University Academic Curriculum Vitae

Personal information

Alessandra Gasparini

Education since leaving school

- 2010-2013, Bachelor degree in Chemistry (108/110), University of Trieste, Trieste, Italy. Thesis title: "Design, synthesis and characterization of gold nanoparticles protected by pegylated ligands"
- 2013-2015, Master degree in Chemistry- Organic-Biomolecular curriculum (110/110 cum laude), University of Trieste, Trieste, Italy. Thesis title: "Synthesis of cafestol and 16-*O*-methylcafestol derivatives for the quality control of coffee". Thesis was done in collaboration with the Aromalab from Illy company (Trieste, Italy).
- June 2016, National Board certification in Chemistry, University of Trieste, Trieste, Italy.
- 2016-2019, PhD in Food Science, Food and Drug Department, University of Parma, Parma, Italy. Thesis title: "Effects of processing and storage conditions on milk and whey products: a detailed molecular investigation of the induced modifications on whey proteins". PhD obtained with the Doctor Europeus certification and discussed the 15th of May 2020. PhD was in collaboration with the FrieslandCampina company (Amersfoort, The Netherlands) and the CIAL Institute (CSIC-UAM) of Madrid.
  During the PhD, the effects of thermal treatments (i.e. pasteurization and UHT treatment) and drying techniques (freeze drying and spray drying) on the two main whey proteins in milk and whey isolates were investigated. Proteomic and metabolomic approaches (i.e. UHPLC-MS, MALDI, etc.) were applied for the identification of the conformational and post-translational modification induced by the treatments on these proteins. The effects of these modification on protein digestibility (INFOGEST in vitro assay), intestinal absorption (Caco2 transport studies) and allergenicity (Western blot and ELISA assay) were finally evaluated.

Last appointment

PostDoc fellowship at the Free University of Bozen-Bolzano, International Center on Food Fermentations, Bolzano.
15th July 2024-14th July 2025
The fellowship was provided within the project "Development of advanced fermentation processes for the production of ingredients of technological interest for food application from Barilla side-streams". The project aims at finding new ingredients through the valorisation of side streams with advanced microbial fermentation. The project is in collaboration with the Barilla company. During this project the main approaches for bacterial and yeast culture and fermentation (i.e. growth and acidification kinetics, microbial isolation and purification, EPS production and proteolytic activity determination, fed-batch fermentation, etc.), are applied for the production of new functional ingredients (i.e. emulsifiers, thickening agents, acidifiers etc.). Proteomic and metabolomic approaches (i.e., HPLC-UV, HPAE-PAD, GC-MS, etc.) are applied for the identification and quantification of targeted molecules (i.e. proteins, peptides, organic acids, fatty acids, sugars, polysaccharides,

etc.).

Professional experience

From / to	Job title	Name of academic Institution	Academic level	responsibilities
07-2016/08-2016	Internship	Burlo Garofolo Pediatric Institute, Medical Genetics Department, Trieste, Italy		PCR and agarose gel, SDS-Page and Western blot, Immunofluorescence, HeLa cell culture
09-2016/10-2016	Fellowship	TestVeritas srl, Area Science Park, Trieste, Italy		Study of Mycotoxins in Food Matrices.
03-2019/ 08-2019	Visiting PhD student	CIAL institute (CSIC-UAM, Madrid, Spain)	PhD student	Study of the effects of processing (thermal treatments, spray drying and freeze drying) on whey proteins isolates´ gastrointestinal digestibility, intestinal absorption and allergenicity. Digestibility studies were performed following the INFOGEST static and semi-dynamic protocols. Intestinal absorption was evaluated with Transwell transport studies with Caco2 cell lines. Allergenicity was evaluated with ELISA and Western Blot assays.
11-2019/ 09-2020	Research fellowship	Food and Drug Department, University of Parma, Parma, Italy	Research fellow	Production of modified peptide mixtures from legume protein extracts obtained from enzymatic hydrolysis. PROLIFIC EU granted Project. Peas and chickpeas protein extracts were

				enzymatically hydrolysed to produce peptide mixtures. Peptides mixtures were esterified with fatty acids. Metabolomic approaches were applied for the analysis of native and modified peptides.
04-2021/04-2022	PostDoc fellowship	Faculty of Science and Technology, Free University of Bozen-Bolzano	Research Assistant	Extraction of apple seed oil with supercritical fluid extraction, ultrasound assisted extraction, Soxhlet extraction and mechanical press. Oxidability and shelf-life studies on extracted apple seed oils with isothermal calorimetry. SEEDS project (FUSION GRANT) in collaboration with VOG company (Laives, Italy).
04-2022/04-2024	Post Doc fellowship	Faculty of Science and Technology, Free University of Bozen-Bolzano	Research Assistant	"Novel extraction procedures for the detoxication of apple pomace", NEED project. Determination of polyphenol oxidases activity with oximetry. Monitoring of enzymatic browning in apple juices with oximetry.
04-2024/07-2024	Post Doc fellowship	Faculty of Science and Technology, Free University of Bozen-Bolzano	Research Assistant	"Rice by-products valorization: from the recovery of bioactive compounds to the regeneration of used frying oils. RAINDROP." PRIN 2022. Extraction of rice bran oil with Soxhlet and Supercritical Fluid extraction.

Experience in academic teaching

- Organic chemistry seminars, pre-courses for the Natural Organic Substances course of the master degree in Food Science and technology at the Food and Drug department, University of Parma (2017).
- Laboratory bench assistant for the course on Organic chemistry for the Bachelor degree in Food Sciences and Technology at the Food Sciences Department, University of Parma (2016-2017).
- Supervision of 4 students for their MSc thesis in the Master degree Course in Food Science and Technology (University of Parma). Main topics: chemical modifications induced by technological treatments on major milk allergens; effects of technological treatments on major proteins in bovine milk and vegetable drinks; effects of process induced modifications on bovine whey proteins digestibility; production of protein extracts from legume and peptide mixtures functionalization.
- Supervision of 3 students for their MSc thesis in the Master degree course in Food Sciences for Innovation and Authenticity (Free University of Bozen-Bolzano). Main topics: comparison of different methods for the extraction of oil from apple seeds; apple seed oil oxidability and influences of extraction technology on oil shelf life; valorisation of strawberry byproduct after industrial process (in collaboration with the Menz&Gasser company).
- Supervision of one student for his BSc thesis in the Bachelor degree course in Agricultural, Food and Mountain Environmental Sciences, (Free University of Bozen-Bolzano). Main topic: ultrasounds assisted extraction of bioactive compounds from white willow, cinchona and quassia barks.
- Mentoring and training of 2 PhD students working on: PGSS microencapsulation of oil in waxes for increasing oil stability and shelf-life; oxidability studies on samples of pork fat and other meat fats.
- Teaching assistant for the course of Units Operation in Food Engineering for the Bachelor course in Agricultural, Food and Mountain Environmental Sciences, in the second semester of the academic years 2021/2022 and 2022/2023 at the Free University of Bozen-Bolzano.
- Teaching assistant for the course of Evaluation of Food Quality and authenticity for the Master course in Food Sciences for Innovation and Authenticity, in the first semester of the academic year 2023/2024 at the Free University of Bozen-Bolzano.

Other academic responsibilities

- Participation to the organization of the Food Integrity conference, 2017, organized by Barilla G. e R. Fratelli S.p.A., University of Parma and Siteia, Parma
- Reviewer for peer reviewed journals of the field (i.e. Royal Society of Chemistry, etc.)

Research and scholarships

- Fellowship for the study of Mycotoxins in Food matrices at the TestVeritas srl, awarded by the Area Science Park, Trieste, Italy. (2016)
- 3rd APP-MS School (IMaSS), Best Poster presentation **award**. (2017)
- Travel grant **award** for the participation at the 7th EuCheMS Chemistry Congress in Liverpool, awarded by the Italian Chemistry Society-Organic Chemistry Division. (2018)

- Fellowship for the production of protein extracts from vegetable food waste within the EU granted PROLIFIC project, awarded by the University of Parma, Parma, Italy. (2019)
- Fellowship for the comparison of different techniques for the extraction of apple seed oil within the SEEDS project awarded by the Free University of Bozen-Bolzano. (2021)
- Fellowship for the detoxication of apple pomace through novel extraction techniques within the NEED project awarded by the Free University of Bozen-Bolzano. (2022)
- Fellowship for the valorization of rice by-products. RAINDROP project (PRIN 2022) awarded by the Free University of Bozen-Bolzano. (2024)
- Fellowship for the "Development of advanced fermentation processes for the production of ingredients of technological interest for food application from Barilla side-streams" awarded by the Free University of Bozen-Bolzano. (2024)

Memberships

Member of the Societá Italiana di Scienze e Tecnologie Alimentari, SISTAl, since 2023.

Publications

Journal Articles:

- *Girotto G*, Pirastu P, Gasparini A, d'Adamo P, Gasparini P. "Frequency of hearing loss in a series of rural communities of five developing countries located along the Silk Road", *Audiological Medicine*, 2011, **9**(4): 135–140. DOI: 10.3109/1651386X.2011.616282
- **Finotello C*, Forzato C, Gasparini A, Mammi S, Navarini L, Schievano E. "NMR quantification of 16-O-methylcafestol and kahweol in *Coffea canephora* var. robusta beans from different geographical origins", *Food Control*, 2017, **75**, 62-69. DOI: 10.1016/j.foodcont.2016.12.019
- **Buhler S*, Solari F, Gasparini A, Montanari R, Sforza S, Tedeschi T. "UV Irradiation as a comparable method to thermal treatment for producing high quality stabilized milk whey", *LWT-Food Science and Technology*, 2019, **105**, 127-134. DOI: 10.1016/j.lwt.2019.01.051
- **Berti F*, Navarini L, Guercia E, Oreski A, Gasparini A, Scoltock J, Forzato C, "Interaction of the coffee diterpenes cafestol and 16-O-methylcafestol palmitates with serum albumins", *International Journal of Molecular Sciences*, 2020, **21**, 1823. DOI: 10.3390/ijms21051823
- **Gasparini A*, Buhler S, Faccini A, Sforza S, Tedeschi T, "Thermally-induced lactosylation of whey proteins: identification and synthesis of lactosylated β-lactoglobulin epitopes", *Molecules*, 2020, **25**(6), 1294. DOI: 10.3390/molecules25061294
- **Gasparini A*, van Gool MP, Bultsma M, Cutroneo S, Sforza S, Tedeschi T, "Modifications induced by controlled storage conditions on whey protein concentrate: effects on whey proteins lactosylation and solubility", *International Dairy Journal,* 2020, **109**, 104765. DOI: 10.1016/j.idairyj.2020.104765
- **Gasparini A*, Benedé S, Tedeschi T, Sforza S, Recio I, Miralles

B, "In vitro simulated semi-dynamic gastrointestinal digestion: evaluation of the effects of processing on whey proteins digestibility an allergenicity", *Food and Function*, 2022, **13**, 1593-1602. DOI: 10.1039/d1fo04102a

- **Tedeschi T*, Prandi B, Lolli V, Gasparini A, Leni G, Loffi C, Nocetti M, Pizzamiglio V, Caligiani A, "A novel approach based on enzymatic hydrolysis for the valorisation of edible Parmigiano Reggiano cheese rinds", *International Dairy Journal,* 2022, **134**, 105454. DOI: 10.1016/j.idairyj.2022.105454
- **Al-Naqeb G*, Cafarella C, Aprea E, Ferrentino G, Gasparini A, Buzzanca C, Micalizzi G, Dugo P, Mondello L, Rigano F, "Supercritical fluid extraction of Cactus Opuntia ficus-indica L and Opuntia dillenii seeds oil: antioxidant activity, chemical characterisation and comparison with a conventional solvent extraction", *Foods*, 2023, **12,** 618. DOI:10.3390/foods12030618.
- **Ding Y*, Angeli L, Gasparini A, Ferrentino G, Scampicchio M, Morozova K, "Effect of extraction treatments on the functional properties of free and bound phenols in apple seeds", *Food Bioscience,* 2023, **53**, 102602. DOI: 10.1016/j.fbio.2023.102602.
- **Gasparini A*, Angeli L, Morozova K, Zatelli D, Scampicchio M, Ferrentino G, "Ultrasound assisted extraction of oils from apple seeds: a comparative study with supercritical fluid and conventional solvent extraction", *Innovative Food Science and Emerging Technologies*, 2023, **86**, 103370. DOI: 10.1016/j.ifset.2023.103370.
- **Suhag R,* Gasparini A, "Apple seeds: promising source of bioactive compounds with immense bio-functionalities", Valorization of Fruit Seed Waste from Food Processing Industry, edited by Kumar M, Sharma K, Bangar S P, Elsevier, 2024, 113-133. DOI: 10.1016/B978-0-443-15535-2.00001-3.
- *Gasparini A*, Morozova K, Scampicchio M, Ferrentino G, "Technologies for Pesticides Removal: Decontamination of Apples and Apple By-products for Food Applications", Food Reviews International, 2025, 1-24. DOI: 10.1080/87559129.2025.2498525
- *Gasparini A,* Suhag R, Zatelli D, Scampicchio M, Ferrentino G, "Extraction technologies induced variations in oxidation and shelf life of apple seeds oil", under review for publication to Innovative Food Science and Emerging Technologies.

Further data

- Gasparini A, Buhler S, Dossena A, Sforza S, Tedeschi T, "Major Allergens in Cow Milk's whey: Chemical Modifications induced by Technological Treatments and their effect on Allergenicity"; 5th MS Food Day organised by Divisione Spettrometria di Massa (Italian Chemical Society). 11-13 October **2017**, Bologna, Italy. (oral presentation)
- Gasparini A, Buhler S, Dossena A, Sforza S, Tedeschi T, "Major Allergens in Cow Milk's whey: Chemical Modifications induced by Technological Treatments and their effect on Allergenicity"; 8th Symposium on Recent Advances in Food Analysis (RAFA). 7-10 November **2017**, Prague, Czech Repulic. (poster presentation)
- Gasparini A, Buhler S, Dossena A, Sforza S, Tedeschi T, "Major Allergens in Cow Milk's whey: Study of the Effects of the

Technological Treatments through the Identification and Synthesis of the Lactosylated Epitopes"; "Advanced school: Food Proteins" organized by SIB- Protein Group. 2-4 May **2018**, Bergamo. (oral presentation)

- Gasparini A, Buhler S, Dossena A, Sforza S, Tedeschi T. "Major Allergens in Cow Milk's whey: Study of the Effects of the Technological Treatments through the Identification and Synthesis of the Lactosylated Epitopes"; 7th EuCheMS Chemistry Congress, 26-30 August **2018**, Liverpool, UK (oral presentation)
- Gasparini A, Cutroneo S, Miralles B, Recio I, Sforza S, Tedeschi T. "Cow milk's whey protein: influence of the technological treatments on their digestibility and allergenicity". "Giornata scientifica della Società Italiana Peptidi dedicate ai Soci Giovani- Premio scienfico Vittorio Erspamer", 21 September **2019**, Florence, Italy. (oral presentation)
- Gasparini A, Cutroneo S, Benedè S, Miralles B, Recio I, Sforza S, Tedeschi T. "Technological treatments of cow milk proteins: effects of lactosylation on whey proteins' allergenicity and digestibility". 2°edition of "La chimica degli alimenti e I giovani ricercatori: nuovi approcci in tema di qualità, sicurezza e aspetti funzionali di ingredienti alimentari", 24 September **2019**, Milan, Italy. (oral presentation)
- Gasparini A, Cutroneo S, van Gool MP, Bultsma M, Sforza S, Tedeschi. "Effect of storage conditions on the main proteins present in bovine milk whey concentrate". 9th International Symposium on Recent Advances in Food Analysis (RAFA), 5-8 November **2019**, Prague, Czech Republic. (poster presentation)
- Gasparini A, Miralles B, Recio I, Sforza S, Tedeschi T. "Processing induced lactosylation on milk whey proteins: synthesis of lactosylated epitopes for the evaluation of the effects on allergenicity and intestinal absorption". 3rd Workshop: I chimici per le biotechnologie, 13-14 February **2020**, Naples, Italy (oral presentation).
- Gasparini A, Angeli L, Morozova K, Zatelli D, Scampicchio M, Ferrentino G. "Supercritical carbon dioxide as an emerging tool for apple by products valorisation". 36th EFFoST International Conference, 7-9 November **2022**, Dublin, Ireland (poster presentation).
- Gasparini A, Ferrentino G, Scampicchio M. "Food by-products valorization: extraction of essential oil form apple seeds". Convegno della Societá Italiana di Scienze e Tecnologie Alimentari, I vent'anni di SISTAl, Innovazione e Sostenibilitá, 31st January **2023**, Milan, Italy. (oral presentation)
- Tenuta MC, Gasparini A, Tolve R, Sportiello L, Morozova K, Scampicchio M, Favati F, Ferrentino G. "Valorisation of rice bran by-products through the application of green technologies". Convegno Nazionale di Scienze e Tecnologie Alimentari- Transizione verso un sistema alimentare sostenibile, SISTAl, 12-13th June, **2024**, Bari, Italy. (oral presentation)
- Gasparini A, Bolchini S, Morozova K, Scampicchio M, Ferrentino G. "On-line detection of enzymatic browning in apple fruit juices". Oral presentation. Convegno Nazionale di Scienze e Tecnologie Alimentari- Transizione verso un sistema alimentare sostenibile, SISTAl, 12-13th June, **2024**, Bari, Italy. (oral presentation)
- Wahab A, Ferrentino G, Gasparini A, Morozova K, Scampicchio

M. "Oxidative stability of meat fats by isothermal calorimetry". 5th International Symposium on Lipid Oxidation and Antioxidants, 8-10th July, **2024**, Bologna, Italy. (oral presentation)

- Gasparini A, Ferrentino G, Angeli L, Morozova K, Scampicchio M, "Innovative extraction techniques for the production of new ingredients from food waste: the case of apple seed oil"; 22nd World Congress of Food Science and technology (IUFoST). 8-12 September, **2024**, Rimini, Italy. (poster presentation)

Statement of interest

As a researcher, I combine my background in organic chemistry with my passion for food and sustainability. I'm strongly motivated in widening my knowledge and technical skills. Indeed, during the PhD I acquired good knowledge on a wide range of analytical techniques (i.e. NMR, circular dichroism, UV, IR, Fluorescence, ESI-MS, LTQ-Orbitrap, MALDI, UHPLC, SDS-PAGE) for qualitative and quantitative analysis and on software used for data analysis (R, Mestrenova, MassLynx, Mascot, BioTools). I´ve learned the principal techniques for food analysis and widened my knowledge on food digestibility (INFOGEST in vitro static and semi-dynamic protocols) and allergenicity (peptide synthesis, Western Blot, ELISA, Caco2 cells transport studies) as a visiting PhD student at CIAL institute (Madrid, Spain). After the PhD, I did a postdoc on the valorisation of vegetable food waste, studying protein extracts, obtained with enzymatic hydrolysis, from legumes and their functionalization with fatty acids for future cosmetics applications. During my postdocs at the Free University of Bozen-Bolzano, I worked on the valorisation of apple and rice by-products. I had the opportunity to gain experience in vegetable oil characterization (antioxidant activity, total phenolic content, fatty acids profile with GC-FID, phenolic profile with HPLC-MS, peroxide value determination, shelf-life determination with isothermal calorimetry) and extraction processes (mechanical press, Soxhlet, ultrasound assisted extraction and supercritical fluid extraction). Additionally, I've worked on the determination of enzymatic activity and kinetics parameters with oximetry, studying the activity of polyphenol oxidases in apple juices from different apples varieties. During the last postdoc fellowship, I´ve worked on food fermentation for the valorisation of food by products, widening my experience in bacterial and yeast fermentation (fed-batch fermentation), in the principal techniques for microbial culture (bacterial and yeast isolation and purification, plate count, DNA extraction, PCR and RAPD PCR, growth kinetics assays, EPS production and proteolytic activity determination) and other analytical methods (i.e., HPLC-UV, GC-MS) for target molecules identification and quantification, including ion exchange chromatography (HPAE-PAD) for saccharides identification.
I might significantly contribute to the activities planned for the investigation of the modulatory capacity of fermented foods and their microbiome on the microbiota-gut-brain axis, combining my education and professional experience in food chemistry, in vitro simulated gastrointestinal digestion, cell transport studies and food fermentation with my motivation to further grow as a researcher and widen my knowledge in food science

Language competence

Italian: mother language
English: Speaking C1, Writing C1, Understanding C1

German: Speaking B1, Writing B1, Understanding B1
Spanish: Speaking A2, Writing A2, Understanding A2

Driving licence B1

Date

4/7/25