

# Characterization of Rufy3 protein in Dendritic Cells: Potential modulator of autophagy and immunity

-----  
Rémy CHAR

1st year Ph.D Student

Centre d'Immunologie Marseille Luminy (CIML) – Marseille

Philippe Pierre Lab: Dendritic Cell Biology

Autophagy is a central regulator of metabolism and inflammation, as well as an important proteolysis node for the treatment of antigenic peptides. This pathway is essential in the host's response to infection and interfaces with almost all aspects of innate and adaptive immunity. Dendritic cells (DCs), which are powerful orchestrators of T cells response by antigenic presentation, require significant autophagic activity.

We focused on several poorly characterized genes involved in the regulation of endocytosis and autophagy in DC, among which Rufy3 and Rufy4. RUN and FYVE domain-containing protein (RUFY) are proteins which participate to the endosome dynamic and membrane trafficking. The team has shown that Rufy4 enhances autophagy upon interleukin-4 stimulation. Rufy3, mainly expressed and studied in the brain, was also found as overexpressed under this treatment. However, no studies were done in the field of immunology. Using CD11c-cre RUFY3 KO mice, and murine RUFY3 KO cell lines, I aim to decipher the fundamental molecular mechanisms controlled by Rufy3 and possibly reveal its importance for immunity.

Firstly, in the brain, Rufy3, unlike all other Rufys, is known not to have FYVE domain. Surprisingly, in Immune cells the protein gets a longer form with a FYVE domain. Moreover, the "brain form" was not at all present in immune cells. In addition, during a short stimulation by LPS, Pol I:C, CpG or IFN $\alpha$ , the level of Rufy3 mRNA and protein is significantly higher.

Those initial results encourage us to continue and may suggest that Rufy3 have a specific function in immune cells. With the FYVE domain especially in immune cells, we could think that Rufy3 can interacts with lipids. To observe potentials partners with Rufy3, I will immunoprecipitate Rufy3 and look for potential partners by mass spectrometry. Then, a Lipid strip will be perform to accurately see which Rufy3 lipids bind. To study the link between Rufy3 and autophagy, I will monitor autophagic flux by Western Blot and microscopy.

-----  
Keywords : Immunology - Autophagy - Cell biology - Dendritic Cells

Authors :

References : , , ,

## Authors

Remy Char 1,

1. Immunology, CIML, Marseille, FRANCE