

Ivan Vučković, PhD

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Education and Training

2015–2017 Postdoctoral Research Fellowship in Metabolomics, Mayo Clinic, Rochester, Minnesota

2013–2014 Postdoctoral Internship in Chemical Weapons Convention-related chemistry, University of Helsinki, Finland

2011 PhD, Natural Products Chemistry, University of Belgrade, Faculty of Chemistry

2005 MSc, Organic Chemistry, University of Belgrade, Faculty of Chemistry

2001 BSc, Chemistry, University of Belgrade, Faculty of Chemistry

Professional Experience

2017–Present Research Scientist, Mayo Clinic, Rochester, Minnesota

2015–2017 Research Fellow, Mayo Clinic, Rochester, Minnesota

2009–2015 Research and teaching appointments, Faculty of Chemistry, University of Belgrade

2002–2009 Research/Teaching Assistant, Institute of Chemistry, Technology and Metallurgy, University of Belgrade

Professional Profile

Research scientist specializing in metabolomics, high-resolution NMR spectroscopy, quantitative NMR methods, natural products chemistry, and metabolite structure elucidation. Research spans biomedical metabolomics, biomarker discovery, tissue and biofluid analysis, and development of NMR-based analytical methods. Extensive experience in multidisciplinary collaborations, scientific training, and invited lectures.

Selected Lectures and Workshops

- NMR-based Urine Metabolomics in Kidney Diseases — invited lecture, University of Campinas, Brazil (2020)
- NMR Metabolomics in Medicine: Mayo Clinic Experience — invited lecture, Central European NMR Symposium, Belgrade (2019)
- Identification of Unknown Metabolites — invited presentation, Mayo Clinic Metabolomics Symposium (2017)
- Identification of Unknowns: What Can We Learn from Natural Products Research? — invited presentation, NIH Metabolomics Consortium, UC Davis (2017)
- NMR-based Metabolomics — workshop, Mayo Clinic Metabolomics Symposium (2017)

Research Record

79 peer-reviewed research articles. Scopus: 80 indexed documents, 2,485 citations, h-index 25 (30 September 2026).

Selected Publications

1. Vuckovic I, Meloche R, Mishra PK, Zhang S, Dzeja P, Irazabal MV, Macura S. *Integrating metabolomics and histopathology: A method for metabolite recovery from fixed tissue specimens*. Structural Dynamics. 2026;13(3):034701.
2. Theodorou A, Vuckovic I, Papadimitriou E, et al. *A Universal Framework for Blood Ionome Extraction and Intelligent Quality Control in 1H NMR Metabolomics*. Analytical Chemistry. 2026;98(17):12647–12659.
3. Veliparambil Subrahmanian M, Vuckovic I, Macura S, Veglia G. *Detection of Exchangeable Protons in NMR Metabolomic Analysis Using AI-Designed Water Irradiation Devoid Pulses*. Analytical Chemistry. 2025;97(6):3412–3417.
4. Takis PG, Vuckovic I, Kowalka AM, Tan T, Suvakov M, Meloche R, Lanza IR, Macura S. *Toward Absolute Quantification of Soluble Proteins via Proton Nuclear Magnetic Resonance Spectroscopy: Total Protein Concentration in Blood Plasma*. Analytical Chemistry. 2024;96(41):16162–16169.
5. Thongprayoon C, Vuckovic I, Vaughan LE, et al. *Nuclear Magnetic Resonance Metabolomic Profiling and Urine Chemistries in Incident Kidney Stone Formers Compared with Controls*. Journal of the American Society of Nephrology. 2022;33(11):2071–2086.
6. Vuckovic I, Denic A, Charlesworth MC, et al. *1H Nuclear Magnetic Resonance Spectroscopy-Based Methods for the Quantification of Proteins in Urine*. Analytical Chemistry. 2021;93(39):13177–13186.
7. Kazak L, Chouchani ET, Lu GZ, et al. *Genetic Depletion of Adipocyte Creatine Metabolism Inhibits Diet-Induced Thermogenesis and Drives Obesity*. Cell Metabolism. 2017;26(4):660–671.e3.

Selected Research Projects

- Mayo Clinic Physical Activity Research Center: Metabolomics and Proteomics Analysis Site — NIH/NIDDK U24 DK112326; Co-Investigator, 2016–2024
- Mayo Clinic Metabolomics Resource Core — NIH U24 DK100469; Co-Investigator, 2015–2018
- Low-mass metabolites of Ricinus communis seeds as possible biomarkers of ricin — OPCW-supported project, 2013–2014

Honors and Professional Service

OPCW-funded postdoctoral internship, University of Helsinki (2013–2014); Fellowship for Young Researchers, Serbian Ministry of Education and Science (2001–2002); DAAD Undergraduate Scholarship, Free University Berlin (2001).

Member of the Metabolomics Society and Serbian Chemical Society. Peer reviewer for journals including Journal of Proteome Research, Journal of Chromatography B, Scientific Reports, PLOS ONE, and Journal of Pharmaceutical and Biomedical Analysis.