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Poster 12
The complement system of Botryllus schlosseri.

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Among the various effector mechanisms involved in immune responses, the complement system is one of the most ancient, deeply-rooted and important for its ability to orchestrate different cells and factors of both innate and adaptive immunity. The comprehension of its roots in the evolution is useful to understand how the main complement-related proteins had changed in order to adapt to new environmental conditions and life-cycles or, in the case of vertebrates, to interact with the adaptive immunity. In this context, data from organisms evolutionary close to vertebrates, such as tunicates, are of primary importance for a better understanding of the changes in immune responses associated with the invertebrate-vertebrate transition.

In our model tunicate Botryllus schlosseri we have described a lectin and alternative pathway of complement system activation very similar to those of Vertebrates. All the complement-related genes such as c3, bf, ficolin, mbl and masp are transcribed by morula cells, the immunocytes in immunomodulation and cytotoxic responses. Functional data suggest a complement-related cross-talk between morula cells and phagocytes immunocyte during the immune response. When B. schlosseri hemocytes are incubated with yeast (Saccharomyces cerevisiae) cells, there is an overexpression of C3 by morula cell that led to increase of phagocytosis that is prevented in the presence of the C3 inhibitor, compstatin.

In the next future, we will focus our efforts on the regulation of complement system in tunicates to shed new light on the complement system function in a pre-adaptive immunity scenario.