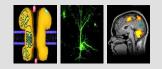# CHARACTERIZATION AND RESCUE OF NEURONAL DYSFUNCTION

April 25th - 26th, 2023

Session 2   **Mechanistic insights into psychiatric and affective disorders**

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Neural signatures of mood switches

At the intersection between the fields of neuroimaging, neuroendocrinology, neuropsychopharmacology, and psychiatry, the presented research will inform on the cross-talk between the brain and the reproductive system of relevance to female´s mental health. Females represent half of the world's population. Among which, approximately 60% experiences cycling fluctuations of gonadal hormones during their fertile age, that is the menstrual cycle. This means that throughout four decades, the most productive and valuable period of a female´s life, their brain is exposed to cyclic hormonal variations. A large proportion of females experiences these endocrine changes with a certain distress, while for a fraction of them daily functioning during the premenstrual phase is severely impaired to the point of being diagnosed with premenstrual dysphoric disorder (PMDD), which is accompanied by a burden of disease comparable to the one of major depression. To date, we have collected a finely characterized multivariate dataset on PMDD, allowing us to perform machine-learning based classification of the PMDD brain and to investigate state vs. trait neural correlates of mood switches. More recently, we conducted a randomized controlled trial demonstrating the efficacy of a new potential treatment for PMDD. By employing a unique pharmaco-neuroimaging approach, we are profiling the brain functional and structural substrates that are associated with this treatment and advance our understanding of PMDD symptoms relief from a mechanistic point of view.