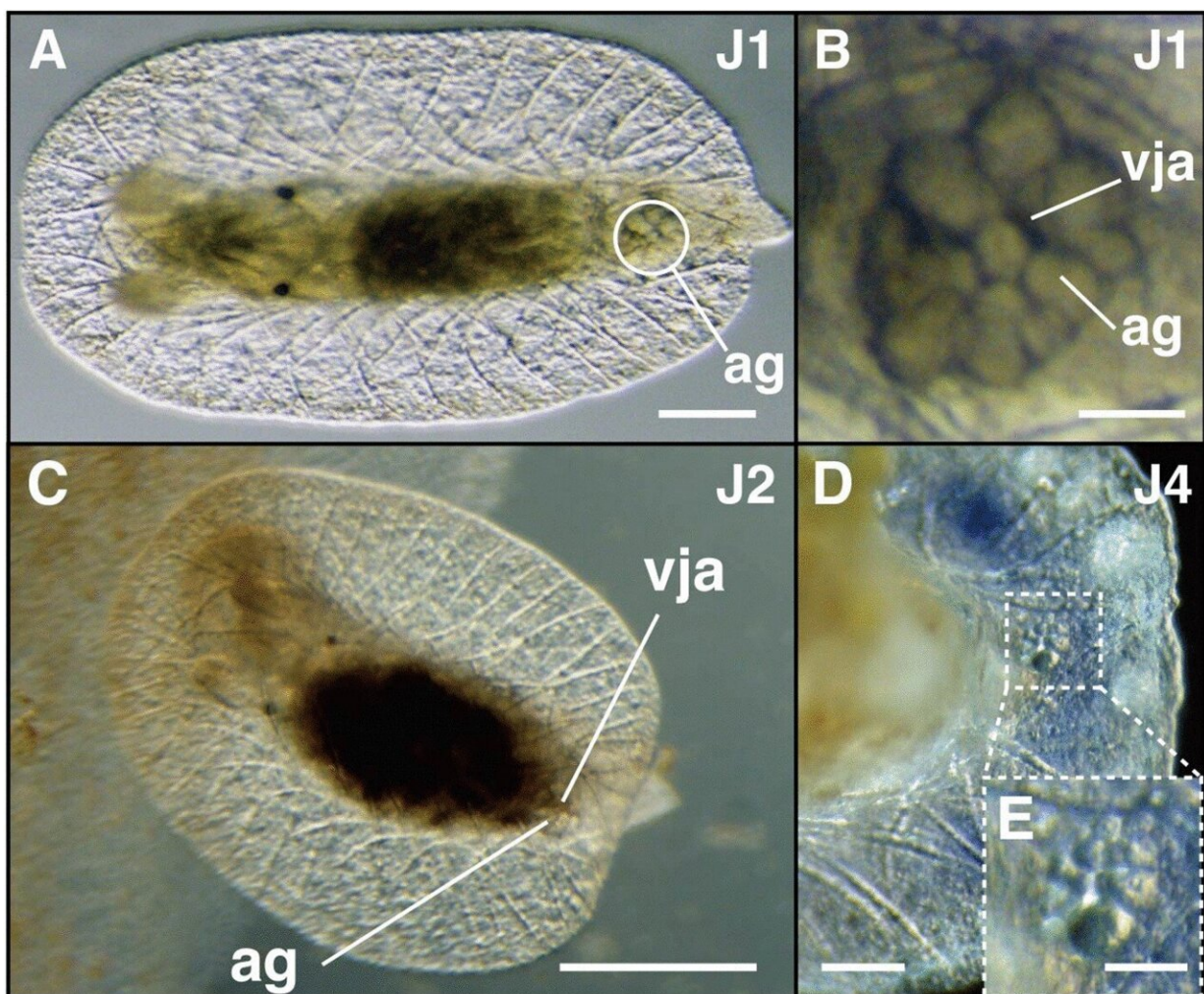


From egg to adult: The first successful lab rearing of the nudibranch sea slug *Hypselodoris festiva*

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Ventral juvenile anus of *H. festiva*. (A) J1 stage juvenile. (B) Anal gland surrounding the ventral juvenile anus in a J1 juvenile. (C) J2 stage juvenile with

the posterior end of the mantle lifted up during excretion from the ventral juvenile anus. (D) and (E) J4 stage juvenile with anal glands remaining posteroventrally. (A–C) dorsal view, anterior to the left. (D) ventral view, anterior to the left. Credit: *Scientific Reports* (2024). DOI: 10.1038/s41598-024-66322-4

Nudibranchs are members of the phylum Mollusca, and most species have a planktonic larval stage characterized by the presence of shells immediately after hatching.

During development, [larvae](#) settle on the seabed and reefs where they metamorphose, lose their shells, and shift from a floating to a benthic lifestyle. However, the species of the family Chromodorididae, including brightly colored sea slugs such as *Hypselodoris festiva* and *Chromodoris orientalis*, have never been raised from [eggs](#) to adults in the laboratory, and the [growth process](#) from settlement to adulthood has been shrouded in mystery.

In a [study](#) published in *Scientific Reports*, the adults of *H. festiva* were collected and reared in the laboratory. They laid eggs, and approximately six days later, more than several thousand floating larvae hatched from a single egg mass.

Upon feeding with microalgae, eye spots and other features were formed and the larvae underwent metamorphosis about three weeks after hatching.

During metamorphosis, they shed their shells and transitioned to a benthic lifestyle. The juveniles grew by feeding on sponges, which were also the food of adult *H. festiva*. During this process, the juveniles developed a bright blue and yellow pattern on their bodies and the main

organs characterizing the adult stage, such as rhinophores, gills, and anus, were formed.

Based on the observed body color formation and organogenesis, the post-settlement growth of *H. festiva* was classified into nine stages: two metamorphic stages and seven juvenile stages.

This classification allows the identification of the growth stages based on the external characteristics, with this study serving as a reference for further developmental studies of Chromodorididae.

The appropriate rearing conditions for the larvae, [juveniles](#), and [adults](#) of species belonging to Chromodorididae were previously unknown; however, the methods established in this study can be applied to not only *H. festiva*, but other species, and can contribute to industrial and commercial uses, such as aquarium displays.

More information: Makiko Hayashi et al, Staging of post-settlement growth in the nudibranch *Hypselodoris festiva*, *Scientific Reports* (2024). [DOI: 10.1038/s41598-024-66322-4](https://doi.org/10.1038/s41598-024-66322-4)

Provided by University of Tsukuba

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