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THE STRUCTURE AND ULTRASTRUCTURE OF THE INTESTINAL ARTERY AND VEIN IN *Squalus acanthias*

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Our present knowledge of the structure and ultrastructure of arteries and veins is based largely on analyses in mammals. Therefore, in order to obtain a broader basis of understanding elasmobranchial vasculature, particularly in support of the above abstracted investigation of the splenic circulation in the dogfish, the intestinal large artery and vein of the *Squalus acanthias* were preserved for electron microscopic analysis. Perfusion of these vessels by the fixative was first tried but proved to be unsuccessful, since the normal distension of the vessels could not be maintained until the vessel was properly fixed. Instead, lengths of one centimeter were clamped with hemostats, tied off with catgut, excised as a "sausage" and fixed as such for about an hour before they were cut open and continued in the fixative for another hour. This procedure of fixation preserved the vessel in its original state of distension and a shortening of the piece of vessel was not observed. Specimens are now being analyzed by electron microscopy.

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THE EFFECT OF ULTRAVIOLET RADIATION ON DIVISION RELATED PROTEIN SYNTHESIS IN SAND DOLLAR (*Echinarachnius parma*) ZYGOTES

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The sequence of synthetic and metabolic processes that are determinants for cytokinesis and early development are of great biological interest. We have been using ultraviolet (UV) to interfere with the normal timing of events to learn at what points in the cell cycle changes in sensitivity occur. Young has indicated (Bull. MDIBL 8:63, 1968) that "division related" proteins for S_2 were synthesized about 20-35 min post-fertilization at a time nearly coincident with S_1. We have previously shown that UV induced cleavage delay is reversible by photoreactivation (PR), therefore we attempted to determine how UV may affect the "division related" protein synthesis and how this may be related to the UV lesion and its reversal.

Zygotes were irradiated 55-60 min post-fertilization with 5.45×10^5 ergs/cm^2 at 254 nm, which is a dose that permits continued cell division but is about 75-80% lethal for normal morphogenesis after morula stages. Aliquots from non-radiated zygotes, those radiated and kept in PR light (daylight fluorescent), and those radiated but subsequently kept in the dark, were placed at 5 min intervals into cycloheximide (1.01 μg/ml) which inhibits protein synthesis by more than 97%. If the UV affected protein synthesis to produce a delay in the "division related" proteins, then the inhibiting action of cycloheximide would be effective longer in the radiated series than in the non-radiated. This is what actually occurred as noted in the upper part of Figure 1. Those zygotes kept in light subsequent to exposure had only a slight extension of the time they could be