Curriculum Vitae and Track Record

Veronica Iacovacci

June, 2017

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1. Personal Information



Name and Surname: Veronica Iacovacci

Birthdate: 10/08/1988

Born in: Sezze (LT) –Italy

Citizenship: Italian

Spoken languages: Italian, English, French

Sex: Female

Address: Via Amerigo Vespucci 23, 56126 Pisa (Italy)

Telephone: +39 050 883074

Mobile: +39 328 3425411

E-Mail: [v.iacovacci@santannapisa.it](mailto:v.iacovacci@santannapisa.it)

URL: <http://sssa.bioroboticsinstitute.it/user/1534>

1. Short bio: professional and scientific highlights

I obtained a M.Sc. Degree (Laurea Specialistica) in Biomedical Engineering at University of Pisa in 2013 (full marks, *cum laude*). My thesis was entitled “*Design and development of a mechatronic implantable system for the refilling of artificial organs*” carried out at the BioRobotics Institute of Scuola Superiore di Studi Universitari e Perfezionamento Sant'Anna (SSSA), introduced me to the scientific research and fostered my interest towards mechatronics and interdisciplinary research. In October 2013, I obtained the Ph.D. in Biorobotics (full marks, *cum laude*) at the same institution, in June 2017 with a thesis on smart magnetic microsystems for targeted therapy.

My scientific activity has been characterized from the beginning by a strongly interdisciplinary and curiosity-driven approach. This allowed me to carry out innovative research efforts at the interface between different disciplines, such as robotics and mechatronics, materials science, molecular biology and biotechnologies.

Currently, my research activity is mainly related to biomechatronics, microrobotics, and smart magnetic systems for targeted therapy and lab-on-chip applications. Other research interest are related to artificial organs with particular attention to Artificial Pancreas and Artificial Bladder systems. From July 2016 to January 2017 I have been visiting scientist at the Multiscale Robotics Lab (ETH, Zurich) led by Professor Bradley Nelson where I worked at the development of thermoresponsive magnetic microrobots for targeted drug delivery.

1. Education

AcademicDegrees

11/2013 – 06/2017 : **Ph.D in BioRobotics (100/100 cum laude)**, at the Scuola Superiore di Studi Universitari e Perfezionamento Sant’Anna, Pisa (Italy). Ph.D. Thesis entitled “*Smart magnetic microsystems for targeted therapy*”, defended on 21/06/2017. Tutor: Dr. Leonardo Ricotti, Supervisor: Prof. Arianna Menciassi.

10/2010 – 06/2013 : **M.Sc. Degree (Laurea Magistrale) in Biomedical Engineering, “Industrial” curriculum (110/110 cum laude)**, at University of Pisa (Italy). The Thesis, discussed on 18/06/2013, was entitled “*Design and development of a mechatronic implantable system for the refilling of artificial organs,*” and it was based on a research activity carried out at the BioRobotics Institute of Scuola Superiore Sant’Anna. Advisors: Prof. Arianna Menciassi, Dr. Leonardo Ricotti.

10/2007 – 12/2010 : **B.Sc. Degree (Laurea Triennale) in Biomedical Engineering, “Industrial” curriculum (104/110)**, at University of Pisa (Italy). The Thesis, discussed on 07/12/20010, was entitled “*Studio di una nuova metodologia per la produzione di fibre polimeriche di natura idrogelica*” and it was based on a research activity carried out at the Chemical Engineering Department of the University of Pisa, Pisa (Italy). Advisors: Prof. Maria Grazia Cascone, Prof. Luigi Lazzeri.

Other Education

07/2016 - 01/2017 : **Visiting Ph.D. student** (7 months) at MSRL (Multi Scale Robotics Lab) – ETH Zurich (<http://www.msrl.ethz.ch/> ) in Zurich (Switzerland), under the supervision of Prof. Bradley Nelson.

09/2002 – 07/2007 : **High School Degree (100/100)** at the Scientific Lyceum “G.B. Grassi”, Latina (Italy)

Summer Schools

21/07/2014 - 25/07/2014 : **4th Biennial North American Summer School on Surgical Robotics**, held at Carnegie Mellon University, Pittsbrugh (Pennsylvania, USA).

1. Employment history

|  |  |
| --- | --- |
| 06/2017 – Present | **Postdoctoral fellow (assegno di ricerca ING-IND/34) in Bioengineering and BioRobotics** at the BioRobotics Institute of SSSA, within the ROBO-IMPLANT project (Implantable robotic device for the controlled release of drugs at intraperitoneal level). |
| 11/2013 – 06/2017 | **Ph.D.**, Scuola Superiore di Studi Universitari e Perfezionamento Sant’Anna (SSSA). International Doctoral School in Biorobotics (XXIX Ph.D. cycle). Research topic: “*Smart magnetic microsystems for targeted therapy*”. Advisors: Dr. Leonardo Ricotti and Prof. Arianna Menciassi.  Ph.D. supported through “Borsa di studio e ricerca” (10/2013-09/2015) and Assegno di ricerca (ING-IND/34) (10/2015-06/2017). |

1. Awards and distinctions

05/2016

**Zeno Karl Schindler Foundation Scolarship (**12100 CHF**).** Assigned for the Project “MagnEtic ThErmO-Responsive mIcrorobot for Targeted thErapy (METEORITE)” to be carried out at ETH-Zurich.

03/07/2014

**Best Oral Presentation Award**.Assigned during the European society for precision engineering & nanotechnology (Euspen) Challenge 2014 **-** Traunreut (Germany) – 1st July – 3rd July 2014.

18/09/2013

**“*Gruppo Nazionale di Bioingegneria*” 2013 Award for the Best Ms.C. Thesis in Bioengineering**. Assigned during the XXXII Annual School of the Italian Bioengineering Group (Gruppo Nazionale di Bioingegneria, GNB), in Bressanone (Bz, Italy).

1. Publicatons and Patents

Papers on ISI Journals

*\* = these authors equally contributed to this work*

2016:

V. Iacovacci, L. Ricotti, A. Menciassi, and P. Dario. The bioartificial pancreas: biological, chemical and engineering challenges. Biochemical Pharmacology. 100: 12-27; 2016 [I.F. 2014: 5]

2015:

- V. Iacovacci\*, G. Lucarini\*, C. Innocenti, N. Comisso, P.Dario, L. Ricotti, and A.Menciassi. Polydimethylsiloxane films doped with NdFeB powder: magnetic characterization and potential applications in biomedical engineering and microrobotics. Biomed Microdev. 17(6): 112; 2015 [I.F. 2014: 2.9] (\* Equally contributing authors)

- V. Iacovacci, G. Lucarini, L. Ricotti, P. Dario, P.E. Dupont, and A. Menciassi. Untethered magnetic millirobot for targeted drug delivery. Biomed Microdev. 17(3): 1-12; 2015 [I.F. 2014: 2.9]

* L. Ricotti, A. Cafarelli\*, V. Iacovacci\*, L. Vannozzi\*, and A. Menciassi. Advanced Micro-Nano-Bio Systems for Future Targeted Therapies. *Curr Nanosci.* 11(2) : 144-160; 2015 [I.F. 2013: 1.1] (\* Equally contributing authors)
* V. Iacovacci, L. Ricotti, P. Dario, and A. Menciassi. Design and development of a mechatronic system for noninvasive refilling of implantable artificial pancreas. *IEEE/ASME Trans. Mechatronics.* 20(3) : 1160-1169; 2015 [I.F. 2014: 3.6]

Papers on International peer-reviewed Conferences

(\*) = Veronica Iacovacci was the presenter / speaker

2017:

* A. Cardona T, V. Iacovacci, Mazzocchi, N. Pinzi, A. Menciassi, and L. Ricotti. Urine-resistant nanocoatings on elastomeric substrates for achieving a reliable long-term artificial bladder. 2017 MRS (Material Research Society) Fall Meeting and Exhibit, 2017 N0vember 27 – December 1, Boston (MA). (Submitted);
* T. Mazzocchi, V. Iacovacci, A. Cardona, A. Milani, N. Pinzi, L. Ricotti, and A. Menciassi. Long-term urine-resistant artificial bladder. 44th ESAO (European Society for Artificial Organs) Congress, 2017 September 6-9, Vienna (Austria). (Accepted as Oral Presentation);
* V. Iacovacci, L. Ricotti, I. Tamaddon, G. Tortora, C. Perri, P. Dario, and A. Menciassi, Towards a fully implantable autonomous artificial pancreas. 44th ESAO (European Society for Artificial Organs) Congress, 2017 September 6-9, Vienna (Austria). (Accepted as Oral Presentation).

2016:

* G. Lucarini, V. Iacovacci, L. Ricotti, and A. Menciassi. Independent control of magnetic millirobots for targeted drug delivery: simulation-based feasibility study. CRAS 2016 (6th Joint Workshop on new Technologies for Computer/Robot Assisted Surgery). 2016 September 12-14, Pisa (Italy);
* G. Lucarini, V. Iacovacci, L. Ricotti, and A. Menciassi. Magnetic milli/micro robotic solutions for medical applications. *MARSS (1st International Conference in Manipulation, Automation and Robotics at Small Scales),* 2016, July 18-22, Paris (France).

2015:

* G. Lucarini, V. Iacovacci, L. Ricotti,N. Comisso, P. Dario, and A. Menciassi. Magnetically driven micorobotic system for cancer cell manipulation. *EMBC (37th Annual International Conference of the IEEE Engineering in Medicine and Biology Society),* 2015, August 25-29, Milan (Italy). DOI: 10.1109/EMBC.2015.7319179.
* G. Lucarini, V. Iacovacci, L. Ricotti, A. Menciassi, and P. Dario. Magnetic microfilm for cancer cell manipulation in lab-on-a-chip platforms. *MiNaB-ICT (International Workshop on “Micro-Nano-Bio-ICT Convergence”)*, 2015, July 13-15, Otranto (Italy)..
* V. Iacovacci, G. Lucarini, L. Ricotti, A. Menciassi, and P. Dario. Magnetic millirobot for targeted drug delivery. *MiNaB-ICT (International Workshop on “Micro-Nano-Bio-ICT Convergence”)*, 2015, July 13-15, Otranto (Italy).
* (\*) V. Iacovacci, G. Lucarini, L. Ricotti, P.E. Dupont, and A. Menciassi. Magnetic bi-component millirobot for targeted drug delivery. *The Hamlyn Symposium on Medical Robotics*, 2015, June 20-23, London (United Kingdom).

2013:

* (\*) V. Iacovacci, L. Ricotti, P. Dario, and A. Menciassi. Mechatronic refilling device for long-term implantable artificial organs. *SMIT (International Conference of the Society for Medical Innovation and Technology)*, 2013, September 5-7, Baden Baden (Germany).

Book Chapters

V. Iacovacci, G. Lucarini, L. Ricotti, and A.Menciassi. Magnetic field-based technologies for lab-on-a-chip applications. In: Lab-on-a-Chip. Margarita Stoytcheva Editor. Intech Open.2016

Patents

* Italian patent: T.Mazzocchi, V. Iacovacci, R. Fontana, L. Ricotti, A. Menciassi (102016000020407) “***Dispositivo medico impiantabile, e procedimento per la sua produzione***,” Filing date: 14/03/2016. Status: pending.
* Italian patent: T.Mazzocchi, V. Iacovacci, R. Fontana, L. Ricotti, A. Menciassi (102016000020407) “***Dispositivo prostetico***,” Filing date: 14/03/2016. Status: pending.

1. Additional professional information and memberships

10/2013 – 07/2016 : PhD Students Representative in the BioRobotics Institute “Consiglio di Istituto”. During the years spent at the University of Pisa as a B.Sc. and M.Sc student in Biomedical Engineering, I served as Student Representative Both in the Biomedical Engineering Course Council and in the Engineering Faculty Council.

11/2013 : Italian license “*abilitazione*” for the profession of Industrial Engineering, obtained after a written and oral exam (*Esame di Stato*), held on November 2013. The license was issued by MIUR (Ministero dell’Istruzione, dell’Università e della Ricerca) on 03/07/2014.

2014 – Present: Euspen society student member.

2015 – Present: Student member of IEEE EMBS and RAS society.

1. Teaching and supervision activities

**Teaching activity**

Didactic activity (officially nominated as subject expert: “Cultore della Materia”) for the course of “Robotics for surgery and targeted therapy”, module of “Miniaturized therapeutic and regenerative systems” (M.Sc. Bionics Engineering, University of Pisa – Scuola Superiore Sant’Anna, Italy)(Academic Year 2016/2017).

**Supervision activity – M.Sc. Students**

* Alice Milani: “Progettazione e sviluppo di un sistema di sensorizzazione ed attuazione per una vescica artificiale”,M.Sc. Thesis in Biomedical Engineering (University of Pisa) –Expected Thesis defense: December 2017;
* Angelo Cardona: “Materiali urino-resistenti per vescica artificiale”,M.Sc. Thesis in Biomedical Engineering (University of Pisa) –Expected Thesis defense: December 2017;
* Matteo Rocchi: “*Progettazione di un serbatoio per pancreas artificiale: monitoraggio e mantenimento della stabilità a lungo termine dell’insulina.*”,M.Sc. Thesis in Biomedical Engineering (University of Pisa) –Thesis defense: December 2015

1. Projects devised and managed

03/2017 – Present : Project Manager for the ROBO-IMPLANT (Implantable robotic device for the controlled release of drugs at intraperitoneal level) Project, funded by Regione Toscana (PAR-FAS 2014). Duration: 2 years;

01/2015 – 01/2016 : Project Manager for the SmartAPP (Smart Artificial Pancreas refilled by mechatronic Pills) Project, funded by Scuola Superiore Sant’Anna in the framework of the “5per1000” campaign. Duration: 1 year. Funding: 15 k€.

1. Referee appointments

**I served as a reviewer** for the following Journals and Conferences: IEEE Transactions on Mechatronics, IEEE Transaction on Nanobioscience, Biomedical Microdevices, Biotechnology and Bioengineering, Diabetes and Clinical Diagnostic, Journal of Magnetic Resonance, IEEE Biorob, the Hamlyn Symposium on Medical Robotics.

Pisa, 28/06/2017

Veronica Iacovacci

