

Matteo Moretti, Ph.D.

Curriculum Vitae

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Education

- 2005 European Doctorate (**Ph.D.**) in Bioengineering, **Politecnico di Milano**, Italy
- 2001 **M.Sc.** (Research) in Bioengineering, **Trinity College Dublin**, Ireland
- 2000 **B.Eng.** in Biomedical Engineering, **Politecnico di Milano**, Italy

Research Experience

- 2009 - present **IRCCS Galeazzi Orthopedic Institute**, Milan, Italy. Head of the Cell and Tissue Engineering Laboratory.
- 2008 - present **Gruppo San Donato Foundation**, Milan, Italy. Principal Investigator and Grant Coordinator.
- 2006 - present **Harvard - MIT Division of Health Sciences and Technology**, MIT, Cambridge, MA, USA. Research Affiliate (*LangerLab and Khademhosseini Lab*).
- 2007 - 2008 **IRCCS Galeazzi Orthopedic Institute**, Milan, Italy. PI in the Cell Culture Laboratory.
- 2006 - 2007 **Politecnico di Milano**, Italy,. Research Fellow at Laboratory for Biological Structure Mechanics (LaBS) Advisor: Dr. M.T. Raimondi
- 2005 - 2006 **Harvard - MIT Division of Health Sciences and Technology**, MIT, Cambridge, MA, USA. Post-doctoral Fellow at *LangerLab*. Advisors: *Dr. L.E. Freed, Prof. R. Langer*.
- 2002 - 2004 **University Hospital of Basel**, Switzerland, Institute für Chirurgische Forschung und Spitalmanagement (ICFS). Ph.D. Fellow in the Tissue Engineering Laboratory. Advisor: *Prof. I. Martin*.
- 2002 - 2005 **Politecnico di Milano**, Italy. PhD Fellow at the Bioengineering Department. Advisors: Prof. R. Pietrabissa, Dr. M.T. Raimondi.
- 2000 - 2001 **Trinity College Dublin**, Ireland. Postgraduate Researcher at the Trinity Centre for Bioengineering. Advisor: *Prof. P.J. Prendergast*.

Within the interdisciplinary field of cell and tissue engineering my main research interests lie within osteochondral and cardiovascular tissues and bioreactor technologies. In particular, on engineered tissues, 3D tumor models, and tissue vascularization with concern to human primary and MSC cell expansion, in vivo/in vitro cell differentiation with different physico-chemical combinations and in the study of tissue integration and vascularization aimed at clinically oriented applications. In multi-scale bioreactor systems from design to fully working prototypes, aimed at developing microfluidic and traditional tissue bioreactor technologies for high-throughput and up-scalable, automated bioreactor systems as a key to more viable and accessible tissue and cell therapies.

Industrial Experience

- 2010-present **Co-Founder and Advisory Board member** of the company **CeltecBiotek** A.G., Basel, Switzerland. Biotech start-up (in association with Prof. I. Martin, U. Basel) aimed at the development, production and commercialization of automated bioreactors and advanced cell and tissue culture systems for research labs, industrial and clinical settings.
- 2007-2009 **Co-Founder and Associate** of the company **SKE** s.r.l., Milan, Italy. Biotech start-up aimed at the design and production of automated bioreactors and custom devices (e.g. electrospinning, live cell imaging) for research labs, industrial and clinical settings.
- 2006 **Consultant** for **Fidia Advanced Biopolymers**, Abano Terme, PD, Italy, now Anika Therapeutics, MA, USA, on industrial scale automated bioreactors for tissue culture.

- 2004-2005 **Coordinator of EU Financed Projects** for 1yr. for **Fidia Advanced Biopolymers**, Abano Terme, PD, Italy, now Anika Therapeutics, MA, USA, leading company in the manufacturing and commercialization of tissue engineered products.
- Project Manager of EU FP6 Integrated Project “STEPS” (proposal no: FP6-500465, budget 22.4M€, 23 EU partners) from negotiations to project activity, project aimed at developing visceral, cartilage, bone and skin engineered tissues;
 - Project Management support of EU FP5 project “Meniscus-Regeneration” (contract no: G5RD-CT-2002-0073, budget 5.7M€, 7 EU partners) and, EU FP5 project “Adipo-Regeneration” (contract no: G5RD-CT-1999-00111, budget 2.5M€, 6 EU partners);

Patent Applications

- M.G. Moretti, L.E. Freed, and R. Langer. Oscillating cell culture bioreactor. Massachusetts Institute of Technology Disclosure No. 12301. Patent No. WO 2008/098165 A2. Licensed to company.
- M.G. Moretti, P. Cecini, G. Talò, MT Raimondi. Bioreactor for cell and tissue culture, method and multistation system. Combined Application Politecnico di Milano - IRCCS Galeazzi Orthopedic Institute Patent application No.MI2009A000388.

Awards & Honors

- 2014 European Society of Biomaterials, Best Presentation Award as co-author of the work ”Generation of 3D functional microvascular networks with mural cell-like human mesenchymal stem cells in microfluidic systems”
- 2013 Italian Hand Surgery Society 1st Prize for the best work as co-author of the work ”The trapezium in subjects affected by rizoarthritis: comparative analysis through imaging and histology techniques” (1.000 € prize)
- 2013 TERMIS-EU 1st Prize for the best young investigator presentation as co-author of the work ”Reconstruction of Human Articular Cartilage in Collagen Scaffolds under Bi-Directional Perfusion”
- 2011 Biofabrication 2011 conference Gold Award “In recognition of the quality of the work presented” as co-Author of the work “Engineering Microvascular structures in Photopatterned Hydrogels by SAM-based Cell Transfer”
- 2011 Selection as Best Paper for the year 2011 Draper Technology Digest, (Charles Starck Draper Laboratories, MA, US)(2010 Biomaterials journal article “In vitro generation of mechanically functional cartilage grafts based on adult human stem cells and 3D-woven poly(varepsilon-caprolactone) scaffolds”).
- 2011 Bioreactor selected from ‘WIRED’ magazine for Italy’s best 150 projects representing the future at the 150 Years Unity National Exhibition (> 1Million visitors in first 90 days).
- 2010 N.A.S.A. Tech Brief Award for development of scientific or technical innovations.
- 2009 Prize ‘Ricerca.tissimi’ to the 20 Best International Achievements within Health, Environmental and Industrial Projects in Lombardy Region.(15.000 € prize)
- 2008 TERMIS-EU Prize “50 Best Abstracts” for the work “An Oscillatory, Perfused Bioreactor for Cell and Tissue Culture”.
- 2005-2007 Postdoctoral Fellowship awarded funded by MIT N.A.S.A. (Grant NNJ04HC72G to LE Freed) and Politecnico di Milano.
- 2002-2005 Doctoral Fellowship awarded from Fidia Advanced Biopolymers, Abano Terme, PD, Italy.
- 2000-2001 MSc Research Fellowship awarded from Trinity College Dublin, (Grant from HEA under Nanobiotechnologies Project to PJ Prendergast).

Advisory and Supervision

Since 2008 **Supervisor/Co-Supervisor** of 7 Post-docs, 5 PhD Students, 7 Postgraduate researchers, 25 MSc Students Experimental Theses from Politecnico di Milano Bioengineering and Università degli Studi Biotechnology courses and 4 international PhD students (U.Keele, U.Lyon, U.Tsukuba, U.Twente) short stay.

Reviewing and Services

- 2015- **Invited Expert Grant Reviewer for German Federal Ministry of Education & Research (BMBF) and Netherlands Organisation for Health Research and Development (ZonMw), More Knowledge with Fewer Animals (MKMD) and Innovational Research Incentives Scheme (Veni-Vidi-Vici) programmes.**
- 2014- Elected **Council Member** of the **Tissue Engineering Regenerative Medicine International Society - Europe (TERMIS-EU)**
- 2014- **Invited Expert Grant Reviewer EU Horizon 2020 (M-ERANET)**
- 2014- **Area Expert**, Italian Ministry of Health, Technical-Scientific Direction, IRCCS Research Hospitals Networks for Europe
- 2014- **Review Editorial Board** - Frontiers in Bioengineering and Biotechnology, Tissue Engineering and Regenerative Medicine
- 2013- **Invited Expert Grant Reviewer for ETH Zurich (ETHZ Research Commission)**
- 2013- **Invited Expert Grant Reviewer for Hong Kong ITC (Innovation and Technology Commission - Hong Kong Government)**
- 2012- **Invited Expert Grant Reviewer EU FP7 (NMP - first EU-CHINA coordinated call)**
- 2011- **Board Editor** – Journal of Biomaterials and Tissue Engineering
- 2011- **Invited Expert Grant Reviewer EU FP7 (NMP - Large scale Integrating Projects),**
- 2010- **Invited Expert Grant Reviewer for United Kingdom BBSRC (Biotechnology and Biological Sciences Research Council)**
- 2009- **Invited Expert Grant Reviewer for Portugal FCT (Ministry of Science and Education – Foundation for Science and Technology)**
- 2005- **Reviewer for over 20 Journals** amongst which: Tissue Engineering, European Cell & Materials, Molecular Cancer, Integrative Biology, PloS ONE, Annals of Biomedical Engineering, Artificial Organs, Biomacromolecules, Journal of Tissue Engineering Regenerative Medicine, Future Oncology, Nanomedicine.

Selected Current International Collaborations

Harvard-MIT Division HST (Dr. Freed, Prof. Langer), Harvard Medical School (Prof. Khademhosseini), M.I.T. (Prof. Kamm), U. Basel (Prof. Martin), U. Keele (Prof. El Haj), U. Tsukuba (Prof. Fukuda), U. Lyon (Prof. Mallein-Gerin), U. Edinburgh (Dr. Nelson), Erasmus MC (Prof. Van Osch), U. Twente (Prof. Moroni), U. Konstanz (Prof. Farhan) U. Wien (Prof. Redl).

Relevant Invited Conferences & Lectures

- 2014 Osaka University, Osaka, Japan, Division of Science and Biotechnology, Prof. Kino-Oka, “Micro-vascularized in vitro bone-like models through microfluidic and biofabrication approaches: from 3D tumor models towards tissue engineered substitutes”
- 2014 Medical and Biological Engineering 2014 Conf., Dubrovnik, Biomimetic Organ-on-Chip Systems session, Invited Keynote Speaker.
- 2014 7th World Congress of Biomechanics, Boston, Session Organizer and Chair, “Advances in Tissue Engineering Bioreactor Systems”
- 2014 Ludwig Boltzmann Institut, Vienna, Prof. Heinz Redl, “Micro-vascularized bone through microfluidic and biofabrication approaches: from 3D tumor models towards tissue engineered substitutes”
- 2014 Master BioSciences, Tissue Engineering, CNRS-Univ. de Lyon, Prof. Mallein-Gerin, “Bioreactors and Tissue Engineering”
- 2013 Twente Univ., Twente, NL, Tissue Regeneration Dept., Prof. Moroni/Van Blitterswijk, “Biofabrication and culture of micro-vascularized constructs based on fibrin and MSCs for bone tissue engineering and as in vitro models”
- 2013 Medical Nanotechnology, European School of Molecular Medicine, CIMAINA, Milan, “Bioreactors: Basic Principles and Applications”
- 2013 Erasmus MC, Rotterdam, NL, Connective Tissue Cells and Repair Group, Prof. Van Osch, “Dynamic culture of micro-vascularized constructs as bone and 3D tumor in vitro models”

- 2012 Bioreactor & Growth Environments for Tissue Engineering Training Course, Keele Univ., UK, Prof. El Haj, "Perfusion Bioreactors For Tissue Engineering" Keynote Lecture
- 2011 The Bioprocessing Summit, Cambridge Healthtech Initiative, Boston, MA, US, "An Automated, Sensorized Scalable Bioreactor for 3D Perfusion Cell Seeding and Culture Within Multiple Independent Chambers"
- 2010 Bioreactor & Growth Environments for Tissue Engineering Training Course, Keele Univ., UK, Prof. El Haj, "Design of Bioreactors For Cartilage Tissue Engineering" Keynote Lecture
- 2010 Spedali Civili Brescia, IT, Prof. Porta, "Multiscale Technologies for Cell and Tissue Engineering"
- 2007 4th International Meeting on Bioengineering and Biotherapies, Nancy, FR, "An integrated experimental-computational approach for the study of engineered cartilage constructs subjected to combined regimens of hydrostatic pressure and interstitial perfusion"
- 2007 5th International Symposium on Cartilage and Chondrocyte, Athens, GR, "The effect of low regimens of interstitial perfusion on the development of engineered cartilage"