



***Ph.D. School in Chemical Sciences
Cycle XXXVIII***

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Research project title: Deciphering and exploiting the chemistry of immunomodulatory glycoconjugates provided by gut microbiota

Key words Glycoconjugates, Lipopolysaccharides (LPS), Structural Chemistry, Microbiota, Immunotherapeutics

Research project abstract The bacterial population present in the intestines is known as the gut microbiota (GM). It is unclear how these bacteria establish commensal or mutualistic interactions with the host despite the vigilance of the immune system. In this context, recent studies have highlighted a role for glycoconjugates of the GM cell wall. However, the intestine also hosts Gram-negative bacteria which express lipopolysaccharides (LPS) on their membranes. Due to their chemical structure, LPS are capable of triggering inflammatory reactions and thus they are considered harmful to human health. However, also the harmless and beneficial Gram-negatives of the GM do express LPS. How LPS remain silent in the gut is a major unsolved question representing a frontier in understanding of how the immune system evolves. At the basis of this phenomenon is the different chemistry of these molecules. This PhD project will deal with the isolation and characterization of the chemical structure of these glycoconjugates to evaluate their immunomodulating activity