exposed on the surfaces of syngeneic murine tumour cells of known malignancy and with well defined metastasis characteristics.

We used 5 lectins conjugated to either ^{125}IUDR or fluoresceinisothiocyanate: Con A, WGA, PNA, SBA and UEA. The binding pattern was characteristically changed by treatment with the proteolytic enzyme (pronase) and with neuraminidase. The data were used as basis for attempts to separate cells in subfractions on Pharmacia Sepharose 6 MB columns. PNA (peanut agglutinin) was found to be the only suitable ligand in terms of cell yield and specificity.

SERUM TOCOPHEROL AND INCIDENCE OF CANCER IN FINLAND

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The 35,000 persons belonging to the Finnish Social Insurance Institution Mobile Clinic Survey were linked to the Finnish Cancer Registry. During a follow-up of 6 to 10 years 766 cancer patients were identified. Stored serum samples were available for the patients and 1:2 matched controls. The alpha-tocopherol levels were higher for controls. The association was strongest for smoking unrelated cancers. It persisted after exclusion of cases diagnosed shortly (<2 years) after the serum sample was drawn as well as after adjusting for the confounding effects of smoking, cholesterol and socioeconomic status.

17 BETA-ESTRADIOL MEDIATES GLYCOSYLATION OF HUMAN BREAST CARCINOMA GROWTH FACTOR RECEPTOR (BCGF-R)

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Malignant cells produce growth factors to which they respond because of specific receptors at their surface, thus conferring a growth advantage to these cells (Hakim, Expt. Cell Biol. 54: 193-211, 1986). Estradiol mediated the release of a serine protease (Hakim, Cancer Biochem. Biophys., 4: 173-185, 1980) from breast carcinoma, and of an immunosuppressive agent from malignant melanoma (Hakim, Annales d'Immunol., 131C: 155-170, 1980). The present investigation reveals that estradiol modulates glycosylation of the growth factor receptor on human breast carcinoma cell membrane. Short term cultures were developed from biopsies of human breast carcinomas confirmed as ductal (BDC), lobular (BLC) and colloidal (BCC). These cell lines were grown in estrogen-free (EFM) medium and in EFM supplemented with 10^{-7}M estradiol and/or tunicamycin (Tn). The cells were examined for mitogenicity, clonogenicity, ^{125}I-EGF binding ability and ^{3}H-galactosamine uptake capacity. The cells were also grown in athymic mice. Extraction of the BCGF-R followed by alkaline borohydride treatment and chromatography on Sepharose-4B showed that CBGF-R from in vitro cultured cells in presence of estradiol, or grown in nude mice treated with estradiol contained significantly higher fucosyl- and sialyl BCGF-R.

TATI, CEA AND CA 125 IN HUMAN OVARIAN CYSTS

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Tumour-associated trypsin inhibitor (TATI) is a 6kD peptide isolated from the urine of an ovarian cancer patient. Highly increased excretion of this inhibitor has been found in the urine and serum of cancer patients. We have now examined the concentration of TATI in human ovarian cysts. Very high cyst fluid concentrations of TATI were found in all mucinous cystadenomas, both benign and malignant. The mean concentration was about 100-fold compared to serum levels. This strongly suggests that this tumour-associated peptide was actually produced by the tumour. In serous cyst fluids low levels of TATI were found, similar to concentrations in serum. By immunohistochemistry TATI was demonstrated in most benign mucinous cystadenomas and in some semi-malignant and malignant tumours. Positive staining was predominantly seen in the apical parts of the cells. All serous tumours were negative in TATI staining. Very high cyst fluid levels of CEA and CA 125 were also detected, CEA exclusively in the mucinous type, CA 125 in both mucinous and serous cysts.

TUMOUR PROMOTING ACTIVITY OF TGFβ

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Transforming growth factor β (TGFβ) is secreted by transformed cells as well as by normal cells. It shows several biological effects common with phorbol esters including modulation of specific programmes of cell differentiation. We have used TGFβ in two-stage BALB/c 3T3 cell transformation to see if it can act as a tumour promoter. After a methylcholanthrene (MCA) initiation treatment of BALB/c 3T3 cells, treatment with phorbol-12,13-didecanoate (PDD) at 100 ng/ml during 4 weeks enhanced 4 to 5 fold the number of transformed foci in comparison with the result obtained on non-initiated cells. When TGFβ at 1 ng/ml was used during 4 weeks either alone or in combination with epidermal growth factor EGF (2 ng/ml), it could induce 5 to 6 fold more transformed foci in MCA-initiated BALB/c 3T3 cells than in non-initiated cells. Furthermore, a good dose response in regard to TGFβ (0.1 to 1 ng/ml) has been obtained for its tumour promoting activity on MCA-initiated BALB/c 3T3 cells. Thus, TGFβ exhibits 100 fold more tumour promoting activity than PDD in two-stage BALB/c 3T3 cell transformation and we have data which suggest that this tumour promoting activity may not be mediated by a complete block of intercellular communication.

MUSCARINIC RECEPTOR SENSITIVITY IN TWO HUMAN NEUROBASTOMA CELL LINES WITH DIFFERENT ACTIVATED ONCOGENES

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The ras oncogene has been suggested to be involved in receptor linked inositol lipid breakdown and Ca^{2+} mobilization. The human neuroblastoma cell lines SH-SY5Y and IMR 32 contain an activatd ras and amplified myc oncogenes respectively. In this study, we have demonstrated that SH-SY5Y cells are 10 to 100 fold more sensitive than IMR 32 cells to muscarinic receptor agonist with respect to Ca^{2+} mobilization. Induction of differentiation in SH-SY5Y cells with TPA normalizes this difference by decreasing the receptor sensitivity. Thus, the unusually high affinity of SH-SY5Y cells to muscarinic agonists might be due to the activated ras oncogene.

DIFFERENT FORMS OF PDGF-LIKE MOLECULES: POSSIBLE ROLE IN AUTOCRINE GROWTH STIMULATION

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PDGF, a major mitogen for connective tissue cells, is a dimeric molecule of two homologous but distinct polypeptide chains denoted A and B. Transformation by simian sarcoma virus is exerted by autocrine stimulation of cell growth involving a factor structurally related to a PDGF B chain homodimer. A human osteosarcoma cell line produces a growth factor similar to a PDGF A chain homodimer, whereas PDGF purified from human platelets probably is a heterodimer of one A chain and one B chain. mRNAs for the A and B chains of PDGF are frequently expressed in human tumour cell lines as well as in certain normal cell types. The regulation of the expression of PDGF-like growth factors, and possible functional differences between the different dimers have been evaluated.

DNA-BOUND POLYCYCLIC AROMATIC HYDROCARBONS IN WHITE BLOOD CELL DNA OF FOUNDRY WORKERS

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Iron foundry workers are exposed to elevated levels of polycyclic aromatic hydrocarbons (PAHs) released from heated organic material. They have also been shown to have an excess risk of lung cancer, to which PAHs may contribute. We applied here benzo(a)pyrene-DNA antibodies and a ^{32}P-postlabelling technique to determine the levels of PAH adducts in workers' white blood cell DNA. Both assays showed that the foundry workers had some 5 to 10 times higher levels of measurable adducts in their DNA as compared to the controls. Furthermore, when the exposed were blindly classified by industrial hygienists into three categories of exposure, the assays revealed the dose-response. The results provide confirmation of the usefulness of these techniques for human exposure monitoring.