

# Federica Iberite, Ph.D.

Postdoctoral fellow

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## EDUCATION

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### Academic degrees

- 10/2017 – 07/2021 **Ph.D. in BioRobotics, full marks *cum laude*** - The BioRobotics Institute, Scuola Superiore Sant'Anna, Pisa (Italy)  
**Thesis title:** "Pushing the boundaries of skeletal muscle tissue engineering with multiple biophysical stimulations"  
**Supervisor:** Prof. Leonardo Ricotti.
- 10/2015 – 10/2017 **Master's Degree in "Genetics and Molecular Biology in Basic and Biomedical Research", 110/110 *cum laude*** – LM-6, Department of Biology and Biotechnology "C. Darwin", "Sapienza" University of Rome, Rome (Italy)  
**Thesis title:** "Functional characterization of a novel long non-coding RNA involved in the regulation of *Neurogenin2*, a master gene of neural differentiation"  
**Supervisor:** Prof. Elisa Caffarelli.
- 10/2012 – 07/2015 **Bachelor's Degree in "Biotechnology", 110/110 *cum laude*** – L-2, Department of Biology and Biotechnology "C. Darwin", "Sapienza" University of Rome, Rome (Italy)  
**Thesis title:** "Expression analysis of *miR-135a* in mechanisms of synaptic plasticity"  
**Supervisor:** Prof. Carlo Presutti.

### Other education

- 26/08 – 05/09/2018 **European School on Nanosciences and Nanotechnologies (ESONN'18)**, Université Grenoble Alpes - Institut polytechnique de Grenoble, Grenoble (France)
- 10/2016 – 04/2017 **IELTS preparation course - level 7** - Trinity School – Accademia Linguistica, Rome (Italy)
- 09/2007 – 07/2012 **Scientific high school diploma, 100/100** - Liceo Scientifico Statale "G.B. Grassi", Latina (Italy)

### Certifications

- 12 - 14/04/2021 **Virtual Pluripotent Stem Cell Maintenance and Cell Quality Training** – STEMCELL Technologies UK Ltd.
- 07/2020 **National professional license as a Biologist (section A)** - University of Salento, Lecce (Italy)
- 2017 **IELTS certification** – Band score: 8, CEFR level: C1

## RESEARCH EXPERIENCES

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- From 07/2021 **Postdoctoral fellow** - The BioRobotics Institute, Scuola Superiore Sant'Anna, Pisa (Italy)
- 10/2017 – 07/2021 **Ph.D. Scholarship** - The BioRobotics Institute, Scuola Superiore Sant'Anna, Pisa (Italy)

- 02/2016 – 10/2017 **Master's Degree student researcher** - Department of Biology and Biotechnology "C. Darwin", "Sapienza" University of Rome, Rome (Italy)
- 05/2015 **Bachelor's Degree student researcher** - Department of Biology and Biotechnology "C. Darwin", "Sapienza" University of Rome, Rome (Italy)

## SKILLS

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### Languages

- **Italian** (mother tongue)
- **English** (CEFR level: C1, IELTS certification 2017)

### Technical

#### Molecular and cell biology

- **Cell cultures and *in vitro* testing:** cell cultures of different cell cultures (SH-SY5Y, HeLa, NHDF, U937, C2C12, human primary chondrocytes, iPSC skeletal muscle differentiation, hADSCs), myoblast differentiation and assessment, cell viability and metabolic assay (LIVE/DEAD by fluorescent staining, colorimetric assay, PrestoBlue metabolic assay), cell proliferation assay (by DNA quantification), ELISA assay, immunofluorescent staining, transfection with lipofectamine, plasmid expression
- **Cell imaging:** fluorescence microscope imaging, confocal microscope imaging
- **DNA, RNA, and protein:** Gel electrophoresis, RT-PCR, etc., molecular cloning, plasmid and genomic DNA isolation, western blot
- **Advanced techniques:** Nuclear-cytoplasmic-chromatinic cellular fractionation and RNA isolation, RNA pull-down, chromatin immunoprecipitation, RNA interference knockdowns (with gapmeRs), Real-Time qRT-PCR

#### Manufacturing techniques

- Spin Coating, elastomeric thin film fabrication, 3D bioprinting

#### Sample/materials morphological and mechanical characterization

- Stylus and optical profilometry, testing instrument for stress/strain measurements (Instron)
- Synthesis and rheological characterization of Gelatin-based materials for 3D printing applications (e.g., dialysis, freeze drying, viscosity measurements)

### Softwares

- MS Office
- Adobe Illustrator (Production of posters for conferences, figures for documents and articles)
- GraphPad Prism (Data analysis and statistics)
- Fiji and Icy (Image postprocessing)
- LaTeX (Production of documents and manuscripts)
- MATLAB (beginner user, data analysis and plotting)

## PARTICIPATION IN INTERNATIONAL AND NATIONAL RESEARCH PROJECTS

- 11/2020 – 11/2023 **MIO-PRO** (Muscoli ingegnerizzati paziente-specifici per il ripristino di canali MIOelettrici e il controllo di PROtesi) in collaboration with INAIL. Funding: 1.5 mln €. **Role:** researcher and leader of one of the working packages.
- 01/2020 – 12/2020 H2020 European project **ADMAIORA** (ADvanced nanocomposite MAterials fOr in situ treatment and ultRASound-mediated management of osteoarthritis) [www.admaiora-project.com/](http://www.admaiora-project.com/). Funding: 5.4 mln €. **Role:** researcher.

## AWARDS

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- **Winner of the “Path of Excellence 2016/2017”** – Awarded by the master’s degree in Genetics and Molecular Biology in Basic and Biomedical Research for academic merits to five excellent students
- **Winner of the grant “Ernesto e Iole De Maggi” 2015/2016** – Awarded by “Fondazione Roma Sapienza” for academic merits to one student of the Faculty of Science (€ 1,350)

## SUPERVISION ACTIVITIES

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- Co-tutor Matilde Fabbri: **M.Sc. Thesis** in Biomedical Engineering (University of Pisa) entitled “*Development of a new gelatin methacrylate-fibrinogen-based bioink for skeletal muscle tissue engineering*”, a.y. 2023-2024.
- Co-tutor of Angelo Sciuolo: **Ph.D. student** in BioRobotics (Scuola Superiore Sant’Anna) with a thesis entitled “*Biofabrication approaches for Skeletal Muscle Tissue Engineering*”, a.y. 2022-2025.
- Co-tutor of Sara Loggini: **M.Sc. Thesis** in Biomedical Engineering (University of Pisa) entitled “*Pushing skeletal muscle differentiation in 3D printed construct with piezoelectric NPs and LIPUS*”, a.y. 2021-2022.
- Co-tutor of Claudia Paci: **M.Sc. Thesis** in Biomedical Engineering (University of Pisa) entitled “*3D bioprinting di idrogeli nanocompositi piezoelettrici e mioblasti per l’ingegnerizzazione del muscolo scheletrico*”, a.y. 2019-2020. **Thesis winner of the GNB award 2021 Premio di Laurea "Bioingegneria" - Università di Padova**
- Tutor of Emanuele Peperoni: **Internship** (80 hours) for M.Sc. in Bionics Engineering (University of Pisa and Scuola Superiore Sant’Anna) on the topic: “*Design and characterization of a bioprintable polymeric substrate for biohybrid actuators*”, a.y. 2018-2019.

## SCIENTIFIC PUBLICATIONS AND PATENTS

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ORCID ID: 0000-0003-1876-9734

	Scholar	Scopus
Number of articles	12	12
Number of citations	114	89
H-index	6	6

### Articles in peer-reviewed journals

- **Iberite, Federica**, Piazzoni, M., Guarnera, D., Iacoponi, F., Locarno, S., Vannozzi, L., ... & Ricotti, L. *Soft Perfusable Device to Culture Skeletal Muscle 3D Constructs in Air*. ACS Applied Bio Materials, 6, 7, 2712–2724, **2023** [2-year I.F. 2022: **4.7**]
- Redolfi-Riva, E. Pérez-Izquierdo, M., Zinno, C., Contreras, E., Rodríguez-Meana, B., **Iberite, Federica**, ... & Navarro, X. *A Novel 3D-Printed/Porous Conduit with Tunable Properties to Enhance Nerve Regeneration Over the Limiting Gap Length*, Advanced Materials Technologies, 8(17), 2300136, **2023** [I.F. 2022: **6.8**]
- Paci, Claudia; **Iberite, Federica**; Arrico, Lorenzo; Vannozzi, Lorenzo; Parlanti, Paola; Gemmi, Mauro; and Ricotti, Leonardo; *Piezoelectric nanocomposite bioink and ultrasound stimulation modulate early skeletal myogenesis.*, Biomaterials Science, 10(18), 5265-5283, **2022** [I.F. 2022: **6.6**]
- **Iberite, Federica**; Gruppioni, Emanuele; Ricotti, Leonardo; *Skeletal muscle differentiation of human iPSCs meets bioengineering strategies: perspectives and challenges*, npj Regenerative Medicine, 7, 1, 1-30, **2022**, Nature Publishing Group [I.F. 2019: **7.021**; 5-Year I.F.: **8.298**]
- Piazzoni, Marco; Piccoli, Elisa; Migliorini, Lorenzo; Milana, Edoardo; **Iberite, Federica**; Vannozzi, Lorenzo; Ricotti, Leonardo; Gerges, Irini; Milani, Paolo; Marano, Claudia; *Monolithic Three-Dimensional Functionally Graded Hydrogels for Bioinspired Soft Robots Fabrication*, Soft Robotics, **2021**, Mary Ann Liebert, Inc [I.F. 2020: **8.071**]
- Fontana, F; **Iberite, Federica**; Cafarelli, A; Aliperta, A; Baldi, G; Gabusi, Elena; Dolzani, Paolo; Cristino, Sandra; Lisignoli, Gina; Pratellesi, T; *Development and validation of low-intensity pulsed ultrasound systems for highly controlled in vitro cell stimulation*, Ultrasonics, 116, 106495, **2021**, Elsevier [I.F. 2020: **2.890**]

- Rea, Jessica; Menci, Valentina; Tollis, Paolo; Santini, Tiziana; Armaos, Alexandros; Garone, Maria Giovanna; **Iberite, Federica**; Cipriano, Andrea; Tartaglia, Gian Gaetano; Rosa, Alessandro; *HOTAIRM1 regulates neuronal differentiation by modulating NEUROGENIN 2 and the downstream neurogenic cascade*, Cell Death & Disease, 11, 7, 1-15, **2020**, Nature Publishing Group [2-year I.F.: **8.469**; 5-year I.F.: **8.713**]
- **Iberite, Federica**; Gerges, Irini; Vannozzi, Lorenzo; Marino, Attilio; Piazzoni, Marco; Santaniello, Tommaso; Lenardi, Cristina; Ricotti, Leonardo; *Combined Effects of Electrical Stimulation and Protein Coatings on Myotube Formation in a Soft Porous Scaffold*, Annals of biomedical engineering, 48, 2, 734–746, **2019**, Springer US [I.F. 2019: **3.47**]

#### under review

- Drago, Elena; Sciuillo, Angelo; Cafarelli, Andrea; **Iberite, Federica**; Vannozzi, Lorenzo; Kerdegari, Sajedeh; Fujie, Toshinori; Gruppioni, Emanuele; Canale, Claudio; Ricotti, Leonardo; *Micropatterned styrene-butadiene-styrene thin films doped with barium titanate nanoparticles: effects on myoblast differentiation*, ACS Biomaterials Science & Engineering
- **Federica Iberite**, Maider Badiola-Mateos, Sara Loggini, Claudia Paci, Jacopo Ruspi, Daniele Iachetta, Emanuele Gruppioni, Leonardo Ricotti, *3D bioprinting of thermosensitive bioinks based on gelatin, hyaluronic acid, and fibrinogen: reproducibility and role of printing parameters*, Bioprinting.

#### Book chapters

- **Iberite, Federica**; Vannozzi, Lorenzo; Ricotti, Leonardo; *Biohybrid Microrobots*, Field-Driven Micro and Nanorobots for Biology and Medicine, 305-347, **2022**, Springer Cham, Online ISBN: 978-3-030-80197-7

#### Patents

- **F. Iberite**, L. Vannozzi, L. Ricotti, Title: “*Dispositivo medico bio-ibrido, sistema per la somministrazione di terapie utilizzando tale dispositivo medico bio-ibrido e relativo metodo di orientamento nello spazio*”, Filing date: 23/07/2021. Filing number: 102021000019703. Status: Extended to PCT (No. PCT/IT2022/050185).

## CONFERENCE PRESENTATIONS

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(\*) = Federica Iberite was the presenter/speaker

#### Conference proceedings

- Iacoponi, F., Iberite, F., Fontana, F., & Ricotti, L. *Biological evaluation of highly controlled low-intensity pulsed ultrasound stimulation set-ups*. 47th World Congress for Artificial Organs (ESAO), Int. J. Artif. Org. 43(8): 506-555, **2020**
- Guarnera, Daniele; **Iberite, Federica**; Piazzoni, Marco; Gerges, Irini; Santaniello, Tommaso; Vannozzi, Lorenzo; Lenardi, Cristina; Ricotti, Leonardo; *Effects of the 3D Geometry Reconstruction on the Estimation of 3D Porous Scaffold Permeability*, 2021 43rd Annual International Conference of the IEEE Engineering in Medicine & Biology Society (EMBC), 4403-4407, **2021**, IEEE. Poster presentation.
- Fontana, F., **Iberite, Federica**, Morchi, L., Pratellesi, T., Cafarelli, A., & Ricotti, L.; *Highly controlled and usable system for Low-Intensity Pulsed Ultrasound Stimulation of Cells*. 2019 41st Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC), 2513-2516, **2019**, IEEE. Poster presentation.
- (\*) **Iberite, Federica**, Salerno, M., Canale, C., Rosa, A., & Ricotti, L. *Influence of substrate stiffness on human induced pluripotent stem cells: preliminary results*. 2019 41st Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC), 1039-1043, **2019**, IEEE. Poster presentation.

**Conference abstract**

- (\*) **Iberite, Federica**, Claudia Paci, Sara Loggini, Jacopo Ruspi, Paola Parlanti, Mauro Gemmi, Maider Badiola Mateos, Leonardo Ricotti, *3D bioprinting of a macroscopic construct with piezoelectric nanoparticles for skeletal muscle tissue engineering applications*. TERMIS EU chapter, **2023**. Poster presentation.
- A. Cafarelli, E. Drago, L. Vannozzi, **Iberite, Federica**, L. Ricotti. *Piezoelectric thin films as substrates for skeletal muscle differentiation and triggering*. International Conference on Biofabrication **2022**. Oral presentation.
- (\*) **Iberite Federica**, C. Paci, L. Vannozzi, L. Arrico, L. Ricotti; *Combination of ultrasound stimulation and 3D-printed piezoelectric hydrogel for skeletal muscle tissue engineering*. 2021 MRS Fall Meeting - Boston, Massachusetts (USA), Nov. 29 – Dec. 2, **2021**. Oral presentation.
- C. Paci, **Iberite Federica**, L. Vannozzi, L. Arrico, E. Catalano, L. Ricotti. *Piezoelectric bioink for skeletal muscle tissue engineering*. 31st Conference of the European Society for Biomaterials. Porto (Portugal) Sept. 5-9, **2021**. Oral presentation.
- Iacoponi F., **Iberite Federica**, Fontana F., & Ricotti L. *Biological evaluation of highly controlled Low-Intensity Pulsed Ultrasound (LIPUS) set-ups*. Int. J. Artif. Org. 43(8): 506-555, **2020**. Oral presentation.