RESEARCH CONTRACTS

PNGdroso project - Development of a Drosophila model to decipher the health effect of new-generation probiotics in a context of intestinal inflammation and infection. - Funding: Graduate School LSH - Université Paris-Saclay - (2023)

The PNGdroso project, led by Eugénie Huillet (UMR Micalis, INRAE de Jouy-en-Josas) and carried out in collaboration with LGBC, has received funding from the Graduate School LSH of the Université Paris-Saclay.

Summary: Murine models of colitis have demonstrated the anti-inflammatory effect of culture fractions of commensal intestinal bacteria, of interest in human health. The underlying molecular mechanisms remain largely uncharacterized. We use the Drosophila model for its ease of use and genetic tools. We are exploring the protective effect of bacterial culture supernatants and lysates on intestinal physiology and immune response, in a context of inflammation and dysbiosis following infection.

SiFeMi project - Study of the relationships between mitochondrial transporters of the Sideroflexin family, iron homeostasis, and ferroptosis - Funding: Agence Nationale de la Recherche ANR - (2021 - 2024)

The SiFeMi project led by Nathalie Le Floch-Leleu and conducted in collaboration with the teams of Nathalie Bonnefoy and Geneviève Dujardin (I2BC, Gif-sur-Yvette), Géraldine Liot (CEA, Fontenay-aux-Roses) and Marie-Pierre Golinelli (ICSN, Gif-sur-Yvette) has been awarded a grant from the ANR.

Summary: The mitochondrion is a metabolic crossroads that performs functions essential to cellular homeostasis. The SiFeMi project aims to better understanding the role of sideroflexins, as yet poorly characterized mitochondrial transporters, in the regulation of mitochondrial functions. More specifically, our aim is first to decipher the interactions between sideroflexins and iron metabolism and then to determine their role in the regulation of ferroptosis, an iron-dependent regulated cell death. This project is based on a multi-model approach (mammalian cells, yeast, drosophila, mouse models) and cell biology and genetic tools.

Link to information on the SiFeMi project: https://anr.fr/Projet-ANR-21-CE13-0009

Fly2HumanSPA project - Deregulations induced by the major susceptibility factor to spondyloarthritis HLA-B27: from Drosophila to patient cells - Funding: Agence Nationale de la Recherche ANR - (2019-2023)

The Fly2HumanSPA project led by Isabelle Guénal and conducted in collaboration with the team of Maxime Breban (IRIS, U1173 INSERM/UVSQ) has obtained funding from the ANR.

Summary: Spondyloarthritis is a group of inflammatory diseases affecting 0.43% of the French population whose main susceptibility factor is HLA-B27, a set of alleles encoding a subunit of the major histocompatibility complex. Despite 45 years of research, the mechanisms by which HLA-B27 contributes to pathology remain elusive. Our project aims to understand these mechanisms using different models and a synergy of scientific and clinical skills. Our results suggest that HLA-B27 deregulates one of the TGF pathways at the crossroads of ossification and inflammation.

Our goals are 1) to identify TGF superfamily receptors deregulated by HLA-B27, 2) to characterize the common peptidome specifically presented by HLA-B27 in Drosophila and humans, and 3) to explore the impact of HLA-B27 on intestinal homeostasis.

Link to information on the Fly2HumanSpA project: https://anr.fr/

AAPSI 2020 project: ATF5 Signaling Network during Viral Stress (ATFNetVirStress)

This project aimed to help characterize ATF5's involvement and identify key members of its signaling (regulators, partners and targets) in response to viral infection. After modeling the ATF5 signaling network in silico in response to infection, we identified potential key candidates. This funding has enabled us to experimentally test their involvement in ATF5 signaling in vivo. This work provides a better understanding of the control of cell death after infection, and in the longer term will enable us to propose new therapeutic targets, particularly in the case of HIV infection.