Université Claude Bernard Lyon 1- Hosting offer for a MSCA Post-doctoral fellowship candidate in bone and mineral metabolism

Host Organisation	**Université Claude Bernard Lyon 1**
Department	**UFR Lyon Est Medical School** **UFR Biosciences**
Laboratory	**LYOS INSERM 1033**
Website (lab / research team)	https://www.lyos.fr
Supervisor Contact name	**Justine BACCHETTA** **Olivier PEYRUCHAUD**
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Host Organisation

The Université Claude Bernard Lyon 1 welcomes Marie Sklodowska Curie Postdoctoral Fellowships applications !

With 62 laboratories and more than 7000 publications per year, and leading French university in terms of the number of patents filed in collaboration with industry, Lyon 1 contributes to scientific and innovation progress in numerous fields: health, mathematics, IT, physics, chemistry, earth and space sciences, life sciences, etc. Creator of emerging knowledge and new technologies, the University is consolidating its research excellence on a global and international level by developing inter- and multidisciplinary approaches targeting the major challenges facing today society.

Host research lab/team

The Laboratoire LYOS / INSERM1033 is a leading research lab in Europe in bone and mineral metabolism.

With more than 50 years of history of research in bone biology, the LYOS lab is internationally-recognized for its expertise in bone evaluation, from cellular models, animal models, translational approaches, patients' deep phenotyping and technical expertise including bone imaging, mineralization assessment and biomechanics.

The LYOS is currently under the administrative renewal process. On 1/1/2027, the new LYOS entitled «Mineralized tissues, pathophysiology of osteoarticular and rare diseases » ambitions to align its global research program mostly on the clinical expertise of the 3

clinical OSCAR reference centres established in Lyon, namely the nationally-certified clinical reference centres for rare diseases of phosphate and calcium (mineral metabolism), constitutional bone diseases and fibrous dysplasia of bone.

In a lab first certified by INSERM in 1982, we keep our historical and internationally-recognized strengths on bone biology and pathophysiology and global evaluation of mineralized tissues whilst developing new approaches, notably by using metabolomics and imaging biomarkers (expanding the field of bone imaging routinely performed in the lab to functional tissular MRI). On top of bone and cartilage, we also integrate nephrocalcinosis, nephrolithiasis, vascular and dental pulpar calcifications to broaden the spectrum of mineralized tissues.

Ultimately, our aim is to bridge ultra-rare diseases and more frequent disorders. As such, we use the model of different rare and ultra-rare diseases of mineralized tissues to apply the knowledge, the potential therapeutic targets and the diagnosis biomarkers identified from these rare diseases to more frequent diseases, including those in the field of ectopic calcifications, inflammation (e.g., rheumatoid arthritis) and bone fragility (e.g., osteoporosis), i.e., three main key health issues in general populations with a huge cost burden for health systems. Our global aim is to advance the understanding of pathophysiology and unravel novel therapeutic strategies, and to accelerate translational projects for rare mineral and bone diseases.

We have three main thematic axes: 1/ phosphate and calcium metabolism, 2/ inflammation and active biolipids, and 3/ biomechanics, numerical simulation and bone/joint fragility. Because of our close collaborations with clinicians who are also part of the senior staff of the LYOS, we have an easy access to a unique diversity of human samples from patients with rare diseases (blood, teeth, bone from surgeries, urines, etc.).

The LYOS research team

Currently led by Roland Chapurlat (MD, PhD, Professor of Rheumatology), the LYOS unit will be directed in January 2027 by a clinician/scientist duo, Justine Bacchetta (MD, PhD, Professor of Pediatrics) and Olivier Peyruchaud (PhD, INSERM Research Director).

The LYOS has colligated a multi-disciplinary expertise from life scientists (biologists, biochemists, experts in metabolomics and in functional characterization of mineralized tissues, experts in biomechanics) and clinician scientists from different backgrounds (rheumatology, pediatric nephrology, renal physiology, odontology, genetics, pediatric

neurosurgery, epidemiology) to potentialize cellular and animal models with patients' cohorts.

In total on 1/1/2027, the global LYOS team will consist of a multi-disciplinary team associating full-time researchers (1 DR-INSERM, 2 CR-INSERM, 1 CR-CNRS, 1 IR-INSERM), medical doctors with university positions (5 PU-PH, 2 MCU-PH, 2 PH-U), basic researchers with university positions (2 PU, 1 MCU), technicians and post-doc/students (1 TR UCBL, 2 technicians on research contracts, 3 post-docs, and PhD/MSc students).

The LYOS lab benefits from a strong local, national and international environment. The LYOS unit is held in the Laennec building of Lyon Est Medical School, just between the two clinical hospitals involved in the follow-up pf patients with rare bone and mineral diseases (i.e., Hôpital Edouard Herriot and Hôpital Femme Mère Enfant). Because of the modernization of the building, the LYOS will benefit from the construction of a brand-new lab by mid-2027 (1000 m^2 on a single level). Moreover, the LYOS benefits directly onsite from the SFR Lyon Est with multiple technique platforms easily available (https://sfrsantelyonest.univ-lyon1.fr/).

Other local collaborations are held with different research teams, notably the historical collaboration for biomechanics with the EIFEL University, the collaboration for biochemical structures with MMSB UMR 5086, and the *Centre d'Investigation Clinique* (CIC) de Lyon. The LYOS lab also has strong national and international collaborations, notably through the two European reference networks for rare diseases BOND and ERKNet.

Hosting Offer

The **LYOS lab** offers to host a MSCA Postdoctoral Fellowship candidate (typically a post-doc of less than 8 years research experience since PhD defence), submitting an application to the next MSCA-2026-PF call for proposals (deadline 09th of September 2026), interested to work on the following research topic:

- Bio-informatics applied to bone and mineral metabolism (SC-RNA seq, Spatial Transcriptomics)

- iPSc models applied to rare diseases

The fellowship could last for 12 to 36 months, depending on the type of Postdoctoral Fellowship.

Supervision

The successful Marie-Curie Post-doctoral fellow will be supervised by Justine Bacchetta and Olivier Peyruchaud. Depending on the proposed topic by the applicant, we may involve another senior researcher of the lab to ensure an optimal supervision of the project.

Justine Bacchetta, MD, PhD, was board certified in Paediatrics in 2009; she trained in France and in the USA (UCLA, Los Angeles). She is currently Professor of Paediatrics in Lyon (France), chair of the Pediatric Nephrology Unit, Vice Chair of the Department of Pediatrics, Treasurer of the French Society of Pediatric Nephrology and coucilor of the International Pediatric Nephrology Association (IPNA). Her main research interests include clinical and basic research on mineral metabolism in chronic kidney disease, and in inherited calcium/phosphate metabolism disorders (including X-linked hypophosphatemia, cystinosis, hyperoxaluria and lithiasis with increased 1-25 D levels). She has authored more than 300 peer-reviewed publications and given more than 150 invited talks in national and international conferences. She received the IPNA Renee Habib award in 2016.

Olivier Peyruchaud, PhD, is a Research Director at INSERM leading the team "Bone and Joint Pathophysiology: Bioactive lipids and mineral metabolism". He completed his Ph.D. in Health Biology at the CNRS Unit5533 with Dr. Alan T. Nurden, Bordeaux France, and trained as a post-doc with Dr. Deane F. Mosher at the University of Wisconsin, Madison. His projects focused for many years on the discovery of new molecular mechanisms controlling bone metastasis and the development of new therapies. His team demonstrated the major role of blood platelets in LPA- and ATX-mediated bone metastasis formation in breast cancers. His projects also cover all aspects of LPA and ATX involvements in bone physiology and diseases. Since 2015, based on cell biology, genetically modified animals, relevant animal models and a close relationship with clinicians, his projects are applied to osteoporosis, inflammatory-mediated bone diseases, bone metastases and rare diseases.

Application process

Interested candidates are invited to contact us exclusively by email at : justine.bacchetta@chu-lyon.fr and olivier.peyruchaud@chu-lyon.fr

Make sure that you include the reference to this offer in the title of your email. Please attach a CV, a motivation letter, your MSc marks, **as well as a 1 page research proposal**.

Professional grant application support:

Candidates will receive the support of the supervisors, as well as online training from a professional grant application company, and advices from successful applicants, to prepare and submit their application with the LYOS as a host laboratory, to the next MSCA-PF call for proposals.