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"pups" 19-22 cm. in length. One mc of P32 suspended in 1 ml of elasmobranch saline was utilized in each injection. Samples of uterine fluid (1 ml) and maternal blood (1 ml) were taken at 2, 4, 8, 10, 11, 12, 24, 48, 53, 74 hours after injection, placed in aluminum planchets, and allowed to dry for 2 hours. Counts were made in a shielded counting chamber (Nuclear-Chicago model 3053) with a thin end-window Geiger tube (giving a background of 30 cpm.) connected to a Decade Scaler (Nuclear-Chicago model 181A) with an external dual Timer. Maternal blood and uterine fluid counts presented below represent the mean count per minute for a 30 minute counting period.

Maternal blood counts, declined sharply in the first 11 hours, and were as follows: at the end of 2 hours 8569 - 12416; at the end of 4 hours 4641 - 4833; at the end of 8 hours 2054 - 2350; at the end of 11 hours 1482 - 1774. After 11 hours the maternal blood count dropped more slowly and in one dogfish reached 920 at the end of 53 hours, in another 730 at the end of 74 hours. Counts on the uterine fluid rose significantly above background at the end of 4 hours, reached their maximum (1183 - 1293) at the end of 11 hours, and then declined slowly at a rate approximating that of the maternal blood. At no time was the uterine fluid count higher than that of the maternal blood. Pups removed from the uterus at the end of 11 and 53 hours showed no count above background in their blood, somatic muscles, liver, and yolk.

It is concluded that 1) phosphorus readily passes through the uterine mucosa into the uterine fluid of gravid *Squalus acanthias* 4-11 hours after it is injected into the maternal blood stream; 2) developing pups fail to utilize phosphorus present in the uterine fluid.

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Relation of Blood Oxygen Content and Renal Succinoxidase Activity to TmPAH

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In the aglomerular goosfish (*Lophius americanus*) blood oxygen content and the hematocrit of freshly caught animals were approximately 5 volumes % and 15% respectively. Under experimental conditions during the next 4-6 days these levels usually decreased, reaching values as low as 1.5 volumes % for blood oxygen content and 5% for the hematocrit. However, during this period no significant decreases were noted in TmPAH (0.5 $\mu\text{M/kg/min}$) or in renal succinoxidase activity (10 $\mu\text{l O}_2/100 \text{ mg DNA/min}$). Comparison of TmPAH and renal succinoxidase activity in the dog and goosfish reveals that in the former TmPAH (5 $\mu\text{M/kg/min}$)

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and renal succinoxidase activity ($90 \mu\text{l O}_2/100 \text{ mg DNA/min}$) are 9 to 10 times greater than in the latter. Comparative data from various species show that there is a significant correlation ($P < .01$) between TmPAH and renal succinoxidase activity in the goosfish, frog, dog, cat and rat.

The Morphogenesis of Regenerating Scales In *Fundulus Heteroclitus*

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The cycloid scales of teleost fishes are capable of regenerating *in situ* soon after their removal. Since they are acellular structures, their replacement is accomplished by the calcification of the intercellular matrix in the vicinity of the dermal scleroblasts left behind after the scale has been plucked. Although scales can be successfully transplanted in the integumentary "pockets" from which they were removed, where they will resume growth, their implantation in other regions of the body is followed by resorption. Scales transplanted to fins or to intraocular sites were invariably eroded, presumably due to the paucity of scale-forming cells.

In other experiments, the ability to repair defects inflicted on scales was investigated. Various regions of scales were removed and the remaining parts were placed into the scale pocket to determine, after a suitable length of time, if the missing parts would be regenerated. If the anterior (proximal) region of a scale was removed by transverse bisection or by cutting a notch in the scale, regeneration of the removed parts occurred. Similarly, longitudinal bisection of the scale resulted in the replacement of the absent part adjacent to the residual half of the scale. Conversely, when posterior (distal) parts of the scale were removed, regeneration seldom occurred. It is concluded that the restoration of lost parts of scales, like that of entirely removed scales, depends upon the presence of scleroblasts capable of mediating calcification. The failure of scale regeneration in the more posterior regions, where the skin adheres to the removed scale, is apparently attributed to the absence of residual scleroblasts in such areas.

Site of Urine Acidification in the Dogfish

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The ventral surface of the kidneys of unanesthetized dogfish (*Squalus acanthias*) was visualized microscopically and micropuncture of individual tubules performed. An aqueous solution of phenol red was injected with a micropipette into renal tubules to determine the site of the acidification of