
CURRICULUM VITAE – FRANCESCO CELLESI

• PERSONAL INFORMATION

Date of birth: 21/06/1974

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Francesco Cellesi is an Associate Professor at Politecnico di Milano, Department of Chemistry, Materials and Chemical Engineering. He graduated in Chemical Engineering from the University of Pisa (IT), in 1999. He obtained a PhD at the Institute of Biomedical Engineering, ETH Zurich (CH) in 2003, and in 2006 he became a Lecturer at the School of Pharmacy, University of Manchester (UK). In 2013 he joined the Fondazione CEN - European Centre for Nanomedicine and Fondazione IRCCS Ca' Granda - Ospedale Maggiore Policlinico as Group Leader in Milan. His main research interests focus on the design and processing of nano biomaterials for novel drug delivery systems and diagnostics, as well as cell microencapsulation and tissue engineering. His areas of expertise span nanomedicine, polymer chemistry, applied physical chemistry, bioengineering and materials science.

• EDUCATION

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| 3/2018 | National scientific habilitation (ASN) for the position of Full Professor (settore concorsuale 09/D2- Sistemi, metodi e tecnologie dell'ingegneria chimica e di processo). |
| 9/2003 | PhD 'Doctor of Sciences', Institute of Biomedical Engineering, Prof. Jeff Hubbell's group, Swiss Federal Institute of Technology (ETH) Zurich (CH), |
| 10/1999 | Master's Degree (Laurea) in Chemical Engineering, University of Pisa (IT) |

• CURRENT POSITION

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| 12/2014- | Associate Professor, Department of Chemistry, Materials and Chemical engineering "G. Natta", Politecnico di Milano (Italy) |
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• PREVIOUS POSITIONS

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| 1/03/2013- | Group Leader CEN – European Centre for Nanomedicine, Milan, Italy |
| 17/12/2014 | |

& Fondazione IRCCS Ca' Granda - Ospedale Maggiore Policlinico, Milan (Italy). Adjunct Professor at Politecnico di Milano, Italy, Department of Chemistry, Materials and Chemical Engineering "Giulio Natta".

- 1/09/2006-28/02/2013 Lecturer in Pharmaceutical Biomaterials, School of Pharmacy and Pharmaceutical Sciences, University of Manchester, UK.
- 1/04/2006-8/2006 Research Fellow, School of Pharmacy and Pharmaceutical Sciences, University of Manchester, UK.
- 4/2005-3/2006 PostDoctoral Research associate, School of Pharmacy and Pharmaceutical Sciences, University of Manchester, UK.

- **FELLOWSHIPS AND AWARDS**

CEN Foundation 2011 call for Group leaders: research “start-up package” grant, awarded by CEN and cofunded by Policlinico di Milano, total budget 873,000.00€ over 3 yrs; research theme “Podocyte-targeted Therapeutic Nanodelivery to Treat Proteinuric Glomerular Diseases”, (March 2013, September 2015)

- **TEACHING ACTIVITIES AND PHD SUPERVISION**

2016 - Module leader – FUNDAMENTALS OF THERMODYNAMICS AND HEAT TRANSFER FOR CHEMICAL ENGINEERING, Politecnico di Milano (IT)

2014 - Module leader – NANOMEDICINE AND PHARMACEUTICAL APPLICATIONS, Politecnico di Milano (IT)

2006 – 2012 Module leader - MEDICINE DESIGN 1, School of Pharmacy, University of Manchester (UK)

2006 – 2012 Lecturer - Foundation Mathematics, Pharmaceutical Calculations, Physical Pharmacy I, Medicine Design 2, MRes course in Tissue Engineering for Regenerative Medicine/ Doctoral Training Centre in Nanoscience (NoWNANO), School of Pharmacy, University of Manchester (UK)

Supervision of 7 PhD students at Politecnico di Milano (IT) and 7 PhD students at the School of Pharmacy, University of Manchester (UK).

- **ADMINISTRATIVE ROLE AND POSITION RESPONSIBILITY**

2019 – Member of the Academic Board of the PhD in Industrial Chemistry and Chemical Engineering Chemical Engineering at Politecnico di Milano (IT).

2012 Chemical Safety Advisor and Chair of the School Chemical Safety Committee (University of Manchester). Member of the School Safety Committee (University of Manchester). Member of the School Research Committee (University of Manchester). Member of the School of Pharmacy & Pharmaceutical Sciences Board (University of Manchester, UK).

- **SCIENTIFIC ORGANISATIONS/COORDINATION OF ACADEMIC ACTIVITIES**

2018 – 2023 Scientific Committee, International conference Milan Polymer Days

Scientific committee, CEN Congress 2015 - Nanomedicine Symposium CEN@Regione Lombardia, Synthesis of nanomaterials, biological applications and modelling, 21/09/2015 Milan (IT). 2014 Organizing committee, CEN Congress 2014 - Nanomedicine Symposium CEN@Politecnico, 14/11/2014 Milan (IT). 2013 Scientific committee, CEN Congress 2013 - Nanomedicine Seminar Series@Politecnico di Milano: Synthesis of nano-biomaterials, modelling, and applications, 24/10/2013 Milan (IT).

- **EDITORIAL ACTIVITY**

Associate Editor of Frontiers in Bioengineering and Biotechnology and Frontiers in Molecular Biosciences, Nanobiotechnology section.

Review Editor of Frontiers in Medical Technology, Frontiers in Chemistry, Frontiers in Chemical Engineering, and Frontiers in Soft Matter.

- **REVISION OF SCIENTIFIC ARTICLES AND PROJECT PROPOSALS**

Reviewer for project proposals for European Research Council (ERC), European Science Foundation (ESF), UK Medical Research Council (MRC), UK Engineering and Physical Sciences Research Council (EPSRC).

Manuscript reviewer for several international (ISI) peer-reviewed journals, including ACS, RSC, Elsevier journals, in the field of nanomedicine and nanotechnology, polymer chemistry, chemistry, biomaterials, pharmaceuticals, drug delivery.

- **MEMBERSHIP OF SCIENTIFIC SOCIETIES**

2005 – Member of the Royal Society of Chemistry (MRSC)

2009 – Member of the American Chemical Society (ACS)

2022 – Member of the Controlled Release Society (CRS) Italy Chapter

2024 – Member of Sigma Xi, The Scientific Research Honor Society

- **RESEARCH GRANTS**

2023- Italian Ministry of Health - Bando Ricerca Finalizzata - grant number: RF-2021-12372635, project title: “PHANTOM-Creation of pancreatic PHANTOM and sealing devices to improve results of pancreatic surgery”). Total value of the grant awarded €450,000. Role: Co-Investigator.

2020-2022 NewMed ID 1175999 Regione Lombardia (POR FESR 2014-2020), project title: “Metodi e materiali innovativi per la medicina di precisione e personalizzata”, Total value of the grant awarded 3,015,786 €, Role: Co-Investigator.

2017-2020 NeOn ID 239047 Regione Lombardia (POR FESR 2014-2020), project title: “Piattaforma per l'identificazione di target di rilevanza farmacologica per il trattamento di patologie del sistema nervoso e oncologiche a elevato bisogno di cure”. Total value of the grant awarded by Politecnico € 420,000. Role: Co-Investigator (Section Leader, Politecnico di Milano).

2014-2017 Fondazione Cariplo, Bando 2013, Project title: “In vitro and in vivo models to evaluate the impact of engineered nanoparticles on kidney function”. Grant n. 2013-1047, Nanoparticelle –2013. Total value of the grant awarded €300,000. Role: Principal Investigator.

2013-2016 Start UP – Group Leader CEN - European Centre Nanomedicine Foundation (CEN) - CEN Foundation 2011 call for Group leaders: research “start-up package” grant, awarded by CEN and

cofunded by Policlinico di Milano, total budget 873,000.00€ over 3 yrs, group leader salary 80,000€ per year; research theme “Podocyte-targeted Therapeutic Nanodelivery to Treat Proteinuric Glomerular Diseases”. Role: Principal Investigator.

2010-2011 Engineering and Physical Sciences Research Council UK, EPSRC EP/H027092/1 “Towards a new nanoparticle vaccine technology. Rational design of pathogen-mimicking nanoparticles for controlled immunostimulation”. Total value of the grant awarded £126,393. Role: Principal Investigator.

2010 -2013 Biotechnology and Biological Sciences Research Council UK, “MRes in Tissue Engineering for Regenerative Medicine”, BBSRC BB/H021205/1, Total value of the grant awarded £271,203, Role: Co-Investigator

2010-2014 Biotechnology and Biological Sciences Research Council UK, “Bbsrc tp bio processing bid 2009”, BBSRC BB/H015868/1, Doctoral Training Partnerships, Total value of the grant awarded £75,281, Role: Co-Investigator

• PUBLICATIONS

Research accomplishments: h-index: 25, Hetero-citation > 1425; 71 articles published in major peer-reviewed scientific journals, including *Macromolecules*, *Biomaterials*, *Journal of Controlled Release*, *Scientific Reports*, *Soft Matter*, *Langmuir*, *Macromolecular Bioscience*, *Polymer Chemistry*, *Advanced Functional Materials*, *International Journal of Pharmaceutics*. He authored 2 book chapters and 4 patents.

A list of published work is available at <http://orcid.org/0000-0001-6106-9317>

Selected (20) publications as corresponding author:

1. Porello, I.; Stucchi, F.; Sbaruffati, G.; **Cellesi, F.***, Tailoring copolymer architectures and macromolecular interactions for enhanced nanotherapeutic delivery: A design-by-architecture approach. *European Polymer Journal* 2024, 220.
2. Porello, I.; Bono, N.; Candiani, G.; **Cellesi, F.***, Advancing nucleic acid delivery through cationic polymer design: non-cationic building blocks from the toolbox. *Polymer Chemistry* 2024, 15 (28), 2800-2826.
3. Huang, X. Y.; Li, M.; Espinoza, M. I. M.; Zennaro, C.; Bossi, F.; Lonati, C.; Oldoni, S.; Castellano, G.; Alfieri, C.; Messa, P.; **Cellesi, F.***, Brain-Derived Neurotrophic Factor-Loaded Low-Temperature-Sensitive liposomes as a drug delivery system for repairing podocyte damage. *International Journal of Pharmaceutics* 2024, 660.
4. Porello, I.; **Cellesi, F.***, Intracellular delivery of therapeutic proteins. New advancements and future directions. *Frontiers in Bioengineering and Biotechnology* 2023, 11.
5. Lagarrigue, P.; Moncalvo, F.; **Cellesi, F.***, Non-spherical Polymeric Nanocarriers for Therapeutics: The Effect of Shape on Biological Systems and Drug Delivery Properties. *Pharmaceutics* 2023, 15 (1).
6. Camana, G.; Tavano, M.; Li, M.; Castiglione, F.; Rossi, F.; **Cellesi, F.***, Design of Functional Pluronic-Based Precursors for Tailoring Hydrogel Thermoresponsiveness and Cell-Adhesive Properties. *Materials* 2023, 16 (7).
7. Moncalvo, F.; Lacroce, E.; Franzoni, G.; Altomare, A.; Fasoli, E.; Aldini, G.; Sacchetti, A.; **Cellesi, F.***, Protein-friendly atom transfer radical polymerisation of glycerol (monomethacrylate) in buffer solution for the synthesis of a new class of polymer bioconjugates. *Reactive & Functional Polymers* 2022, 175.
8. Moncalvo, F.; Lacroce, E.; Franzoni, G.; Altomare, A.; Fasoli, E.; Aldini, G.; Sacchetti, A.; **Cellesi, F.***, Selective Protein Conjugation of Poly(glycerol monomethacrylate) and Poly(polyethylene

glycol methacrylate) with Tunable Topology via Reductive Amination with Multifunctional ATRP Initiators for Activity Preservation. *Macromolecules* 2022.

9. Celentano, W.; Pizzocri, M.; Moncalvo, F.; Pessina, F.; Matteoli, M.; **Cellesi, F.***; Passoni, L.*; Functional Poly(ϵ -caprolactone)/Poly(ethylene glycol) Copolymers with Complex Topologies for Doxorubicin Delivery to a Proteinase- Rich Tumor Environment. *Acs Applied Polymer Materials* 2022.

10. Celentano, W.; Ordanini, S.; Bruni, R.; Marocco, L.; Medaglia, P.; Rossi, A.; Buzzaccaro, S.; **Cellesi, F.***, Complex poly(ϵ -caprolactone)/poly(ethylene glycol) copolymer architectures and their effects on nanoparticle self-assembly and drug nanoencapsulation. *European Polymer Journal* 2021, 144.

11. Moncalvo, F.; Espinoza, M. I. M.; **Cellesi, F.***, Nanosized Delivery Systems for Therapeutic Proteins: Clinically Validated Technologies and Advanced Development Strategies. *Frontiers in Bioengineering and Biotechnology* 2020, 8.

12. Ehrbar, M.; Rossi, F.; **Cellesi, F.***, Editorial: Nanosized Drug Delivery Systems: Colloids and Gels for Site Specific Targeting. *Frontiers in Bioengineering and Biotechnology* 2020, 8.

13. Celentano, W.; Neri, G.; Distante, F.; Li, M.; Messa, P.; Chirizzi, C.; Chaabane, L.; De Campo, F.; Mentrangolo, P.; Bombelli, F. B.; **Cellesi, F.***, Design of fluorinated hyperbranched polyether copolymers for ^{19}F MRI nanotheranostics. *Polymer Chemistry* 2020, 11 (24), 3951-3963.

14. Ordanini, S.; Celentano, W.; Bernardi, A.; **Cellesi, F.***, Mannosylated brush copolymers based on poly(ethylene glycol) and poly(ϵ -caprolactone) as multivalent lectin-binding nanomaterials. *Beilstein Journal of Nanotechnology* 2019, 10, 2192-2206.

15. Ordanini, S.; **Cellesi, F.***, Complex Polymeric Architectures Self-Assembling in Unimolecular Micelles: Preparation, Characterization and Drug Nanoencapsulation. *Pharmaceutics* 2018, 10 (4).

16. Celentano, W.; Battistella, J.; Silvestri, I. P.; Bruni, R.; Huang, X. Y.; Li, M.; Messa, P.; Ordanini, S.; **Cellesi, F.***, Engineered polyester-PEG nanoparticles prepared through a "grafting through" strategy and post-functionalization via Michael type addition. *Reactive & Functional Polymers* 2018, 131, 164-173.

17. Huang, X. Y.; Li, M.; Bruni, R.; Messa, P.; **Cellesi, F.***, The effect of thermosensitive liposomal formulations on loading and release of high molecular weight biomolecules. *International Journal of Pharmaceutics* 2017, 524 (1-2), 279-289.

18. Colombo, C.; Li, M.; Watanabe, S.; Messa, P.; Edefonti, A.; Montini, G.; Moscatelli, D.; Rastaldi, M. P.; **Cellesi, F.***, Polymer Nanoparticle Engineering for Podocyte Repair: From in Vitro Models to New Nanotherapeutics in Kidney Diseases. *Acs Omega* 2017, 2 (2), 599-610.

19. Bruni, R.; Possenti, P.; Bordignon, C.; Li, M.; Ordanini, S.; Messa, P.; Rastaldi, M. P.; **Cellesi, F.***, Ultrasmall polymeric nanocarriers for drug delivery to podocytes in kidney glomerulus. *Journal of Controlled Release* 2017, 255, 94-107.

20. Silvestri, I. P.; **Cellesi, F.***, AGET ATRP of Poly poly(ethylene glycol) methyl ether methacrylate Catalyzed by Hydrophobic Iron(III)-Porphyrins. *Macromolecular Chemistry and Physics* 2015, 216 (20), 2032-2039.