

Giuseppe Perale – CV – Jan 2022

Date of Birth: 22.08.1978, Venice

Address: Switzerland



I'm a visionary regenerative medicine scientist, passionate entrepreneur and bush pilot.

Education

July 2002: Master degree (M.Sc.E. - *laurea*), Politecnico di Milano (Italy), Biomedical Engineering with curriculum courses from the Medicine Faculty of University of Milan.

May 2005: Master Course for PhD students on start-up management (DRIN – Dottorati di Ricerca, Industria, e Nuova Impresa), School of Management (MIP-SOM), Politecnico di Milano (Italy).

May 2006: Ph.D. degree in Industrial Bioengineering, Politecnico di Milano (Italy).

Current positions

Industrial Executive Vice President for Scientific and Clinical Affairs, Board Member; Founder Industrie Biomediche Insubri SA (IBI SA), Mezzovico-Vira, Switzerland.

President of the Board of Directors; Founder Regenera SA, Lugano, Switzerland.

Diplomatic Austrian Honorary Consul for Canton Tessin, Lugano, Switzerland

Academic Titular Professor of Regenerative Medicine
Faculty of Biomedical Sciences, University of Southern Switzerland (USI), Lugano

Personal profile

My scientific and business interests are focused on regenerative medicine, tissue engineering and controlled drug delivery systems, grounding on my competencies in materials and technologies for biomedical applications and stem cells for clinical translational applications, applying on a wide spectrum of tools ranging from hybrid system design to bio-fabrication, to successfully bring new technologies and products from the lab scale to the clinics and finally into the market. Following the so-called “*nature inspired*” philosophy, my research and experimental activities are devoted to theoretical investigations and development of feasible solutions for human tissues regeneration, aiming at both achieving new knowledge and developing industrially-scaled processes for applicable new generation therapeutic approaches. From an engineering perspective, my applied research is based on resorbable materials such as formulated hydrogels, biopolymers and composite materials in general. From a technological point of view, my attention is mainly given to multidisciplinary approaches to solve biomedical process engineering and to develop sustainable next generation medical devices. From a theoretic perspective, my main interests are towards principles of regenerative medicine, applied physical chemistry and transport phenomena, with a particular attention to their implications in human physiology. From a clinical point of view, my research activities are focused on regeneration of injured spinal cord (Regenera SA), bone regeneration (IBI SA), custom made solutions for personalized medicine and *in vitro* models for preclinical studies. Orthogonal interest to such topics is given to mathematical modelling and to the development of computational supportive tools to couple with experimental evidences, fully embracing the “*safety by design*” paradigm and the “3Rs” philosophy.

Industrial curriculum

- ◆ President and Founder in 2021 of Regenera SA, Lugano, Switzerland.
- ◆ Executive Vice-President for Scientific and Clinical Affairs as Board Member and Founder in 2008 of Industrie Biomediche Insubri SA (IBI SA), Mezzovico-Vira, Switzerland.
- ◆ Co-founder of the start-up association AITI-Up, within the Associazione Industrie Ticinesi AITI, Lugano, Switzerland.
- ◆ Board member in the family business holding company, Venice, Italy.

Academic curriculum

- Dec 2019, on: Titular Professor of Regenerative Medicine, USI, Lugano, Switzerland – current;
- July 2019, on: Invited permanent visiting Professor at Ludwig Boltzmann Institute for Experimental and Clinical Traumatology, Vienna, Austria – current;
- 2010, on: Invited permanent Visiting Researcher at the Neurosciences Department of the Istituto di Ricerche Farmacologiche “Mario Negri” Milan, Italy;
- 2013-2021: Full Professor of Biomaterials, SUPSI, Manno, Switzerland;
- Q3’18 - Q2’19: Invited visiting Professor at San Martino Hospital, Faculty of Biomedical Sciences, University of Genova, Italy;
- 2012-2013: Invited reader at the Angström Laboratory of the University of Uppsala, Sweden;
- 2012: Visiting researcher at the Department of Neurobiology of the Karolinska Institute, Stockholm, Sweden;
- 2011-2013: Acting Professor of Formulation Science, Politecnico di Milano, Milan, Italy;
- 2008-2010: Acting Professor of Intellectual Property and Technology Transfer, Biotechnology Faculty, “A. Avogadro” University of Eastern Piedmont, Novara, Italy;
- 2007: Visiting PostDoc, Royal School of Mines of Imperial College London, London, UK;
- 2003-2006: Member of Technology Transfer Office Team, Politecnico di Milano, Italy.

Most relevant membership and associative appointments

- Jan 2021: Founding member of the European Society for Bioresorbable Implants (ESBI), Austria;
- Since 2020: Member of the Industry Committee of the Tissue Engineering and Regenerative Medicine International Society -TERMIS- European Chapter;
- Since 2019: InnoSuisse / Swiss National Research Fund (SNSF) BRIDGE: Discovery programme, evaluation panel member, Bern, Switzerland;
- Q3-Q4 2018: Member of Advisory Board of the Ticino Candidacy Team to the Swiss Innovation Park, Fondazione Agire, Manno, Switzerland;
- Since 2018: Member of the Steering Board of the “Swiss National Contact Point for the safe handling, regulation, and transfer of engineered nanomaterials”, run by State Secretariat for Research and Innovation (SERI) at EMPA, Dübendorf, Switzerland;
- Since 2018: External Expert for the EU-COST programme, Brussel;
- Since 2018: Member of the Steering Committee of TEDD, Tissue Engineering and Drug Delivery Competence Center, in Wädenswil at ZHAW (Zürcher Hochschulen für Angewandte Wissenschaften), Switzerland;

Scientific and technical production

Author in more than 150 international publications and 6 international patent families, reflecting research results on regenerative medicine, tissue engineering, controlled delivery systems, materials and technologies for biomedical applications, theoretical physical chemistry and computational modelling.

Major technical, scientific and clinical achievements in brief

From an industrial perspective, in the last ten years I was involved and had coordinated research, design, development, set-up, scale-up and complete testing up to human studies of innovative composite biomaterial platform for bone regeneration. This innovative solution is among very first completely scaled-up composite biomaterials technologies that have been successfully translated not only into humans but also into market through out a complete technology transfer process, having also built the manufacturing company on it too (IBI sa, Mezzovico-vira, Switzerland). IBI sa was first in class to successfully apply bone regeneration orthobiologics in the pediatric oncology space. IBI sa was first in class also to introduce custom-made patient-tailored bone grafts and the regenerative potential was also clinically demonstrated in critical applications such as traumatology, oncology and pediatrics. My major scientific, technical, clinical and coordination roles are being played ever since the beginning of this activity, along all stages of research and implementation processes, including also clinical studies design and conduction. Technology and products are all within IBI sa, which has safety database records of more than 85'000 patients and currently operates from its Swiss headquarter to commercially more than 30 Countries worldwide.

From an academic point of view, in the last decade I was involved and had coordinated research, development and testing up to *in vivo* models of a biomaterial library of composite, nanostructured, resorbable and tunable hydrogels (HG) for regenerative medicine and controlled drug delivery applications in acute spinal cord injury (SCI) repair strategies. Further to complete material physical-chemical and *in vitro* characterization, *in vivo* studies proved this library to be a very effective and reliable tool for SCI repair strategies: HG widely support the tuned use of nanoparticles for locally controlled drug delivery, the hosting of various types of stem cells for regenerative purposes and we proved to also support combined strategies of drug delivery and cell hosting. Running long-term *in vivo* experiments allowed first evidencing key factors influencing regeneration potential of such approaches: a) a caudal drifting effect in drug delivery patterns due to local circulation of cerebro-spinal fluid and this allows a more precise positioning of HG with respect to target tissue; b) sub-glial populations distributions are affected by the presence of the HG once *in situ* injected and this can be used to contrast local inflammatory response; c) HG can be successfully tailored to be used to carry autologous stem cells, placed in the outer lesion space, delivering trophic factors and supporting plasticity towards neuroregeneration. *In vivo* models run under GLP conditions also provided robust confirmation on both motory and sensory recovery. Beside various research grants and more than 50 publications, these technologies are the grounding base of the start-up company Regenera SA, recently established, with the aim to translate them into clinics.

Google scholar profile: <https://scholar.google.com/citations?user=Eb3lTi4AAAAJ&hl=en>

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