

## PhD thesis offer

### Generic Encapsulation concept for Lactic Acid Bacteria

Laboratoire d'Ingénierie des Biomolécules – LIBio Nancy – France

New generation of powders are currently developed for nutritional purposes. Dynamics of this market are supported by consumer interest and demand for healthy foods. Milk powders enriched in probiotics are an important component of this market. The use of coagulated dairy proteins under powder form has several advantages, as probiotics delivery in solid form creates a buffered environment protecting against the high acidity encountered in the stomach and forms a dense matrix that physically protects the cells. The issue facing food technologists is that probiotic protection by encapsulation is extremely strain-dependent. Recently, interactions between *Lactobacillus rhamnosus* GG (**LGG**) and milk components were elucidated. Characterization of these interactions is identified as a necessary requirement for an efficient encapsulation process allowing cell targeted delivery.

This pioneer proposal aims at providing structured dairy powders to enhance encapsulation and delivery of hundreds of strains of lactic acid bacteria (**LAB**), instead of only one. The originality of this high-gain project is to develop a generic encapsulation process for hundreds of strains based on interactions between milk proteins and LAB. For this purpose, interactions between identified milk proteins and LAB strains from our laboratory culture collection will be high-throughput screened. LAB will be sorted into different groups according to the nature of their interactions with milk proteins. Concurrently, biophysical techniques will be applied on selected strains from each LAB group to identify surface biomolecules involved in the interactions. Encapsulation matrices and process conditions will then be settled for each LAB group. New powders in terms of composition and LAB distribution within the powder structure will be generated.

#### Desired diploma and skills:

- Master degree or equivalent in food science
- Good knowledge in dairy physicochemistry
- Good knowledge and practical skills in microbiology
- Fluent in English (written, spoken)

**Starting time:** September 2019, duration 36 months

**Type of funding:** ANR JCJC (Pr. Claire GAIANI), GEL project

**Application:** For application, please send your detailed CV and motivation letter **before 10<sup>th</sup> June 2019** to:

Dr Jennifer BURGAIN & Pr Joël SCHER

Université de Lorraine - LIBio – Laboratoire d'Ingénierie des Biomolécules, 2 avenue de la Forêt de Haye - BP 20163, 54505 Vandoeuvre-lès-Nancy - FRANCE

Tél. : +33(0)3 72 74 41 00 - Fax : +33(0)3 83 59 57 72

[jennifer.burgain@univ-lorraine.fr](mailto:jennifer.burgain@univ-lorraine.fr) ; [joel.scher@univ-lorraine.fr](mailto:joel.scher@univ-lorraine.fr)