



**Propuesta de Trabajo Fin de Máster**

Año académico 2022-2023

**MÁSTER EN MÉTODOS COMPUTACIONALES EN CIENCIAS**

<b>Proyecto Nº 03</b>
<b>Título: AI-based computational pathology applied to digitized patient biopsies</b>
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<b>Resumen:</b> Advances in the accuracy of predicting patient resistance or non-responsiveness to immunotherapy are required. We reported evidence in preclinical cancer models that neutrophil extracellular traps (NETs) induced by IL-8 impair cytotoxicity as mediated by cytotoxic T lymphocytes and NK cells. To translate this information to the clinic, we have recently developed a robust multiplex immunofluorescence assay to detect and quantify NETs in formalin-fixed and paraffin-embedded human tumor samples. Artificial intelligence-based computational pathology workflow based on algorithms typically used for social network analysis will be used to transform apparently chaotic distributions of cells into highly structured microenvironmental phenotypes that enable better cancer understanding and classification. The topological map of neutrophils and NETs, CD8+ T cells, NK cells, and macrophages within the tumor will be associated with parameters related to the patient, its tumor and the associated microenvironment and its response to immunotherapy.

<b>OPTATIVAS RECOMENDADAS</b>
1. Machine learning I
2. Machine learning II
3. Procesamiento de imágenes
4.