

IL-17 FAMILY IN *POMACEA CANALICULATA*: FIRST EVIDENCE OF A EXCLUSIVE NEURAL-SPECIFIC MEMBER

A. Ferri¹, S. Sacchi¹, C. Losi², N. Franchi¹, U. Rosani³, D. Malagoli^{1,4}

¹Dept. of Life Science, University of Modena and Reggio Emilia, Italy; ²Dept. of Chemical and Geological Sciences, University of Modena and Reggio Emilia, Italy; ³Dept. of Biology, University of Padova, Italy; ⁴NBFC, National Biodiversity Future Center, Italy

Cytokines of the IL-17 family show remarkable evolutionary conservation across metazoan phylogeny, yet their roles at the neuro-immune interface remain largely unexplored in invertebrates. We investigated the IL-17 family in the freshwater gastropod *Pomacea canaliculata* (Pc), an invertebrate model for comparative neuroimmunobiology, occupying an informative taxonomic position between *C. elegans*, which possesses IL-17 but lacks immune cells, and mammals, where information on IL-17 neuro-immune role remains incomplete. Genome-wide analysis combined with conserved domain searches were used to identify 11 IL-17-encoding genes in the Pc genome. Transcriptomic profiling revealed distinct tissue-specific expression patterns, leading us to focus on two main genes. PcIL-17n is expressed constitutively and exclusively in ganglionic neural tissue and lacks a signal peptide, suggesting non-canonical secretion and a direct neural function. PcIL-17h is broadly expressed across peripheral tissues with marked prevalence in hemocytes, carry-

ing a canonical signal peptide consistent with classical immune cytokine secretion. Expression patterns were validated by RT-PCR and spatially resolved via in situ hybridization. RNA sequencing of cerebral ganglia during cephalic tentacle regeneration revealed no significant modulation of either isoform, pointing towards a constitutive neural function for PcIL-17n. RT-qPCR in juveniles demonstrated PcIL-17n expression starting from 1 month post hatching (mph), with significant upregulation observed at 9 mph, coinciding with the achievement of sexual maturity. These results provide the first comprehensive characterization of the IL-17 gene family in Pc, highlighting for the first time in mollusks a neural-specific IL-17 isoform and supporting functional diversification of IL-17 signaling at the neuro-immune interface prior to vertebrate emergence.

Acknowledgments. This work was supported by National Recovery and Resilience Plan (NRRP), Mission 4, CUP E93C22001090001, Project title "National Biodiversity Future Center - NBFC".