Mushroom coral regeneration from a detached stalk

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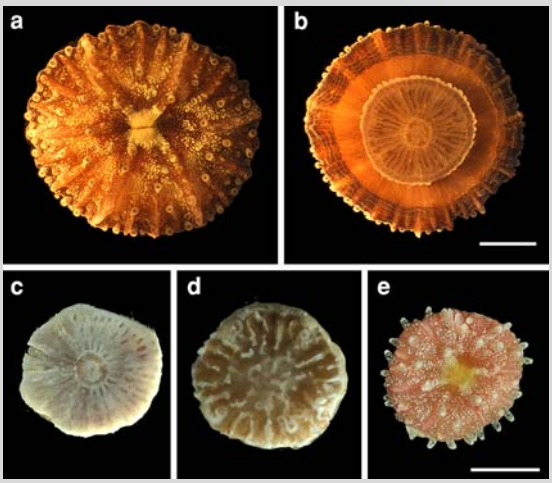

Fig. 1 Stalk regeneration from a free living fungiid coral, *Fungia granulosa*. **a** A 1-year-old polyp cultured in the lab. **b** An aboral view of 'a', notice the stalk ''stump'' in the center of the polyp. **c** Detached stalk, an aboral view. **d** Detached stalk, an oral view. Notice the appearance of mouth, septae, and tentacles. **e** Fully extended tissue of a regenerated stalk. Note the 'daughter' polyp appears more bleached than the 'parent' due to fewer zooxanthellae (shown in **a**) (scale = 2.5 mm)

Following settlement, attachment, and metamorphosis of the planula larva, fungiid corals develop by forming an elongated calcareous stalk (covered by tissue) on which the polyp ''cap'' grows. This ''cap'' then grows radially producing a polyp with a mushroom-like appearance (Hoeksema 1989). Radial growth of the polyp ''cap'' continues until it detaches from the stalk and becomes a free living solitary polyp (Boschma 1922). Previous studies show that this detachment occurs through the active dissolution of the skeleton across a distinct plane by the calicoblastic cells of the polyp (Yamashiro and Yamazato 1987, 1996). Following detachment in the field, the calcareous stalk remains attached to the substrate, and regenerates one or more polyp ''caps''. This process can repeat itself one or more times (Hoeksema 1989).

We present evidence of a spontaneous release from the substrate of the whole polyp (stalk and cap) of a *Fungia granulosa* coral cultured in the laboratory. Following this release (Fig. 1a, b), the ''cap'' detaches from its stalk (Fig. 1c). A full regeneration of the ''disc-shaped'' free stalk into another free living mushroom-shaped polyp occurs (Fig. 1d, e). Due to its short height (approximately 1 mm), the regenerated stalk ''stump'' looks like a normal free living young polyp (Fig. 1e). This phenomenon is especially useful for studying the spontaneous decalcification mechanisms that occur during the detachment process as a model for mechanisms that occur during polyp and colony growth, and processes of asexual reproduction, such as polyp expulsion (Kramarsky-Winter et al. 1997).

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Reef sites

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