Rui Miguel Pinheiro Vitorino, PhD, Senior Researcher and Principal Investigator, Department of Chemistry, University of Aveiro, Aveiro Portugal

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PhD in Biochemistry, “Saliva and dental caries: a proteomic approach”. University of Aveiro in 2004. Graduated in Biochemistry, Food Chemistry by University of Aveiro in 2000.

Present Position: Principal Researcher at iBiMED (Department of Medical Sciences, University of Aveiro). Researcher at Faculty of Medicine –Cardiovascular Unit (University of Porto).

Scientific Areas: Biotechnology, Clinical Biochemistry, Metabolomics, Proteomics, Peptidomics, Mass Spectrometry, Biomarkers, Bioinformatics, Body fluids, Head Neck cancer, Therapeutic peptides.

Personal Statement

Rui Vitorino (RV) is a Senior Researcher and Principal Investigator at the Department of Medical Sciences (DCM)-iBiMED, University of Aveiro. He holds a PhD in Biochemistry (2004) and has over 25 years of experience in mass spectrometry (MS)-based proteomics and bioinformatics. His research focuses on deciphering molecular mechanisms of disease through biofluid proteome profiling, particularly in saliva and urine, with strong translational relevance to oncology.

RV has made pioneering contributions to the development and application of both gel-based and gel-free protein enrichment strategies, enhancing the sensitivity and depth of proteomic analyses. A hallmark of his work is the invention of the

nanomagnetic platform MAGN@PROT, a patented technology (PCT/IB2015/053093) for selective enrichment of glycoproteins and metalloproteases in complex biofluids. This innovation addresses longstanding analytical challenges in cancer proteomics by enabling more reliable detection of clinically relevant low-abundance proteins.

His research platform, BioDiGest, integrates wet-lab proteomics with dry-lab bioinformatics to identify biomarker signatures and therapeutic targets across diverse diseases, with a growing emphasis on cancer.

RV's broader work in cancer encompasses the design of multi-marker panels for early detection, risk stratification, and disease monitoring, with validation in non-invasive biofluids like saliva and urine. This aligns with current shifts toward minimally invasive diagnostics and precision oncology. His translational research extends to national and international collaborations, including participation in EU-ETN and COST actions, three EU-funded projects, and two global consortia.

RV has authored over 303 peer-reviewed publications, accumulating 7,400+ citations and an *h*-index of 44, and has filed two patents. His recent invention (National Patent No. 117614) presents a novel method for quantifying C-reactive protein in saliva using magnetic nanoparticles and dynamic light scattering, a promising tool for inflammation-associated cancer risk profiling.

A recognized leader in integrative proteomics, RV champions a systems-level view of disease, emphasizing the power of proteomics to bridge upstream molecular alterations with downstream phenotypic manifestations. His work sits at the convergence of technology development and clinical translation.

Awards and Highlights

"Gold Member" Award (2023) Search for OMICS, "ProteoAix"**.**

Award for "Research Grants in Oncology in Primary Health Care - LPCC/AICIB 2022" (2023)

Cover in *Analytical Methods* with "Gold nanoparticle probes for colorimetric detection of plasma galectin-3: a simple and rapid approach", Volume 15 Number 24 28 June 2023, Pages 2879–3006

Cover in *Proteomics Clinical Applications* with "New insights on the mitochondrial proteome plasticity in Parkinson's disease." (volume 10, **2016**). **Cover** in *Journal of Proteome Research* with "Lifelong exercise training modulates cardiac mitochondrial phosphoproteome in rats." (volume 13, **2014**). **Highlight** about t6he article: "Bladder cancer-induced skeletal muscle wasting: Disclosing the role of mitochondria plasticity", "Beyond the Abstract", at UroToday.com, September 2013.

Highlight about the article: "Salivary Proteome and Peptidome Profiling in Type 1 Diabetes Mellitus Using a quantitative approach", at World Biomedical Frontiers, July 2103.

Commentary in *Translational Research* about the article entitled "Pursuing type 1 diabetes mellitus and related complications through urinary proteomics" (in press, **2013**).

Cover in *Archives of Biochemistry and Biophysics* with "Exploring the role of post-translational modifications on protein-protein interactions with survivin." (volume 538, **2013**).

Cover in *Molecular Oncology* with "Overexpression of tumour-associated carbohydrate antigen sialyl-Tn in advanced bladder tumours" (volume 7, **2013**)

Cover in *Proteomics Clinical Applications* with "Towards defining the whole salivary peptidome" (volume 3, **2009**)

Participation in Networks

Editor-in-Chief

Computational and Systems Oncology

Executive Editors

Biochemistry and Biophysics Reports

Heliyon Bioinformatics and computational biology.

Guest Editors

Biochimica et Biophysica Acta (BBA) - Molecular Basis of Disease - Artificial Intelligence in Health and Disease

Journal of Proteomics - Tutorials in Bioinformatics for Biological Science IJMS - Innovative Molecular Strategies in Biomedical Research and Therapeutics: Harnessing Peptides, Bioprinting and Nanotechnology, Dr. Rui Vitorino

Biomedicines - Galectin as Disease Biomarker, Prof. Dr. José Mesquita Bastos, Dr. Rui Vitorino

IJMS- Integration of Meta-Multi-Omics Data: Unraveling Impact and Therapeutic Potential, Dr. Rui Vitorino

IJMS - Proteomics and Nanotechnology for Medical and Pharmacological Applications, Dr. Rui Vitorino

IJMS - Bioinformatics, Omics Tools and Tutorials, Dr. Rui Vitorino

IJMS - The Emerging Nanotechnologies for Medical and Pharmacological Applications, Dr. Rui Vitorino

Scientific publications

303 Articles (7792 citations and *h* index of 44 according to Scopus at December)

1 Book

16 Book chapters

2 Educational publications

Selected scientific publications

Top 10 list of publications:

1. Urinary Micropeptides: Integrative In Silico Profiling and LC-MS/MS Analysis for Prostate Cancer Biomarker Discovery.

Ferreira R, Vitorino R. Methods Mol Biol. 2026;2992:267-281. doi: 10.1007/978-1-0716-5013-4_19.

2. Cryobioprinted human tumor models with shelf-stable programmability.

Monteiro MV, Garciamendez-Mijares CE, Ruiz DSR, Borralho MS, Vitorino R, Duarte IF, Gaspar VM, Zhang YS, Mano JF.

Trends Biotechnol. 2025 Oct 29:S0167-7799(25)00406-8. doi: 10.1016/j.tibtech.2025.09.018

3. Advances and applications of clinical proteomics in precision medicine. Alshehri S, Vitorino R, Saleh O, Al-Harthi S, Alahmadi A, Alotibi R, da Silva Rosa SC, Osama A, Magedeldin S, Alhattab D, Emwas AH, Jaremko M.
Expert Rev Proteomics. 2025 Oct;22(10):401-420. doi: 10.1080/14789450.2025.2560919

4. Basso J.; Sereno J.; Matos A.M.; Oliveira R.; Ramos M.L.; Castelo-Branco M.; Fortuna A.; Vitorino R.; Vitorino C, Straight to the core: Intratumoral delivery of pitavastatin and miR-338–5p through lipid nanoparticles inhibits glioblastoma growth","2026","NanoToday, doi: 10.1016/j.nantod.2025.102954

5. Expression of NORAD correlates with breast cancer aggressiveness and protects breast cancer cells from chemotherapy. Alves-Vale C, Capela AM, TavaresMarcos C, Domingues-Silva B, Pereira B, Santos F, Gomes CP, Espadas G, Vitorino R, Sabidó E, Borralho P, Nóbrega-Pereira S, Bernardes de Jesus B. Mol Ther Nucleic Acids. 2023 Aug 18;33:910-924. doi: 10.1016/j.omtn.2023.08.019.

6. A two-pronged approach against glioblastoma: drug repurposing and nanoformulation design for in situ-controlled release. Mendes M, Branco F, Vitorino R, Sousa J, Pais A, Vitorino C. Drug Deliv Transl Res. 2023 Dec;13(12):3169-3191. doi: 10.1007/s13346-023-01379-8.

7. Diagnostic and monitoring applications using near infrared (NIR) spectroscopy in cancer and other diseases. Vitorino R, Barros AS, Guedes S, Caixeta DC, SabinoSilva R. Photodiagnosis Photodyn Ther. 2023 Jun;42:103633. doi: 10.1016/j.pdpdt.2023.103633.

8. Application of Proteogenomics to Urine Analysis towards the Identification of Novel Biomarkers of Prostate Cancer: An Exploratory Study. Lima T, Barros AS, Trindade F, Ferreira R, Leite-Moreira A, Barros-Silva D, Jerónimo C, Araújo L, Henrique R, Vitorino R, Fardilha M. Cancers (Basel). 2022 Apr 15;14(8):2001. doi: 10.3390/cancers14082001.

9. Integration of Automatic Text Mining and Genomic and Proteomic Analysis to Unravel Prostate Cancer Biomarkers. Lima T, Ferreira R, Freitas M, Henrique R, Vitorino R, Fardilha M. J Proteome Res. 2022 Feb 4;21(2):447-458. doi: 10.1021/acs.jproteome.1c00763.

10. A peptide-centric approach to analyse quantitative proteomics data- an application to prostate cancer biomarker discovery. Lima T, Rodrigues JE, Manadas B, Henrique R, Fardilha M, Vitorino R. J Proteomics. 2023 Feb 10;272:104774. doi: 10.1016/j.jprot.2022.104774.