

REPORT OF MEETING

XIXth scientific meeting of the Italian Association of Developmental and Comparative Immunobiology (IADCI), 7 - 9 February 2018, Department of Earth, Environment and Life Sciences (DISTAV), University of Genoa, Genoa, Italy

Organizers: **L Canesi, T Balbi, M Auguste, E Grasselli, L Vergani, I Demori, R Fabbri, M Montagna, A Voci**

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Amyloid and immune responses in the colonial ascidian *Botryllus schlosseri*

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Increasing evidences indicate that functional, non-toxic amyloid is widely distributed among living organisms. In invertebrates and vertebrates, functional amyloid is involved in inflammatory reactions and modulation of immune responses. In the present study, we investigated the occurrence of functional amyloid in tunicates, the closest living relatives of vertebrates. Previous studies indicate that orthologous genes for the amyloid precursor protein (APP), involved in amyloid synthesis in vertebrates, are present in solitary ascidians of the genus *Ciona*. In addition, colonies of compound ascidians of the genus *Botryllus*, respond to contacting genetically incompatible colonies with an allorecognition reaction that leads to the formation of necrotic, melanic spots along the contact border. Our data provide evidence that functional amyloid is involved in immune responses of *Botryllus schlosseri* and indicate that, both the circulating immunocyte types, *i.e.*, the cytotoxic morula cells and phagocytes, can produce amyloid using two different proteins: Bsp102 and BsAPP. Bsp102 forms the amyloid functioning as scaffold to store MC granular content and, once released upon MC degranulation, the support where phenoloxidase and melanin are deposited, thus limiting the diffusion of cytotoxicity. BsAPP is released by phagocytes and contribute to the formation of extracellular nets that entrap microbes and prevent their diffusion within the organism. To the best of our knowledge, this is the first report of functional amyloidogenesis in protochordate immunity.

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