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Nutrient Assimilation in Developmental Stages of the Purple Sea Urchin, *Arbacia Punctulata*

A. W. Boyden

Illinois Wesleyan University

Elizabeth Balsler, Faculty Advisor

Illinois Wesleyan University

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Oral Presentation 1.5

**NUTRIENT ASSIMILATION IN DEVELOPMENTAL STAGES OF THE
PURPLE SEA URCHIN, ARBACIA PUNCTULATA**

A.W. Boyden and Elizabeth Balsler*

Department of Biology, Illinois Wesleyan University

The capability of the developmental stages of sea urchins to assimilate protein and polysaccharide tracers was determined. Although the uptake of small nutrient molecules like amino acids and simple sugars from the surrounding medium occurs in early developmental stages of sea urchins (Schneider, 1985), the results presented here are the first report of active uptake of large proteins and polysaccharides. Unfertilized and fertilized eggs, blastulae, prism larvae, 2-arm feeding plutei, 4 to 6 week old larvae, and early juvenile stages were all examined. These various developmental stages were exposed to iron-containing ferritin (a protein) and iron dextran (a polysaccharide). The Prussian blue reaction, which demonstrates the presence of iron, was then employed to confirm the presence of the iron tracers inside the animals. After exposure to the tracers and the Prussian blue reaction, the animals were preserved and processed for examination by light microscopy. Our results show that pre-feeding stages, including fertilized eggs, blastulae, and prism stages, are capable of uptake of ferritin. Additionally, our results show that the ability to incorporate this tracer is concomitant with fertilization. Unfertilized eggs incorporate neither tracer, and non-feeding stages are incapable of assimilating iron dextran. Uptake of dissolved organic molecules by embryos of planktonic larvae may augment maternal contribution to the egg and improve survivorship.