

### Reproduction

**Asexual reproduction**

Most capable of regenerating lost parts. Holothuroids regenerate intestines and respiratory trees. Asteroids and ophiuroids regenerate lost arms and suckers.

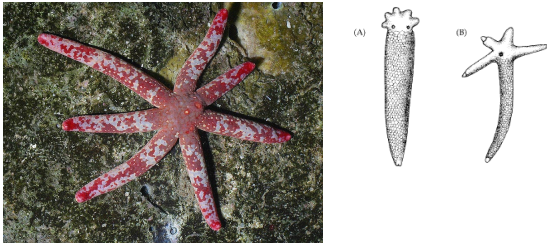


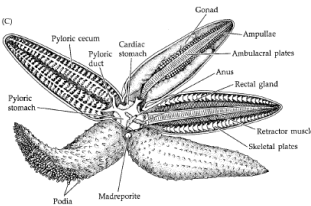
Diagram (A) shows a single arm with a small bud at the tip. Diagram (B) shows the same arm with a larger, more developed bud at the tip, illustrating the process of asexual reproduction in echinoderms.

### Reproduction

**Sexual reproduction**

Most gonochoristic. - Greek offspring + disperse) or unisexualism describes sexually reproducing species in which individuals have just one of at least two distinct sexes.

Gonads housed in **genital sinuses**. In classes with multiple gonads, each has own gonopore in an interambulacral area.



The diagram labels various internal structures: Pyloric caecum, Pyloric duct, Pyloric stomach, Cardiac stomach, Gonad, Ampullae, Ambulacral plates, Anus, Rectal gland, Retractor muscle, Skeletal plates, Poda, and Madreporite.

### Repro/Development

**Sexual reproduction**

Free spawning with indirect development to brooding with direct development.

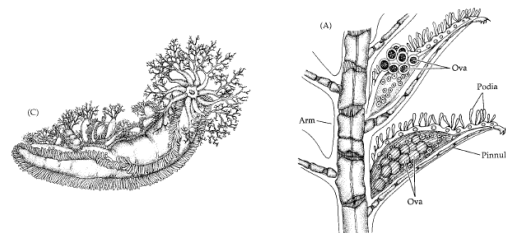
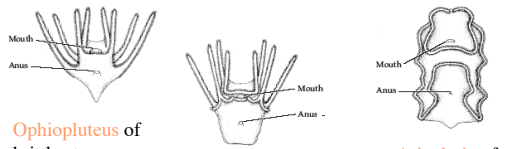


Diagram (C) shows a sea cucumber with a large, complex brooding structure. Diagram (A) shows a cross-section of an arm with labels for Arm, Ova, Poda, and Pinnae.

### Development

**Indirect**

Babies are bilateral – adults pentaradial. change from a free-swimming bilaterally symmetrical larva to a bottom-dwelling adult with radial symmetry.



The diagrams show the larval stages: Ophiopluteus of brittle star, Echinopluteus of urchin, and Aricularia of sea cucumber. Labels include Mouth and Anus for each stage.