

## Emanuela Pasciuto, Early Career Prize in Immunology



**Dr. Emanuela Pasciuto** earned her PhD in 2014 under the guidance of Prof. Claudia Bagni at KU Leuven. Following her doctoral studies, she continued her research as a postdoctoral fellow in the Bagni lab and in the lab of Prof. Adrian Liston at the VIB-KU Leuven Center for Brain & Disease Research in Belgium. In 2023, she took on the role of principal investigator at the VIB-UAntwerp Center for Molecular Neurology and became an associate professor at the University of Antwerp. Emanuela has published numerous articles in prestigious journals such as *Cell*, *Nature Immunology*, *Nature Communications*, *EMBO Molecular Medicine* and *Neuron*. Her postdoctoral work was supported by an SAO (Alzheimer Research Foundation) Pilot Grant and two research grants for postdocs from the FWO.

The complex **interactions between the immune and nervous systems** is a rapidly advancing field that is discovering the immune system's role in brain health and diseases. We now understand that immune-related processes are involved in conditions that were previously thought to be purely neurological disorders. Gaining a deeper understanding of how the immune system and the brain interact will revolutionize our understanding of brain biology and diseases. One area of interest is the role of T cells in processes that cause brain inflammation and contribute to neurodegenerative disorders. Emanuela **identified a novel population of CD4 T cells in both mice and humans, as well as uncovering a new role for brain T cells in the development of microglia**. This breakthrough discovery reshaped our understanding of the interaction between the brain and the immune system. To exploit the translational potential of these new findings, Dr. Pasciuto engaged in comprehensive study to develop the **first available immunotherapy for brain injury**. This novel therapeutic approach mediated by regulatory T cells proved to be effective in preventing pathological neuroinflammation in multiple sclerosis, ischemia and ageing, *and* will provide a versatile platform for delivery of diverse biologics to neuroinflammatory patients.

The primary objectives of the Pasciuto lab are twofold. Firstly, they want to explore how T cells contribute to brain plasticity. Secondly, they aim to understand how T cells impact neurodegenerative and neurodevelopmental disorders. By achieving these goals, they hope to identify new markers for diagnosing these conditions and discover potential targets for therapeutic interventions.

Moving forward, Emanuela intends to leverage her multidisciplinary training to adopt a translational approach that integrates immunology, molecular and cellular neuroscience, biochemistry, and behavioral neuroscience. Her project will center around discovering the **role of brain resident T cells in brain plasticity** at the VIB-UAntwerp Center for Molecular Neurology.

<https://pasciutolab.sites.vib.be/en>