

Montalbano Giorgia

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PERSONAL INFORMATION

Date of birth: 21/12/1990
Place of birth: TORINO
Citizenship: Italy

CAREER AND EDUCATION

12. 2020 – PRESENT RESEARCH FELLOW

POLITECNICO DI TORINO, DISAT

10.2017 – 11.2020 PhD STUDENT

POLITECNICO DI TORINO, DISAT

Ph.D. in Bioengineering and Medical-Surgical Sciences (XXXIII cycle)

Supervisor: Prof. Chiara Vitale Brovarone

Project title: 3D Collagen based biomimetic scaffolds

01.2019 PROFESSIONAL STATE EXAMINATION as INDUSTRIAL ENGINEER

09. 2016 – 09.2017 RESEARCH FELLOW

POLITECNICO DI TORINO, DISAT

ERC BOOST Project, Tutor Prof. Chiara Vitale Brovarone

Biomimetic trick to re-balance Osteoblast-Osteoclast loop in osteoporosis therapy: a Topologically and materials driven approach (BOOST)

07. 2015 – 02. 2016 INTERN – MASTER'S DEGREE THESIS

NEWCASTLE UNIVERSITY, NEWCASTLE UPON TYNE (UK)

Master thesis project: Collagen/alginate/fibrin hydrogels for potential use in treatment of diabetes

10. 2012 – 01.2013

INTERNSHIP DURING STUDIES

Dipromed (Dipro Medical Devices) - San Mauro T.se (TO)
Tutors: Prof Gianluca Ciardelli, Cristina Buemi
Evaluation of design phases of medical devices

09.2013 – 03.2016

MASTER OF SCIENCE IN BIOMEDICAL ENGINEERING

POLITECNICO DI TORINO

Dissertation/Thesis Title: "Assessment of a Collagen/Alginate/Fibrin Hydrogel for potential use in Treatment of Diabetes Type I".

09.2009 – 10.2013

BACHELOR'S IN BIOMEDICAL ENGINEERING

POLITECNICO DI TORINO

Dissertation/Thesis Title: "Design phases of no-adherent composite meshes for the treatment of laparocoele".

09.2004 – 07.2009

HIGH SCHOOL DIPLOMA

Liceo Scientifico Gino Segré, Torino (Italy)
Final score: 76/100

TEACHING

2021-2022

Surface engineering for Medical applications for MSc in Biomedical Engineering
Politecnico di Torino
Assistant Teacher, 5 hours

Material Engineering for MSc in Material Engineering
Politecnico di Torino
Assistant teacher, 54 hours

2020-2021 **Surface engineering for Medical applications** for MSc in
Biomedical Engineering
Politecnico di Torino
Assistant Teacher, 5 hours

Material Engineering for MSc in Material Engineering
Politecnico di Torino
Assistant teacher, 28 hours

2019-2020 **Surface engineering for Medical applications** for MSc in
Biomedical Engineering
Politecnico di Torino
Assistant Teacher, 5 hours

Material Engineering for MSc in Material Engineering
Politecnico di Torino
Assistant teacher, 28 hours

2018-2019 **Surface engineering for Medical applications** for MSc in
Biomedical Engineering
Politecnico di Torino
Assistant Teacher, 4.5 hours

Material Engineering for MSc in Material Engineering
Politecnico di Torino
Assistant teacher, 10 hours

TUTORING

2020-2021 Master thesis Project: “Realizzazione di scaffolds elettrospinnati a
base di collagene per potenziale rigenerazione cutanea”

2020-2021 Master thesis Project: “Strategie per la stampa 3D di formulazioni
ibride a base di collagene per la realizzazione di scaffold ossei”

STUDIES AND EXPERIENCES ABROAD

09.2019– 10.2019 **INSTITUTE FOR TECHNOLOGY-INSPIRED**
REGENERATIVE MEDICINE (MERLN), MAASTRICHT
UNIVERSITY
Maastricht University, Maastricht (NL)
- *Development and optimisation of collagen-based
formulations for electrospinning applications*

06.2019 – 06.2019

NEWCASTLE UNIVERSITY

Newcastle University, Newcastle upon Tyne (UK)

- *Design of PLLA composites for 3D printing applications*

07.2015 - 02.2016

NEWCASTLE UNIVERSITY

Newcastle University, Newcastle upon Tyne (UK)

Master Thesis Project

PERSONAL SKILLS AND COMPETENCES

Mother tongue Italian

Other(s) language(s)

English

German

Understanding		Speaking		Writing
Listening	Reading	Spoken interaction	Spoken production	
B2	B2	B2	B2	B2
A1	A1	A1	A1	A1

Common European Framework of Reference for Languages

IELTS Level 6.5, University of Cambridge

Zertifikat Deutsch Level B1, Goethe Institut

Organisational skills Good time-management skills, sense of organization and autonomous work planning, honed through simultaneous conduction of multiple research projects. Efficiently met deadlines.

Strong propensity for teamwork, developed by constantly working on research projects involving multiple participants.

IT skills

Advanced internet, database and archival research skills;

Operating systems: Microsoft Windows, iOS

Proficient use of Microsoft Office applications.

Proficient use of Origin software for data analysis and ChemDraw Ultra 8.0.

Proficient use of data management software, ISA-TAB format and Zenodo platform

CSWA Certificate in Mechanical design with SolidWorks at the level of Associate

Communication skills Good oral communication and data presentation skills, acquired during research activities; ability to interpret other

people's demands and needs and to establish proficient and satisfying interaction

TECHNICAL SKILLS AND COMPETENCES

NANOMATERIAL SYNTHESIS AND CHARACTERISATION

Mesoporous Bioactive Glasses synthesis (by spray-dryer technique and sol-gel process), and characterization (by SEM, FE-SEM, DLS, XRD, N₂-Adsorption/desorption) and release test of ions (analysed by ICP -Inductively coupled plasma)

Synthesis of biomimetic hydroxyapatite by means of hydrothermal methods.
Project name: ERC BOOST, Biomimetic trick to re-balance Osteoblast-Osteoclast loop in osteoporosis therapy: a Topologically and materials driven approach.

BIOCOMPATIBLE POLYMERS AND COMPOSITES

Synthesis of hydrogels based on natural polymers (collagen, alginate, fibrin) and composites based on thermoplastic polymers (PLLA).

Addition and dispersion of inorganic phases to obtain polymeric composites.

Characterisation techniques: morphological analyses by Scanning Electron Microscopy (SEM), Transmission Electron Microscopy and Micro-Computed Tomography (μ CT); compositional analyses by Energy Dispersive X-ray Spectrometry (EDS), UV/Vis Spectrophotometry, Attenuated Total Reflection Fourier Transform Infrared Spectroscopy (ATR-FTIR), Fluorescence Microscopy; Rheometric analyses by rotational rheometer; ICP -Inductively coupled plasma, Uv-Vis spectroscopy; Lyophilisation techniques.

Cytocompatibility assessment: Live/Dead assay, Alamar Blue, MTT assay.

ADDITIVE MANUFACTURING TECHNOLOGIES

3D Printing technologies: extrusion printing of composite biomaterials based on type I collagen hydrogels; design and processing of CAD/CAM models derived from micro-computed tomography analyses and following implementation of STL files.

Project name: ERC BOOST, Biomimetic trick to re-balance Osteoblast-Osteoclast loop in osteoporosis therapy: a Topologically and materials driven approach.

Electrospinning technologies: electrospinning of collagen-based suspensions to produce injectable mats for bone tissue engineering application

Project name: Horizon 2020, GIOTTO, Active aGelng and Osteoporosis: The next challenge for smart nanobiomaterials and 3D technologies.

PROJECTS

All the research activities have been conducted in the frame of different European and national projects:

ERC BOOST Project – “Biomimetic trick to re-balance osteoblast-osteoclast loop in osteoporosis treatment: a topological and materials driven approach”.

Project funded by the European Research Council (ERC) under the European Union's Horizon 2020 research and innovation programme (grant agreement No 681798-B OOST)

The research activities led to 6 publications in international scientific journals.

NMBP H2020 GIOTTO Project – “Active aGelng and Osteoporosis: The next challenge for smart nanobiOMaterials and 3D technologies”.

Project funded by the European Community under the European Union's Horizon 2020 research and innovation programme (grant agreement No 814410 (GIOTTO))

The research activities led to 3 publications in international scientific journals.

NMBP H2020 MOZART Project – “Mesoporous matrices for localized pH-triggered release of the therapeutic ions and drugs”.

Project funded by the European Community under the European Union's Horizon 2020 research and innovation programme (grant agreement No. 685872-MOZART)

The research activities led to 1 publication in international scientific journals.

ZODIAC – “Zwitterionic mesostructured glasses: powerful devices for bone regeneration”.

National project funded by Compagnia di San Paolo under the initiative “Metti in rete la tua idea di ricerca”.

The research activities led to 1 publication in international scientific journals.

GRACE- “Growth factor Release upon ACidic Environment in bone resorption”.

National project funded by the Italian Minister of Education, Universities and Research (MIUR), under the programme “FARE Ricerca in Italia”.

The research activities led to 1 publication in international scientific journals.

CERTIFICATES AND PRIZES

Poster Prize “GISM 2020” – Awarded by Gruppo Italiano Cellule Staminali
WINTER SCHOOL OF BIOPRINTING- From 3D printing set-up to laboratory analysis
Università di Pavia, February 13, 2020

ISBF Travel Award 2018 – Awarded by the International Society of Biofabrication
The International Conference on Biofabrication 2018 (ISBF)
Würzburg, October 28-31, 2018

1st Abstract Prize winner awarded by the Society for medical innovation and technology

Collagen-based biomimetic smart scaffold for bone tissue engineering
29th Conference of the international Society for Medical innovation and Technology,
Lingotto Congress Center, Turin, November 9-10, 2017

CSWA – Solidworks

Academic exam at Politecnico di Torino, July 31, 2018

PUBLICATIONS

1. Lamnini, S., Baino, F., Montalbano, G., Javed, H., & Smeacetto, F. "Printability of carboxymethyl cellulose/glass-containing inks for robocasting deposition in reversible solid oxide cell applications.", *Materials Letters*, 2022, 318, 132239.
2. 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 Nanoparticles Mimicking the Growth Factor Footprint of Human Bone Tissue." *Polymers*, 2022, 14(5), 857.
3. Estévez, M., Montalbano, G., Gallo-Cordova, A., Ovejero, J. G., Izquierdo-Barba, I., González, B., Tomasina, C., Moroni, L., Vallet-Regí, M., Vitale-Brovarone, C. & Fiorilli, S. "Incorporation of Superparamagnetic Iron Oxide Nanoparticles into Collagen Formulation for 3D Electrospun Scaffolds." *Nanomaterials*, 2022, 12(2), 181.
4. Borciani, G., Montalbano, G., Baldini, N., Vitale-Brovarone, C., & Ciapetti, G. "Protocol of Co-Culture of Human Osteoblasts and Osteoclasts to Test Biomaterials for Bone Tissue Engineering." *Methods and Protocols*, 2022, 5(1), 8.
5. Borciani, G., Montalbano, G., Melo, P., Baldini, N., Ciapetti, G., & Vitale Brovarone, C. "Assessment of Collagen-Based Nanostructured Biomimetic Systems with a Co-Culture of Human Bone-Derived Cells." *Cells*, 2022, 11(1), 26.
6. Melo, P., Montalbano, G., Fiorilli, S. and Vitale-Brovarone, C. "3D Printing in Alginic Acid Bath of In-Situ Crosslinked Collagen Composite Scaffolds." *Materials*, 2021, 14(21), 6720
7. Montalbano, G., Tomasina, C., Fiorilli, S., Camarero-Espinoza, S., Vitale-Brovarone, C. and Moroni, L. "Biomimetic scaffolds obtained by electrospinning of collagen-based materials: Strategies to hinder the protein denaturation." *Materials* 2021, 14(16), 4360
8. Banche-Niclot, F., Montalbano, G., Fiorilli, S., & Vitale-Brovarone, C. "PEG-Coated Large Mesoporous Silicas as Smart Platform for Protein Delivery and Their Use in a Collagen-Based Formulation for 3D Printing." *International journal of molecular sciences*, 2021, 22(4), 1718.

9. Fiorilli, S., Pagani, M., Boggio, E., Gigliotti, C. L., Dianzani, C., Gauthier, R., Pontremoli, C., Montalbano, G., Dianzani, U. and Vitale-Brovarone, C. "Sr-Containing Mesoporous Bioactive Glasses Bio-Functionalized with Recombinant ICOS-Fc: An In Vitro Study." *Nanomaterials*, 2021, 11(2), 321.
10. Adali, M. B., Barresi, A., Boccardo, G., Montalbano, G., & Pisano, R. "Ultrasonic spray freeze-drying of sucrose and mannitol-based formulations: Impact of the atomization conditions on the particle morphology and drying performance." *Drying Technology*, 2021, 1-11.
11. Molino, G., Montalbano, G., Pontremoli, C., Fiorilli, S., & Vitale-Brovarone, C. "Imaging Techniques for the Assessment of the Bone Osteoporosis-Induced Variations with Particular Focus on Micro-CT Potential. " *Applied Sciences* 2020, 10(24), 8939.
12. Melo, P., Naseem, R., Corvaglia, I., Montalbano, G., Pontremoli, C., Azevedo, A., Quadros, P., Gentile, P., Ferreira, A.M., Dalgarno, K., Vitale-Brovarone, C., Fiorilli, S. "Processing of Sr²⁺ containing PLLA-based hybrid composites for additive manufacturing of bone scaffolds." *Front. Mater.* 7, 2020: 601645.
13. Fiorilli, S., Pontremoli C., Montalbano G. and Vitale Brovarone C. - Chapter 10. "Hybrid Formulations Based on Mesoporous Bioactive Glasses/Polymer Phases for the Design of Bone Scaffolds and Delivery Platforms - In *Bioactive Glasses: Properties, Composition and Recent Applications*" by Daniel Arcos and Maria Vallet-Regí, 2020, Nova Science Publishers ISBN: 978-1-53618-337-5
14. 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." *Nanomaterials* 2020, 10(9), 1681.
15. Montalbano, G., Molino, G., Fiorilli, S., & Vitale-Brovarone, C. "Synthesis and incorporation of rod-like nano-hydroxyapatite into type I collagen matrix: A hybrid formulation for 3D printing of bone scaffolds." *Journal of the European Ceramic Society*, 2020, 40(11), pp. 3689–3697
16. Licini, C., Montalbano, G., Ciapetti, G., Cerqueni, G., Vitale-Brovarone, C., & Mattioli-Belmonte, M. "Analysis of multiple protein detection methods in human osteoporotic bone extracellular matrix: From literature to practice." *Bone*, 2020, 137, 115363.
17. Borciani, G., Montalbano, G., Baldini, N., Cerqueni, G., Vitale-Brovarone, C., & Ciapetti, G. "Co-culture systems of osteoblasts and osteoclasts: Simulating in vitro bone remodeling in regenerative approaches." *Acta Biomaterialia*, 2020, 108, pp. 22–45

18. Paterson, T. E., Bari, A., Bullock, A. J., Turner, R., Montalbano, G., Fiorilli, S., Vitale-Brovarone, C., MacNeil, S., Shepherd, J. "Multifunctional copper-containing mesoporous glass nanoparticles as antibacterial and proangiogenic agents for chronic wounds." *Frontiers in Bioengineering and Biotechnology*, 2020, 8, 246

19. Pontremoli, C., Izquierdo-Barba, I., Montalbano, G., Vallet-Regí, M., Vitale-Brovarone, C., & Fiorilli, S. "Strontium-releasing mesoporous bioactive glasses with anti-adhesive zwitterionic surface as advanced biomaterials for bone tissue regeneration." *Journal of Colloid and Interface Science*, 2020, 563, 92-103.

20. Molino, G., Palmieri, M. C., Montalbano, G., Fiorilli, S., & Vitale-Brovarone, C. "Biomimetic and mesoporous nano-hydroxyapatite for bone tissue application: a short review." *Biomedical Materials*, 2020, 15(2), 022001.

21. Montalbano, G., Borciani, G., Pontremoli, C., Ciapetti, G., Mattioli-Belmonte, M., Fiorilli, S., & Vitale-Brovarone, C. "Development and Biocompatibility of Collagen-Based Composites Enriched with Nanoparticles of Strontium Containing Mesoporous Glass." *Materials* 2019, 12(22), 3719.

22. Montalbano G., Toumpaniari S., Popov A., Duan P., Chen J., Dalgarno K., Scott III W. E., Ferreira, A. M. "Synthesis of bioinspired collagen/alginate/fibrin-based hydrogels for soft tissue engineering. " *Materials Science and Engineering: C*, 2018, 91, 236-246

23. Montalbano G., Fiorilli S., Caneschi A., Vitale-Brovarone C. "Type I Collagen and Strontium-Containing Mesoporous Glass Particles as Hybrid Material for 3D Printing of Bone-Like Materials." *Materials*, 2018, 11(5), 700

ORAL COMMUNICATIONS, PRESENTATIONS AND CONFERENCES

ORAL COMMUNICATIONS

G. Montalbano, M. Estevez Amado, C. Tomasina, S. Fiorilli, B. González, I. Izquierdo-Barba, S. Camarero Espinosa, L. Moroni, M. Vallet-Regí, C. Vitale Brovarone. "The combination of superparamagnetic iron oxide nanoparticles and type I collagen to design 3D electrospun scaffolds for bone regeneration"

ESB 2021 Virtual Congress

5-9 September 2021

G. Montalbano, G. Borciani, P. Melo, S. Fiorilli, G. Ciapetti, C. Vitale-Brovarone. "Assessment of collagen-based bioactive scaffolds with human osteoblast and osteoclast indirect co-culture systems"

ESB 2021 Virtual Congress

5-9 September 2021

G. Montalbano, C. Vitale-Brovarone, G. Molino, F. Banche Niclot, S. Fiorilli, G. Borciani, G. Ciapetti, C. Licini, G. Cerqueni, M. Mattioli-Belmonte, C. De Maria, G. Vozzi. "3D printed bioactive composite scaffolds for bone tissue applications"
WBC 2020 Virtual Congress
11-15 December 2020

G. Montalbano, G. Molino, F. Banche-Niclot, C. De Maria, G. Vozzi, M. Mattioli, Belmonte, C. Licini, G. Ciapetti, G. Borciani, S. Fiorilli, C. Vitale Brovarone "Design of 3D printed scaffolds mimicking the natural features of healthy bone".
European Orthopaedic Research Society (EORS) 2019
Maastricht, 2-4 October 2019

G. Montalbano, G. Molino, F. Banche Niclot, C. De Maria, G. Vozzi, M. Mattioli-Belmonte, C. Licini, G. Ciapetti, G. Borciani, S. Fiorilli, C. Vitale-Brovarone "3D printed scaffolds based on hybrid bioactive systems for bone tissue engineering applications".
XVI ECerS Conference 2019
Turin, June 16-20, 2019

G. Montalbano, C. Vitale-Brovarone "Osteoporosis and 3d bone like scaffolds mimicking the feature of human healthy bone".
Invited lecture
TERMIS European Chapter Meeting 2019
Rhodes, May 27-31, 2019

G. Montalbano, G. Molino, G. Ciapetti G., M. Mattioli-Belmonte, G. Vozzi, S. Fiorilli, C. Vitale-Brovarone "Bioactive and biomimetic scaffolds to mimic healthy bone".
Material Science and Engineering Congress
Darmstadt, September 26-28, 2018

G. Montalbano, G. Molino, S. Fiorilli, C. Vitale Brovarone "Collagen-based biomimetic smart scaffold for bone tissue engineering".
29th Conference of the international Society for Medical innovation and Technology,
Lingotto Congress Center, Turin, November 9-10, 2017
1st Abstract Prize winner

G. Montalbano, G. Molino, S. Fiorilli, C. Vitale-Brovarone "Nanomaterials and 3D scaffolds for tissue regeneration".
Open Workshop "Micro- and Nano-Technologies for Health", Politecnico di Torino
June 19, 2017

POSTER PRESENTATION

G. Montalbano, G. Molino, G. Ciapetti, G. Vozzi, S. Fiorilli, C. Vitale-Brovarone "Bioactive hybrid formulations for 3D printing of bone scaffolds".
The International Conference on Biofabrication 2018 (ISBF)

Wurzburg, October 28-31, 2018
(Travel grant winner)

G. Montalbano, G. Molino, S. Fiorilli, C. Vitale-Brovarone “Bioactive hybrid systems for the 3D printing of bone scaffolds”.

16th European Inter-Regional Conference on Ceramics, Castello del Valentino – Politecnico di Torino, September 9-11, 2018

G. Montalbano, G. Molino, S. Fiorilli, C. Vitale-Brovarone “Design and characterisation of biomimetic smart scaffolds for bone applications”.

EUROMAT 2017, Thessaloniki, Greece - September 17-22, 2017

G. Montalbano, G. Molino, G. Novajra, S. Fiorilli, C. Vitale-Brovarone. “Design of smart scaffold for the treatment of osteoporosis”.

48th National Congress OTODI, Loano (SV), Italy
May 18-19, 2017

SEMINARS AND WORKSHOPS

IV Workshop di Bioprinting: dal set-up della stampa alle analisi in laboratorio
Pavia, Università di Pavia, February 14, 2020

The European CELLINK Partnership Conference
Milan, Ospedale San Raffaele, May 10, 2019

D-day 2018
Turin, Centro di Biotecnologie Molecolari, September 13, 2018

“Tecniche spettroscopiche innovative per lo studio dei materiali”, Thermofisher Scientific
Politecnico di Torino, June 8, 2018

Summer School INSTM/AIMAT
XIX National School of materials science and technology, Ischia, Italy
July 9-12, 2017

Autorizzo il trattamento dei dati in conformità a quanto previsto dal DL 196/03.

