Ultrastructure of Active Chromatin

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The ultrastructural organization of chromatin was examined in Miller spread preparations of samples prepared from isolated nuclei of rat ascites hepatoma cells. Examination of the spreads reveals that ribonucleoprotein (RNP) fibrils are only occasionally associated with the extended chromatin. RNA polymerase II (RPase II) present in the chromatin was identified with hen anti-rat hepatoma RPase II antibody (IgY) labelled with colloidal gold.

The transcribing chromatin appears to be devoid of discrete nucleosomes, and the smooth chromatin region corresponds to about 600 base pair DNA in length.

Histone H1 in chromatin was examined both with rabbit anti-rat hepatoma H1 antibody (serum) and with goat anti-rabbit IgG labelled with colloidal gold. Immunoelectron microscopy reveals that histone H1 is scarcely present in the transcribing chromatin regions.

The biochemical and immunohistochemical observation of LCDD

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A case of the systemic light chain deposition disease (LCDD) in a 48-year -old man is showed. The patient treated for multiple organ failure. At autopsy, eosinophilic substance was deposited systematically. It was granurally differed from amyloid fibril by myelomatous proliferations of kappa light chain positive plasma cells were recognized. Biochemical and immunohistochemical findings of LCDD proteins extracted from the liver tissue showed the resenblance to AL-kappa amyloidosis in the view of degradations of the protein, amino acid compositions and immunobiochemical cross-reactivity of the LCDD protein.

High glucose 6-phosphatase activity in osteoblasts in the metaphysis of new born rats

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Glucose 6-phosphatase (G6Pase) activity was examined cytochemically in the metaphysis of femur of 3- and 7-day-old rats. G6Pase and hexokinase activities were also examined biochemically in the femur of 3-day-old animals. The reaction product for G6Pase activity was seen in the endoplasmic reticulum and nuclear envelope of all cell types composing the metaphysis. The amount of the reaction product was abundant in osteoblasts, moderate in osteocytes, and moderate to scarce in osteoclasts. Biochemical G6Pase activity in the bones was higher than that in the brain, submandibular gland or pancreas of the animals. Hexokinase activity in the bones was not different from that in the submandibular gland, pancreas or kidney, and higher than that in the brain. Activity ratio of G6Pase and hexokinase in the bones, 0.603, was greater than that in the submandibular gland, pancreas or brain, and smaller than that in the kidney. The results suggest that the cells of the bone are more inclined to release glucose and phosphate than the cells of the brain, submandibular gland and pancreas. The phosphate produced by osteoblasts may be used for new calcification in the bone.

The Circulating α_1-Antitrypsin-Elastase Complex attacks the Elastic Lamina of Blood Vessels. An Immunohistochemical Study

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The results indicate that, when α_1-antitrypsin-elastase complex is present in the circulating blood, it is incorporated into the elastic lamina through the endothelial layer.

The light microscopic observations revealed dense deposition of reaction product in the elastic lamina of the arterioles; moderate or slight deposits were seen in the tissues surrounding arteries, in the tubular epithelial cells of the proximal convoluted tubules in the kidney, and in the pancreatic ducts.

Immunoelectron microscopy revealed heavy deposition of the reaction products in the elastic lamina of the small arteries and arterioles; some dissolution of the elastic fibers was also evident. Pinocytic uptake of the α_1-antitrypsin-elastase complex was observed on the albuminal surface of endothelial cells and in smooth-muscle cells bordering the elastic lamina of arterioles. However, the endothelial cells of the arteries and arterioles retained their normal morphological appearance, although local desquamation was observed in some animals.