

PERSONAL INFORMATION

Monica Mattioli Belmonte Cima



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Sex F | Date of birth 28/04/1962 | Nationality Italian

Enterprise	University	EPR
☐ Management Level	☒ Full professor	☐ Research Director and 1st level Technologist / First Researcher and 2nd level Technologist / Principal Investigator
☐ Mid-Management Level	☐ Associate Professor	☐ Level III Researcher and Technologist
☐ Employee / worker level	☐ Researcher and Technologist of IV, V, VI and VII level / Technical collaborator	☐ Researcher and Technologist of IV, V, VI and VII level / Technical collaborator

WORK EXPERIENCE

- 2020-to date** **Full Professor**
Università Politecnica delle Marche
▪ Teaching, academic institutional and research activities
Human Histology and Embriology
- 2016-2020** **Associate Professor**
Università Politecnica delle Marche
▪ Teaching, research and academic institutional activities
Human Histology and Embriology
- 2005-2016** **Assistant Professor**
Università Politecnica delle Marche
▪ Research and teaching activities
Human Histology and Embriology
- 1995-2005** **Research Fellow**
Università Politecnica delle Marche
▪ Research activities
Human Histology and Embriology

EDUCATION AND TRAINING

- 2017** Qualification for the role of Full Professor of Histology (05/H2).
- 2015** Qualification for the roles of Associate and Full Professor of Anatomy (05/H1).
- 1995** PhD in "Cytomorphology" EQF 8
Università "La Sapienza" Roma ,Italy
Skills in morphological analysis based on light and scanning electron microscopy
Skills in cell culture with continuous cell lines and primary cells
- 1986** Master's Degree in Biological Science EQF 7
Università "Alma Mater", Bologna, Italy

WORK ACTIVITIES Research interest comprises the investigation and potential applications of biomaterials in

different fields. Activities concern the morpho-functional study of the cellular and tissue response (extracellular and microenvironmental components) induced using implant materials, 2D and 3D scaffolds for the regeneration of osteochondral tissues and polymeric coatings with controlled release of drugs designed to promote osseointegration and/or prevent the associated degenerative phenomena. More recently, the interest focuses on tissue regeneration and wound healing in ageing and in the development of multi-tissue culture systems or modular bioengineered multi-organ in vitro platforms (MOP) as in vitro tools to study multi-system human pathophysiological conditions. The in vitro work is based on the use of static and dynamic culture conditions, continuous cell lines, primary cells or adult mesenchymal stem cells derived from different origins and individual or co-culture culture approaches. Moreover, skills in the Lab she coordinated are relative to procedures for histological applications like routine E and H slides and special stains (specimen processing cutting embedding staining and mounting); histochemical and immunohistochemical tests; specimen processing for ultrastructural analyses; qTR-PCR and Western blotting.

Awards	Best Lecturer and Researcher at Università Politecnica delle Marche in 2010.
Editorial activity	- Member of the Editorial Board of the Journal of Bioactive and Compatible Polymers (SAGE Publication). - Reviewer for: Tissue Engineering (Mary Ann Liebert, Inc), Biomaterials (Elsevier), Acta Biomaterialia (Elsevier), Material Science & Engineering C (Elsevier), Materials Letters (Elsevier), Biomacromolecules (ACS Publication), The Journal of Biomedical Material Research (Interscience-Wiley) Histology and Histopathology (Jiménez-Godoy, SA Murcia. Spain), Cell Health and Cytoskeleton (Dove Press), Stem Cell and Development (Mary Ann Liebert, Inc.), Frontiers in Bioengineering and Biotechnology e Frontiers in Physiology
Invited presentations	- "Invited Speaker" at 3rd Advanced Course on regenerative Medicine: Marinha Grande (Portugal) M. Mattioli Belmonte. Mesenchymal stem cells for Skeletal regeneration: from bench to bed-side (14/15-03-2013) - "Invited Speaker" at III ISMuLT Scientific Workshop Biomaterials and Regenerative Medicine for the Musculoskeletal System. Bologna M. Mattioli Belmonte Harvesting mesenchymal stem cells from different sources: research status and actual opportunities in bone regeneration 24-09-2015 - Biofabrication 2022 Keynote: Deciphering the suitability of human cell types for in vitro bone models (Montecatini 26-28 September 2022) - "Invited speaker" a 4th International Biennial Conference BioMaH "Biomaterials and Novel Technologies for Healthcare: Gut microbiota and bone crosstalk: a 3d in vitro investigative approach
PERSONAL SKILLS	- Cell and tissue morphological analyses based on immunohistochemistry, immunofluorescence, and electron microscopy - Deep experience on bone tissue modelling and remodelling - Knowledge of human development (histogenesis and organogenesis)
Mother tongue(s)	Italian
Other language(s)	English (B2)
Digital skills	Microsoft Office (Word, Excel, Power Point), Adobe, Teams, Webex, Google Meet

ADDITIONAL INFORMATION

Publications

total number of publications in peer-review journals > 200 (orcid.org/0000-0002-2087-2776)
Average IF = 6.03,
total number of citations 6387
H index 43 (Scopus)

Relevant publications

1. Licini C, Fantone S, Lamanna D, Tossetta G, Marzioni D, Mattioli-Belmonte M. Possible involvement of HtrA1 serine protease in the onset of osteoporotic bone extracellular matrix changes. *Tissue Cell*. 2024 Apr;87:102329. doi: 10.1016/j.tice.2024.102329. Epub 2024 Feb 13.
2. Gatto ML, Cerqueni G, Groppo R, Santecchia E, Tognoli E, Defanti S, Mattioli-Belmonte M, Mengucci P. Improved biomechanical behavior of 316L graded scaffolds for bone tissue regeneration produced by laser powder bed fusion. *J Mech Behav Biomed Mater*. 2023 Aug;144:105989. doi: 10.1016/j.jmbbm.2023.105989. Epub 2023 Jun 23.
3. Scalzone A, Cerqueni G, Wang XN, Dalgarno K, Mattioli-Belmonte M, Ferreira-Duarte AM, Gentile P. A cytokine-induced spheroid-based in vitro model for studying osteoarthritis pathogenesis. *Front Bioeng Biotechnol*. 2023 May 9;11:1167623. doi: 10.3389/fbioe.2023.1167623. eCollection 2023.
4. Gatto ML, Cerqueni G, Furlani M, Riberti N, Tognoli E, Denti L, Leonardi F, Giuliani A, Mattioli-Belmonte M, Mengucci P. Influence of Trabecular Geometry on Scaffold Mechanical Behavior and MG-63 Cell Viability. *Materials (Basel)*. 2023 Mar 15;16(6):2342. doi: 10.3390/ma16062342.
5. Sojan JM, Licini C, Marcheggiani F, Carnevali O, Tiano L, Mattioli-Belmonte M, Maradonna F. *Bacillus subtilis* Modulated the Expression of Osteogenic Markers in a Human Osteoblast Cell Line. *Cells*. 2023 Jan 19;12(3):364. doi: 10.3390/cells12030364. Annachiara Scalzone A, Cerqueni G, Wang XN, Ferreira-Duarte A, Dalgarno K, Mattioli-Belmonte M, Gentile PG. An in vitro engineered osteochondral model as tool to study Osteoarthritis environment (2022) *Advanced Healthcare Materials*
6. Licini, C., Notarstefano, V., Marchi, S., Cerqueni, G., Ciapetti, G., Vitale-Brovarone, C., Giorgini, E., Mattioli-Belmonte, M. Altered type I collagen networking in osteoporotic human femoral head revealed by histomorphometric and Fourier transform infrared imaging correlated analyses (2022) *BioFactors* doi: 10.1002/biof.1870
7. Cometa, S., Licini, C., Bonifacio, M.A., Mastroianni, P., Mattioli-Belmonte, M., De Giglio, E. Carboxymethyl cellulose-based hydrogel film combined with berberine as an innovative tool for chronic wound management (2022) *Carbohydrate Polymers*, 283, art. no. 119145.
8. Banche-Niclot, F., Licini, C., Montalbano, G., Fiorilli, S., Mattioli-Belmonte, M., Vitale-Brovarone, C. 3D Printed Scaffold Based on Type I Collagen/PLGA_TGF- β 1 (2022) *Nanoparticles Mimicking the Growth Factor Footprint of Human Bone Tissue Polymers*, 14 (5), art. no. 857.
9. Cerqueni, G., Scalzone, A., Licini, C., Gentile, P., Mattioli-Belmonte, M. Insights into oxidative stress in bone tissue and novel challenges for biomaterials (2021) *Materials Science and Engineering C*, 130, art. no. 112433, DOI: 10.1016/j.msec.2021.112433
10. Cometa S, Bonifacio MA, Licini C, Bellissimo A, Pinto L, Baruzzi F, Mattioli-Belmonte M, De Giglio E. Innovative Eco-Friendly Hydrogel Film for Berberine Delivery in Skin Applications. (2021) *Molecules*. 2021 Aug 13;26(16):4901. doi: 10.3390/molecules26164901
11. Lapomarda, A., Cerqueni, G., Geven, M.A., Chiesa, I., De Acutis, A., De Blasi, M., Montemurro, F., De Maria, C., Mattioli-Belmonte, M., Vozzi, G. Physicochemical Characterization of Pectin-Gelatin Biomaterial Formulations for 3D Bioprinting (2021) *Macromolecular Bioscience*, 21 (9), art. no. 2100168, DOI: 10.1002/mabi.202100168
12. Lapomarda, A., Pulidori, E., Cerqueni, G., Chiesa, I., De Blasi, M., Geven, M.A., Montemurro, F., Duce, C., Mattioli-Belmonte, M., Tiné, M.R., Vozzi, G., De Maria, C. Pectin as rheology modifier of a gelatin-based biomaterial ink (2021) *Materials*, 14 (11), art. no. 3109, DOI: 10.3390/ma14113109

13. Montalbano, G., Borciani, G., Cerqueni, G., Licini, C., Banche-Niclot, F., Janner, D., Sola, S., Fiorilli, S., Mattioli-Belmonte, M., Ciapetti, G., Vitale-Brovarone, C. Collagen hybrid formulations for the 3d printing of nanostructured bone scaffolds: An optimized genipin-crosslinking strategy (2020) *Nanomaterials*, 10 (9), art. no. 1681, pp. 1-23. DOI: 10.3390/nano10091681
14. Lapomarda, A., De Acutis, A., Chiesa, I., Fortunato, G.M., Montemurro, F., De Maria, C., Mattioli Belmonte, M., Gottardi, R., Vozzi, G. Pectin-GPTMS-Based Biomaterial: Toward a Sustainable Bioprinting of 3D scaffolds for Tissue Engineering Application (2020) *Biomacromolecules*, 21 (2), pp. 319-327. DOI: 10.1021/acs.biomac.9b01332
15. Bonifacio MA, Cerqueni G, Cometa S, Licini C, Sabbatini L, Mattioli-Belmonte M, De Giglio E. Insights into Arbutin Effects on Bone Cells: Towards the Development of Antioxidant Titanium Implants. (2020) *Antioxidants (Basel)*. 2020 Jul 2;9(7):579. doi: 10.3390/antiox9070579.
16. Caddeo, S., Mattioli-Belmonte, M., Cassino, C., Barbani, N., Dicarlo, M., Gentile, P., Bains, F., Sartori, S., Vitale-Brovarone, C., Ciardelli, G. Newly-designed collagen/polyurethane bioartificial blend as coating on bioactive glass-ceramics for bone tissue engineering applications (2019) *Materials Science and Engineering C*, 96, pp. 218-233. DOI: 10.1016/j.msec.2018.11.012
17. Mattioli-Belmonte, M., Montemurro, F., Licini, C., Iezzi, I., Dicarlo, M., Cerqueni, G., Coro, F., Vozzi, G. Cell-free demineralized bone matrix for mesenchymal stem cells survival and colonization (2019) *Materials*, 12 (9), art. no. 1360, DOI: 10.3390/ma12091360
18. Dicarlo, M., Teti, G., Iezzi, I., Cerqueni, G., Manzotti, S., Falconi, M., Mattioli-Belmonte, M. Detecting senescent fate in mesenchymal stem cells: a combined cytofluorimetric and ultrastructural approach (2018) *Biogerontology*, 19 (5), pp. 401-414. DOI: 10.1007/s10522-018-9766-4
19. Mattioli-Belmonte, M., De Maria, C., Vitale-Brovarone, C., Bains, F., Dicarlo, M., Vozzi, G. Pressure-activated microsyringe (PAM) fabrication of bioactive glass-poly(lactic-co-glycolic acid) composite scaffolds for bone tissue regeneration (2017) *Journal of Tissue Engineering and Regenerative Medicine*, 11 (7), pp. 1986-1997. DOI: 10.1002/term.2095
20. Orciani, M., Fini, M., Di Primio, R., Mattioli-Belmonte, M. Biofabrication and bone tissue regeneration: Cell source, approaches, and challenges (2017) *Frontiers in Bioengineering and Biotechnology*, 5 (MAR), art. no. 17 DOI: 10.3389/fbioe.2017.00017

Projects Role of Principal Investigator:

- Research Unit of the national PRIN 2010-2011 (Protocol 2010J8RYS7) Engineering physiologically and pathologically relevant organ Models for the Investigation of age-related Diseases (MIND).
- PI in a biological unit of the ERC – BOOST (GA 681798) "Biomimetic trick to re-balance osteoblast-osteoclast loop in osteoporosis treatment: a topological and material driven approach"
- National role PoWer PRIN 2022 (Protocol 2022P2NAJD). Photobiomodulation as a tool for the well-being of microenvironmental cues in muscle-tendon unit (PoWeR).

Role of Associated Investigator

- PNRR "Vitality" Ecosistema di Innovazione, Digitalizzazione e Sostenibilità per l'Economia Diffusa nell'Italia Centrale 2022-2025.
- CHETCH (CHina and Europe Taking Care of Healthcare solutions) European Project in the 7th European Framework (MARIE CURIE ACTIONS - International Research Staff Exchange
- Cariverona Project 2007 "Cell Factory" e valutazioni biomeccanico-morfologiche finalizzate alla realizzazione di sostituti ossei per difetti protesici e traumatici.
- FIRB 2011 – Protocol: RBAP10MLK7: Scaffold per la rigenerazione dei tessuti scheletrici: valutazione preclinica della loro compatibilità
- PRIN -MIUR 1999 Biomateriali con superfici micro e nanostrutturate (Resp. Nazionale Prof. Rolando Barbucci). U.O 9903305117_005 Caratterizzazione dei meccanismi di adesione e di crescita cellulare su materiali micro- e nano-strutturati

Ancona, Sunday, 16 February 2025

