The Cryptic Filtering House of an Invertebrate Larva

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Materials and Methods

Adult *Pectinaria californiensis* were collected by dredge from 190 m depth near Seattle, Washington. Spawning occurred after removal of adults from their tubes, and fertilization was accomplished as described in (1). Larvae were maintained in stirred cultures at 10° C and were fed *Monochrysis* sp. and *Rhodomonas* sp., with food and water replaced weekly. For observation, photography, and videotaping using a stereomicroscope, houses containing larvae were tethered to glass suction pipets mounted on a micromanipulator. Suction was controlled using a Gilson syringe. Houses were sticky and frequently adhered to the pipet on contact, without suction. Small volumes of suspended particles (ground sumi ink, carmine particles, cells of the cyanobacterium *Synechococcus*, or polystyrene divinylbenzene spheres of diameters from 3-10 µm) were added near houses using a braking pipet. To determine whether or not cells of *Synechococcus* (estimated diameter 1.8 µm) were trapped inside the house, the houses of larvae offered abundant *Synechococcus* for five minutes were subsequently mounted on a slide and observed using an epifluorescence microscope; few *Synechococcus* were ever observed in these houses or in the guts of their resident larvae. To relate house size to larval size, inflated houses were measured by videotaping them in lateral view. Their resident larvae were subsequently removed, relaxed in a 1:1 solution of 7.5% MgCl₂ and seawater, and measured at 400x using an ocular micrometer on a compound microscope. House diameters were later measured from videotape using the program ImageJ (available at http://rsb.info.nih.gov/ij/). Correlations between house diameter and larval length were determined using ordinary least squares regression.
Supporting Figures

**Fig. S1.** The house of a *Pectinaria californiensis* larva shrinking on being abandoned. Images are digitized video frames.  

**a**, Larva (arrow) ensconced in its house, which is tethered to a pipet (bottom of image) and labelled with carmine particles. The anterior of the larva is towards the left.  

**b**, The larva abandons the house, swimming towards the lower left of the frame.  

**c**, Only 18 seconds after abandonment, the house has shrunk noticeably in all dimensions.  

**d**, The house is nearing its final size, one minute and 45 seconds after abandonment. Scale bar: 250 µm.

Supporting References and Notes


Supporting Movies

**Movie S1.** Larva of *Pectinaria californiensis* drawing a suspension of carmine particles into its house. Most of the particles that enter the house are trapped on its inner wall, rendering it easily visible. The larva is oriented with its anterior end down, and the house is tethered near its opening with a suction pipet.

**Movie S2.** Larva of *Pectinaria californiensis* drawing a suspension of sumi ink particles into its house. Most of the particles that enter the house immediately pass through its wall. The larva is oriented with its anterior end facing the top left, and the house is tethered near its equator with a suction pipet.