Cecilia Beccari

Ph.D. Student

✉ **Email address:** _____

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WORK EXPERIENCE

PhD Student *DIBRIS, University of Genoa [01/02/2023 – current]*

PhD student in Bioengineering and Robotics at the Department of Informatics, Bioengineering, Robotics, and Systems Engineering (DIBRIS), focusing on developing an experimental platform to explore electro-mechanical properties of *in-vitro* cardiac model.

Postgraduate researcher *DIBRIS, University of Genoa [01/11/2022 – 01/02/2023]*

Postgraduate Researcher at the Department of Informatics, Bioengineering, Robotics, and Systems Engineering (DIBRIS), focusing on studying *in-vitro* cardiac models.

- Design and development of a three-dimensional microelectrode array (3D-MEA) aimed at recording the electrical activity of cardiac organoids derived from hiPSCs sourced from patients afflicted with Arrhythmogenic Cardiomyopathy (ACM), a rare genetic pathology; the 3D platform will be used for disease modeling and drug testing studies.
- Performing electrophysiological measurements, using 2D microelectrode arrays (MEAs), on hiPSC-derived cardiac cells obtained from individuals diagnosed with Duchenne Muscular Dystrophy (DMD); the purpose of the project was to assess the effects of the Cannabidiol (CBD) drug on the electrical properties of cardiomyocytes, conducting measurements on both healthy control cells and diseased cells.
- Extraction and synchronization of morpho-mechanical and electrical parameters from two-dimensional *in-vitro* models of cardiac muscle, through the combined and simultaneous use of atomic force microscopy (AFM) and microelectrode arrays (MEAs). Testing the effects of Lidocaine drug on the coupling of electro-mechanical activity in hiPSC-derived cardiac cells, using the aforementioned experimental setup.

EDUCATION AND TRAINING

Master's Degree in Bioengineering *University of Genoa [2020 – 2022]*

Final grade: 110/110 cum laude
Thesis: "Investigating the effects of an enzyme/nanoparticle based remediation strategy on the structure of bacterial biofilms using atomic force microscopy"

Bacterial biofilms are structures in which bacteria self-organize to defend themselves from the outside world, proliferating and growing undisturbed. Since biofilms represent a major obstacle to the success of antibiotic therapies, the aim of this master thesis was to develop nanoparticles conjugated to enzymes with the final goal of disrupting bacterial biofilm components. I evaluated the effect of a polymeric nanoformulation on the structural and elastic properties of Staphylococcus Aureus biofilms. Atomic force microscopy (AFM) was employed to characterize both the bacterial biofilm (both morphologically and mechanically) and the nanoformulation, composed of polycaprolactone (PCL) nanoparticles functionalized with the enzyme α-amylase.

The effectiveness of the nanoformulation was tested by acquiring AFM data of the same biofilm area, pre and post-treatment, in order to evaluate any changes in the above-mentioned properties.

Bachelor's Degree in Biomedical Engineering *University of Pisa [2014 – 2020]*

Final grade: 97/110
Thesis: "Characterization of microelectrodes for electrical stimulation"
Presented and synthesized findings from the research conducted by Cui H. et al. (https://doi.org/10.1186/s12938-019-0704-8), pertaining to the development and characterization of a flexible microelectrode array designed for application as a retinal prosthesis, aiming to electrically stimulate residual inner retinal cells (ganglion cells) in pathological conditions like retinitis pigmentosa (RP) and age-related macular degeneration (AMD).

LANGUAGE SKILLS

Mother tongue(s): **Italian**

Other language(s): **English**

LISTENING C1 **READING** C1 **WRITING** C1

SPOKEN PRODUCTION B2 **SPOKEN INTERACTION** B2

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

CONFERENCES

E. Dellacasa, G. Lo Bello, **C. Beccari**, A.M. Spagnolo, A.M. Schito, M.L. Cristina, R. Raiteri, L. Pastorino "*Green-based antibiofilm nanoformulations against surface contamination in hospital settings*". Abstract presented: 2nd Eurasian International Conference on Antimicrobial and Biosensing Nanotechnologies (ABN); May, 13-15, 2022; Nazarbayev University, Nur-sultan, Kazakhstan.

C. Beccari, R. Santoro, R. Raiteri "*Experimental set-up for simultaneous measurements of in-vitro cardiac models*". Poster presented: JRC Summer School on Non-Animal Approaches in Science; May, 23-26, 2023; Ispra (VA), Italy.

COURSES

"*Introduction to the Biology of Cancer*", by Johns Hopkins University and offered through Coursera (coursera.org/verify/PNFZK4UUV5LV); February, 2022.