pass these viruses in embryo dogfish tissue cultures were unsuccessful. Supported by NIH Grant #AI 01129.

## 1963 #34

## EARLY EMBRYONIC DEVELOPMENT IN Fucus

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Although classic material for the study of early embryological development in plants, the brown alga, Fucus, has been little studied with respect to nuclear and cytoplasmic cytology or cytoplasmic events associated with fertilization, polarization and embryonic cleavage. We have explored appropriate technical procedures for fixation and staining of the unfertilized egg, the zygote and early embryonic stages for use in studies ranging from macroscopic morphology to ultrastructure. Effective fixation was achieved with 10% formalin in sea water or 2-1/2% glutaraldehyde in sea water. A number of routine nuclear stains proved ineffective; acetocarmine, alum cochineal, azure B, and toluidine blue all proved of some value in staining nuclear, cytoplasmic or wall structures in squash preparations. Some success in obtaining adequate fixation for electron microscopy was achieved. We gained sufficient experience in collecting reproductive plants and obtaining gamete release and fertilization in vitro to allow preliminary experiments on two specific problems: a) the distribution of nuclear and cytoplasmic structures within the zygote associated with the polarization of the embryo and the determination of unequal cytoplasmic division at the first cell division, and b) the use of raised temperature in the production of abnormal eggs which should make possible a study of the role of the nucleus in development and the importance of the nuclear-cytoplasmic ratio in normal embryogenesis.

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## 1963 #35

EFFECT OF POLYURIDYLIC ACID ON DEVELOPMENT AND PROTEIN SYNTHESIS OF IN-TACT SAND DOLLAR EMBRYOS

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Previous studies on polyuridylic acid (polyU) in subcellular systems suggest that if messenger RNAs can cross the cell membrane, they should redirect the pattern of protein synthesis of intact cells. This study describes the effect of polyU on the pattern of development and protein synthesis by intact sand dollar embryos (Echinarachnius parma). Embryos incubated in sea water containing 500 to 1000  $\mu$ g/ml of polyU developed normally to the early blastula stage. Thereafter the central cavity became filled with cells producing a multicellular mass which underwent subsequent opacification and degeneration. External cell layers did not develop ciliation. We have

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