

Prof. Loris Rizzello



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Employment History

- 2021 ● **Group Leader**
National Institute of Molecular Genetics (INGM, Milan)
- 2020 ● **Associate Professor**
University of Milan, Department of Pharmaceutical Science (DISFARM)
- 2018 ● **Marie Curie Fellow (IF)**
Institute for Bioengineering of Catalonia (IBEC) - Barcelona (Spain)
- 2016 ● **Senior Post Doctoral Research Associate**
University College London (UCL), Dept. of Chemistry - London (UK)
- 2014 ● **International Newton Fellow**
The Royal Society of London & Dept. of Chemistry, UCL - London (UK)
- 2013 ● **Junior Postdoc**
Italian Institute of Technology - Lecce (Italy)

Education

- 2012 ● **Ph.D. in Intelligent System and Technologies** (with honors)
The Italian Institute of Technology & The University of Salento
- 2008 ● **Master in Biotechnology** (*Summa cum Laude*)
The University of Salento - Lecce (Italy)
- 2006 ● **Bachelor in Biotechnology** (*Summa cum Laude*)
The University of Salento - Lecce (Italy)

—| **Grants and Fellowships awarded**

Total funds raised: c.a. €2.5 Millions

- 2021 - **PRIN 2020** (Principal Investigator) - €500,000
- 2021 - **Linea 4 - Mobility Grant** (University of Milan) - €50,000
- 2021 - **Outreach activity grant** (Progetto Terza Missione) - €10,000
- 2020 - **ERC Starting Grant** - €1,500,000
- 2020 - **Fondazione Cariplo** - €320,000
- 2019 - **Ramón y Cajal** (Spanish Tenure Track Fellowship) - €200,000 (Declined)
- 2018 - **Marie Curie Fellowship (IF)** - €172,000
- 2017 - **EMBO short-term Fellowship**
- 2014 - **The Newton International Fellowship** (The Royal Society) - £100,000
- 2013 - **The Lady Davis Fellowship Trust** (Hebrew Univ of Jerusalem) - ₪82,642

—| **Visiting and Honorary Positions**

10/2018 - Present **Honorary Researcher**

University College London (UCL), Dept. of Chemistry - London (UK)

11/2017 **EMBO short term Fellow**

Laboratory of Cancer Biology, The University of Tartu (Estonia)

10/2016 **Visiting Post-Doctoral Researcher**

Dept. of Infect., Imm. & Cardiovas. Disease, University of Sheffield (UK)

—| **Teaching**

- *Protein Engineering*. Department of Pharmaceutical Sciences, University of Milan
- *Chemical and Toxicological Analysis*, University of Milan
- *Scanning the new antimicrobial drugs horizon*. Faculty of Medical Science, Division of Infection and Immunity, UCL.

—| **Reviewer and grant evaluator**

Expert evaluator for Research Councils:

- MUR, Italian Ministry for University, and research
- FWO (Belgium)
- The Czech Science Foundation.

Referee activities: ACS Nano, ACS Infectious Diseases, Scientific Reports, Biomaterials, European Journal of Nanomedicine (EUJNM), Journal of Translational Medicine; Sensors & Actuators B, Coatings

—| **Invited Speaker and Talks in International Conferences**

- NanoBioMed2018, November 2018 - Barcelona (Spain)
- The 253rd ACS National Meeting, April 2017 - San Francisco, California (US)
- Frontiers in drug delivery: Biological targets and advanced nanocarriers. March 2016 - Manchester (UK)
- MRS Spring Meeting & Exhibition. April 2015 - San Francisco, California (US)
- London Polymer Group (co-organizer of the event). March 2015 - London (UK)
- 10th International Symposium on Polymer Therapeutics. May 2014 - Valencia (Spain)
- XI International Conference on Nanostructured Materials. August 2012 - Rhodes (Greece)
- TechConnect WORLD Conference & Expo. June 2011 - Boston (US)
- Xth International Conference on Nanostructured Materials. September 2010, Rome (Italy)

—| **Memberships**

- Doctorate Program in Biomedicine - University of Barcelona
- Newton Fellow - The Royal Society of London

—| **Thesis supervisor**

PhD Students: Lara Aiassa (University of Barcelona and IBEC)

MSc Students: Hilary Merlin, Arianna Chesi, Mohammad Ghanem, Giulia Latino (University of Milan)

BSc Students: Beatrice Antinori (University of Milan)

—| **Other Qualifications**

Personal license (PIL) for animal work (mice, rats) - PIL No. I35249D0A. UK Home Office (2017)

- Modules E1/L; PIL A; PIL B; PIL C - released by the Royal Society of Biology (2017)

Scientific Production

Metrics (Last update: February 2022)

Source: Scopus

Total number of citations: **1855**

h - index: **17**

Publications (total, 47)

A. Research Papers

1. V.M. Gouveia, **L. Rizzello**, B. Vidal, C. Nunes, A. Poma, C. Lopez-Vasquez, E. Scarpa, S. Brandner, A. Oliveira, J.E. Fonseca, S. Reis, G. Battaglia. Targeting Macrophages and Synoviocytes Intracellular Milieu to Augment Anti-Inflammatory Drug Potency. **Adv. Therap.** 2100167 (2022).
2. M. Cascione,[#] **L. Rizzello**,[#] D. Manno, A. Serra, V. De Matteis. Green Silver Nanoparticles Promote Inflammation Shutdown in Human Leukemic Monocytes. **Materials** 15, 775 (2022)
= Equally contributing first authors
3. G. Pepe, C. Sfogliarini, **L. Rizzello**, G. Battaglia, C. Pinna, G. Rovati, P. Ciana, E. Brunialti, F. Mornata, A. Maggi, M. Locati, E. Vegeto. ER α -independent NRF2-mediated immunoregulatory activity of tamoxifen. **Biomedicine & Pharmacotherapy** 144, 112274 (2021).
4. F. Selmin, U. Musazzi, S. Franzè, E. Scarpa, **L. Rizzello**, P. Procassi, P. Minghetti. Pre-drawn syringes of Corminarty[®] for an efficient Covid 19 mass vaccination: demonstration of stability. **Pharmaceutics** 13(7), 1029 (2021).
5. V. De Matteis, M. Cascione, **L. Rizzello**, D.E. Manno, C. Di Guglielmo, R. Rinaldi. Synergistic Effect Induced by Gold Nanoparticles with Polyphenols Shell during Thermal Therapy: Macrophage Inflammatory Response and Cancer Cell Death Assessment. **Cancers** 13(14), 3610 (2021).

6. V. De Matteis, **L. Rizzello**, C. Ingrosso, R. Rinaldi. Purification of olive mill wastewater through noble metal nanoparticle synthesis: waste safe disposal and nanomaterial impact on healthy hepatic cell mitochondria. **Environmental Science and Pollution Research** 28, 26154 (2021).

7. X. Tian, D.M. Leite, E. Scarpa, S. Nyberg, G. Fullstone, J. Forth, D. Matias, A. Apriceno, A. Poma, A. Duro-Castano, M. Vuyyuru, L. Harker-Kirschneck, A. Šarić, Z. Zhang, P. Xiang, B. Fang, Y. Tian, L. Luo, **L. Rizzello**, G. Battaglia. On the shuttling across the blood-brain barrier via tubule formation: Mechanism and cargo avidity bias. **Science Advances** 6, eabc4397 (2020).

8. F. Fenaroli, J. D. Robertson, E. Scarpa, V. M. Gouveia, C. Di Guglielmo, C. De Pace, P. M. Elks, A. Poma, D. Evangelopoulos, J. Ortiz Canseco, T. K. Prajsnar, H. M. Marriott, D. H. Dockrell, S. J. Foster, T. D. McHugh, S. A. Renshaw, J. Samitier Martí, G. Battaglia, and **L. Rizzello***. Polymersomes Eradicating Intracellular Bacteria. **ACS Nano** 14, 8287-8298 (2020).

* = Corresponding author

9. E. Scarpa, C. De Pace, A.S. Joseph, S. Campos de Souza, A. Poma, E. Liatsi-Douvitsa, C. Contini, V. De Matteis, J Samitier Martí, G. Battaglia, and **L. Rizzello**. Tuning cell behavior with nanoparticle shape. **PloS One** 15, e0240197 (2020).

10. A. Kocere, J. Resseguier, J. Wohlmann, F.M.Skjeldal, S. Khan, M. Speth, N.K. Dal, M. Yoke, W. Ng, N. Alonso-Rodriguez, E. Scarpa, **L. Rizzello**, G. Battaglia, G. Griffiths, F. Fenaroli. Real-time imaging of polymersome nanoparticles in zebrafish embryos engrafted with melanoma cancer cells: Localization, toxicity and treatment analysis. **EBioMedicine** 58, 102902 (2020).

11. L. Ruiz-Pérez,# **L. Rizzello**,# J. Wang, N. Li, G. Battaglia, and Y. Pei. Polypyrrole and polyaniline nanocomposites with high photothermal conversion efficiency. **Soft Matter** 16, 4569-4573 (2020).

= Equally contributing first authors

12. V. De Matteis, **L. Rizzello**, M. Cascione, E. Liatsi-Douvitsa, A. Apriceno, and R. Rinaldi. Green Plasmonic Nanoparticles and Bio-Inspired Stimuli-Responsive Vesicles in Cancer Therapy Application. **Nanomaterials** 10, 1083 (2020).

13. J.L. Donnelly, D. Offenbartl-Stiegert, J.M. Marín-Beloqui, **L. Rizzello**, G. Battaglia, T.M. Clarke, S. Howorka, and J. D. Wilden. Exploring the Relationship between BODIPY Structure and Spectroscopic Properties to Design Fluorophores for Bioimaging. **Chemistry - A European Journal** 26, 863-872 (2020).
14. V.M. Gouveia, **L. Rizzello**, C. Nunes, A. Poma, A.O. Salette Reis, G. Battaglia. Macrophage targeting pH responsive polymersomes for glucocorticoid therapy. **Pharmaceutics** 11, 614-630 (2019)
15. V. De Matteis, **L. Rizzello**, C. Ingrosso, E. Liatsi-Douvitsa, M.L. De Giorgi, G. De Matteis, R. Rinaldi. Cultivar-dependant anticancer and antibacterial properties of silver nanoparticles synthesized using leaves of different Olea Europaea trees. **Nanomaterials** 9, 1544-1568 (2019)
16. V. De Matteis, M. Cascione, C.C. Toma, P. Pellegrino, **L. Rizzello** and R. Rinaldi. Tailoring Cell Morphomechanical Perturbations Through Metal Oxide Nanoparticles. **Nanoscale Research Letters** 14, 109 (2019)
17. C.K. Williams, Y. Zhu, A. Poma, **L. Rizzello**, V. Gouveia, L. Ruiz-Perez, and G. Battaglia. Metabolic-active fully hydrolysable polymersomes. **Angewandte Chemie Int. Ed.** 131, 4629-4634 (2019)
18. E. Bloise, M.P. Di Bello, G. Mele, and **L. Rizzello***. A green Method for the production of an efficient bioimaging nanotool. **Nanoscale Advances** 1, 1193-1199 (2019).
* Corresponding author.
19. C. Contini, R. Pearson, L. Wang, L. Messenger, J. Gaitzsch, **L. Rizzello**, L. Ruiz-Perez, and G. Battaglia. Bottom-Up Evolution of Vesicles from Disks to High-Genus Polymersomes. **iScience** 7, 132-144 (2018)
20. V. De Matteis; **L. Rizzello**; M. P. Di Bello; R. Rinaldi. One-step synthesis, toxicity assessment and degradation in tumoral pH environment of SiO₂@Ag core/shell nanoparticles. **Journal of Nanoparticles Research** 19, 196 (2017)
21. L. Chierico, **# L. Rizzello, #*** L. Guan, A.S. Joseph, A.L. Lewis, and G. Battaglia*. The role of the two splice variants and extranuclear pathway on Ki-67 regulation in non-cancer and cancer cells. **PlosONE** 12(2):e0171815 (2017)
= Equally contributing first authors
* = Corresponding author

22. J.D. Robertson,# **L. Rizzello**,#* C. Claudia, M. Magon, M. Avila-Olias, S.A. Renshaw, and G. Battaglia*. Purification of Nanoparticles by Size and Shape. **Scientific Reports** 6, 27494 (2016).

= Equally contributing first authors

* = Corresponding author

23. I. Romano, F. Ayadi, **L. Rizzello**, I.S. Bayer, P.P. Pompa, F. Brandi, A. Athanassiou. Controlled antiseptic/eosin release from chitosan-based hydrogel modified fibrous substrates. **Carbohydrate Polymers** 131, 306-314 (2015)

24. I. Liakos, **L. Rizzello**, H. Hajiali, V. Brunetti, R. Carzino, P.P. Pompa, A. Athanassiou, and E. Mele. Fibrous wound dressings encapsulating essential oils as natural antimicrobial agents. **Journal of Materials Chemistry B** 3, 1583-1589 (2015)

25. I. Liakos, **L. Rizzello**, D.J. Scurr, P.P. Pompa, I.S. Bayer, and A. Athanassiou. All-natural composite wound dressing films of essential oils encapsulated in sodium alginate with antimicrobial properties. **International Journal of Pharmaceutics** 463, 137-145 (2014)

26. I. Liakos, **L. Rizzello**, I.S. Bayer, P.P. Pompa, R. Cingolani and A. Athanassiou. Controlled Antiseptic Release by Alginate Polymer Films and Beads. **Carbohydrate Polymers** 92, 176-183 (2013)

27. **L. Rizzello**, A. Galeone, G. Vecchio, V. Brunetti, S. Sabella and P.P. Pompa. Molecular response of Escherichia coli adhering onto nanoscale topography. **Nanoscale Research Letters** 7, 575 (2012).

28. G. Vecchio, A. Galeone, V. Brunetti, G. Maiorano, **L. Rizzello**, S. Sabella, R. Cingolani, and P.P. Pompa. Mutagenic effects of gold nanoparticles induce aberrant phenotypes in Drosophila melanogaster. **Nanomedicine NBM**, 8, 1-7 (2012).

29. G. Maiorano, **L. Rizzello**, M.A. Malvindi, S. Shiv Shankar, L. Martiradonna, A. Falqui, R. Cingolani, and P.P. Pompa. Monodispersed and size-controlled multibranching gold nanoparticles with nanoscale tuning of surface morphology. **Nanoscale**, 3, 2227-2232 (2011)

30. **L. Rizzello**, B. Sorce, S. Sabella, G. Vecchio, A. Galeone, V. Brunetti, R. Cingolani, and P.P. Pompa. Impact of nanoscale topography on genomics and proteomics of adherent bacteria. **ACS Nano**, 5, 1865-1876 (2011)

31. V. Brunetti, G. Maiorano, **L. Rizzello**, B. Sorce, S. Sabella, R. Cingolani and P.P. Pompa. Neurons sense nanoscale roughness with nanometer sensitivity. **Proc. Natl. Acad. Sci. USA**, 107(14), 6264-6269 (2010)
32. S. Sabella, S. Shiv Shankar, G. Vecchio, V. Brunetti, **L. Rizzello**, A. Qualtieri, L. Martiradonna, R. Cingolani, and P.P. Pompa. Room-temperature metal stamping by microfluidics. **Materials Letters**, 64, 41-44 (2010).
33. **L. Rizzello**, S. Shiv Shankar, D. Fragouli, A. Athanassiou, R. Cingolani and P. P. Pompa. Microscale patterning of hydrophobic/hydrophilic surfaces by spatially controlled Galvanic Displacement Reactions. **Langmuir**, 25 (11), 6019-6023 (2009).
34. S.S. Shankar, **L. Rizzello**, R. Cingolani, R. Rinaldi, and P.P. Pompa. Micro/nanoscale patterning of nanostructured metal substrates for plasmonic applications. **ACS Nano**, 3 (4), 893-900 (2009).

B. Review Articles

1. V. Mercadante, E. Scarpa, V. De Matteis, **L. Rizzello**, A. Poma. Engineering Polymeric Nanosystems against Oral Diseases. **Molecules** 26(8), 2229 (2021).
2. V. De Matteis, **L. Rizzello**. Noble Metals and Soft Bio-Inspired Nanoparticles in Retinal Diseases Treatment: A Perspective. **Cells** 9 (3), 679 (2020).
3. **L. Rizzello**. Nanotechnology Meets Immunotherapy: CAR-T Cells Technology and Beyond. **Journal of Biomaterials** 1, 1-6 (2018).
4. A. Poma, Y. Pei, L. Ruiz-Perez, **L. Rizzello**, and G. Battaglia. Polymersomes: Synthesis and Applications. **Encyclopedia of Polymer Science and Technology**, 1-43 (2018).
5. L. Guan, **L. Rizzello**, and G. Battaglia. Polymersomes and their applications in cancer therapy. **Nanomedicine** 10, 2757-2780 (2015).

6. **L. Rizzello**, and P.P. Pompa. Nanosilver-based antibacterial drugs and devices: mechanisms, methodological drawbacks, and guidelines. **Chemical Society Reviews** 43, 1501-1518 (2014).

7. **L. Rizzello**, R. Cingolani, and P.P. Pompa, Nanotechnology tools for antibacterial materials. **Nanomedicine - Future Medicine** 8, 807-821 (2013)

C. Book Chapters

1. V. De Matteis, M. Cascione, **L. Rizzello**, E. Liatsi-Douvitsa, A. Apriceno, and R. Rinaldi. Green Synthesis of Nanoparticles and Their Application in Cancer Therapy, in book Green Synthesis of Nanoparticles: Applications and Prospects. Springer Nature Singapore (2020).

2. A. Poma, Y. Pei, L. Ruiz-Pérez, **L. Rizzello**, G. Battaglia. Polymersomes: synthesis and applications. Encyclopaedia of Polymer Science and Technology, Wiley (2018)

3. **L. Rizzello**, and P.P. Pompa. Nanosilver-based antibacterial drugs and devices for infections treatment and wound healing, in book 'Silver Nanoparticles for Antibacterial Devices: Biocompatibility and Toxicity' ISBN: 9781498725323. CRC press, Taylor & Francis Group (2017)

4. Athanassiou, D. Fragouli, I. Bayer, P. Netti, P.P. Pompa, and **L. Rizzello**. Soft Matter Composites Interfacing with Biomolecules, Cells, and Tissues. Springer International Publishing Switzerland (2014).

D. Pre-prints

1. V.M. Gouveia, **L. Rizzello**, B. Vidal, C. Nunes, A. Poma, C. Lopez-Vasquez, E. Scarpa, S. Brandner, A. Oliveira, J.E. Fonseca, S. Reis, G. Battaglia. Targeting activated macrophages intracellular milieu to augment anti-inflammatory drug potency. **BioRxiv** 2021. doi: <https://doi.org/10.1101/2021.06.22.449368>

2. **L. Rizzello**, *et al.*, Targeting mononuclear phagocytes for eradicating intracellular parasites. **BioRxiv** (2017, successfully published on ACS Nano)

E. Patents

1. **L. Rizzello**, and G. Battaglia. Polymersomes for the treatment of human tuberculosis. UK patent N407627GB APC.
2. **L. Rizzello**, and G. Battaglia. Filo-Polymersomes for modulating cancer cell behaviour. UK Patent N407626GB.
3. A. Athanasiou, I.S. Bayer, I. Liakos, **L. Rizzello**, R. Cingolani, S. Sabella, P.P. Pompa. Polymeric composite materials with antimicrobial and biodegradable properties and uses thereof. International patent n° US20150050234 A1 (2013)
4. I. Liakos, **L. Rizzello**, I.S. Bayer, P.P. Pompa, R. Cingolani and A. Athanassiou. Sodium and Calcium Alginate-Povidone Iodine Composites for Antimicrobial Wound Dressing, Drug Encapsulation and Surgical Sutures. Italian Patent TO2012A000258 (2012)
5. G. Maiorano, **L. Rizzello**, S. Shiv Shankar, R. Cingolani, and P.P. Pompa. Method for the synthesis of branched gold nanoparticles with controlled dimensions and branching. International Patent TO2010A000968 (2010).