LUXEMBOURG INSTITUTE OF HEALTH

PRESS RELEASE

For immediate release

Luxembourg, 4 September 2025

Luxembourg Institute of Health Awarded Prestigious EU Grant to Advance Brain Cancer Research

IMMUNAGENOMICS project will explore how ageing and genetic variation influence immune responses in metastatic brain tumors to improve personalized cancer therapies

The Translational Cancer Immunogenomics (TCI) group at the Luxembourg Institute of Health (LIH) has been awarded the European Research Council (ERC) Starting Grant to launch IMMUNAGENOMICS, a five year research project focused on decoding the complex relationship between ageing, genetic variation and the tumor immune microenvironment in brain metastases. The project addresses a critical unmet need in oncology and aims to improve patient outcomes through personalized immunotherapeutic approaches.

Cancer remains a major health burden, with nearly 3 million new diagnoses in Europe alone in 2022. Among the most lethal complications are the spread of tumors to the brain, known as brain metastases (BrM), which affect up to 40 percent of all cancer patients and more often than not lead to grim prognoses. Despite recent breakthroughs in the field of immunotherapy, many BrM patients still fail to respond to treatment due to the complex nature of the disease.

The Translational Cancer Immunogenomics (TCI) group at the Luxembourg Institute of Health (LIH) is set to tackle this challenge head-on thanks to a newly awarded ERC Starting Grant, which will fund the *IMMUNAGENOMICS project*. Under the guidance of group leader Dr. Ángel Álvarez-Prado, the team will investigate how ageing and genetic variation influence the immune microenvironment of BrM tumors and the efficacy of radio- and immunotherapies.

"*IMMUNAGENOMICS offers a unique opportunity to bring together advanced genomics, immunology and cancer biology to decipher how the immune system responds to brain metastases across different genetic and age backgrounds*," said Dr. Álvarez-Prado. "*Our aim is to uncover insights that can directly inform the development of more precise and effective therapies for patients with these aggressive tumors.*"

Via a combination of genetic models, cutting-edge technologies such as single-cell RNA sequencing and spatial transcriptomics, as well as analyses of human BrM tissue samples, the TCI group will produce an extremely detailed view of the tumor immune microenvironment and its evolution during treatment. By doing so, IMMUNAGENOMICS aims to lay the foundation for a new era of personalized medicine in oncology.

This ERC Starting Grant not only recognizes the scientific excellence of the TCI group, but also reinforces the role of the LIH at the forefront of cancer immunology and translational research in Europe.

About the Luxembourg Institute of Health (LIH)

The Luxembourg Institute of Health (LIH) is a public biomedical research organisation focused on precision health and invested in becoming a leading reference in Europe for the translation of scientific excellence into meaningful benefits for patients.

The LIH places the patient at the heart of all its activities, driven by a collective obligation towards society to use knowledge and technology arising from research on patient derived data to have a direct impact on people's health. Its dedicated teams of multidisciplinary researchers strive for excellence, generating relevant knowledge linked to immune related diseases and cancer.

The institute embraces collaborations, disruptive technology and process innovation as unique opportunities to improve the application of diagnostics and therapeutics with the long-term goal of preventing disease.

Scientific contact:

Dr. Ángel Álvarez-Prado

Group Leader, Translational Cancer Immunogenomics

Luxembourg Institute of Health

Email: Angel.Alvarez@lih.lu

Press contact:

Marketing and Communication Department

Luxembourg Institute of Health

Email: communication@lih.lu