April 28 at 11am, Salle des Thèses

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Seminar title:

Neuronal exosomes that carry a miRNA cargo instruct germline stem cells to execute quiescence; defining a new chapter in endoc-RNA-ology

Abstract:

Many stem cell populations defer to quiescent states rather than continuous division, presumably to preserve their genomic integrity over long durations. We use *C. elegans* as a model to identify and better understand what gene activities are required to impose this quiescence, and how they function in response to both developmental, physiological, and environmental cues. One key regulatory factor is the AMP-activated protein kinase (AMPK), which phosphorylates key targets to ultimately readjust energy resources during periods of stress. Using this model we have uncovered a regulated mechanism of exosome secretion that specifically targets the germ cells, thereby providing a series of pro-quiescent signals that instruct the germline to enter a state of quiescence. These signals comprise, at least, a repertoire of miRNAs that are produced and packaged in the serotonergic neurons that leave the neurons and home to the gonad, where they are internalized and subsequently affect their mRNA targets. I will discuss many of the details of this novel form of neuroendocrinology that is likely to be active in other contexts in *C. elegans*, and most likely in other organisms.