A **PhD student position** will be available in the INSERM U1059-SAINBIOSE, University of Saint Etienne, France, on the topic: **Regulation and role of the fibroblast growth factor 23 (FGF23) in chronic inflammatory arthritis.**

Environment: This doctoral position will be located in the thriving environment of the INSERM Unit U1059 (French national institute for health and medical research), supported by a large portfolio of academic and industry funding, at the School of Medicine in Saint Etienne (Jean Monnet university), and in direct proximity with the University Hospital and the Health Sciences Department of the Institute Mines-Telecom of Saint Etienne. The successful candidate will be invited to author at least two publications and will have the opportunity to participate to national and international meetings.

Lead and collaborations: This 3-year position will be funded by the French Department of Research and co-supervised by Pr Hubert Marotte, MD-PhD, rheumatologist, who leads the team "Biology of the Bone Tissue" and Dr Guillaume Courbon, PhD, INSERM researcher. In addition, this project will lead to local cooperation with the University Hospital of Saint Etienne and international collaborations with several prestigious American universities.

Research topic: The fibroblast growth factor 23 (FGF23) is a bone hormone that regulates phosphate levels and vitamin D synthesis. Pathologic excess of FGF23 in chronic kidney disease (CKD) leads to alterations of the mineral metabolism, bone deformities, and fractures. However, it has recently been shown that FGF23 excess is also associated with iron deficiency anemia, inflammation, and cardiovascular disease in CKD[1,2]. However, such inter-regulations of FGF23 with iron metabolism and inflammation remain poorly elucidated in CKD and are unknown in other chronic inflammatory diseases[3,4]. Recent data suggest that FGF23 levels are elevated in patients with arthritis[5].

The objective of this doctoral thesis is (1) to characterize FGF23 elevations in different subsets of arthritis and study its correlation with inflammation, anemia, and cardiovascular disease. (2) This translational work will parallel a fundamental study conducted by the PhD candidate on several cell and animal models to validate FGF23 source, kinetics, and post-translational changes. (3) Finally, a panel of experiments will decipher the physiopathological role of FGF23 in arthritis, by overexpressing or deleting its gene *Fgf23* in cells and in animals.

The successful candidate will work on a widely translational panel of experiments from cell culture and *in vivo*, cutting-edge gene expression research, biochemistry, and clinical data to bridge the gap between bench and bedside. By the start of the position (~October 2023), the applicant must hold a Master degree in a relevant discipline (biology, physiology, biochemistry…). The candidate is expected to show curiosity for medical research and healthcare, be a team player, and willing to progress in English and French, whichever language(s) is(are) non-native. Equal consideration will be given to candidates regardless of origin and nationality.

To apply, please contact guillaume.courbon@inserm.fr and hubert.marotte@chu-st-etienne.fr with a 2-page cover letter indicating your motivation, experience, and research interests. Join a CV, an up-to-date master graduate transcript, 2 support/recommendation letters, and past communications if applicable (contribution to a scientific article, review, poster…).

References:

1 Courbon, G. *et al.* Lipocalin 2 stimulates bone fibroblast growth factor 23 production in chronic kidney disease. *Bone Res* **9**, 35 (2021). https://doi.org:10.1038/s41413-021-00154-0

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3 Caire, R. *et al.* YAP/TAZ: Key Players for Rheumatoid Arthritis Severity by Driving Fibroblast Like Synoviocytes Phenotype and Fibro-Inflammatory Response. *Front Immunol* **12**, 791907 (2021). https://doi.org:10.3389/fimmu.2021.791907

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5 Sato, H. *et al.* Serum Fibroblast Growth Factor 23 (FGF23) in Patients with Rheumatoid Arthritis. *Intern Med* **55**, 121-126 (2016). https://doi.org:10.2169/internalmedicine.55.5507