

Press Release

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Two new ERC Advanced Grants for the IMP Vienna

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European funding to support research on immunology and regeneration

Applications by the IMP, the Research Institute of Molecular Pathology in Vienna, were 100% successful in the latest call of the European Research Council ERC. Over the coming five years, projects by Senior Scientists Meinrad Busslinger and Elly Tanaka will be funded with 4.8 million euros.



Prof. Meinrad Busslinger



Prof. Elly Tanaka

Research in the lab of Meinrad Busslinger, who is also the IMP's Deputy Director, focuses on the development and differentiation of immune cells, in particular plasma cells.

Plasma cells – antibody factory and memory of the immune system

Plasma cells are white blood cells that play an important role in the acute response to infection and in the long-term protection of the body. They provide immunity through the continuous secretion of antibodies that recognize an almost unlimited number of pathogens. A plasma cell develops when a B cell gets into contact with a so-called antigen – anything the body classifies as foreign and potentially harmful. This activation leads to the differentiation of short-lived, antibody-secreting plasmablasts that are still dividing. They migrate to survival niches in the bone marrow where they develop into quiescent long-lived plasma cells that can provide life-long protection against pathogens and constitute the basis for successful vaccination strategies.

The project that will be supported by the ERC funds aims to identify the mechanisms that regulate the differentiation and function of plasmablasts and plasma cells, relying heavily

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on gene editing technologies such as the CRISPR/Cas9 method. The systematic identification and characterization of regulatory factors and their target genes that control plasmablasts and plasma cells will provide fundamentally new insight into the generation and function of these important players of the immune system. The results will also contribute to a better understanding of how deregulated genes in plasma cells can lead to the development of autoimmune diseases and multiple myeloma, a type of blood cancer.

Evolution and regeneration – the ‘evo-reg’ approach

The second grant goes to Elly Tanaka who joined the IMP in October 2016. Prior to her move, she was Professor and Director at the Center for Regenerative Therapies of the TU Dresden. By establishing her group at the IMP, she not only introduced regenerative biology as a new research focus but also a new model organism, the axolotl. This Mexican salamander is able to regenerate entire limbs and even spinal cord tissue.

In the new project, Tanaka will bring together her knowledge of the mechanisms of regeneration with a more systematic, evolutionary approach to find out how and why the ability to regenerate has evolved in certain organisms and not in others.

Limb regeneration is governed by similar regulatory mechanisms to embryonic development. For limbs and organs to be formed correctly in space and time, a whole network of factors orchestrates the fine-tuning. They involve not only genes that are switched on or off at specific times but also substances that diffuse through tissues and act via a concentration gradient. These so-called morphogenes govern growth and patterning of body axes and organ fields. During Axolotl limb development and regeneration, some key limb morphogens display different expression patterns compared to other vertebrates. Elly Tanaka's hypothesis is that this divergent expression is what allows limb regeneration in these animals. Her studies aim to find out how this divergent expression arose during evolution and to identify the exact molecular nature of the signals that control regeneration. She calls it the ‘evo-reg’ approach.

ERC grants support excellence in research

ERC Advanced Grants provide long-term funding for established, leading principal investigators who want to pursue a ground-breaking, high-risk project. They may be awarded up to € 2.5 million for a period of 5 years. To qualify, applicants must have a track-record of significant research achievements in the last 10 years.

Since the establishment of the ERC in 2007, a total of 16 ERC-grants have been awarded to IMP researchers, six of them Advanced Grants. Of the 15 Group Leaders that are currently active at the IMP, ten have received ERC funding, three of them twice.

About the IMP

The Research Institute of Molecular Pathology (IMP) in Vienna is a basic biomedical research institute largely sponsored by Boehringer Ingelheim. With over 200 scientists from nearly 40 nations, the IMP is committed to scientific discovery of fundamental molecular and cellular mechanisms underlying complex biological phenomena. In particular, research at the IMP addresses topics in molecular and cellular biology; gene expression and chromosome biology; stem cell biology and development; immunology and cancer; and neuroscience. The IMP is located at the Vienna Biocenter.



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