

TRAINING PROGRAM

The predoctoral student will enroll in the Molecular Biosciences Doctoral Program of the Madrid Autonomous University, an international PhD program of Excellence. The hosting lab is situated in a very active scientific environment (CSIC-UAM Excellence Campus) that ensures exposure to research of the highest quality. The student will participate in all the training activities organized at the CBMSO including weekly Institute seminars given by leaders on the field of Biomedicine; annual CBMSO research discussion day led by student and postdocs; specific workshops on new technologies or topics of interest for PhDs, such as scientific writing, research ethics, career development, gender equality, etc.

The project has a multi-approach character and, in such a way, it will contribute to an excellent training in several aspects of the state-of-the-art in biological and biomedical research. Its development implies the use of standard techniques of molecular, cellular biology and biochemistry, as well as more specific techniques like chromatin immunoprecipitation, chromatin accessibility, and Real-Time PCR; a broad range of genomic approaches including ChRNA-seq, MeChRIP-seq, Repli-seq, TT-seq, RNA-seq, ChIP-seq, m6A-DIP-seq, ATAC-seq; computational analysis; genomic editing by CRISPR; single-molecule and imaging approaches. Eventhough each team member in the lab leads an individual research project, they also closely collaborate with each other to maximize both the success of the projects and the exposure to different techniques and knowledge.

The training program comprises at least one stay in a foreign lab, the presentation of the results of the project in at least one national and one international meeting and at the *ChromoDyst* network meetings, as well as the attendance to *CSIC Conexión Genoma* network meetings and to basic bioinformatic courses organized by the UAM (Linux, Shell Scripts programming, R, etc), or more specialized ones like the EMBL courses on bioinformatics. In addition, the on-going collaborations of the lab with other CBMSO teams and labs in Spain and abroad will further widening the scientific and technical background of the student.

Recent lab publications:

- Fernández-Justel JM, et al. Histone H1 regulates non-coding RNA turnover on chromatin in a m6A-dependent manner. *Cell Rep* 40: 111329, doi: 10.1016/j.celrep.2022.111329 (2022).
- Jodkowska K, et al. 3D chromatin connectivity underlies replication origin efficiency in mouse embryonic stem cells. *Nucleic Acids Res* 50:12149-12165, doi: 10.1093/nar/gkac1111 (2022).
- Gallego A, et al. Slow RNAPII transcription elongation rate, low levels of RNAPII pausing, and elevated histone H1 content at promoters associate with higher m6A deposition on nascent mRNAs. *Genes (Basel)* 13:1652, doi: 10.3390/genes13091652 (2022).
- Almeida R, et al. Chromatin conformation regulates the coordination between DNA replication and transcription. *Nat Commun* 23, 1590, doi: 10.1038/s41467-018-03539-8 (2018).