

## IMMACOLATA SERRA

PH.D. IN BIOMOLECULAR SCIENCES AND BIOTECHNOLOGY

Assistant professor (RTDB) of Chemistry and Biotechnology of Fermentations  
(SSD: CHEM-07/C)

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### EDUCATION

**2006-2009** Ph.D. in Biomolecular Sciences and Biotechnology, Institute for Advanced Studies of Pavia (IUSS)

Thesis: Microbial nucleoside phosphorylases for the enzymatic synthesis of nucleoside analogues

**2004-2006** Master degree in Medicinal and Pharmaceutical Biotechnology (110/110 *cum laude*), University of Pavia

**2001-2004** Bachelor degree in Biotechnology, University of Pavia

### CURRENT AND PAST POSITIONS

**2023-Present** Assistant Professor (RTDB) of Chemistry and Biotechnology of Fermentation (SSD: CHEM-07/C previously CHIM/11), University of Milano-Bicocca, Department of Biotechnology and Biosciences

**2021-2023** Assistant Professor (RTDA) of Chemistry and Biotechnology of Fermentation (SSD: CHEM-07/C previously CHIM/11), University of Milano-Bicocca, Department of Biotechnology and Biosciences

**2014-2020** Post-doc Researcher, University of Milano, Department of Food, Environmental and Nutritional Sciences

**2009-2014** Post-doc Researcher, University of Pavia, Department of Drug Sciences

### RESEARCH PERIODS ABROAD

**September 2007-December 2007** Department of Cell and Organism Biology, Lund University, Sweden

**March 2008-June 2008** Department of Cell and Organism Biology, Lund University, Sweden

**January 2010-March 2010** Department of Cell and Organism Biology, Lund University, Sweden

**March 2014-April 2014** Department of Biology, Lund University, Sweden

## TEACHING AND STUDENT SUPERVISION

**2008-present** Co-supervisor of 10 experimental theses within the Bachelor and Master courses of Pharmacy, Industrial Biotechnology and Medical and Pharmaceutical Biotechnology of the University of Pavia. Co-supervisor of 3 experimental theses within the Master courses in Pharmaceutical Biotechnology and Plant, Food and Environmental Biotechnology of the University of Milano. Supervisor or co-supervisor of >10 theses within the Bachelor and Master course in Biotechnology and Industrial Biotechnology of the University of Milano-Bicocca

**2021-present** Co-supervisor of 5 PhD students in Material Sciences and Converging Technologies for Biomolecular Systems, University of Milano-Bicocca

**2024-present** Supervisor of 1 PhD student within the doctoral course in Biodiversity (National PhD program), University of Palermo

**2021-present** Teacher of the laboratory course "Industrial Microbiology", Bachelor degree in Biotechnology of the University of Milano-Bicocca

**2022-present** Teacher of the course "Industrial Biotechnology for the Production of Chemicals and Bioenergies", Master degree in Chemical Sciences of the University of Milano-Bicocca

**2022/2023** Teacher of the laboratory course Industrial Biotechnology for the Production of Chemicals and Bioenergies", Master degree in Chemical Sciences of the University of Milano-Bicocca

**2018** Seminar "Marine yeasts: how, why and what?" (2 hours) for the master course of Advanced Biotechnology University of Pavia

**2018** "Cultore della Materia" SSD CHIM/11, University of Milano

**2013/2014** and **2014/2015** Seminars (32 hours in total) for the course "Biosynthesis of drugs", Master course in Medicinal and Pharmaceutical Biotechnology

**2016, 2018, 2018, 2020, 2021** Seminars (2 hours each) "Production and improvement of biocatalysts" for the course "Biosynthesis of Drugs", Master course in Medicinal and Pharmaceutical Biotechnology

**2010/2011** Seminars (5 hours) for the course "Biosynthesis of Drugs", Master course in Medicinal and Pharmaceutical Biotechnology

**2008** "Cultore della Materia" SSD CHIM/08, University of Pavia

## AWARDS AND RECOGNITIONS

**Best Poster Award** for Tengattini S.,\* Bavaro T., Massolini G., Piubelli L., Serra I., Temporini C., Terreni M. "Rational design and analytical characterization by mass spectrometry of potential neo-glycovaccines against tuberculosis" DRUG ANALYSIS 2014, 22-25 June 2014, Liege (Belgium)

**FEMS bursary** by Microbiology Society for the participation to 33<sup>rd</sup> International Specialised Symposium on Yeasts (ISSY33) with the poster presentation "Marine halotolerant yeasts for selective biotransformations of nitriles", Serra I.,\* Capusoni C., Molinari F., Compagno C., 26 - 29 June 2017 Cork (Ireland)

**Issue cover** of Catalysts (10 (1) 2020) with the publication Robescu, M.S., Serra, I.,\* Terreni, M., Ubiali D.,\* Bavaro, T. A multi-enzymatic cascade reaction for the synthesis of vidarabine 5'-monophosphate. Catalysts 2020, 10, 60; DOI: 10.3390/catal10010060

**National Scientific Habilitation** (Associate Professor, SSD CHIM/11) from 10<sup>th</sup> July 2020 to 10<sup>th</sup> July 2030

#### *INSTITUTIONAL ACTIVITIES*

**2018-2020** Representative of Post-doc Researchers of the Department of Food, Environmental and Nutritional Sciences, University of Milano

**2021-2023** Member of the Supervisory Board of the PhD course in Converging Technologies for Biomolecular Systems (TeCSBi), University of Milano-Bicocca

**2024-present** Member of the Teaching Board of the PhD course in Converging Technologies for Biomolecular Systems (TeCSBi), University of Milano-Bicocca

**2023-present** Member of the Teaching Board of the PhD course in Biodiversity (National PhD program), University of Palermo

**2021-2025** Member of the Cost Action "Non-Conventional Yeasts for the Production of Bioproducts" (Yeast4Bio, Action N° CA18229)

**2021-present:** Member of the Research Consortium Polaris (POLveri in Ambiente e Rischio per la Salute)

**2022-present** Member of the management committee of the Next Generation Sequencing interdepartmental facility

**2023- present** Responsible for teaching activities of the PhD course in Converging Technologies for Biomolecular Systems (TeCSBi), University of Milano-Bicocca

**2025-present** Member of the Executive Committee of Lombardy Green Chemistry Association (LGCA)

**2025-present** Member of the board of the Biocatalysis Division of the European Federation of Biotechnology

**2025-present** Member of the Scientific Committee of the Workshop Plastics & Environment, June 2026, Milan

#### *COMPETITIVE GRANTS*

1. **PRIN 2022** From genome-guided discovery to production of novel glycopeptide antibiotics by an integrative technological platform (DiGlycAn). Role: Leader of UNIMIB Research Unit. Coordinator: Dr. Francesca Berini, University of Insubria.
2. **PRIN 2022-PNRR** Production of functional bacterial cellulose by a circular biotechnological platform (FUN CLUB). Role: Coordinator

## RESEARCH CONTRACTS

**July 2025-June 2025:** MIMETISE: Assessment of microbial metabolism within the plastsphere of traditional and biodegradable plastic. Agreement MIMETISE-IBISBA between CNR-IRSA e UNIBICOCCA. Contractor: Istituto di Ricerca sulle Acque del Consiglio Nazionale delle Ricerche (CNR-IRSA).

## EDITORIAL ACTIVITY

**2023-present:** Member of the Editorial Board of FEMS Yeast Research

**2020-2021:** Topic co-Editor (co-editors Prof. A.R. Alcantara, Prof. C. Compagno, Prof. L. Wilson) for Frontiers in Biotechnology and Bioengineering of the Research Topic "Recent Advances in Biocatalysis: Focusing on applications of these processes" (<https://www.frontiersin.org/research-topics/17683/recent-advances-in-biocatalysis-focusing-on-applications-of-these-processes>)

**2020-present:** Member of the Editorial Board of Catalysts, section of Biocatalysis

**2018-2019:** Co-guest Editor (with Prof. D. Ubiali) for Catalysts of the Special Issue "Immobilization of Enzymes"

**2010-present:** *ad hoc reviewer* for: ACS Synthetic Biology, Applied Microbiology and Biotechnology; Catalysis Communications; Molecules; Catalysts; Journal of Chemical Technology and Biotechnology; European Journal of Organic Chemistry; Current Medicinal Chemistry; International Journal of Molecular Sciences.

## ORAL PRESENTATIONS

1. Serra I., Senatore V., Milanesi R., Masotti F., Maestroni L., Campone L., Branduardi P. Exploring yeast biodiversity and process conditions for optimizing ethylene glycol conversion into glycolic acid. FEMS-MICRO, FEMS Conference, 14-17 July 2025, Milan (Italy)
2. Serra I., Senatore V.G., Maestroni L., Milanesi R., Cannavacciuolo C., Branduardi P. Engineered *Saccharomyces cerevisiae* for the upcycling of polyethylene terephthalate (PET) monomers. Microbiology 2023, SIMGBM Congress, 21-24 September 2023, Cagliari (Italy)
3. Serra I. Upcycling of polyethylene terephthalate (PET) monomers by yeast fermentation, FEMS conference 2023, 9-13 July 2023, Hamburg (Germany), Invited speaker
4. Serra I., Di Lorenzo R.D., Branduardi P. "Production of lactic acid from inulin by combined microbial biotransformation", Biocat2022, 28 August-01 September 2022, Hamburg (Germany)
5. Serra I., Temporini C., Bavaro T., Tengattini S., Piubelli L., Terreni M. "M. tuberculosis antigenic proteins: identity control and optimization of purification by ESI-MS", XI NATIONAL CONGRESS ON BIOTECHNOLOGY, CNBXI, 27-29 June 2012, Varese (Italy)
6. Serra I., Ubiali D., Albertini A., Amati G., Daly S., Terreni M. "Enzymatic synthesis of Vidarabine. 2<sup>nd</sup> International symposium on active pharmaceutical ingredients from bioprocesses: from research to industrial and regulatory issue, 14-17 June 2011, Madrid (Spain)
7. Serra I., Bavaro T., Terreni M. "Biotechnological approach for the rational design of new vaccines for TBC" 5<sup>th</sup> AITUN MEETING: VACCINES: PREVENTIONS BETTER THAN CURE CURRENT STATUS AND FUTURE PROSPECTS, 11-12 March 2011, Pavia (Italy)
8. Ubiali D., Serra I. "New industrial enzymatic catalysts for the functionalization of nucleosides of pharma interest" 14<sup>th</sup> International Biotechnology Symposium and Exhibition, 14-18 September 2010, Rimini (Italy)

9. [Serra I.](#), Cecchini D., Temporini C., Ubiali D., Terreni M. Albertini A. M. "PGA immobilized derivatives with improved catalytic properties obtained by rational immobilization and site-directed mutagenesis", 28<sup>th</sup> SIMGBM Congress, 11-13 June 2009, Spoleto (Italy)

**PUBLICATIONS** (N°: 49; H-INDEX: 22, CITATIONS: 1035 (SCOPUS, last access 22<sup>nd</sup> January 2026))

\*: Corresponding Author

1. Senatore V., Paronen E., Martínez-López S., Ayuso M., Ceccarossi S., Hylkilä E., Behm K., Zago M., [Serra I.](#), Branduardi P. Production and carbon footprint of microbial oil from waste lemon peel extract (2026) Open Research Europe, 5, 261 [version 2; peer review: 2 approved with reservations, 1 approved]
2. Alessandrini F., Guerra S., Tadiello L., Giannini L., Branduardi P., [Serra I.](#) Enzyme-mediated tuning of cellulose surface reactivity for innovative compounding purposes (2025) Cellulose, 32 (17), pp. 9967 – 9983
3. Senatore V.G., Masotti F., Milanesi R., Ceccarossi S., Maestroni L., [Serra I.](#), Branduardi P. Challenges in elucidating ethylene glycol metabolism in *Saccharomyces cerevisiae* (2025) FEMS Yeast Research, 25, art. no. foaf006
4. Milanesi R., Porro D., Branduardi P., [Serra I.](#) Production of industrially relevant organic acids by yeasts and filamentous fungi (2025) Grand Challenges in Biology and Biotechnology, 2025, pp. 123 – 140
5. Mapelli V., Senatore V., [Serra I.](#), Branduardi P., *Scheffersomyces stipitis*: development of cell factories beyond ethanol production (2025) Eukaryotic Microorganisms as Sources of Bioproducts, pp. 375-398
6. Zago M., Branduardi P., [Serra I.](#)\*. Towards biotechnological production of bio-based low molecular weight esters: a patent review (2024) RSC Advances, 14 (40), pp. 29472 – 29489
7. Bucchieri D., Mangiagalli M., Martani F., Butti P., Lotti M., [Serra I.](#)\*, Branduardi P. A novel laccase from *Trametes polyzona* with high performance in the decolorization of textile dyes (2024) AMB Express, 14 (1), art. no. 32
8. Senatore V.G., Milanesi R., Masotti F., Maestroni L., Pagliari S., Cannavacciuolo C., Campone L., [Serra I.](#), Branduardi P. Exploring yeast biodiversity and process conditions for optimizing ethylene glycol conversion into glycolic acid (2024) FEMS Yeast Research, 24, art. no. foae024
9. Maestroni L., Butti P., Milanesi R., Pagliari S., Campone L., [Serra I.](#), Branduardi P., Easy Modular Integrative fuSion-ready Expression (Easy-MISE) toolkit for fast engineering of heterologous productions in *Saccharomyces cerevisiae* (2023) ACS Synthetic Biology, 12 (5), pp. 1508 - 1519
10. Di Lorenzo R.D., [Serra I.](#), Porro D., Branduardi P. State of the art on the microbial production of industrially relevant organic acids (2022) Catalysts, 12 (2), art. no. 234
11. Donzella S., [Serra I.](#), Fumagalli A., Pellegrino L., Mosconi G., Lo Scalzo R., et al. Recycling industrial food wastes for lipid production by oleaginous yeasts *Rhodospiridiobolus azoricus* and *Cutaneotrichosporon oleaginosum* (2022) Biotechnology for Biofuels and Bioproducts, 15(1)
12. Serra, I., Wilson, L., & Alcantara, A. Editorial: Recent Advances in Biocatalysis: Focusing on Applications of These Processes (2022) Frontiers in Bioengineering and Biotechnology, 10
13. Capusoni C., [Serra I.](#), Donzella S., Compagno C. Screening for yeast phytase leads to the identification of a new cell-bound and secreted activity in *Cyberlindnera jadinii* CJ2 (2021), 9, art. no. 662598.
14. Robescu M.S., [Serra I.](#)\*, Terreni M., Ubiali D.,\* Bavaro T. A multi-enzymatic cascade reaction for the synthesis of vidarabine 5'-monophosphate (2020) Catalysts, 10 (1), art. no. 60.

15. [Serra I.](#), Benucci I., Robescu M.S., Lombardelli C., Esti M., Calvio C., Pregolato M., Terreni M., Bavaro T. Developing a novel enzyme immobilization process by activation of epoxy carriers with glucosamine for pharmaceutical and food applications (2019) *Catalysts*, 9 (10), art. no. 843
16. [Serra I.](#),\* Capusoni C., Molinari F., Musso L., Pellegrino L., Compagno C. Marine microorganisms for biocatalysis: selective hydrolysis of nitriles with a salt-resistant strain of *Meyerozyma guilliermondii* (2019) *Marine Biotechnology*, 21 (2), pp. 229-239
17. Pinto A., [Serra I.](#), Romano D., Contente M.L., Molinari F., Rancati F., Mazzucato R., Carzaniga L. Preparation of sterically demanding 2,2-disubstituted-2-hydroxy acids by enzymatic hydrolysis (2019) *Catalysts*, 9 (2), art. no. 113
18. Capusoni C., Ariol, S., Donzella S., Guidi B., [Serra I.](#), Compagno C. Hyper-osmotic stress elicits membrane depolarization and decreased permeability in halotolerant marine *Debaryomyces hansenii* strains and in *Saccharomyces cerevisiae* (2019) *Frontiers in Microbiology*, 10 (JAN), art. no. 64
19. [Serra I.](#),\* Ubiali D., Piškur J., Munch-Petersen B., Bavaro T., Terreni M. Immobilization of Deoxyadenosine kinase from *Dictyostelium discoideum* (Dddak) and its application in the 5'-phosphorylation of arabinosyladenine and arabinosyl-2-fluoroadenine (2017) *ChemistrySelect*, 2 (19), pp. 5403-5408
20. Dall'Oglio F., Contente M.L., Conti P., Molinari F., Manfredi D., Pinto A., Romano D., Ubiali D., Tamborini L.,\* [Serra I.](#)\* Flow-based stereoselective reduction of ketones using an immobilized ketoreductase/glucose dehydrogenase mixed bed system (2017) *Catalysis Communications*, 93, pp. 29-32
21. Bavaro T., Cattaneo G., [Serra I.](#), Benucci I., Pregolato M., Terreni M. Immobilization of neutral protease from *Bacillus subtilis* for regioselective hydrolysis of acetylated nucleosides: application to capecitabine synthesis (2016) *Molecules*, 21 (12), art. no. 21121621
22. [Serra I.](#), Guidi B., Burgaud G., Contente M.L., Ferraboschi P., Pinto A., Compagno C., Molinari F., Romano D. Seawater-Based biocatalytic strategy: stereoselective reductions of ketones with marine yeasts (2016) *ChemCatChem*, 8 (20), pp. 3254-3260
23. Contente M.L., Molinari F., [Serra I.](#), Pinto A., Romano D. Stereoselective enzymatic reduction of ethyl secodione: preparation of a key intermediate for the total synthesis of steroids (2016) *European Journal of Organic Chemistry*, 2016 (7), pp. 1260-1263
24. Contente M.L., [Serra I.](#), Molinari F., Gandolfi R., Pinto A., Romano D. Preparation of enantiomerically enriched aromatic  $\beta$ -hydroxynitriles and halohydrins by ketone reduction with recombinant ketoreductase KRED1-Pglu (2016) *Tetrahedron*, 72 (27-28), pp. 3974-3979
25. Fresco-Taboada A., [Serra I.](#), Arroyo M., Fernández-Lucas J., De La Mata I., Terreni M. Development of an immobilized biocatalyst based on *Bacillus psychrosaccharolyticus* NDT for the preparative synthesis of trifluridine and decitabine (2016) *Catalysis Today*, 259, pp. 197-204
26. Contente M.L., Guidi B., [Serra I.](#), De Vitis V., Romano D., Pinto A., Lenna R., de Souza Oliveira R.P., Molinari F. Development of a high-yielding bioprocess for 11- $\alpha$  hydroxylation of canrenone under conditions of oxygen-enriched air supply (2016) *Steroids*, 116, pp. 1-4
27. Contente M.L., [Serra I.](#), Brambilla M., Eberini I., Gianazza E., De Vitis V., Molinari F., Zambelli, P., Romano D. Stereoselective reduction of aromatic ketones by a new ketoreductase from *Pichia glucozyma* (2016) *Applied Microbiology and Biotechnology*, 100 (1), pp. 193-201
28. Contente M.L., [Serra I.](#), Palazzolo L., Parravicini C., Gianazza E., Eberini I., Pinto A., Guidi B., Molinari F., Romano D. Enzymatic reduction of acetophenone derivatives with a benzil reductase from *Pichia glucozyma* (KRED1-Pglu): electronic and steric effects on activity and enantioselectivity (2016) *Organic and Biomolecular Chemistry*, 14 (13), pp. 3404-3408
29. Carvalho A.C.L.M., Fonseca T.S., De Mattos, M.C., De Oliveira M.C.F., De Lemos T.L.G., Molinari F., Romano D., [Serra I.](#) Recent advances in lipase-mediated preparation of pharmaceuticals and their intermediates (2015) *International Journal of Molecular Sciences*, 16 (12), pp. 29682-29716
30. Ubiali D., Morelli C.F., Rabuffetti M., Cattaneo G., [Serra I.](#), Bavaro T., Albertini A.M., Speranza G. Substrate specificity of a purine nucleoside phosphorylase from *Aeromonas hydrophila* toward 6-

- substituted purines and its use as a biocatalyst in the synthesis of the corresponding ribonucleosides (2015) *Current Organic Chemistry*, 19 (22), pp. 2220-2225
31. Calleri E., Cattaneo G., Rabuffetti M., Serra I., Bavaro T., Massolini G., Speranza G., Ubiali D. Flow-synthesis of nucleosides catalyzed by an immobilized purine nucleoside phosphorylase from *Aeromonas hydrophila*: integrated systems of reaction control and product purification (2015) *Advanced Synthesis and Catalysis*, 357 (11), pp. 2520-2528
  32. Zambelli P., Serra I., Fernandez-Arrojo L., Plou F.J., Tamborini L., Conti P., Contente M.L., Molinari F., Romano D. Sweet-and-salty biocatalysis: Fructooligosaccharides production using *Cladosporium cladosporioides* in seawater (2015) *Process Biochemistry*, 50 (7), pp. 1086-1090
  33. Serra I.,\* Daly S., Alcantara A.R., Bianchi D., Terreni M., Ubiali D.\* Redesigning the synthesis of vidarabine via a multienzymatic reaction catalyzed by immobilized nucleoside phosphorylases (2015) *RSC Advances*, 5 (30), pp. 23569-23577
  34. Calleri E., Ubiali D., Serra I., Temporini C., Cattaneo G., Speranza G., Morelli C.F., Massolini G. Immobilized purine nucleoside phosphorylase from *Aeromonas hydrophila* as an on-line enzyme reactor for biocatalytic applications (2014) *Journal of Chromatography B: Analytical Technologies in the Biomedical and Life Sciences*, 968, pp. 79-86
  35. Serra I.,\* Conti S., Piškur J., Clausen A.R., Munch-Petersen B., Terreni M., Ubiali D.\* Immobilized *Drosophila melanogaster* deoxyribonucleoside kinase (*DmdNK*) as a high performing biocatalyst for the synthesis of purine arabinonucleotides (2014) *Advanced Synthesis and Catalysis*, 356 (2-3), pp. 563-570
  36. Fresco-Taboada A., Serra I., Fernández-Lucas J., Acebal C., Arroyo M., Terreni M., De La Mata I. Nucleoside 2'-deoxyribosyltransferase from psychrophilic bacterium *Bacillus psychrosaccharolyticus* - Preparation of an immobilized biocatalyst for the enzymatic synthesis of therapeutic nucleosides (2014) *Molecules*, 19 (8), pp. 11231-11249
  37. Bavaro T., Filice M., Temporini C., Tengattini S., Serra I., Morelli C.F., Massolini G., Terreni M. Chemoenzymatic synthesis of neoglycoproteins driven by the assessment of protein surface reactivity (2014) *RSC Advances*, 4 (99), pp. 56455-56465
  38. Temporini C., Bavaro T., Tengattini S., Serra I., Marrubini G., Calleri E., Fasanella F., Piubelli L., Marinelli F., Pollegioni L., Speranza G., Massolini G., Terreni M. Liquid chromatography-mass spectrometry structural characterization of neo glycoproteins aiding the rational design and synthesis of a novel glycovaccine for protection against tuberculosis (2014) *Journal of Chromatography A*, 1367, pp. 57-67
  39. Bonomi P., Bavaro T., Serra I., Tagliani A., Terreni M., Ubiali D. Modulation of the microenvironment surrounding the active site of penicillin G acylase immobilized on acrylic carriers improves the enzymatic synthesis of cephalosporins (2013) *Molecules*, 18 (11), pp. 14349-14365
  40. Serra I.,\* Ubiali D., Piškur J., Christoffersen S., Lewkowicz E.S., Iribarren A.M., Albertini A.M., Terreni, M. Developing a collection of immobilized nucleoside phosphorylases for the preparation of nucleoside analogues: Enzymatic synthesis of arabinosyladenine and 2',3'-dideoxyinosine (2013) *ChemPlusChem*, 78 (2), pp. 157-165
  41. Serra I., Bavaro T., Cecchini D.A., Daly S., Albertini A.M., Terreni M., Ubiali D. A comparison between immobilized pyrimidine nucleoside phosphorylase from *Bacillus subtilis* and thymidine phosphorylase from *Escherichia coli* in the synthesis of 5-substituted pyrimidine 2'-deoxyribonucleosides (2013) *Journal of Molecular Catalysis B: Enzymatic*, 95, pp. 16-22
  42. Serra I., Ubiali D., Cecchini D.A., Calleri E., Albertini A.M., Terreni M., Temporini C. Assessment of immobilized PGA orientation via the LC-MS analysis of tryptic digests of the wild type and its 3K-PGA mutant assists in the rational design of a high-performance biocatalyst (2013) *Analytical and Bioanalytical Chemistry*, 405 (2-3), pp. 745-753
  43. Ubiali D., Serra C.D., Serra I., Morelli C.F., Terreni M., Albertini A.M., Manitto P., Speranza G. Production, characterization and synthetic application of a purine nucleoside phosphorylase from *Aeromonas hydrophila* (2012) *Advanced Synthesis and Catalysis*, 354 (1), pp. 96-104

44. Tran T.H., Christoffersen S., Allan P.W., Parker W.B., Piškur J., Serra I., Terreni M., Ealick S.E. The crystal structure of *Streptococcus pyogenes* uridine phosphorylase reveals a distinct subfamily of nucleoside phosphorylases (2011) *Biochemistry*, 50 (30), pp. 6549-6558
45. Serra I., Serra C.D., Rocchietti S., Ubiali D., Terreni M. Stabilization of thymidine phosphorylase from *Escherichia coli* by immobilization and post immobilization techniques (2011) *Enzyme and Microbial Technology*, 49 (1), pp. 52-58
46. Temporini C., Bonomi P., Serra I., Tagliani A., Bavaro T., Ubiali D., Massolini G., Terreni M. Characterization and study of the orientation of immobilized enzymes by tryptic digestion and HPLC-MS: Design of an efficient catalyst for the synthesis of cephalosporins (2010) *Biomacromolecules*, 11 (6), pp. 1623-1632
47. Christoffersen S., Serra I., Terreni M., Piškur J. Nucleoside phosphorylases from *Clostridium perfringens* in the synthesis of 2',3'-dideoxyinosine (2010) *Nucleosides, Nucleotides and Nucleic Acids*, 29 (4-6), pp. 445-448
48. Serra I., Cecchini D.A., Ubiali D., Manazza E.M., Albertini A.M., Terreni M. Coupling of Site-Directed mutagenesis and immobilization for the rational design of more efficient biocatalysts: The case of immobilized 3G3K PGA from *E. coli* (2009) *European Journal of Organic Chemistry*, (9), pp. 1384-1389
49. Cecchini D.A., Serra I., Ubiali D., Terreni M., Albertini A.M. New active site oriented glyoxyl-agarose derivatives of *Escherichia coli* penicillin G acylase (2007) *BMC Biotechnology*, 7, art. no. 54

#### PATENT APPLICATIONS

1. Sintesi biocatalitica di esteri. Italian patent application n. 102024000025548. Inventors: Mirko Zago, Paola Branduardi, Immacolata Serra. Submission date: 13/11/2024. International extension application n. PCT/IB2025/061220 on 04/11/2025
2. Composizioni elastomeriche reticolabili comprendenti cellulosa modificata. Italian patent application n. 102024000029193. Inventors: Silvia Guerra, Francesca Alessandrini, Immacolata Serra, Luca Giannini. Submission date: 19/12/2024
3. Composizioni elastomeriche reticolabili comprendenti fanghi di cartiera a base di cellulosa. Italian patent application n. 102025000035365. Inventors: Luca Giannini, Silvia Guerra, Luciano Tadiello, Immacolata Serra, Martina Dramis. Submission date: 29/12/2025
4. Composizioni elastomeriche reticolabili comprendenti fanghi di cartiera a base di cellulosa. Italian patent application n. 102025000035374. Inventors: Luca Giannini, Silvia Guerra, Paola Branduardi, Immacolata Serra, Martina Dramis. Submission date: 29/12/2025

#### COLLABORATIONS WITH COMPANIES

1. **2021-present Pirelli Tyres SpA** for the projects: "Biotechnological approaches for the assessment of the biodegradation of rubber compounds" and "Biomanufacturing of chemicals and modified natural polymers suited for the formulation of high-performance elastomeric nano-compounds"
2. **2023- present Sipcarn Oxon SpA** for the project "Production of enzymes and microbial biomass and design of natural pesticides for agro-industrial applications"
3. **2023-present Indena SpA** for the project "Synthetic biology applied to the biomanufacturing of plant natural products of pharmaceutical interest"
4. **2021-present Soft Chemicals Srl** for the project "Biocatalytic production of low molecular weight esters"

I authorize the handling of personal information in this curriculum, according to D.Lgs n. 196/03 and following modifications and Regulations EU 679/2016 (General Regulations concerning Data Protection or GRDP) and art. 7 of University Regulations concerning protection of personal information.

Milano, 22<sup>nd</sup> January 2026

*Immacolata Serra*