Echinoderms transform from bilateral planktonic larvae to penta-radial adults through metamorphosis. During late larval development, prior to metamorphosis, five sets of each adult structure, such as spines and tube feet, are formed within a region of the larval body called the adult rudiment. The mechanisms of this transition from bilateral to pentaradial symmetry are unclear. Recent studies identified that cells positive for germ-line factors, such as Vasa and Nanos, initially appear in a single cell cluster during larval development of sea urchins, starfish, and sea cucumbers (Juliano and Wessel, 2009 *Evol Dev* 11:560; Fresques et al., 2013 *Dev Dyn* 243:568). Unlike other adult body structures, this cluster does not appear as a penta-radial structure during adult rudiment formation (Yajima and Wessel, 2015 Development 142:1960; Yajima, unpublished data). The newly metamorphosed *Patricia pectinifera* starfish shown here (~2 weeks after metamorphic induction; the skeletal structure is highlighted in the image) supports a model first proposed by Inoue and Shirai (1991, *Dev Growth Diff* 33:217) that the germ-line cells cluster in a single location near the hydroporic canal located in the central skeletal disk, and then migrate into the penta-radial gonad structures in the juvenile starfish. These cells are clustered in this juvenile, as seen by immunofluorescence for Vasa (shown in red in the left lower corner of the central disk), and presumably migrate into each of the pentameric gonads during development into an adult.



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