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“Unconventional secretion in Drosophila development”

The Rabouille’s group studies the secretion of transmembrane proteins during epithelial development and remodeling in *Drosophila*. In theory, transmembrane proteins should de deposited via the classical secretory pathway (ER>Golgi>PM) as described by the Nobel Prize winner George Palade. However, we have recently established that in *Drosophila* some key proteins in cell adhesion and junction formation bypass the Golgi on their way to the plasma membrane, making them critical and biologically unique. Strikingly, this Golgi bypass requires a peripheral Golgi protein dGRASP to be ectopically localized at the plasma membrane. In *Drosophila* mutant missing this protein, epithelium are strongly disorganized. Importantly, this pathway is critical in different stages of the *Drosophila* development, such as certain stages of oogenesis and during embryonic dorsal closure, to form a proper epithelial sheet. Interestingly, the GRASP ectopic localization at the plasma membrane is due to a pool of newly translated protein from its targeted mRNAs. This is preceded by gene expression upregulation that is triggered by tissue tension and mechanical stress.
Catherine Rabouille will present evidence of this pathway and will discuss potential implication for mammalian epithelium.