PERSONAL INFORMATION

Giorgio MATTEI

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Skype-ID mattei-giorgio (Poggibonsi)

Sex Male | Date of birth 05 Dec 1986 | Nationality Italian

WORK EXPERIENCE

Nov 2016 – ongoing

Marie Sklodowska-Curie Research Fellow

Optics11 B.V., Amsterdam / Vrije Universiteit Amsterdam / Leiden University Medical Center (NL)

Research project supervisors: Prof. Davide IANNUZZI (d.iannuzzi@vu.nl)
Prof. Chrstine MUMMERY (c.l.mummery@lumc.nl)

- **Project Title:** ENgineering DYnamic ViscoElasticity to study cell response (ENDYVE)
- **Project ID:** 705296 (http://cordis.europa.eu/project/rcn/201311_en.html)
- **Funding scheme:** European Horizon 2020 Marie Skłodowska-Curie Actions - Individual Fellowship
- **Main activities and responsibility:** Design and control of instrumented nano-indentation devices for testing mechanical properties of soft samples (e.g. biological tissues, biomaterials) at typical cell length-scales; Viscoelastic characterisation of soft biological tissues (heart) and biomaterials (hydrogels); Design and characterisation of "smart" biomaterials with temporally tuneable mechanical properties as scaffolds for advanced in-vitro cell cultures and cell mechano-biology studies; In-vitro cell cultures and strategies to monitor cell behaviour and response to environmental changes (e.g. scaffold viscoelastic properties); Planning, scheduling and execution of experiments, data collection and analysis (including statistics); Dissemination of research activities to scientific community (e.g. journal publications, conference contributions) and non-expert public (e.g. social media, newsletter); Mentoring and tutoring of master and PhD students; Writing/editing research proposals; Preparation of reports, collaboration with academic and non-academic partners; Technology transfer, exploitation of results and intellectual property rights

Business or sector Research in both academic and private sectors

Jan 2014 – ongoing

Co-founder and Member of the Board of Directors at IVTech s.r.l.

IVTech s.r.l., Massarosa (IT)

- **IVTech s.r.l.** (www.ivtech.it) is an **innovative start-up** and **spin-off company** of the **University of Pisa** founded in January 2014 and devoted to the **design of in-vitro technologies** for developing advanced pathophysiologically relevant tissue/organ models aimed at better approximating human in-vivo complexity and contributing to the reduction and refinement of animal tests.

Business or sector Industry, in-vitro technologies

Jan 2014 – Oct 2016

Postdoctoral Research Associate

Research Centre "E. Piaggio", Università di Pisa (IT)

Research project supervisor: Prof. Arti AHLUWALIA (arti.ahluwalia@centropiaggio.unipi.it)

- **Project Title:** Physicochemical and viscoelastic analysis of hydrogels derived from tissue extracellular matrix for the creation of bio-artificial liver organoids and bioreactor design
- **Scientific-Disciplinary Sector:** ING-IND/34 - Industrial Bioengineering
- **Main activities and responsibilities:** Decellularisation and processing of biological tissues (liver) for the design and synthesis of novel hydrogel-based biomaterials as scaffolds for in-vitro cell cultures; Physicochemical and viscoelastic characterisation of biological tissues (liver), tissue derivatives (decellularised hepatic matrix) and hydrogels; Design and characterisation of bioreactors for advanced dynamic in-vitro cell cultures (CAD design, computational modelling, fabrication and experimental validation); Planning, scheduling and execution of experiments, data collection and statistical analysis; Scientific dissemination through journal publications and conference presentations; Student tutoring for projects and theses; Writing/editing of research projects; Production and analysis of experimental data, preparation of reports, collaboration with partners and participation in meetings of the RE-LIVER European Project (FP7/2007-2013, n° 304961, http://cordis.europa.eu/project/rcn/104054_en.html)

Business or sector Academic research

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Apr 2012 – Oct 2012

Visiting Postgraduate Researcher (PGDR)

Laboratory of Polymers and Biomaterials, School of Biomedicine, University of Manchester (UK)

Research project supervisor: Prof. Nicola TIRELLI (nicola.tirelli@manchester.ac.uk)

- **Project Title:** Smart, enzymatically cross-linkable hydrogels as three-dimensional models of tissue ageing and fibrosis
- **Main activities and responsibilities:** Design and synthesis of modular enzyme-responsive hydrogels with tuneable mechano-structural properties for cell encapsulation (3D organ models in-vitro); Photo-polymerisation and physicochemical and rheological characterisation of hydrogels

Business or sector Academic research

EDUCATION AND TRAINING

Jan 2011 – Dec 2013

PhD in Chemical and Materials Engineering

ISCED 8

Dept. of Civil and Industrial Engineering (DICI) & Research Centre "E. Piaggio", University of Pisa (IT)

Supervisor: Prof. Arti AHLUWALIA (arti.ahluwalia@centropiaggio.unipi.it)

- **Project title:** Smart modular scaffolds (SMSs) for the realisation of 3D in-vitro organ models
- **Principal subjects covered / skills acquired:** Decellularisation of biological tissues (liver); Design and synthesis of biomaterials (hydrogels); Physicochemical and viscoelastic characterisation of biomaterials (hydrogels), biological tissues (liver) and tissue derivatives (decellularised hepatic matrix); Design of bioreactors for advanced dynamic cell cultures that can be monitored in real-time by optical microscopy; CAD design; CFD modelling; Statistical analysis; Basic electronics and Arduino programming; Fundamentals of cell cultures; Basics of optical microscopy

Sep 2008 – Sep 2010

Master of Science in Bioengineering

ISCED 7

University of Pisa (IT)

- **Thesis title:** Functionally graded osteochondral scaffolds: proof-of-concept, CFD analysis and design of an automated system for their realisation
- **Score:** 110/110 cum laude
- **Principal subjects covered / skills acquired:** Tissue engineering; Medical robotics; Bioengineering of rehabilitation; Design of medical devices and implants; Minimally invasive therapies; Bio-mechatronics; Automatic controls; Models of physiological systems; Pharmacokinetics and compartmental models; Bioengineering of radiations; Biomedical electronic measurements

Sep 2005 – Dec 2008

Bachelor of Science in Bioengineering

ISCED 6

University of Pisa (IT)

- **Thesis title:** Optimisation and characterisation of injectable natural polymeric systems for cartilage and bone tissue engineering
- **Score:** 110/110 cum laude
- **Principal subjects covered / skills acquired:** Biomechanics; Biological transport phenomena; Biomaterials; Biochemical engineering; Fundamentals of automatic control; Basic electronics; Informatics; Signal analysis; Analysis of electrical circuits and machines; Physiology; Mathematics; Linear algebra; Physics

Sep 2000 – Jul 2005

Scientific high school diploma

ISCED 3

I.T.I.S. "Tito Sarrocchi", Poggibonsi (IT)

- **Score:** 100/100 cum laude
- **Principal subjects covered / skills acquired:** Mathematics, Chemistry, Physics, Technology and design, Biology, Science, English, History, Philosophy, Italian literature, Informatics

QUALIFICATIONS

21 Mar 2011

Professional qualification in Industrial Engineering (Section A)

State exam taken at the University of Pisa, Faculty of Engineering. Score: 240/240.

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PERSONAL SKILLS

Mother tongue(s) Italian

Other language(s)

	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken interaction	Spoken production	
English	C1	C1	C1	C1	C1

Levels: A1/2: Basic user - B1/2: Independent user - C1/2 Proficient user
Common European Framework of Reference for Languages

Communication skills

Excellent ability to **work in team,** gathered in the interdisciplinary context of my research activities by collaborating with Engineers, Biologists, Physicists, Chemists and Medical Doctors; Good **communication skills** and **ability to adapt to multicultural environments**, developed during work experiences abroad (e.g. visiting period at the University of Manchester, Marie Curie project in The Netherlands) and business travels (international conferences, workshops, dissemination and technical-scientific meetings of international research projects); Excellent **written and verbal communication skills** (write clearly, convey information effectively), gathered while preparing the theses, writing scientific publications and reports of research projects, working in team and presenting at conferences

Organisational / managerial skills

Ability to **work under stress and deadlines**; Good attitude to **manage interdisciplinary projects** involving different professional characters, gained by collaborating actively in writing proposals, handling projects' logistics and organisation, establishing the experimental rationale/design, and performing experiments and data analyses for developing new materials and devices for tissue engineering (in particular smart scaffolds and bioreactors for 2D/3D in-vitro cell cultures); Good **organisational skills** developed in the context of my research activities and while tutoring students in projects and theses

Computer skills

- **Operating Systems**: Windows XP, Vista, 7, 8, 10 (advanced), Mac OS X (basic)
- **Application suite:** Microsoft Office (advanced)
- **Graphics:** Adobe Photoshop (good)
- **CAD:** SolidWorks (advanced), Autocad (basic)
- **FEM / CFD modelling:** COMSOL Multiphysics (advanced), ANSYS FLUENT (advanced), MixSim (advanced), GAMBIT (good)
- **Data analysis and processing / Calculation:** OriginPro (advanced), GraphPad Prism (advanced), MATLAB (good), Wolfram Mathematica (good)
- **Programming:** LabVIEW (good), Arduino prototyping platform (good), C++ (basic)
- **Other software:** Cool Edit (advanced), Cubase (good)

Driving licence A (motorcycles) and B (cars) European driving licences

ADDITIONAL INFORMATION

List of Publications Attachment A

Patents

- T. Sbrana, **G. Mattei**, S. Giusti, A. Ahluwalia, *Innovativo supporto per colture cellulari*, MI2013A001494, Sep 2013 (granted) - *Support for cell cultures*, WO2015044813 A1 (PCT/IB2014/064330), Apr 2015 (pending)

An optically transparent modular bioreactor for the implementation of 2D, 3D and interfacial (i.e. on-membrane) advanced dynamic cell cultures in-vitro

- T. Sbrana, S. Giusti, **G. Mattei**, D. Cei, A. Ahluwalia, *Piastra multi-pozzetto per colture cellulari (Multi-well plate for cell cultures)*, 102015000032064, Jul 2015 (pending)

An optically-transparent multi-well plate with fluidically interconnected wells to implement advanced 2D and 3D interconnected multi-organ dynamic cell cultures in-vitro

Memberships

- Order of Engineers of the Province of Siena, since 27 July 2011 (registration number: 1082)
- European Society of Biomechanics (ESB), since 18 February 2015

Tutoring activities and teaching support

- **Student tutoring for projects and theses** (A.Y. 2011/2012 to 2015/2016, Research Centre "E. Piaggio", University of Pisa, Prof. Arti Ahluwalia)

Student supervision during development of the scientific idea, experimental design, laboratory activities, data analysis, draft preparation and presentation of the results obtained

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- **Teaching support for the course "Tissue biomechanics and biomedical machines" (module of Biological tissue engineering) held by Prof. Arti Ahluwalia** (A.Y. 2013/2014 to 2015/2016, Bachelor's program in Bioengineering, University of Pisa)
Theory and practical exercises on biological tissue viscoelasticity; Data collection and statistical analysis

- **Teaching support for the course "Biological transport phenomena" held by Prof. Arti Ahluwalia** (A.Y. 2013/2014 to 2015/2016, Bachelor's program in Bioengineering, University of Pisa)
Theory and practical exercises on biological transport phenomena; Computational fluid dynamics modelling; Computational modelling of heat and mass transfer

- **Teaching support for the course "Biomechanics" (module of Mechanobiology) held by Prof. Arti Ahluwalia** (A.Y. 2011/2012, Master's program in Bioengineering, University of Pisa)
Theory and practical exercises on biological tissue viscoelasticity; Data collection and statistical analysis

- **Teaching support for the course "Laboratory of Bioengineering" held by Prof. Giovanni Vozzi** (A.Y. 2010/2011, Bachelor's program in Bioengineering, University of Pisa)
Teaching support and practical exercises about basic chemistry and material characterisation

Awards

- **Marie Curie Alumni Association (MCAA) Micro Travel Grant** (May 2017)
Travel grant supported by the Marie Curie Alumni Association to attend the 23rd Congress of the European Society of Biomechanics (ESB 2017), Seville, Spain, 2-5 Jul 2017

- **2016 Société de Biomécanique (SB) Travel Grant** (Jul 2016, Lyon, FR)
Travel grant supported by the Société de Biomécanique and Sensix to attend the 22nd Congress of the European Society of Biomechanics (ESB 2016), Lyon, France, 10-13 Jul 2016

- **Best oral presentation Award at ESB-ITA 2015** (Jun 2015, Milano, IT)
Won with the oral presentation entitled "Decoupling the roles of stiffness and hydroxyapatite signalling in the osteo-differentiation of stem cells" (G. Mattei, C. Ferretti, M. Mattioli-Belmonte, and A. Ahluwalia)

- **PhD Thesis Award "Paul Durst" 2014 - Italian National Bioengineering Group** (Sep 2014, Bressanone, IT)
Won with the PhD thesis entitled "Smart modular scaffolds (SMSs) for the realisation of 3D in-vitro organ models"

- **Start Innovation Award 2014** (Jun 2014, Milano, IT)
Proposed project: "Advanced technology for in-vitro cell culture" (T. Sbrana, S. Giusti, G. Mattei, A. Ahluwalia). The project was selected by A. Menarini Diagnostic s.r.l.

- **"Dall'idea all'impresa" Award - "Gaetano Marzotto" 2013 contest** (Nov 2013, Vicenza, IT)
Proposed start-up: "IVTech" (T. Sbrana, S. Giusti, G. Mattei, A. Ahluwalia). The mission of IVTech is to produce and commercialise innovative devices for in-vitro methods alternative to animal testing

- **StartCup Toscana 2013 - Third prize** (Sep 2013, Siena, IT)
Proposed start-up: "IVTech" (T. Sbrana, S. Giusti, G. Mattei, A. Ahluwalia)

- **Arscientia Prize 2012/2013 - Food and Green Section** (Jun 2013, Venezia, IT)
Proposed project: "Multidyn: a novel device for in-vitro methods alternative to animal testing" (T. Sbrana, S. Giusti, G. Mattei, A. Ahluwalia). Multidyn allows to implement and real-time monitor pathophysiologically relevant 3D multi-organ in-vitro models

- **Master's Thesis Award "GNB" 2011 - Italian National Bioengineering Group** (Sep 2011, Bressanone, IT)
Won with the Master thesis entitled "Functionally graded osteochondral scaffolds: proof-of-concept, CFD analysis and design of an automated system for their realisation"

Reviewer of scientific contributions for journals and conferences

- **Nature Scientific Reports (Nature Publishing Group)**
- **Cell Stem Cell Reports (Elsevier)**
- **Acta Biomaterialia (Elsevier)**
- **Frontiers in Bioengineering and Biotechnology (Frontiers)**
- **Journal of Biomedical Materials Research Part B: Applied Biomaterials (Wiley)**
- **Journal of Biomechanics (Elsevier)**
- **Clinical Science (Portland Press)**
- **Journal of Biomaterials Applications (SAGE Publications)**
- **Third (GNB 2012) and Fourth (GNB 2014) Italian National Bioengineering Group Conference**

Member of conference scientific committees

- **VII Annual Meeting of the Italian Chapter of the European Society of Biomechanics (ESB-ITA 2017)**

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Participation in doctoral schools, courses and seminars

Attachment B

Brief description of my research and entrepreneurial activities

Since the Bachelor thesis, my multidisciplinary research has been focused on the development of new materials and devices for in-vitro model and tissue engineering applications (in particular scaffolds and bioreactors for advanced cell cultures), integrating concepts of Biomedical Engineering, Mechanical Engineering, Materials Science, Computational modelling, Electronics and Basic Programming.
My **Bachelor thesis** (2008) concerned the optimisation and characterisation of injectable scaffolds based on natural polymers as materials for minimally invasive techniques for cartilage and bone tissue engineering. The results were published in the "Journal of Osteology and Biomaterials".
The **Master thesis** (2010) was aimed at designing an automated system for the realisation of functionally graded osteochondral scaffolds that reproduce the composition and porosity gradients typical of the human native tissue. After undergoing a preliminary feasibility study, the structure of the automated system was designed with the help of computational fluid dynamics (CFD) analysis to reduce both the time and costs necessary for the proper sizing of each component. With this thesis, I won the Italian National Bioengineering Group (GNB) award in 2011. The results were published in the Journal "Computers & Chemical Engineering".
The **PhD in "Chemical and Materials Engineering"** (2011-2013) was focused on the realisation of pathophysiological 3D in-vitro liver models, which can simulate both healthy and diseased hepatic tissue, by reproducing the main features of the native in-vivo environment and the principal changes related to fibrotic and ageing processes, such as extracellular matrix stiffening. During this large multidisciplinary project I worked on various research topics, including: i) decellularisation, physicochemical and viscoelastic characterisation of biological tissues (i.e. liver) to derive ideal design criteria for developing biomimetic tissue engineering scaffolds; ii) design, synthesis and characterisation of biomaterials (i.e. photopolymerisable hydrogels) as scaffolds for hepatic cell encapsulation to engineer 3D in-vitro models of healthy liver able to mimic fibrotic/ageing stiffening when exposed to enzymes typically involved in such pathophysiological processes in-vivo (e.g. lysyl oxidase); iii) design of bioreactors for advanced dynamic cell cultures in-vitro that can be monitored in real-time via optical microscopy. The modular approach proposed in my PhD project can be used to engineer 3D in-vitro models also of other soft tissues in addition to the liver. Different organ models can be inter-connected in series or parallel recreating pathophysiologically relevant multi-organ models to study organ cross-talk in-vitro. Many of the results obtained about the decellularisation and characterisation of liver tissue as well as the design of bioreactors were produced within the **RE-LIVER European Project** (http://cordis.europa.eu/project/rcn/104054_en.html).
From April to October 2012 I was a **Visiting Postgraduate Researcher** (PGDR) at the Laboratory of Polymers and Biomaterials of the School of Biomedicine of the **University of Manchester** (UK). During this experience, I gained a robust experience in the design, synthesis, physicochemical and rheological characterisation of modular enzyme-responsive hydrogels with tuneable mechano-structural properties for 3D cell encapsulation, in addition to **improve my confidence, initiative and organisational skills**.
Activities related to engineering pathophysiological organ models in-vitro were pursued and expanded during my **Postdoctoral Research Associate** appointment (2014-2016) at the Research Centre "E. Piaggio" (University of Pisa, Italy), particularly focusing on bioreactor design and on physicochemical and viscoelastic analysis of hydrogels derived from tissue extracellular matrix for the creation of bio-artificial liver organoids.
I won a **Horizon 2020 Marie Sklodowska-Curie Individual Fellowship** (MSCA-IF) **European research grant** thanks to which I am **currently** a **Research Fellow** at Optics11 B.V. (Amsterdam), VU Amsterdam and LUMC (Leiden) since November 2016. My MSCA-IF project (acronym **ENDYVE**, http://cordis.europa.eu/project/rcn/201311_en.html) is aimed at engineering the temporal variation of viscoelastic properties of biological tissues (namely, dynamic viscoelasticity) typical of pathophysiological processes in-vivo to investigate its role on cell behavior (focusing on cardiomyocyte maturation).
Overall, these research activities have led to the publication of several **scientific papers in international peer-reviewed journals**, the **participation in numerous international conferences** and the **filing two patents** about innovative devices for advanced in-vitro cell cultures (see Patents section within Additional Information). I have also gained **interest in the business field** by following **entrepreneurship and innovation courses** (e.g. PhD+ Programme, see Attachment B) and participating in various competitions for biotech innovation. In this regard, I have gathered a **good experience in writing research projects and proposals**, also winning some innovation contests together with other colleagues (see Awards section in Additional Information). Moreover, in **January 2014 I co-founded IVTech s.r.l.** (www.ivtech.it), an **innovative start-up** and **spin-off company** of the **University of Pisa** devoted to the **design of in-vitro technologies** for the development of advanced physiologically relevant tissue/organ models.

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Attachment A – List of Publications (updated to Nov 2017)

Latest updates at: https://scholar.google.it/citations?user=ij4t9qMAAAAJ&hl=it

Papers in International Journals

G. Mattei, C. Magliaro, A. Pirone, A. Ahluwalia, "Decellularised Human Liver is too Heterogeneous for Designing a Generic ECM-mimic Hepatic Scaffold", *Artificial Organs, in press*

G. Mattei, L. Cacopardo, A. Ahluwalia, "Micro-Mechanical Viscoelastic Properties of Crosslinked Hydrogels Using the Nano-Epsilon Dot Method", *Materials,* vol.10, no. 8, 889, 2017

G. Mattei, C. Magliaro, S. Giusti, S.D. Ramachandran, S. Heinz, J. Braspenning, A. Ahluwalia, "On the adhesion-cohesion balance and oxygen consumption characteristics of liver organoids", *PLOS ONE,* vol. 12, no. 3, e0173206, 2017

S. Giusti, D. Mazzei, L. Cacopardo, **G. Mattei**, C. Domenici, A. Ahluwalia, "Environmental Control in Flow Bioreactors", *Processes,* vol. 5, no. 2, 16, 2017

G. Mattei, A. Ahluwalia, "Sample, testing and analysis variables affecting liver mechanical properties: A review", *Acta Biomaterialia*, vol. 45, pp. 60-71, 2016

G. Mattei, G. Vozzi, "CFD modelling of a mixing chamber for the realisation of functionally graded scaffolds", *Computers & Chemical Engineering,* vol. 84, pp. 43-48, 2016

C. Magliaro, A.L. Callara, **G. Mattei**, M. Morcinelli, C. Viaggi, F. Vaglini, A. Ahluwalia, "Clarifying CLARITY: Quantitative Optimization of the Diffusion Based Delipidation Protocol for Genetically Labeled Tissue", *Frontiers in Neuroscience,* vol. 10, article 179, 2016

G. Mattei, C. Ferretti, A. Tirella, A. Ahluwalia, M. Mattioli-Belmonte, "Decoupling the roles of stiffness and hydroxyapatite signalling in the osteo-differentiation of periosteal derived stem cells", *Nature Scientific Reports*, vol. 5, no. 1, 10778, 2015

G. Mattei, G. Gruca, N. Rijnveld, A. Ahluwalia, "The nano-epsilon dot method for strain rate viscoelastic characterisation of soft biomaterials by spherical nano-indentation", *Journal of the Mechanical Behavior of Biomedical Materials,* vol. 50, pp. 150-159, 2015

G. Mattei, I. Cristiani, C. Magliaro, A. Ahluwalia, "Profile analysis of hepatic porcine and murine brain tissue slices obtained with a vibratome", *PeerJ*, vol. 3, e932, 2015

A. Tirella, M. La Marca, L-A Carroll, **G. Mattei**, J.W. Aylott, A. Ahluwalia, "Nano-In-Micro Self-Reporting Hydrogel Constructs", *Journal of Biomedical Nanotechnology*, vol. 11, no. 8, pp. 1451-1460, 2015

C. Magliaro, A. Tirella, **G. Mattei**, A. Pirone, A. Ahluwalia, "HisTOOLogy: an open-source tool for quantitative analysis of histological sections", *Journal of microscopy*, vol. 260, no. 3, pp. 260-267, 2015

G. Mattei, V. Di Patria, A. Tirella, A. Alaimo, G. Elia, A. Corti, A. Paolicchi, A. Ahluwalia, "Mechanostructure and composition of highly reproducible decellularised liver matrices", *Acta Biomaterialia*, vol. 10, no. 2, pp. 875-882, 2014

G. Mattei, S. Giusti, A. Ahluwalia, "Design criteria for generating physiologically relevant in-vitro", *Processes*, vol. 2, no. 3, pp. 548-569, 2014

G. Mattei, A. Tirella, G. Gallone, A. Ahluwalia, "Viscoelastic Characterisation of Pig Liver in Unconfined Compression", *Journal of Biomechanics*, vol. 47, no. 11, pp. 2641-2646, 2014

A. Tirella, **G. Mattei**, A. Ahluwalia, "Strain rate viscoelastic analysis of soft and highly hydrated biomaterials", *Journal of biomedical materials research. Part A*, vol. 102, no. 10, pp. 3352-3360, 2014

C. Jelen, **G. Mattei**, F. Montemurro, C. De Maria, M. Mattioli-Belmonte, G. Vozzi, "Bone scaffolds with homogeneous and discrete gradient mechanical properties", *Materials Science and Engineering: C*, vol. 33, no. 1, pp. 28-36, 2013

G. Mattei, A. Tirella, A. Ahluwalia, "Functionally Graded Materials (FGMs) with Predictable and Controlled Gradient Profiles: Computational Modelling and Realisation", *CMES: Computer Modeling in Engineering & Sciences*, vol. 87, no. 6, pp. 483-504, 2012

G. Mattei, F. Montemurro, M. Mattioli-Belmonte, G.Vozzi, "Novel injectable hydrogel scaffold for cartilage repair based on natural polymers". *Journal of Osteology and Biomaterials*, vol.1, no. 3, pp. 153-161, 2010

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G. Mattei, A. Ahluwalia, “A new analytical approach to derive lumped parameter constants for linear viscoelastic models from strain rate tests”, *submitted*

A. Ahluwalia, A. Misto, F. Vozzi, C. Magliaro, **G. Mattei**, MC. Marescotti, A. Avogaro, E. Iori, “Systemic and vascular inflammation in an in-vitro model of central obesity”, *submitted*

A. Ahluwalia, C. Magliaro, A. Pirone, **G. Mattei**, “Design criteria for engineering bioinspired liver scaffolds”, *submitted*

Papers in National Journals

L. Tonelli, G. Berni, **G. Mattei**, S. Carli, “Sul consumo di Albumina e Immunoglobuline nella Regione Toscana”. *Toscana Medica*, N° 2, pp. 32-35, 2012

L. Tonelli, A. Bavazzano, **G. Mattei**, “Combinazioni di fragilità”. *Toscana Medica*, N° 9, pp. 37-38, 2011

Conference Proceedings

- **2017**

L. Cacopardo, N. Guazzelli, R. Nossa, **G. Mattei**, A. Ahluwalia, “Engineering viscoelasticity in biomaterials”, *7th Italian Chapter Meeting of the European Society of Biomechanics* (*ESB-ITA 2017)*, Rome, Italy, 28-29 Sep 2017 (poster)

G. Mattei, L. Bartolini, N. Rijnveld, C. Mummery, D. Iannuzzi, “Micro-mechanical viscoelastic characterisation of soft tissues and (bio)materials in physiological-like conditions”, *23rd Congress of the European Society of Biomechanics (ESB 2017)*, Seville, Spain, 2-5 Jul 2017 (oral)

G. Mattei, L. Cacopardo, R. Nossa, N. Guazzelli, A. Ahluwalia, “Effect of the testing and sample geometry on biomaterial mechanical properties”, *23rd Congress of the European Society of Biomechanics (ESB 2017)*, Seville, Spain, 2-5 Jul 2017 (oral)

L. Cacopardo, **G. Mattei**, A. Ahluwalia, “Alginate gels with spatially tunable mechanical properties for pathophysiological in-vitro models”, *23rd Congress of the European Society of Biomechanics (ESB 2017)*, Seville, Spain, 2-5 Jul 2017 (oral)

G. Mattei, J. Pyszkowski, E. Breel, “Measuring micro-mechanics of soft biomaterials in physiological conditions”, *eCM Journal*, vol. 33 (Suppl. 2), p. P291, 2017, presented at *7th TERMIS-EU Meeting,* Davos, Switzerland, 26-30 Jun 2017 (poster)

G. Mattei, E. Breel, “A novel approach to characterise physiologically relevant micro-mechanical viscoelastic properties of cells and (bio)materials”, *Nanoengineering for Mechanobiology*, Camogli, Italy, 26-29 Mar 2017 (poster)

L. Cacopardo, **G. Mattei**, A. Ahluwalia, “Alginate gels with spatially tunable mechanical properties for pathophysiological in-vitro models”, *Nanoengineering for Mechanobiology*, Camogli, Italy, 26-29 Mar 2017 (poster)

- **2016**

G. Mattei, J. Scardigno, A. Ahluwalia, “Viscoelastic characterisation of gelatin hydrogels at different degrees of crosslinking”, *22nd Congress of the European Society of Biomechanics (ESB 2016)*, Lyon, France, 10-13 Jul 2016 (poster PO12-1 + flash presentation)

L. Cacopardo, **G. Mattei**, A. Ahluwalia, “Enzymatically stiffenable gelatin hydrogels for engineering in-vitro pathophysiological organ models”, *22nd Congress of the European Society of Biomechanics (ESB 2016)*, Lyon, France, 10-13 Jul 2016 (oral OS24)

G. Mattei, C. Magliaro, S.D. Ramachandran, B. Muenst, J. Braspenning, A. Ahluwalia, “Liver organoid formation in vitro: what triggers cell self-assembly?”, *eCM Journal,* vol. 31 (Suppl. 1), p. P265, 2016, presented at *6th TERMIS-EU Meeting,* Uppsala, Sweden, 28 Jun - 1 Jul 2016 (poster)

G. Mattei, C. Magliaro, A. Pirone, A. Ahluwalia, “Biomimetic hepatic scaffolds cannot be fabricated using human livers as a design template”, *eCM Journal,* vol. 31 (Suppl. 1), p. 52, 2016, presented at *6th TERMIS-EU Meeting,* Uppsala, Sweden, 28 Jun - 1 Jul 2016 (oral)

C. De Maria, I. Chiesa, S. Angeli, A. De Acutis, F. Montemurro, **G. Mattei**, A.M. Smith, A. Saiani, G. Vozzi, “Characterization and biofabrication of a pH-sensible hydrogel”, *Quinto Congresso del Gruppo Nazionale di Bioingegneria (GNB 2016)*, Naples, Italy, 20-22 Jun 2016 (poster Id. 132)

L. Cacopardo, **G. Mattei**, A. Ahluwalia, “Enzymatically Stiffenable Gelatin Hydrogels for Engineering Pathophysiological Organ Models”, *6th Italian Chapter Meeting of the European Society of Biomechanics* (*ESB-ITA 2016)*, Naples, Italy, 22 Jun 2016 (poster)

- **2015**

G. Mattei, G. Gruca, E.J. Breel, N. Rijnveld, A. Ahluwalia, "Viscoelastic characterisation of soft biomaterials by nano-indentation: the nano-epsilon dot method", *21st Congress of the European Society of Biomechanics (ESB 2015)*, Prague, Czech Republic, 5-8 Jul 2015 (oral, O 094)

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Attachment B - Participation in doctoral schools, courses and seminars

- **PhD+ Programme 2015** (Feb - Mar 2015, Pisa, IT)

Practical training course, organized by the University of Pisa, aimed at spreading the entrepreneurial spirit and enhancing the researcher ideas in the industrial field. Main topics: patenting, company creation, enhancing of scientific ideas, innovation management, fund raising

- **2nd Biomedical Engineering (BME) Innovators Summer School** (12 - 16 Aug 2013, Nairobi, KE)

Held at the Kenyatta University in Nairobi (Kenya), funded by the "United Nations Economic Commission for Africa" (UNECA) and organized by the "African Biomedical Engineering Consortium" (ABEC)

- **IMARIS Practical Seminar: Quantitative Analysis of Images** (15 Nov 2012, Pisa, IT)

Organized by the Institute of Science and Technology Information "A. Faedo"

- **PhD+ Programme 2011** (Apr - Nov 2011, Pisa, IT)

Practical training course, organized by the University of Pisa, aimed at spreading the entrepreneurial spirit and enhancing the researcher ideas in the industrial field. Main topics: patenting, company creation, enhancing of scientific ideas, innovation management, fund raising

- **GRICU PhD National School 2011 – Mathematical Methods for Chemical Engineering/Nanotechnologies** (26 Sep - 1 Oct 2011, Santa Margherita di Pula, IT)

Summer School organized by the University Group of Chemical Engineering (GRICU)

- **Italian Life Science Entrepreneurship Bio Boot Camp 2011** (13 - 15 Jun 2011, Firenze, IT)

Advanced course in entrepreneurship training organized by the "National Institute for Foreign Trade" and "Tuscany Promotion"

- **Writing Scientific Articles in English and Presenting research at International conferences** (A.Y. 2011/2012, Prof. Adrian Wallwork, Università di Pisa)

Course on writing and presenting of scientific contributions

- **Introduction to Mathematica** (A.Y. 2011/2012, Prof. Mauro Bologna, Università di Pisa)

Introductory course on the use of Wolfram Mathematica software

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