to be virtually free from this contaminant when examined by mass spectrometry.—We are, etc.,

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HL-A Antigens and Ankylosing Spondylitis

SIR,—Your leading article "HL-A Antigens and Rheumatic Diseases" (3 May, p. 238) states that "only some 5% of individuals with HL-A W27 develop ankylosing spondylitis." Recent data from several sources suggest that the figure is nearer 20%.

A controlled study[1] of "healthy" blood donors at Stanford University Medical Center revealed a prevalence of symptomatic, definite ankylosing spondylitis (A.S.), satisfying the New York criteria,[2] in 20% of males and 17% of females carrying the W27 antigen. There were no cases among W27-negative controls. These findings have been confirmed by Cohen *et al.*[3] at Northwestern University, Chicago, for male blood donors. Similar unpublished prevalence figures have been found for the Haida and Pima Indians. Some 10% of the Haida Indians develop A.S.,[4] and Gofton, in Vancouver, has now shown that HL-A W27 is present in 50% of the Haida. Comparable studies by Bennett in Arizona have revealed W27 in about 20% of Pima Indians, a population known to have a 4% prevalence of A.S.; thus these studies also demonstrate that 20% of individuals with HL-A W27 develop disease. A review of earlier Caucasian family studies indicate that this 20% figure is to be expceted; Emery and Lawrence[5] stated that A.S. was present in 10% of first-degree relatives of patients with A.S. It has been shown that some 50% of these first-degree relatives are W27 positive.[6]

Investigations in progress include large-scale population studies with screening by questionnaires, radiographs, and HL-A typing. It will thus become apparent whether extrapolation from a 20% risk of developing the disease in an individual with W27 to a total population prevalence of 1-1·5% is justified. The clinical implication of this higher figure is evident. Ankylosing spondylitis may no longer be considered a rare disease.—We are, etc.,

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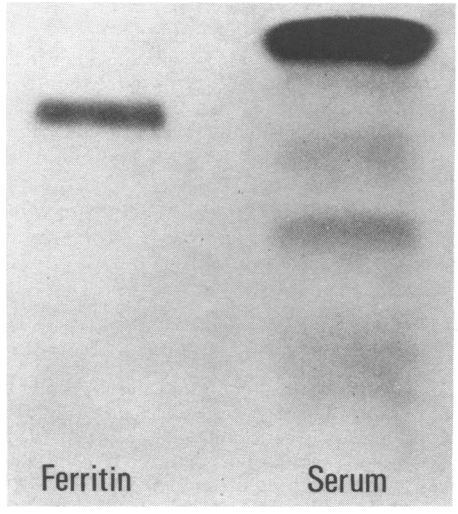
α_2H-globulin and Ferritin

SIR,—Your leading article on "Plasma Proteins in Cancer Surveillance" (24 May, p. 407) has again raised the subject of α_2H-globulin and once again we have noted the close similarities between the studies on this protein by Buffe and his colleagues[1] and our own investigations into "serum ferritin."[2]

α_2H-globulin appears to share many properties with the iron-containing protein ferritin. It has a molecular weight of about 600 000, normally contains 15-25% iron, but can occur without iron.[3] It is heat-stable and polymerizes to form dimers, trimers, etc. Indeed Buffe *et al.* have demonstrated its immunochemical identity with ferritin.[3] α_2H-globulin is found in the circulation (at concentrations of greater than 200 µg/l) at birth and disappears from the circulation during the first few weeks of life. In many patients with malignant disease the protein is again found in high concentrations in the plasma. Studies of serum ferritin concentration in malignancy have not been extensive, as most investigations have been related to iron metabolism, but nevertheless serum ferritin concentrations follow the same pattern both during the neonatal period and in cancer patients.[2]



On cellulose acetate electrophoresis in barbitone buffer at pH 8·6 purified human liver ferritin moves similarly to the α_2 component of serum proteins (see figure). There are a number of other similarities. α_2H-globulin extracted from tumour or from fetal liver appears to differ from that extracted from normal liver in carbohydrate content, iron content, and state of polymerization.[1] Similarly, differences occur between ferritin preparations from normal and malignant or fetal tissue.[4] Furthermore, serum ferritin appears to differ from normal liver or spleen ferritin in a number of ways, including its iron content.[6] Both serum ferritin and α_2H-globulin concentrations are increased in patients with hepatoma or acute lymphoblastic leukaemia. A rise in α_2H-globulin concentration precedes relapse in children with hepatoma who have undergone chemotherapy,[1] and serum ferritin concentrations may give a similar warning in children with acute lymphoblastic leukaemia.[6]

Comparison of the concentrations of α_2H-globulin and circulating ferritin in various disease states is difficult because of the different starting materials and methods of assay employed. None the less, it seems likely that both names describe members of what now seems to be an extensive family of iron-containing proteins generally called ferritins. Further examination of the properties of circulating α_2H-globulin and ferritin may give much information about the nature of ferritin in malignant tissue, about its release into the circulation, and about immunological relationships between the various proteins.

It seems likely that research in this area has been hindered by the use of different names for the same protein. The appearance of a further report[7] identifying β-fetoprotein as ferritin emphasizes the importance of specific characterization of the protein rather than reliance on its electrophoretic mobility in order to avoid confusion.—We are, etc.,

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Unsuccessful Immunosuppressant Treatment of Paraquat Poisoning

SIR,—The successful use of immunosuppressant therapy in a case of paraquat poisoning has been described by Dr. J. A. Laithwaite (1 February, p. 266). The patient in question was treated with prednisolone 100 mg daily from admission, seven days after poisoning with about a quarter of a cupful of paraquat. Azathioprine 50 mg and potassium aminobenzoate one sachet (3 g) four times daily were started five days after admission because of deteriorating respiratory function. We report two further cases treated with immunosuppressants, one within 48 hours of poisoning and the other when breathlessness started, in spite of which both patients died.

A 38-year-old man took one mouthful of paraquat concentrate and was brought to hospital 24 hours later. Paraquat was detected in his urine. Treatment with oral bentonite was started immediately in an attempt to prevent intestinal absorption (7 December 1974, p. 569) and was continued for three days. Twenty-four hours after admission immunosuppressive treatment was started with azathioprine 50 mg and prednisone 10 mg four times daily. On the eighth day after admission he began to feel short of breath on mild exertion and on the 15th day he died in respiratory failure. Necropsy showed extensive pulmonary fibrosis.

Another man, aged 20, took four mouthfuls of paraquat concentrate, and treatment with oral bentonite, 200 ml of suspension hourly, was started within an hour and continued for two days. Paraquat was detected in his urine for the first three days after admission. On the 15th day he became short of breath and chest *x*-ray showed bilateral pulmonary shadowing. He was then treated with azathioprine 50 mg, prednisone 10 mg, and potassium aminobenzoate one sachet, each four times daily, but his breathlessness steadily worsened and he died in respiratory failure 25 days after poisoning. Necropsy again showed extensive pulmonary fibrosis.

Immunosuppressive treatment in the doses given did not obviously modify the course or outcome of the poisoning in these cases, but perhaps larger doses started earlier might have done so.