

had 2, 3, 4, and 1 syncytia. Controls during the same period (3 embryos per time point) averaged 21.3, 32, and 30.3 syncytia, respectively.

This report effectively establishes that true refusion of blastomeres occurs in chloramphenicol- and rotenone-treated embryos, presumably accompanied by membrane disassembly, and that it is reversible if the inhibitor is not an irreversible mitochondrial binder. This system is now attractive for exploring the metabolic linkage between respiration and membrane biogenesis and perhaps for differentiating between membrane synthesis and maintenance.

Summary. Rotenone and high doses of chloramphenicol, both of which specifically inhibit electron transport between NADH and flavoprotein in the respiratory chain, caused fully separated *Rana pipiens* blastomeres to refuse, as shown by syncytium counts on embryos reconstructed from serial sections. With chloramphenicol, the effect was completely reversible: re-cleavage and normal development followed drug removal. The blastomere

fusion effect was not produced by the succinic dehydrogenase-specific respiratory inhibitor, thenoyltrifluoroacetone, nor by a non-mitochondrial protein synthesis inhibitor, cycloheximide, both of which instead produced simple arrest of cleavage.

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Tubuloreticular Structures in Hepatic Endothelial Cells in a Case of Malignant Melanoma Liver Metastasis

Tubuloreticular structures have been described in several human diseases, namely viral, neoplastic and connective tissue diseases¹⁻³. They have been identified in the hepatic sinusoidal endothelium by Kovacs et al.⁴ in a case of systemic lupus erythematosus. To our knowledge there are no other references concerning their presence in human liver endothelial cells. The unknown significance of these structures and the controversy regarding their relationship to diseases make them an interesting biological finding. This report describes the presence of tubuloreticular structures in the hepatic endothelial cells in a case of malignant melanoma liver metastasis.

Methods. A percutaneous liver biopsy was performed by Menghini needle in a 48-year-old white man with liver metastasis of a malignant melanoma. The patient had no clinical or laboratory evidence of any other disease, such as collagen disease. The fragments were fixed in cacodylate-buffered 3% glutaraldehyde pH 7.3 and postfixed sequentially in veronal acetate-buffered 1% osmium tetroxide pH 7.3 and veronal acetate-buffered 0.5 uranyl acetate pH 5.8⁵. Following dehydration in ethanol, they were embedded in Epon 812⁶. The ultrathin sections were stained with lead citrate and examined on a Phillips EM 300 electron microscope.

Results and discussion. Tubuloreticular structures were frequently identified within the hepatic sinusoidal endothelium. They presented 20–22 nm diameter branched tubules associated with dilated cisternae of the endoplasmic reticulum. The tubular arrays appeared identical in dimensions and location to structures described by others in tumors, collagen and viral diseases^{2, 7, 8}. No tubuloreticular structures were found, either in the tumor cells or in the hepatocytes.

Despite the accumulated literature concerning these structures, their nature and pathological significance, remains unsolved. Their ubiquitous presence in a variety of cell types and diseases with unrelated aetiology

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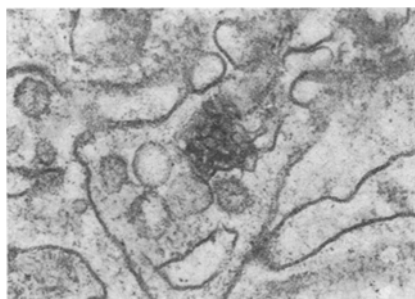


Fig. 1. Tubuloreticular structure within a sinusoidal endothelial cell.



Fig. 3. Higher magnification of a tubuloreticular structure shown in Figure 2.

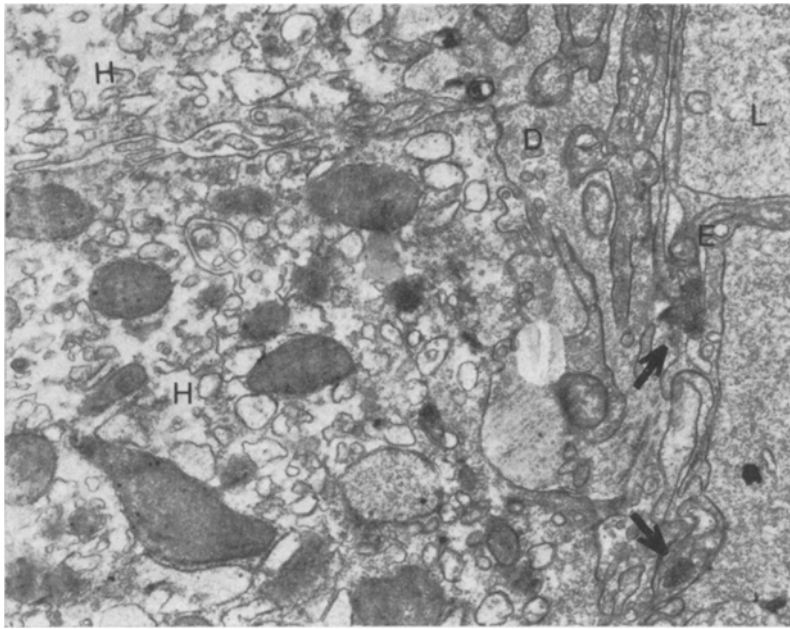


Fig. 2. Tubuloreticular structure (arrows) within dilated cisternae of endoplasmic reticulum of the endothelial lining (cappillarization) of the hepatocyte sinusoidal surface. H-hepatocyte; E-endothelial cell; D, space of disse; L, lumen.

suggest that they may reflect a cellular response to a broad range of stimuli⁹⁻¹¹. The relationship between tubuloreticular structures and immunoglobulin synthesis or secretion, as demonstrated by POTHIER et al.¹², raises the hypothesis of a specificity to that response. The presence of tubuloreticular structures in the hepatic endothelium in a malignant melanoma metastatic liver may reflect a host cell response to the cellular proliferative state. A further possibility on their association with local host-tumor immunological reaction presents con-

siderable interest as to the presence of these structures in this situation¹³.

Summary. The presence of tubuloreticular structures within hepatic endothelial cells in a case of malignant melanoma liver metastasis is described. This finding may reflect a host cell response to the neoplastic proliferation in the liver tissue, possibly a host-tumor immunological reaction.

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Demonstration of Gap Junctions by Lanthanum in the Vitamin A Acid-Treated Skin Tumor, Keratoacanthoma

The topical application of vitamin A acid to the dry keratotic skin tumor, keratoacanthoma in rabbits results in a mucous metaplasia and accelerated regression in the tumors^{1,2}.

In normal rabbit epidermis or in the untreated keratoacanthoma, the predominant cell junction is the desmosome. Other junctional complexes, particularly gap junctions are very sparse and are only occasionally observed. Tight junctions are never seen. In a recent paper, we have reported in the vitamin A acid-treated keratoacanthoma the numerous appearances of a cell junction having a similar substructure and dimensions that has been described for the gap junction³⁻⁵. These junctions form early in mucous metaplasia⁶.

This study was undertaken to confirm the findings obtained with thin-section electron microscopy using the tracer material, lanthanum nitrate.

Materials and methods. 15 albino male rabbits (average weight, 2 kg) had the inner surface of their right ear

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