Bail-out of the polyp from the skeleton of spats in the scleractinian coral *Acropora tenuis*

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Unlike tight association between the polyp and skeleton in scleractinian corals, there are reports on bail-out of polyps from the colony in *Seriatopora* (Sammarco 1982), expulsion of polyp with calices in *Favia* and *Oculina* (Kramarsky-Winter et al. 1997), and also reversal to a motile palnula form from the initial polyp in *Pocillopora* (Richmond 1985). Here we report polyp bail-out from spats in *Acropora*. Hundreds of primary polyps of *Acropora tenuis* were prepared in culture dishes following Iwao et al. (2002) from gametes collected in the field, infected with zooxanthellae from the giant clam and reared at 25°C with daily seawater change. Two months later, we found more than a dozen of naked polyps floating in the culture dishes (Fig. 1A). They were active for more than 4 weeks, and some looked healthy with extended tentacles and buds (Fig. 1B).

Fig. 1 Polyps bailed out from the spat skeleton. **A** A snap shot of polyps bailed out. Different tones of brown colors reflect the density of zooxanthellae. **B** A bailed-out polyp possessing two buds, extending tentacles. **C–F** A bailed-out polyp with three buds. An arrow indicates a white particle circulating in the entire polyp.

Although it remains mysterious how polyps with buds bailed out from the reticulate skeletal complexes in the coenosteum region, these observations reveal that the polyp of *Acropora* is capable of bailing out from, and of surviving without skeletons. In addition, circulation of particles in the whole body of bailed-out polyp (Fig. 1C–F) shows loss of the compartment structure observed in the primary polyp of *Acropora* (Hatta 2010). It suggests that the compartment structure is maintained in a simple cylindrical body by partitioning skeletons.

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References

- Hatta M (2010) Unidirectional circulation in each coelenteron compartment in a primary polyp of *Acropora tenuis*. *Galaxea*, JCRC 12: 45
- Iwao K, Fujisawa T, Hatta M (2002) A cnidarian neuropeptide of the GLWamide family induces metamorphosis of reef-building corals in the genus *Acropora*. *Coral Reefs* 21: 127–129
- Kramarsky-Winter E, Fine M, Loya Y (1997) Coral polyp expulsion. *Nature* 387: 137
- Richmond RH (1985) Reversible metamorphosis in coral planula larvae. *Mar Ecol Prog Ser* 22: 181–185
- Sammarco WP (1982) Polyp bail-out: an escape response to environmental stress and a new means of reproduction in corals. *Mar Ecol Prog Ser* 10: 57–65

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