lectin blocking effect. In summary, when organ-specific lectins are blocked with competitive glycoconjugates, tumour cell colonization of the liver can be prevented. The same holds for the settling of bacteria with D-galactose residues (for instance, asialo-B-streptococci).

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CHROMOSOME ABNORMALITIES IN KAHLERS DISEASE

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Kahlers disease, otherwise known as multiple myeloma or plasma cell myeloma was first described in 1846. Cytogenetic studies have been performed on relatively few patients with this disease to date. The majority had normal karyotypes probably because malignant plasma cells undergo cell division infrequently and thus were not readily detected.

We report here our findings on 49 patients with Kahlers disease collected over a period from 1975 to the present time. Application of cytogenetic banding techniques has identified 15 patients from this group with chromosome abnormalities. Detailed karyotype analyses were performed and whilst the majority of them were complex it would appear that chromosomes 1, 11 and 14 were the most frequently involved.

EXPRESSION OF c-fos, c-myc AND hsp70 GENES IN REGENERATING RAT LIVER

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Partial removal of rat liver induces synchronous entry of Go hepatocytes into G1 and S phases (at 22 to 28 hr) followed by the wave of mitosis (at 30 to 32 hr). Transient, but significant expression of the c-fos gene at 15 to 60 min after surgery, followed by a second peak at 4 hr was observed in regenerating liver. The c-myc gene was slightly induced within first hour and induction reached maximum at 4 to 8 hr. The second peak of c-myc induction was followed by an increase in the level of one of the hsp70 gene-like transcripts. A comparison of the hsp70 gene expression pattern in control, partially hepatectomized and heat-shocked rats revealed that hepatectomy brought about the increase in the level of this hsp70-like RNA species which was constitutively expressed in various organs of non-treated rats. Induction of this transcript started at 6 hr and remained elevated through the pre- and replication phase with a slight maximum at 8 to 10 hr of the regeneration.

CO-EXPRESSION OF ALPHA-2-MACROGLOBULIN AND GROWTH PROMOTING ACTIVITY IN HIGHLY AND POORLY TUMOURIGENIC MELANOMA CELL LINES

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A panel of highly and poorly tumourigenic melanoma cell lines was analyzed with respect to their expression of alpha-2-macroglobulin and growth factors. For the highly tumourigenic cell lines, shorter population doubling time was characteristic and exhibited slightly higher levels of growth promoting activity in conditioned media than the poorly tumourigenic melanoma cell lines. Heterotransplantation experiments showed that the expression of the alpha-2-macroglobulin was not crucial in the ability of the melanoma cells to form tumours in nude mice. Present results suggest the possibility that alpha-2-macroglobulin secreted by human melanoma cell lines can influence the growth promoting activity expressed by these cell lines.

METABOLISM OF DIETHYLSTILBESTROL IN HAMSTER HEPATOCYTES

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The combined treatment of male Syrian golden hamsters with the synthetic estrogen diethylstilbestrol (DES) and 7,8-benzoflavone (7,8-FB), but not with DES alone nor 7,8-BF alone, gives rise to a near 100% incidence of liver tumours. We hypothesize that 7,8-BF modulates the hepatic metabolism of DES or vice versa, thereby leading to tumour induction. To test this hypothesis we are investigating the biotransformation of DES in freshly

isolated hamster hepatocytes of high viability, as measured by the efflux of lactate dehydrogenase, the intracellular and extracellular distribution of Na+ and K+, and the plasma membrane potential. DES was metabolized by these cells to several oxidative metabolites and also to glucoronides and sulphates. The oxidative compounds comprise Z,Z-dienestrol, 1-hydroxy-DES and 3'-hydroxy-DES. Interestingly no isomerization of Z-isomers could be detected.

This study demonstrates the ability of isolated hamster hepatocytes to metabolize DES via conjugative and oxidative pathways. Liver cells should therefore be useful in studying the effect of 7,8-BF pretreatment on DES metabolism, thereby helping to clarify the role of metabolic activation in DES-mediated tumourigenesis.

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EXPRESSION OF THE TRANSFORMATION-ASSOCIATED PROTEIN p53 IN RODENT CELLS TRANSFORMED BY HUMAN ADENOVIRUSES WHICH DIFFER IN THEIR ONCOGENIC POTENTIAL

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The steady-state levels of p53 protein and mRNA were analyzed in a range of rodent cells transformed by highly oncogenic Adenovirus (Ad) type 12 or non-oncogenic Ad2 or Ad5. Analysis of the steady-state level of p53 protein by Western blotting showed a reduction in the level of p53 protein in Ad12 transformed cells when compared to Ad2 or Ad5 transformed cells. The half-life of p53 was similar (approximately 10 to 15 hr) in cells transformed by either Adenovirus serotype.

In order to analyze further the level of control of p53 expression, the steady-state concentration of p53 mRNA in each transformed cell line was analyzed by Northern blotting. This showed a marked reduction in the steady-state level of p53 mRNA in Ad12 transformed cells compared to Ad2 transformed cells. There appears therefore to be no strict correlation between the steady-state level of p53 protein and mRNA and the oncogenicity of Ad-transformed cells examined in this study.

MOLECULAR AND BIOLOGICAL CHARACTERIZATION OF FIBROBLAST GROWTH FACTOR FGF, A POTENT INDUCER OF ANGIOGENESIS

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Two proteins (16 to 17 kD), acidic and basic FGF, have been isolated and structurally characterized by protein sequencing and cDNA cloning. The FGFs are related by structure, possess similar biological activities and are present in many tissues. In vitro, they are strongly mitogenic for vascular endothelial and other mesodermal cells, and also modulate non-mitogenic cellular activities (endocrine, differentiated functions). In vivo, FGFs induce the formation of new capillary blood vessels and promote wound healing. These data suggest that FGFs may have a physiological role as local regulators of normal tissue growth, repair and maintenance. FGFs may also be implicated in various pathological conditions involving altered neovascularization, e.g. in solid tumour growth. Certain tumour cells synthesize basic FGF and the growth of tumours can be inhibited by antibodies that neutralize the mitogenic activity of basic FGF.

EARLY CHANGES IN GENE EXPRESSION INDUCED BY TUMOUR PROMOTERS IN MOUSE SKIN KERATINOCYTES

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The potent tumour promotor 12-0-tetradecanoylphorbol-13-acetate (TPA) causes alterations of both epidermal differentiation and proliferation patterns in vivo as well as in cultured keratinocytes. To characterize early changes (within 4 hr) in gene expression, a cDNA library representative for mRNAs expressed in mouse epidermis in vivo after TPA treatment was constructed and screened with a cDNA probe enriched in sequences preferentially expressed after TPA treatment. Here we describe the characteristics of two cDNA clones λB3 (430 bp) and λ B10 (850 bp) consistently showing differential hybridization. The clones recognize unique TPA inducible transcripts of 0.6 and 5.0 kb, respectively. In primary mouse keratinocytes a low basal level of expression is observed, which is markedly reduced when cells are induced to differentiate. Similar to that observed for ornithine decarboxylase mRNA, new protein