

The Barcelonaβeta Brain Research Center incorporates a new population neuroscience group led by Dr. Tomáš Paus and Dr. Zdenka Pausova

- With this addition, the research center of the Pasqual Maragall Foundation consolidates seven groups and expands its focus brain health from a comprehensive and longitudinal perspective
- The new Group will study how the interplay between genes and environment, influences brain vulnerability and resilience throughout life, and its relationship with cognitive decline and dementia
- Dr. Tomáš Paus and Dr. Zdenka Pausova, pioneers of population neuroscience — a discipline that integrates neuroimaging, epidemiology, and genetics — will lead a team based in Barcelona and Montreal to study the biological and population-level mechanisms of brain health



Barcelona, March 2, 2026 - The **Barcelonaβeta Brain Research Center (BBRC)**, the research center of the Pasqual Maragall Foundation, is strengthening its commitment to research excellence with the creation of the **new Population Neuroscience ResearchGroup**, led by **Dr. Tomáš Paus** and **Dr. Zdenka Pausova**.

The team will investigate why, when faced with adversity and different risk factors, some individuals are more vulnerable to brain changes while others demonstrate resilience and

maintain good brain health. Its goal is to identify the biological pathways that explain these differences and to understand how they influence the risk of cognitive decline and dementia.

The group is grounded in a comprehensive view of brain health. The brain is built and shaped throughout life, from prenatal development and childhood to adolescence, midlife, and old age. Under this approach, the group will study how the interplay between genes and life-long environment and experiences impacts brain health at each stage.

“Dementias represent one of the greatest biomedical and social challenges of the 21st century. Addressing them requires moving beyond fragmented approaches and understanding how biological, environmental, and social factors interact across the lifespan, opening the door to evidence-based prevention strategies and brain resilience”, emphasizes **Dr. Zdenka Pausova**.

Multilevel and collaborative research

According to the World Health Organization, more than 55 million people worldwide are currently living with dementia, with Alzheimer’s disease being the most common cause. This figure continues to rise due to population aging, making these conditions one of the greatest scientific and social challenges of our time.

To address this complexity, the new group adopts an innovative, multilevel approach. It will study environmental factors, such as neighborhood characteristics or social context, and connect them with detailed studies of the brain and its fundamental cellular units.

The Group’s methodology is structured around three main lines. First, the **analysis of large population cohorts with multimodal data**, including magnetic resonance imaging, cognitive and mental health assessments, cardiometabolic indicators, and environmental variables. Second, **randomized controlled trials and the use of genetic instruments**, which strengthen causal inference in human studies. Third, **animal and cellular models**, which facilitate the experimental exploration of biological mechanisms and the validation of hypotheses generated from population data.

“The major challenge is not only identifying risk factors, but understanding when during development they act and how their effects accumulate over time. Incorporating a longitudinal and transgenerational perspective will allow us to anticipate brain changes long before the first clinical symptoms appear”, notes **Dr. Tomáš Paus**.

The group carries out its work from two strategic locations, the BBRC in Barcelona and the Centre Hospitalier Universitaire Sainte-Justine in Montreal, thereby strengthening the **international and collaborative dimension of its research**.

A multidisciplinary team strengthening the BBRC and broadening its neuroscience perspective

The group is led by **Dr. Tomáš Paus** and **Dr. Zdenka Pausova** and includes a multidisciplinary team of specialists in biostatistics, bioinformatics, genomics, neuroimaging, and biomedical sciences.

Dr. Tomáš Paus has devoted his career to studying how the cerebral cortex is organized and transformed throughout development and aging, and to advancing population neuroscience by integrating neuroimaging, epidemiology, and genetics to understand how genes and environment interact in brain health.

Dr. Zdenka Pausova focuses her research on how obesity and vascular risk factors influence brain health across the lifespan, integrating multi-omics approaches, advanced neuroimaging, and large population cohorts to identify biomarkers and early mechanisms associated with the risk of dementia and Alzheimer's disease.

Together, they co-direct the **Saguenay Youth Study**, a longitudinal cohort of adolescents and their parents aimed at studying the early origins of brain and cardiometabolic health.

The addition of this team consolidates the BBRC with seven research groups specializing in key areas such as risk factors, neuroimaging, fluid biomarkers, genomics, and the biology of aging. With this new group, the center strengthens its capacity to **study brain health from multiple perspectives**. It also reinforces a broader neuroscience approach applied to the prevention of Alzheimer's disease and other conditions associated with aging.

Alzheimer's in figures

It is currently estimated that Alzheimer's and neurodegenerative diseases affect 900,000 people, a figure that translates into one in ten over 65 years of age and a third of those over 85. These pathologies are one of the main causes of mortality, disability and dependence. If an effective cure is not found and with life expectancy on the rise, by 2050 the number of cases could triple in the world, exceeding one and a half million people in Spain alone, a fact that could collapse the health and care systems.

About the Barcelonaβeta Brain Research Center and the Pasqual Maragall Foundation

The Barcelonaβeta Brain Research Center (BBRC) is the research centre of the Pasqual Maragall Foundation, promoted by the "la Caixa" Foundation since its creation, dedicated to the prevention of Alzheimer's disease and the study of the cognitive functions affected by healthy and pathological ageing. The BBRC's research focuses on the preclinical phase of Alzheimer's, a period before the onset of the first symptoms, when changes in the brain associated with the disease already occur. The BBRC has more than 100 professionals dedicated to contributing to the forefront of research into Alzheimer's and other neurodegenerative diseases.

The Pasqual Maragall Foundation is a non-profit organisation that was born in April 2008, in response to the commitment made by Pasqual Maragall, former mayor of Barcelona and former president of the Generalitat de Catalunya, when he publicly announced that he had been diagnosed with Alzheimer's disease. The Foundation's mission is to promote research to prevent Alzheimer's and offer solutions that improve the quality of life of affected people and their families.

The Pasqual Maragall Foundation has the support of more than 100,000 members and with:



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