

be used for growth assessment using SEM autoradiography.

Differences in the luminal surface structure of bladder from normal and MAMA (methylazoxy-methanol-acetate) treated C57 BL mice were observed using the SEM but the relation of these changes to the action of the carcinogen remains to be determined. Certain of the morphological features noted *in vivo* were maintained in organ cultures of adult bladder tissues and may provide useful markers for normal and experimentally treated bladder epithelium.

In organ culture cellular outgrowth from the bladder epithelium occurred earlier and was more extensive in explants from the carcinogen treated animals. There was also evidence of stimulation of epithelial outgrowth following proteolytic enzyme treatment of bladder explants. This work forms part of a project on stromal-epithelial carcinogenesis in the bladder.

A FREEZE ETCH SCANNING (SEM) AND TRANSMISSION (TEM) ELECTRON MICROSCOPE STUDY OF LANDSCHUTZ ASCITES TUMOUR (LAT) CELL SURFACES. R. G. P. PUGH-HUMPHREYS, Cell Research Unit, Zoology Department, University of Aberdeen.

Microvilli observed by SEM on LAT cells (Pugh-Humphreys and Sinclair, *J. cell. Sci.*, 1970, 6, 477), were enveloped by plasmalemma and possessed a core of 5 nm diameter microfilaments in continuity with subplasmalemmal actin-like microfilaments. Freeze etch and TEM studies revealed that microfilaments inserted into the plasmalemma, possibly linking to membrane components, were also closely associated with cytoplasmic microtubules and 8 nm diameter filaments. 6-10 nm diameter particles, believed to be proteins and/or lipoprotein complexes (Singer and Nicolson, *Science, N.Y.*, 1972, 175, 720) were observed predominantly within, and sometimes spanning the width of the plasmalemma of freeze etched LAT cells.

Discrete patches of electron dense material on LAT cell surfaces observed by TEM after staining with ruthenium red (Luft, *Anat. Rec.*, 1971, 171, 369) and concanavalin A-peroxidase (Bernhard and Avrameas, *Expl cell Res.*, 1971, 64, 232) indicated the presence of externally located carbohydrates attached to plasmalemma components.

THE METABOLIC FORMATION OF WATER-SOLUBLE DERIVATIVES FROM DIHYDRODIOLS OF POLYCYCLIC HYDROCARBONS. G. R. KEYSELL, J. BOOTH and P. SIMS, Chester Beatty Research Institute, London.

Polycyclic hydrocarbons are initially metabolized by microsomal mono-oxygenases into epoxides that are then converted into dihydrodiols, phenols and glutathione conjugates. The dihydrodiols are themselves further metabolized by the mono-oxygenase to intermediates that yield water soluble products with glutathione.

Studies on the metabolism of the 5,6- and 8,9-dihydrodiols of benz(a)anthracene show that the 5,6-dihydrodiol is converted into one and the 8,9-dihydrodiol into 2 conjugates. We have shown that the 5,6-dihydrodiol is metabolized on the 8,9-bond and the 8,9-dihydrodiol on the 5,6- and 10,11-bonds. The formation of the 8,9-dihydrodiol 10,11-oxide of benz(a)anthracene as a metabolite of the 8,9-dihydrodiol by rat liver microsomal fractions has been demonstrated and this type of diol-epoxide may have a role in the further metabolism of dihydrodiols.

ENVIRONMENT AND TUMOUR GROWTH. P. J. HOUGHTON and D. M. TAYLOR, Institute of Cancer Research, Sutton, Surrey.

Studies using pulmonary Lewis lung carcinomata (1-50 mg) have suggested an altered mode of growth in contrast to that of the intramuscular tumour, as determined by biochemical parameters. DNA, RNA and protein concentrations have been shown to fall over this weight range, whilst marked necrosis has not been recorded. Isotopic tracer studies have suggested an increase in extracellular fluid. Pulmonary colonies have lower macromolecular concentrations than comparable intramuscular tumours. It is suggested that the cellularity of the pulmonary colonies is lower than in those grown in an intramuscular site, and that this difference may be explained in the context of the diffuse nature of the pulmonary environment allowing loose cell packing, in contrast to the restricting influence to expansion found in the intramuscular environment.