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## Gut microbial metabolomics to understand allergies in early life

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## Curriculum vitae

Mariyana Savova was born on 27<sup>th</sup> November 1995 in Gorna Oriyahovitsa, Bulgaria. After graduating from high school in 2014, she pursued a 4-years bachelor's degree program in Chemistry in HZ University of Applied Sciences in Vlissingen, the Netherlands. In 2015 she was admitted to the 3-year Analytical Sciences Talent Program organized by Top Institute for Comprehensive Analytical Science and Technology (COAST), where she realized her passion for analytical sciences.

During her studies, she followed a theoretical minor program “Chemistry of Life” in Radboud University in Nijmegen and had two 6-month internships. She worked at Wageningen Food Safety Research in Wageningen on the optimization of liquid chromatography–mass spectrometry (LC-MS) method for the analysis of pesticide in human hair, and later at Unilever Research and Development in Vlaardingen, where she studied lipid oxidation in food emulsions using nuclear magnetic resonance (NMR).

After completing her bachelor's studies with honors in 2018, Mariyana pursued a joint degree master's program in Chemistry (Analytical Sciences track) of the University of Amsterdam (UvA) and Vrije Universiteit Amsterdam and joined the MSc+ Program offered by COAST. In her second year of studies, she became a member of the Chemistry Program Committee. During her master's, Mariyana wrote a literature thesis for the company DSM on polyurethane characterization and carried out a research thesis at the Analytical Chemistry group at Van 't Hoff Institute for Molecular Sciences, UvA, in collaboration with AstraZeneca, Macclesfield, the UK. Thesis work on retention-time prediction in supercritical-fluid chromatography was published in *Journal of Chromatography A* (2022), with Mariyana as shared-first author.

After obtaining her Master's diploma *cum laude*, she started her PhD at Metabolomics and Analytics Centre at Leiden university under the supervision of prof. dr. Thomas Hankemeier, dr. Amy Harms, and dr. Alida Kindt. As part of the EARLYFIT project, Mariyana studied the link between allergies, the gut microbiome, and nutrition in early life by means of fecal metabolomics. During the project she collaborated with scientists from Danone Research & Innovation, Wageningen University, and Radboud University Medical Center. She also collaborated with scientists from Mimetas studying intestinal barrier using their gut-on-a-chip models. During her PhD Mariyana presented her work at multiple conferences, including an oral presentation at ASMS 2024, Anaheim, USA and a poster presentation at Metabolomics 2024, Osaka, Japan.

Mariyana is currently working as a PostDoc in the Nutrition, Microbiome and Metabolomics Research Group headed by Associate Professor Henrik Munch Roager at Department of Nutrition, Exercise and Sports, Faculty of Science at University of Copenhagen. There Mariyana continues to investigate the role of the gut microbiome in human health, with a particular focus on cardiometabolic health, using metabolomics.

## Curriculum vitae

### Publications related to this thesis

1. **Savova M.V.#**, Zhu P.#, Harms A. C., van der Molen R. G., Belzer C., Hendrickx D.M. (2024). Current insights into cow's milk allergy in children: Microbiome, metabolome, and immune response - A systematic review. *Pediatric Allergy and Immunology*, 35(2), e14084.  
DOI: 10.1111/pai.14084
2. Zhu P.#, **Savova M. V.#**, Kindt A., PRESTO Study Team, Wopereis H., Belzer C., Harms A.C., Hankemeier T. (2025). Exploring the Fecal Metabolome in Infants with Cow's Milk Allergy: The Distinct Impacts of Cow's Milk Protein Tolerance Acquisition and of Synbiotic supplementation. *Molecular Nutrition & Food Research*, 69(1), e202400583.  
DOI: 10.1002/mnfr.202400583
3. Morelli M.#, Savova M.V.#, Queiroz K., Harms A.C., Hankemeier T. (2025) Cytokine-induced barrier dysfunction and lipid signaling in a gut-on-chip model. *The FASEB Journal* 39, e71059 (2025)  
DOI: 10.1096/fj.202501685R
4. **Savova M.V.**, Zhu P., Kindt A., the TEMPO study team, Wopereis H., Belzer C., Harms A.C., Hankemeier T. Fecal metabolome alterations in infants at risk of developing allergies during the first year of life. *Metabolomics* (Under revision)

### Other publications

1. Molenaar S.R.A.#, **Savova M.V.#**, Cross R., Ferguson D.R., Schoenmakers P.J., Pirok B.W.J, Improving retention-time prediction in supercritical-fluid chromatography by multivariate modelling. *Journal of Chromatography A*, 1668, 462909 (2022)  
DOI: 10.1016/j.chroma.2022.462909
2. Hendrickx D. M., **Savova M. V.**, Zhu P., An R., Boeren S., Klomp K., Mutte S.K., PRESTO study team, Wopereis H., van der Molen R.G., Harms A.C., Belzer C. (2025). A multi-omics machine learning classifier for outgrowth of cow's milk allergy in children. *Molecular Omics*, 21, 343 (2025)

#Authors contributed equally

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