**There and Back Again: A Rudiment's Tale**

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Phenotypic plasticity during development allows organisms to couple specific phenotypic responses to specific ecological cues. During development, organisms must be adapted to form an adequate response to changes in their environment. This developmental plasticity may be exploited by natural selection, resulting in changes on evolutionary timescales. Marine invertebrates develop through distinct larval stages with delayed juvenile development. Many of these organisms display striking developmental plasticity. Echinoids, a class of echinoderms, are well known for their extensive plasticity in response to variation in exogenous nutrient supplies. The extent to which echinoids display plasticity in development has not been fully explored, and is of interest to evolutionary biologist as a potential explanation for the numerous, independent, evolutionary transitions from feeding, to non-feeding larval development that have occurred among echinoids, echinoderms and other marine invertebrate phyla. Until now the focus on developmental plasticity study among echinoids has focused on larval structures. We report on recent findings indicating striking developmental plasticity is displayed in juvenile structure development, most notably the developing juvenile rudiment. We will then, briefly, discuss implications of these observations on the speculated evolutionary transition from feeding to non-feeding larval forms among the echinoids.