University Academic Curriculum Vitae

Personal information

Name: Andrea Polo

Education since leaving school

- 2004. BSc. at the University of Padova, Faculty of Natural Science, 110/110 *cum laude*.
- 2006. MSc. at the University of Padova, Science, Engineering and Liberal Arts interfaculty, 110/110 *cum laude*.
- 2010. PhD school in Molecular Sciences and Plant, Food and Environmental Biotechnologies, PhD course in Chemistry, Biochemistry and Ecology of Pesticides. University of Milan – Agricultural Faculty, Department of Food Science, Technology **a**nd Microbiology (DiSTAM). PhD thesis: "The control of deleterious biofilm on abiotic surfaces: from a more sustainable use of biocides to a new environmentally-friendly approach".
- 2023. National Scientific Abilitation (ASN) to *Professore Universitario di Seconda Fascia* in 07/I1 - MICROBIOLOGIA AGRARIA sector

Present appointment

- Start of appointment: 15/4/2026
- Level of appointment: Tenured associate professor
- Employer: Free University of Bozen, Faculty of Agricultural, Environmental and Food Sciences

Professional experience

Chronological list of all previous employments

From / to	***Job title***	***Name of academic Institution / employer***	***Role***	***Main responsibilities/activities***
April 2023 – April 2026	Use of lactic acid bacteria in food fermentations	Free University of Bozen	Researcher with fixed-term contract (RTD-B)	Food fermentation and the human gut microbiome, with specific reference to the use of lactic acid bacteria.
October 2021 – April 2023	Study and characterization of microbial biofilms in the gastrointestinal environment and fermented foods	Free University of Bozen	Researcher with fixed-term contract (RTD-A)	Study of microbial ecosystems in gastrointestinal environments and in fermented food matrices; development of new functional foods/beverages; study of the effects of novel functional foods on human colonic microbiota using in vitro models; investigation of diet impacts on structure and functionality of human intestinal microbiota
October 2018 – September 2021	Study of microbial ecosystem in fermented beverages and food: from the analysis of ecosystem to starter development	Free University of Bozen	Researcher with fixed-term contract (RTD-A)	Study of microbial communities in fermented foods and in gut ecosystems through validated in vitro models (i.e. SHIME); selection of tailored starters to develop new functional foods/beverages.
March 2016 – July 2018	Development of the transdisciplinary research network on environment and health in South Tyrol (TER)	Free University of Bozen	Postdoctoral fellow (AR)	Establishment and maintenance of relationships with partners, institutions and stakeholders; search for new grant opportunities; support in projects preparation; fundraising activity for inter- and transdisciplinary projects; organisation of international and interdisciplinary events; support in ongoing research activities.
March 2015 – March 2016	S.I.P.O.F.A in Sierra Leone: participate entrepreneurial development for optimisation of cashew production chain in Sierra Leone (Food security programme for vulnerable communities funded by CARIPLO Foundation)	COOPI – International Cooperation, Milan, Italy	Project Manager	To ensure the acquisition of the results foreseen by the project in technical as well as economic/financial terms. In particular: 1) coordination and monitoring of activities foreseen by the project; 2) relations with institutional and operative interlocutors; 3) supervision and monitoring of tasks and activities carried out by local staffs involved in the project; 4) preparation of documents and reports concerning the awareness of project; 5) management and supervision of the project budget
January 2015	Assessing the microbiological risk to manuscripts stored in the degree thesis archive of University of Milan	University of Milan, Department of Food, Environmental and Nutritional Sciences (DeFENS), Milan, Italy	Postdoc researcher (independent contractor agreement)	Study of microbial communities on manuscript surfaces and in the repository air, and of microclimatic conditions

Novembe r 2014	Teaching	Istituto Comprensivo Statale "Don Paolo Galliero", Tribano (PD), Italy	Teacher	Teaching
October 2014	Analysis and identification of fungal communities living on plaster	University of Milan, Department of Food, Environmental and Nutritional Sciences (DeFENS), Milan, Italy	Postdoc researcher (independent contractor agreement)	Samples collection and preparation, DNA extraction, study of microbial communities by molecular methods
Septemb er 2014	Evaluation of the effects of zosteric acid on the polysaccharide fraction of extracellular polymeric matrix in microbial biofilm	Programme "Stage in SIMTREA laboratory" funded by the Italian Society for Agriculture, Food and Environmental Microbiology (SIMTREA)	Postdoc researcher (research prize spent at the University of Florence. Department of Agrifood Production and Environmental Sciences)	In vitro culture of bacterial biofilm both with and without the antifouling agent, exopolysaccharides extraction from the biofilm extracellular polymeric matrix, and quantitative and qualitative analysis of exopolysaccharides
April 2014 – May 2014	Lectureship at the University of Makeni (Sierra Leone).	University of Makeni, Faculty Agriculture and Food Sciences, Makeni, Sierra Leone	Lecturer	Lecturer for the course of Agricultural Microbiology
June 2012 – January 2014	Novel materials for medical devices based on biofunctionalized surfaces with antifouling properties (ANFOMAT, http://www.anfomat.unimi.it/)	University of Milan, Department of Food, Environmental and Nutritional Sciences (DeFENS), Milan, Italy	Postdoctoral fellow (AR)	Evaluation of: 1) antibiofilm activity of natural and synthesized compounds and biofunctionalized materials on model systems of bacterial and fungal infections; 2) molecular/cellular processes altered by antibiofilm activity of compounds; 3) ability of biofunctionalized materials to increase the biofilm susceptibility to antibiotics.
May 2011 – May 2012	New non-toxic antifouling technologies for wastewater filter surfaces	University of Milan, Department of Food Science, Technology and Microbiology (DISTAM), Milan, Italy	Postdoctoral fellow (AR)	Development of an innovative, safe, environmentally friendly and economically sound method to prevent biofouling on wastewater filter surfaces
Novembe r 2010 – May 2011	The Milan University's Richini's Courtyard	University of Milan, Department of Food Science, Technology and Microbiology (DISTAM), Milan, Italy	Postdoctoral fellow (AR)	Study of microbial biodeteriogen communities on surfaces of Richini court and on adjacent air
Novembe r 2007 - October 2010	The control of deleterious biofilm on abiotic surfaces: from a more sustainable use of biocides to a new environmentally-friendly approach	University of Milan, Department of Food Science, Technology and Microbiology (DISTAM), Milan, Italy	PhD student	Study of new strategies for controlling microbial adhesion and biofilm formation by pathogenic and alterative bacteria on abiotic surfaces
June 2007 – October 2007	Microbial biotechnology applied to the remediation of cultural heritage	University of Milan, Department of Food Science, Technology and Microbiology (DISTAM), Milan, Italy	Fellow	Development of microbial biotechnologies applied to the remediation of cultural heritage
February 2007 – May 2007		R&C Lab S.r.l., Altavilla Vicentina (VI), Italy	Qualified laboratory technician	Samples collection, preparation and analysis. Report writing

Awards received

- Prize "Stage in SIMTREA laboratory" by the Italian Society for Agriculture, Food and Environmental Microbiology (SIMTREA) to the research project "Evaluation of the effects of zosteric acid on the polysaccharide fraction of extracellular polymeric matrix in microbial biofilm", 20th June 2014.
- Prize given to the MSc thesis by the Province of Trento (Italy), Italy on 26th June 2007.

Experience in academic teaching

Graduate courses leading to a Bachelor or Master of Science degrees (last 5 years):

2019/present "The food - human axis for driving the gut microbiome", (English), 6 CFU, at the M.Sc. in Food Sciences for Innovation and Authenticity (lab teaching) (LM-70). Free University of Bolzano-Bozen, Bolzano, Italy. **Score of last 3 academic years: 9.1; 98.27% of positive feedback.**

2018/present "Fermentation processes for the production of mountain wines" (English), 2 CFU, at the M.Sc. in Viticulture, Enology and Wine

Marketing (LM-69). Free University of Bolzano-Bozen, Bolzano, Italy. **Score of last 3 academic years: 9.0; 98.82% of positive feedback.**

2018/present "Fermentations as tools for making traditional and innovative foods and beverages" (English), 6 CFU, at the M.Sc. in Food Sciences for Innovation and Authenticity (lab teaching) (LM-70). Free University of Bolzano-Bozen, Bolzano, Italy. **Score of last 3 academic years: 9.2; 96.71% of positive feedback.**

Courses leading to a PhD of Science degrees (last 5 years):

2020 "Food-human axis: the gut microbiome" (English), 3 CFU, at PhD course in Food Engineering and Biotechnology. Free University of Bolzano-Bozen, Bolzano, Italy.

2020 "Meta-omics approaches to study the food fermentations" (English), 3 CFU, at the PhD course in Food Engineering and Biotechnology. Free University of Bolzano-Bozen, Bolzano, Italy.

Graduate courses leading to a Bachelor of Science degrees in foreign Universities

2013/2014 "Agricultural microbiology" (48 hours, English). Bachelor of Science in Agriculture and Food Technology Sciences at the University of Makeni (Sierra Leone).

Summary of significant personal achievements in teaching:

Since I started my research activity, I was co-supervisor of 24 Bachelor and Master thesis, 10 PhD students at Unibz, 4 visiting PhD students from other Universities, and 3 visiting researchers and professors.

Overall, I introduced/adopted the following innovative didactic methods that improved the quality of teaching:

- use and exploitation of OLE and Reserve Collection platforms to share didactic material, documents, slides of lesson and books with students. Industrial study cases were explained and discussed giving the possibility for students to see applications in their own sector of interest. Students had, so, the possibility to participate and actively interact during lessons.
- Use and exploitation of Teams platform to create and manage the groups of courses students for sharing slides, communications, information, additional teaching materials, and to record lessons. Recorded lessons were then available for students in the platform.
- Use of video and movies to describe microbiological techniques and methods and to show didactic activities and topics dealing with analytical techniques, research projects and laboratory activities.
- Use of pilot plants to show and teach processes leading to the production of fermented food like cheese and bread.
- Use of most advanced and avant-gardes technologies to the study of gut ecosystems such as the Simulator of the Human Intestinal Microbial Ecosystem (SHIME) and the Confocal Laser Scanning Microscopy (CLSM).
- Organization of external visits to give the students the opportunity to see real industrial production plants and processes dealing with DOC/DOP products (such as Parmigiano Reggiano cheese, Asiago cheese, and Trentingrana cheese).
- Use of TeamViewer platform to remote connection to advanced instruments that are not available in didactic labs (but present in the research labs at the NOI Techpark) in order to show students how manage/drive such analytical techniques and give them the opportunity to know and practice with such instruments.
- Use of applicative and industrial study cases to describe industrial applications and industrial problem solving.

Other academic responsibilities

Internal appointments to faculty and university boards

- Member of the Committee for the PhD in Food Engineering and Biotechnology at the Free University of Bozen, Faculty of Agricultural, Environmental and Food Sciences, since the academic year 2025-2026.
- Delegate for UNIBZ (assigned by Rector) in EIT-Food network (EU) https://www.eitfood.eu/, since June 2024.

- Representative of RTDs researchers at the Faculty of Agricultural, Environmental and Food Sciences, Free University of Bozen, from March 2023 to April 2026.
- Member of the Admission Committee for the Master's degree course in Food Science for Innovation and Authenticity, Free University of Bozen, academic year 2021/2022.

Responsibilities for organizing conferences/seminars/exhibitions

- Member of the organizing committee for the "I International Conference on Fermented Foods" by NOI TechPark Südtirol/Alto Adige. Bozen 27-30 October 2025.
- Member of the organizing committee for the congress "VIII International Symposium on Sourdough**"** by the Free University of Bozen. Bozen, 14th-17th June 2022.
- Member of the organizing committee for the congress **"**III CONVEGNO AISSA#UNDER40**"** by the Italian Association of the Agricultural Science Societies**.** Bozen, 14-15 July 2022.
- Member of organization board for the congress "Water as a natural resource in a changing environment: quality, threats and sustainable use" by the Free University of Bozen. Bozen, 12th December 2017.
- Member of conference secretariat for the congress "Microbial Diversity 2011 – Environmental stress and adaptation" by the Italian Society for Agriculture, Food and Environmental Microbiology" (SIMTREA). Milan, 26th – 28th October 2011.

Memberships

Membership of academic or professional bodies

- Member of the Italian Society for Agriculture, Food and Environmental Microbiology (SIMTREA), associated with FEMS, since March 2014.
- Guest Editor for the Special Issue "Fermented Foods" by International Journal of Food Microbiology (Q1), 2025-26 https://www.sciencedirect.com/special-issue/327274/fermented-foods.
- Reviewer of international journals: Microorganisms, Microbial Ecology, Plos One, Molecules, Journal of Cereal Science, Annals of Microbiology, Journal of Cultural Heritage, Frontiers in microbiology, Pharmaceuticals, Food research international, European journal of nutrition.

Research and scholarships

Summary of current research and scholarship

Since 2018, I worked as researcher at the Free University of Bozen. My activity focused on three main topics: a) the food-human axis with the aim to study, through *in vitro* models, the **human gut microbiome** in response to dietary habits and specifically tailored fermented functional foods, food intake/food conversion, and the microbiome ecology at the intestinal level; 2) the **development of new fermented food and beverages** with functional properties, exploiting selected/tailored starters with the final goal to improve fermentation processes; and 3) the **study and exploitation of sourdough fermentation** with the aim to functionalize foods, to recycle functional by products, and to develop functional and/or improved formulations.

To this purpose, the **Simulator of the Human Intestinal Microbial Ecosystem** (SHIME) was my main technological tool for in vitro studying of gut microbiota, microbiome and metabolome. During this position, I also improved my skills with the **confocal laser scanning microscopy** (CLSM) and **molecular methods**, the main methods I adopted for investigating microbial communities (namely lactic acid bacteria and yeasts) involved in food fermentation. Overall, my technical expertise included: i) the use of SHIME; ii) culture-mediated and culture independent approaches to investigate the structure of microbial communities; iii) metagenomic, metabolomic and metatranscriptomic approaches to determine the functions of microbial communities; iv) optical, fluorescent, confocal and electron microscopy.

Summary of significant achievements in research and scholarship

Since I started my research activity, in 2007, I obtained the PhD scholarship (funded by MIUR), overall 71 months of fellowships, two junior researcher contracts (RTD-A) and

one senior researcher contract (RTD-B). During this period, I was author of **50 papers in international peer-review journals**, and **8 chapters** in books. I was **co-supervisor of 24 Bachelor and Master thesis** and **10 PhD students**. I won **2 prizes**: the "Stage in SIMTREA laboratory" prize by the Italian Society for Agriculture, Food and Environmental Microbiology (SIMTREA, June 2014), and the prize by the Province of Trento (Italy) to MSc thesis that are relevant for the Province of Trento (2006). I formally participated as team member in **54 funded projects** in which I contributed to the project writing and/or implementation and management. In the same period, I have also contributed to the writing of several other successful project proposals, although I am not formally involved as team member. Through such activity, as demonstrated by my publications and contributions to congresses, I developed interdisciplinary research **collaborations with over 50 national and international research institutes, Universities and companies**, including Sapienza Universitá di Roma, Università degli Studi di Bari Aldo Moro, Università del Molise, Università degli Studi della Tuscia, Università degli Studi di Napoli Federico II, Università degli Studi di Milano, Università degli Studi di Torino, University of Trento, University of Modena and Reggio Emilia, University of Sassari, Politecnico di Torino, Universitá degli Studi di Padova, University College Cork, University of Helsinki, Doğuş University, Yıldız Technical University, Utah State University, KU Leuven, University of Sussex, Istituto Superiore di Sanitá, Ospedale Pediatrico Giovanni XXIII of Bari, and with Puratos, Evonik, Fourneo, Zuegg Com, Giuliani, Barilla, Iprona, Bonomelli companies. Moreover, I have established **applicative collaborations with more than 16 companies** (both national and international) and started interdisciplinary collaborations with other research groups and Faculties belonging to UNIBZ. Since 2018, through my work in UNIBZ, I actively contributed to develop the **Micro4Food platform**, the international research group lead by Prof. Gobbetti currently consisting of 21 members (including PhD students, postdocs, technologists and full professors) coming from 12 different countries and 3 Continents (Europe, Asia, Africa), which reppresents nowadays an excellence center in food microbiology sector, as both co-responsible of PhD students, postdocs, master and bachelor students, and responsible of research projects (in both writing/design and implementation/administration). Since 2023, I also had an active role in building and developing the **International Center on Food Fermentations (ICOFF)**, the international competence center lead Prof. Di Cagno, currently consisting of 11 team members (including technologists, technicians and researchers) coming from European and Asia countries, where researchers and 9 companies (local, national and international) work together to capitalize the most advanced innovations resulting from the research of Micro4Food.

Research grants and contracts obtained in last 5 years. Total amount granted: ***3.959.859 Euro***

Date granted	*Role*	*Funding body or programme*	*Title of proposal*	*Grant (Euro)*
2025-2028	Investigator	Internal (CRC)	AI-Powered Insights into Sourdough Bread Digestibility (IDigest)	200.000
2025-2027	Investigator	Company	MoldPredict - A tool to predict mold free shelf-life in bread applications	140.000
2024-2027	Investigator	Company	Fermentation: A Sustainable Approach for the Development of plant-based Sausages	120.000
2024-2027	Investigator	Company	Unlocking the health and sensory Benefits: Exploitation of tailored fermentation and probiotics	120.000
2024-2027	Investigator	Company	Exploring exotic experiences: Fermented snacks from around the world	120.000
2024-2027	Investigator	Company	Formulation of a consortium of probiotics in the regulation of the intestinal barrier function, improving tight junction protein function, balancing intestinal microbial composition, and regulating immune-related cytokine expression	120.000
2024-2027	Investigator	Company	Design of potential formulation of yeasts probiotic or lysates with potential health benefits in human gut ecosystem	120.000

2024-2025	Principal investigator	Company	Development of a designed sourdough formulation for pinsa making allowing lower gluten content	50.000
2024-2027	Investigator	Company	Development of "plant-based" substitutes of meat, cheeses and eggs	120.000
2024-2027	Investigator	Company	Fermentation as an Effective and Sustainable Approach to Increase the Extractability and Bioactivity of apple phenolics - Formulating Dietary Supplements	120.000
2024-2025	Participant	International (Infra2024)	Biomaterials for Bio-hybrid living electronics and bioenergy production	82.978
2023-2025	Investigator	Company	Development of innovative solutions for improving the rheological and shelf-life properties of puff pastry products	94.000
2023-2024	Investigator	Company	Survival assays of *Bacillus coagulans* IS-2 Unique and *B. coagulans* BC-G44 BioGrowing during infusion, and in vitro assays of persistence and adhesion during gastro-intestinal transit	14.000
2023-2024	Investigator	Company	Study of prebiotic effects of Sambucus nigra beverage through the Simulator of the Human Intestinal Microbial Ecosystem (SHIME)	50.000
2022-2026	Investigator	International (Horizon EU)	Innovative pulse and cereal-based food fermentations for human health and sustainable diets (HealthFerm)	542.950
2022-2025	Investigator	National (Ministerial funding)	Pasta and baked goods: integrity, health and sustainability - process and product innovation	254.100
2021-2024	Investigator	Company	Exploitation of lactic bacteria strains belonging to the Micro4Food Culture Collection and isolation of lactobacillus species from vaginal ecosystem for developing of next generation vaginal probiotics	263.200
2021-2025	Investigator	Internal (CRC)	From South Tyrol food by-products to bioactive peptides: a novel and sustainable bioprocessing to deliver multifunctional foods	75.293
2021-2022	Investigator	Company	Effects of different Biga fermentations on digestibility through a dynamically simulated in vitro model	30.000
2020-2023	Investigator	International (Horizon EU)	Smart Protein for a Changing World. Future-proof alternative terrestrial protein sources for human nutrition encouraging environment regeneration, processing feasibility and consumer trust and acceptance	347.056
2020-2022	Investigator	Local (EFRE-FESR)	Development of an eco-sustainable bioprocessing for making low sugar fruit juices	174.268
2020-2022	Investigator	National (Ministerial funding)	Bio-preservation of new bakery products with improved nutritional characteristics through the use of agricultural by-products and unconventional plant substrates	105.027
2020-2022	Investigator	Company	Development of a biotechnological protocol for the production of whey and fruit smoothies and fruit-based baby-food preparations	60.000
2019-2023	Investigator	Internal (CRC)	Unravelling the microbiome meta-community: the novel approach for steering cheese making	98.797
2020-2021	Principal investigator	Internal (CRC-RTD)	A pioneering investigation on biofilm by fructophilic lactic acid bacteria: a first step to sketch out potential strategy for the improvement of honeybee health	9.125
2020-2021	Investigator	Company	Development of sourdough, monitoring and optimization of the baking process	10.000

2020-2021	Investigator	Company	Use of selected lactic bacteria for the fermentation of pulses flours: development of biotechnological protocols for the production of fortified bread with pulses of legumes, set-up of fermentation processes and obtaining pre-fermented ingredients for the food industry	10.000
2020-2021	Investigator	Company	Sourdough selection for crispbread production from rye flour with improved sensory, rheology and nutritional characteristics	30.000
2020-2021	Investigator	Company	Production of a vaginal/neonatal psychobiotic gel	70.000
2021	Investigator	Company	Study of prebiotic effects of selected arabinoxylan-oligosaccharides (AXOS) in a simulator of the human intestinal microbial ecosystem	30.000
2021	Investigator	Company	Investigation of beta-hydroxybutyrate triglyceride (BHB-TG) hydrolysis in dynamically simulated upper GI conditions (stomach and small intestine)	25.000
2019-2021	Investigator	National (Ministerial funding)	Management of breeding systems and environmental drivers for the production and exploitation of natural starter in the cheese making process	142.100
2018-2021	Investigator	National (Cariplo)	A microbe-based value chain: treatment and valorisation of textile wastewater	49.800
2020	Investigator	Company	Sourdough starter strategy (Sourstarter)	50.000
2020	Investigator	Company	Survival assays of Bacillus coagulans GANEDEN BC30 during infusion, and in vitro determination of persistence and adhesion during gastrointestinal transit	35.000
2019-2020	Investigator	Company	Monitoring of microbiological and biochemical features of company products	15.000
2019-2020	Investigator	Company	Factors affecting the digestibility of the sourdough breads: an in vitro preliminarily characterization (InvitroDigestibility)	35.000
2017-2020	Investigator	National (Ministerial funding)	Processing for healthy cereal foods (ProHealthCereals)	27.165

Publications over last 15 years

**Corresponding,*
†co-authorship

Journal articles in refereed peer review academic journals.

Journal impact factor (IF) at the submission. **Current records** (December 2025): **50 publications, 20 h-index and 1,563 citations by Scopus** (https://www.scopus.com/authid/detail.uri?authorId=7005680230); 51 publications, 19 h-index and 1,336 citations by Web of Science (https://www.webofscience.com/wos/author/record/38111255); 99 publications, 23 h-index and 2,174 citations by Google Scholar https://scholar.google.it/citations?hl=it&user=P4YqM2YAAAAJ&view_op=list_works&citft=1&email_for_op=a.polo8209%40gmail.com&gmla=AJsN-F5JwCT_yT0e5er8DqRrq7fHKhoGaziGvjtbRmu1NwZKAn5uDeIdj95nsPcM6t1_m_ZJgJKu8aCzapJBVzWin3AcUeSfRO17q2qPDzVg79ARfrAI6QCbE7U9R3fu6VppdFVDc73sDxsD5gzhn7cTqDCG1JEXaw).

1. Mushtaq B.S., Nikoloudaki O., Ben M., Arora K., Tlais A.Z.A., **Polo A.**, Di Cagno R., Gobbetti M. (2026). Development of nutritionally enhanced sourdough bread through Tritordeum bran incorporation and assessment in an in vitro gut simulation. Future Foods, IF (2024) 8.2. DOI: https://doi.org/10.1016/j.fufo.2025.100874
2. Mastrolonardo F., Tonini S., Granehäll L., **Polo A.**, Zannini E., Gobbetti M., Di Cagno R., Nikoloudaki O. (2025). Influence of bioactive peptides from fermented red lentil protein isolate on gut microbiota: A dynamic in vitro investigation. Future Foods, IF (2024) 8.2. DOI: https://doi.org/10.1016/j.fufo.2025.100772
3. Viretto C., Tlais A.Z.A., Tuccillo F., **Polo A.**, Arora K., Verté F., Katina K., Di Cagno R., Marco Gobbetti M. (2025). Maximize the synergistic interactions among microbial consortia and plant-based matrices to design fermented cereal-pulse-based beverages. Food Research International, IF (2024) 8.0. DOI: 10.1016/j.foodres.2025.117045
4. Viretto C., Tlais A.Z.A., Arora K., Ameur H., Tuccillo F., **Polo A.**, Ardèvol V.N., Verté F., Katina K., Di Cagno R., Gobbetti M. (2025). Unraveling the functional

potential of microbial resources and pulse-based matrices for sourdough breadmaking. Future Foods, IF (2024) 8.2. DOI: 10.1016/j.fufo.2025.100643

5. **Polo A.***; Calabrese F.M.; Tlais A.Z.A.; Ferrocino I.; De Filippis F.; Celano G.; Vincentini O.; Valentino V.; Bo' C.D.; Bo S.; Di Cagno R.; Cocolin L.S.; Ercolini D.; De Angelis M.; Gobbetti M. (2025). A Novel Plant-Based Food to Enlarge the Access of Healthy Bioactive Compounds Typical of the Mediterranean Diet to Non-Adherent People. Food Frontiers, IF (2024) 6.9. DOI: 10.1002/fft2.70044
6. Joolaei Ahranjani P., **Polo A.**, Di Cagno R., Ferrentino G. (2025). Comparative evaluation of stability and interfacial characteristics of Pickering emulsions co-stabilized by zein and hydrocolloids: Role of charge profile, emulsifying ability, and rheological properties. Food Research International, IF (2024) 8.0. DOI: 10.1016/j.foodres.2025.116948
7. Stringari A., Tlais A.Z.A., **Polo A.***, Ameur H., De Micheli T., Aquaro N., Zannini E., Gobbetti M., Di Cagno R. (2025). Sourdough fermentation and red lentil protein enrichment as sustainable valorization of pasta by-products to make new pasta. Current Research in Food Science, IF (2024) 7.0. DOI: 10.1016/j.crfs.2025.101094
8. Pontonio E., Stringari A., Di Cagno R., Filannino P., Rizzello C.G., **Polo A.**, Nikoloudaki O., Gobbetti M. (2024). Plant-derived food waste management, valorization, and recycling through sourdough fermentation. Trends in Food Science and Technology, IF (2024) 15.4. DOI: 10.1016/j.tifs.2024.104589
9. Stringari A., **Polo A.***, Rizzello C.G., Arora K., Racinelli F., Ampollini M., Gobbetti M., Di Cagno R. (2024). Successful combination of lactic acid bacteria and yeast fermentation and enzymatic treatment to re-cycle industrial bread by-products for bread making. New Biotechnology, IF (2024) 4.9. DOI: 10.1016/j.nbt.2024.11.003
10. Vasquez S., Angeli M.A.C., **Polo A.**, Costantini A., Petrelli M., Avancini E., Di Cagno R., Gobbetti M., Gaiardo A., Valt M., Lugli P., Petti L. (2024). In vitro gastrointestinal gas monitoring with carbon nanotube sensors. Scientific Reports, IF (2024) 3.9. DOI: 10.1038/s41598-023-50134-z
11. Mastrolonardo F., Costantini A., **Polo A.***, Verni M., Junior W.J.F.L., Tlais A.Z.A., Nikoloudaki O., Granehäll L.B.M., Gobbetti M., Pontonio E., Di Cagno R. (2024). New fermented plant-based ingredients in sourdough breads enhanced nutritional value and impacted on gut microbiota. Future Foods, IF (2023) 8.2. DOI: 10.1016/j.fufo.2024.100498
12. Tlais A.Z.A.*†*, **Polo A.*†***, Granehäll L., Filannino P., Vincentini O., De Battistis F., Di Cagno R., Gobbetti M. (2024). Sugar lowering in fermented apple-pear juice orchestrates a promising metabolic answer in the gut microbiome and intestinal integrity. Current Research in Food Science, IF (2024) 7.0. DOI: 10.1016/j.crfs.2024.100833
13. Ameur H., Tlais A.Z.A., Paganoni C., Cozzi S., Suman M., Di Cagno R., Gobbetti M., **Polo A.*** (2024). Tailor-made fermentation of sourdough reduces the acrylamide content in rye crispbread and improves its sensory and nutritional characteristics. International Journal of Food Microbiology, IF (2024) 5.2. DOI: 10.1016/j.ijfoodmicro.2023.110513
14. Nikoloudaki O., Celano G., **Polo A.**, Cappello C., Granehäll L., Costantini A., Vacca M., Speckmann B., Di Cagno R., Francavilla R., De Angelis M., Gobbetti M. (2024). Novel probiotic preparation with in vivo gluten-degrading activity and potential modulatory effects on the gut microbiota. Microbiology Spectrum, IF (2024) 3.8. DOI: 10.1128/spectrum.03524-23
15. **Polo A.***, Acin-Albiac M., Da Ros A., Nolla Ardèvol V., Nikoloudaki O., Verté F., Di Cagno R., Gobbetti M. (2023). The effect of hydrolyzed and fermented arabinoxylan-oligosaccharides (AXOS) intake on the middle-term gut microbiome modulation and its metabolic answer. Nutrients, IF (2022) 5.9. DOI: 10.3390/nu15030590
16. Costantini A., Verni M., Mastrolonardo F., Rizzello C.G., Di Cagno R., Gobbetti M., Breedveld M., Bruggink S., Lefever K., **Polo A.*** (2023). Sourdough “Biga” Fermentation Improves the Digestibility of Pizza Pinsa Romana: An Investigation through a Simulated Static In Vitro Model. Nutrients, IF (2022) 5.9. DOI: 10.3390/nu15132958
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93. Tlais A.Z.A., Di Cagno R., Filannino P., Vincentini O., Rohn S., **Polo A.**, Gobbetti M. 2019. Tailored biotransformation of apple by-products: a novel method for producing shikimic acid. In: “Book of abstract. FEMS 2019. 8th Congress of European Microbiologists”. FEMS, Glasgow, 7.7.2019 - 11.7.2019, p 131.
94. Pioli S., Bani A., Borruso L., **Polo A**., Brusetti L. 2018. Microbial decomposer dynamics: Diversity and functionality in litter and deadwood of South Tyrolean forests. In “10° convegno sulla ricerca zoologica e botanica in Alto Adige”, Bolzano 6th – 7th September 2018, Bolzano (Italy). Editor: Museo Scienze Naturali in Alto Adige. Handle: https://hdl.handle.net/10863/6556
95. **Polo A.**, Cappitelli F., Villa F., Pinzari F. 2017. Fungal communities in library archives and the conservation of stored manuscripts: the case study of the archive of the University of Milan. In “Microbial Diversity 2017 – Drivers of microbial diversity”, proceedings of the congress of the Italian Society for Agriculture, Food and Environmental Microbiology (SIMTREA), 24th – 26th October 2017, Bari (Italy). Editors: Maria Calasso, Luca Cololin, Daniele Daffonchio, Maria De Angelis, Marco Gobbetti, Sylvie Lortal, Fabio Minervini, Erasmo Neviani, Carlo Giuseppe Rizzello. Publisher: SIMTREA, San Casciano Val di Pesa (Fi), 466-467. ISBN: 978-88-

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96. **Polo A.** 2014. “Biorestauro: batteri alleati dell’uomo nella conservazione delle opere d’arte”. Proceedings of the congress “I cippi di confine della Veneranda Arca del Santo di Anguillara Veneta – Atti delle giornate di studio”, conference organised by Palinsesti Onlus Association, 10th – 11th October 2013, Anguillara Veneta (Italy). Editors: Serena Franceschi, Adelmo Lazzari. Publisher: Gieffe Edizioni srl, 51-54. ISBN:978-88-940847-0-2
97. **Polo A.,** Cappitelli F., Sorlini C. 2014. “Biorestauro: batteri alleati dell’uomo nella conservazione delle opere d’arte”. Proceedings of the congress “I batteri nel restauro. I principi, l'esperienza di laboratorio e i casi studio applicati dalla biopulitura al bioconsolidamento”, congress organized by Villa Fabris Fondation, 28th September 2013, Thiene (Italy). Editors: L. Becagli, S. Metaldi. Publisher: il prato, 9-12. ISBN: 978-88-6336-236-7
98. Cappitelli F., Cattò C., Villa F., **Polo A.**, Forlani F., Dell’Orto S., Gelain A., Villa S. 2013. Exploring the anti-biofilm activity of zosteric acid via high-throughput screening of a small molecules scaffold-based library. In “Microbial Diversity 2013 – Microbial Interactions in Complex Ecosystems”, proceedings of the congress of the Italian Society for Agriculture, Food and Environmental Microbiology (SIMTREA), 23th – 25th October 2013, Torino (Italy).
99. Cattò C., Baroni S., Villa F., **Polo A**., Cappitelli F., Dell’Orto S., Gelain A., Villa S., Vitali A., Forlani F. 2013. Exploring molecular targets and pathways involved in the antibiofilm activity of zosteric acid related structure by a multi-strategy proteomic approach. In “57th National Meeting” by the Italian Society of Biochemistry and Molecular Biology (SIB)”, proceeding of congress, 18th – 20th September 2013, Ferrara (Italy).
100. Gulotta D., Bertoldi M., Bortolotto S., **Polo A.**, Cappitelli F., Toniolo L. 2012. The Richini Courtyard in Milan: characterisation of the restoration materials and decay evaluation. In “A.I.Ar. 2012 – VII° Congresso Nazionale di Archeometria”, proceedings of the congress of the A.I.Ar Associazione Italiana di Archeometria, 22th – 24th February 2012, Modena (Italy). Editors: G. Vezzalini, P. Zannini. 1-8.
101. **Polo A.**, Cappitelli F., Giacomucci L., Troiano F., Cattò C., Sorlini C. 2011. Alterative microorganisms living on stone artworks exposed to environmental stress conditions. In “Microbial Diversity 2011 – Environmental stress and adaptation”, proceedings of the congress of the Italian Society for Agriculture, Food and Environmental Microbiology (SIMTREA), 26th – 28th October 2011, Milano (Italy). Editors: S. Casella, D. Daffonchio, M. Gobbetti, E. Parente. Publisher: SIMTREA, San Casciano Val di Pesa (Fi), 23-26.

Proceeding – edited

102. Water as a natural resource in a changing environment: quality, threats and sustainable use. Borruso L., Plagg B., **Polo A.**, Brusetti L., Zerbe S. (Eds.) 2017. Proceedings of TER congress (12th December 2017), Free University of Bozen.

Articles published by others in magazines, etc. about my projects

103. “Nuovi alimenti da proteine vegetali: ecco come funziona il Micro4Food Lab di Unibz”, in “Alto Adige”, 2025, https://www.altoadige.it/video/nuovi-alimenti-da-proteine-vegetali-ecco-come-funziona-il-micro4food-lab-di-unibz-1.4253396
104. „Akteur im NOI: unibz“, in „Dolomiten“, 2023
105. “Una vera rivoluzione per i succhi di frutta”, in “Alto Adige”, 2023

Other publications

106. **Polo A.**, Tlais A.Z.A., Nikoloudaki O., Di Cagno R., Gobbetti M. 2023. *La fermentazione al servizio del sistema agro alimentare dell´Alto Adige*. In “Relazione agraria & forestale 2023” by Provincia Autonoma di Bolzano – Alto Adige.
107. Di Cagno R., **Polo A.**, Tlais A.Z.A, Nikoloudaki O., Gobbetti M. 2022. *Le fermentazioni come risorsa per il Sistema alimentare altoatesino*. In “Relazione agraria & forestale 2022” by Provincia Autonoma di Bolzano – Alto Adige.
108. **Polo A.**, Nikoloudaki O., Tlais A.Z.A., Di Cagno R., Gobbetti M. 2021. *Mikrobielle Fermentation: ein nachhaltiger Weg, um die Agrar- und Ernährungsressourcen des Planeten zu ernähren und zu verbessern*. In “Relazione

agraria & forestale 2021" by Provincia Autonoma di Bolzano – Alto Adige.

Further data

Presentations at scientific conferences (invited or selected)

1. "Tecniche omiche complementari per il monitoraggio e la gestione della fermentazione lattica", invited speaker in "Tecnologie MultiOmics: nuovi approcci per l'alimentazione e la salute", 12 March 2026, Bolzano (Italy).
2. "Sourdough fermentation and legume protein isolates as sustainable valorization of food by-products". Selected speaker in "9 International symposium on sourdough – book of abstracts", 23-27 February 2026, Brussels (Belgium).
3. "A novel plant-based food to make the benefits of the Mediterranean diet accessible to non-adherent people", selected speaker in "Microbial Diversity 2025, Microbial diversity for empowering the ecological transition", 23-26 September 2025, Rome (Italy).
4. "Fermented red lentil protein isolates rich in bioactive peptides and crackers fortified with such isolates modulate gut microbiome and its metabolic answer", selected speaker in "Smart Protein project closing conference", 24th May 2024, Berlin (Germany).
5. "The middle-term intake of hydrolyzed and fermented arabinoxylan-oligosaccharides (AXOS) modulates gut microbiome and its metabolic answer", selected speaker in "Microbial Diversity 2023, Agrifood microbiota as a tool for a sustainable future", 26-29 September 2023, Parma (Italy).
6. "Feeding with sustainably sourdough bread promotes healthy microbiota metabolism at the colon level", selected speaker in "VIII International Symposium on Sourdough. Resilience, Sustainability, Wellness", 14-17 June 2022, Bolzano (Italy).
7. "Tailored biotransformation of apple by-products as a source of nutritional supplement", selected speaker in "FEMS 2019. 8th Congress of European Microbiologists", 7-11 July 2019, Glasgow (Scotland).
8. "Alterative microorganisms living on stone artworks exposed to environmental stress conditions", selected speaker in "Microbial Diversity 2011 – Environmental stress and adaptation", 26-28 October 2011, Milan (Italy).
9. "Microbiological analysis on biofilms" in "Novel material for medical devices based on biofunctionalized surfaces with antifouling properties", congress of ANFOMAT (Antifouling Materials) research project, 21 February 2014, Milan (Italy).
10. "TER - Transdisciplinary Environment and Health Research Network South Tyrol" in "Transformative research and development in urban and regional environment" congress, 1-3 September 2016, Brixen (Italy).
11. "Bacteria: partners for the conservation of artworks", invited speaker in "Bacteria and conservation science", congress organized by Villa Fabris Fondation, 28 September 2013, Vicenza (Italy).

Entrepreneurship and technology transfer

Patents

1. Patent "Sourdough biga pinsa. Methods for preparing a dough or a baked or partially baked product and products of these methods" by European Patent office, ID CBJCHBCAABAAOOnRnqug96bp00C1QVYAP21FOEgLtnXQ
2. Patent "Sourdough products – bread reclycling" Patent Application PCT/EP2024/087827, Belgian patent application no. BE 2023/6042

Third mission

1. "Dalla fermentazione spontanea al controllo in laboratorio: architettura, ricerca e futuro dell´alimentazione". Public event for dissemination to citizens organized in cooperation with Fondazione Culturale G. Gambara and UPAD, Bolzano (NOI TechPark) (2026).
2. Participation in the round table with entrepreneurs, researchers and administrators in occasion of the kickoff meeting of the EFRE-FESR project "ZeroResidue - Infrastruttura per la valorizzazione totale degli scarti dell'industria alimentare", Bolzano (NOI TechPark) (2026).
3. Interview to TG3 pixel (RAI) about the SmartProtein Europen project (2026).
4. Article and interview to "La Repubblica" dedicated to SmartProtein European project (2026).
5. Guided visits to Micro4Food platform at the NOI TechPark for BAU

(https://www.b-a-u.it/about/) (2026).

6. Interview titled “Proteine vegetali per una nuova generazione di pasta e alternative ai latticini” to the "Ingredienti Alimentari" journal about SmartProtein Europen project (2026).
7. School Activities within PCTO Project (alternanza scuola lavoro) with the Istituto di Istruzione Secondaria Superiore Gandhi of Merano (2026).
8. Interview to “Alto Adige” newspaper about the SmartProtein European project (2025).
9. Speaker for the series of lectures “Innovazione alimentare: sfide e opportunitá” adressed to citizens and organized by Federazione Culturale "Gaetano Gambara" UPAD in Brixen, Bruneck and Egna (2025).
10. Participation at the Science Live 2025 “The Gardens of Knowledge” by UNIBZ.
11. Participation at the Open Day for Schools by the NOI TechPark with guided tours of Micro4Food platform labs (Edition April 2025).
12. Teaching for “Studium Generale, 2024-25”, Course: “Alimentazione: un ponte tra cultura e salute” (2025).
13. Guided visits to Micro4Food platform in occasion of EUniverCities Network Conference (2025).
14. Interview to TGR Rai and the scientific magazine TG3 "Leonardo" on EU projects SmartProtein and HealthFerm (2025).
15. Interview to Huffington Post about Micro4Food platform and the International Competence Centre on Food Fermentations (ICOFF) at the NOI TechPark (2025).
16. Guided visits to Micro4Food platform (by Andrea Polo) and presentation of the bachelor in Enogastromy (by Prof. Ferrentino) for the delegation from the Küchenmeisterausbildung of SKV (2025).
17. School Activities within PCTO Project (alternanza scuola lavoro) with the Istituto di Istruzione Secondaria Superiore Gandhi of Merano (2025).
18. Guided visits to Micro4Food platform at the NOI TechPark for Team Fraunhofer Italia, organized by NOI TechPark (2024).
19. Interview to Forbes US by Dr. Ann Abel (2024).
20. Guided visits to Micro4Food platform at the NOI TechPark for AdvantageAustria (Camera dell'Economia Austriaca - team of Italian offices in Milano, Roma, Padova and Bolzano) (2024).
21. Organization of the seminar by the visiting Professor Robert Ward, from the Nutrition, Dietetics and Food Sciences (NDFS) Department - UtahState University. The seminar was open to the accademic comunity, PhD, Master and Bachelor students (2024).
22. School Activities: Guided visits to Micro4Food platform at the NOI TechPark for Realgymnasium of Bozen (2024).
23. Participation at the Open Day for Schools by the NOI TechPark with guided tours of Micro4Food platform labs (Edition March 2024).
24. School Activities within PCTO Project (alternanza scuola lavoro) with the Istituto di Istruzione Secondaria Superiore Gandhi of Merano (2024).
25. Guided visits to Micro4Food platform in occasion of the visit by the delegation of Camera di Commercio and IRE/WIFO led by the Director of NOI TechPark Dr. Ulrich Stofner (2024).
26. Guided visits to Micro4Food platform in occasion of ERIAFF Annual Conference. Green and Climate Transition Plans in Agriculture and Agroforestry Systems (2023).
27. Contribution with articles on research activities of Unibz in “Agrar- und Forstbericht“, editions 2022, 2023, 2024 and 2025.
28. Interview to the magazine "Speranza Verde" by Luca Sardella for the TV show “Striscia la Notizia” (2023).
29. Participation at the Open Day for Schools by the NOI TechPark with guided tours of Micro4Food platform labs (Edition March 2023).
30. Participation at “Onde Vagabonde” broadcast by Radio Rai (9/2/2023) http://www.raialtoadige.rai.it/it/index.php?media=Pra1675945500.
31. Contribute (video interview) to the MicrobiomeSupport (HORIZON 2020) documentary movie http://www.microbiomesupport.eu/documentary-movie/ (December 2022)

32. Interview to Dolomiten newspaper, 16 November 2022.
33. Interview to AltoAdige newspaper, 16 November 2022.
34. Interview to “Accademia” magazine (#84 12/2022) titled “SHIME, l´intestino virtuale del laboratorio Micro4Food”, November 2022.
35. Presentation of Micro4Food platform and labs to Grisons government delegation, by the Presidium Protocol and Ceremonial Department of the Autonomous Province of Bozen (November 2022).
36. Participation at the Open Day for Schools by the NOI TechPark with guided tours of Micro4Food platform labs (Edition November 2022).
37. Organization of “Fermentazione del Cibo: dal passato direttamente nel futuro?” event (round table discussion open to citizens) within the “RI-NUTRI. Ripensare la Nutrizione” project by UPAD Cultural Association (2022)
38. Guided visit of Micro4Food platform in occasion of visit by the U. S. Consul General Robert Needham at the NOI Techpark in Bozen-Bolzano, South Tyrol, (2022).
39. Articolo divulgativo “Mikrobielle Fermentation: ein nachhaltiger Weg, um die Agrar- und Ernährungsressourcen des Planeten zu ernähren und zu verbessern“ in “Agrar- und Forstbericht 2021“ (2021).
40. Guided Tours of Micro4Food platform for Master students of the University of Innsbruck – Institute of Microbiology, organised by NOI TechPark (2021 and 2022)
41. Participation to Lab 4 Business Food Technologies, workshop organized by NOI TechPark to promote the technology transfer and to support the meeting between research and companies (2021).
42. Guided Tours of Micro4Food platform for Companies organised by NOI TechPark (ca. 12 per year, since 2019).
43. Video-interview by NOI TechPark to disseminate examples of cooperations between University and companies (2021) https://www.instagram.com/tv/CUNTwftjO3-/?utm_medium=share_sheet.
44. Participation to Family Bakers & Fulvio Marino broadcast (2021).
45. Contribution to the Immersive video installation on sourdough by Katrin Hornek, visual art on artistic research (2021).
46. Participation to UNLOCK POTENTIAL, promotional events focused on Food and Green organized by NOI TechPark in cooperation with workers and companies associations (lvh.apa, SBB, Rete Economia, UVS) (2021).
47. Interview for TG Leonardo (2019).
48. Interview for TGR (2019).
49. Interview for Interpoma broadcast (2019).

Language competence

Written and spoken competence in all languages according to CERF levels, Common European Reference Framework (http://www.coe.int/t/dg4/linguistic/cadre1_en.asp); append certificates wherever available

	Understanding				Speaking				Writing	
	Listening		Reading		Spoken interaction		Spoken production			
French	B2	Independent User	C1	Proficient User	B1	Threshold or intermediate	B1	Threshold or intermediate	A2	Threshold or intermediate
English	C1	Independent User	C1	Independent User	C1	Independent User	C1	Independent User	C1	Independent User
German	B2	Basic User	B2	Basic User	B2	Basic User	B2	Basic User	B2	Basic User

- Recognized language certificate of the **English level C1**, through internal C1 exam by the Language Centre of the Free University of Bozen-Bolzano.
- Recognized language certificate of the **German level A2**, Goethe Institute.
- Recognized language certificate of the **German level B2**, through internal B2 exam by the Language Centre of the Free University of Bozen-Bolzano.

Date: 08.04.2026