PROPOSED CONFERENCE ON RESEARCH PROSPECTI IN BIOLOGICAL AGEING

I. Definition of Ageing

A. Can it be defined?

B. What is evidence that it is a general phenomenon throughout the organism rather than a phenomenon involving key molecules or cells?

C. What experiments can be designed to answer the problem of definition?

II. Ageing and Differentiation

A. Is ageing a necessary concomitant of differentiation?

B. How can this question be attacked experimentally?

III. Genetics and Ageing

A. How do genes affect the rate of ageing?

B. How does selection affect life span?

C. Can somatic mutations cause ageing?

D. How can above questions be attacked experimentally?

IV. Growth and Ageing

A. Do all now-growing organisms and tissues age?

B. Do any growing tissues or organisms age?

C. What hypotheses can be suggested to explain any positive or negative correlation?

D. How can these questions be attacked experimentally?

V. Ageing of Molecules

A. Do complex molecules change their properties with time?

1. Enzymes

2. Nucleic acids

3. Structural molecules - collogeus, etc.

4. Plastics and crystalline metals, etc.

B. Experimental approaches?

VI. Ageing and Endocrines

A. Are hormonal differences with age causes or effects?

B. What are age differences in tissue responsivity to hormonal action?

C. How can these questions be answered definitively by experimental means?

VII. Ageing and Subcellular Particles

A. Do mitochondria, microsomes, etc., change structurally and functionally with time?

B. Does nuclear physiology change with time?

C. Cytoplasmic changes with age?

D. Experimental prospectus for definition.

VIII. Cellular Ageing

A. Are individual cells capable of living indefinitely?

B. What general conclusions can be drawn from tissue culture and other experimental approaches?

C. What are effects of the medium?

D. Experimental proposals.

IX. Biochemical Changes in Ageing

A. Is the path of carbohydrate metabolism altered with age?

B. Do individual enzymes decrease or increase in activity with age?

C. Is protein synthesis ability affected by age?

D. Is energetic coupling affected by age?

E. Design of experiments?

X. Organismic Ageing

A. Are older organisms less "efficient" than younger ones in useing energy sources, or

B. Are the rates of utilization changed?

C. What are organismic indices of ageing?

D. How does nutrition affect organismic ageing?

E. Are numbers of viable cells/tissue affected by ageing?

F. How can these problems be approached experimentally?

XI. Radiation and Ageing

A. Does radiation increase rate of ageing?

B. Are observed higher mortalities after radiation secondary effects, such as an increased incidence of tumors, etc.

C. Do individual cells age more rapidly under radiation?

D. Experimental approaches.

XII. The Choice of Experimental Material

A. Are there any "ideal" organisms for ageing studies? Why?

B. Where might human material be the best experimental source?

6. Which organisms have advantages for which of the above research subject outlines?