

CURRICULUM OF SCIENTIFIC AND EDUCATIONAL ACTIVITIES

Andrea Remuzzi
Born in Bergamo, June 20th, 1955
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Education

- 1982-1983 Visiting Scientist "Fluid Mechanics Laboratory", Massachusetts Institute of Technology, Cambridge, Massachusetts (USA) e "Department of Vascular Pathology", Brigham and Women's Hospital, Boston, Massachusetts (USA).
- 1974-79 Politecnico di Milano, Faculty of Engineering, Milano, Italy
Mechanical Engineering – Experimental thesis: "Experimental and theoretical study of an allow fiber membrane blood oxygenator".

Professional experience

- 1980-1981 Volunteer frequenter of the Bioengineering Laboratory of the Politecnico di Milano.
- 1981-1982 Civil Service at the Cardiovascular Pharmacology Laboratory of the "Mario Negri" Institute of Pharmacological Research, Milan office.
- 1984-1990 Researcher, Head Research Unit "Mario Negri" Institute for Pharmacological Research, Bergamo.
- 1990-1999 Head of the Bioengineering Laboratory - "Mario Negri" Pharmacological Research Institute, Bergamo.
- 1999-2007 Head of the Bioengineering Department of the "Mario Negri" Pharmacological Research Institute, Bergamo.
- 2007-2014 Researcher (ING-IND/34) - University of Bergamo, Dalmine (BG), Teaching and Scientific Research
- 2015-2019 Associate Professor (ING-IND/34) - University of Bergamo, Dalmine (BG), Teaching and Scientific Research
- Dal 2019 Full Professor of Biomedical Engineering (ING-IND/34), University of Bergamo, Dalmine (BG), Teaching and Scientific Research

Teaching Activities

- AS 1983/85 Lecturer in charge of teaching "Mechanics and Machines", ITIS "P. Paleocapa ", Bergamo and ITIS of Treviglio (BG).
- 1997 - 2002 Professor in charge of the course of "Artificial Organs and Prostheses" (two teaching modules) - Degree Course in Biomedical Engineering, Politecnico di Milano

- 2003 - 2007 Professor in charge of the "Tissue Engineering" course (5 CFU) - Degree Course in Biomedical Engineering, Politecnico di Milano.
- 2007 - 2010 Teacher of the course of "Biomachines" (6 CFU) and "Transport Phenomena in Biological Systems" (6 CFU) - Degree Course in Mechanical Engineering and Computer Engineering, University of Bergamo.
- 2011 - 2015 Teacher of the course of "Engineering Applications in the Biomedical Field" (6 CFU) - Degree Course in Mechanical Engineering and Computer Engineering, University of Bergamo.
- AA 2016/17 Teacher of the course of "Fundamentals of physiology" (6 CFU) - Degree Course in Ingegneria delle Tecnologie per la Salute, University of Bergamo.
- Dal 2017/18 Teacher of the courses: "Engineering Applications in the Biomedical Field" (module of 6 CFU); "Medical and Diagnostic Devices" (9 CFU module); exercises of the course "Fundamentals of physiology" - Degree course in Ingegneria delle Tecnologie per la Salute, University of Bergamo. Lecturer in the "Medical Image Processing" module (3 CFU) - Degree Course in Medicine and Surgery at the University of Bergamo and the University of Milan Bicocca.
- Dal 2018/19 Teacher of the modules of "Computer modeling an artificial kidney" (3 CFU) - Degree Course in Medicine and Surgery Bergamo, University of Bergamo and University of Milan Bicocca.
- dal 1986 Supervisor or co-supervisor of 26 master's degree theses carried out by students of the courses of Engineering, Physics, Biology and Computer Science. Tutor of 9 Ph.D. students in Biophysics and Biomedical Engineering (Politecnico di Milano - Open University, London - Eindhoven Technical University - Maastricht Medical School - University of Bergamo).

Scientific Production

Author or co-author of 221 publications in international scientific journals (Scopus).

Number of citations = 18002 (Scopus); 18811 (Google Scholar)

H Index = 61 (Scopus); H Index = 68 (Google Scholar), since 2017 H Index = 36.

Editorial Board Activities

- 1997 - 2001 Member of the Editorial Board of the Journal "American Journal of Physiology - Renal Physiology".
- 1999 - 2003 Member of the Editorial Board of journal "Drugs of Today".
- dal 2014 Editor-in-Chief of the journal "The International Journal of Artificial Organs" - Official Journal of the European Society of Artificial Organs.

Membership of Scientific Societies

- dal 1992 Member of the "American Society of Nephrology"
- dal 2011 Member of the "European Society of Biomechanics"
- dal 2014 Member of the "European Society of Artificial Organs"

since 1985 Review of scientific articles for international journals in the biomedical research sector including: *Artificial Organs*, *The International Journal of Artificial Organs*, *Biomaterials*, *American Journal of Physiology*, *Journal of Clinical Investigation*, *Kidney International*, *Journal of the American Society of Nephrology*, *Journal of Biomechanical Engineering*, *Journal of Biomechanics*, *PLoS One*.

Main Scientific Interests

- Transport phenomena in biological systems (glomerular filtration of water and macromolecules, blood motion in large vessels and in microcirculation).
- Effect of shear stress due to blood motion on endothelial cell functionality in in vitro culture systems.
- Study of the physico-chemical and structural alterations associated with the development of glomerular damage in progressive renal failure in humans.
- Mathematical models of glomerular filtration of water and macromolecules.
- Analysis of biomedical images for the three-dimensional reconstruction of arterial vessels and the creation of geometric models.
- Computational fluid dynamics analysis of blood motion in arterial vessels in physiological and pathological conditions.
- Experimental techniques for tissue engineering. In vitro manipulation of vascular and epithelial cells. Use of perfusion and microfluidic systems.
- Techniques for the structural and ultrastructural analysis of histological preparations and biomaterials.
- Development and implementation of information systems for the management of clinical data and databases relating to controlled clinical trials.

Research Projects

- 1999-01 Responsible for the research project "*Sviluppo di un sistema per immisolamento delle isole pancreatiche*" financed by Compagnia di San Paolo - Torino.
- 2002-06 Responsible for the unit of the research project FIRB – RBNE01EBES "*Impiego delle tecniche di ingegneria tissutale nello sviluppo di protesi vascolari cellularizzate*" financed by Italian MIUR.
- 2003-04 Responsible for the research project "*Identificazione e utilizzo di cellule staminali del tessuto esocrino pancreatico per la cura del diabete insulino dipendente*" financed by Fondazione CARIPLO, Milano.
- 2003-06 Responsible for the unit of the research project STREP EU 6° Framework Program "*BARP+, Development of a Bioartificial Pancreas for Type I Diabetes Therapy*".
- 2004-07 Responsible for the research project "*Sviluppo del pancreas bioartificiale*" finanziato dalla Compagnia di San Paolo - Torino

- 2005-09 Responsible for the unit of the research project EU 6° Framework Program: "STEPS, A Systems Approach to Tissue Engineering Processes and Products".
- 2008-11 Responsible for the research project – EU 7° Framework Program "ARCH – Patient specific image-based computational modelling for improvement of acute and long-term outcomes of vascular access for hemodialysis " Project n. 224390 - FP7-ICT-2007-2
- 2011-16 Responsible for the unit of the research project –ERC (RESET - Dreaming of no more renal dialysis: How self-derived tissue and cells can replace renal function) Project n. 268632.
- 2012-16 Responsible for the research project "D@se - "Dossier Sanitario Elettronico Aziendale", Azienda Ospedaliera Giovanni XXIII, Bergamo.
- 2013-18 Responsible for the research project and coordinator "Smart Aging" (Piattaforma di servizi per acquisizione e elaborazione di dati personali per il prolungamento della vita attiva e il miglioramento del benessere) Bando MIUR - Smart Cities Nazionale – Progetto n. 00442.
- 2016-20 Responsible for the unit of the research project HORIZON 2020 – NICHOID: "Mechanobiology of nuclear import of transcription factors modelled within a bioengineered stem cell niche".
- 2018-20 Responsible for the unit of the research project ERC-2018-PoC - MOAB - Miniaturised optically accessible bioreactor for drug discovery and biological research.
- 2019-20 Evaluator - progetto HORIZON H2020 AMD-766884-3 - ORCHID: "Organ on chip in development"
- 2020-21 Responsible for the unit of the research project of Regione Lombardia - LINEA 2: Ricerca industriale e Sviluppo Sperimentale – TeleCOVID (Piattaforma per Tele Monitoraggio con Bio-sensori remoti e Tele Consulto per pazienti COVID-19 e cronici fragili)
- 2020-22 Responsible for the unit of the research project of Regione Lombardia - LINEA 2: Ricerca industriale - MIRATO (Supporto mirato ai pazienti dimessi dopo un ricovero per infezione da Coronavirus SARS-CoV-2 e comorbidità)

Knowledge of foreign Languages

- Good knowledge of spoken and written English.
- Scholastic knowledge of the French language.

Bergamo, March 21st, 2022