be expected to be of particular value in tumours producing large amounts of melanin. Under these circumstances, malignant melanocytes would be likely to sustain more damage than normal melanocytes, particularly if the patient were kept away from direct sunlight.

$^{32}$P was considered to be the most suitable available radionuclide and DL-1-amino-2-(3,4-dihydroxyphenyl)-ethyl-phosphonic acid (ADEP), an analogue of DOPA, was made and investigated as a possible carrier. Preliminary distribution studies were carried out with tritiated ADEP in mice bearing the Harding–Passey melanoma. The highest initial tritium concentration was in the kidneys, adrenal glands and eyes. Radioactivity fell to low levels in all tissues in 8 days or less but the tumour retained the isotope longer than did other tissues.

Structural analogues of ADEP which may be taken up more selectively by melanoma tissues are being considered.

**TRANSPLANTABLE ADENOCARCINOMATA OF THE COLON IN MICE AS POSSIBLE MODELS FOR CHEMOTHERAPY.** C. R. BALL and J. A. DOUBLE, Department of Cancer Research, University of Leeds.

Dimethylhydrazine treatment (17 weekly subcutaneous injections) of NMRI mice results in a 100% incidence of tumours of the colon by 22 weeks (Haase et al., Br. J. Cancer, 1973, 28, 530). Primary tumours derived in such mice have been transplanted into syngeneic mice and have resulted in 5 transplantable tumour lines from 51 attempts.

The 5 transplant lines (MAC7, MAC10, MAC13, MAC14, MAC15) are all well differentiated adenocarcinomata, some mucin secreting; each has its own characteristic growth rate (3–16 weeks to reach 5 × 5 mm from an implanted fragment) and thymidine labelling index (12–24%); all have 100% take rates; there is no evidence of de-differentiation during successive transplant generations (up to 8 in one case).

Methods have been developed for using the tumours MAC13 and MAC15 for chemotherapy screening. Initial studies of sensitivity to single dose therapy with 5-fluorouracil, cyclophosphamide, BCNU, CCNU, MeCCNU and methotrexate indicate (i) a general insensitivity to chemotherapy; (ii) that each tumour line has its own spectrum of sensitivity each responding to about half the drugs tested; and (iii) that the tumours are amenable to further development as possible screening models for drugs active against colorectal cancer.

**EFFECTS OF AGE AND CARCINOGEN TREATMENT ON CELL GROWTH IN ORGAN CULTURES OF ADULT MOUSE COLON.** E. A. DEFRIES and L. M. FRANKS, Imperial Cancer Research Fund, London.

As most differentiated epithelial cells cannot be maintained in monolayer culture, most of the work on chemical carcinogenesis in *vivo* is done using cultures of undifferentiated mesenchymal cells.

Although embryonic intestine can be maintained in organ culture for several weeks, previous tissue culture experiments using adult intestinal tissue had been restricted to 24–48 h. We have established an organ culture system by which adult mouse colon can be maintained, in a modified form, for at least 28 days.

After an initial degenerative phase the explants are covered by a layer of well differentiated surface epithelium with a variable number of crypts extending into the lamina propria. Cell division is confined to the crypts and cells move out of the crypts into the surface compartment. These cultures have been used for studies on the effect of donor age and carcinogen pretreatment on subsequent mitotic index in *vivo*. Preliminary experiments appear to show that carcinogen treatment alters the growth capacity of the intestinal epithelial cells though they remain responsive to the growth controlling mechanisms in the intact animal.

**EFFECTS OF PROTEOLYTIC ENZYMES AND A SYSTEMIC CARCINOGEN ON SURFACE STRUCTURE AND GROWTH OF ADULT BLADDER EPITHELIUM IN ORGAN CULTURE.** G. M. HODGES and G. SPACEY, Imperial Cancer Research Fund, London and M. D. MURG, Imperial College, London.

The scanning electron microscope (SEM) is a useful tool for studying surface changes in cells in *vivo* and *in vitro* and it can also