europass

Francesco Iacoponi

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ABOUT ME

I am a PhD student at The BioRobotics Institute of Scuola Superiore Sant'Anna, within the "Regenerative Technologies" Lab (https://www.santannapisa.it/it/istituto/biorobotica/regenerative-technologies-laboratory).
I received a Bachelor's Degree in Biomedical Engineering at the University of Pisa, with a dissertation about the biomechanical analysis of squat motor patterns. In 2020 I received a Master's degree in Biomedical Engineering (Industrial Curriculum) at the University of Pisa, with a thesis (carried out within the "Regenerative Technologies Lab") entitled "Controlled ultrasonic stimulation of immune cells", in which ultrasound stimulation techniques were applied to macrophages to promote anti-inflammatory effects in a controlled and reproducible way.
My current research activities concern system design and characterization for in vitro and in vivo biophysical stimulation purposes and investigation of related bio-effects due to the interaction between the biophysical stimuli and the biological target.
I am or have been actively involved in Italian and European projects (ADMAIORA, MIO-PRO, FORGETDIABETES). I have supervised or co-supervised 2 M.Sc. and 1 B.Sc. thesis on bioengineering topics.
I'm open-minded and I own good team spirit, which is a fundamental soft skill to have when working in a research team.

WORK EXPERIENCE

01/10/2022 – CURRENT Pontedera (PI), Italy
PHD STUDENT SCUOLA SUPERIORE SANT'ANNA - THE BIOROBOTICS INSTITUTE

- ADMAIORA (ADvanced nanocomposite MAterIals fOr in situ treatment and ultRAsound-mediated management of osteoarthritis) Project, funded under the Horizon 2020 EU Framework Programme. My activity is focused on further investigation of possible bioeffects on cells induced by a particular noninvasive beneficial stimulation technique called low-intensity pulsed ultrasound (LIPUS).
https://www.admaiora-project.com/

- MIO-PRO (Muscoli ingegnerizzati paziente-specifici per il ripristino di canali MIOelettrici e il controllo di PROtesi) Project, financed by INAIL. My activity is focused on the development of a new platform capable of stimulating a biological sample with ultrasound in a highly controlled manner. In addition, I have a management role within this project: I am responsible for interacting and coordinating the various working groups, scheduling update meetings, and drafting documents that are requested periodically.

- FORGETDIABETES Project, funded under the Horizon 2020 EU Framework Programme. My work focuses on biological analyses for the optimisation of an anti-fouling coating for the bionic invisible pancreas.
https://forgetdiabetes.eu/

01/11/2021 – 30/09/2022 Pontedera (PI), Italy
RESEARCH ASSISTANT (ASSEGNO DI RICERCA) SCUOLA SUPERIORE SANT'ANNA - THE BIOROBOTICS INSTITUTE

- ADMAIORA (ADvanced nanocomposite MAterIals fOr in situ treatment and ultRAsound-mediated management of osteoarthritis) Project, funded under the Horizon 2020 EU Framework Programme. My activity was focused on further investigation of possible bioeffects on cells induced by a particular noninvasive beneficial stimulation technique called low-intensity pulsed ultrasound (LIPUS).
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- MIO-PRO (Muscoli ingegnerizzati paziente-specifici per il ripristino di canali MIOelettrici e il controllo di PROtesi) Project, financed by INAIL. My activity was focused on the development of a new platform capable of stimulating a biological sample with ultrasound in a highly controlled manner. In addition, I had a management role within this project: I was responsible for interacting and coordinating the various working groups, scheduling update meetings, and drafting documents that were requested periodically.

01/11/2020 – 31/10/2021 Pontedera (PI), Italy
SCHOLARSHIP HOLDER (BORSA POST-LAUREA) SCUOLA SUPERIORE SANT'ANNA - THE BIOROBOTICS INSTITUTE

- ADMAIORA (ADvanced nanocomposite MAterIals fOr in situ treatment and ultRAsound-mediated management of osteoarthritis) Project, funded under the Horizon 2020 EU Framework Programme. My activity was focused on the biological analysis of possible bioeffects induced by a particular noninvasive beneficial stimulation technique called low-intensity pulsed ultrasound (LIPUS). Through advanced in vitro investigation techniques such as ELISA assay, qRT-PCR assay, immunofluorescence, confocal analysis, Western Blot, I was currently investigating how a cell line belonging to the immune system reacts to the stimulus by releasing appropriate signals and activating specific intracellular anti-inflammatory pathways.
https://www.admaiora-project.com/

- MIO-PRO (Muscoli ingegnerizzati paziente-specifici per il ripristino di canali MIOelettrici e il controllo di PROtesi) Project, financed by INAIL. My activity was focused maily on project managment: I was responsible for interacting and coordinating the various working groups, scheduling update meetings, and drafting documents that were requested periodically.

EDUCATION AND TRAINING

31/01/2021
QUALIFICATION TO THE PROFESSION OF ENGINEER - SECTION A - INDUSTRIAL SECTOR University of Pisa

24/09/2017 – 09/10/2020 Pisa, Italy
MASTER'S DEGREE IN BIOMEDICAL ENGINEERING University of Pisa

Master's degree in Biomedical Engineering, "Biomedical Technologies" curriculum, LM21 class industrial engineering.

From 22/10/19 to 10/10/20 I carried out my Thesis in the "Regenerative Technologies" Lab of The BioRobotics Institute, within the ADMAIORA Project (Scientific coordinator: Prof. Leonardo Ricotti). My activity focused on the development of highly controlled ultrasonic stimulation techniques (Low Intensity Pulsed Ultrasound) applied to cell lines in order to promote regenerative effects in a controlled and highly reproducible way.
https://www.admaiora-project.com/

Final grade 106/110 | **Level in EQF** EQF level 7

30/09/2013 – 12/07/2017 Pisa, Italy
BACHELOR'S DEGREE IN BIOMEDICAL ENGINEERING University of Pisa

Bachelor's degree in Biomedical Engineering, L-9 class industrial engineering, thesis entitled: "Biomechanical analysis of the squat at the Smith Machine", developed at the Department of mechanical engineering at the University of Pisa, supervisor: Prof. Alessio Artoni.

Level in EQF EQF level 6

10/06/2012 – 12/06/2012 Frascati (RM)
TRAINING INTERNSHIP Istituto Nazionale di Fisica Nucleare (INFN)

Through a national competition, I was selected among deserving students and invited to LNF (Laboratori Nazionali di Frascati) to attend theoretical lectures and experimental activities in the field of relativistic physics.

14/09/2008 – 01/07/2013 Pontedera, PI, Italy
HIGH SCHOOL DIPLOMA Liceo Scientifico XXV Aprile

Level in EQF EQF level 4

LANGUAGE SKILLS

Mother tongue(s): **ITALIAN**

Other language(s):

	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken production	Spoken interaction	
ENGLISH	B2	C1	B2	C1	C1
FRENCH	A2	A2	A2	A2	A2

Levels: A1 and A2: Basic user; B1 and B2: Independent user; C1 and C2: Proficient user

DIGITAL SKILLS

Microsoft Office | CC++ | Comsol Multiphysics | OpenSim | Modela Player | SolidWorks | Arduino | Meshlab | Ultimaker Cura | Slicer 3d | Regard3D | Blender Basic Knowledge | GraphPad Prism | VcDemo | OriginLab | ImageJ | k-Wave acoustic toolbox | MATLAB | LabVIEW | GPower

ADDITIONAL INFORMATION

PUBLICATIONS

Pulsed electromagnetic field stimulation enhances neurite outgrowth in neural cells and modulates inflammation in macrophages

– 2023

Fontana, F., Cafarelli, A., Iacoponi, F., Gasparini, S., Pratellesi, T., Koppes, A. N., Ricotti, L. Pulsed electromagnetic field stimulation enhances neurite outgrowth in neural cells and modulates inflammation in macrophages. Engineered Regeneration. Submitted on 26/05/2023 - Under Review.

Journal Paper

Soft perfusable device to culture skeletal muscle 3D constructs in air – 2023

F. Iberite, F., Piazzoni, M., Guarnera, D., Iacoponi, F., Locarno, S., Vannozzi, L., Bolchi, G., Boselli, F., Gerges, I., Lenardi, C., Ricotti, L. Soft perfusable device to culture skeletal muscle 3D constructs in air. ACS Applied Bio Materials. Submitted on 17/03/23 - Accepted with minor revisions.

Journal Paper

Low-intensity pulsed ultrasound increases neurotrophic factor secretion and suppresses inflammation in in vitro models of peripheral neuropathies

– 2023

Fontana, F., Iacoponi, F., Orlando, F., Pratellesi, T., Cafarelli, A., Ricotti, L. (2023). Low-intensity pulsed ultrasound increases neurotrophic factors secretion and suppresses inflammation in in vitro models of peripheral neuropathies. *Journal of Neural Engineering*, *20*(2), 026033.

Journal paper

Optimal low-intensity pulsed ultrasound stimulation for promoting anti-inflammatory effects in macrophages – 2023

Iacoponi, F., Cafarelli, A., Fontana, F., Pratellesi, T., Dumont, E., Barravecchia, I., Angeloni, D., Ricotti, L. (2023). Optimal low-intensity pulsed ultrasound stimulation for promoting anti-inflammatory effects in macrophages. *APL bioengineering*, *7*(1).

Journal Paper

CONFERENCES AND SEMINARS

2023 – Conference abstract

Zwitterionic coatings on PEEK to reduce inflammatory response E. Roventini, A. Poliziani, F. Iacoponi, G. Ballardini, l. Ricotti. Zwitterionic coatings on PEEK to reduce inflammatory response. 33rd Annual Conference of the European Society for Biomaterials (ESB), 2023, September 4-8, Davos (Switzerland). The contribution was accepted as poster presentation.

2023 – Conference abstract

Dose-controlled LIPUS stimulation of cells A. Cafarelli, F. Fontana, F. Iacoponi, T. Pratellesi, E. Dumont, L. Ricotti. Dose-controlled LIPUS stimulation of cells. 6th International Caparica Conference on Ultrasonic-based applications from analysis to synthesis (ULTRASONICS), 2023, June 26-29, Caparica (Portugal). The contribution was accepted as oral presentation.

2023 – Conference proceeding
Dose-controlled low-intensity pulsed ultrasound and pulsed electromagnetic fields stimulations modulate inflammation in human macrophages F. Iacoponi, F. Orlando, S. Gasparini, T. Pratellesi, A. Cafarelli, L. Ricotti. Dose-controlled low-intensity pulsed ultrasound and pulsed electromagnetic fields stimulations modulate inflammation in human macrophages. VIII Congress of the National Group of Bioengineering (GNB), 2023, June 21-23, Padua (Italy). The contribution was accepted as oral presentation and I will deliver the talk.

2023 – Conference abstract
Low-intensity pulsed ultrasound stimulation modulates neurotrophic factor secretion andinflammation in Schwann cells F. Iacoponi, F. Orlando, F. Fontana, T. Pratellesi, A. Cafarelli, L. Ricotti. Low-intensity pulsed ultrasound stimulation modulates neurotrophic factor secretion andinflammation in Schwann cells. European Chapter of the Tissue Engineering and Regenerative Medicine International Society (TERMIS), 2023, March 28-31, Manchester (England). The contribution was accepted as oral presentation and I delivered the talk.

2021 – Conference abstract
Dose-controlled Low-Intensity Pulsed Ultrasound to modulate inflammatory response F. Iacoponi, F. Fontana, E. Catalano, C. Manferdini, D. Trucco, A. Cafarelli, G. Lisignoli and L. Ricotti. Dose-controlled Low-Intensity Pulsed Ultrasound to modulate inflammatory response. 6th World Congress of the Tissue Engineering and Regenerative Medicine International Society (TERMIS), 2021, November 15-19, Maastricht (the Netherlands). The contribution was accepted as oral presentation and I delivered the talk.

2020 – Conference abstract
Biological evaluation of highly controlled Low-Intensity Pulsed Ultrasound (LIPUS) set-ups F. Iacoponi, F. Iberite, F. Fontana and L. Ricotti. Biological evaluation of highly controlled Low-Intensity Pulsed Ultrasound (LIPUS) set-ups. ESAO (World Congress for Artificial Organs), 2020, held remotely. Published in Int. J. Artif. Org. 43(8): 506-555, 2020
The contribution was accepted as oral presentation and I delivered the talk.

Link https://doi.org/10.1177/0391398820937567

CERTIFICATIONS

02/2022
Il regolamento UE 2017/745 sui dispositivi medici (MDR)

The Course aims to present participants with the new features introduced by EU Regulation 2017/745 and their impact on regulatory activities and technical documentation required to support the CE Marking process of Medical Devices. It also aims to provide useful evaluation elements and considerations for transitional management and implementation. Duration: 8 hours.

06/2021
Certificazione ISIPM-Base - Istituto Italiano di Project Management (ISIPM)

ISIPM Certification-Basic Level was designed by the Italian Institute of Project Management and attests with a certification the elements of knowledge deemed necessary for those who want to consolidate a path as a project manager.

05/2021
Corso online per Auditor Interno sulla Norma UNI EN ISO 9001:2015 - Area ISO S.r.l.

The aim of the course is to provide participants with an analysis of the requirements and contents of the UNI EN ISO 9001 standard, with the intention of also providing useful guidance for implementing the management system in accordance with the new standard. Duration: 4 hours.

05/2021
La Norma ISO 13485 - Certiquality S.r.l.

The Course provides an explanation of the requirements of the International Standard ISO 13485:2016, knowledge of which is a prerequisite for corporate Quality management specifically for companies operating in the Medical Devices field. Duration: 8 hours.

05/2020
EF SET English Certificate (C1 Proficient) - EF SET

Link https://www.efset.org/cert/kNFFcF

04/2020
C++ Tutorial Course - SoloLearn

C++ course that has covered: data types, arrays, pointers, conditional statements, loops, functions, classes, objects, inheritance, polymorphism.

Link https://www.sololearn.com/Certificate/1051-18600258/pdf/

04/2020
Solving Nonlinear Equations with MATLAB - MathWorks

Apply root-finding methods to solve nonlinear equations across fields of engineering, physics, and biology.

Link https://matlabacademy.mathworks.com/progress/share/certificate.html?id=eb6f683f-873c-4365-a0e0-6a4a123a2837

10/2019
NI Certified LabVIEW Associate Developer (CLAD) - National Instruments

The Certified LabVIEW Associate Developer (CLAD) Certification indicates a broad working knowledge of the LabVIEW environment, a basic understanding of coding and documentation best practices, and the ability to read and interpret existing code.

Link https://www.youracclaim.com/badges/51acbd97-88ff-4795-8130-21c1a164de71/linked_in_profile

11/2019
Professional Course of Project Management - Stargate Consulting Ponsacco

The course covered:

- Introduction to project management: what is project management, constraints in a project, historical background on the project management, the project manager today, the systems approach, project manager rules (2 hours).
- The processes of project management: initiation, planning, execution, control and closure, context and stakeholders, project phases, success criteria, project strategies, requirements and objectives, project evaluation (3 hours).
- Project manager's tools: hierarchical structures of a project, what is a WBS, what is an OBS, responsibility matrices, risk and opportunity management, project deliverables, reporting of a project, cost management in a project, resource management in a project, time management, managing the quality of a project, evaluating project progress according to time cost quality criteria (3 hours).
- Organizational structures and management systems: the management systems of quality, environment and safety in the working environments, finance and legal aspects (3 hours).
- Project organization: organizational structures and projects, management of change processes, management communications (3 hours).
- Team management: leadership, result orientation, how to motivate the team, negotiation, management of conflicts (2 hours).
- Working in teams: team building/team working, motivation, result orientation (2 hours).
- Final check: final learning assessment test (2 hours).

06/2019
Corso di Alta Formazione (Advanced Training Course) in 3d Printing: "Stampa 2D/3D per la realizzazione di prodotti innovativi, sensori, sistemi wearable e dispositive IoT" - Pisa

The course covered the topics of additive manufacturing for 2D/3D fabrication of systems/devices/sensors, one of the main enabling technologies of Industry 4.0. I was selected to participate to this course. Duration: 18 hours.

05/2013
First Certificate in English (FCE, B2 Upper Intermediate) - University of Cambridge

01/2013
European Computer Driving Licence (ECDL) - AICA

ECDL certificate represents the international standard for recognizing the skills and competencies needed to be an expert user of computers and basic computer applications, the most common office applications and in specialized areas.

COURSES

09/2019
Training course on Safety in the Workplace

09/2019
3rd Italian Digital Biomanufacturing Network (IDBN)

I was invited to participate at this congress. The aim was to provide an overview of the state of research related to new approaches and technologies in the biomanufacturing field, through the presentation of results in both the research and application-medical fields from leading Italian universities.

02/2019
3D Modelling with Blender - FabLab Pisa

Blender is a powerful software, dedicated to 3D imaging and animation creation, which provides many options related to 3D modeling: from animation, rendering, post-production, interactive creation and playback. Duration: 12 hours.

02/2018
Radiation Measurement course - Radiometrics S.r.l. Pisa

This course illustrates the instruments and methods used in the measurement of ionizing radiation fields and personnel exposures. Topics covered in the course are sources and properties of nuclear radiation, mechanisms of radiation interaction with matter, and detection methods— particularly, in nuclear power generation and in medical and industrial applications. Duration: 8 hours.

PROJECTS

UBORA project In the "Biomedical Technologies Laboratory" course (within the Master's degree program in biomedical engineering) I developed, together with a project team formed by two other students, a prototype of a biomedical device (knee brace for the correction of the pathology of knee Varus or knee Valgus).
Mechanical design, electronic rapid prototyping, manufacturing study, mould design and requirements of Regulation (EU) 2017/745 were shared on UBORA, a platform for open source co-design of new solutions that has the objective to face the current and future global healthcare challenges by exploiting networking, knowledge on rapid prototyping of new ideas and sharing of safety criteria and performance data.

Link https://platform.ubora-biomedical.org/projects/a8c1d1a7-3eef-45eb-8a75-037759ca8b16

ORGANISATIONAL SKILLS

Soft skills

- Ability to work individually as well as in a team. Proneness in group work and experience in different heterogeneous groups.
- Problem solving skills and ability to work under pressure. Rational mind set in challenges where it is necessary to find a quick solution.
- Confidence in the use of academic knowledge to work on tasks.
- Strong motivational and positive attitude.

COMMUNICATION AND INTERPERSONAL SKILLS

Communication and interpersonal skills

- Open-minded, good empathy, good ability in presenting my works.
- Good team spirit thanks to the sportive activity that I have always practiced; currently I'm playing football.

TECHNICAL SKILLS

Job-related skills

- Experience in cell culture (e.g. iPSCs, synovial cells, chondrocytes, macrophages, fibroblasts), and in managing: biological assays (e.g. ELISA, MTS, PrestoBlue, Picogreen, ROS, Griess, LDH), RNA extraction and purification, PCR and Real-Time assays, Immunofluorescence, Western Blot;
- Technical skills in rapid prototyping system (especially 3D Printing) and CAD design;
- Knowledge in the application, especially in the *in vitro* environment, of biophysical stimulation techniques such as Low-Intensity Pulsed Ultrasound (LIPUS) and Pulsed ElectroMagnetic Field (PEMF) therapy.

OTHER SKILLS

10/2018
Basic Life Support and Defibrillation (BLSD) certificate

Interests

Engineering sciences, foreign languages, travel and discovery, reading, sport, music.

DRIVING LICENCE

Driving Licence: AM

Driving Licence: B

“In compliance with the EU regulation 2016/679, I hereby authorize the recipient of this document to use and process my personal details for the purpose of recruiting and selecting staff and I confirm to be informed of my rights in accordance to art. 13 of the above mentioned decree.”