

## The Workshop on Molluscan Pathology: Closing Comments

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During the past several days, a number of very interesting lesions have been presented, discussed, and studied firsthand, by the participants from microscopic slides of material submitted by the various speakers. It is clear that much remains to be learned before we can make intelligent judgements about the nature of the various proliferative lesions of mollusks. A case in point is our knowledge concerning the kinetics and differentiation of hematopoietic cells in oysters, and I suspect, other molluscan species which appear quite rudimentary. Studies in this area must be expanded if we are ever to understand and accurately classify the various proliferative conditions of this system.

Since it has been amply demonstrated that lesions suspiciously resembling neoplasms occur in bivalves in nature, it would now seem a logical step to begin carefully controlled laboratory experiments in which the effects of known and suspected carcinogens are studied, not only with respect to biological and pathological phenomena, but biochemical and metabolic ones as well. It still remains to be established whether marine invertebrates possess the mixed function oxidases found in higher animals, enzymes necessary for

the metabolic *in vivo* conversion of a variety of chemicals including hydrocarbons to carcinogenic compounds. To date, evidence implicating aquatic pollutants in the genesis of these lesions has been purely circumstantial. Guilt by association is not a convincing case. A direct cause and effect must be demonstrated between a substance such as a hydrocarbon present in fuel oil, for example, and the ultimate development of a "tumor". The autonomous nature of such lesions should be established by transplantability in genetically controlled molluscan hosts. Finally, it seems that very little is known about the natural history of proliferative lesions in mollusks due largely to the fact that these mollusks are encountered sporadically in the field and are either dead or dying, offering little or no opportunity for study. Physiological studies of affected animals must be undertaken under carefully controlled laboratory conditions if a better understanding of how such lesions interfere with normal function is to be forthcoming. It is hoped this conference will serve to stimulate further research in this fascinating and important area of invertebrate pathobiology. Thank you all, speakers and participants alike, for a successful conference.