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PULMONARY DIFFUSING CAPACITY FOR CARBON MONOXIDE IN THE HARBOR SEAL, Phoca vitulina

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This laboratory has been involved in a systematic study of the adaptations which permit prolonged diving in the seal. As a part of this study, measurements have been performed of the steady state pulmonary diffusing capacity for carbon monoxide $D_{L_{CO}}$. A priori, an increased D_L might be expected to enhance the ability of this animal to supply oxygen to tissues following the completion of a dive.

These measurements were accomplished by a modification of the method of Fillay substituting end tidal CO_2 tension (measured by an infrared CO_2 analyzer) for arterial CO_2 tension. A total of 13 measurements were performed on 8 animals. Mean $D_{L_{CO}}$ averaged 0.91 ml/min/mm Hg. On the basis of weight, the $D_{L_{CO}}$ amounted to 0.34 ml/min/mm Hg/kg. The comparable figure in normal human subjects is 0.25. Thus, an increased D_L does not appear to constitute a significant adaptive mechanism.

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TISSUE CULTURE AND VIRUSES OF MARINE ORGANISMS

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Various tissues and organs from Fundulus and from dogfish embryos, pups, and adults were tested for their ability to grow in tissue culture media. All explants were minced with scissors and single cell suspensions made by trypsin digestion according to established techniques. The following is a list of tissues or organs tested.

Fundulus: gill, fin, and cell-laden fluid from the abdomen of a diseased fish.

Dogfish: whole embryos; pup spleen and pancreas; adult oviduct, pancreas, and kidney.

Only the dogfish embryo cells attached readily to the substrate and spread out to form a mono-layer. Such mono-layers were maintained in a state of gradual decline for as long as four months (August through early December) after which they were lost due to bacterial contamination. During this time subcultures were attempted. The cells were transferred to new containers after trypsinization of the original mono-layers and were found to re-attach themselves. Mitosis was not observed in any cultures.

A variety of media was tested, the best being as follows: Earle's saline with NaCl increased to 0.26 M, Eagle's vitamins and amino acid mixture, 10% human serum, 10% fetal calf serum, 5% whole egg ultrafiltrate, and appropriate concentrations of penicillin, streptomycin, and fungizone.

Other additives, tested at several concentrations, such as dogfish embryo extract, lactalbumin hydrolysate, urea, and dogfish serum, were found to be of no benefit or actually inhibitory.

The agents (presumed to be viruses) of infectious pancreatic necrosis of trout and lymphocystis disease of the Centrarchid fishes were obtained from Kenneth Wolf. Initial attempts to