



INFORMATION EMBARGOED UNTIL SUNDAY 25TH DECEMBER AT 19.00H.

The article has been published on-line at the prestigious magazine Nature Immunology and will be the front cover of the printed issue of next February.

Discovered the existence of neutrophils in the spleen

These neutrophils are there without there being any infection and play an immunoregulating role

The work contributes totally new knowledge in the field of biology and opens an important way to offer more efficient therapeutic strategies.

Barcelona, 22nd of December 2011.- For the first time, it has been discovered that neutrophils exist in the spleen without there being an infection. This important finding made by the research group on the Biology of B Cells of IMIM (Hospital del Mar Research Institute) in collaboration with researchers from Mount Sinai in New York, **has also made it possible to determine that these neutrophils have an immunoregulating role.**

Neutrophils are the so-called cleaning cells, since they are the first cells to migrate to a place with an infection and inflammation to destroy the pathogens. Until now, scientific literature had considered neutrophils essentially as lowly qualified soldiers that simply limited the expansion of an infection, as a first action to pave the way for other cells of the immune system in charge of eradicating the infection permanently.

“This study has revealed that neutrophils are found in the spleen without there being an infection, contributing totally new knowledge in the field of biology” explains Andrea Cerutti, the coordinator of the research group on the Biology of B Cells of IMIM, a professor at ICREA and the last signatory of the article.

Researchers noticed that the existence of neutrophils in the spleen started when the fetus is developing, even when there is no infectious process involved; this was not known in scientific literature. The study was expanded to people of different ages and other mammals. Detecting the presence of neutrophils in the spleen suggested that these played a different role in the spleen to the one usually given to them.

The neutrophils in the spleen are located around B lymphocytes to help their activation and offer a first rapid response when there are pathogens. ***“through several different experimental approaches we have proven that neutrophils in the spleen acquire the ability to interact with B cells or B lymphocytes, inducing the production of antibodies, a role that***

lymphocytes circulating in blood are not able to do” states Irene Puga, researcher of the IMIM and a signatory of this article.

This finding **improves the understanding of the mechanisms with which our immune system protects us against an infection**, an essential requirement to better control all pathologies linked to it. Also, when faced with certain diseases, such as neutropenia (or a numeric deficiency of neutrophils), it will become necessary to study not only the deficiency of neutrophils, but also how this affects the production of antibodies.

This work opens the door to therapies which are geared at, and more effective against, different pathogens, for example, to **develop vaccines** to increase the capacity of neutrophils in the spleen so as to have an incidence on the production of antibodies by type B lymphocytes.

This study has been made possible thanks to the samples gathered mainly in different Catalan hospitals such as Hospital del Mar, Hospital Clínic, Hospital de la Vall d’Hebron and Hospital Sant Joan de Déu, together with other centres in the USA and Europe.

Reference article

“B-helper neutrophils stimulate immunoglobulin diversification and production in the marginal zone of the spleen” Irene Puga, Montserrat Cols, Carolina Barra, Bing He, Linda Cassis, Maurizio Gentile, Laura Comerma, Alejo Chorny, Meimei Shan, Weifeng Xu, Giuliana Magri, Daniel M. Knowles, Wayne Tam, April Chiu, James B Bussel, Sergi Serrano, José Antonio Lorente, Beatriz Bellosillo, Josep Lloreta, Nuria Juanpere, Francesc Alameda, Teresa Baró, Cristina Díaz de Heredia, Núria Torán, Albert Català, Montserrat Torreadell, Claudia Fortuny, Victoria Cusi, Carmen Carreras, George A. Diaz, J. Magarian Blander, Claire-Michèle Farber, Guido Silvestri, Charlotte Cunningham-Rundles, Michaela Calvillo, Carlo Dufour, Lucia Dora Notarangelo, Vassilios Lougaris, Alessandro Plebani, Jean-Laurent Casanova, Stephanie C. Ganal, Andreas Diefenbach, Juan Ignacio Aróstegui, Manel Juan, Jordi Yagüe, Nizar Mahlaoui, Jean Donadieu, Kang Chen & Andrea Cerutti. **Nature Immunology 2011**

For further information

Rosa Manaut, head of communications at IMIM, Tel: +34 618 509 885 or Marta Calsina, Communication service at IMIM, Tel: +34 933 16 06 80.