

## PERSONAL INFORMATION

## Livia Visai



📍 **Affiliation:** University of Pavia  
Department of Molecular Medicine (DMM)  
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🌐 [State personal website\(s\)](#)

Sex Female | *Date of birth* 06/06/1961 | *Nationality* Italian

Position: Associate Professor in Biochemistry

## WORK EXPERIENCE

From March 2021 up to now

### **Lombardia Aerospace Cluster**

Piazza Monte Grappa 5, 21100 Varese

- UniPV representation

From June 2020 up to now

### **Co-founder of the Start Up Bac3Gel, Portugal (<https://bac3gel.com/home/>)**

Bac3gel LTD, Av. Jacques Delors Edifício Inovação II, nº 411, Laboratório 2, 2740-122 - Oeiras

- Scientific advisor

Business : Spin off of the Polytechnic of Milano, Milano Italy

From July 2019 up to now

### **Vice director of Health professions of rehabilitation of UNIPV, Class 2**

University of Pavia, Corso Strada Nuova 65, 27100 Pavia, Italy

- Vice director, Coordination of activities related to Health professions of rehabilitation, Class 2

From November 2018- 2024

### **"3R Inter-University Center" (<https://www.centro3r.it/>)**

University of Pavia, Corso Strada Nuova 65, 27100 Pavia, Italy

- Scientific and didactic referent for UNIPV

From July 2018 -2025

### **Nominee as a member of the joint commission of Medicine Faculty**

University of Pavia, Corso Strada Nuova 65, 27100 Pavia, Italy

- Activities related to joint commission of Medicine Faculty

From March 2018 up to now

### **ISTEC-CNR Associate position 2018-2020. Renewed until 2022**

Istec CNR ([www.istec.cnr.it/](http://www.istec.cnr.it/)), Via Granarolo, 64 - 48018 Faenza (RA), Italy

- Research activities

From January 2018-2024

### **Advisor at Scuola Avanzata di Alta Formazione Dottorale (SAFD)**

(<http://phd.unipv.it/safd-scuola-di-alta-formazione-dottorale/> )

University of Pavia, Corso Strada Nuova 65, 27100 Pavia, Italy

- All the scientific and organizing activities of SAFD

From May 2017 up to now

### **Member of the Scientific Committee of the Italian Society for Biomaterials (SIB) ,**

<http://www.biomateriali.org/> (since 2006)

Politecnico di Milano, Milano, Italy

- All the scientific and organizing activities of SIB

From April 2017 up to now

### **Vice-Coordinator of the Ph. D programme in Translational Medicine**

(<http://molecularmedicine.unipv.it/phd-programme/>)

University of Pavia, Corso Strada Nuova 65, 27100 Pavia, Italy

- Ph.D programme

- From June 2016 -2020      **Member of the Scientific Committee of the Foundation of the European Centre for Nanomedicine (CEN), (<http://nanomedicen.eu/>)**  
Politecnico di Milano, Milano, Italy  
• All the activities that compete as a member of the scientific committee of the CEN
- From June 2016 up to now      **Type A Researcher at INSTM (<http://www.instm.it/>)**  
INSTM, Via G. Giusti, 9, 50121 Firenze (ITALY)  
• Research activities and grant applications
- From July 2015 up to now      **Associate professor at Istituti Clinici Maugeri, IRCCS**  
**<https://www.icsmaugeri.it/preview/>**  
ICS Maugeri, Società Benefit SpA, IRCCS, Via S.Boezio, 28, 27100 Pavia, Italy  
• Nanotechnology Laboratory
- Form June 2015 up to now      **Referent of the academic strategic project of Centre for Health Technologies (CHT),**  
**<http://cht.unipv.it/index.php/it/>**  
University of Pavia, Corso Strada Nuova 65, 27100 Pavia, Italy  
• Head of the Nanomedicine pillar
- From June 2015 up to now      **Associate Professor in Biochemistry at the Dept of DMM at Medicine Faculty**  
**<https://unipv.unifind.cineca.it/individual?uri=http%3A%2F%2Firis.unipv.it%2Fresource%2Fperson%2F656921>**  
University of Pavia, Corso Strada Nuova 65, 27100 Pavia, Italy  
• Scientific Research Activities in the application of Nanotechnology on International Space Station (ISS) with Samantha Cristoforetti (2015), on tissue Engineering/ regenerative medicine and on the reduction of bacterial infections. Teaching Activity at the Faculty of Medicine
- From June 2009- 2015      **Vice-Director of the Interdepartmental Center for Tissue Engineering (CIT)**  
University of Pavia, Corso Strada Nuova 65, 27100 Pavia, Italy  
• Scientific Research Activities in Tissue Engineering
- From September 2011-2014      **Head of the Nanotechnology Laboratory at Fondazione Salvatore Maugeri, IRCCS**  
Fondazione Salvatore Maugeri, IRCCS, 27100 Pavia, Italy  
• Scientific Research Activities in Nanotechnology and Nanomedicine
- September 2011 and September 2012      **Visiting Professor in USA**  
Prof **Mauro Ferrari**, The Methodist Hospital Research Institute (MHRI), Houston, Texas, USA and Prof. **Magnus Hook**, “Center for Extracellular Matrix Biology” at the Institute of Biosciences and Technology of the Texas A&M University System Health Science Center, Houston, Texas, USA.  
• Projects discussion
- Juny 2009      **Visiting Professor in USA**  
Prof. **Magnus Hook**, “Center for Extracellular Matrix Biology” at the Institute of Biosciences and Technology of the Texas A&M University System Health Science Center, Houston, Texas, USA  
• Project discussion in a bilateral project USA/ITALY
- From 2006-2016      **Member of the Doctorate “Biologia e Biotecnologia Molecolare” of Perugia University, Italy**  
University of Perugia, Perugia, Italy  
• Ph.D programme in Biochemistry
- From 2005-2015      **Assistant Professor in Biochemistry**  
University of Pavia, Corso Strada Nuova 65, 27100 Pavia, Italy  
• Scientific Research Activities and Teaching Activity at the Faculty of Medicine
- From June-August 2001      **Research Assistant in Biochemistry in USA**  
Prof. Magnus Hook, “Center for Extracellular Matrix Biology” at the Institute of Biosciences and Technology of the Texas A&M University System Health Science Center, Houston, Texas, USA  
• Research collaboration with Prof. Magnus Hook
- From 1997-2005      **Confirmed Researcher in Biochemistry**  
University of Pavia, Corso Strada Nuova 65, 27100 Pavia, Italy  
• Scientific Research Activities and Teaching Activity at the Faculty of Medicine

- From 1994-1997 **Researcher in Biochemistry**  
University of Pavia, Corso Strada Nuova 65, 27100 Pavia, Italy  
•Scientific Research Activities and Teaching Activity at the Faculty of Medicine
- From 1992-1994 **Post-Doc in Biochemistry**  
University of Pavia, Corso Strada Nuova 65, 27100 Pavia, Italy  
• Scientific Research Activities on biochemical and immunological characterization of bacterial adhesins
- From 1989-1992 **Fellowship in Biochemistry**  
University of Pavia, Corso Strada Nuova 65, 27100 Pavia, Italy  
• Scientific Research Activities on biochemical and immunological characterization of bacterial adhesins
- 1988 **Italian Title of Biologist**  
University of Pavia, Corso Strada Nuova 65, 27100 Pavia, Italy

## EDUCATION AND TRAINING

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- From July 1985-1989 **PhD in biochemistry**  
University of Pavia, Corso Strada Nuova 65, 27100 Pavia, Italy  
•Scientific Research Activities on biochemical and immunological characterization of bacterial adhesins
- From July 1985-1987 **Research Assistant in biochemistry In USA**  
Prof. Magnus Hook, at the Department of Biochemistry of the Diabetes Hospital In Birmingham, AL; USA  
• Scientific Research Activities on biochemical and immunological characterization of bacterial adhesins
- From 1980-1985 **Degree in Biological Science**  
University of Pavia, Corso Strada Nuova 65, 27100 Pavia, Italy  
• Experimental Thesis: Study on collagens binding to hepatocytes and bacteria: an analysis of specificity

## WORK ACTIVITIES

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- Awards**
- Eligible for funding for the PoC Instrument call (PoC – Proof of Concept), Nanoparticelle per combattere la resistenza batterica” (<https://linksfoundation.com/poc-instrument/>) April 2020
  - 1st place on the Competition “Switch2Product” (<https://s2p.it/vincitori-2018/>), Innovation in Bioengineering Award and Finalist in StartCup Lombardia
  - Premium “Lombardia è Creatività” for the crowdfunding project “Breast cancer: Defeat It with intelligent gold nanospheres” (November 2017)  
<https://www.consiglio.regione.lombardia.it/wps/portal/crl/home/comunicazione/lista-eventi/Dettaglio-evento/creativita-lombardia-2017>

**Editorial activity** -Biochemistry & Analytical Biochemistry, <https://www.longdom.org/biochemistry-and-analytical-biochemistry/editorial-board.html> ( since 2011)

-Journal of Applied Materials & Functional Materials , <https://journals.sagepub.com/home/jbf> ( since 2012, Section Editor)

#### **GUEST EDITOR**

-Frontiers in Public Health (<https://www.frontiersin.org/research-topics/12855/recent-advances-in-recombinant-antibody-therapeutics-for-infectious-diseases> )

Research Topic: Recent Advances in Recombinant Antibody Therapeutics For Infectious Diseases  
Topic Editors: Theam Soon Lim Universiti Sains Malaysia (USM), Penang, Malaysia; Michael Hust, Technische Universität Braunschweig, Braunschweig, Germany; Livia Visai, University of Pavia, Pavia, Italy

-Frontiers in Bioengineering and Biotechnology : <https://www.frontiersin.org/research-topics/27396/cells-biomaterials-and-biophysical-stimuli-for-bone-cartilage-and-muscle-regeneration>

Research Topic: Special Issue "Cells, Biomaterials, and Biophysical Stimuli for Bone, Cartilage, and Muscle Regeneration"

Topic Editors: Lorenzo Fassina, Nora Bloise , Livia Visai and Gabriella Cusella of University of Pavia, Pavia, Italy and Murugan Ramalingam VIT University, Vellore, India

-International Journal of Molecular Sciences: [https://www.mdpi.com/journal/ijms/special\\_issues/nanomaterials\\_bioscience](https://www.mdpi.com/journal/ijms/special_issues/nanomaterials_bioscience)

Research Topic: Special Issue "Cutting-Edge Research of Nanoscience and Nanomaterials Use in Biosciences"

Topic Editors: Livia Visai, University of Pavia, Pavia, Italy and Giuseppina Rea Institute of Crystallography (IC), National Research Council of Italy (CNR), Monterotondo St., Rome, Italy

**Invited presentations** She has been invited at 25 presentation at internationals and national conferences

**Grants** MIUR (2023-2027) : Departmental Excellence project DMM. Co-PI

BANDO DI RICERCA SULL'ENDOMETRIOSI - anni finanziari 2021-2022-2023 Ministero della Salute - Progetto ENDO-2021-12371975 : AntiCD44-gold nanoparticles for endometriosis photothermal therapy. Co-PI-2021

BANDO ASI (Agenzia Spaziale Italiana) DC-VUM-2020-7 "Targeting the FGF23-Klotho axis for diagnostics Of microGravity induced osteoporosis on ISS (COMET\_ISS) : PI 2021

FONDO INTEGRATIVO SPECIALE PER LA RICERCA (FISR) - FISR2020IP\_02115 Mucus4COVID: un prototipo di modello *in vitro* per determinare il ruolo del muco polmonare nell'infezione di SARS-Cov-2, la sua trasmissione e lo sviluppo di terapie efficaci per bloccare la progressione della malattia (Mu4Covid)- Co-PI – 2021

PROGETTI DI "RICERCA FINALIZZATI AI METODI ALTERNATIVI"- "In vitro assessment of the risk of hepatotoxicity from Chlordiazepoxide and Midazolam in preclinical studies through the use of in vitro methods based on the use of two and three-dimensional human cell lines" -Scientific Manager of an Operative Unit – 2020

MAECI-MUR (2018-2020): bilateral project ITALIA-SVEZIA "Effect of hydroxyapatite nanoparticles on bone regeneration in simulated microgravity (REPAIR)". PI

MIUR (2018-2022) : Departmental Excellence project DMM. Co-PI

Allocation fund for the financing of the Basic Research Activities of the MIUR (2018)

PROGETTO DI CROWDFUNDING (2015 and 2021) di "Universitiamo.eu" - Breast cancer: defeating it with intelligent golden nanospheres" – PI

PROGETTO (2013-2016) "Nanoparticles and Osteoporosis" (NATO) funded by Agenzia Spaziale Italiana (ASI) with ESA and NASA– PI

Banco Regione Lombardia (2012): Nanotechnology applied to the treatment of pain.Co-PI

MISE-ICE (MIUR) 2011: Development of monoclonal antibodies anti-lipoprotein A high affinity for diagnostic and therapeutic. Co-PI

Banco San Paolo (GE) 2011: Use of mesenchymal stem cells subjected to the electromagnetic field: an innovative approach to the osseointegration of titanium implants. PI

PRIN 2010-11: Nanomed (prot. 2010FPTBSH\_009). Member of the research group.

ALMA MATER Ticinensis 2010: Nanomedicine in ageing-associated prototypic diseases: activation of a scientific and technological platform challenging seminal aspects of pathogenesis, diagnosis and therapy. Co-PI

Progetto regione Lombardia 2010: From materials science to the development of new devices for the diagnosis and treatment of diseases associated with aging. Member of the research group.

INAIL 2010: Effects of electromagnetic fields on human health: in vitro experimental models. Co-PI.

**Patents** 7 deposited international patents

## PERSONAL SKILLS

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Mother tongue(s) Italian

Other language(s) English

Job-related skills

- Nanotechnology in Space: Study of osteoporosis on ground, in simulated microgravity and on the International Space Station (ISS) - Agenzia Spaziale italiana (ASI), ESA and NASA <https://www.asi.it/esperimenti/nanoparticles-and-osteoporosis-nato/> ;
- Nanotechnology in cancer: Breast cancer: defeat it with smart gold nanospheres (University of Pavia, [www.universitiamo.eu](http://www.universitiamo.eu)) ;
- Nanotechnology in infection and against biofilm formation : Study of the interaction of Gram-positive and Gram-negative bacteria with extracellular matrix; isolation, biochemical and immunological characterization of bacterial adhesins; characterization of biomaterials with surface properties of anti-adhesive and antibacterial activity (anatase titanium, or surfaces containing zinc, silver, gold or gallium nanoparticles); Photodynamic treatment as an alternative approach for the inactivation of bacterial biofilm by use of substances such as Toluidine blue, Menocianina 540 and porphyrins;
- Nanotechnology in tissue engineering and regenerative medicine: Characterization of the calcified matrix produced by stem cells (pluripotent or multipotent or iPSCs) on biomaterials (titanium and titanium alloys, hydroxyapatite, keratin, absorbable biocompatible polymers, nano and micro electrospun materials etc.), following the application of the "shear stress" produced from a perfusion bioreactor, or by exposure to electromagnetic (PEMF), ultrasound or laser treatment (LLI);
- Antibodies: Production of polyclonal and monoclonal antibodies in mice and rabbits and their characterization; human antibodies by phage display technology;
- Biocompatibility and toxicity studies: Characterization of biomaterials (variously treated polyurethanes, polyurethane foams and shape memory polyurethanes, hydroxyapatite, metal foams etc.) and their capacity to adsorb plasma-derived proteins; study of their cytotoxicity and emo-biocompatibility with different cell lines (epithelial, endothelial, macrophages, fibroblasts, platelets).

Digital skills Computer skills and abilities acquired in the professional context.  
Good command of Microsoft Office <sup>TM</sup> (Word <sup>TM</sup>, Excel <sup>TM</sup> and PowerPoint <sup>TM</sup>);  
Basic knowledge of graphic design applications (Adobe Illustrator <sup>TM</sup>, PhotoShop <sup>TM</sup>, GraphPad etc).

Other skills Social skills and competences: Good team spirit; Ability to adapt to multicultural environments; Good communication skills to write clearly or transmit information effectively; Capacity and Social skills acquired during sports and cultural activities.  
Organization skills and competences: Coordinator of the 1st year teaching at the university of Pavia for the Degree in Health Care Professions, class 2<sup>a</sup>, Faculty of Medicine, 2006; Ability to organize national and international conferences national:  
Publishing activity at the publishing house The McGraw Hill Companies, Milan headquarters – Italy  
Translation of the following books from English into Italian language:

- "Biochemistry" JD Rawns, and the entire "Exercise book" Biochemistry of the same author;  
 - Part of the book "Biology" by J. Postlethwaite, J. Hopson, R. Veres;  
 - "Biochemistry" by Laurence A. Moran.  
 - Consultant to the translation from the English dictionary, "The Dictionary of Cell Biology" by John M. Lackie and Julian A.T. Dow

## ADDITIONAL INFORMATION

### Statement of Research Interests

At the beginning of my academic career, I have been studying bacterial adhesins and interactions with macromolecules of extracellular matrix (fibronectin, collagen and fibrinogen), their cloning, biochemical and immunochemical characterizations. Since then, I started to characterize biomaterials or nanosystems with anti-infective properties. More than 15 years ago I did start to study tissue engineering/reparative medicine for bone tissue, using human osteoblasts, human mesenchymal stem cells, induced pluripotent stem cells and different type of biomaterials (metallic or polymeric materials) and bioreactors. My recent research field is more focused on the applications of nanotechnology in medicine but in particular on treatment of osteoporosis (also in microgravity/ space), of breast cancer, and infections. I also serve as Referent of the strategic academic project, Center for Health Technology (CHT). I have been principal investigator on national grants (PRIN and FIRB), Bank Foundations (Cariplo, BRE and San Paolo), European bilateral project, Italian Space Agency (ASI, Futura Mission, 2015, ESA and NASA).

### Publications

total number of publications in peer-review journals: 197

total number of citations: 8579

H index (Scopus): 51

- Hep3Gel: A Shape-Shifting Extracellular Matrix-Based, Three-Dimensional Liver Model Adaptable to Different Culture Systems.  
Guagliano G, Volpini C, Sardelli L, Bloise N, Briatico-Vangosa F, Cornaglia AI, Dotti S, Villa R, **Visai L**, Petrini P. ACS Biomater Sci Eng. 2023 Jan 9;9(1):211-229. doi: 10.1021/acsbmaterials.2c01226. Epub 2022 Dec 16. PMID: 36525369
- Long-term osteogenic differentiation of human bone marrow stromal cells in simulated microgravity: novel proteins sighted.  
Montagna G, Pani G, Flinkman D, Cristofaro F, Pascucci B, Massimino L, Lamparelli LA, Fassina L, James P, Coffey E, Rea G, **Visai L**, Rizzo AM. Cell Mol Life Sci. 2022 Oct 1;79(10):536. doi: 10.1007/s00018-022-04553-2. PMID: 36181557
- Early Osteogenic Marker Expression in hMSCs Cultured onto Acid Etching-Derived Micro- and Nanotopography 3D-Printed Titanium Surfaces.  
Bloise N, Waldorff EI, Montagna G, Bruni G, Fassina L, Fang S, Zhang N, Jiang J, Ryaby JT, **Visai L**. Int J Mol Sci. 2022 Jun 25;23(13):7070. doi: 10.3390/ijms23137070. PMID: 35806083
- Haralick's texture analysis to predict cellular proliferation on randomly oriented electrospun nanomaterials.  
Bloise N, Fassina L, Focarete ML, Lotti N, **Visai L**. Nanoscale Adv. 2022 Feb 16;4(5):1330-1335. doi: 10.1039/d1na00890k. eCollection 2022 Mar 1. PMID: 36133676
- Polyurethane-Based Coatings with Promising Antibacterial Properties.  
Villani M, Bertoglio F, Restivo E, Bruni G, Iervese S, Arciola CR, Carulli F, Iannace S, Bertini F, **Visai L**. Materials (Basel). 2020 Sep 25;13(19):4296. doi: 10.3390/ma13194296. PMID: 32993029
- In Vitro Production of Calcified Bone Matrix onto Wool Keratin Scaffolds via Osteogenic Factors and Electromagnetic Stimulus.  
Bloise N, Patrucco A, Bruni G, Montagna G, Caringella R, Fassina L, Tonin C, **Visai L**. Materials (Basel). 2020 Jul 8;13(14):3052. doi: 10.3390/ma13143052. PMID: 32650489 Free PMC article.
- An in vivo Comparison Study Between Strontium Nanoparticles and rhBMP2.  
Montagna G, Cristofaro F, Fassina L, Bruni G, Cucca L, Kochen A, Divieti Pajevic P, Bragdon B, **Visai L**, Gerstenfeld L. Front Bioeng Biotechnol. 2020 Jun 16;8:499. doi: 10.3389/fbioe.2020.00499. eCollection 2020. PMID: 32612980
- Extra-Small Gold Nanospheres Decorated With a Thiol Functionalized Biodegradable and Biocompatible Linear Polyamidoamine as Nanovectors of Anticancer Molecules.  
Bloise N, Massironi A, Della Pina C, Alongi J, Siciliani S, Manfredi A, Biggiogera M, Rossi M, Ferruti P, Ranucci E, **Visai L**. Front Bioeng Biotechnol. 2020 Mar 4;8:132. doi: 10.3389/fbioe.2020.00132. eCollection 2020. PMID: 32195232
- The NATO project: nanoparticle-based countermeasures for microgravity-induced osteoporosis.  
Cristofaro F, Pani G, Pascucci B, Mariani A, Balsamo M, Donati A, Mascetti G, Rea G, Rizzo AM, **Visai L**. Sci Rep. 2019 Nov 20;9(1):17141. doi: 10.1038/s41598-019-53481-y. PMID: 31748575
- Influence of the nanofiber chemistry and orientation of biodegradable poly(butylene succinate)-based scaffolds on osteoblast differentiation for bone tissue regeneration.  
Cristofaro F, Gigli M, Bloise N, Chen H, Bruni G, Munari A, Moroni L, Lotti N, **Visai L**. Nanoscale. 2018 May 10;10(18):8689-8703. doi: 10.1039/c8nr00677f. PMID: 29701213