



## 3.4.4 Regulation of Gene Expression and by Hypoxia Group

Publications: 4

Q1: 2

### COMPOSITION

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### STRATEGIC OBJECTIVE

Oxygen homeostasis, central to physiology, is altered in high-incidence pathologies such as cardiovascular disease and cancer. Therefore, the elucidation of cellular and molecular adaptive responses to hypoxia is an important topic of biomedical research. Hypoxia-inducible transcription factors (HIFs) play a key role in this response by controlling the expression of most of the genes involved in adaptation to hypoxia. The aim of our group is to contribute to the understanding of the transcriptional response to hypoxia and the cellular and molecular mechanisms underlying adaptive responses such as the induction of angiogenesis. Our long-term goal is to exploit this knowledge to improve the clinical management of pathologies in which the development of tissue hypoxia is a common feature.

### RESEARCH LINES

- Characterisation of molecular mechanisms responsible for the transcriptional response to hypoxia
- Identification of polymorphisms affecting HIF binding sites and characterisation of their functional effect
- Cellular and molecular mechanism of angiogenesis regulation by hypoxia
- Hypoxia regulation of metabolism and role of HIF in metabolic diseases

### RESEARCH ACTIVITY

#### ● Publications

- Arconada-Luque E, Jiménez-Suárez J, Pascual-Serra R, Nam-Cha SH, Moline T, Cimas FJ, Fliquete G, Ortega-Muelas M, Roche O, Fernández-Aroca DM, Velasco RM, García-Flores N, Garnes-García C, Sánchez-Fdez A, Matilla-Almazan S, Lobo VJSA, Hernández-Losa J, Belandría B, Pandiella A, Esparís-Ogando A, Cajal SRY, del Peso L, Sánchez-Prieto R, Ruiz-Hidalgo MJ. ERK5 is a major determinant of chemical sarcomagenesis: implications in human pathology. *Cancers (Basel)*. 2022; 14(14): 3509. Article. IF: 5.2; Q2
- Maeso-Alonso L, Alonso-Olivares H, Martínez-García N, López-Ferreras L, Villoch-Fernández J, Puente-Santamaría L, Colas-Algora N, Fernández-Corona A, Lorenzo-Marcos ME, Jiménez B, Holmgren L, Wilhelm M, Millán J, del Peso L, Claesson-Welsh L, Marqués MM, Marín MC. p73 is required for vessel integrity controlling endothelial junctional dynamics through Angiotonin. *Cell Mol Life Sci*. 2022; 79(10): 535. Article. IF: 8; Q1.
- Puente-Santamaría L, Sánchez-González L, Pescador N, Martínez-Costa O, Ramos-Ruiz R, del

Peso L. Formal meta-analysis of hypoxic gene expression profiles reveals a universal gene signature. *Biomedicines*. 2022; 10(9): 2229. Article. IF: 4.7; Q1

- Puente-Santamaría L, Sánchez-González L, Ramos-Ruiz R, del Peso L. Hypoxia classifier for transcriptome datasets. *BMC Bioinformatics*. 2022; 23(1): 204. Article. IF: 3; Q2

#### ● Research projects

**del Peso Ovalle L.** Implementación de procedimientos para análisis de datos derivados de técnicas de secuenciación de alto rendimiento (IND2019/BMD-17134). CM. 2021-2023.

Management centre: UAM

**del Peso Ovalle L.** Contribución de BHLHE40 a la respuesta transcripcional a la hipoxia y su implicación en patologías metabólicas y respiratorias (PID2020-118821RB-I00). MICIN. 2021-2024.

Management centre: UAM