

---

## CURRICULUM VITAE ALBERTO REDAELLI

---

NAME: Alberto Redaelli

---

POSITION TITLE: Full Professor, Biomedical Engineering

---

Office Mailing Address: Piazza Leonardo da Vinci, 32 - 20133 Milano, Italy

---

Email [alberto.redaelli@polimi.it](mailto:alberto.redaelli@polimi.it)

Contact No:+39 02 23993375

---

Scopus Author ID 7005302872

Website: [www.biomech.polimi.it](http://www.biomech.polimi.it)

---

### CURRENT POSITION AND PAST EMPLOYMENT HISTORY

INSTITUTION AND LOCATION	Role	Period	Dept
Politecnico di Milano, Italy	Chair of the Bioengineering Division	2020 -	Electronics Informatics and Bioengineering
Politecnico di Milano, Italy	Full Professor	2014 -	Electronics Informatics and Bioengineering
Politecnico di Milano, Italy	Associate Professor	2005-2014	Bioengineering
Politecnico di Milano, Italy	Assistant Professor	1999/2005	Bioengineering

### EDUCATION/TRAINING

INSTITUTION AND LOCATION	DEGREE	Completion Date	FIELD OF STUDY
Politecnico di Milano, Italy	MS	06/1991	Mechanical Engineering
Politecnico di Milano, Italy	PhD	04/1995	Bioengineering

### BIOSKETCH

Alberto Redaelli is Full Professor in Bioengineering at Politecnico di Milano. He graduated in Mechanical Engineering in 1991 and he obtained the Ph.D. in Bioengineering in 1995 at Politecnico di Milano. In 2014, following postdoctoral and tenured professor positions, he was promoted to Professor in Biomechanics in the Department of Electronics, Information and Bioengineering. Currently, he serves as the Chair of the Bioengineering Division.

He has founded and coordinates the Research Group on Biomechanics ([www.biomech.polimi.it](http://www.biomech.polimi.it)) of the Department of Electronics, Information and Bioengineering. Over his academic life, he has mainly focused on the development of new enabling tools, with the aim of finding new solutions to biological and clinical problems. His research is mainly in the field of cardiovascular biomechanics and computational fluid dynamics, both experimental and computational, and embrace pioneering studies on fluid structure interaction approaches, design of innovative cardiovascular devices and prostheses, and valve mechanics studies with emphasis on patient specific modeling from imaging data. In recent years, his research interests have been extended to smaller scales to include molecular modeling of molecular motors and collagen, and microfluidics for the study of blood damage mechanics and myocardial tissue physiopathology.

Alberto Redaelli has published 240+ ISI peer reviewed journal papers (Scopus H-index 46, 7500+ citations); he has been local coordinator of 1 Marie Curie project and two STREP project in FP6, and 1 ICT-VPH project and one IRSES Marie Curie in FP7. Currently, he is the coordinator of 1 Marie Curie ITN project and local coordinator of one RISE project in H2020. Finally, he is the inventor of 18 patents (starting from 2001), 9 of which have been transferred to companies. He is co-founder of two Politecnico spin-off company, BiomimX (2017) and Artiness (2018).

BiomimX ([www.biomimx.com](http://www.biomimx.com)) develops clinically relevant in vitro models of human organs and pathologies for testing drug and medical devices. BiomimX has won the first prize at the Switch-to-Product competition 2018, the EIT Headstart 2018 award and the Termis Business Plan Competition 2018.

Artiness ([www.artinessreality.com](http://www.artinessreality.com)) develops holographic applications for healthcare. Artiness has won the Lombardy CNA contest 2019, the Vodafone Action for 5G 2019 award the 11<sup>th</sup> European Open Innovation Contest di NTTData and participates to the start-up accelerator programs Elevator by Endeavor, B-Heroes and Microsoft for Startups

- INSTITUTIONAL RESPONSIBILITIES

2020 - now Chair of the Bioengineering Division of the Department of Electronics, Information and Bioengineering, Politecnico di Milano.

2020 – now Member of the Scientific Committee of the Department of Electronics, Information and Bioengineering, Politecnico di Milano

1999 - 2000 Student Exchange Coordinator of the Biomedical Engineering Track, Politecnico di Milano (appx 60 outgoing and 40 incoming students per year).

2016- 2019 Member of the executive council of the Department of Electronics, Information and Bioengineering, Politecnico di Milano

2005 - now Coordinator of the Biomechanics Research Group of the Department of Electronics, Information and Bioengineering, Politecnico di Milano.

2003 - now Board Member, PhD program in Bioengineering, Politecnico di Milano.

- HONORS

2022 First prize at the Switch-to-Product competition with the project IPSE-XR.

2020 First prize Vodafone “Action for 5G-2019” Competition with his start-up Artiness.

2019 First prize “Lumbardy CNA contest” 2019 with his start-up Artiness.

2019 First prize “11<sup>th</sup> European Open Innovation Contest di NTTData” with his start-up Artiness

2018 First prize at the Switch-to-Product competition with his start-up BioMIMX.

2018 EIT Headstart 2018 award with his start-up BioMIMX

2018 Termis Business Plan Competition 2018 award with his start-up BioMIMX.

2017 CVET most cited Article Award by BMES and Springer Nature.

2017 First prize at the StartCup Lombardy Region competition for Innovative ideas in Life Sciences

2015 Best Poster Award European Biomechanics Conference Conference Prague.

2014 2017 Best poster award at the International CAE Conference, Lazise.

2008 Prize awarded at the Computers in Cardiology Conference for the best work in cardiovascular imaging and modeling.

2002 Perkins Prize awarded by the Institute of Physics and Engineering in Medicine for the best paper published in Medical Engineering and Physics in 2001, for the paper entitled: “Fluid-structure interaction within realistic three-dimensional models of the aneurysmatic aorta as a guidance to assess the risk of rupture of the aneurysm”.

2002 Rabago Price awarded for the best scientific presentation at the 51<sup>o</sup> Interational Congress of The European Society for Cardiovascular Surgery.

2001 Award for the best poster in the Cardiovascular area at the Summer Bioengineering Conference ASME 2001.

1991 Award 'Prof. Ottorino Sesini' for the best degree thesis in Mechanical Engineering at Politecnico di Milano, Milan, Italy, for the academic year 1990/91.

1999-2015 Mentor of 10 Master theses and 4 PhD Theses, which received a national or international award.

- TEACHING ACTIVITIES

1999 - now Biomechanics (BSc level) – Politecnico di Milano

2004 - 2009 Biomolecular modelling (MSc level) – Politecnico di Milano

2002 - 2018 Computational Biomechanics (MSc level) – Politecnico di Milano

2007 - now Introduction to Lab-on-a-Chip (PhD level) - Politecnico di Milano

- ORGANISATION OF SCIENTIFIC MEETINGS

2024 Member of the Scientific Committee of the “Seventh International Biofluid Mechanics Symposium”– Dead Sea, Israel.

2021 Member of the Organizing and Scientific Committee of the European Society of Biomechanics Conference, Milan, Italy.

2020 Member of the Scientific Committee of the Biofluid Symposium, Tucson, US.

2018 Member of the Scientific Committee of the Italian GNB Conference, Milan, Italy.

- 2018 Member of the Scientific Committee of the Conference: Nanotechnology in Medicine II: Bridging Translational in vitro and in vivo Interfaces, Albufeira, Portugal.
- 2016 Member of the Organizing and Scientific Committee of the Micro and Nanoflow Conference, Milan, Italy.
- 2016 Member of the Scientific Committee of the “Eight International Biofluid Mechanics Symposium” – CalTech, Pasadena, US.
- 2014 Member of the Scientific Committee of the Micro and Nanoflow Conference, London, UK.
- 2014 Member of the Scientific Committee of the IV Conference of the National Group of Bioengineering, Pavia, Italy.
- 2012 Member of the Scientific Committee of the “Computational Fluid Dynamics (CFD) in Medicine and Biology” Conference, and of the “Seventh International Biofluid Mechanics Symposium” – Dead Sea, Israel.
- 2011 Member of the Scientific Committee of the II IASTED International Conference on “Computational Bioscience” – Cambridge, UK.

- MEMBERSHIPS OF SCIENTIFIC SOCIETIES

Fellow of EAMBES

Member of the European Society of Biomechanics

Member of the Biomedical Engineering Society

- PATENTS IN THE LAST 10 YEARS (7 transferred)

1. Palumbo MC, Redaelli Schiariti M, Ferroli P Dallolio V- Method and system for the improvement of a virtual surgical procedure. (2022) – 102022000017319.
2. Chidambaram S, Pannullo S, Palumbo MC, Redaelli A, Stifano V, Olivi A (2022) - Mixed-reality systems for enhancing stereotactic radiosurgery case planning - WO 2022/081862 A1
3. Gautieri A, Parisini E, Rigoldi F, Donini S, Redaelli A. (2022) Thermostabilized Amadoriases And Uses Thereof, US app. No. 16/623241.
4. Landoni G, Zangrillo A, Consolo F, Redaelli A, Fiore GB, Caimi A (2020). Non-invasive ventilation system for the pre-hospital management of acute respiratory failure. 10202000009712, Ospedale San Raffaele di Milano e Politecnico di Milano
5. Slepian M, Redaelli A, Rasponi M, Bluestein D (2019). Methods , devices , and systems for microfluidic stress emulation. US 10413901 B2, Arizona Board of Regents on behalf of the University of Arizona ; the Research Foundation for the State University of New York; Politecnico di Milano
6. Rasponi M, Occhetta P, Redaelli A (2019). Microfluidic device and relative method for the generation and/or culture and/or maturation of three-dimensional cells and/or tissue constructs EP3289065B1, Politecnico di Milano, Fondazione Cariplo, (transferred to BiomimX, a politecnico spin-off company).
7. Redaelli A. Slepian JM (2018). Systems and methods for analyzing platelet function. WO2018237246\_A1, Arizona Board of Regents on Behalf of ohe University of Arizona; Politecnico di Milano
8. Fiore GB, Redaelli A, Vismara R, Antona C, Gelpi G, Lemma MG, Mangini A (2017). Test bench assembly for the simulation of cardiac surgery and/or interventional cardiology operations. PCT/IB2017/057098, Politecnico di Milano, Università degli Studi di Milano (Transferred)
9. Rasponi M, Moretti M, Redaelli A, Visone R, Ugolini G (2017). Three-dimensional multilayer constructs in microchannels. PCT/IB2017/058458, Politecnico di Milano, Istituto Ortopedico Galeazzi
10. Redaelli A, Fiore GB, Vismara R, Bozzini, G. (2014) Device for surgical training, US2015037776, (Transferred)
11. Reggiani S, Fiore GB, Redaelli A, Baiotto C. (2014) Blood processing unit with modified flow path, US2014227133, 2014-08-14. (Transferred)
12. Reggiani S, Silvestri C, Giri A, Redaelli A, Fiore GB. (2012) Oxygenator with integrated arterial filter including filter frame, EP2465554, 2012-06-20. (Transferred)
13. Reggiani S, Fiore GB, Redaelli A, Giri A, Silvestri C, Tommasi G. (2012) Blood processing unit with circumferential blood flow, WO2012066439, 2012-05-24. (Transferred)
14. Alfieri O, Maisano F, Redaelli A. (2012) Methods of repairing an abnormal mitral valve, US2012172983, 2012-07-05, (Transferred)

#### • ONGOING AND PAST GRANTS AND FUNDING

In the last 15 years Alberto Redaelli has been local coordinator of 6 European Projects, 7 projects of the University, Research and health Ministries and he has been general coordinator of 1 European Project and 3 Fondazione Cariplo Projects as reported in the followings:

1. Project: Next Generation Healthcare - 2022-2026 – Granting agency: Ministero dell'Università e della Ricerca – Call: PNRR-ITEC – Ruolo: PI – Grant: 14.000.000 euro.
2. Project: INNOVA - 2022-2026 – Granting agency: Ministero della Salute – Call: PNC Iniziativa B – Ruolo: local PI – Grant: 1.455.000 euro.
3. Progetto: CAL.HUB.RIA - CALabria HUB per Ricerca Innovativa ed Avanzata – 2022-2026 – Granting agency: Ministero della Salute – Call: POS traiettoria 4 – Ruolo: local PI – Grant: 900.000 euro.
4. Progetto: PREVENT A new portable device for PRE-hospital non-invasive VENTilatory support in acute respiratory failure – 2020-2023 – Granting agency: Ministero della Salute – Call: PNRR-POC 2021 – Ruolo: local PI – Grant: 200.000 euro.
5. Project: Spontaneous Platelet Aggregation as a marker of platelet hyper-reactivity– 2020-2023 – Granting agency: Ministero della Salute – Call: Finalizzata 2018 – Role: local PI – Grant: 90.000 euro.
6. Project : SILKELASTOGRAFT – 2019-2021 – Granting agency: Fondazione Cariplo e Regione Lombardia – Call: Advanced Materials 2018 – Role: PI - Grant: 215.000 euro.
7. Project : Microfluidic organotypic model of monocyte transendothelial migration to the joint for the screening of promising therapeutic strategies in obese osteoarthritic patients – 2017-2020 – Granting agency: Ministero della Salute – Call Finalizzata 2013 Role: local PI – Grant: 50.000 euro
8. Project : LNMA-related cardiomyopathy as a paradigm of cardiovascular precision medicine - 2016-2020 - Granting agency: MIUR – Call: PRIN 2015 - Role: local PI – Grant: 109.000 euro
9. Project: PlatLoC – 2017-2018 – Granting agency: Fondazione Cariplo-Regione Lombardia – Call: Sostegno al capitale umano 2016 – Role: PI - Grant: 94.000 euro.
10. Project: MUSICARE – 2015-2019 – Granting agency: H2020 – Call: MSCA-ITN 2014 – Role: PI - Grant: 650.000 euro.
11. Project: AMMODIT – 2015-2019 – Granting agency: H2020 – Call: MSCA-RISEs 2014 – Role: local PI - Grant: 275.000 euro.
12. Project: NanoBBB – 2014-2017 – Granting agency: Fondazione Cariplo – Call: Ricerca Scientifica 2013 – Role: local PI - Grant: 100.000 euro.
13. Project EUMLS – 2013-2016 – Granting agency: FP7 – Call MCA-IRSES 2012 – Role: local PI - Grant: 130.000 euro.
14. Project: FluTE – 2013-2015 – Granting agency: Fondazione Cariplo – Bando: Capitale Umano 2011 – Role: PI - Grant: 300.000 euro.
15. Project: Pars-BAV – 2013-2015 – Granting agency: Ministero della Salute – Call: Finalizzata 2009 – Role: local PI - Grant: 100.000 euro.
16. Project :VPH2 – 2009-2012 – Granting agency: FP7 – Call: VPH – Role: local PI - Grant: 240.000 euro.
17. Project: ECPRO – 2009-2011 – Granting agency: Fondazione Cariplo – Call: Materiali avanzati 2008– Role: local PI - Grant: 100.000 euro.
18. Project: Biomimetic Systems – 2005-2009 – Granting agency: FP6 – Call: MEST 2004 – Role: local PI - Grant: 800.000 euro.
19. Project : BAV - 2008-2010 - Granting agency: MIUR – Call PRIN 2006 - Role: local PI – Grant: 50.000 euro
20. Project: Biomics – 2005-2008 – Granting agency: FP6 – Call: NMP4 2004 – Role: local PI - Grant: 140.000 euro.
21. Project: Multimatdesign – 2004-2008 – Granting agency: FP6 – Call: NMP3 2005 – Role: local PI - Grant: 130.000 euro.
22. Project : InterFACE - 2005-2006 - Granting agency: MIUR – Call: PRIN 2003 - Role: local PI – Grant: 50.000 euro

• PEER REVIEWED PAPERS IN THE LAST 5 YEARS

Number of publication in peer reviewed journals indicized in Scopus/WOS: 200

Number of citation (Scopus):8000

H-index (Scopus): 46

1. Piatti F, Palumbo MC, Consolo F, Pluchinotta F, Greiser A, Sturla F, Votta E, Siryk SV, Vismara R, Fiore GB, Lombardi M, Redaelli A. Experimental quantification of the fluid dynamics in blood-processing devices through 4D-flow imaging: A pilot study on a real oxygenator/heat-exchanger module. *J Biomech.* 2018; 68:14-23.
2. Rigoldi F, Donini S, Redaelli A, Parisini E, Gautieri A. Engineering of thermostable enzymes for industrial applications. *APL Bioengineering.* 2018; 2:011501.
3. Galea N, Piatti F, Sturla F, Weinsaft JW, Lau C, Chirichilli I, Carbone I, Votta E, Catalano C, De Paulis R, Girardi LN, Redaelli A, Gaudino M; Cornell International Consortium for Aortic Surgery (CICAS). Novel insights by 4D Flow imaging on aortic flow physiology after valve-sparing root replacement with or without neosinuses. *Interact Cardiovasc Thorac Surg.* 2018; 26:957-964
4. Consolo F, Sferrazza G, Motolone G, Contri R, Valerio L, Lembo R, Pozzi L, Della Valle P, De Bonis M, Zangrillo A, Fiore GB, Redaelli A, Slepian MJ, Pappalardo F. Platelet activation is a preoperative risk factor for the development of thromboembolic complications in patients with continuous-flow left ventricular assist device. *Eur J Heart Fail.* 2018; 20:792-800
5. Dimasi A, Roka-Moia Y, Consolo F, Rasponi M, Fiore GB, Slepian MJ, Redaelli A. Microfluidic flow-based platforms for induction and analysis of dynamic shear-mediated platelet activation- Initial validation versus the standardized hemodynamic shearing device. *Biomicrofluidics.* 2018 ;12:042208.
6. Tedaldi E, Montanari C, Aycok KI, Sturla F, Redaelli A, Manning KB. An experimental and computational study of the inferior vena cava hemodynamics under respiratory-induced collapse of the infrarenal IVC. *Med Eng Phys.* 2018; 54:44-55.
7. Rigoldi F, Donini S, Giacomina F, Sorana F, Redaelli A, Bandiera T, Parisini E, Gautieri A. Thermal stabilization of the deglycating enzyme Amadoriase I by rational design. *Sci Rep.* 2018; 8:3042.
8. Ugolini, G.S., Occhetta, P., Sacconi, A., Re F, Krol S, Rasponi, M., Redaelli, A. Design and validation of a microfluidic device for blood-brain barrier monitoring and transport studies. *J Micromech Microeng* 2018; 28:044001
9. Gaudino M, Piatti F, Lau C, Sturla F, Weinsaft JW, Weltert L, Votta E, Galea N, Chirichilli I, Di Franco A, Francone M, Catalano C, Redaelli A, Girardi LN, De Paulis R. Aortic flow after valve sparing root replacement with or without neosinuses reconstruction. *J Thorac Cardiovasc Surg.* 2018 ;157:455-465.
10. Caimi A, Sturla F, Pluchinotta FR, Giugno L, Secchi F, Votta E, Carminati M, Redaelli A. Prediction of stenting related adverse events through patient-specific finite element modelling. *J Biomech.* 2018 2018 79:135-146.
11. Visone R, Talò G, Occhetta P, Cruz-Moreira D, Lopa S, Pappalardo OA, Redaelli A, Moretti M, Rasponi M. A microscale biomimetic platform for generation and electro-mechanical stimulation of 3D cardiac microtissues. *APL Bioeng.* 2018;2:046102.
12. Rigoldi F, Donini S, Redaelli A, Parisini E, Gautieri A. Engineering of Thermostable Enzymes for Industrial applications. *APL Bioengineering* 2018; 2:011501.
13. van Uden S, Catto V, Perotto G, Athanassiou A, Redaelli ACL, Greco FG, Riboldi SA. Electrospun fibroin/polyurethane hybrid meshes: Manufacturing, characterization, and potentialities as substrates for haemodialysis arteriovenous grafts. *J Biomed Mater Res B Appl Biomater.* 2019; 107:807-817
14. Consolo F, Sferrazza G, Motolone G, Pieri M, De Bonis M, Zangrillo A, Redaelli A, Slepian MJ, Pappalardo F. Shear-Mediated Platelet Activation Enhances Thrombotic Complications in Patients With LVAD and Is Reversed After Heart Transplantation. *ASAIO J.* 2019; 65e33-e35
15. Visone R, Talo G, Occhetta P, Cruz-Moreira D, Lopa S, Pappalardo OA, Redaelli A, Moretti M, Rasponi M. A microscale biomimetic platform for generation and electro-mechanical stimulation of 3D cardiac microtissues. *APL Bioengineering.* 2018; 2:046102.

16. Apostoli A, Bianchi V, Bono N, Dimasi A, Ammann KR, Moia YR, Montisci A, Sheriff J, Bluestein D, Fiore GB, Pappalardo F, Candiani G, Redaelli A, Slepian MJ, Consolo F. Prothrombotic activity of cytokine-activated endothelial cells and shear-activated platelets in the setting of ventricular assist device support. *J Heart Lung Transplant*. 2019; 38:658-667
17. Visone R, Ugolini GS, Vinarsky V, Penati M, Redaelli A, Forte G, Rasponi M. A Simple Vacuum-Based Microfluidic Technique to Establish High-Throughput Organs-On-Chip and 3D Cell Cultures at the Microscale. *Advanced Materials Technologies*. 2019; 4:1800319.
18. van Uden S, Vanerio N, Catto V, Bonandrini B, Tironi M, Figliuzzi M, Remuzzi A, Kock L, Redaelli A, Greco FG, Riboldi SA. A novel hybrid silk-fibroin/polyurethane three-layered vascular graft: towards in situ tissue-engineered vascular accesses for haemodialysis. *Biomed Mater*. 2019;14:025007.
19. Selmi M, Chiu WC, Chivukula VK, Melisurgo G, Beckman JA, Mahr C, Aliseda A, Votta E, Redaelli A, Slepian MJ, Bluestein D, Pappalardo F, Consolo F. Blood damage in Left Ventricular Assist Devices: Pump thrombosis or system thrombosis? *Int J Artif Organs*. 2019; 42:113-124.
20. Canè F, Selmi M, De Santis G, Redaelli A, Segers P, Degroote J. Mixed impact of torsion on LV hemodynamics: A CFD study based on the Chimera technique. *Comput Biol Med*. 2019;112:103363.
21. Rong LQ, Palumbo MC, Rahouma M, Meineri M, Arguelles GR, Kim J, Lau C, Devereux RB, Pryor KO, Girardi LN, Redaelli A, Gaudino MFL, Weinsaft JW. Immediate Impact of Prosthetic Graft Replacement of the Ascending Aorta on Circumferential Strain in the Descending Aorta. *Eur J Vasc Endovasc Surg*. 2019;58:521-528.
22. Saitta S, Pirola S, Piatti F, Votta E, Lucherini F, Pluchinotta F, Carminati M, Lombardi M, Geppert C, Cuomo F, Figueroa CA, Xu XY, Redaelli A. Evaluation of 4D flow MRI-based non-invasive pressure assessment in aortic coarctations. *J Biomech*. 2019 20;94:13-21.
23. Consolo F, Pozzi L, Pieri M, Valle PD, Redaelli A, D'Angelo A, Pappalardo F. Influence of Different Antithrombotic Regimens on Platelet-Mediated Thrombin Generation in Patients with Left Ventricular Assist Devices. *ASAIO J*. 2019. doi: 10.1097/MAT.0000000000001064. [Epub ahead of print]
24. Tasca G, Selmi M, Riva B, Lobiati E, Gamba A, Redaelli A, Votta E. Aortic Root Dynamics in Sleeve Aortic Sparing Procedure: Echocardiographic and Computational Studies. *Semin Thorac Cardiovasc Surg*. 2019; 2(4):635-643.
25. Pluchinotta FR, Sturla F, Caimi A, Giugno L, Chessa M, Giamberti A, Votta E, Redaelli A, Carminati M. 3-Dimensional personalized planning for transcatheter pulmonary valve implantation in a dysfunctional right ventricular outflow tract. *Int J Cardiol*. 2019; pii: S0167-5273(19)34925-3.
26. Tasca G, Lucherini F, Romagnoni C, Jaworek M, Redaelli A, Antona C, Vismara R. Effect of the valve design on pressure drop, pressure recovery, and spatial positioning of vena contracta. *Int J Artif Organs*. 2020:391398819896582.
27. Scavone M, Bozzi S, Mencarini T, Podda G, Cattaneo M, Redaelli A. Platelet Adhesion and Thrombus Formation in Microchannels: The Effect of Assay-Dependent Variables. *Int J Mol Sci*. 2020;21(3).
28. Sturla F, Piatti F, Jaworek M, Lucherini F, Pluchinotta FR, Siryk SV, Giese D, Vismara R, Tasca G, Menicanti L, Redaelli A, Lombardi M. 4D Flow MRI hemodynamic benchmarking of surgical bioprosthetic valves. *Magn Reson Imaging*. 2020;68:18-29.
29. Sibilla S, Manenti S, Cazzato T, Colombo F, Tomei AA, Redaelli A, Manzoli V, Consolo F. Smoothed Particle Hydrodynamics multiphase modelling of an experimental microfluidic device for conformal coating of pancreatic islets. *Med Eng Phys*. 2020;77:19-30.
30. Roka-Moia Y, Bozzi S, Ferrari C, Mantica G, Dimasi A, Rasponi M, Santoleri A, Scavone M, Consolo F, Cattaneo M, Slepian MJ, Redaelli A. The MICELI (MICrofluidic, ELEctrical, Impedance): Prototyping a Point-of-Care Impedance Platelet Aggregometer. *Int J Mol Sci*. 2020;21(4).

31. Caimi A, Pasquali M, Sturla F, Pluchinotta FR, Giugno L, Carminati M, Redaelli A, Votta E. Prediction of post-stenting biomechanics in coarcted aortas: A pilot finite element study. *J Biomech.* 2020;105:109796.
32. Pappalardo OA, Votta E, Selmi M, Luciani GB, Redaelli A, Delgado V, Bax JJ, Ajmone Marsan N. 4D MDCT in the assessment of the tricuspid valve and its spatial relationship with the right coronary artery: A customized tool based on computed tomography for the planning of percutaneous procedures. *J Cardiovasc Comput Tomogr.* 2020:S1934-5925(20)30133-7.
33. Palumbo MC, Rong LQ, Kim J, Navid P, Sultana R, Butcher J, Redaelli A, Roman MJ, Devereux RB, Girardi LN, Gaudino MFL, Weinsaft JW. Prosthetic aortic graft replacement of the ascending thoracic aorta alters biomechanics of the native descending aorta as assessed by transthoracic echocardiography. *PLoS One.* 2020;15(3):e0230208.
34. Redaelli A, Cooper-White J. Bioengineering of the heart. *APL Bioeng.* 2020; 4(1):010402.
35. Rigoldi F, Donini S, Torretta A, Carbone A, Redaelli A, Bandiera T, Parisini E, Gautieri A. Rational backbone redesign of a fructosyl peptide oxidase to widen its active site access tunnel. *Biotechnol Bioeng.* 2020; 117:3688-3698.
36. Caimi A, Pasquali M, Sturla F, Pluchinotta FR, Giugno L, Carminati M, Redaelli A, Votta E. Prediction of post-stenting biomechanics in coarcted aortas: A pilot finite element study. *J Biomech.* 2020 22;105:109796.
37. Rong LQ, Palumbo MC, Rahouma M, Devereux RB, Kim J, Pryor KO, Redaelli A, Weinsaft JW, Girardi LN, Gaudino M. Differential Effects of Aortic Valve Replacement on Aortic Circumferential Strain in Aortic Stenosis and Aortic Insufficiency. *J Cardiothorac Vasc Anesth.* 2020; S1053-0770(20)31158-7.
38. Redaelli A, Votta E. Cardiovascular patient-specific modeling: Where are we now and what does the future look like? *APL Bioeng.* 2020; 4:040401.
39. Boraschi A, Bozzi S, Thamsen B, Granegger M, Wiegmann L, Pappalardo F, Slepian MJ, Kurtcuoglu V, Redaelli A, De Zélicourt D, Consolo F. Thrombotic Risk of Rotor Speed Modulation Regimes of Contemporary Centrifugal Continuous-flow Left Ventricular Assist Devices. *ASAIO J.* 2020. doi: 10.1097/MAT.0000000000001297. Online ahead of print.
40. Bozzi S, Vesentini S, Santus M, Ghelli N, Fontanili P, Corbelli M, Fiore GB, Redaelli ACL. Fluid dynamics characterization and thrombogenicity assessment of a levitating centrifugal pump with different impeller designs *Med Eng Phys.* 2020; 83:26-33.
41. Riva A, Sturla F, Caimi A, Pica S, Giese D, Milani P, Palladini G, Lombardi M, Redaelli A, Votta E. 4D flow evaluation of blood non-Newtonian behavior in left ventricle flow analysis. *J Biomech.* 2021; 119:110308.
42. Pozzi S, Domanin M, Forzenigo L, Votta E, Zunino P, Redaelli A, Vergara C. A surrogate model for plaque modeling in carotids based on Robin conditions calibrated by cine MRI data. *Int J Numer Method Biomed Eng.* 2021:e3447.
43. Visone R, Ugolini GS, Cruz-Moreira D, Marzorati S, Piazza S, Pesenti E, Redaelli A, Moretti M, Occhetta P, Rasponi M. Micro-electrode channel guide ( $\mu$ ECG) technology: an online method for continuous electrical recording in a human beating heart-on-chip. *Biofabrication.* 2021.
44. Emendi M, Sturla F, Ghosh RP, Bianchi M, Piatti F, Pluchinotta FR, Giese D, Lombardi M, Redaelli A, Bluestein D. Patient-Specific Bicuspid Aortic Valve Biomechanics: A Magnetic Resonance Imaging Integrated Fluid-Structure Interaction Approach *Ann Biomed Eng.* 2021; 49:627-641.
45. Palumbo MC, Redaelli A, Wingo M, Tak KA, Leonard JR, Kim J, Rong LQ, Park C, Mitlak HW, Devereux RB, Roman MJ, RoyChoudury A, Lau C, Gaudino MFL, Girardi LN, Weinsaft JW. Impact of ascending aortic prosthetic grafts on early postoperative descending aortic biomechanics on cardiac magnetic resonance imaging. *Eur J Cardiothorac Surg.* 2021: ezab501. doi: 10.1093/ejcts/ezab501.
46. Bozzi S, Dominissini D, Redaelli A, Passoni G. The effect of turbulence modelling on the assessment of platelet activation. *J Biomech.* 2021; 128:110704. doi: 10.1016/j.jbiomech.2021.110704

47. Chidambaram S, Stifano V, Demetres M, Teyssandier M, Palumbo MC, Redaelli A, Olivi A, Apuzzo MLJ, Pannullo SC. Applications of augmented reality in the neurosurgical operating room: A systematic review of the literature. *J Clin Neurosci*. 2021; 91:43-61.
48. Stifano V, Palumbo MC, Chidambaram S, Sturiale CL, Albanese A, Marchese E, Redaelli A, Pannullo SC, Olivi A. The use of Mixed Reality for the treatment planning of unruptured intracranial aneurysms. *J Neurosurg Sci*. 2021 doi: 10.23736/S0390-5616.21.05356-X.
49. Salmasi MY, Pirola S, Sasidharan S, Fisichella SM, Redaelli A, Jarral OA, O'Regan DP, Oo AY, Moore JE Jr, Xu XY, Athanasiou T. High Wall Shear Stress can Predict Wall Degradation in Ascending Aortic Aneurysms: An Integrated Biomechanics Study. *Front Bioeng Biotechnol*. 2021;9: 750656. doi: 10.3389/fbioe.2021.750656.
50. Nannini G, Caimi A, Palumbo MC, Saitta S, Girardi LN, Gaudino M, Roman MJ, Weinsaft JW, Redaelli A. Aortic hemodynamics assessment prior and after valve sparing reconstruction: A patient-specific 4D flow-based FSI model. *Comput Biol Med*. 2021; 135:104581.
51. Mencarini T, Roka-Moia Y, Bozzi S, Redaelli A, Slepian MJ. Electrical impedance vs. light transmission aggregometry: Testing platelet reactivity to antiplatelet drugs using the MICELI POC impedance aggregometer as compared to a commercial predecessor. *Thromb Res*. 2021; 204:66-75.
52. Triberti S, Petrella F, Gorini A, Pappalardo O, Sebri V, Savioni L, Redaelli A, Pravettoni G. Augmenting Surgery: Medical Students' Assessment and Ergonomics of 3D Holograms vs. CT Scans for Pre-Operative Planning. *EAI Endorsed Trans. Pervasive Health Technol*. 2021; 7(25): e5.
53. Consolo F, Marasi A, Della Valle P, Bonora M, Pieri M, Scandroglio AM, Redaelli A, Zangrillo A, D'Angelo A, Pappalardo F. Bleeding in patients with continuous-flow left ventricular assist devices: acquired von Willebrand disease or antithrombotics? *Eur J Cardiothorac Surg*. 2021;ezab474. doi: 10.1093/ejcts/ezab474.
54. Mondadori C, Palombella S, Salehi S, Talò G, Visone R, Rasponi M, Redaelli A, Sansone V, Moretti M, Lopa S. Recapitulating monocyte extravasation to the synovium in an organotypic microfluidic model of the articular joint. *Biofabrication*. 2021; 13(4). doi: 10.1088/1758-5090/ac0c5e
55. Saitta S, Sturla F, Caimi A, Riva A, Palumbo MC, Nano G, Votta E, Corte AD, Glauber M, Chiappino D, Marrocco-Trischitta MM, Redaelli A. A Deep Learning-Based and Fully Automated Pipeline for Thoracic Aorta Geometric Analysis and Planning for Endovascular Repair from Computed Tomography. *J Digit Imaging*. 2022. 35(2):226-239.
56. Riva A, Sturla F, Pica S, Camporeale A, Tondi L, Saitta S, Caimi A, Giese D, Palladini G, Milani P, Castelvechio S, Menicanti L, Redaelli A, Lombardi M, Votta E. Comparison of Four-Dimensional Magnetic Resonance Imaging Analysis of Left Ventricular Fluid Dynamics and Energetics in Ischemic and Restrictive Cardiomyopathies. *J Magn Reson Imaging*. 2022 56(4):1157-1170..
57. Tasca G, Sturla F, Jaworek M, Giese D, Menicanti L, Vismara R, Lombardi M, Redaelli A. In vitro four-dimensional flow magnetic resonance analysis of the effect of pericardial valve design on aortic flow. *J Med Eng Technol*. 2022; 46:209-219.
58. Gautieri A, Rigoldi F, Torretta A, Redaelli A, Parisini E. In Silico Engineering of Enzyme Access Tunnels. *Methods Mol Biol*. 2022; 2397:203-225.
59. Haase K, Piatti F, Marcano M, Shin Y, Visone R, Redaelli A, Rasponi M, Kamm RD. Physiologic flow-conditioning limits vascular dysfunction in engineered human capillaries. *Biomaterials*. 2022; 280:121248.
60. Mencarini T, Bozzi S, Redaelli A. On-Chip Platelet Activation Assessment: Microfluidic Emulation of Shear Stress Profiles Induced by Mechanical Circulatory Support Devices. *Methods Mol Biol*. 2022; 2373:201-212.
61. Pasquali M, Fusini L, Italiano G, Maltagliati A, Tamborini G, Penso M, Andreini D, Redaelli A, Pappalardo O, Pepi M. Feasibility study of a mixed reality tool for real 3D visualization and planning of left atrial appendage occlusion. *J Cardiovasc Comput Tomogr*. 2022; 16(5):460-462.
62. Visone R, Lozano-Juan F, Marzorati S, Rivolta MW, Pesenti E, Redaelli A, Sassi R, Rasponi M, Occhetta P. Predicting human cardiac QT alterations and pro-arrhythmic effects of compounds



- with a 3D beating heart-on-chip platform. *Toxicol Sci.* 2022;kfac108. doi: 10.1093/toxsci/kfac108. Online ahead of print.
63. Bozzini G, Maltagliati M, Berti L, Vismara R, Sanguedolce F, Crisci A, Fiore GB, Redaelli A, Pastore AL, Gozen A, Breda A, Scoffone C, Ahmed K, Mueller A, Gidaro S, Liatsikos E. Development and Validation of a Novel Skills Training Model for PCNL, an ESUT project. *Acta Biomed.* 2022; 93:e2022254.
  64. Caldiroli A, Pederzani E, Pezzotta M, Azzollini N, Fiori S, Tironi M, Rizzo P, Sangalli F, Figliuzzi M, Fiore GB, Remuzzi A, Riboldi SA, Soncini M, Redaelli A. Hybrid fibroin/polyurethane small-diameter vascular grafts: from fabrication to in vivo preliminary assessment. *Biomed Mater.* 2022;17. doi: 10.1088/1748-605X/ac885a.
  65. Cappelletti S, Caimi A, Caldiroli A, Baroni I, Votta E, Riboldi SA, Marrocco-Trischitta MM, Redaelli A, Sturla F. Non-invasive estimation of vascular compliance and distensibility in the arm vessels: a novel ultrasound-based protocol. *Quant Imaging Med Surg.* 2022; 12:3515-3527.
  66. Sturla F, Caimi A, Romarowski RM, Nano G, Glauber M, Redaelli A, Votta E, Marrocco-Trischitta MM. Fast Approximate Quantification of Endovascular Stent Graft Displacement Forces in the Bovine Aortic Arch Variant. *J Endovasc Ther.* 2022: 15266028221095403. doi: 10.1177/15266028221095403. Online ahead of print.
  67. Redaelli A, Long M. Bioengineering of the liver. *APL Bioeng.* 2022; 6:020401.
  68. Fang P, Du J, Boraschi A, Bozzi S, Redaelli A, Schmid Daners M, Kurtcuoglu V, Consolo F, de Zélicourt D. Insights Into the Low Rate of In-Pump Thrombosis With the HeartMate 3: Does the Artificial Pulse Improve Washout? *Front Cardiovasc Med.* 2022; 9:775780.
  69. Bruno C, Sauvage E, Simcock I, Redaelli A, Schievano S, Shroff R, Capelli C. Computational investigation of the haemodynamics shows criticalities of central venous lines used for chronic haemodialysis in children. *Front Pediatr.* 2022;10:1055212.
  70. Saitta S, Maga L, Armour C, Votta E, O'Regan DP, Salmasi MY, Athanasiou T, Weinsaft JW, Xu XY, Pirola S, Redaelli A. Data-driven generation of 4D velocity profiles in the aneurysmal ascending aorta. *Comput Methods Programs Biomed.* 2023; 233:107468.
  71. Aigner P, Sella Bart E, Panfili S, Körner T, Mach M, Andreas M, Königshofer M, Saitta S, Redaelli A, Schmid A, Moscato. Quantification of paravalvular leaks associated with TAVI implants using 4D MRI in an aortic root phantom made possible by the use of 3D printing. *Front Cardiovasc Med.* 2023; 10:1083300.
  72. Gabbrielli S, Colnaghi L, Mazzuoli-Weber G, Redaelli ACL, Gautieri A. In Silico Analysis of Nanoplastics' and  $\beta$ -amyloid Fibrils' Interactions. *Molecules.* 2023; 28(1):388.
  73. Jaworek M, Gelpi G, Perico F, Romagnoni C, Tasca G, Salurso E, Contino M, Redaelli A, Fiore GB, Vismara R. Coronary Perfusion After Valve-in-Valve Transcatheter Aortic Valve Implantation in Small Aortic Root: In Vitro Experimental Assessment. *J Cardiovasc Transl Res.* 2023 doi: 10.1007/s12265-023-10364-y. Online ahead of print.
  74. Saitta S, Maga L, Armour C, Votta E, O'Regan DP, Salmasi MY, Athanasiou T, Weinsaft JW, Xu XY, Pirola S, Redaelli A. Data-driven generation of 4D velocity profiles in the aneurysmal ascending aorta. *Comput Methods Programs Biomed.* 2023; 233:107468.
  75. Aigner P, Sella Bart E, Panfili S, Körner T, Mach M, Andreas M, Königshofer M, Saitta S, Redaelli A, Schmid A, Moscato F. Quantification of paravalvular leaks associated with TAVI implants using 4D MRI in an aortic root phantom made possible by the use of 3D printing. *Front Cardiovasc Med.* 2023; 10:1083300.