

BRITISH SOCIETY FOR CELL BIOLOGY

AND

SOCIETY FOR DEVELOPMENTAL BIOLOGY

(13th Meeting)

Autumn meeting. Oxford. September 26/27th 1968

Programme

Thursday September 26th.

Symposium on:-

"The Relationship of DNA Synthesis to Cell Differentiation"

Organised by Dr. J. B. Gurdon (Oxford)
Chairman: Professor G. Pontecorvo (London)

To be held in the Department of Physiology, Parks Road.

Time (including discussion)

Contributor.

10-11.00 a.m.

D. D. Brown. Flow lecturer. Department of Embryology,
Carnegie Institution of Washington and John Hopkins
University, Baltimore, U.S.A.

Gene amplification.

11-11.30 a.m.

Coffee

11.30-12.00 a.m.

A. Lima-de-Faria. University of Edinburgh and
University of Lund, Sweden.

Analysis of DNA amplification in Acheta.

12-12.30 p.m.

M.L. Birnstiel. Institute of Animal Genetics,
University of Edinburgh.

Ribosomal DNA of Xenopus laevis.

Lunch at New College at 1.00 p.m.

2.15-2.55 p.m.

H.C. Macgregor and J.G. Gall. Department of Zoology,
University of St. Andrews.

Gene amplification in oocytes of Dytiscid water
beetles.

2.55-3.35 p.m.

H.G. Callan. Department of Zoology, University of
St. Andrews.

The c - value paradox.

3.35-4.05 p.m.

Tea

4.05-4.45 p.m.

W. Donachie. Department of Molecular Biology,
University of Edinburgh.

The control of DNA in bacteria.

4.45-5.30 p.m.

M.G.P. Stoker. (London).

Some aspects of growth regulation in animal
cultured cells.

7.00 p.m.

Conference dinner to be held in New College.

Friday 27th September.

9.30 a.m.

Business Meeting for British Society for Cell Biology.

Continuation of meeting with contributed papers.

Chairman: Professor J. M. Mitchison (Edinburgh).

Time (including discussion)

Contributor.

10-10.20 a.m.

J. T. Dingle and G. D. Clarke. (Cambridge)

The synthesis of labelled nucleic acid and protein in relation to spreading of normal connective tissue cells.

Culture conditions allow (a) Attachment and spreading on a surface or (b) complete detachment: findings are related to differentiation and the fact that malignant cells appear less dependent on attachment.

10.20-10.40 a.m.

J. R. Pirt and S. J. Pirt. (London)

Choline and Serum Protein Requirements for Mouse Fibroblast Cells (strain LS) in Culture.

Choline was found to be the growth-limiting nutrient in a modified Eagle's medium. Serum protein served as the major source of choline. Other roles of serum proteins, particularly albumin, will be discussed.

10.40-11.10 a.m.

Coffee

11.10-11.30 a.m.

R. G. Gethin and P. C. T. Jones. (Aberystwyth)

The Effect of Nucleic Acids on Tumour Development in vivo.

Following a demonstration (Jones, P. C. T. Nature 212, 365) that tumour RNA would "transform" cells in vitro; the effects of normal and tumour nucleic acids on Ehrlich and Hepatoma 129 development in mice were investigated. Results indicate that RNA (but not DNA) of normal origin is capable of inhibition tumour growth, and a possible mechanism will be discussed.

11.30-11.50 a.m.

Muriel J. Ord. (Carshalton).

The cytoplasmic control of nuclear DNA synthesis in Amoeba proteins.

The stage of the cell cycle during which DNA synthesis takes place has been determined by autoradiography. Nuclear transfer experiments indicate the importance of the cytoplasm in determining the initiation of DNA synthesis.

11.50-12.10 p.m.

Margery G. Ord and L. A. Stocken. (Oxford)

Modifications in histone structure associated with DNA synthesis in fertilised Echinoderm eggs and mammalian somatic cells.

Two changes in microstructure of histones have been examined; the oxido-reduction state of thiol groups on the arginine-rich histone F3 and phosphorylation of F3 and the lysine-rich histone F1. Histones of the mature urchin egg differ from those of mammalian somatic cells in their diversity and in the proportion of thiol in F3. After fertilization cyclical reduction of S-S groups occurs up to the 4 cell-stage at times related to fusion

Time (including discussion)

Contributor.

Margery G. Ord and L. A. Stocken (Oxford) cont.

and mitosis. In mammalian cells DNA synthesis is associated with increased phosphorylation of histones F1 and F3; differences in the behaviour of these two histones will be considered.

12.10-12.30 p.m. General discussion

Lunch at New College at 1.00 p.m.

2.15-2.35 p.m. J. Paul and J. A. Hunter (Glasgow)

DNA synthesis is a prerequisite for the initiation of erythrocytic maturation by erythropoietin.

In foetal rodent liver tissue cultures, erythropoietin promotes a massive increase in haemoglobin synthesis. This is preceded by an increase in RNA synthesis which in turn is preceded by a wave of DNA synthesis. Blocking DNA synthesis completely prevents these events. The initiation of DNA synthesis is itself preceded by synthesis of a very small amount of RNA and protein.

2.35-2.55 p.m. Ruth F. Itzhaki (Manchester)

Attachment of protein to DNA in the DNP complex and its possible biological significance.

The release of proteins and nucleotide from the DNP complex under the influence of an exonuclease and an endonuclease, have been studied in attempts to distinguish between possible models for the structure.

2.55-3.15 p.m. N. R. Ringertz (Stockholm)

Possible mechanism for the reactivation of hen erythrocyte deoxyribonucleo protein.

The synthesis of DNP and other cell components has been studied in hen erythrocytes reactivated in a number of ways. The data suggest that changes in divalent cation concentrations play an important role in the alteration of DNP properties which occurs during reactivation.

3.15-3.45 p.m. Tea.

3.45-4.05 p.m. C. Rowlatt (London)

Subepithelial Fibrils in Mouse Uterus.

Fibrils, approximately 4000⁰ long, with a characteristic cross-banding pattern are found in the sub-epithelial zone in the uterus of spayed mice. They will be described and the possibility that they are naturally occurring aggregates of tropocollagen discussed.

4.05-4.25 p.m. Maria P. Viola - Magni and R. Tongiani

Hepatocyte differentiation and DNA changes.

The liver of foetal rats possesses only diploid nuclei; their DNA content is 4.5 pg (=10⁻¹² g). During the first 3 days of life the DNA content per nucleus increased to 7.1 pg and reaches the levels of the adult diploid nuclei (7.7 pg) after 6 days.

4.25-4.55 p.m. General discussion.