



*A master project is available at the French National Research Institute for Agriculture, Food and Environment (INRAE) in Jouy-en-Josas (Paris region, FR)*

## ***Genetic variability of milk extracellular vesicles protein and microRNA content in cows***

Extracellular vesicles (EVs) are small structures that play a central role in cell-to-cell communication and in the establishment of physio-pathological processes. Identified in milk in 2007, their role in mother-to-offspring communication remains unclear. Preliminary results indicate that the abundance of milk-EVs may vary depending on the breed of cow.

**In this M2 project, the candidate will analyse extracellular vesicles present in cow milk by characterizing their proteic and genetic content and the variability of the latter in milk of different qualities from three breeds of cow: Prim'Holstein, Normande and Jersiaise.** Based milk-EVs already purified from six cows in each breed, the candidate will first analyse the existence of a variability in the abundance of specific subpopulations of EVs. To that end, he/she will study the expression levels of specific biomarkers of different EVs subpopulations by biochemical approach (western blot). Then, using bioinformatics approaches, the candidate will compute and analyse the miRNome of milk-EVs using already available high throughput sequencing data and address whether differences in microRNA expression may exist between the different breeds of cow.

Altogether, the results may provide key knowledge on the protein and microRNA content of milk-EVs and a strong basis for future studies on a more substantial number of individuals to address genetic variability of milk-EVs.

Our requirements: Candidates should be enrolled in a master program in cell biology, biochemistry, bioinformatics, or related fields. Candidates should be highly motivated, good team players, and strong interest in bioinformatics analysis.

We offer an internship in the Mammary Gland and Lactation (GaLac) Team, in the Animal Genetics and Integrative Biology research laboratory (GABI UMR1313) belonging to the National Institute on agriculture, food and environment research INRAE located in Jouy-en-Josas, Paris area (FR).

The candidate will work in a dynamic research group with strong expertise EVs, microRNAs, and milk.

Duration: 6 months

Grant: Approx 550 euros / month

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