

Researchers identify novel immunological mechanism important for vaccine development

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Researchers have discovered the presence of a novel subtype of innate lymphoid cells in human spleen essential for the production of antibodies. This discovery, published in the prestigious journal *Nature Immunology*, clears the path to the identification of novel strategies to develop more efficient vaccines against encapsulated bacteria, considered highly virulent.

This work was done by the B cell Biology research group at IMIM (Institut Hospital del Mar d'Investigacions Mediques) in Barcelona, directed by Dr. Andrea Cerutti, ICREA research professor and leader in the field of B lymphocyte biology. Amongst the collaborators of the group are researchers from Icahn School of Medicine of Mount Sinai in New York and Riken Research Center for Integrative Medicine in Japan.

Innate [lymphoid cells](#) were recently described by the scientific community and represent the first line of immunological defence on our body surfaces, which are constantly exposed to bacteria, such as the intestine or skin. "For the first time it has been described both their presence and function in human spleen. We have discovered how these cells regulate the [innate immune response](#) of a subset of splenic B lymphocytes that are responsible to fight against encapsulated bacteria, causative agents of meningitis or pneumonia", says Dr. Giuliana Magri, member of the research group of B Cell Biology at IMIM and first author in the paper. This new finding improves our understanding on

how the immune system protects us against infections.

"The current available vaccines against encapsulated bacteria confer only a limited protection in immunodeficient patients, and are too expensive to be implemented in developing countries. At the same time, we lack information on the underlying mechanisms that regulate B lymphocytes, which has been a major hurdle in the development of novel vaccine strategies. This makes the current discovery key in the design of novel more efficient and well-oriented therapies", concludes Dr. Andrea Cerutti.

This research involved in vitro studies with isolated cells from human spleen samples and in vivo studies performed with different mice models. The work explored the function of the innate lymphoid cells in homeostasis, in short, in the absence of any illness, opening the door in the future to study the possible implication of innate lymphoid cells in diverse pathological processes both at the mucosal and systemic level, as well as deepening our understanding of autoimmune and immunodeficient diseases.

More information: Paper: Innate lymphoid cells integrate stromal and immunological signals to enhance antibody production by splenic marginal zone B cells, [DOI: 10.1038/ni.2830](https://doi.org/10.1038/ni.2830)

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