

CURRICULUM VITAE ALBERTO REDAELLI

• BIOGRAPHICAL SKETCH

Alberto Redaelli earned his Ph.D. in Bioengineering in 1995 from 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 where he currently coordinates the Research Group on Biomechanics (www.biomech.polimi.it).

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 170 ISI peer reviewed journal papers (**Scopus H-index 38, 4500 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 13 patents (starting from 2001), 9 of which have been transferred to companies. 1 patent has been recently exploited to start a new Politecnico spin-off company, BioMImX in 2017. In 2018 he has open a second company, Visihologic in the area of holographic applications for healthcare

• PERSONAL INFORMATION

Family name, First name: **Redaelli Alberto**
Researcher unique identifier: **Scopus Author ID 7005302872**
Date of birth: **06/02/1966**
Nationality: **Italy**
URL for web site: **www.biomech.polimi.it**

• EDUCATION

1995 PhD in Bioengineering, Politecnico di Milano, Milan, Italy
1991 Master in Mechanical Engineering, Politecnico di Milano, Milan, Italy

• CURRENT POSITION

2014 - now Full Professor, Department of Electronics, Information and Bioengineering, Politecnico di Milano, Milan, Italy

• PREVIOUS POSITIONS

2005 - 2014 Associate Professor, Department of Bioengineering, Politecnico di Milano, Milan, Italy
1999 - 2005 Assistant Professor, Department of Bioengineering, Politecnico di Milano, Milan, Italy

• TEACHING ACTIVITIES

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

- 2004 - 2009 Biomolecular modelling (MSc level) – Politecnico di Milano
- 2002 - now Computational Biomechanics (MSc level) – Politecnico di Milano
- 2007 - now Introduction to Lab-on-a-Chip (PhD level) - Politecnico di Milano

- **HONORS**

- 2017 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° 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.

- **ORGANISATION OF SCIENTIFIC MEETINGS**

- 2020 Member of the Organizing and Scientific Committee of the European Society of Biomechanics Conference, Milan, Italy.
- 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.

- **INSTITUTIONAL RESPONSIBILITIES**

- 1999 - now Student Exchange Coordinator of the Biomedical Engineering Track, Politecnico di Milano (appx 60 outgoing and 40 incoming students per year).
- 2005 - now Coordinator of the Biomechanics Division of the Department of Electronics, Information and Bioengineering, Politecnico di Milano.
- 2003 - now Board Member, PhD program in Bioengineering, Politecnico di Milano.

- **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)

International Patents

1. Rasponi M, Occhetta P, Redaelli A. Microfluidic device and relative method for the generation and/or culture and/or maturation of three-dimensional cells and/or tissue constructs PCT/IB2016/052410, 2015-05-29 (transferred to BiomimX, a politecnico spin-off company).
2. Redaelli A, Rasponi M, Bluestein D, Slepian M. Methods, devices, and systems for microfluidic stress emulation. WO2016033455, 2014-08-29 (coowned with University of Arizona Innovation Center).
3. Redaelli A, Fiore GB, Vismara R, Bozzini, G.. Device for surgical training, US2015037776, 2013-02-26. (Transferred)
4. Reggiani S, Fiore GB, Redaelli A, Baiotto C. Blood processing unit with modified flow path, US2014227133, 2014-08-14. (Transferred)
5. Reggiani S, Silvestri C, Giri A, Redaelli A, Fiore GB. Oxygenator with integrated arterial filter including filter frame, EP2465554, 2012-06-20. (Transferred)
6. Reggiani S, Fiore GB, Redaelli A, Giri A, Silvestri C, Tommasi G. Blood processing unit with circumferential blood flow, WO2012066439, 2012-05-24. (Transferred)
7. Alfieri O, Maisano F, Redaelli A. Methods of repairing an abnormal mitral valve, US2012172983, 2012-07-05, (Transferred)
8. Rasponi M, Pavesi A, Fiore GB, Redaelli A. A method to produce a microfluidic device and a device obtained from it, WO2011121427, 2011-10-06.

National Patents

1. Gautieri A, Parisini E, Rigoldi F, Donini S, Redaelli A. Thermostabilized Amadoriases And Uses Thereof, IT102017000070452 , 2017-06-23

• **ONGOING AND PAST GRANTS AND FUNDING**

On-going Grants

<i>Project Title</i>	<i>Funding source</i>	<i>Amount (Euros)</i>	<i>Period</i>	<i>Role</i>
SILKELASTOGRAFT ¹	Cariplo Bank Foundation Lombardy Region – Advanced Materials 2018	598.000 for the project. 215.000 for the local unit.	2019-2021	PI and local PI
MUSICA ²	H2020-MSCA-ITN-2014-642458	3.800.000 for the project. 650.000 for the local unit.	2015-2019	PI and local PI
AMMODIT ³	H2020-MSCA-RISE-2014- 645672	275.000	2015-2019	Local PI

¹ Partners: Mario Negri Research Institute, Bioengineering Laboratories

² partners: Philips, Materialise, Livanova, BEL laboratories, Feops, Lifetec, TU/e, Imperial College, Gent University.

³ partners: University of Luebeck, Österreichische Akademie der Wissenschaften RICAM Linz, University of Kyiv, National Technical University of Ukraine, Academy of Science of Ukraine.

LNMA-related cardiomyopathy as a paradigm of cardiovascular precision medicine ⁴	PRIN	109.000	2015-2019	local PI
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Past Grants

<i>Project Title</i>	<i>Funding source</i>	<i>Amount (Euros)</i>	<i>Period</i>	<i>Role</i>
Nano BBB ⁵	Cariplo Bank Foundation 2013-1048	100.000	2014-2016	Local PI
PlatLoC	Cariplo Bank Foundation	94.000	2016-2017	PI
AQUSTIC	ENI - Italian multinational oil and gas company	280.000	2014-2016	PI
EUMLS ⁶	FP7-MCA-IRSES-2012-295164	130.000	2012-2015	PI
FluTE ⁷	Cariplo Bank Foundation 2011-2241	300.000 (success rate 10%)	2013-2015	PI
Pars-BAV ⁸	Italian Health Ministry GR-2009-1580434	100.000 (success rate 5%)	2013-2015	Local PI
VPH2 ⁹	FP7 - VPH-2008-224635	240.000	2009-2012	Local PI

⁴ partners: National Research Council, Humanitas University, University of Naples Federico II, University of Pavia.

⁵ partners: Carlo Besta Neurological Institute, IFOM Institute of Molecular Oncology.

⁶ partners: University of Luebeck, University of Oslo, Simula research Laboratory, University of Kyiv, National Technical University of Ukraine, Academy of Science of Ukraine.

⁷ partners: Stony Brook University, University of Arizona.

⁸ partners: Second University of Naples.

⁹ partners: Noemalife, Regione Lombardia, Super Computing Solutions, Sorin Biomedica, Italian National Research Council, Niguarda Hospital, Patmos, Computer Technology Institute, Westfälische Wilhelms-Universität Münster, Ecole Polytechnique Federale de Lausanne, Intercon, University of Bedfordshire.

¹⁰ partners: Potsdam Max Plank Institute, University of Copenhagen, Heinrich Heine Universitaet Duesseldorf, University of Leoben, University of Edinburgh, Universite' Paul Sabatier.

¹¹ partners: Potsdam Max Plank Institute, BASF, Centre National de la Recherche Scientifique, European Molecular Biology Laboratory, Institut Curie Section Recherche, Chinese Academy of Sciences, Leibniz Institut fur Altersforschung, Chinese National Center for Nanoscience and Technology, Stichting, Universität Leipzig.

¹² partners: GKSS Forschungszentrum Geesthacht, National Centre for Scientific Research "Demokritos", L'Air Liquide, Nitalian national Research Council, Accelrys, Universiteit Leiden, Matsim, A.V.Topchiev Institute of Petrochemical Synthesis, Mesodyn, Alma Mater Studiorum-Universita di Bologna.

¹³ partners: Gruppo San Donato Foudation.

¹⁴ partners: Second University of Naples, University of Naples Federico II.

¹⁵ partners: Politecnico di Torino

¹⁶ partners: Massachusetts Institute of Technology

Biomimetic Systems ¹⁰	FP6 - MEST-CT-2004-504465	800.000	2005-2009	Local PI
Active Biomics ¹¹	FP6 - NMP4-CT-2004-5169892005	140.000	2005-2008	Local PI
Multimatdesign ¹²	FP6 - NMP3-CT-2005-0136442005	130.000	2006-2009	Local PI
ECPRO ¹³	Cariplo Bank Foundation 2013-1048	100.000 (success rate 20%)	2009-2011	Local PI
BAV ¹⁴	PRIN - Italian Ministry of Research	50.000 (success rate 5%)	2008-2010	Local PI
InterFACE ¹⁵	PRIN - Italian Ministry of Research	50.000 (success rate 5%)	2005-2006	Local PI
OxyLoC ¹⁶	Progetto Rocca MIT/Politecnico	60.000 (success rate 30%)	2005-2007	PI
Inspire	Sorin Group	132.000	2009-2012	PI

PEER REVIEWED PAPERS

170 publications - Scopus H-index = 38, 4500 citations

1. Inzoli F, Di Martino E, Dubini G, Redaelli A, Fumero R. **A new pulsatile blood pump for adult cardiopulmonary bypass: design criteria and preliminary fluid dynamic evaluation.** *Int. J. of Artificial Organs*, 1996, 19: 359-66.
2. Redaelli A, Montevecchi FM. **Computational evaluation of intraventricular pressure gradients based on a fluid-structure approach.** *J. Biomech. Eng.*, 1996, 118:529-537.
3. Pennati G, Redaelli A, Bellotti M, Ferrazzi E. **Computational analysis of the ductus venosus fluid dynamics based on Doppler measurements.** *Ultrasound in Med. & Biol.*, Elsevier Science, New York, (US), ISSN: 0301-5629, 1996, 22:1017-1029.
4. Dubini G, Redaelli A. **Mesh updating in fluid-structure interactions in biomechanics: an iterative method based on an uncoupled approach.** *Ann. Biomed. Eng.*, 1997, 25:218-231.
5. Redaelli A, Pietrabissa R. **A structural model of the left ventricle including muscle fibres and coronary vessels: mechanical behaviour in normal conditions.** *Meccanica*, 1997, 32: 53-70.
6. Redaelli A, Boschetti F, Inzoli F. **The assignment of velocity profiles in finite element simulations of pulsatile flow in arteries.** *Comp. Biol and Med.*, Elsevier Science, 1997, 27: 233-247.
7. Redaelli A, Di Martino E., Procopio A.M., Gamba A, Fumero R. **Assessment of the influence of the compliant aortic root on aortic valve mechanics by means of a geometrical model.** *Med. Eng. Phys.*, 1997, 19: 696-710.
8. Redaelli A, Di Martino E, Mantero S, Agazzi A, Vangeri E, Gamba A, Fumero R. **Optimisation of a stentless valve prosthesis based on an analytic parametric model of the aortic valve.** *Int. J. of Artificial Organs*, 1998, 21: 161-170.
9. Redaelli A, Montevecchi FM. **Intraventricular pressure drop and aortic blood acceleration as indices of cardiac inotropy: a comparison with the first derivative of aortic pressure based on computer fluid dynamics.** *Med. Eng. Phys.*, 1998, 20:231-4.
10. Manfredini P, Cocchetti G, Maier G, Redaelli A, Montevecchi FM. **Poroelastic finite element analysis of a bone specimen under cyclic loading.** *J. Biomechanics.*, 1999, 32:135-144.
11. Maisano F, Redaelli A, Pennati G, Fumero R, Torracca L, Alfieri O. **The hemodynamic effects of double orifice valve repair for mitral regurgitation: a 3-D computational model.** *Eur. J. Cardio-thoracic Surg.*, 1999, 15: 419-425.
12. Redaelli A, Maisano F, Schreuder J, Montevecchi FM. **Ventricular motion during the ejection phase: a computational analysis.** *J. Appl. Physiol.* 2000, 89: 314-22.
13. Redaelli A, Soncini M, Montevecchi FM. **Myosin cross-bridge mechanics: geometrical determinants for continuous sliding.** *J. Biomechanics.* 2001, 34:1607-1617.
14. Redaelli A, Guadagni G, Fumero R, Maisano F, Alfieri O. **A computational study of the hemodynamics after "edge-to-edge" mitral valve repair.** *J. Biomech. Eng.* 2001, 123:565-570.
15. Di Martino E, Guadagni G, Fumero A, Ballerini G, Spirito R, Biglioli P Redaelli A. **Fluid-structure interaction within realistic three-dimensional models of the aneurysmatic aorta as a guidance to assess the risk of rupture of the aneurysm.** *Med. Eng & Phys.* 2001, 23:647-655.
16. Redaelli A, Arrigoni S, Rizzo G, Di Martino E, Montevecchi FM. **An assisted automated procedure for vessel geometry reconstruction and hemodynamic calculation from clinical imaging.** *Comput. Med. Imaging. Graph.* 2002, 26:143-152.
17. Fiore GB, Redaelli A, Guadagni G, Inzoli F, Fumero R. **Development of a new disposable pulsatile pump for cardiopulmonary bypass: cfd design and *in vitro* tests,** *ASAIO J.* 2002, 48: 260-267.

18. Caserta S, La Maida GA, Misaggi B, Peroni D, Pietrabissa R, Raimondi MT, Redaelli A. **Elastic stabilization alone or combined with rigid fusion in spinal surgery: a biomechanical study and clinical experience based on 82 cases** *Eur. Spine J.*, 2002, 11: S192–S197.
19. Votta E, Maisano F, Soncini M, Redaelli A, Montevecchi FM, Alfieri O. **3-D computational analysis of the stress distribution on the leaflets after edge-to-edge repair of mitral regurgitation** *J Heart Valve Disease*, 2002, 11: 810-822.
20. Soncini M, Manfredi GF, Redaelli A, Attanasio A, Tosoni A, Venturino MA, Susini G. **A computer method to measure Systolic Pressure Variation (SPV) in mechanically ventilated patients.** *J. Clinical Monitoring and Computing*, 2002, 17:141-146. Rivista non ISI
21. Vesentini S, Redaelli A, Montevecchi FM. **Skin nanostructural features determine suture biomechanics,** *IEEE Transactions on Nanobioscience*, 2003, 2:79-88.
22. Redaelli A, Vesentini S, Soncini M, Vena P, Mantero S, Montevecchi FM. **The possible role of decorin glycosaminoglycans in fibril to fibril force transfer in relative mature tendons – a computational study from molecular to microstructural level.** *J. Biomechanics*, 2003, 36:1555-1569.
23. Montagano V, Morosi S, Dayar M, Gomma A, Atherton M, Collins M, Redaelli A. **The link between restenosis and cardiovascular stent design: A study combining Computational Fluid Dynamics with Computer Aided Design.** *Internal Medicine Clinical and Laboratory*. 2003; 11:14-23. Rivista non ISI
24. Redaelli A, Maisano F, Soncini M, Alfieri O, Montevecchi FM. **Hemodynamics and mechanics following partial left ventriculectomy: a computer modeling analysis.** *Med. Eng & Phys.*, 2004, 26:31-42.
25. Soncini M, Redaelli A, Montevecchi FM. **Myosin head mechanical performance under different conformational change mechanisms.** *Journal of Biomechanics*, 2004, 37:1031-1041.
26. Soncini M, Vandini L, Redaelli A. **Finite element analysis of a knee joint replacement during a gait cycle.** *J App Biomat Biomech*, 2004; 2:45-54.
27. Redaelli A, Bothorel E, Votta E, Soncini M, Morbiducci U, Del Gaudio C, Balducci A, Grigioni M. **3-D simulation of the SJM bileaflet valve opening process: fluid-structure interaction study and experimental validation** *Journal of Heart Valve Disease*, 2004;13:804-813.
28. Redaelli A, Maisano F, Ligorio G, Cattaneo E, Montevecchi FM, Alfieri O. **Flow dynamics of the St Jude Medical Symmetry aortic connector vein graft anastomosis do not contribute to the risk of acute thrombosis.** *Journal of Thoracic and Cardiovascular Surgery*, 2004;128:117-23.
29. Maisano F, Redaelli A, Soncini M, Votta E, Arcobasso L, Alfieri O. **An annular prosthesis for the treatment of functional mitral regurgitation: finite element analysis of a dog-bone shaped ring prosthesis.** *Annals of Thoracic Surgery*, 2005; 79:1268-75.
30. Vesentini S, Redaelli A, Montevecchi FM. **Estimation of the binding force of the collagen molecule-decorin core protein complex in collagen fibril.** *Journal of Biomechanics*, 2005; 38:433-443
31. Vesentini S, Fitiè CF, Montevecchi FM, Redaelli A. **Molecular assessment of the elastic properties of different collagen type I sequences.** *Biomechanics and Modelling in Mechanobiology*, 2005; 3:224-34.
32. Vesentini S, Montevecchi FM, Redaelli A **CAMM techniques for the prediction of the mechanical properties of tendons and ligaments nanostructures.** *Scientific World Journal*, 2005; 5:564-70.
33. Lemma M, Mangini A, Redaelli A, Acocella F. **Do cardiac stabilizers really stabilize? Experimental quantitative analysis of mechanical stabilization.** *Interactive CardioVascular and Thoracic Surgery*, 2005; 4: 222 - 226.
34. Vesentini S, Montevecchi FM, Redaelli A. **Response to letter to the editor: On the calculation of the binding force between decorin and collagen.** *J Biomechanics*, 2006; 39:1160-2. Rivista non ISI

35. Rasponi M, Fiore GB, Redaelli A, Montevecchi FM, Fumero R. **A reliable method for prototyping flexible physiologic-like behaving left ventricles for studying mitral valve surgical corrections.** *J Mech Med Biol*, 2006, 6:101-107.
36. Soncini M., Votta E., Zinicchino S., Burrone V., Fumero R., Mangini A., Lemma M., Antona C., Redaelli A. **Finite element simulations of the physiological aortic root and valve sparing corrections.** *J Mech Med Biol*, 2006, 6:91–99.
37. Vesentini S, Soncini M, Zaupa A, Silvestri V, Fiore GB, Redaelli A. **Multi-scale analysis of the Toraymyxin adsorption cartridge. Part I: molecular interaction of polymyxin B with endotoxins.** *Int J Artif Organs*, 2006, 29: 239-250.
38. Fiore GB, Soncini M, Vesentini S, Penati A, Visconti G, Redaelli A. **Multi-scale analysis of the Toraymyxin adsorption cartridge. Part II: Computational fluid-dynamic study.** *Int J Artif Organs*, 2006; 29:251-60
39. Ponzini R, Vergara C, Redaelli A, Veneziani A, **Reliable CFD-based estimation of flow rate in haemodynamics measures** *Ultrasound in Medicine & Biology*, 2006, 32:1545-1555.
40. Soncini M, Vesentini S, Ruffoni D, Orsi M, Deriu MA, Redaelli A. **Mechanical response and conformational changes of alpha-actinin domains during unfolding: a molecular dynamics study.** *Biomech Model Mechanobiol*. 2007; 6:399-407.
41. Morbiducci U, Ponzini R, Grigioni M, Redaelli A. **Helical flow as fluid dynamic signature for atherogenesis risk in aortocoronary bypass. A numeric study.** *J Biomechanics*, 2007;40:519-34.
42. Gilbert JR, Park H, Rasponi M, Redaelli A, Gellman B, Dasse KA, Thorsen T. **Computational and Functional Evaluation of a Microfluidic Blood Flow Device.** *ASAIO J*, Lippincott, 2007; 53:447-55
43. Morbiducci U, Lemma M, Ponzini R, Boi A, Bondavalli L, Antona C, Montevecchi FM, Redaelli A. **Does the Ventrica magnetic vascular positioner (MVP(R)) for coronary artery bypass grafting significantly alter local fluid dynamics? A numeric study.** *Int J Artif Organs*. 2007; 30:628-39.
44. Votta E, Maisano F, Bolling SF, Alfieri O, Montevecchi FM, Redaelli A. **The Geoform disease-specific annuloplasty system: a finite element study.** *Ann Thorac Surg*. 2007; 84:92-101.
45. Deriu MA, Enemark S, Soncini M, Montevecchi FM, Redaelli A. **Tubulin: From Atomistic Structure to Supramolecular Mechanical Properties.** *J Mater Sci*. 2007, 42: 8864–8872, 2007.
46. Nobili M, Passoni G, Redaelli A. **Two fluid-structure approaches for 3D simulation of St. Jude Medical bileaflet valve opening.** *J App Biomat Biomech*, 2007; 5: 49 - 59
47. Nobili M, Sheriff J, Morbiducci U, Redaelli A, Bluestein D. **Platelet Activation Due to Hemodynamic Shear Stresses: Damage Accumulation Model and Comparison to in vitro Measurements.** *ASAIO J*, 2008; 54: 64-72.
48. Aprodu I, Redaelli A, Soncini M. **Actomyosin Interaction: Mechanical and Energetic Properties in Different Nucleotide Binding States.** *Int. J. Mol. Sci.*, 2008; 9: 1927-1943.
49. Aprodu I, Soncini M, Redaelli A. **Interaction forces and interface properties of KIF1A kinesin-alpha beta tubulin complex assessed by molecular dynamics.** *J Biomechanics*, 2008 41:3196-201.
50. Gautieri A, Vesentini S, Montevecchi FM, Redaelli A. **Mechanical properties of physiological and pathological models of collagen peptides investigated via steered molecular dynamics simulations.** *J Biomechanics*, 2008; 41: 3073–3077
51. Votta E, Caiani E, Veronesi F, Soncini M, Montevecchi FM, Redaelli A. **Mitral valve finite-element modelling from ultrasound data: a pilot study for a new approach to understand mitral function and clinical scenarios.** *Philos Transact A Math Phys Eng Sci*. 2008;366:3411-34.
52. Enemark S, Deriu MA, Soncini M, Redaelli A. **Mechanical model of the tubulin dimer based on molecular dynamics simulations.** *J Biomech Eng*. 2008;130: :041008.

53. Nobili M, Morbiducci U, Ponzini R, Del Gaudio C, Balducci A, Grigioni M, Maria Montevocchi F, Redaelli A. **Numerical simulation of the dynamics of a bileaflet prosthetic heart valve using a fluid-structure interaction approach.** *J Biomechanics*. 2008;41:2539-50.
54. Aprodu I, Soncini M, Redaelli A. **Mechanical characterization of the motor proteins - a molecular dynamics approach.** *Macromolecular Theory and Simulation*, 17: 376-384, 2008.
55. Ponzini R, Lemma M, Morbiducci U, Montevocchi FM, Redaelli A. **Doppler derived quantitative flow estimate in coronary artery bypass graft: a computational multiscale model for the evaluation of the current clinical procedure.** *Med Eng Phys.*, 2008;30:809-16.
56. Soncini M, Votta E, Zinicchino S, Burrone V, Mangini A, Lemma M, Antona C, Redaelli A. **Aortic root performance after valve sparing procedure: A comparative finite element analysis.** *Med Eng Phys.*, 2009; 31, 234-243.
57. Morbiducci U, Ponzini R, Rizzo G, Cadioli M, Esposito A, Cobelli F, Del Maschio F, Montevocchi FM, Redaelli A. **In Vivo Quantification of Helical Blood Flow in Human Aorta by Time-Resolved Three-Dimensional Cine Phase Contrast Magnetic Resonance Imaging.** *Ann. Biomed. Eng.*, 2009; 3:516-531.
58. Gautieri A, Vesentini S, Redaelli A, Buehler MJ. **Single molecule effects of osteogenesis imperfecta mutations in tropocollagen protein domains.** *Protein Sci*. 2009; 18:161-8.
59. Cantini M, Fiore GB, Redaelli A, Soncini M. **Numerical Fluid-Dynamic Optimization of Microchannel-Provided Porous Scaffolds for the Co-Culture of Adherent and Non-Adherent Cells.** *Tissue Eng Part A*. 2009; 15:615-623.
60. Consolo F, Fiore GB, Truscillo S, Caronna M, Morbiducci U, Montevocchi FM, Redaelli A. **A Computational Model for the Optimization of Transport Phenomena in a Rotating Hollow-Fiber Bioreactor for Artificial Liver.** *Tissue Eng Part C*. 2009; 15:41-54.
61. Gautieri A., Uzel S., Vesentini S., Redaelli A., Buehler M. **Molecular and mesoscale mechanisms of Osteogenesis Imperfecta disease in collagen fibrils.** *Biophysical Journal*, 2009, 2009;97:857-65.
62. Gautieri A, Buehler MJ, Redaelli A. **Deformation rate controls elasticity and unfolding pathway of single tropocollagen molecules.** *J Mech Behav Biomed Mater*. 2009; 2:130-7.
63. Morbiducci U, Ponzini R, Nobili M, Massai D, Montevocchi FM, Bluestein D, Redaelli A. **Blood damage safety of prosthetic heart valves. Shear-induced platelet activation and local flow dynamics: a fluid-structure interaction approach.** *J Biomech*. 2009; 42:1952-60.
64. Fiore GB, Morbiducci U, Ponzini R, Redaelli A. **Bubble tracking through computational fluid dynamics in arterial line filters for cardiopulmonary bypass.** *ASAIO J*. 2009; 55:438-44.
65. Stevanella M, Votta E, Redaelli A. **Mitral valve finite element modeling: implications of tissues' nonlinear response and annular motion.** *J Biomech Eng*. 2009;131:121010.
66. Gautieri A, Vesentini S, Buehler MJ, Redaelli A. **Intermolecular slip mechanism in tropocollagen nanofibrils** *Journal of Materials Research* 2009, 100: 921-925.
67. Soncini M, Deriu MA, Votta E, Aprodu I, Enemark S, Montevocchi FM, Redaelli A. **Microtubule-kinesin mechanics by molecular modelling.** *Biophysical Reviews and Letters* 2009, 4:45-62.
68. Vismara R, Soncini M, Talò G, Dainese L, Guarino A, Redaelli A, Fiore GB. **A Bioreactor with Compliance Monitoring for Heart Valve Grafts.** *Ann Biomed Eng*. 2010; 38:100-108. Rivista non ISI
69. Vergara C, Ponzini R, Veneziani A, Redaelli A, Neglia D, Parodi O. **Womersley number-based estimation of flow rate with Doppler ultrasound: Sensitivity analysis and first clinical application.** *Comput Methods Programs Biomed*. 2010, 98:151-60.
70. Conti CA, Votta E, Della Corte A, Del Viscovo L, Bancone C, Cotrufo M, Redaelli A. **Dynamic finite element analysis of the aortic root from MRI-derived parameters.** *Med Eng Phys*. 2010 32:212-221.

71. Fiore GB, Soncini M, Vesentini S, Redaelli A. **Mechanisms of polymyxin B endotoxin removal from extracorporeal blood flow: hydrodynamics of sorption.** *Contrib Nephrol.* 2010;167:55-64.
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