

## Valeria Chiono, Full Professor

Department of Mechanical and Aerospace Engineering, Politecnico di Torino

Telephone: 011-0906920. E-mail: [valeria.chiono@polito.it](mailto:valeria.chiono@polito.it)

Web of Science Research ID: G-3631-2014

SCOPUS ID: 6506338419

ORCID: 0000-0003-2067-7732

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### BIOSKETCH

Valeria Chiono is **Full Professor** at the Department of Mechanical and Aerospace Engineering of Politecnico di Torino, Italy, where she teaches “Engineering for regenerative medicine”, “Cell and tissue engineering” and “Laboratory of Tissues and Physiological Processes' Models” at the Faculty of Biomedical Engineering.

She earned a **Master Degree cum laude in Chemical Engineering** (2001) and a **PhD in Chemical and Materials Engineering** (2006) from the University of Pisa, Italy.

**From 2006 to 2012, she has been postdoc fellow** in the bioengineering research group managed by Prof. G. Ciardelli, initially at the University of Pisa and, then, since 2007 at Politecnico di Torino.

In 2012 she got the position of **researcher after being awarded a prestigious Future-In-Research Project (FIRB 2010)** financed by the Italian Ministry of Education, University and Research. In those years, she has been **visiting scientist at the University of Cambridge**, where she worked on the design of hydrogels loaded with nanoparticles for intranasal delivery of drugs to the brain, under the framework of the collaborative project PAD-INJ “Smart Injectable Drug-Delivery systems for Parkinson’s and Alzheimer’s Disease Treatment”- funded by Compagnia di San Paolo (2014-2015).

From 2015 to 2018, she became **Associate Professor** at Politecnico di Torino and in 2018 **she got the position of Full Professor as a recognition for being awarded the ERC Consolidator project BIORECAR.**

During her academic career, she has been the **coordinator of multiple research projects**, among which **STARIGEN FIRB2010 project**, financed by the Italian Ministry of Education, University and Research, on the preparation of biomimetic scaffolds for cardiac regeneration and the **ERC Consolidator project BIORECAR** (contract number: 772168; [www.biorecar.polito.it](http://www.biorecar.polito.it)) on advanced strategies for myocardial regeneration through the design of an injectable biomimetic hydrogel releasing miRNA-loaded nanoparticles. In BIORECAR her team also develops *in vitro* models of fibrotic human cardiac tissue for predictive preclinical investigation of new advanced therapies.

As BIORECAR coordinator, she manages BIORECAR team including 1 researcher, 2 postdoc fellows, 5 PhD students and 1 postgraduate fellow. She also **manages BIORECAR Cell Laboratory** recently set up at Politecnico di Torino.

Since 2020, she is member of the **Research Ethics Committee** of Politecnico di Torino.

In 2021, she has been appointed **Vice-Director of Centro 3R**, the national Interuniversity Center for the Promotion of 3Rs Principles in Teaching and Research.

She is in the **editorial board of several journals** among which Frontiers in Bioengineering and Biotechnology, Biomedical Materials-IOP Journals and International Journal of Molecular Sciences - MDPI.

Prof. Chiono is **co-founder of the spin-off Company Geltis** and has been involved in the **organization of several conferences and symposia** at national and international level.

**Her research is highly interdisciplinary aimed at the design of innovative bioengineering approaches to solve key problems in regenerative medicine and nanomedicine**, and includes the development of bioactive materials and interfaces, tissue engineering, materials characterization, *in vitro* tissue models, drug delivery and non-viral gene therapy. One main research topic is cardiac tissue engineering.

Prof. Chiono has **supervised** several undergraduate and graduate students (including multiple PhD students), postdoc fellows and researchers and delivered more than **40 oral presentations** at international conferences, and authored >200 conference proceedings. She is also author of **122 publications**, including **75 articles** and **34 abstracts in international peer-reviewed journals** and **13 book chapters (H-index/citations: 31/4617 Scopus; 36/6253 Google Scholar)**. She is also editor of **1 book** on bioprinting. She deposited **5 patents** in the field of biomaterials, tissue engineering and nanomedicine.

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### COORDINATION OF RESEARCH PROJECTS

**1. PROJECT ERC-CoG 2017: BIORECAR** (contract number: 772168) “Direct cell reprogramming therapy in myocardial regeneration through an engineered multifunctional platform integrating biochemical instructive cues” (2018-2023). [www.biorecar.polito.it](http://www.biorecar.polito.it)

**2. Project BIOMODE** “In Vitro Experimental Models for Biomaterials-Mediated Drug Delivery to the Central Nervous System” - Compagnia di San Paolo (2017-2021). In collaboration with Prof. R.D. Kamm, Massachusetts –

MIT.

**3. Project “Proof of concepts” Compagnia di San Paolo: “Method for the preparation of cellularised constructs based on thermosensitive hydrogels” (2017).**

**4. Project PAD-INJ** “Smart Injectable Drug-Delivery systems for Parkinson’s and Alzheimer’s Disease Treatment” - Compagnia di San Paolo (2014-2016). In collaboration with Prof. M.G. Spillantini, University of Cambridge (UK).

**5. Project FIRB 2010: STARIGEN** “Bioartificial materials and biomimetic scaffolds for a stem cells-based therapy for myocardial regeneration” (2012-2015). Overall budget: €1.062.600 (financed grant: € 835.620).

**6. Project MITOR** - Compagnia di San Paolo: NANOCAB “In Vitro Modelling of Nanoparticle-Mediated Drug Delivery to the Central Nervous System by a Microfluidic Platform Mimicking the Biological Barriers” (2016-2017).

**7. Project of Finalized Sanitary Research – 2008 bis**, PIEDMONT REGION: “Nano-structured biomimetic coatings for regenerative medicine” (2008-2009)

**8. Project of Finalized Sanitary Research – 2009**, PIEDMONT REGION: “Multifunctional nano-coatings for medical devices with improved anti-inflammatory and antibacterial properties” (2009-2011).

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## PARTICIPATION TO RESEARCH PROJECTS

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**1. PROJECT CRT Visco3DCell** (2021-2023). Budget: € 33.000. Role: Collaborator.

**2. 2020-NMBP-TR-IND-2018 - Project EVPRO** (2019-2022); € 500.000. Role: Task Leader. <http://www.evpro-implant.eu/>

**3. H2020-MSCA ITN-2014 - Project HyMedPoly** (2015-2018). Role: WP Leader. <https://hymedpoly.eu/>

**4. BANDO ATENEO-CSP 2014 PROJECT -BIOSURF** (2015-2017). Role: Unit Leader.

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## SELECTED PUBLICATIONS

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- 1) C. Paoletti, **V. Chiono** (2021). “Bioengineering Methods in MicroRNA-Mediated Direct Reprogramming of Fibroblasts Into Cardiomyocytes”, *Front Cardiovasc Med.* 8: 750438.
- 2) R. Laurano, M. Boffito, M. Abrami, M. Grassi, A. Zoso, **V. Chiono**, G. Ciardelli (2021), “Dual stimuli-responsive polyurethane-based hydrogels as smart drug delivery carriers for the advanced treatment of chronic skin wounds”, *Bioactive Materials* 6: 3013-3024.
- 3) C. Paoletti, C. Divieto, G. Tarricone, F. Di Meglio, **V. Chiono** (2020), “MicroRNA Mediated Direct Reprogramming of Human Adult Fibroblasts Toward Cardiac Phenotype”, *Front. Bioeng. Biotechnol.* Vol. 8, <https://doi.org/10.3389/fbioe.2020.00529>.
- 4) S.W.L. Lee, M. Campisi, T. Osaki, L. Possenti, C. Mattu, G. Adriani, R.D. Kamm, **V. Chiono** (2020) “Modeling Nanocarrier Transport across a 3D In Vitro Human Blood-Brain-Barrier Microvasculature”, *Adv Healthc Mater.* 9(7): e1901486.
- 5) S.W.L. Lee, C. Paoletti, M. Campisi, T. Osaki, G. Adriani, R.D. Kamm, C. Mattu, **V. Chiono** (2019). “MicroRNA delivery through nanoparticles”, *J. Control. Rel.* 313: 80-95.
- 6) M. Campisi, Y. Shin, T. Osaki, C. Hajal, **V. Chiono**, R. D. Kamm, R.D. (2018). "3D self-organized microvascular model of the human blood-brain barrier with endothelial cells, pericytes and astrocytes", *Biomaterials*; 180: 117-129.
- 7) M. Boffito, F. Di Meglio, P. Mozetic, S.M. Giannitelli, I. Carmagnola, C. Castaldo, D. Nurzynska, A.M. Sacco, R. Miraglia, S. Montagnani, N. Vitale, M. Brancaccio, G. Tarone, F. Basoli, A. Rainer, M. Trombetta, G. Ciardelli, **V. Chiono** (2018). “Surface functionalization of polyurethane scaffolds mimicking the myocardial microenvironment to support cardiac primitive cells”, *PLoS One*; Jul 6;13(7):e0199896.
- 8) **V. Chiono**, C. Tonda-Turo (2015). “Trends in the design of nerve guidance channels in peripheral nerve tissue engineering”, *Prog. Neurobiol.*, 131: 87-104.
- 9) M. Boffito, P. Sirianni, A.M. Di Rienzo, **V. Chiono** (2015) “Thermosensitive block copolymer hydrogels based on poly( $\epsilon$ -caprolactone) and polyethylene glycol for biomedical applications: State of the art and future perspectives”, *J Biomed Mater Res A.* 103: 1276-1290.
- 10) P. Gentile, **V. Chiono**, I. Carmagnola (2014) "An Overview of Poly(Lactic-co-Glycolic) Acid (PLGA) as Biomaterials for Bone Tissue Engineering", *Int. J. Mol. Sci.* 15: 3640-3659.
- 11) S. Sartori, **V. Chiono**, C. Tonda-Turo, C. Mattu and G. Ciardelli (2014). "Biomimetic polyurethanes in nano and regenerative medicine", *J. Mater. Chem. B* 2014; 2: 5128-5144.
- 12) M. Ferreira, P. Gentile, **V. Chiono**, G. Ciardelli (2012). “Collagen for bone tissue regeneration”, *Acta Biomaterialia* 2012; 8: 3191-3200.
- 13) **V Chiono**, P Gentile, F Boccafoschi, M Ninov, I Carmagnola, V Georgieva, G Georgiev, and G Ciardelli (2010). “Photoactive Chitosan Switching on Bone-Like Apatite Deposition”, *Biomacromolecules* 11: 309-315.