or methanolysed, reacylated and examined by g.l.c. as their trimethylsilyl derivatives (Clamp *et al.*, 1967).

The compounds fell into two classes, namely those that were neutral at pH 5.3 but separated on electrophoresis at pH 2.0, and acidic compounds, with very low electrophoretic mobilities at pH 2.0, but separable at pH 5.3. Three major neutral components were seen, namely components N₁, N₂ and N₃ with respectively one, two and three additional neutral carbohydrate residues attached to the aspartylglycosamine residue. Traces of higher-molecular-weight neutral compounds were also present. Component N₁ had an additional galactose residue, and component N₂ had galactose and fucose. Component N₃ could be resolved into two components on prolonged electrophoresis at pH 2.0; one had two mannose residues and one galactose residue, and the other had two mannose residues and one additional *N*-acetylglucosamine residue.

At least nine acidic compounds were present, with some members containing more than one acidic group/molecule. Most of these compounds contained sialic acid and were converted into neutral compounds on treatment with 0.1 M-HCl at 80°C; however, at least one of the more acidic compounds was stable to this treatment, and it possibly contained a sulphated residue as it moved slowly to the anode even at pH 2.0.

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The Iodination of Mammalian Cells Catalysed by Lactoperoxidase as a Probe for Externally Located Proteins of the Plasma Membrane

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The use of lactoperoxidase to catalyse the iodination of tyrosine residues exposed on the outside of human erythrocyte membranes has been described by Phillips & Morrison (1971). We have been able to confirm their finding that only two peptide-chain components (as revealed by polyacrylamide gel

electrophoresis in sodium dodecyl sulphate) are labelled. One of these components is the glycoprotein of the membrane. In addition, we have obtained evidence that the sites on both components can saturate, and exhibit similar kinetic behaviour in this iodination reaction. Since the macromolecule lactoperoxidase must participate in this specific iodination, this reaction should provide an excellent means of identifying protein components of cells that could possibly participate in specific intercellular interactions. We are therefore applying this label to the case of the cultured BHK 21 cell, and preliminary results will be reported.

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Isolation of Plasma-Membrane-Associated Tumour-Specific Antigen from Rat Hepatoma Cells

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Carcinogen-induced rat hepatomas and fibrosarcomas possess tumour-specific antigens, comparable with weak histocompatibility antigens, against which the host may evoke an immune response (Baldwin *et al.*, 1971*a,b*). These antigens are specific products of individual tumours and are viewed to be new discrete components of the transformed cell surface. Limited papain digestion of cell membranes has been used extensively to release H-2 and HL-A transplantation antigens as water-soluble glycoproteins (Reisfeld & Kahan, 1970). Similar techniques have now been applied to an amino-azodye-induced rat hepatoma (hepatoma D23) to characterize tumour-specific antigens.

Antigenic activity present in individual or pooled preparations of solubilized hepatoma D23 cell membranes was determined by their capacity to neutralize the reaction of antibody in hepatoma D23 immune serum with tumour-specific antigens expressed on viable hepatoma D23 cells. This inhibition of antibody reactivity was measured by using the indirect membrane immunofluorescence test (Baldwin & Barker, 1967).

An 'extranuclear' membrane preparation of hepatoma D23 tissue was subjected to limited papain digestion (1 mg of enzyme/30 mg of membrane protein) for 60 min at 37°C. The soluble extract was fractionated by DEAE-cellulose column chromatography by the technique of Baldwin & Glaves (1972). Velocity sedimentation of eluted fractions exhibiting