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PRESS RELEASE

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Immunomodulation and chronic diseases through the prism of autoimmunity: new concepts, new perspectives

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Palma de Mallorca, March 8, 2016 - The **1st International Congress of Micro-Immunotherapy** will be held in **Palma de Mallorca** between **18-20 May, 2017**. Scientists and healthcare professionals from around the world will meet on this occasion to share their experience on important topical issues related to basic discoveries and therapeutic innovations. As a matter of fact, chronic diseases offer an appropriate framework for reflection, allowing this Congress to open up new perspectives thanks to emerging concepts of autoimmunity.

Chronic diseases comprise a wide range of pathologies: autoimmune diseases, cancer, degenerative diseases, allergies, infections, inflammatory bowel diseases, cardiovascular diseases, metabolic disorders, etc. A better understanding of their development and progression represents a challenge for researchers, whereas practitioners are seeking to find long-term therapeutic solutions for their patients.

Since the **immune system** has become a common point of interest for researchers and practitioners, the therapeutic options offered by **Immunomodulation** will constitute one of the major topics of this congress. Within these new strategies, the use of low-doses seems the most promising; micro-immunotherapy and other therapeutic solutions based on immunomodulation, thus, may work in synergy with more conventional immunotherapies.

Auto-immunity: changing views and hypotheses

At first, different links between autoimmune diseases and viruses or bacteria were established, highlighting the fact that the immune system might mistake self-antigens with microorganisms, due to similarities between the two. This phenomenon is called **molecular mimicry**.

Later, another hypothesis defined auto-immunity as a result of different mechanisms: it was shown that **tissue damages** in certain autoimmune diseases were sometimes caused by a combination of an anti-pathogen reaction and a chronic inflammatory response, allowing self-antigens to externalize more easily and get in contact with immune system cells (phenomenon known as bystander activation).

In the 90's, the **hygienic theory** emerged postulating a higher autoimmune risk due to an excess of hygiene, particularly in developed countries, where the lack of parasites and infections could alter the **Th1/Th2 balance**.

It had also been recognized for a number of years that **genetic susceptibility** could lead to autoimmune diseases in a propitious environment. This susceptibility may be related to mutations affecting the genes encoding for the **HLA-molecules group** that play a key-role in antigen presentation.

Furthermore, recent studies have shown the existence of communication problems between the innate and the adaptive immunity. This miscommunication could lead to the differentiation of lymphocytes towards the **Th17 path**; those cells are, nowadays, known to be majorly implicated in autoimmune processes. **Toll-like receptors**, which are responsible for the innate recognition of pathogens, might also be implicated in the pathogenesis of those diseases.



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The new concept of auto-immunity: Tolerance, the essential function of barriers

Barriers refer to interfaces between the external world and the body (skin, respiratory system, intestinal mucosa...). These interfaces are responsible for identifying and discerning between what is beneficial and, thus, can access the body (nutrients, medicine, specific micro-organisms...), and what harms it and, thus, should be eradicated (pathogens: virus, bacteria...). These barriers ensure the mechanism of **tolerance**. If tolerance decreases, inflammatory reactions and inappropriate immune reactions will emerge, leading to chronic processes. In this context, the immune system is likely to select **auto-reactive cells** (T and B-lymphocytes). Therefore, chronicity implies a higher risk of autoimmune disorders.

In summary, **auto-immunity** can be defined as the result of a long-standing inflammatory process caused by a dysfunction of barriers. This concept may serve to explain not only autoimmune diseases but also various chronic diseases like cancer, metabolic disorders etc... **Immuno-modulation**, thus, offers new possibilities for the treatment of those diseases and enables us to look to the future with hope.

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