

Predocctoral research position in functional genomics of rare diseases

We are looking for a predoctoral candidates interested in performing a Thesis in our group. The project will cover the implementation of the proof of concept that inhibitors of PI3K are therapeutically efficient to block bone formation in patients suffering from FOP (Fibrodysplasia ossificans progressiva) (see Valer et al., 2019 and Valer et al., 2023).

Background of the group: Our group has carried out an active research on the molecular and cellular basis of bone biology. At present, we are studying several aspects of functional genomics of bone biology: study of the signal transduction pathways that control bone homeostasis (Smad, NRF2 and PI3-kinase); study of gene expression and regulatory elements of the transcription involved in osteoblast differentiation. Cumulative data allowed us the application of this knowledge to improve strategies for bone tissue engineering from stem cells to regenerate bone structures and identify relevant pharmacological targets for treatment bone pathologies (osteoporosis, heterotopic ossification and FOP). More info about the group can be found at:

<https://bonebiology.wixsite.com/venturalab>

Requirements for candidates:

- Degree in a discipline with strong background in molecular and cellular biology.
- Good academic record.
- Willingness to work with mouse models.
- Fluency in English and writing skills.
- (Desired) Accredited certificate of Animal Research Experimentation.

We offer:

- 1-year contract.
- Develop a Thesis project working in a dynamic group.
- Funding to cover stages and seminars to expand scientific training

Interested applicants should send a request by email (including a CV, academic record, and a brief statement of research interests) to Francesc Ventura (fventura@ub.edu).

Project supervisor: Dr. Francesc Ventura. Dept. Ciències Fisiològiques. Universitat de Barcelona

(Campus de Bellvitge) 08907 Hospitalet de Llobregat. email: fventura@ub.edu

Relevant publications:

1.- Authors: Valer J.A.; Deber, A.; Wits, M.; Pimenta-Lopes, C.; Goumans, M.J.; Rosa, J.L. Sánchez-Duffhues, G.; Ventura F.

Title: PI3K α inhibition blocks osteochondroprogenitor specification and the hyper-inflammatory response to prevent heterotopic ossification.

Journal: eLife.

<https://doi.org/10.7554/eLife.91779.1> **Year:** 2023

2.- Authors: Pimenta-Lopes, C.; Sánchez-de-Diego, C.; Deber, A.; Egea-Cortés, A.; Valer, J.A.; Alcalá, A.; Méndez-Lucas, A.; Esteve-Codina, A.; Rosa, J.L.; Ventura, F.

Title: Inhibition of C5AR1 impairs osteoclast mobilization and prevents bone loss.

Journal: Molecular Therapy.

Volume: 31 **Number:** 8 **Pages:** 2507-2523. **Year:** 2023

3.- Authors: Sanz-Serrano, D.; Sánchez-de-Diego, C.; Mercade, M.; Ventura, F.

Title: Dental Stem Cells SV40, a new cell line developed in vitro from human stem cells of the apical papilla.

Journal: International Endodontic Journal. **Year:** 2022

<https://doi.org/10.1111/iej.13887>

4.- Authors: Sánchez-de-Diego, C.; Pedrazza, L.; Pimenta-Lopes, C., Martinez-Martinez, A.; Dahdah, N.; Valer, J.A.; Garcia-Roves, P.; Rosa, J.L.; Ventura, F.

Title: NRF2 function in osteocytes is required for bone homeostasis and drives osteocytic gene expression.

Journal: Redox Biology.

<https://doi.org/10.1016/j.redox.2020.101845> **Year:** 2021

5.- Authors: Ventura F, Williams E, Ikeya M, Bullock A, Ten Dijke P, Goumans M, Sanchez-Duffhues G.

Title: Challenges and Opportunities for Drug Repositioning in Fibrodysplasia Ossificans Progressiva

Journal: Biomedicines

<https://doi.org/10.3390/biomedicines9020213> **Year:** 2021

6.- Authors: Valer, J.A.; Sánchez-de-Diego, C.; Gámez, B.; Mishina, Y; Rosa J.L.; Ventura, F.

Title: Inhibition of phosphatidylinositol 3-kinase α (PI3K α) prevents heterotopic ossification

Journal: EMBO Molecular Medicine

Volume: 11 **Number:** 9 **Pages,** e10567 **Year:** 2019

7.- Authors: Sánchez-de-Diego, C.; Artigas, N.; Pimenta-Lopes, C.; Valer, J.A.; Torrejón, B.; GamaPérez, P.; Villena, J.A.; García-Roves, P.M.; Rosa, J.L.; Ventura, F.

Title: Glucose Restriction Promotes Osteocyte Specification by Activating a PGC-1 α -Dependent Transcriptional Program.

Journal: iScience

Volume: 15 **Number:** 31 **Pages, Initial:** 79 **final:** 94 **Year:** 2019

8.- Authors: Valer, J.A.; Sánchez-de-Diego, C.; Pimenta-Lopes, C.; Rosa, J.L.; Ventura, F.

Title: ACVR1 Function in Health and Disease.

Journal: Cells

Volume: 8 **Number:** 11 **Pages, pii:** E1366 **Year:** 2019