CURRICULUM VITAE

PERSONAL INFORMATION

Name	**AGNESE DENZI**
Nationality	Italian

RESEARCH ACTIVITY

• Date (from– to)	March 2016 – May 2017
• Institution	Center for Life Nanoscience – Istituto Italiano di Tecnologia (CNLS@Sapienza)
• Position	Fellow
• Research Project Title	**Study of nanosecond pulses for drug delivery application**
• Research Activities	**Design and realization of a measurement bench and applicators for nanosecond pulses in vitro applications** Numerical design and development of applicators for cell and liposomes exposure: biological cuvette, microchamber with a microfluidic system. Microdosimetry model of cells and liposomes and bench and experimental setup design. Measurements on cell and liposomes working in a multidisciplinary team.

• Date (from– to)	March 2015 – March 2016
• Institution	Università degli Studi di Roma “La Sapienza”, DIET Department (Dipartimento di Ingegneria dell’Informazione, Elettronica e Telecomunicazioni), Italy.
• Position	Post-Doc
• Research Project Title	**Study and development of new innovative technologies for electrodes and applicators for electroporation medical applications supported by microdosimetry and macrodosimetry models.**
• Research Activities	**Development of micro and mesodosimetry models of real cells for the study of different signal effects.** in collaboration with Italian Inter-University Centre of Electromagnetic Fields and Bio-Systems, Italian National Agency for New Technologies, Energy, and Sustainable Economic Development (ENEA) and CNRS and University Paris-Sud, Gustave Roussy, Villejuif Cedex, France. **Development of electrode topology and applicator for electroporation** in collaboration with IGEA Clinical Byophysics spa (Carpi, Italy) and Laboratory of Nanotechnology of DIET at University of Rome “La Sapienza”. **Analysis of the feasibility to use electroporation with liposomes for drug delivery applications** in collaboration with the CNRS and University Paris-Sud, Gustave Roussy, Villejuif Cedex, France.

• Date (from – to)	November 2011 – March 2015
• Institution	Università degli Studi di Roma “La Sapienza”, DIET Department (Dipartimento di Ingegneria dell’Informazione, Elettronica e Telecomunicazioni), Italy.
• Position	PhD Student
• Research Project Title	**Technological and theoretical studies of the effects of ultra-short pulses on the biological systems**
• Research Activities	**Design of new electrode topology for electroporation** in collaboration with IGEA Clinical Byophysics spa (Carpi, Italy) and Laboratory of Nanotechnology of DIET at University of Rome “La Sapienza”. **Microdosimetry and Dosimetry models for electroporation** in collaboration with IGEA

Clinical Byophysics SPA (Carpi, Italy) and UMR 8203 of the CNRS and University Paris-Sud, Gustave Roussy, Villejuif Cedex, France.

Study of the electroporation applicability in breast cancer application in collaboration with IGEA Clinical Byophysics SPA (Carpi, Italy) and Istituto Nazionale Tumori Regina Elena (IFO).

Dielectric Spectroscopy and Measurement for single cells characterization in collaboration with Compound Semiconductor Technology Laboratory, Lehigh University, Bethlehem, PA, USA.

RESEARCH EXPERIENCE

• Date (from – to)	22/08/2016 – 12/09/2016
• Host Institute	Compound Semiconductor Technology Laboratory, Lehigh University, Bethlehem, PA, USA
• Position	Visiting Research Associate
• Research supervisor	James C. M. Hwang, Director Compound Semiconductor Technology Laboratory 5 East Packer Avenue, ECE-CSTL Bethlehem, PA 18015-3115
• Research activity	**AC electroporation and nanoporation on Jurkat cells**
• Date (from – to)	01/09/2013-23/12/2013
• Host Institute	Compound Semiconductor Technology Laboratory, Lehigh University, Bethlehem, PA, USA.
• Position	Visiting Pre-doctoral Research Associate
• Research supervisor	James C. M. Hwang, Director Compound Semiconductor Technology Laboratory 5 East Packer Avenue, ECE-CSTL Bethlehem, PA 18015-3115
• Research activity	**Bio-electromagnetics for electrical detection on live and dead biological cells**
• Date (from – to)	15/04/2013-24/05/2013
• Host Institute	UMR 8203 of the CNRS and University Paris-Sud, Gustave Roussy, Villejuif Cedex, France
• Position	Short Term Scientific Mission (STSM) in the framework of the Cost Action in the European network for development of electroporation-based technologies and treatments (COST TD 1104 ACTION-EP4Bio2Med).
• Research supervisor	Dr Lluis M. Mir Director of the UMR 8203 UMR 8203 CNRS- Institut Gustave-Roussy -114 rue E. Vaillant - F-94805 VILLEJUIF Cédex - FRANCE
• Research activity	**Nanosecond pulses effects on cells: microdosimetry supporting experiments**

GRANT

Year	2015-2016
Financing	MIUR, Università di Roma “La Sapienza”
Project	Avvio alla Ricerca Project
Title	Study and development of new innovative technologies for electrodes and applicators for electroporation medical applications supported by microdosimetry and macrodosimetry models

SCHOLARSHIPS

15/04/2013 to 24/05/2013	Fellowship by the COST TD 1104 Action – EP4Bio^{2}Med, European network for development of electroporation-based technologies and treatments for a Short Term Scientific Mission (STSM) at UMR 8203 of the CNRS and University Paris-Sud, Gustave Roussy, Villejuif, France.
01/09/2013 to 23/12/2013	Fellowship at Department of Electrical and Computer Engineering at the Lehigh University

SCHOOL AND WORKSHOP

• Date (from – to)	I semester, academic year 2013-2014
• Institute	Lehigh University, Bethlehem, PA, USA
• Course	ECE 463-10. DESIGN OF MICROWAVE SOLID STATE CIRCUITS, Professor James Hwang During the course I attended at the seminar “Agilent RF Back to Basics 2013 - Learn the fundamentals of RF Measurements, Seminar in Plymouth Meeting (PA)”

	Final exam with score of A-
• Date (from – to)	November 2012
• Institute	University of Ljubljana, Ljubljana (Slovenia)
• Course	International scientific workshop and postgraduate course "Electroporation based technologies and treatments" (EBTT2012) Final exam (5ECTS) with percentage score of 97/100.
• Date (from – to)	February 2011
• Institute	Inter-University consortium CASPUR (Rome)
• Course	Molecular dynamics for the simulation of biological systems

WORK EXPERIENCE

• Date (from – to)	16/05/2011 – 27/06/2011
• Company	Accenture Technology Solution
• Category	Information Technology
• Position	Professional formation
• Attained skills	Basis of C Basis of SQL Basis of Java Basis of Java Server Pages – JSP

TEACHING EXPERIENCE

• Date (from – to)	November 2011– present
• Institute	Università degli Studi di Roma "La Sapienza" Piazzale Aldo Moro 5, 00185 Roma (Italia)

• Activity

- Examiner during the exams of the course Bioelectromagnetic Interaction under the direction of Professor Guglielmo d'inzeo for Biomedical Engineering (academic year 2014-2015)
- Examiner during the exams of the course Bioelectromagnetic Compatibility under the direction of Dr. Alessandra Paffi for Biomedical Engineering (academic year 2014-2015)
- Lecturer for the course of Bioelectromagnetic Compatibility for Biomedical Engineering under the direction of Dr. Micaela Liberti and Dr. Alessandra Paffi (academic years 2012-2013, 2013-2014, 2014-2015)
- Lecturer for the course of Electrical Measurements for Biomedical and Electronic Engineering under the direction of Dr. Emanuele Piuzzi (academic year 2013-2014 and 2014-2015).
- Lecturer for the course of Electromagnetic Fields for Clinical Engineering under the direction of Dr. Francesca Apollonio and Micaela Liberti (academic years 2011-2012 and 2012-2013).
- I trained, under the direction of Dr. Micaela Liberti around 40 between bachelor (32) and master students (8) for their intern period.

EDUCATIONAL BACKGROUND

• Date	March 2015
• Title	PhD
• University	Università degli Studi di Roma "La Sapienza", Italy.
• Department	DIET Department (Dipartimento di Ingegneria dell'Informazione, Elettronica e Telecomunicazioni)
• PhD thesis supervisor	Dr. Micaela Liberti
• Title of the PhD thesis	**Technological and theoretical studies of the effects of ultra-short pulses on the biological systems**
• Date	13/12/2010
• Title	M.Sc. in Biomedical Engineering
• University	Università degli Studi di Roma "La Sapienza" Piazzale Aldo Moro 5, 00185 Roma (Italia*)*

• Faculty	Biomedical Engineering
• Master thesis supervisor	Dr. Micaela Liberti
• Title of the master thesis	**Numerical study of a new flexible and configurable electrode topology for electroporation applications**
• Final mark	110/110 cum laude
• Date	20/02/2008
• Title	Bachelor in Clinical Engineering
• University	Università degli Studi di Roma “La Sapienza” Piazzale Aldo Moro 5, 00185 Roma (Italia)
• Faculty	Clinical Engineering
• Bachelor thesis supervisor	Dr. Ugo Andreaus
• Title of the bachelor thesis	**Analysis of the bone tissue behavior under a mechanical stimulus**
• Final mark	110/110
• Date	07/07/2004
• Title	High school diploma
• Institute	Liceo scientifico “G. Piazzi” Via Flaminia 14, 00067 Morlupo (RM)
• Final Mark	100/100
MOTHER TONGUE	**ITALIAN**
OTHER LANGUAGES	**ENGLISH**
• Reading skills	Excellent
• Writing skills	Very Good
• Verbal skills	Very Good
TECHNICAL SKILLS AND COMPETENCES With computers, specific kinds of equipment, machinery, etc.	Software Application: Matlab, Mathematica, SPICE, AutoCad, Advanced Design System (ADS), basis of LabVIEW. Numerical Simulation Programs: CST Microwave Studio, Comsol Multiphysics, HFSS Ansoft. Programming Languages: basis of C. Devices for electrical measurements: Oscilloscope, Network Analyzer, Spectrum Analyzer, Waveform and pulsed electric field Generator, Digital Voltmeter, LCR meter, use of microforge for realization of different type of microwave structures.

PUBLICATIONS ON JOURNAL PAPERS:

- M. Casciola, M. Liberti, A. Denzi, A. Paffi, C. Merla, F. Apollonio, “A computational design of a versatile microchamber for in vitro nanosecond pulsed electric fields experiments”, Integration, the VLSI Journal, 58, pp. 446-453, 2017.
- A. Denzi, E. della Valle, G. Esposito, L.M. Mir, F. Apollonio, M. Liberti, “Technological and Theoretical Aspects for Testing Electroporation on Liposomes”, BioMed Research International, volume 2017 (2017), Article ID 5092704, https://doi.org/10.1155/2017/5092704.
- H. Li, A. Denzi, X. Ma, X. Du, Y. Ning, X. Cheng, F. Apollonio, M. Liberti, J. C. M. Hwang, "Distributed Effect in High-Frequency Electroporation of Biological Cells", accepted for publication on IEEE Transaction on Microwave Theory and Techniques, 2017.
- A. Denzi, F. Camera, C. Merla, B. Benassi, C. Consales, A. Paffi, F. Apollonio, M. Liberti, “A Microdosimetric Study of Electropulsation on Multiple Realistically Shaped Cells: Effect of Neighbours”. The Journal of Membrane Biology, 249(5), 691-701, 2016.
- A. Denzi, E. della Valle, F. Apollonio, M. Breton, L. M. Mir, M. Liberti, “Exploring the Applicability of Nano-Poration for Remote Control in Smart Drug Delivery Systems”. The Journal of Membrane Biology, 1-10, 2016.
- A. Denzi, L. Strigari, F. Di Filippo, C. Botti, S. Di Filippo, L. Perracchio, M. Ronchetti, R. Cadossi, M. Liberti, “Modelling the positioning of single needle electrodes for the treatment of breast cancer in a clinical case”, *Biomedical Engineering Online*, 14 Suppl 3:S1 2015-09-11.
- A. Denzi, C. Merla, C. Palego, A. Paffi, Y. Ning, C. R. Multari, X. Cheng, F. Apollonio, J. C. M. Hwang, M. Liberti, “Assessment of Cytoplasm Conductivity by Nanosecond Pulsed Electric Fields”, *IEEE Trans Biomed Eng.*, 62(6):1595-603. doi:10.1109/TBME.2015.2399250. Epub 2015 Feb 4.
- Y. Ning., C. Multari, X. Luo, X. Cheng, J.C.M. Hwang, A. Denzi, C. Merla, F. Apollonio, M. Liberti, “Broadband Electrical Detection of Individual Biological Cells” *IEEE Transaction on Microwave Theory and Techniques,* vol. 62, no. 9, 1905 – 1911, 2014.

- A. Denzi, C. Merla, P. Camilleri, A. Paffi, G. d'Inzeo, F. Apollonio, M. Liberti, "Microdosimetric Study for Nanosecond Pulsed Electric Fields on a Cell Circuit Model with Nucleus", Journal of Membrane Biology (JMB), vol. 246, no. 10, pp. 761-767, 2013.
- F. Apollonio, M. Liberti, A. Paffi, C. Merla, P. Marracino, A Denzi, C. Marino, G. d'Inzeo, "Feasibility for Microwaves Energy to Affect Biological Systems Via Nonthermal Mechanisms: A Systematic Approach", IEEE Transactions on Microwave Theory and Techniques, vol. 61, no. 5, 2013.
- C. Merla, A. Denzi, A. Paffi, M. Casciola, G. d'Inzeo, F. Apollonio, M. Liberti, "Novel Passive Element Circuits for Microdosimetry of Nanosecond Pulsed Electric Fields", IEEE Transactions on Biomedical Engineering, vol. 49, no. 8, 2302 - 2311, 2012.

PUBLICATIONS ON INTERNATIONAL CONFERENCES:

- A. Denzi, F. Apollonio, R. Di Stefano, M. Leonetti, G. Ruocco, M. Liberti, "Study of Microthermal Effects due to Nanosecond Pulsed Electric Field on a Single Realistically Shaped Neuron", Single-Cell Biophysics: Measurement, Modulation, and Modeling, Biophysical Society, June 17 - 20, 2017, Taipei, Taiwan.
- A. Denzi, H. Hanna, F. M. Andre, L. M. Mir, F. Apollonio, M. Liberti, "Can Microsecond Pulse Affect Endoplasmic Reticulum? Theoretical Proof of Concept with a Realistic Microdosimetry Single Cell Model", Single-Cell Biophysics: Measurement, Modulation, and Modeling, Biophysical Society, June 17 - 20, 2017, Taipei, Taiwan.
- A. Denzi, H. Hanna, F. M. Andre, L. M. Mir, F. Apollonio, M. Liberti, "Microdosimetry for Pulsed E Fields in a Realistic Models of Cells and Endoplasmic Reticulum", 14th International Conference on Synthesis, Modeling, Analysis and Simulation Methods and Applications to Circuit Design (SMACD 2017), June 12-15, 2017 in Giardini Naxos - Taormina, Italy.
- E. della Valle, A. Denzi, F. Apollonio, L. M. Mir, M. Liberti, "Numerical estimation of a 10 nanosecond pulse effects on non-uniformly distributed liposomes", 14th International Conference on Synthesis, Modeling, Analysis and Simulation Methods and Applications to Circuit Design (SMACD 2017), June 12-15, 2017 in Giardini Naxos - Taormina, Italy.
- F. Apollonio, M. Casciola, A. Denzi, M. Liberti, P. Marracino, C. Merla, A. Paffi, "Microchambers and devices for cells exposure: From the design to applications", 11th European Conference on Antennas and Propagation, EUCAP 2017, art. no. 7928563, pp. 1350-1353, 2017.
- A. Denzi, C. Merla, M. Casciola, J. C. M. Hwang, X. Cheng, F. Apollonio, M. Liberti, "Microchambers for cell exposure: From the design to applications", Proceedings of the Annual International Conference of the IEEE Engineering in Medicine and Biology Society, EMBS, 2016-October, art. no. 7591661, pp. 4232-4235.
- A. Denzi, J. A. A. Escobar, C. Nasta, C. Merla, B. Benassi, C. Consales, F. Apollonio, M. Liberti, "A microdosimetry study for a realistic shaped nucleus", Proceedings of the Annual International Conference of the IEEE Engineering in Medicine and Biology Society, EMBS, 2016-October, art. no. 7591650, pp. 4189-4192.
- M. Casciola, M. Liberti, F. Apollonio, A. Denzi, "A numerical design of versatile microchambers for nsPEFs experiments", 12th Conference on Ph.D. Research in Microelectronics and Electronics, PRIME 2016, art. no. 7519484.
- Denzi, C. Merla, A. Paffi, F. Camera, F. Apollonio and M. Liberti, "Microdosimetry Study for Nanosecond Pulsed Electric Fields on Neuronal Cells", Electroporation World Conference, Portoroz, Slovenia, 2015.
- Denzi, L. Strigari, F. Di Filippo, M. Ronchetti, R. Cadossi, M. Liberti, "Modelling Electric Field Distribution for Breast Cancer Electrochemotherapy Treatments", Electroporation World Conference, Portoroz, Slovenia, 2015.
- Denzi, Y. Ning, C. Multari, C. Palego, C. Merla, F. Apollonio, X. Cheng, M. Liberti, J. C. M. Hwang, "Cell Detection and Discrimination by a Microfluidic-Integrated Broadband Microchamber", Proceeding of the 44th European Microwave Conference (EuMC), October 5-10, 2014, Rome, Italy.
- Y. Ning, C. Multari, X. Luo, C. Palego, X. Cheng, J. C. Hwang, A. Denzi, F. Apollonio, M. Liberti, and C. Merla, "Microwave sensing of individual biological cells", Proceeding of 2014 IEEE Benjiamin Franklin Symposium on Microwave and Antenna Sub-system for Radar, Telecommunications, and Biomedical Applications, IEEE BenMAS 2014, 27 Sept. Philapelhpia, PA, USA.
- C. Multari, Y. Ning, X. Luo, C. Palego, A. Denzi, C. Merla, F. Apollonio, M. Liberti, J. C. M. Hwang, X. Cheng, "Cell Detection by a Microfluidic-Integrated Broadband Biosensor", NanoTech 2014, vol., 2, pp. 101-104 in TechConnect World Innovation Conference & Expo, June 15-18, 2014, Washington DC, USA.
- Denzi, C. Merla, C. Palego, Y. Ning, C. Multari, X. Cheng, F. Apollonio, J. C. M. Hwang and M. Liberti, "An Improvement Method of Estimation for Cell Cytoplasm Conductivity Using Nanosecond Pulsed Electric Fields: Coupling of a Microdosimetric model with experiments for a single cell", Proceeding of BIOEM, the annual meeting of BEMS and EBEA, 8-13 June, 2014, Cape Town, South Africa.
- Denzi, C. Merla, C. Palego, A. Paffi, Y. Ning, C. Multari, X. Cheng, F. Apollonio, J. C. M. Hwang, M. Liberti, "Assessment of cytoplasm conductivity of a single cell using nsPEF", Gordon Research Conference on Bioelectrochemistry, June 6-11, 2014, University of New England, Biddeford, MA, USA.
- Denzi, C. Merla, C. Palego, F. Apollonio, J. C. Hwang, M. Liberti, "Single Cell Microdosimetric Studies Comparing Ideal and Measured Nanosecond Pulsed Electric Fields" at the 2013 International Microwave Symposium (IMS2013), 2-7 June 2013, Seattle, WA.
- Denzi, C. Merla, C. Palego, Y. Ning, F. Apollonio, J. M. C. Hwang, M. Liberti, "Microdosimetric model of a single cell for nanosecond pulsed electric fields: an experimental method of validation", at the BioEM conference, 10-14 June 2013, Thessaloniki, Greece.
- P. Nenzi, A. Denzi, K. Kholostov, R. Crescenzi, F. Apollonio, M. Liberti, P. Marracino, A. Ongaro, R. Cadossi, M. Balucani, "Smart Flexible Planar Electrodes for Electrochemotherapy and biosensing" at the 63rd ECTC conference, May 28-May 31, 2013, Las Vegas, NV USA.
- Denzi, C. Merla, A. Paffi1, G. d'Inzeo, F. Apollonio, M. Liberti, "Microdosimetric Study for nsPEFs on a Cell Circuit Model with Nucleus", Electroporation based Technologies and Treatments (EBTT2012), November 18-24, 2012, Ljubljana, Slovenia.

- P. Marracino, M. Migliorati, A. Paffi, M. Liberti, G. D'Inzeo, F. Apollonio, A. Denzi, "Signal Transduction on Enzymes: The Effect of Electromagnetic Field Stimuli on Superoxide Dismutase (SOD)" at the 34th Annual International Conference of the IEEE Engineering in Medicine and Biology Society (IEEE EMBC 2012), August 28- September 1 2012, San Diego, United States.
- F. Camera, A. Paffi, C. Merla, A. Denzi, F. Apollonio, P. Marracino, G. d'Inzeo and M. Liberti, "Effects of Nanosecond Pulsed Electric Fields on the Activity of a Hodgkin and Huxley Neuron Model" at the 34th Annual International Conference of the IEEE Engineering in Medicine and Biology Society (IEEE EMBC 2012), August 28- September 1 2012, San Diego, United States.
- M. Balucani, P. Nenzi, C. Crescenzi, P. Marracino, F. Apollonio, M. Liberti, A. Denzi , C. Colizzi, , "Technology and Design of Innovative Flexible Electrode for Biomedical Applications" at the 61th ECTC conference, May 31-June 3 2011, Florida, United States.
- C. Colizzi, A. Denzi, M. Maiali, P. Marracino, M. Balucani, R. Cadossi, F. Apollonio, M. Liberti, "Innovative flexible electrode for electroporation" at the10th International Congress of the European Bioelectromagnetics Association (EBEA2011), 21-24 February, Faculty of Engineering, University of Rome "La Sapienza".

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