Postdoctoral position "Milk caseins molecular modelling"

Laboratory

The team Inra PIHM is member of UMET (University Lille 1, http://umet.univ-lille1.fr/) and specialized in microbial, physical and chemical processes dynamics, at solid interfaces in the food industry. Ingredia is the global market leader for milk casein production (www.ingredia.com). In 2018, Ingredia and PIHM have created a common laboratory, Proteinolab, in order to develop new milk proteins for high-protein content nutritional applications.

In the framework of Proteinolab, PIHM is seeking for a one-year postdoctoral position.

Job description

Milk proteins structure, as caseins, is of major importance on their functional properties that are a key parameter of the industrial market. To answer consumers' expectations, understanding and optimizing functional properties of milk powders is necessary. Thus, Proteinolab project aims at better understanding the structure of those complex molecules and predicting their behavior during treatment processes and final use. In this context, the purpose of the defined strategies is to associate experimental approaches and molecular modelling in order to improve the understanding of the involved molecular phenomena during the fabrication process of casein powders.

The applicant will be in charge of studying casein micelles rheological behavior (viscosity) and aggregation properties by using molecular simulation and modelling methods, based on big grains models. This work will attempt to understand the impact of physical-chemical parameters on structural properties of casein powders. It will be realized in tight collaboration with the experimentations performed by the other project members and which will give many information to feed the models and test their robustness.

Complementary information

Duration: 12 months – Start in March 2019 (potentially in January 2019)

Location : Cité Scientifique, 59651 Villeneuve d'Ascq, France

Tutoring: Scientific management and tutoring will be ensured by Pr. Frédéric Affouard (UMET) and Dr. Sophie Barbe (INSAT)

Qualifications/job requirements

The candidate will ideally be specialized in modelling using molecular dynamics simulation (big grains model) with strong bases in biology and/or physical-chemistry. Experience in proteins aggregation will be appreciated. The ideal profile is a PhD in molecular modelling (computational structural biology, structural bioinformatics, physics and chemistry) with knowledge in proteins and macromolecular structures.

UMR UMET / Equipe PIHM
369 rue Jules Guesde
59651 Villeneuve d'Ascq

Oral and written communication skills are necessary. Ability to work in a project team.

Contacts and application

Please send CV and cover letter before November 30th, 2018 to both:

- Dr. Paulo Peixoto, paulo.peres-de-sa-peixoto-junior@inra.fr, +33 3 20 43 54 01
- Dr. Emilie Dieudé-Fauvel, emilie.dieude-fauvel@inra.fr, +33 3 20 43 54 18

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