

Marie-Hélène Verlhac

Marie-Hélène Verlhac, DR1 CNRS in the CIRB (Centre for Interdisciplinary Research in Biology) in the Collège de France, is interested in the end of oogenesis in mammals. Student from the École normale supérieure de Lyon, after a PhD at the University Pierre et Marie Curie (UPMC) followed by a post-doctoral internship at the University of California in San Francisco (UCSF), she started her own team with the objective to decipher the processes controlling the last stages of female gametogenesis in mammals, namely the asymmetry in size of meiotic divisions in the absence of canonical centrosomes.

Her team joined the CIRB in 2011 and she became deputy director of the structure in 2013.

The Verlhac lab pioneered the study of acentrosomal meiotic spindle assembly and positioning in mouse oocytes. Using genetics combined to two-hybrid screening and live imaging, they have identified pathways involved in meiotic spindle assembly, specific of meiosis I and of meiosis II, essential for maintaining the gamete correct ploidy. Her lab has also discovered the mechanisms involved in actin-mediated nucleus and spindle positioning in these huge cells, of fundamental importance for the asymmetry in size of meiotic divisions of the oocyte. More recently, thanks to the recruitment in the team of a CR1 INSERM researcher, Marie-Emilie Terret, they have pioneered biophysical approaches aiming at elucidating the forces as well as oocyte mechanics at play for these chromosome motion. They have notably shown that cortex mechanics is essential to regulate the geometry of meiotic divisions by modulating meiotic as well as mitotic spindle motion in the early embryo.

Currently, while the ongoing project of the Terret/Verlhac lab aims at deciphering the impact of actinmeshes in the control of chromosome positioning correlated to the developmental potential of the oocyte, Marie-Hélène Verlhac will also take new responsibilities as head of the CIRB starting January 2019.