

SPATIAL EXPRESSION OF DELTA IN *E. TRIBULOIDES* USING WHOLE-MOUNT IN SITU HYBRIDIZATION

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Sea urchins have been used for decades as models for development. The two extant subclasses of sea urchins include Euechinoidea and Cidaroida. The Class Euechinoidea is comprised of derived urchins such as *Lytechinus variegatus*, known for their extensive use as models for development. Cidaroid urchins show many differences in development to that of the derived urchins (Schroeder, 1981). Because Cidaroid urchins are considered primitive, it is believed that they might also display a primitive pattern of development, and therefore studies must be conducted to determine the molecular pathways responsible for this. The Delta gene in derived urchins has been found to play a role in mesoderm specification and axis formation of the sea urchin embryo. Studies have shown in *L. variegatus* that the gene *Delta* is expressed in the micromere derivatives during the blastula stage and macromere derivatives during the early gastrula stage, with an expression pattern between 6 and 16 hours. (Sweet et. al. 2002). The purpose of this project is to characterize the spatial expression of *Delta* in the primitive sea urchin *Eucidaris tribuloides* by the use of whole-mount in situ hybridization using *L. variegatus* as a positive control. Antisense RNA probes were made to bind to *Delta* mRNA expressed in the embryo. Fixed embryos of varying stages were then incubated with the antisense probes to allow binding of complementary sense mRNA, and the probe was visualized by the use of antibody staining. Antisense probes have been prepared for both *Eucidaris* and *Lytechinus*, however the results of whole-mount *in situ* hybridization are thus far inconclusive.