The nervous system of cheilostome Bryozoans

Jakob Proemer
a1307220@unet.univie.ac.at

MSc Student
Department of Integrative Zoology, University of Vienna
Advisors: Andy Sombke, Thomas Schwaha,

Bryozoans are sessile aquatic suspension feeders in mainly marine, but also freshwater habitats. They form colonies composed of numerous individuals called zooids. Most extant species belong to the group of Cheilostomata that, among other characters, have a calcified body wall. The nervous system of this group is little investigated and several authors of the 20th century faced problems in the examination of these small animals. Essential morphological data originated from neuronal tracing techniques using methylene blue vital staining and silver impregnation that were later complemented by immunohistochemical experiments. In our study we focus on the analysis and characterization of the nervous system, based on data from representatives of all main cheilostome taxa. We employed a range of complementary traditional and modern techniques to evaluate each of these methods for neuroanatomical research purposes. Results show the location of the brain at the base of the lophophore, from where nerve cords embrace the mouth opening to form a circumpharyngeal nerve ring. Four neurite bundles project from the brain to innervate peripheral areas, such as the body wall and parietal muscles via the tentacle sheath. Three nerve chords display the main nerves of the visceral nervous system. This data is used as basis for a ground pattern reconstruction of the cheilostome nervous system.