Academic CV
Giulia Bisson

Profile

I was awarded with the Ph.D. in "Food and Human Health" in May 2024. My expertise lies at the intersection of food microbiology, human nutrition, and food technology. Passionate about exploring the world of food technology, microbiology, and nutrition to advance scientific knowledge and improve human health. Eager to contribute my analytical skills and research acumen to impactful projects in the field of Food and Human Health. Passionate about fermented foods and beverages, I produce my own kombucha and water kefir at home.

Education and Research positions

February 2024-present	**Postdoctoral researcher in Human Nutrition** Dept. of Agricultural, Food, Environmental and Animal Science, University of Udine, Italy. Supervisor: Prof. Nicoletta Pellegrini
November 2020 – November 2023	**Ph.D.** in **Food and Human Health** at the University of Udine. Dissertation title: "Microbial exopolysaccharides as postbiotics for the development of new functional foods". Supervisor Prof. Marilena Marino Award date: 6th May 2024; Overall evaluation: Excellent
January 2023 – May 2023	**Visiting Ph.D. student** Food Biosciences Department, Teagasc Food Research Centre, Fermoy, Co. Cork, Ireland. Supervisors Prof. Paul Cotter, and Prof. Tom Beresford
February 2020 – July 2020	**Predoctoral researcher** Dept. of Agricultural, Food, Environmental and Animal Science, University of Udine. "Assessment of the antimicrobial activity of plastic surfaces" Supervisor: Prof. Marilena Marino
October 2017 – December 2019	**Master's degree in Food Science and Technology** at the University of Udine. Thesis title "Effect of moderate intensity pulsed electric fields (MIPEF) on properties of pea, rice and gluten concentrates" Evaluation: 110/110 *cum laude*
October 2012 – April 2017	**Bachelor's degree in Food Science and Technology** at the University of Udine. Thesis title "Photodynamic activity of a pentafirin on food related microorganisms" Evaluation: 102/110

Work experience

October 2020 – October 2022	**Tutor/demonstrator** for the support during online lessons, Dept. of Agricultural, Food, Environmental and Animal Science, at the University of Udine.
April 2017 – October 2017	**Food quality controller** at "Latteria Perenzin S.R.L." in Conegliano, Italy.
September – October 2012/2013	**Laboratory technician** for the chemical analysis of wine in "Enopiave s.r.l.", Tezze di Piave, Italy.

Research experience

February 2024 - present	**Postdoctoral researcher in human nutrition** funded by an internal grant (CIBIAMO - PSD_2022-2025_DI4A_INTERDIP_CIBIAMO – CUP G23C22002620001) of the University of Udine. The candidate is involved in the study of the effect of the consumption of plant-proteins snacks enriched with vitamin D in sarcopenic elderly subjects (65-75 years old) on the muscle mass,

quality, physical performance, blood biomarkers and gut microbiome composition. She also collaborates in a project aiming to functionalize Mediterranean food with postbiotics. The candidate has also been involved in mentoring both Bachelor and Master students and teaches in the degree of Food Science and Technology (University of Udine).
Supervisor: Prof. Nicoletta Pellegrini
Dept. of Agricultural, Food, Environmental and Animal science, University of Udine, via Sondrio 2/A, 33100 Udine, Italy

November 2020 – May 2024 **PhD candidate in Food and Human Health** entitled *"Microbial exopolysaccharides as postbiotics for the development of new functional foods"*
Grant funded by the Ministry of Universities of Italy. The PhD aimed to isolate, extract and characterize exopolysaccharides produced by lactic acid bacteria and to use them as novel ingredients in the formulation of new functional foods. During her PhD, the candidate was involved in other projects related to the modulation of the gut microbiome by processed and non-processed apple and the antimicrobial treatment of wastewater by combined ultrasound-ozone oxidation**.** Moreover, the candidate was involved in activities related to the assessment of stress response in lactic acid bacteria.
International mobility: 4 months visit to Paul Cotter's lab to gain experience with *ex vivo* faecal fermentation with micro-Matrix®, DNA extraction and library preparation for shotgun sequencing funded by the University of Udine.
Supervisor: Prof. Marilena Marino
Dept. of Agricultural, Food, Environmental and Animal science, University of Udine, via Sondrio 2/A, 33100 Udine, Italy

February 2020 – July 2020 **Predoctoral researcher** at Food Microbiology section of the Dept. of Agricultural, Food, Environmental and Animal Science, University of Udine. The project dealt with the antimicrobial effect of non-porous plastic surfaces. The antimicrobial potential was tested against foodborne pathogens (*Escherichia coli* and *Staphylococcus aureus*) by applying the ISO 22196 test method. This activity was carried out in collaboration with an industrial partner (Coveme S.p.A., Gorizia, Italy).
Supervisor: Prof. Marilena Marino
Dept. of Agricultural, Food, Environmental and Animal science, University of Udine, via Sondrio 2/A, 33100 Udine, Italy

October 2017 – December 2019 **Master's degree internship** at Food Technology section of the Dept. of Agricultural, Food, Environmental and Animal Science, University of Udine. The effect of MIPEF was studied on plant protein concentrates of pea, rice and gluten. The modification of both protein structure and functionality were studied. The study has been published in an international peer reviewed journal (see "Publications in peer reviewed journals").
Supervisor: Prof. Lara Manzocco, Prof. Sonia Calligaris
Dept. of Agricultural, Food, Environmental and Animal science, University of Udine, via Sondrio 2/A, 33100 Udine, Italy

October 2012 – April 2017 **Bachelor's degree in Food Science and Technology** at Food Microbiology section of the Dept. of Agricultural, Food, Environmental and Animal Science, University of Udine. The project aimed to test a photosensitive molecule for the photoinactivation of food-related bacteria (*Listeria monocytogenes, Escherichia coli, Staphylococcus aureus, Enterococcus faecium*). A LED lamp was used to activate the molecule and the viability of microbies was tested.
Supervisor: Prof. Marilena Marino, Prof. Clara Comuzzi
Dept. of Agricultural, Food, Environmental and Animal science, University of Udine, via Sondrio 2/A, 33100 Udine, Italy

Participation in research projects

- August 2024 – present; Co-investigator: **"FAME - Functionalization of Mediterranean food products to meet the nutritional needs of specific consumer groups also through the use of food waste project"** funded by the Italian Ministry of the Enterprises and made in Italy. The project's ultimate goal is to use waste or by-products of industrial food processing, with undeniable additional advantages in terms of circularity of production, and to develop four prototype products. The candidate is involved in producing a prototype product added with postbiotics and in studying its effect on the human gut microbiome.
  Supervisor: Prof. Nicoletta Pellegrini
  Scientific Project Coordinators: Prof. Gianluigi Mauriello, Prof. Nicoletta Pellegrini
  Department of Agricultural Science, University of Naples Federico II, 80049 Naples, Italy
  Dept. of Agricultural, Food, Environmental and Animal Science, University of Udine, via Sondrio 2/A, 33100 Udine, Italy.

- March 2021 – May 2022; Co-investigator: "**Il tempo della mela – effect of processed and non-processed apple on the gut microbiota"**, funded by the University of Udine.
  During the project, an *in vitro* colonic fermentation model was set up to test the effect of different apple products (non-processed, orally processed, puree) on the gut microbiota. This activity was part of an interdisciplinary project. The candidate was involved in setting up a batch system for faecal fermentations, processing samples for plate counts, short-chain fatty acids analysis with GC, and metagenomic analysis.
  Supervisor: Prof. Marilena Marino
  Scientific Project Coordinator: Prof. Maria Cristina Nicoli
  Dept. of Agricultural, Food, Environmental and Animal science, University of Udine, via Sondrio 2/A, 33100 Udine, Italy.

Scientific competences

- General microbiology: experience with bacteria and yeasts. In-depth experience with lactic acid bacteria growth and optimization of culture conditions to produce exopolysaccharides
- Molecular biology: DNA and RNA extraction, Qbit, Nanodrop, PCR, gel electrophoresis, SDS-PAGE, library preparation for sequencing (shotgun and 16S rRNA)
- Fermentation: batch fermentation with 1.5 L Applikon technology bioreactor,
- *Ex-vivo* faecal fermentation: micro-Matrix®
- Chemistry: HPLC Size Exclusion, Fourier Transformed Infrared Spectroscopy, NMR, spectrophotometric assays
- *In vitro* digestion: INFOGEST; determination of protein and starch digestibility
- *In vitro* bioactivity assays: antimicrobial, antibiofilm, antioxidant, bifidogenic and DNA protective effect
- Basic use of statistical software (R, SPSS)
- Clinical studies design and drafting of application documents for the ethics committee approval for human clinical trial (ethics committee of Friuli Venezia Giulia, Italy).

Publications in peer-reviewed journals (chronological order)

1. **Bisson, G.,** Comuzzi, C., Gómez-Mascaraque, L.G., O'Mahony A.K., Zanocco, M., Andreatta, F., Beresford, T., Mathur, H., Cotter, P.D., Marino, M. (2024). Investigating the bioactivities of a dextran and levan mixture produced by the sourdough-derived *Leuconostoc mesenteroides* strain DSA_F. *Food Bioprocess Technology*. https://doi.org/10.1007/s11947-024-03711-7

2. **Bisson, G.,** Melchior, S., Comuzzi, C., Andreatta, F., Rondinella, R., Zanocco, M., Calligaris, S., Marino, M. (2024). Unrevealing the potentialities in food formulations of a low-branched dextran from Leuconostoc mesenteroides. *Food Chemistry*, 460, 140718. https://doi.org/10.1016/j.foodchem.2024.140718.

3. **Bisson, G.,** Comuzzi, C., Giordani, E., Poletti, D., Boaro, M., Marino, M. (2023). An exopolysaccharide from Leuconostoc mesenteroides showing interesting bioactivities versus foodborne microbial targets. *Carbohydrate Polymers*, 301(Pt B), 120363. https://doi.org/10.1016/j.carbpol.2022.120363 .

4. **Bisson, G.,** Maifreni, M., Innocente, N., Marino, M. (2023). Application of pre-adaptation strategies to improve the growth of probiotic lactobacilli under food-relevant stressful conditions. *Food & Function*, 14, 2128-2137. https://doi.org/10.1039/D2FO03215E .

5. **Bisson, G.,** Marino, M., Poletti, D., Innocente, N., Maifreni, M. (2021). Turbidimetric definition of growth limits in probiotic lactobacillus strains from the perspective of an adaptation strategy. *Journal of Dairy Science*, 104, 12236-12248. https://doi.org/10.3168/jds.2021-20888.

6. Melchior, S., Calligaris, S., **Bisson, G.,** Manzocco, L. (2020). Understanding the impact of moderate-intensity pulsed electric fields (MIPEF) on structural characteristics of pea, rice and gluten concentrates. *Food and Bioprocess Technology*, 13, 2145-2155. https://doi.org/10.1007/s11947-020-02554-2.

Publications Under Review

7. Moretti, A., Gover, E., **Bisson, G.,** Goi, D., Marino, M. Kinetic modeling and cost-effectiveness of *Salmonella enterica* serovar Enteritidis, *Escherichia coli*, *Enterococcus* spp., and *Pseudomonas* spp. inactivation in wastewater by Advanced Oxidation Processes (AOPs). *Submitted to Journal.*

Metrics and indicators of research impact

Total citations: 96, H-index: 4, 16 average citations/article, first author 75% of documents, co-author 25% of documents; source: Scopus.

Presentations in International and National Conferences (chronological order)

Oral communications

1. **Bisson, G.,** Marino, M. (2024). Microbial exopolysaccharides as postbiotics for the development of new functional foods – presentation of one case study. 17th European PhD Workshop on Food Engineering and Technology, Aachen, Germany. Oral communication (personally delivered) *.
*The PhD thesis of Dr. Giulia Bisson was selected among Italian PhD students to participate, and she was granted to attend the Workshop (see also "Communication & Disseminations activities").

2. **Bisson, G.,** Marino, M. (2023). Microbial exopolysaccharides as postbiotics for the development of new functional foods. 27th Workshop on the Developments in the Italian PhD research on Food Science Technology and Biotechnology (annual event). Portici (NA), Italy. Oral communication (personally delivered).

3. **Bisson, G.,** Comuzzi, C., Melchior, S., Calligaris, S., Zanocco, M., Andreatta, F., Marino, M. (2023). Chemical, technological and biological features of an exopolysaccharide from *Leuconostoc mesenteroides*. 8th EPNOE International Polysaccharide Conference, Graz, Austria. Oral communication (personally delivered).

4. **Bisson, G.,** Comuzzi, C., Giordani, E., Poletti, D., Boaro, M., Marino, M. (2022). Identification and bioactivities of a novel EPS produced by *Leuconostoc mesenteroides*. 9th Biennial meeting on microbial carbohydrates, Naples, Italy. Oral communication (personally delivered).

Poster contributions

5. **Bisson, G.,** Comuzzi, C., J.A., FitzGerald, Mathur, H., Beresford, T., Cotter, P.D., Marino, M. (2024). Use of microbial exopolysaccharides for the development of a plant-based beverage and its effect on the gut microbiota. XLIV SINU National Congress, Piacenza, Italy.

6. **Bisson, G.,** Comuzzi, C., Marino, M. (2024). *Leuconostoc mesenteroides* DSA_PM01A5 produces a mixture of dextran and levan with interesting bioactivities. From Biotechnology to Human and Planetary Health – XIII Congress of Microbiologists of Serbia, Belgrade, Serbia.

7. Iovine, A., **Bisson, G.,** Speciale, I., Notaro, A., Marino, M., De Castro, C. (2023). Structural elucidation of polysaccharides from *Lactiplantibacillus plantarum*. XVIII Convegno - Scuola chimica dei carboidrati (XVIII CSCC 2023), Siena, Italy.

8. **Bisson, G.,** Marino, M. (2022). Microbial exopolysaccharides as postbiotics for the development of new functional foods: optimization of yields. 26th Workshop on the Developments in the Italian PhD research on Food Science Technology and Biotechnology (annual event). Asti, Italy.

9. **Bisson, G.,** Marino, M. (2021). Microbial exopolysaccharides as postbiotics for the development of new funcitonal foods. 25th Virtual Workshop on the Developments in the Italian PhD research on Food Science Technology and Biotechnology (annual event). Palermo, Italy.

Supervision

SUPERVISOR/COSUPERVISOR BACHELOR (15) and MASTER (11) students at the Department of Agricultural, Food, Environmental and Animal Science, University of Udine.

Bachelor students (15)

1. **Stefano Baratella** (2024): thesis ongoing. Supervisor: Prof. Nicoletta Pellegrini, Prof. Monica Anese; Co-supervisor: Giulia Bisson
2. **Cecilia Colloredo** (2024): thesis ongoing. Supervisor: Prof. Nicoletta Pellegrini; Co-supervisor: Giulia Bisson
3. **Fabio Zanitti** (2023): Evidence of sub-lethal damage induced by pulsed electric fields in *Leuconostoc mesenteroides*. Supervisor: Prof. Marilena Marino, Co-supervisors: Giulia Bisson, Sofia Melchior, Anna Rossi
4. **Sebastian Salvatore Taiman Mercado** (2022): Bioactivities of an heteropolysaccharide by *Lactiplantibacillus plantarum*. Supervisor: Prof. Marilena Marino, Co-supervisor: Giulia Bisson
5. **Andrea Bugari** (2022): Rheological properties of dispersions of a dextran of microbial origin. Supervisors: Prof. Sonia Calligaris, Prof. Marilena Marino, Co-supervisors: Giulia Bisson, Sofia Melchior
6. **Michele Ermacora** (2022): Evaluation of some technological properties of exopolysaccharides produced by Leuconostoc mesenteroides subjected to pre-treatment with pulsed electric fields (PEF). Supervisors: Prof. Sonia Calligaris, Dr. Marilena Marino, Co-supervisors: Giulia Bisson, Sofia Melchior
7. **Caterina Cappellari** (2022): Amicrobial activity of microbial exopolysaccharides. Supervisor: Prof. Marilena Marino, Co-supervisor: Giulia Bisson
8. **Daniele Pregnolato** (2022): Antioxidant activity of microbial exopolysaccharides. Supervisor: Prof. Marilena Marino, Co-supervisor: Giulia Bisson, Prof. Sonia Calligaris
9. **Marco Dal Bò** (2022): Investigation into the viscosity properties of microbial exopolysaccharides. Supervisors: Prof. Sonia Calligaris, Prof. Marilena Marino, Co-supervisor: Giulia Bisson, Sofia Melchior
10. **Sara Angeli** (2020): "Mycotoxins in food production". Supervisor: Prof. Marilena Marino, Co-supervisor: Giulia Bisson
11. **Nicola Bertacchini** (2020): "Presence of Listeria monocytogenes in the dairy sector and possible solutions". Supervisor: Prof. Marilena Marino, Co-supervisor: Giulia Bisson
12. **Elisa De Bastiani** (2020): "Fermentation kinetics of kefir grains in food matrices". Supervisor: Prof. Marilena Marino, Co-supervisor: Giulia Bisson
13. **Silvia Bianco** (2019): "Yogurt starters: two better than one?". Supervisor: Prof. Marilena Marino, Co-supervisor: Giulia Bisson
14. **Valentina Corà** (2019): "Enterococci in food: real enemies or potential allies?". Supervisor: Prof. Marilena Marino, Co-supervisor: Giulia Bisson
15. **Marta Gomiero** (2019): "Unconventional uses of cheese whey". Supervisor: Prof. Marilena Marino, Co-supervisor: Giulia Bisson

Master Students (11)

16. **Laura Beccarello** (2024): thesis ongoing. Supervisor: Prof. Nicoletta Pellegrini, Co-supervisor: Giulia Bisson
17. **Giulia Della Vecchia** (2023): Effect of MIPEF treatments on the eps yield of *Leuconostoc mesenteroides*. Supervisor: Prof. Marilena Marino; Prof. Sonia Calligaris, Co-supervisors: Giulia Bisson, Sofia Melchior, Anna Rossi
18. **Ilaria Bellè** (2021): Biological activities of an exopolysaccharide from *Leuconostoc mesenteroides* Supervisor: Dr. Marilena Marino, Co-supervisor: Giulia Bisson
19. **Luca Dalle Carbonare** (2021): "Effect of fermentation conditions on exopolysaccharide production by *Leuconostoc mesenteroides*". Supervisor: Prof. Marilena Marino, Co-supervisor: Giulia Bisson
20. **Sara Baldassi** (2020): Effect of apple on the gut microbiota. Supervisor: Prof. Marilena Marino, Co-supervisor: Giulia Bisson
21. **Michele Blasig** (2020): Development of new fruit-based probiotic foods. Supervisors: Prof. Marilena Marino, Prof. Nadia Innocente, Co-supervisor: Giulia Bisson
22. **Carlo Brescacin** (2020): Qualitative and quantitative screening of exopolysaccharide-producing microbial strains. Supervisor: Prof. Marilena Marino, Co-supervisors: Giulia Bisson, Sabrina Voce
23. **Greta Gallai** (2021): Antimicrobial materials and their use in the food industry. Supervisor: Prof. Marilena Marino, Co-supervisor: Giulia Bisson
24. **Elisabetta Gover** (2021): Strategies for the microbiological recovery of wastewater. Supervisors: Prof. Marilena Marino, Prof. Daniele Goi, Co-supervisors: Giulia Bisson, Alessandro Moretti
25. **Elisa Momi** (2020): "Designing a possible functional food for early childhood". Supervisor: Prof. Marilena Marino, Co-supervisor: Giulia Bisson
26. **Cecilia Casalegno** (2019): "Possible development of probiotic sweets". Supervisors: Prof. Marilena Marino, Prof. Sonia Calligaris, Co-supervisor: Giulia Bisson

Teaching experience

2023-2025 **Teaching collaborator at University of Udine**
Course: "Nutrition physiology and dietetics", held by Prof. Nicoletta Pellegrini.

2020-2021 **Teaching collaborator at University of Udine**
Course: "Probiotic microorganisms and functional foods", held by Prof. Marilena Marino.

2020 - 2023 **Exam member committee at University of Udine**

- Dairy microbiology held by Prof. Marilena Marino
- Porbiotic microorganisms and functional foods held by Prof. Marilena Marino
- Quality control and management in collective catering held by Prof. Michela Maifreni
- Cleaning and sanitizing held by Prof. Michela Maifreni

Training

Courses provided by the University of Udine

08/06/2022	Introduction to copyright (2h)
26/05/2022	Intellectual property management in collaborative projects (2h)
21/09/2021-24/09/2021	Research and entrepreneurship: from idea to the start-up (24h)
02/07/2021	Exceptions to copyright in teaching and scientific research (2h)
	English for Academic Purposes – EAP (40h)
15/12/2020	Research funding opportunities: introduction to Horizon Europe (2h);
21/12/2020	Public speaking (4h)

Courses provided by other institutions

03-05/07/2024	The R software: basic course (20h). Provided by Alta Formazione Insubria, Varese, Italy.
05/03/2021	Open source: a general introduction to its economic value and the open source licenses (1h). Provided by Scuola Internazionale di Studi Avanzati (SISSA), Trieste, Italy.
03/03/2020	Optimize your bioprocess – From shaker to bioreactor (2h). Provided online by Eppendorf SE and Labroots Inc.

Memberships of scientific associations

- Member of the Italian Society of Agricultural, Food and Environmental Microbiology (SIMTREA). Via Montepaldi 12, 50026 San Casciano Val di Pesa (FI), Italy, segreteria@simtrea.org.
- Member of the European Polysaccharide Network of Excellence association (EPNOE). Department of Chemical Engineering, KU Leuven, Celestijnenlaan 200F bus 2424, Leuven Chem&Tech -3rd Floor, Office: 03.113, B-3001 Leuven, Heverlee, Belgium, contact@epnoe.eu.
- Member of Italian Society of Human Nutrition (SINU). BioMedia srl. Libero Temolo 4, street 20126 (MI), Italy, info@sinu.it.

Awards

- G. Bisson was selected among Italian PhD candidates in 2023 and received a grant to participate in the 17th European PhD Workshop on Food Engineering and Technology in Aachen, Germany, to present her PhD work.

Awarded grants

February 2024 – February 2025	**Postdoctoral contract** by the University of Udine (2024-2025). Affiliation: Dept. of Agricultural, Food, Environmental and Animal Science, University of Udine.
November 2020 – October 2023	**PhD scholarship** in "Food and Human Health" at the Dept. of Agricultural, Food, Environmental and Animal Science, University of Udine.
January 2023 – May 2023	**Research mobility grant for PhD students** at Teagasc Food Research Centre, Moorepark, Co. Cork, Ireland

Grant applications

- Marie Skłodowska-Curie Postdoctoral Fellowship Application, call 2024 (waiting for the result): drafted a comprehensive application focused on food microbiology and human gut microbiome. Collaborated with the Supervisor, Prof. Paul Cotter at Teagasc Food Research Centre, Fermoy, Co. Cork, Ireland, to develop a robust proposal.

Communication & Dissemination activities

- Regular participation to dissemination activities for the Path for Transversal skills and orientation (PCTO) at the University of Udine
- Online press release:
  - https://qui.uniud.it/ricerca-e-innovazione/tecnologia-alimentare-giulia-bisson-fra-i-17-migliori-phd-europei/
  - https://www.nordest24.it/agroalimentare-giulia-bisson-17-migliori-studiosi-europei-efce/
  - https://www.qdpnews.it/comuni/conegliano/dal-cerletti-ai-migliori-ricercatori-europei-giulia-bisson-e-il-prodotto-alla-soia-che-fa-bene-alla-salute/
  - https://www.greenplanner.it/2024/06/19/tesi-italiana-premiata-postbiotici/

Languages and other relevant skills

- ✓ ITALIAN Mother tongue
- ✓ ENGLISH Excellent writing, comprehension and communication skills (C1 level)
- ✓ Good command of Office 365 (Word, Excel, PowerPoint)
- ✓ Good communication skills acquired during teaching and laboratory activities
- ✓ Scientific papers writing, conference oral and poster contributions preparation
- ✓ Knowledge transfer
- ✓ Fluent in English, basic knowledge of French

Udine, 5th February 2025