MOBILE GENETIC ELEMENTS IN EUKARYOTES

Walter J.Gehring.
Biozentrum, University of Basel, Klingelbergstr. 70, CH-4056 Basel, Switzerland.

The genome of higher organisms is much less stable than previously thought, and contains a large number of repetitive DNA sequences that are capable of "jumping" around in the genome. These movable genetic elements include the "controlling elements" in maize, a variety of transposons in yeast and Drosophila, retroviruses and retrovirus-like particles in vertebrates and invertebrate animals, and Alu repeats in humans. They are responsible for a large fraction of spontaneous mutations and chromosome rearrangements both in the germ line and in somatic cells. Movable genetic elements can alter the structure and expression of oncogenes. Furthermore, an oncogene may become integrated into a mobile genetic element. The possible involvement of movable genetic elements in the induction of cancer has been evaluated.

CULTURE OF EPITHELIAL CELLS FROM HUMAN ORAL MUCOSA

R.C.Grafström and K.Arvidson, Department of Forensic Medicine and Department of Prosthetics, Karolinska Institutet, Stockholm, Sweden

Outgrowth of epithelial cells was obtained from explant culture of human gingival mucosa. Oral epithelial cells were grown in a chemically defined nutrient medium MCDB 151 previously used to culture human dermal and bronchial epithelial cells. The medium was slightly modified and supplemented with purified factors including epidermal growth factor, insulin, hydrocortisone, phosphoethanolamine, ethanolamine and trace elements. Oral epithelial cells metabolized benzo(a)pyrene to phenols, dihydrodiols and tetrols. The features of this system allow investigations of differentiation and carcinogenesis using conditions without serum and other undefined additives.

ISOLATION AND CHARACTERISATION OF DNA METHYLTRANSFERASE FROM P 815 MOUSE MASTOCYTOMA CELLS.

Stefan Grünwald and Dusan Drahovsky. Center of Biological Chemistry, University of Frankfurt Medical School, Frankfurt, F.R.G.

DNA cytosine-5-methyltransferase from P 815 mouse mastocytoma cells has been extensively purified (about 2,600 fold) by chromatography on DEAE-cellulose, hydroxy-apatite and by an affinity step on heparin-agarose. The isolated enzyme has a molecular weight of 135,000 daltons and methylates DNA from various sources in double-stranded and single-stranded forms. DNA containing hemimethylated sites was used to measure the "maintenance" DNA methylase activity, whereas DNA free of 5-methylcytosines (M.luteus) served as substrates for the "de novo" type of DNA methylase activity. The fact that both types of activities copurify and that the highly purified enzyme is capable to use both of these substrates as methyl-accepting polymers strongly suggests that the "maintenance" and "de novo" activities of DNA methyltransferase are exercised by the same enzyme. During the selection of methylation sites P 815 DNA methyltransferase acts "processively" as it binds to methyl-accepting polymers and accomplishes a series of methyl group transfers without being detached from the DNA.

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