.

I understand from Sid that you may be persuaded to visit Australia. You will be very welcome in Sydney.

Kind regards to you and your wife. Yours sincerely
Jack Still

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