

## UbiCODE is recruiting 13 PhD students

Innovative Training Networks (ITN)  
Marie Skłodowska-Curie Action  
GA 765445 – H2020-MSCA-ITN-2017

### Marie Curie Innovative Training Network (ITN) UbiCODE is opening 13 PhD positions (36 months) for highly motivated students.

#### **Project Background**

Post-translational modifications (PTM) by members of the **Ubiquitin** (Ub) family represent an efficient way to regulate protein function at several levels: to change their localisation, activity, their interaction with partner proteins or their stability at the right time and cellular compartment, according to the cell requirements. Defects in this homeostatic equilibrium result in pathologies such as **cancer, neurodegeneration, inflammation or multiple infections**. For this reason, this research area has become very attractive for fundamental scientists as well as for the pharmaceutical industry (Pharma) aiming to identify potential targets for therapeutic intervention. Interestingly, Ub and Ub-Like (UbL) proteins can modify themselves, forming intricate and complex chains. This landscape was recently expanded with the discovery of the formation of heterologous chains among UbL molecules including SUMO or NEDD8 but also other PTMs such as phosphorylation, acetylation or ribosylation. This unsuspected complexity of what is now called «**The Ubiquitin Code**», an unexplored universal language that needs to be deciphered to understand protein homeostasis and its associated pathologies. To decrypt this complex code requires joint collaborative multidisciplinary efforts at all levels, including the use of distinct molecular systems and model organisms and the latest technological developments to explore chemical, biochemical, molecular, pharmacological and clinical aspects of protein modification by members of the Ub family. UbiCODE represents an unprecedented effort to understand «The Ubiquitin Code» in an integrated manner.

Link to UbiCODE website : <http://www.ubicode.eu>

#### **Scientific challenge**

Our **key scientific challenge** is to investigate how chain diversity is generated (written), regulated (edited), recognised (read) and connected with effector functions (interpreted) to regulate cellular plasticity. Our **main hypothesis** is that a better knowledge of the “writers”, “editors”, “readers” and “interpreters” of this new universal language will help us to understand the encoded message, which will be crucial to predict physiologic and pathologic processes.

#### **Recruitment at CIC bioGUNE: Fellow ESR6**

**Title of the Project:** Development and application of novel tools to detect protein interactions in vivo.

**Host institution:** Center for Cooperative Research in Biosciences (CIC bioGUNE), Bilbao, Spain.

**Supervisor:** [Rosa Barrio](mailto:Rosa.Barrio)

**Webpage:** <http://personal.cicbiogune.es/rbarrio/>

**Summary of the project:** As the gatekeepers of protein homeostasis, Ub and SUMO are implicated in almost every cellular pathway described, and it is no surprise that the complexity of their regulation seems to be increasing weekly in the literature. The fact that Ub can make



chain-linkages through every one of its lysines raises questions about the lysines of all other UbL proteins. Mixed-chains are seemingly less abundant, but this may be due to lack of good tools to capture and analyse them. We hypothesize that Ub-SUMO mixed chains have important homeostatic and stress-responsive roles, and that novel regulators oversee their formation and destruction. We will design split-BirA for recognising Ub-SUMO mixed chains and to identify the proteins modified by these mixed chains by MS. The application of split-BirA to this problem will hopefully confirm this hypothesis, and also be applicable to other protein complexes in the future.

### **Requirements of the candidates**

**Early-Stage Researchers:** All students recruited should fit into the category of Early Stage Researchers (ESRs), that is, they should be within the first four years of their research career and they should not hold a doctoral degree.

**Mobility requirements:** ESRs should not have spent more than 12 months during the last 3 years in the host country. There is no nationality restriction.

**Academic requirements:** All ESRs should have the necessary degrees to access a PhD program at the host institution (i.e. master degree recognized in the host country, [120 ECTS](#) corresponding to the European Credit Transfer System). All ESR should aim to obtain her/his PhD degree derived from her/his work at the UbiCODE project. ESRs should **NOT** hold a PhD degree by any university. All ESRs should be able to communicate, read and write correctly in English. Additional language skills could be required by the host institutions.

### **Benefits for the candidates**

**Training:** Student will receive scientific skills in experimental Biomedical Sciences in the field of Ubiquitin in expert laboratories at the fore-front of the field, in a highly stimulating and collaborative environment. Candidates will be involved in the particular project offered by the chosen hosting groups ([click here for a detailed description](#)). In addition, all the students will receive specialized courses ([click here to see the programmed courses](#)) and transferable skills (writing CV and grants, presentations skills, etc). Also, all the students will participate in short term stays in collaborative laboratories within the network (secondments).

**PhD:** Students will register in the Doctorate program in their host institution or associated University and will aim to present their PhD at the end of the project.

**Salary:** Students will have a highly competitive salary according to Marie Skłodowska-Curie Actions rules. Exact salary will be calculated per country and will contemplate living and mobility allowances.

**Hosting conditions:** Each recruited student will be hosted in a laboratory and offered good working conditions (desks, computers, access to experiments, etc.). S/he will be supervised by a main supervisor, a co-supervisor and a mentor from the private sector. This supervision team will also act as career advisor.

### **Host countries**

The host laboratories are located in Toulouse and Montpellier (France), Freiburg, Frankfurt and Mainz (Germany), Leiden (Netherlands), Basel (Switzerland), Liverpool, Cambridge and Dundee (UK), Bilbao (Spain) and Copenhagen (Denmark). For details on the hosting groups click [here](#).

### **How to apply and deadlines**

Applicant should supply, **as a single pdf file** (maximum 5 MB) the following documents:  
- A signed **Application Form** ([download here](#)), indicating the top three projects of election in order of preference, motivation letter, names of three referees, etc.



- Scan of University Degrees and MSc diplomas or equivalent with an official transcript of student record. Subjects, grades and maximum attainable grades should be visible in the official document.
- For undergraduates, an official certificate confirming student status and due date of MSc examination.

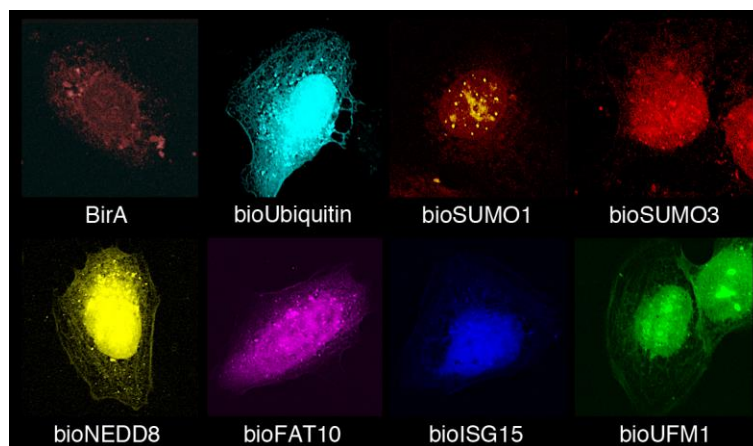
Applicants should send their completed Application pdf document to the email address [ubicode@itav.fr](mailto:ubicode@itav.fr) by **MARCH 31st 2018**.

The Recruitment Committee of UbiCODE will analyze all applications and eligible applications will be sent to the selected host laboratories.

Selected students might be interviewed by Skype in **April 2018**. Final selection is expected to be finished in **May 2018**.

### **Starting date and duration of the contract**

Students are expected to initiate their contracts in **SEPTEMBER 1st 2018**. The present contract will last for three years.



**Figure caption**

**Cellular distribution of different bioUbLs.** U2OS cells were transfected with plasmids expressing the indicated bioUbLs (bioUbiquitin, bioSUMO1, bioSUMO3, bioNEDD8, bioFAT10, bioISG15, bioUFM1) or BirA alone as a control. BioUbL conjugates were visualized using fluorescently-labeled streptavidin. Colors have been added to grayscale images.