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**Oferta Prácticas Externas (PE):**

Profesor responsable: Aurora Gomez-Duran

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Centro/Institución/Empresa: MitoPhenomics Lab. Centro de Investigaciones Biológicas Margarita Salas. CSIC. Madrid.

Número de plazas ofertadas: 1

Título: Mutation espefic mechanisms controlling mtDNA heteroplasmy

Período: November 2021- August 2022

Actividades a desarrollar:

**Mitochondrial diseases (MD)** are metabolic disorders of oxidative phosphorylation that affect ~1 in 5,000, cause substantial morbidity and have no cure. MD are genetically determined by mutations of mitochondrial (**mtDNA**) or nuclear DNA. **mtDNA** is a small, circular DNA, that encodes 13 polypeptides of the electron transport chain and the tRNAs and rRNAs necessary for their synthesis. mtDNA is maternally inherited and polyplasmic, each cell and mitochondria contain many copies of mtDNA where several alleles can co-exist in a state called **heteroplasmy** (ratio WT/mutant). In a state of **homoplasmy** the cell contains mtDNA of a single genotype. In heteroplasmic pathological variant the phenotype is thought to need a certain threshold to be disease-causing. However, a great variation in the penetrance of mtDNA pathogenic mutations have been observed, suggesting a complex interplay between the primary OXPHOS defect and the compensatory adaptation to that dysfunction.

Our over-arching aim is to develop new treatments for these diseases using a combination of genomic (NGS, pyrosequencing and single cell), cell biology (cell culture, qPCR, WB, microscopy), and bioinformatic techniques on human tissues and cell models. In addition to their own research, there will be opportunities for training and career development.

El número de horas presenciales es de 225 h que incluyen el trabajo en el centro (5 semanas 40 h/semana= 200 h) y la elaboración de la memoria (25 h).