EYES Research Observership Program

Maimonides Biomedical Research Institute of Cordoba (IMIBIC)

Research overview:
OncObesity and Metabolism Group is a basic-clinical multidisciplinary group composed of Postdocs researchers, PhD students, clinicians and laboratory technicians experts in different areas of the Biomedicine field.

We focus on the study of cellular, molecular and pathophysiological bases that underlie the development and progression of metabolic diseases (such as obesity and diabetes), tumor pathologies and cancer and, on the pathophysiological association and interaction between both pathologies. More specifically, we have a special interest in the study of the function of some endocrine-metabolic factors (hormonal, inflammatory and lipidic systems, chemokines, miRNAs, etc), as well as the molecular and cellular mechanisms underlying in the pathophysiological relationship between obesity and cancer, such as the machineries that control the expression and secretion of inflammatory components (inflammasome), regulators of the senescence-associated secretory phenotype (SASP), factors associated with the regulation of the expression and secretion of miRNAs (DROSHA, DICER, etc.) and extracellular vesicles, as well as machineries and factors that control the splicing process [spliceosome and non-sense mediated mRNA decay (NSMD) and related factors/variants], etc.

The different research lines of our group have as a common aim: the identification of new diagnostic, prognostic and therapeutic opportunities in the interaction between metabolic dysregulations (mainly obesity) and tumoral pathologies, in order to promote their transfer to the Society and improve the Public Health Systems.

Research topics:
Our research is based on reaching four different goals:

1) Identification of key endocrine-metabolic factors in the pathophysiological interaction between tumoral pathologies (prostate, liver, brain cancer, etc.) and metabolic dysregulations (obesity, diabetes, etc.)
2) Study of novel cellular and molecular mechanisms involved in the development, progression and aggressiveness of endocrine-metabolic tumoral pathologies
3) Identification of new biomarkers associated to the diagnosis, prognosis, aggressiveness and resistance to drugs in endocrine-metabolic tumoral pathologies
4) Generation and characterization of preclinical animal models to develop new diagnostic, prognostic and therapeutic tools in the study of the pathophysiological association between obesity and cancer

Techniques:
To make science happen, we employ many different experimental techniques which include:
- In vitro primary cell culture and cell lines (including functional assays such as determination of cell viability, apoptosis, clonogenic assay, etc.)
- Experimental manipulation of mouse models
- Protein analyses by ELISA
- Flow cytometry
- DNA, RNA, and protein extraction from human/mouse tissues and cells
- Immunohistochemistry and immunofluorescence
- Analysis of gene expression by microfluidic-base qPCR array
- Analysis and integration of clinical and molecular data

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For more information, please check:
- Website: https://www.imibic.org/grupo/52
- Twitter: @OncMet27

Selected publications:


5. Jimenez-Vacas, JM; Montero-Hidalgo, AJ; Gomez-Gomez, E; et al; Luque, RM. 2021. In1-Ghrelin Splicing Variant as a Key Element in the Pathophysiological Association Between Obesity and Prostate Cancer JCEM. 106. ISSN 0021-972X. https://doi.org/10.1210/clinem/dgab516

and statins in prostate cancer. J Clin Endocrinol Metab. https://doi.org/10.1210/clinem/dgaa877


11. del Rio- Moreno, M; Alors-Perez, E; Gonzalez-Rubio, S; et al; Luque, RM. 2019. Dysregulation of the Splicing Machinery Is Associated to the Development of Nonalcoholic Fatty Liver Disease JCEM. 104. ISSN 0021-972X. WOS (1) https://doi.org/10.1210/jc.2019-00021

