

THE 2017 NINE CHOUCROUN EDMOND DE ROTHSCHILD FOUNDATION AWARD

Speaker: **Diana Catarina Nunes Pinheiro**
Date: Wednesday, November 29th at 11:30 pm
Place: « Bibliothèque Edmond de Rothschild » at IBPC

Title of the lecture:

Cell division in a multicellular context: Transmission of cytokinesis forces via E-Cadherin dilution and actomyosin flows

Abstract:

During epithelial cytokinesis, the remodelling of adhesive cell–cell contacts between the dividing cell and its neighbours has profound implications for the integrity, arrangement and morphogenesis of proliferative tissues. In both vertebrates and invertebrates, this remodelling requires the activity of non-muscle myosin II (MyoII) in the interphasic cells neighbouring the dividing cell. However, the mechanisms that coordinate cytokinesis and MyoII activity in the neighbours are unknown. My PhD work shows that in the *Drosophila notum* epithelium, each cell division is associated with a mechanosensing and transmission event that controls MyoII dynamics in neighbouring cells. We find that the ring pulling forces promote local junction elongation, which results in local E-cadherin dilution at the ingressing adherens junction. In turn, the reduction in E-cadherin concentration and the contractility of the neighbouring cells promote self-organized actomyosin flows, ultimately leading to accumulation of MyoII at the base of the ingressing junction.

Although force transduction has been extensively studied in the context of adherens junction reinforcement to stabilize adhesive cell–cell contacts, we propose an alternative mechanosensing mechanism that coordinates actomyosin dynamics between epithelial cells and sustains the remodelling of the adherens junction in response to mechanical forces.

