



MARIE SKŁODOWSKA-CURIE POSTDOCTORAL FELLOWSHIPS 2023

EXPRESSION OF INTEREST FOR HOSTING MARIE CURIE FELLOWS

HOST INSTITUTION

LAQV REQUIMTE, Department of Chemistry, NOVA School of Science and Technology
NOVA University Lisbon.

RESEARCH GROUP AND URL

BIOSCOPE Research Group - <https://www.bioscopegroup.org>
(Bio)Chemistry & Omics - https://laqv.requimte.pt/research/research-groups/115-bio_chemistry_omics

SUPERVISOR (NAME AND E-MAIL)

Hugo M. Santos
hmsantos@fct.unl.pt

SHORT CV OF THE SUPERVISOR

H. M. Santos' research productivity accounts for 86 peer-reviewed international journal articles, 15 peer-reviewed invited editorial publications, 4 conference papers, two published in *Laboratory Investigation* from *Nature* (reporting new biomarkers of renal neoplasms), and 4 datasets available at ProteomeXchange. He is co-author of 4 book chapters and editor of the book entitled *Translational Urinomics*, published by Springer-Nature (2021).

H. M. Santos' publications have attracted many citations, over 2131 to date (Scopus). His papers on the topics of proteomics and mass spectrometry are more cited than similar documents (Topic Field-Weighted Citation Impact ranging from 1.22 to 1.65), with 23 papers being cited at least 22 times (H-index 23, Scopus). 46.4% of my research papers were published in the first quartile (Q1, 45 papers out of 97 with information available at *Journal of Citation Reports® Science Edition*, Clarivate Analytics) high impact factor publications.

5 SELECTED PUBLICATIONS

Pathway-guided monitoring of the disease course in bladder cancer with longitudinal urine proteomics. Luís B. Carvalho, José L. Capelo, Carlos Lodeiro, Rajiv Dhir, Luis Campos Pinheiro, Hugo López-Fernández, Gonçalo Martins, Mariana Medeiros, Fernando Díaz & Hugo M. Santos* *Communications Medicine* 3, 8 (2023). <https://doi.org/10.1038/s43856-023-00238-4>

Absolute quantitative proteomics using the total protein approach to identify novel clinical immunohistochemical markers in renal neoplasms. Jorge, S., Capelo, J.L., LaFramboise, W., Satturwar, S., Korentzelos, D., Bastacky, S., Quiroga-Garza, G., Dhir, R., Wiśniewski, J.R., Lodeiro, C., Santos, H.M.* *BMC Med* 19, 196 (2021). <https://doi.org/10.1186/s12916-021-02071-9>.

Ultrasonic-Based Filter Aided Sample Preparation as the General Method to Sample Preparation in Proteomics. Carvalho, L.B., Capelo-Martínez, J.L., Lodeiro, C., Wiśniewski, J.R., Santos, H.M.* *Anal. Chem.* 92, 13 (2020) 9164–9171. <https://doi.org/10.1021/acs.analchem.0c01470>.

Snap-heated freeze-free preservation and processing of the urine proteome using the combination of stabilizer-based technology and filter aided sample preparation. Carvalho, L.B., Capelo-Martínez, J.L., Lodeiro, C., Wiśniewski, J.R., Santos, H.M.* *Anal. Chim. Acta.* 1076 (2019) 82–90. <https://doi.org/10.1016/j.aca.2019.05.051>

Novel nanocomposites based on a strawberry-like gold-coated magnetite (Fe@Au) for protein separation in multiple myeloma serum samples. Araújo, J.E., Lodeiro, C., Capelo, J.L., Rodríguez-González, B., dos Santos, A.A., Santos, H.M.*, Fernández-Lodeiro, J.* *Nano Res.* 8, 4 (2015) 1189–1198. <https://doi.org/10.1007/s12274-014-0599-4>

PROJECT TITLE AND SHORT DESCRIPTION

Unveiling Non-Canonical Peptide Sequences in Renal Cell Carcinoma: Exploring Novel Biomarkers and Therapeutic Targets

The project, "Unveiling Non-Canonical Peptide Sequences in Renal Cell Carcinoma: Exploring Novel Biomarkers and Therapeutic Targets," aims to investigate and identify non-canonical peptide sequences associated with renal cell carcinoma (RCC). Renal cell carcinoma is a highly aggressive and heterogeneous form of kidney cancer that poses significant challenges for diagnosis and treatment.

In this research endeavor, state-of-the-art mass spectrometry techniques and proteomic analyses will be employed to comprehensively analyze the proteome of RCC samples. The focus will be on identifying non-canonical peptide sequences, which are derived from alternative splicing events, post-translational modifications, or other atypical protein processing mechanisms. By unraveling these non-canonical peptide sequences, the project aims to shed light on their functional significance and potential roles as biomarkers or therapeutic targets for RCC. These unique peptide sequences may provide valuable insights into the underlying molecular mechanisms of RCC development, progression, and response to treatment.

The project will involve a multidisciplinary approach, integrating advanced mass spectrometry technology, bioinformatics, and computational methods to analyze and interpret the complex proteomic data. Through rigorous data analysis and validation, the research team aims to establish a comprehensive catalog of non-canonical peptide sequences specific to RCC.

The outcomes of this project have the potential to significantly advance our understanding of renal cell carcinoma and pave the way for the development of innovative diagnostic tools and targeted therapies. Ultimately, the identification of novel biomarkers and therapeutic targets may contribute to improved patient outcomes, personalized treatment strategies, and advancements in the field of precision medicine for RCC.

SCIENTIFIC AREA WHERE THE PROJECT FITS BEST*

Life Sciences (LIF)

***Scientific Area where the project fits best** – Please select/indicate the scientific area according to the panel evaluation areas: Chemistry (CHE) • Social Sciences and Humanities (SOC) • Economic Sciences (ECO) • Information Science and Engineering (ENG) • Environment and Geosciences (ENV) • Life Sciences (LIF) • Mathematics (MAT) • Physics (PHY)