

ADHESIVE PAPILLAE OF ASCIDIAN LARVAE: A CONFOCAL MICROSCOPE ANALYSIS

Umberto Fascio¹, Roberta Pennati², Giuliana Zega²,
Silvia Groppelli², Fiorenza De Bernardi²

¹ C.I.M.A. Interdepartmental Centre of Advanced Microscopy

² Biological Department

University of Milan

Via Celoria 26, 20133 Milan, Italy

E-mail: umberto.fascio@unimi.it

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Ascidians are sessile chordates and they are diffused in the marine habitat. The ascidian larvae, with their notochord, dorsal nerve cord, and flanking rows of sarcomeric muscle cells, exhibit the basic chordate body plan. After only a brief free-swimming period, most ascidian larvae settle and begin adhesion by means of mucus secreting adhesive papillae. With few exceptions, all adhesive papillae are formed by elongated secreting cells and by sensory primary neurons and they have been classified into two types: eversible papillae of most colonial species, which show a complex cell composition and rapidly change shape as they touch the substrate, and non-eversible papillae, which do not change shape after their attach. We performed an immunohistochemical localization of serotonin and β -tubulin in the adhesive papillae of *Phallusia mammillata*, *Botrylloides leachi*, *Clavelina lepadiformis* and *C. phlegraea*, which have simple, non-eversible papillae, and in *Diplosoma listerianum* and *Distaplia bermudensis*, with eversible papillae. The optical sections acquired by confocal microscope demonstrate that the adhesive papillae of all analyzed species have both secretory and sensory functions and the 3D reconstruction makes evident that the papillae contain two distinct types of neurons with different localization and possibly different functions. Neurons containing serotonin may play a role in triggering metamorphosis and may act releasing an internal signal that stimulates the metamorphosis process, after the permanent adhesion has been attained.