

# University Academic Curriculum Vitae

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## Personal information

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## Education since leaving school

- 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 and 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” (open access at [air.unimi.it/handle/2434/150089](http://air.unimi.it/handle/2434/150089)).
- 2006. MSc. at the University of Padova, 110/110 *cum laude* (degree awarded on 27th October 2006).
- 2004. BSc. at the University of Padova, 110/110 *cum laude* (degree awarded on 30th September 2004).

## Present appointment

- Title of appointment: “Study and characterization of microbial biofilm in fermented food matrix and in gastrointestinal environment”.
- start of appointment: 01/10/2021
- level of appointment: RTD-A
- employer: Free University of Bozen, Faculty of Science and Technology
- brief description of responsibilities: study of structure, function and evolution of microbial communities in fermented foods/beverages and in gut ecosystems in order to clarify the role of microbiota in such ecosystems and the effect of new foods/beverages on gut microbiota. Exploiting of microorganisms to select tailored starter with the final goal to improve fermentation processes and give value to studied ecosystems. In particular, following methods were applied: i) culture-mediated and culture independent approaches to investigate the structure of microbial communities; ii) metagenomic and metatranscriptomic approaches to determine the functions of microbial communities; iii) in vitro models (i.e. SHIME) for simulation and study of gastro intestinal ecosystems; iv) study of properties, structure, architecture and composition of microbial biofilm in fermented foods/beverages and in gastrointestinal environments (colon and mucosal layers) through microscopy (CLSM) and molecular methods; v) selection and pro-technological characterization of starter in order to develop new foods/beverages.

## Professional experience

Chronological list of all previous employments

<i>From / to</i>	<i>Job title</i>	<i>Name of academic Institution / employer</i>	<i>Role</i>	<i>Main responsibilities/activities</i>
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	RTD-A	Research (i.e. study of structure, function and evolution of microbial communities in fermented foods/beverages and in gut ecosystems through validated in vitro models) and teaching.
March 2016 –	Development of the	Free University of	Post-doctoral	Establishment and maintenance of

July 2018	transdisciplinary research network on environment and health in South Tyrol (TER)	Bozen	fellow (AR)	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	Post-doc researcher (independent contractor agreement)	Study of microbial communities on manuscript surfaces and in the repository air, and of microclimatic conditions
November 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
September 2014	Evaluation of the effects of zosteric acid on the polysaccharide	Programme "Stage in SIMTREA laboratory" funded by	Postdoc researcher (research prize spent at the	In vitro culture of bacterial biofilm both with and without the antifouling agent, exopolysaccharides

	fraction of extracellular polymeric matrix in microbial biofilm	the Italian Society for Agriculture, Food and Environmental Microbiology (SIMTREA)	University of Florence. Department of Agrifood Production and Environmental Sciences)	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, <a href="http://www.anfomat.unimi.it/">http://www.anfomat.unimi.it/</a> )	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
November 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
November 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 alternative 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	Fellow	Development of microbial biotechnologies applied to the remediation of cultural heritage

		Microbiology (DISTAM), Milan, Italy		
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 conferred 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:
- 2019/present “The food - human axis for driving the gut microbiome” (English) at the M.Sc. in Food Sciences for Innovation and Authenticity (lab teaching) (LM-70). Free University of Bolzano-Bozen, Bolzano, Italy. Result of last lectureship evaluation: 8,5/10.
- 2018/present “Fermentation processes for the production of mountain wines” (English) at the M.Sc. in Viticulture, Enology and Wine Marketing (LM-69). Free University of Bolzano-Bozen, Bolzano, Italy. Result of last lectureship evaluation (degree of satisfaction): definitively yes.
- 2018/present “Fermentations as tools for making traditional and innovative foods and beverages” (English) at the M.Sc. in Food Sciences for Innovation and Authenticity (lab teaching) (LM-70). Free University of Bolzano-Bozen, Bolzano, Italy. Result of last lectureship evaluation: not available.
- 2018/2019 “Nutrition and Health: the Functional Foods” (English) at the B.Sc. in Agricultural Science. Free University of Bolzano-Bozen, Bolzano, Italy. Result of last lectureship evaluation (degree of satisfaction): generally yes.
- 2013/2014 “Agricultural microbiology” (48 hours, English). Bachelor of Science in Agriculture and Food Technology Sciences at the University of Makeni (Sierra Leone). Result of lectureship evaluation: not available.

#### Courses leading to a PhD of Science degrees:

- 2018/2020 “Food-human axis: the gut microbiome” (English) at PhD course in Food Engineering and Biotechnology. Free University of Bolzano-Bozen, Bolzano, Italy.
- 2018/2020 “Meta-omics approaches to study the food fermentations” (English) at the PhD course in Food Engineering and Biotechnology. Free University of Bolzano-Bozen, Bolzano, Italy.

#### Lab teaching in graduate courses leading to a Bachelor or Master of Science degrees:

- October 2017-January 2018: course of “Food Microbiology”, 24 hours laboratory, degree course in “Agricultural and agro-environmental science”. Free University of Bozen, academic years 2017/2018.
- April-May 2013: course of “Microbiology for cultural heritage”, 32 hours laboratory, degree course in “Science and Technology for Cultural Heritage Conservation”. University of Milan, academic years 2012/2013.
- March-May 2012: course of “Microbiology for cultural heritage”, 32 hours laboratory, degree course in “Science and Technology for Cultural Heritage Conservation”. University of Milan, academic years 2011/2012.
- November-December 2008: course of “Agricultural microbiology”, 16 hours laboratory, degree course in Agricultural Science and Technology. University of Milan, academic years 2008/2009.

- October-December 2007: course of "Agricultural microbiology", 16 hours laboratory, degree course in Agricultural Science and Technology, University of Milan, academic years 2007/2008.

Academic lectures in PhD and master courses:

- "Culture and study of biofilm" (5h) in the theoretical course "Biofilm study and environmentally-friendly antifouling strategies" for PhD course in Chemistry, Biochemistry and Ecology of Pesticides, University of Milan, Milano, Italy, March-April 2013.
- "Bacteria for the remediation of cultural heritage" (3h), in the course of "Biology applied to conservation" by Accademy of Fine Arts of Brera, Milano, Italy, 16th July 2013.
- "The removal of chemical alterations from stone by bio-cleaning techniques" (8h), in the course of "The conservation of contemporary arts" by Accademy of Fine Arts of Brera, Milano, Italy, 14th and 21th December 2011.

Non-academic courses:

- "Fundamentals of microbiology", post-A Level course of technician for the restoration of cultural heritage at "ENGIM Veneto – Formazione, Orientamento Cooperazione", Vicenza, Italy, school year 2014, 2016 and 2017.
- "Biotechnologies applied to cultural heritage conservation", refresher course for restorers entitled "Innovative technologies for cleaning, consolidation and protection" funded by Veneto Region, Thiene (VI), Italy, 2012.
- "Microbiology and botany connected to the deterioration of stone surfaces", education course of technician for the reconnaissance and digital elaboration of archaeological stone heritage of Lombardia Region funded by Government Department Responsible for Archeological Monuments of Lombardia Region, Capo di Ponte (BS), Italy, 2012.

Invited academic seminars:

- "Biodeterioration and biorestitution of stone monuments", in the course of "Microbial biotechnology", degree course in "Molecular biotechnology", University of Firenze, Italy, 2th December 2014.
- "Biotechnology applied to the conservation of artworks", in the course of "Biology applied to the analysis and conservation of cultural heritage", degree course in "Methods for the conservation of cultural heritage", University of Genova, Italy, 21th May 2013.
- "Biotechnology to study artworks", in the course of "Biology applied to the analysis and conservation of cultural heritage", degree course in "Methods for the conservation of cultural heritage", University of Genova, Italy, 15th May 2012.
- "The removal of chemical alterations on stone material" in the course of "Biology and microbiology", degree course in "Science and technology for cultural heritage", University of Padova, Italy, 24th January 2011.
- "Bioremediation of stone materials" in the course of "Biology and microbiology", degree course in "Science and technology for cultural heritage", University of Padova, Italy, 9th December 2009.
- "Biotechnologies for the conservation of cultural heritage" in the course of "Biology and microbiology", degree course in "Science and technology for cultural heritage", University of Padova, Italy, 5th December 2008.
- "Bio-cleaning methods for the conservation of cultural heritage" in the course of "Microbiology", degree course in "Science and technology for cultural heritage", University of Padova, Italy, 11th January 2008.

Bachelor and Master students co-supervision:

6 Master theses in Food Sciences for Innovation and Authenticity (Free University of Bozen), 1 Master thesis in Industrial Biotechnology (University of Milano-Bicocca), 1 Master thesis in Arts in Conservation-Restoration (University of Applied Sciences and Arts of Southern Switzerland, SUPSI), 1 Bachelor thesis in Agriculture and Agro-Environmental Sciences (Free University of Bozen), 2 Bachelor theses on Plant, Food and Agri-Environmental Biotechnologies (University of Milan), 4 Bachelor theses in Science and

Technology for Cultural Heritage Conservation (University of Milan), 2 Bachelor theses in Environmental Science (University of Insubria), 1 Bachelor thesis in Material Engineering (Polytechnic of Milan), 1 Bachelor thesis in Agricultural Science and Technology (University of Milan). Total, 19 Bachelor and Master students co-supervision.

Invited non-academic seminars:

- “Biorestauro”, within the programme “Piano formativo fondoimpresa per aumentare la competitività delle imprese lombarde” by Fondazione Enaip Lombardia, Gallarate (VA), Italy, 17th January 2018.
- “Biodeterioration and bioremediation of stone artworks” (5h), professional school of restoration “ENGIM Veneto – Formazione, Orientamento Cooperazione”, Vicenza, Italy, 7th October 2013.
- “Science and technology for the conservation of cultural heritage” on the occasion of “The scientific week” by the “P. Paleocapa” Second Level College of Science, Rovigo, Italy, 6th March 2006.

### **Other academic responsibilities**

Internal appointments to Faculty and University boards:

- Member of the Admission Committee for the Master's degree course in Food Science for Innovation and Authenticity (LM70), Free University of Bozen, since academic years 2021/2022.
- Member of the examination board for the course of “Microbiology for Cultural Heritage”, degree course in “Cultural heritage conservation science”, University of Milan, since academic years 2010/2011.

Responsibilities for organizing conferences/seminars/exhibitions:

- 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 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.
- 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, 12<sup>th</sup> December 2017.

External appointments at national and international level:

- 2021. Evaluator of AGR16 PhD students products in the First Virtual Workshop on the Developments in the Italian PhD Research on Food Science, Technology and Biotechnology. <https://www.phdfood.it/>

### **Memberships**

Member of the Italian Society for Agriculture, Food and Environmental Microbiology (SIMTREA), associated with FEMS, since March 2014.

Editorial Boards of scientific publications:

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 (12<sup>th</sup> December 2017), Free University of Bozen.

### **Research and scholarships**

- Summary of current research and scholarship  
Since October 2018, I benefit of full-time RTD-A contract at the Free University of Bozen (Faculty of Science and Technology). 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 characterization of microbial biofilms in fermented foods and in gut environments, with the aim to elucidate structure, composition, properties and architecture; and 3) the development of new fermented food and beverages with functional properties, exploiting selected/tailored starters with the final goal to improve fermentation

processes.

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 the properties of microbial biofilms, and the structure/functions of microbial communities. Overall, my technical expertise includes: i) culture-mediated and culture independent approaches to investigate the structure of microbial communities; ii) metagenomic, metatranscriptomic and metabolomic approaches to determine the functions of microbial communities; iii) optical, fluorescent and electron microscopy.

▪ Summary of research and scholarship during the previous years

In the previous years I was postdoc researcher at the Free University of Bozen (2016-2018), project manager for COOPI (International Cooperation) (2015-2016), and postdoc researcher at the University of Milan (2011-2014).

2016-2018: I was postdoc researcher at the Free University of Bozen, in the coordination office of the Transdisciplinary Environment and Health Research Network South Tyrol (TER). Main activities were: the development of TER Network; the establishment and maintenance of relationships with research partners, institutions and stakeholders; the research of new grant opportunities; the support in projects preparation and submission.

2015-2016: I worked as project manager for COOPI (International Cooperation). The project I lead concerned the food security on rural area of Sierra Leone through the culture of cashew and the study/improvement of the cashew value chain. Particularly, I had the responsibility to ensure the acquisition of the results foreseen by the project in technical as well as economic/financial terms.

2011-2014: I benefited of postdoctoral fellowships in the multidisciplinary research team led by Prof. Francesca Cappitelli. In particular, my research activity was dedicated to the study of microbial biofilms and of microbial communities living on abiotic surfaces. The aims were: to set up a more sustainable practice to use conventional control strategies, and to investigate new strategies to hinder microbial adhesion and biofilm growth, with the final goal of creating effective and safer control strategies as alternative to the traditional biocidal practices.

▪ Summary of significant achievements in research and scholarship

Since I started my research activity, I obtained the PhD scholarship (funded by MIUR), overall 71 months of fellowships and a 3-years RTD-A contract. During this period, I was author of 26 papers in scientific peer-review journals, 5 chapters in books and 8 conference papers. I was co-supervisor of 19 Bachelor and Master thesis. I won 2 prizes: the “Stage in SIMTREA laboratory” prize 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*” (June 2014), and the prize by the Province of Trento (Italy) to MSc thesis that are relevant for the Province of Trento. I formally participated as team member in 35 funded projects in which I contributed to the project writing and/or implementation. In the same period, I have also contributed to the writing of several successful project proposals, although I am not formally involved as team member. In the last 5 years, I contributed to preparation and submission of 38 research projects.

▪ Research grants and contracts

Date granted	Award Holder(s)	Funding Body	Title
July 2020 – July 2021	Dr. Andrea Polo, Free University of Bozen (PI)	Free University of Bozen (CRC-RTD 2020)	A pioneering investigation on biofilm by fructophilic lactic acid bacteria: a first step to sketch out potential strategy for the improvement of honeybee health

2020	Prof. Raffaella Di Cagno, Free University of Bozen (A. Polo team member)	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.
2020-21	Prof. Marco Gobbetti, Free University of Bozen (A. Polo team member)	Company	Production of a vaginal/neonatal psychobiotic gel
2020	Prof. Marco Gobbetti, Free University of Bozen (A. Polo team member)	Company	Survival assays of Bacillus coagulans GANEDEN BC30 during infusion, and in vitro determination of persistence and adhesion during gastrointestinal transit.
2019-20	Prof. Raffaella Di Cagno, Free University of Bozen (A. Polo team member)	Company	Monitoring of microbiological and biochemical features of company products
2019-21	Prof. Marco Gobbetti, Free University of Bozen (A. Polo team member)	Ministerial funding	Management of breeding systems and environmental drivers for the production and exploitation of natural starter in the cheese making process
2020-22	Prof. Marco Gobbetti, Free University of Bozen (A. Polo team member)	FESR-EFRE	Development of an eco-sustainable bioprocessing for making low sugar fruit juices
2021	Prof. Marco Gobbetti, Free University of Bozen (A. Polo team member)	Company	Study of prebiotic effects of selected arabinoxylan-oligosaccharides (AXOS) in a simulator of the human intestinal microbial ecosystem
2019-22	Prof. Raffaella Di Cagno, Free University of Bozen (A. Polo team member)	Ministerial funding	Bio-preservation of new bakery products with improved nutritional characteristics through the use of agricultural by-products and unconventional plant substrates
2019-22	Prof. Marco Gobbetti, Free University of Bozen (A. Polo team member)	Free University of Bozen	Unravelling the microbiome meta-community: the novel approach for steering cheese making
2020	Prof. Raffaella Di Cagno, Free University of Bozen (A. Polo team member)	Company	Development of sourdough, monitoring and optimization of the baking process
2021	Prof. Raffaella Di Cagno, Free University of	Company	Investigation of beta-hydroxybutyrate triglyceride (BHB-TG) hydrolysis in



	Bozen (A. Polo team member)		dynamically simulated upper GI conditions (stomach and small intestine)
2020-23	Dr. Emanuele Zannini, University College Cork (A. Polo team member of WP)	Horizon 2020	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
2020-22	Prof. Raffaella Di Cagno, Free University of Bozen (A. Polo team member)	Company	Development of a biotechnological protocol for the production of whey and fruit smoothies and fruit-based baby-food preparations
2020-21	Prof. Marco Gobbetti, Free University of Bozen (A. Polo team member)	Company	Sourdough selection for crispbread production from rye flour with improved sensory, rheology and nutritional characteristics
2017-20	Prof. Raffaella Di Cagno, Free University of Bozen (A. Polo team member)	MIUR (PRIN2015)	Processing for healthy cereal foods
2019-20	Prof. Raffaella Di Cagno, Free University of Bozen (A. Polo team member)	Company	Factors affecting the digestibility of the sourdough breads: an in vitro preliminarily characterization
2020	Prof. Marco Gobbetti, Free University of Bozen (A. Polo team member)	Company	Sourdough starter strategy
2018-20	Politecnico di Milano (A. Polo team member of WP)	CARIPLO Foundation	A microbe-based value chain: treatment and valorisation of textile wastewater
2017-19	Dr. Lorenzo Brusetti, Free University of Bozen (A. Polo team member)	Free University of Bozen	Patterns of wood-decomposer communities in a montane South Tyrolean forest
2017	Dr. Lorenzo Brusetti, Free University of Bozen (A. Polo team member)	Free University of Bozen	The advantage of teatime at your home field
2015-18	Dr. Lorenzo Brusetti, Free University of Bozen (A. Polo team member)	Free University of Bozen (CRC-RTD 2014)	Leaves degradation in mountain environments
2017-21	Prof. Matthias Gauly, Free University of Bozen (A. Polo team member)	EUREGIO International funding	Environment, Food & Health; The Overweight/Obesity/healthy ageing challenge: European Region Tyrol-South Tyrol-Trentino as Land of Solutions
June 2017-	Dr. Leonardo	Free	Temperature sensitivity of

January 2019	Montagnani, Free University of Bozen (A. Polo team member)	University of Bozen (CRC-RTD 2017)	heterotrophic respiration in soil: can be teabags weight loss and Acidobacteria density adequate methods for its determination?
January 2017- January 2018	Prof. Stefan Zerbe and Dr Lorenzo Brusetti, Free University of Bozen (A. Polo co-proponent)	Kurt-Eberhard-Bode Foundation	Sustainable Water management and wetland Restoration in settlements of continental-arid Central Asia
2015-2020	Prof. Stefan Zerbe, Free University of Bozen (A. Polo beneficiary of postdoctoral fellowship)	Autonomous Province of Bolzano	Transdisciplinary Environment and Health Research Network South Tyrol
March 2012- February 2014	Prof. Francesca Cappitelli, University of Milan (A. Polo beneficiary of postdoctoral fellowship)	CARIPLO Foundation	Novel materials for medical devices based on biofunctionalized surfaces with antifouling properties
January 2012- December 2013	Prof. Jutta Papenbrock, Leibniz Universität of Hanover, and Prof. Francesca Cappitelli, University of Milan (A. Polo post-doc fellow)	German DAAD and Italian CRUI	Seagrass compounds inhibit biofilm formation - from the identification to the application
Accademic year 2011-2012	Prof. Elisabetta Zanardini, University of Insubria (A. Polo external team member)	University of Insubria (FAR 2011)	Biodeterioration of artworks and selection of microorganisms for biorestitution of historical materials
October 2010-April 2012	Prof. Francesca Cappitelli, University of Milan (A. Polo beneficiary of postdoctoral fellowship)	Fondazione Cassa di Risparmio di Trento e Rovereto	"Nuove tecnologie antifouling non tossiche per sistemi di filtrazione a membrana caratteristici di impianti di depurazione dell'area trentina"
January 2010-June 2011	Prof. Pasquale Tucci, University of Milan (A. Polo beneficiary of postdoctoral fellowship)	CARIPLO Foundation	"Il cortile del Richini (Università degli Studi di Milano, Via Festa del Perdono)"
November 2008- October 2009	Prof. Francesca Cappitelli, University of Milan (A. Polo PhD student)	University of Milan (PUR 2008)	"Ottimizzazione di processi biologici per il trattamento di fanghi di supero dalla depurazione delle acque e per lo smaltimento di scarti dell'industria alimentare con recupero energetico"
Accademic	Prof. Elisabetta	University	Analyses of stone-work

year 2008-2009	Zanardini, University of Insubria (A. Polo external team member)	of Insubria (FAR 2008)	biodeterioration and aerobiological characterization of the environment
March 2007-July 2008	Francesco Cellini, Metapontum Agrobios Soc.Consort. A R.L. (SME) (A. Polo beneficiary of fellowship)	Basilicata Region	"Attività di ricerca e trasferimento tecnologico sull'impiego di microrganismi nel settore del risanamento dei beni culturali e di manufatti artistici"
June 2005-December 2007	Prof. Claudia Sorlini, University of Milan (A. Polo team member)	Indian Department of Science and Technology (DST) and Italian Ministry of Foreign Affairs (MAE)	Investigation of stone deteriorating microbial strains and application of bioremediating microbial agents on Indian altered stone monuments

## Publications

Journal articles in refereed academic journals. Journal impact factor (IF) at the submission.

**Current h-index: 12** ([www.scopus.com](http://www.scopus.com), October 2021).

- Filannino P., Di Cagno R., Vincentini O., Pinto D., **Polo A.**, Maialetti F., Porrelli A., Gobbetti M. 2021. Nutrients bioaccessibility and anti-inflammatory features of fermented bee pollen: A comprehensive investigation. *Frontiers in Microbiology*, 12. IF (2021) 4,076. DOI: 10.3389/fmicb.2021.622091
- Arora K, Ameer H., **Polo A.**, Di Cagno R., Rizzello C.G., Gobbetti M. 2021. Thirty years of knowledge on sourdough fermentation: A systematic review. *Trends in Food Science & Technology*, 108, 71-83. IF (2019) 11,077. DOI: 10.1016/j.tifs.2020.12.008
- Badraghi A., Ventura M., **Polo A.**, Borruso L., Giammarchi F., Montagnani L. (2021). Soil respiration variation along an altitudinal gradient in the Italian Alps: Disentangling forest structure and temperature effects. *PLoS ONE*, 16, e0247893. IF (2020) 2,74. DOI: 10.1371/journal.pone.0247893
- Borruso L., Bani A., Pioli S., Ventura M., Panzacchi P., Antonielli L., Giammarchi F., **Polo A.**, Tonon G., Brusetti L. 2021. Do aerial nitrogen depositions affect fungal and bacterial communities of oak leaves? *Frontiers in Microbiology*, 12, 633535. IF (2021) 4,076. DOI: 10.3389/fmicb.2021.633535
- Polo A.**, Arora K., Ameer H., Di Cagno R., De Angelis M., Gobbetti M. 2020. Gluten-free diet and gut microbiome. *Journal of Cereal Science*, 95, 103058. IF (2020) 2,938. DOI: 10.1016/j.jcs.2020.103058
- Gobbetti M., De Angelis M., Di Cagno R., **Polo A.**, Rizzello C.G. 2020. The sourdough fermentation is the powerful process to exploit the potential of legumes, pseudo-cereals and milling by-products in baking industry. *Critical Reviews in Food Science and Nutrition*, 60, 2158–2173. IF (2019) 7,862. DOI: 10.1080/10408398.2019.1631753
- Tlais A.Z.A., Fiorino G.M., **Polo A.**, Filannino P., Cagno R.D. 2020. High-value compounds in fruit, vegetable and cereal byproducts: An overview of potential sustainable reuse and exploitation. *Molecules*, 25, 2987. IF (2019) 3,267. DOI: 10.3390/molecules25132987
- Di Cagno R., Filannino P., Cantatore V., **Polo A.**, Celano G., Martinovic A., Cavoski I., Gobbetti M. 2020. Design of potential probiotic yeast starters tailored for making a cornelian cherry (*Cornus mas L.*) functional beverage. *International Journal of Food Microbiology*, 323. IF (2020) 4,187. DOI: 10.1016/j.ijfoodmicro.2020.108591

9. Bani A., Borruso L., Matthews Nicholass K.J., Bardelli T., **Polo A.**, Pioli S., Gomez-Brandon M., Insam H., Dumbrell A.J., Brusetti L. 2019. Site-specific microbial decomposer communities do not imply faster decomposition: Results from a litter transplantation experiment. *Microorganisms*, 7. IF (2018) 4.167. DOI: 10.3390/microorganisms7090349
10. **Polo A.**, Cappitelli F., Villa F., Pinzari F. 2017. Biological invasion in the indoor environment: the spread of *Eurotium halophilicum* on library materials. *International Biodeterioration & Biodegradation*, 118, 34-44. IF (2015) 2.429. DOI: 10.1016/j.ibiod.2016.12.010
11. Okpalanozie O.E., Adebuseye S.A., Troiano F., **Polo A.**, Cappitelli F., Ilori M.O. 2016. Evaluating the microbiological risk to a contemporary Nigerian painting: molecular and biodegradative studies, *International Biodeterioration & Biodegradation*, 114, 184-192. IF (2015) 2.429. DOI: 10.1016/j.ibiod.2016.06.017
12. Villa F., Secundo F., **Polo A.**, Cappitelli F. 2015. Immobilized hydrolytic enzymes exhibit antibiofilm activity against *Escherichia coli* at sub-lethal concentrations. *Current Microbiology*, 71(1), 106-114. IF (2013) 1.359. DOI: 10.1007/s00284-015-0834-6
13. Sanmartín P., Villa F., **Polo A.**, Silva B., Prieto B., Cappitelli F. 2015. Rapid evaluation of three biocide treatments against the cyanobacterium *Nostoc* sp. PCC 9104 by color changes. *Annals of Microbiology*, 65, 1153-1158. IF (2013) 1.039. DOI: 10.1007/s13213-014-0882-3
14. Balloi A., Lombardi E., Troiano F., **Polo A.**, Capitelli F., Gulotta D., Toniolo L., Lucchini A., Daffonchio D. 2015. Sulfate reducing bacteria as bio-cleaning agents: development of new methodologies and study cases. *Conservation science in cultural heritage*, 15(2), 109-119. IF (2015) 0.037. DOI: 10.6092/issn.1973-9494/7123
15. **Polo A.**, Foladori P., Ponti B., Bettinetti R., Gambino M., Villa F., Cappitelli F. 2014. Evaluation of zosteric acid for mitigating biofilm formation of *Pseudomonas putida* isolated from a membrane bioreactor system. *International Journal of Molecular Sciences*, 15, 9497-9518. IF (2013) 2.339. DOI: 10.3390/ijms15069497
16. Troiano F., **Polo A.**, Villa F., Cappitelli F. 2014. Assessing the microbiological risk to stored 16th Century parchment manuscripts: a holistic approach based on molecular and environmental studies. *Biofouling*, 30(3), 299-311. IF (2013) 3.701. DOI: 10.1080/08927014.2013.871539
17. Cappitelli F., **Polo A.**, Villa F. 2014. Biofilm formation in food processing environments is still poorly understood and controlled. *Food Engineering Reviews*, 6, 29-42. IF (2013) 3.036. DOI: 10.1007/s12393-014-9077-8
18. Cappitelli F., Villa F., **Polo A.** 2014. Culture-independent methods to study subaerial biofilm growing on biodeteriorated surfaces of stone cultural heritage and frescoes. *Methods in Molecular Biology*, 1147, 341-366. IF (2013) 1.254. DOI: 10.1007/978-1-4939-0467-9\_24
19. Troiano F., Gulotta D., Balloi A., **Polo A.**, Toniolo L., Lombardi E., Daffonchio D., Sorlini C., Cappitelli F. 2013. Successful combination of chemical and biological treatments for the cleaning of stone artworks. *International Biodeterioration & Biodegradation*, 85, 294-304. IF (2013) 2.235. DOI: 10.1016/j.ibiod.2013.08.011
20. **Polo A.**, Gulotta D., Santo N., Di Benedetto C., Fascio U., Toniolo L., Villa F., Cappitelli F. 2012. Importance of subaerial biofilms and airborne microflora in deterioration of stonework: a molecular study. *Biofouling* 28(10), 1093-1106. IF (2011) 4.429. DOI: 10.1080/08927014.2012.729580
21. Giacomucci L., Purdy K. J., Zanardini E., **Polo A.**, Cappitelli F. 2012. A new non-degenerate primer pair for the specific detection of the nitrite reductase gene, *nrfA*, in the genus *Desulfovibrio*. *Journal of Molecular Microbiology and Biotechnology* 22, 345-351. IF (2012) 1.679. DOI: 10.1159/000345768
22. **Polo A.**, Diamanti M. V., Bjarnsholt T., Høiby N., Villa F., Pedferri M. P., Cappitelli F. 2011. Effects of photoactivated titanium dioxide nanopowders and coating on planktonic and biofilm growth of *Pseudomonas aeruginosa*. *Photochemistry and Photobiology*, 87, 1387-1394. IF (2010) 2.679. DOI: 10.1111/j.1751-1097.2011.00972.x
23. **Polo A.**, Cappitelli F., Brusetti L., Principi P., Villa F., Giacomucci L., Ranalli G., Sorlini C. 2010. Feasibility of removing surface deposits on

- stone using biological and chemical remediation methods. *Microbial Ecology*, 60 (1), 1-14. IF (2009) 3.251. DOI: 10.1007/s00248-009-9633-6
24. Villa F., Giacomucci L., **Polo A.**, Principi P., Toniolo L., Levi M., Turri S., Cappitelli F. 2009. N-vanillylnonanamide tested as a non-toxic antifoulant, applied to surfaces in a polyurethane coating. *Biotechnology Letters* 31, 1407–1413. IF (2008) 1.595. DOI: 10.1007/s10529-009-0031-4
25. Cappitelli F., Abbruscato P., Foladori P., Zanardini E., Ranalli G., Principi P., Villa F., **Polo A.**, Sorlini C. 2009. Detection and elimination of cyanobacteria from frescoes: The case of the St. Brizio Chapel (Orvieto Cathedral, Italy). *Microbial Ecology* 57(4), 633-639. IF (2008) 2.885. DOI: 10.1007/s00248-008-9441-4
26. Villa F., Cappitelli F., Principi P., **Polo A.**, Sorlini C. 2009. Permeabilization method for in-situ investigation of fungal conidia on surfaces. *Letters in Applied Microbiology* 48, 234-240. IF (2008) 1.679. DOI: 10.1111/j.1472-765X.2008.02520.x

#### Chapters in books

27. Ameer H., Arora K., **Polo A.**, Gobbetti M. (in print). "The sourdough microbiota and its sensory and nutritional performances" in "Good Microbes Book". Editor: Frans de Bruijn.
28. Molin G., **Polo A.** 2018. "Studio conservativo dei resti mortali di Francesco Petrarca" in "Imago animni – volti dal passato". Editors: Luca Bezzi, Nicola Carrara, Marcello Nebl. Publisher: Litografia EFFE e ERRE, Trento, 47-52. ISBN 978-88-9776055-9
29. Cappitelli F., **Polo A.**, Troiano F. 2015. "Indagini microbiologiche sui manoscritti della Certosa di Pavia e dell'aria" in "La Certosa di Pavia. Tecnologie integrate per la conoscenza e la conservazione. Recenti scoperte nei locali inaccessibili". Editors: Marco Martini, Carla Simone, Goffredo Haus, Pasquale Tucci, Maria Teresa Mazzilli Savini, Marco Morandotti, Susanna Bortolotto e Gabriele Guidi. Publisher: Silvana Editoriale ed., Cinisello Balsamo (Mi), 232-239. ISBN: 9788836631933
30. Cappitelli F., **Polo A.**, Sorlini C., Santo N., Fascio U., Di Benedetto C., De Bernardi F. 2013. "Indagini microbiologiche sulle superfici e sull'aria del Cortile" in "Il cortile del Richini un monumento da conservare". Editors: Antonello Negri, Pasquale Tucci. Publisher: Skira, Milano, 211-220. ISBN: 885722214
31. Cappitelli F., **Polo A.**, Sorlini C. 2012. "Indagini microbiologiche delle superfici del cortile e dell'aria" in "Il cortile del Richini, un piano di conservazione programmata". Publisher: Università degli Studi di Milano, Milano, 85-90. DOI (book): 10.4465/2012\_PROGETTORICHINI; DOI (chapter): 10.4465/2012\_PROGETTORICHINI\_Cappitelli\_Polo\_Sorlini

#### Conference papers and abstracts

32. 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.
33. **Polo A.**, Filannino P., Ehrmann M., Jacob F., Di Cagno R., Gobbetti M. 2019. Fructophilic lactic acid bacteria: a study on biofilms and exopolysaccharides production and structure. In "Microbial Diversity 2019 – Drivers of microbial diversity", proceedings of the congress of the Italian Society for Agriculture, Food and Environmental Microbiology (SIMTREA), 25th – 27th September 2019, Catania.
34. 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. Proceedings of the "10° Convegno sulla Ricerca Zoologica e Botanica in Alto Adige", 6th – 7th September 2018, Bolzano.
35. **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 Gobetti, Sylvie Lortal, Fabio Minervini, Erasmo Neviani, Carlo Giuseppe Rizzello. Publisher: SIMTREA, San Casciano Val di Pesa (Fi), 466-467. ISBN: 978-88-943010-0-7
36. Mapelli F., De Noni I., Orsi L., Corsi S., **Polo A.** 2015. A multidimensional methodological approach to assess socio-economic impact of innovative social business models' implementation within Fair Trade activities. The case of cashew production in Sierra Leone. Proceedings of the "5th Fair Trade International Symposium Critically Developing the Fair Trade Movement: Trade justice in food, fashion and craft", 29-31 May 2015 - Politecnico di Milano, Italy.
  37. **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
  38. **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 Foundation, 28th September 2013, Thiene (Italy). Editors: L. Becagli, S. Metaldi. Publisher: il prato, 9-12. ISBN: 978-88-6336-236-7
  39. 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. Vezzadini, P. Zannini. 1-8.
  40. **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. Gobetti, E. Parente. Publisher: SIMTREA, San Casciano Val di Pesa (Fi), 23-26.
  41. Villa F., **Polo A.**, Principi P., Giacomucci L., Cappitelli F. 2009. New environmental friendly approaches against detrimental biofilms. In "The role of microbiology in agricultural, food and environmental fields", proceedings of the Second National Conference SIMTREA 10th – 12th June 2009, Sassari (Italy). *Annals of Microbiology* 59, Special Issue, 108.

Proceeding – edited

42. 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 (12<sup>th</sup> December 2017), Free University of Bozen.

**Presentations at scientific conferences**  
(invited or selected, keynote, nature and status of conference)

- "Tailored biotransformation of apple by-products as a source of nutritional supplement" in FEMS 2019. 8th Congress of European Microbiologists. FEMS, 7th – 11th July .2019, Glasgow (Scotland).
- "Alterative microorganisms living on stone artworks exposed to environmental stress conditions" in "Microbial Diversity 2011 – Environmental stress and adaptation", congress of the Italian Society for Agriculture, Food and Environmental Microbiology (SIMTREA), 26th – 28th October 2011, Milan (Italy).
- "Microbiological analysis on biofilms" in "Novel material for medical devices based on biofunctionalized surfaces with antifouling properties", congress of ANFOMAT (Antifouling Materials) research project, University of Milan, 21th February 2014, Milan (Italy).
- "TER - Transdisciplinary Environment and Health Research Network South Tyrol" in "Transformative research and development in urban and regional environment" congress, 1th – 3th September 2016, Brixen (Italy).

- “Bacteria for the remediation of stone artworks” in “The boundary stones of *Veneranda Arca del Santo*”, conference organized by Palinsesti Onlus Association, 10th – 11th October 2013, Anguillara Veneta (Italy).
  - “Bacteria: partners for the conservation of artworks” in “Bacteria and conservation science”, congress organized by Villa Fabris Foundation, 28th September 2013, Vicenza (Italy).
- Training and update**  
(conference participation and courses attendance)
- 7th – 11th January 2019. Training course for the Simulator of the Human Intestinal Microbial Ecosystem (SHIME), by ProDigest-Gastrointestinal Expertise, Gent, Belgium.
  - 24th July 2019. Training course for Confocal Laser Scanning Microscopy, by Leica, Bozen, Italy.
  - 24th – 26th October 2017. “Microbial Diversity 2017 – Drivers of microbial diversity”, congress of the Italian Society for Agriculture, Food and Environmental Microbiology (SIMTREA). Bari, Italy.
  - 4<sup>th</sup> – 8<sup>th</sup> Jun 2017. “14th Symposium on Bacterial Genetics and Ecology”, BAGECO 14, Aberdeen, Scotland.
  - 1st – 3th September 2016. “Transformative research and development in urban and regional environment”, by Unibz, Bressanone (BZ), Italy.
  - 18th – 20th September 2013. “57th National Meeting” by the Italian Society of Biochemistry and Molecular Biology (SIB). Ferrara, Italy.
  - 10th May 2013. “Biology applied to cultural heritage: from diagnosis to conservation treatments” by the Center for Conservation and Restoration “la Venaria Reale”, Venaria (TO), Italy.
  - 26th – 28th October 2011. “Microbial Diversity 2011 – Environmental stress and adaptation”, congress of the Italian Society for Agriculture, Food and Environmental Microbiology (SIMTREA). Milano, Italy.
  - 2nd – 5th September 2009. “Eurobiofilms 2009” by Federation of European Microbiological Societies (FEMS), Roma, Italy.
  - 31st May – 4th June 2009. “International Summer School 2009. New goals on environmental science” by the Italian Research Group on Pesticides and Environment (GRIFA), Villasimius (CA), Italy.
  - 14th – 19th September 2008. “International Summer School 2008. Crop systems, Forestry, and Environmental Sciences” by the Italian Research Group on Pesticides and Environment (GRIFA), Metaponto (MT), Italy.
  - 21st May 2008. “From RNA extraction to data analysis” by Applied Biosystems, University of Milan, Milan, Italy.
  - 19th May 2008. “Meeting on confocal microscopy” by Department of Human Morphology (DMU), University of Milan, Milan, Italy.
- Other titles**
- 2021. Recognized language certificate of the English level C1, thorough internal C1 exam by the Language Centre of the Free University of Bozen-Bolzano.
  - 2011. “Cultore della Materia” for the disciplines afferent to AGR/16 field assigned by the “Consiglio di Coordinamento Didattico” of Agricultural Faculty. University of Milan.
  - 2016. “Qualifica di collaboratore restauratore di beni culturali - tecnico del restauro” by the Ministry of Cultural Heritage and Activities and Tourism (MiBACT)
  - Degree in oboe (10/10) on 28th February 2005 by “F. Venezia” Conservatory in Rovigo, Italy.
- Third mission**
- Video-interview by NOI TechPark to disseminate examples of cooperations between University and companies (2021).
  - Participation to Family Bakers & Fulvio Marino broadcast (2021).
  - Contribution to the Immersive video installation on sourdough by Katrin Hornek, visual art on artistic research (2021).
  - Participation to UNLOCK POTENTIAL, promotional events focused on Food and Green organized by NOI TechPark in cooperation with workers and companies associations (Ivh.apa, SBB, Rete Economia, UVS) (2021).
  - Interview for TG Leonardo (2019).
  - Interview for TGR (2019).
  - Interview for Interpoma broadcast (2019).

**Further data**

Research experience in foreign laboratories

- May 2012. Research stay in the framework of the “VIGONI” program of the DAAD “Seagrass compounds inhibit biofilm formation – from the identification to the application”, at the Institut für Botanik, Leibniz Universität of Hanover, Germany, under the supervision of Prof.ssa Jutta Papenbrock. The aim of this research stay was to study the methods how to prepare and analyze plant samples mainly for phenolic compounds by HPLC.
- January 2010 – May 2010. Internship research at the Department of International Health, Immunology and Microbiology, Faculty of Health Sciences (Panum Institute), University of Copenhagen, Denmark, under the supervision of Prof. Niesl Højby and Prof. Thomas Bjarnsholt. Title of the internship research project: “In vivo effects of photoactivated titanium dioxide on microbial biofilms”.
- August – September 2007. Research stay in the framework of the international project *CHCRT-2* “Investigation of stone deteriorating microbial strains and application of bioremediating microbial agents on Indian altered stone monument”, Agra, India. The aim of this research stay was to collect samples of alteration of Indian monuments and to teach how to carry out biomolecular analysis on cultural heritage samples.

Reviewer of international journals

- Journal of Cereal Science, IF (2020) 2,938.
- Microbial Ecology, IF (2012) 3,277.
- Plos One, IF (2016) 2,806.
- Journal of Cultural Heritage, IF (2016) 1,838.
- Annals of Microbiology, IF (2019) 1,528.

Scientific missions

- April 2008 – May 2008. Assigned to write the preliminary project “Bio-restoration” in relation to the TECNOPRIMI project realized by AIRI (Italian Association Industrial Research) and Municipality of Milan.

**Language competence**

Mother tongue: Italian

English: Recognized language certificate of the English level C1, thorough internal C1 exam by the Language Centre of the Free University of Bozen-Bolzano.

Other language (Self-assessment *European level based on Common European Framework of Reference for Languages*):

		Understanding				Speaking				Writing	
		Listening		Reading		Spoken interaction		Spoken production			
French	B 2	Independent User	C 1	Proficient User	B 1	Threshold or intermediate	B 1	Threshold or intermediate	B 1	Threshold or intermediate	
English	C 1	Independent User	C 1	Independent User	C 1	Independent User	C 1	Independent User	C 1	Independent User	
German	A 2	Basic User	A 2	Basic User	A 2	Basic User	A 2	Basic User	A 2	Basic User	

**Driving license**

B

Date  
01/10/2021

Signature

*Andrea Polo*