and in pathology of malignant melanoma.

GENOTOXICITY OF PRISTANE AND OTHER ALKANES BY THE SOS CHROMOTEST

S.Janz(1), T.Huttunen(2) and H.Storch(1)

(1)Institute of Clinical Immunology, Leipzig, G.D.R.; and (2)Research Laboratory, Labsystems OY, Helsinki, Finland

The most extensively studied model of plasmacytoma genesis is by induction of BALB/c mice with i.p. injections of mineral oil or, chemically more defined, by several branched alkanes, such as pristane (2,6,10,14-tetramethylpentadecane), phytane (2,6,10,14-tetramethylhexadecane), and 7-n-hexyloctadecane. The available evidence suggests that the primary action of these plasmacytomagenic agents is to induce the formation of a chronic granulomatous tissue, the histological matrix of plasmacytoma development. However, certain genotoxic (mutagenic) effects caused by these substances can not be ruled out a priori. Pristane, 2-methyldodecane, and 1,3-di-tert-butyl-5-methylcyclohexane as well as hexahydrodibenzauberane and perhydroanthracose were shown to be potential genotoxic agents using the SOS Chromotest, a quantitative bacterial colorimetric assay for genotoxicity. The tested substances, which widely differed in their toxicity, did not provide any evidence for mutagenicity.

ACTIVATION OF MACROPHAGES IN HODGKIN'S DISEASE

D.B.Jones, N.Hogg(1) and D.H.Wright

University Pathology, General Hospital, Southampton SO9 4XY; and (1)ICRF, Lincoln's Inn Fields, London, U.K.

We describe the results of an investigation in frozen sections of 80 cases of Hodgkin's (HD) and non-Hodgkin's lymphoma (NHL) with a panel of monoclonal antibodies directed to human macrophage subsets. A variety of macrophage patterns were observed with the antibodies Ki-M6, Ki-M8, UCHM1 and 44. The greatest frequency of macrophages in all cases was demonstrated with antibodies directed to the alpha-chain of the p150:95 complex (CD11c). The antibody, 10.1, putatively directed to a high-affinity Fc receptor, absent in NHL, was strong in HD and in certain large cell lymphomas positive for Ki-1. In a separate series of experiments we have shown that gamma interferon and the supernatants of Hodgkin's lymph nodes, in short-term culture, are capable of inducing 10.1 positivity on blood monocytes. This suggests that the presence of this marker in HD and Ki-1 lymphomas is due to the local production of high levels of lymphokine.

CARCINOGEN-DNA ADDUCTS AS PROBES FOR THE MECHANISMS OF CHEMICAL MUTAGENESIS AND CARCINOGENESIS

Fred F.Kadlubar

National Center for Toxicological Research, Jefferson, Arkansas, U.S.A.

The formation of specific carcinogen-DNA adducts, their relative persistence in the target tissues of experimental animals, and their demonstated mutagenicity in both microbial and mammalian test systems have provided strong evidence for their role in the initiation of the neoplastic process. For several classes of chemical carcinogens including aromatic amines, polycyclic aromatic hydrocarbons and their nitroaromatic derivatives, metabolic activation pathways leading to DNA adduct formation have been elucidated and found to be quite comparable in tissues of humans and experimental animals. Structure-activity studies have indicated that DNA adducts can induce specific chemical or conformational changes that, upon cellular replication, can lead to specific base transitions or transversions. These same mutations hae also been implicated in the activation of certain cellular proto-oncogenes in both human and animal tumours. Consequently, biochemical methods, which are now being developed to quantify carcinogen-DNA adducts in human tissues, may provide not only an estimate of exposure to occupational and environmental carcinogens but also a reasonable assessment of cancer risk.

ACTION MECHANISMS AND ANTI-LYMPHOMA PROPERTIES OF NEPLANOCIN A

E.O.Kajander, D.A.Carson(1) and S.M.A.Kröger

Department of Biochemistry, University of Kuopio, Kuopio, Finland; and (1)Scripps Clinic and Research Foundation, La Jolla, U.S.A.

We have analysed the antineoplastic activity of Neplanocin A (NA), a carbocyclic adenosine analog, against several cultured cell lines. NA was cytostatic and cytotoxic against human and murine T and B Lymphoma cell lines. 50% growth inhibition was brought about at 1 to 10 nM drug levels in 3-day toxicity tests. Several non-lymphoid cell lines were about 1000-fold resistant to NA. Normal peripheral blood lymphocytes

±PHA or ConA stimulation showed only slight inhibition of viability or growth and of macromolecule synthesis when cultured with 10 to 40 nM NA. Such NA levels inactivated S-adenosylhomocysteine hydrolase and drastically increased S-adenosylhomocysteine in the lymphoma cells resulting in transmethylation block. NA is thus a promising antilymphoma agent and its action mechanism is related to inhibition of cellular tansmethylation reations, a new route for attacking cancer cells.

PROGNOSTIC IMPACT OF DNA-PLOIDY AND S-PHASE FRACTION

O.-P.Kallioniemi, J.Mattila, T.Hietanen, R.Punnonen, M.Lehtinen, K.Lauslahti and T.Koivula

Tampere University Central Hospital, Hospital and University of Tampere, Tampere, Finland

To evaluate the prognostic significance of nuclear DNA content and S-phase fraction (SPF) in human tumours, 600 archival paraffin-embedded specimens from breast, ovarian and lung cancer were analysed with DNA flow cytometry.

DNA-aneuploidy was observed in 60% of breast, 58% of ovarian nd 63% of lung cancer specimens and the mean SPF was 11.1, 14.5 and 17.6%, respectively. DNA-aneuploidy and high SPF were most common in advanced stage or poorly differentiated tumours as well as in steroid receptor negative breast tumours. In breast cancer, high SPF but not DNA-aneuploidy was related to poor prognosis. In ovarian cancer both parameters were independent indicators of poor prognosis according to a Cox regression model. DNA-aneuploidy in the tetraploid mode was related to better prognosis than non-tetraploid or multiclonal DNA abnormality. We conclude that DNA flow cytometry can be used to measure new prognostic parameters on a cellular level in human cancer.

THE DIAGNOSTIC APPLICATION OF URINARY POLYAMINE MEASUREMENT IN WOMEN WITH GYNAECOLOGICAL CANCERS

K.Kamiński(1) and A.Zubrowski(2)

(1)Department of Biochemistry; and (2) Department of Obstetrics and Gynaecology, Silesian Medical Academy, Katowice, Poland

In 56 women (in the age range of 28 to 55) with gynaecological cancers, urinary polyamines were measured using an enzymatic assay method. After performing surgery and chemotherapy, a decrease in the level of urinary polyamines was found in almost all cases. This was taken to be indicative that the measurement of urinary polyamines can be used to monitor the effectiveness of therapy.

A COMPARATIVE STUDY OF VARIOUS TUMOUR MARKERS IN CANCERS OF GASTROINTESTINAL SYSTEM

T.Karamfyllis, J.Vaitsopoulos, A.Kortsaris, P.Kostaki, A.Papadopoulou, L.Boutis and O.Antonoglou

Theagenion Cancer Institute, Thessaloniki, Greece

A comparative study of eight tumour markers, including five enzymes (5'-nucleotidase, sialyltransferase, γ-glutamyltransferase, alkaline phosphatase and a Zn++ dependent nucleoside diphosphatase), two antigens (carcinoembryonic antigen and immunosuppressive acidic proteins) and sialic acid, was performed in nearly 100 patients with primary and metastatic cancer of the gastrointestinal system.

Liver scanning for liver involvement was performed in all patients and the disease in all cases was histologically confirmed.

The results showed that none of the markers used is specific for primary, stomach and colorectal carcinoma. On the other hand, 5'-nucleotidase, nucleoside diphosphatase and γ-GT, were proved very good markers for th early detection of primary or metastatic liver carcinoma. In fact, the feasibility of detecting liver involvement using these markers, is very close to that achieved by liver scanning.

MAMMARY EPITHELIAL CELL POPULATIONS ANALYSED BY MEANS OF MONOCLONAL ANTIBODIES (MAbs)

U.Karsten(1), G.Papsdorf(2), P.Stosiek(3), M.Kasper(3) and G.Pasternak(1)

(1)Central Institute for Molecular Biology, and (2)Central Institute for Cancer Research, Academy of Sciences, Berlin-Buch; and (3) Institute of Pathology, Görlitz, G.D.R.

MAbs, some of which were produced in our laboratories, have been evaluated for their potential use in (1) analysing normal mammary epithelial cells cultured in vitro, and (2) detecting metastases of mammary carcinomas in regional lymph nodes. A characteristic pattern of marker expression (cytokeratins, blood group