Curriculum Vitae

Personal information

Alessio Gizzi

Work experience

CURRENT POSITIONS

2021 – to date

Associate Professor, Solid & Structural Mechanics – ICAR/08, Dept Engng, UCBM.

2021 – 2023

Executive Board ESB-ITA: *Italian Chapter of the European Society of Biomechanics* (esb-ita.it).

2022 – 2023

European Medicines Agency (EMA): *Expert panels on medical devices and IVD.*

2020 – to date

Research Council Member: *Inter-University Center for the Promotion of the 3Rs Principles in Teaching & Research.* (http://www.centro3r.it/en/members)

2013 – 2023

Alumni Community Member: UCBM. (https://www.unicampus.it/risorse-e-uffici/alumni)

PREVIOUS POSITIONS

2020 – 2021

European Commission's Panel: *"Medical devices and in vitro diagnostic medical devices"* (Expamed - Screening Panel) (Ref. 804/PP/GRO/CODEL/20/).

2019 – 2020

Tenure Track Assistant Professor (RTD-B), Solid & Structural Mechanics – ICAR/08, Dept Engng, UCBM.

2015 – 2018

Visiting Professor, Solid & Structural Mechanics – ICAR/08 (2 months/year), IMT School for Advanced Studies Lucca. Project: *Modelling and computational research on biologi- cal cell-cell interactions using reaction diffusion systems.* Contribution to research and PhD education programmes at IMT Lucca, fostering interdisciplinary research. Contact person: Prof. Marco Paggi.

Assistant Professor (RTD-A), Solid & Structural Mechanics – ICAR/08, Dept Engng, UCBM.

2019 **Research Contract, Solid & Structural Mechanics –** ICAR/08, Dept Engng

UCBM. Project: *Theoretical and computational mechanics for the study of multi-physics biomechanical problems.*

2012 – 2014
Post-Doc, Solid & Structural Mechanics – ICAR/08, Dept Engng
UCBM. Project: *Application of nonlinear dynamics for the analysis of quantitative indicators for human ecology.*

EDUCATION Academic Degrees

19/04/2012 **PhD** in Biomedical Engineering, UCBM.
Spatio-temporal dynamics of cardiac physiopathology: experiments, theory and simulations.

27/10/2008 **MS** in Biomedical Engineering cum Laude, UCBM (2 years). *Thermal effects on the action potential propagation in cardiac tissue*.

25/10/2006 **BS** in Biomedical Engineering cum Laude & Special Mention, UCBM (3 years).
Finite element modeling of diffusion phenomena within the human brain reconstructed by NMR images.

Languages Mother Tongue: *Italian*. Others: *English*. Reading/Writing/Verbal skills: C2.

Education and training

01/12/2008 – 01/04/2012
PHD IN BIOMEDICAL ENGINEERING. SPATIO-TEMPORAL DYNAMICS OF CARDIAC PHYSIOPATHOLOGY: EXPERIMENTS, THEORY AND SIMULATIONS
University of Rome Campus Bio-Medico

15/06/2018 – 15/07/2018 POST-GRADUATE PROGRAMME: INTEGRATIVE CARDIAC DYNAMICS PROGRAMME.
Kavli Institute for Theoretical Physics (KITP), UCSB, Santa Barbara, CA (US).

01/02/2016 – 05/02/2016
ADVANCED SCHOOL: NONLINEAR ELASTICITY FOR RUBBER-LIKE MATERIALS AND SOFT TISSUES. – Università Cattolica Brescia

01/09/2012 – 07/09/2012
SUMMER SCHOOL: BIOMECHANICS AND MODELING IN MECHANOBIOLOGY.
Graz University of Technology

01/01/2012 – 15/01/2012
PHD COURSE: AN INTRODUCTION TO NONLINEAR SOLID MECHANICS.
Politecnico di Milano

01/06/2011 – 10/06/2011
POST-GRADUATE COURSE: ADVANCED AND BIO-INSPIRED NANOMECHANICS.
CISM. International Centre for Mechanical Sciences (CISM), Udine, Italy.

01/08/2009 – 15/08/2009
XXVIII DOCTORAL TRAINING SCHOOL: DYNAMICAL SYSTEMS FOR THE BIOLOGY OF SYSTEMS.
Les Houches. Pôle de Biologie Systémique de Nice, France

Additional information

Publications

On the electrical intestine turbulence induced by temperature changes.
A. Gizzi, C. Cherubini, S. Migliori, R. Portuesi, R. Alloni, and S. Filippi.
https://pubmed.ncbi.nlm.nih.gov/20147777/ – 2010

Paralytic ileus is a temporary syndrome with impairment of peristalsis and no passage of food through the intestine. Although improvements in supportive measures have been achieved, no therapy useful to specifically reduce or eliminate the motility disorder underlying postoperative ileus has been developed yet. In this paper, we draw a plausible, physiologically fine-tuned scenario, which explains a possible cause of paralytic ileus. To this aim we extend the existing 1D intestinal electrophysiological Aliev–Richards–Wikswo ionic model based on a double-layered structure in two and three dimensions. Thermal coupling is introduced here to study the influence of temperature gradients on intestine tissue which is an important external factor during surgery. Numerical simulations present electrical spiral waves similar to those experimentally observed already in the heart, brain and many other excitable tissues. This fact seems to suggest that such peculiar patterns, here electrically and thermally induced, may play an important role in clinically experienced disorders of the intestine, then requiring future experimental analyses in the search for possible implications for medical and physiological practice and bioengineering.

Computational modeling and stress analysis of columellar biomechanics.
A. Gizzi, C. Cherubini, N. Pomella, P. Persichetti, M. Vasta, and S. Filippi.
https://pubmed.ncbi.nlm.nih.gov/23026731/ – 2013

The open approach for rhinoplasty offers excellent exposure of the various components of the nose in situ. The biggest advantage of the external approach is the complete anatomic exposure, which allows the surgeon to inspect the osteo[1]cartilagineous framework, while the biggest disadvantage is represented by the transcolumellar scar. The goal of this study is to numerically quantify the stress induced on the scar of a human columella by a constant load, through a fine tuned finite elasticity continuum model. Specifically we want to determine the best shape of incision which would minimize this stress. The columellar portion of the nose, together with the various constituting tissues, has been modeled in a first approximation as a hyperelastic body and seven types of scars have been studied. The determination of the best incision must be a compromise among different factors: shape and size primarily, but also position with respect to the internal structures and external loads. From this point of view, the best class of scar appears to be, both at simulated and real levels, the V-shaped one, inducing a maximum logarithmic von Mises stress in tissue of 4.67 Pa, and an absolute minimum stress distribution on the scar of 4.17 Pa. Numerical simulations appear to be in agreement with the evidence-based results coming from surgical practice, thus confirming the necessity to minimize local stresses on the tissue. A parameters' sensitivity analysis further highlighted our optimal choice. The proposed mathematical model can be applied both to theoretically designed and numerically verified new non-conventional scar geometries.

Effects of pacing site and stimulation history on alternans dynamics and the development of complex spatiotemporal patterns in cardiac tissue.
A. Gizzi, E.M. Cherry, R.F. Gilmour J., S. Luther, S. Filippi, and F.H. Fenton.
https://pubmed.ncbi.nlm.nih.gov/23637684/ – 2013

Alternans of action potential duration has been associated with T wave alternans and the development of arrhythmias because it produces large gradients of repolarization. However, little is known about alternans dynamics in large mammalian hearts. Using optical mapping to record electrical activations simultaneously from the epicardium and endocardium of 9 canine right ventricles, we demonstrate novel arrhythmogenic complex spatiotemporal dynamics. (i) Alternans predominantly develops first on the endocardium. (ii) The postulated simple progression from normal rhythm to concordant to discordant alternans is not always observed; concordant alternans can develop from discordant alternans as the pacing period is decreased. (iii) In contrast to smaller tissue preparations, multiple stationary nodal lines may exist and need not be perpendicular to the pacing site or to each other. (iv) Alternans has fully three-dimensional dynamics and the epicardium and endocardium can show significantly different dynamics: multiple nodal surfaces can be transmural or intramural and can form concave/convex surfaces resulting in islands of discordant alternans. (v) The complex spatiotemporal patterns observed during alternans are very sensitive to both the site of stimulation and the stimulation history. Alternans in canine ventricles not only exhibit larger amplitudes and persist for longer cycle length regimes compared to those found in smaller mammalian hearts, but also show novel dynamics not previously described that enhance dispersion and show high sensitivity to initial conditions. This indicates some underlying predisposition to chaos and can help to guide the design of new drugs and devices controlling and preventing arrhythmic events

Modeling collagen recruitment in hyperelastic bio-material mod- els with statistical distribution of the fiber orientation.
A. Gizzi, M. Vasta, and A. Pandolfi.
https://www.sciencedirect.com/science/article/abs/pii/S0020722514000238 – 2014

Gradual fiber recruitment is one of the stiffening mechanisms observed in collagen reinforced biological tissues. Given the natural statistical distribution of the fiber orientation in biological materials, in agreement with experimental findings it is reasonable to assume a stochastic nature of the fiber recruitment mechanism. In the present study, we consider the presence of a stochastic recruitment mechanism in a hyperelastic fiber reinforced material model characterized by statistical distributions of the fiber orientation. The material model is based on a second order approximation of the strain energy density, considered as a function of the fourth pseudo-invariant I¯4, and on the multiplicative decomposition of the deformation gradient and, consequently, of the stretch. For a planar distribution of the fiber orientation, we choose an exponential analytical expression of the strain energy density and derive the stress and stiffness tensors. The mechanical behavior of the model is assessed, through uniaxial tests, by distinguishing the mean and the variance contributions of I¯4 to the model is validated against experimental data.

Novel risk predictor for thrombus deposition in abdominal aortic aneurysms.
M.G.C. Nestola, A. Gizzi, C. Cherubini, S. Filippi and S. Succi.
https://iopscience.iop.org/article/10.1209/0295-5075/112/28001 – 2015

The identification of the basic mechanisms responsible for cardiovascular diseases stands as one of the most challenging problems in modern medical research including various mechanisms which encompass a broad spectrum of space and time scales. Major implications for clinical practice and pre-emptive medicine rely on the onset and development of intraluminal thrombus in which effective clinical therapies require synthetic risk predictors/indicators capable of informing real-time decision-making protocols. In the present contribution, two novel hemodynamics synthetic indicators, based on a three-band decomposition (TBD) of the shear stress signal, are introduced. Extensive fluid-structure computer simulations of patient specific scenarios confirm the enhanced risk-prediction capabilities of the TBD indicators. In particular, they permit a quantitative and accurate localization of the most likely thrombus deposition in realistic aortic geometries, where previous indicators would predict healthy operation. The proposed methodology is also shown to provide additional information and discrimination criteria on other factors of major clinical relevance, such as the size of the aneurysm.

Computationally informed design of a multi-axial actuated microfluidic chip device.
A. Gizzi, et al.

https://www.nature.com/articles/s41598-017-05237-9 – 2017

This paper describes the computationally informed design and experimental validation of a microfluidic chip device with multi-axial stretching capabilities. The device, based on PDMS soft-lithography, consisted of a thin porous membrane, mounted between two fluidic compartments, and tensioned via a set of vacuum-driven actuators. A finite element analysis solver implementing a set of different nonlinear elastic and hyperelastic material models was used to drive the design and optimization of chip geometry and to investigate the resulting deformation patterns under multi-axial loading. Computational results were cross-validated by experimental testing of prototypal devices featuring the in silico optimized geometry. The proposed methodology represents a suite of computationally handy simulation tools that might find application in the design and in silico mechanical characterization of a wide range of stretchable microfluidic devices.

Post-bariatric brachioplasty with postero-medial scar: physical model, technical refinements and clinical outcomes.
Simone et al.
https://pubmed.ncbi.nlm.nih.gov/29369986/ – 2018

Background: Brachioplasty is an increasingly performed procedure following massive weight loss. A visible scar is the main hindrance to this surgery. The aims of the study were to develop a physical model to investigate the ideal location of the surgical incision and to present the authors' technical refinements with the posteromedial scar approach. Methods: Twenty-four postbariatric patients underwent brachioplasty with posteromedial scar placement, concomitant liposuction, fascial plication, and axillary Z-plasty. Skin specimens were tested and a physical model of the arm was set up to investigate the difference in mechanical stress on the posteromedial and medial scars. The validated Patient and Observer Scar Assessment Scale, the Vancouver Scar Scale, and a questionnaire assessing subjective improvements were administered to patients. Preoperative and postoperative photographs were assessed by three independent plastic surgeons. Results: The physical model showed that stress intensity and distribution along the scar were reduced in the posteromedial location, with smaller scar displacement in the loading simulations. Twenty-three patients healed uneventfully. One (4.1 percent) had a 2-cm dehiscence. Mean Patient and Observer Scar Assessment Scale scores were, respectively, 2 ± 0.76 and 2.13 ± 0.64 in the patients' and observers' questionnaires. The mean Vancouver Scar Scale value was 3.5 ± 1.7. Questionnaires assessing the subjective outcomes showed a mean value of 3.45 ± 0.63 of 4. The surgeons' assessment resulted in a score of 4.5 ± 0.4 of 5. Conclusions: The physical model demonstrated that the posteromedial scar was subjected to lower mechanical stress and displacement. The reported technical refinements allowed pleasant arm recontouring to be achieved with acceptable scarring and a low incidence of complications.

Mechanical behavior of metastatic femurs through patient-specific computational models accounting for bone-metastasis interaction.
C. Falcinelli, A. Di Martino, A. Gizzi, G. Vairo, and V. Denaro.
https://www.sciencedirect.com/science/article/abs/pii/S1751616118311378 – 2019

This paper proposes a computational model based on a finite-element formulation for describing the mechanical behavior of femurs affected by metastatic lesions. A novel geometric/constitutive description is introduced by modelling healthy bone and metastases via a linearly poroelastic constitutive approach. A Gaussian-shaped graded transition of material properties between healthy and metastatic tissues is prescribed, in order to account for the bone-metastasis interaction. Loading[1]induced failure processes are simulated by implementing a progressive damage procedure, formulated via a quasi-static displacement-driven incremental approach, and considering both a stress- and a strain-based failure criterion. By addressing a real clinical case, left and right patient-specific femur models are geometrically reconstructed via an ad-hoc imaging procedure and embedding multiple distributions of metastatic lesions along femurs. Significant differences in fracture loads, f racture mechanisms, and damage patterns, are highlighted by comparing the proposed constitutive description with a purely elastic formulation, where the metastasis is treated as a pseudo-healthy tissue or as a void region. Proposed constitutive description allows to capture stress/strain localization mechanisms within the metastatic tissue, revealing the model capability in describing possible strain-induced mechano-biological stimuli driving onset and evolution of the lesion. The proposed approach opens towards the definition of effective computational strategies for supporting clinical decision and treatments regarding metastatic femurs, contributing also to overcome some limitations of actual standards and procedures.

A microstructural model of crosslink interaction between collagen fibrils in the human cornea. A. Pandolfi, A. Gizzi, M. Vasta.
https://royalsocietypublishing.org/doi/10.1098/rsta.2018.0079 – 2019

We propose a simplified micromechanical model of the fibrous reinforcement of the corneal tissue. We restrict our consideration to the structural function of the collagen fibrils located in the stroma and disregard the other all-important components of the cornea. The reinforcing structure is modelled with two sets of parallel fibrils, connected by transversal bonds within the single fibril family (inter-cross-link) and across the two families (intra-cross-link). The particular design chosen for this ideal structure relies on the fact that its ability to sustain loads is dependent on the degree of the cross-link and, therefore, on the density and stiffness of the bonds. We analyse the mechanical response of the system according to the type of interlacing and on the stiffness of fibres and bonds. Results show that the weakening of transversal bonds is associated with a marked increase of the deformability of the system. In particular, the deterioration of transversal bonds due to mechanical, chemical or enzymatic reasons can justify the loss of stiffness of the stromal tissue resulting in localized thinning and bulging typically observed in keratoconus corneas

In-silico study of the cardiac arrhythmogenic potential of biomaterial injection therapy.
W.A. Ramirez, A. Gizzi, K.L. Sack, J.M. Guccione, and D.E. Hurtado.
https://www.nature.com/articles/s41598-020-69900-4 – 2020
Biomaterial injection is a novel therapy to treat ischemic heart failure (HF) that has shown to reduce remodeling and restore cardiac function in recent preclinical studies. While the effect of biomaterial injection in reducing mechanical wall stress has been recently demonstrated, the influence of biomaterials on the electrical behavior of treated hearts has not been elucidated. In this work, we developed computational models of swine hearts to study the electrophysiological vulnerability associated with biomaterial injection therapy. The propagation of action potentials on realistic biventricular geometries was simulated by numerically solving the monodomain electrophysiology equations on anatomically-detailed models of normal, HF untreated, and HF treated hearts. Heart geometries were constructed from high-resolution magnetic resonance images (MRI) where the healthy, peri-infarcted, infarcted and gel regions were identified, and the orientation of cardiac fibers was informed from diffusion-tensor MRI. Regional restitution properties in each case were evaluated by constructing a probability density function of the action potential duration (APD) at different cycle lengths. A comparative analysis of the ventricular fibrillation (VF) dynamics for every heart was carried out by measuring the number of filaments formed after wave braking. Our results suggest that biomaterial injection therapy does not affect the regional dispersion of repolarization when comparing untreated and treated failing hearts. Further, we found that the treated failing heart is more prone to sustain VF than the normal heart, and is at least as susceptible to sustained VF as the untreated failing heart. Moreover, we show that the main features of VF dynamics in a treated failing heart are not affected by the level of electrical conductivity of the biogel injectates. This work represents a novel proof-of-concept study demonstrating the feasibility of computer simulations of the heart in understanding the arrhythmic behavior in novel therapies for HF.

Projects

National Science Foundation - USA. PI: A. Veneziani. Project: *Multiphysics Mathematical, Numerical and Reduced-Order Modeling of Cardiac Ablation*, co-PI - under evaluation.

PRIN 2022 PROGETTI DI RICERCA DI RILEVANTE INTERESSE NAZIONALE #2022T3SLAZ. *COmputational Micromechanics in BOne mechanobiology: biodegradation of magnesium-based bone implants - COMBO*. co-PI, 111.932 e .

Australian Research Council. PI: M. Flegg, R. Ruiz-Baier, B. Lamichhane, A. Goriely. Project: *Multiphysics-multiscale models and methods for intestinal mechanobiology*, co-PI - under evaluation.

HORIZON-CL4-2021: Research Participant 6.6 Me .
Project: *Multiscale quantum bio-imaging and spectroscopy* – **MUQUABIS**.
Scheme: "Digital and emerging technologies for competitiveness and fit for the green deal".

GNFM-INdAM, School-Workshop Organization U-UFMBAZ-2022-001813.

BIOPMEAT, Research Projects on Green Economy, Research Co-Leader 68.130 e .
GNFM-INdAM, Visiting Professor – Prof. R. Ruiz-Baier (Australia) U-UFMBAZ-2021-001842. **GNFM-INdAM**, **Young Researcher Grant**, Research Leader: U-UFMBAZ-2021-000081. Project: *Model- and data-driven methodologies for the rapid estimation of material parameters in soft active matter*.

KA107 Erasmus+. Universidad Nacional Autónoma de Honduras, 62.364 e , PI.
EC-funded HPC-Europa3 Consortium. HPC175QA9K Research Host (Prof. R. Ruiz-Baier). **GNFM-INdAM** Visiting Professor Project Grant – Prof. D.E. Hurtado (RCH).

National Science Foundation (NSF). Project: *Novel Data Assimilation Techniques in Mathe- matical Cardiology-Development, Analysis and Validation* (Collaborative Research – A. Veneziani). **GNFM-INdAM**, **Young Researcher Grant**, Research Leader: PRR-20190404-105833-952.Project: *Constitutive modeling of active fiber-distributed media*.

CONICYT, International Research Grant Network – Co-Leader, Chile (RCH).
Project: *Formation of an International Netowrk of Young Researchers* (Call 2017).
COST-CA16119, Short Term Scientific Missions (STSM-38666) - TU Munich (DE).
Project: *Mi- cromechanically motivated constitutive modeling of the visco-elastic active behavior of the cytoskeleton*. **GNFM-INdAM** Visiting Professor Project Grant – Marcel Hörning (DE).

London Mathematical Society, Research in Pairs – Ricardo Ruiz-Baier, University of Oxford. Project: *Computational modeling of multi-field electro-mechanical couplings*.
INdAM, **International Scholarship Grant 2016-2017** – TU Munich (DE).
Project: *Micromechanically modeling of the active behavior of the cytoskeleton*.

INTESE, **UCBM Technological Transfer Grant** - Research Leader, 125 ke . **UCBM**, Visiting Professor Grant Program – TU Munich (DE).
Project: *Constitutive modeling of the visco-elastic active behavior of soft media*

GNFM-INdAM, Visiting Professor Project Grant – Prof. R. Ruiz-Baier. Research Leader. **UCBM Multidisciplinary Internal Grant Project** Co-Leader, 10 ke . Project: *Self-on-a-Chip*.

GNFM-INdAM, **Young Researcher Grant** – Co-Leader. Project: *Waveguide properties of periodic media and their connection with functionally graded materials and microstructure*.
UCBM Multidisciplinary Grant Co-Leader, 180 ke. Project: *A multi-cellular "gut-on-chip" technology for predictive human safety testing: an integrated experimental and modeling approach*.

CEST+I Project 18/PCI/207, Chile-European STI Initiative. Research Leader.
Project: *In silico experiments of soft tissue biomechanics: Developing a computational framework for personalized healthcare*.
GNFM-INdAM, **Young Researcher Grant**. Research Leader.
Project: *Hyperelastic formulation of electro-active media with distributed fibers*.

GNFM-INdAM, **Young Researcher Grant**, Research Leader.

Project: *Spatio-temporal analysis of electro-mechanical dynamics in biological excitable media*.

MOBILITY Grants:
European Physical Society, **European Science Foundation**, **Erasmus+**, **GNFM-INdAM**.

Memberships

MEMBERSHIP OF SCIENTIFIC SOCIETIES

IEEE Sensors Council & **IEEE** Engineering in Medicine and Biology Society (**EMBS**) #99134610.
Societá Italiana di Scienza delle Costruzioni, **SISCo**.
European Society of Biomechanics, **ESB** (ID: #2168).
European Mechanics Society (#200162-AIMETA), **EUROMECH**.
Associazione Italiana di Meccanica Teorica e Applicata, **AIMETA**. Gruppo di Biomeccanica **GBMA**.
Department of Mathematics and Physics of Roma Tre, **INdAM Research Unit**.

Society for Mathematical Biology, **SMB** (2015-16).
Society for Natural Philosophy, **SNP**. European Physical Society, **EPS** (2013-14).
Society for Industrial and Applied Mathematics, **SIAM** (2011-12).

National Group for Mathematical Physics, **GNFM**.
Istituto Nazionale di Alta Matematica *"Francesco Severi"*, **INdAM**.

Other Relevant Information

My research covers multi-field and multi-scale modeling of biological media:

• **Theoretical and computational modeling in biomechanics & mechanobiology**.
• **Constitutive modeling of active electro-mechanics in gastric and cardiac tissues**.
• **Inverse problems, optimization and non-local modeling of complex biological systems**. • ***In silico* design and patenting of biomedical devices**.

Conference Organizer
2023 **EUROMECH Colloquium**. Chair: *Cellular Mechanobiology and Morphogenesis*, Sirmione (IT).

Mini-Symposium Organizer
2023 **ICCB23** *Biomechanical modelling by coupling Mechanics, Biology and Chemistry*, Vienna (AT). **DDE23** *Experiments, modeling and simulation in nonlinear cardiac dynamics*, Naples (IT).
2022 **XXV AIMETA** *Reaction-Diffusion-Drift equations and Gradient Flows in Mechanics and Contin- uum Physics*, Palermo (IT).
15th WCCM *Computational Biomechanics: Advanced Methods and Emerging Areas*, & *Modelling and simulation of thermo-mechanical effects in excitable tissues*, Yokohama (JP).
8th ECCOMAS *Unexplored Avenues of Computational Modeling of Living Systems, from In silico to the Clinics*, Oslo (NO).
2019 **PLACE** *Experiment, Modeling and Simulation in Cardiac Physio-Pathology*, Rome (IT). 2018 **ICCM9** *Multiscale material modeling in biomechanics and mechanobiology*, Rome, IT.
13th WCCM *Advances in theoretical & computational mechanics and mechanobiology*, NY (US).
2017 **ICBT17** *Behind pathogenesis and biocompatibility: models and experiments linking biomechanics to biology*. – *Contact in soft tissues: Experimental, theoretical and computational tools*, Hannover (DE). **ICF14** *Fracture and contact in multiphysics problems: from energy to biological applications*, (GR).
2016 **12thWCCM** *Nonlinear Cardiac Dynamics and Multiphysics Coupling*. Seoul (ROK).
2015 **SMB** Society for Math. Biology, Atlanta (US). *Nonlinear Dynamics in Cardiac Electrophysiology*. 2013 **XXXIII Dynamics Days Europe**, *Cardiac Electromechanical Modeling*, Madrid (E).

PostDoctoral School Organizer
2023 **International School on "Uncertainty Quantification in Biomechanics".** Johannes Kepler University of Linz, Austrian Academy of Science–RICAM, 23-27 Oct

2023, Linz (AT) (Chair).
2023 2nd **Advanced International School on "Experiments, Modeling and Simulation in Biome- chanics & Mechanobiology".** UCBM & Tor Vergata, 20-24 Feb 2023, Rome (IT) (Chair).
2020 1st **Advanced International School on "Imaging, Modeling and Simulation in Biomechan- ics & Mechanobiology".** UCBM, Tor Vergata & Hannover, 24-28 Feb 2020, Rome (IT) (Chair).
2019 1st **Latin-American Summer School on "Biomechanics & Mechanobiology".** Department of Engineering, Pontificia Universidad Catolica de Chile, Santiago (RCH).

Scientific Committee Member (selected)
2023 **ICCB** *X International Conference on Computational Bioeengineering*, Vienna (AT).
2018 *International Workshop on Cardiovascular Imaging, Modeling and Simulation*, PUC de Chile (RCH). 2017–2023 **ESB-ITA** *European Society of Biomechanics - Italian Chapter*, Rome, Bologna, Massa, Torino.
2017 AMMSA2017, *Int. Conf. on Applied Math, Modelling and Statistics Application* (CN). MMS2017, *Int. Conf. on Mechanics and Material Science* (CN).
ICMME2017, *Int. Conf. on Mechanical and Mechatronics Engineering* (TH).
ICBEB2017, *Int. Conf. on Biomedical Engineering and Biotechnology* (CN).
2016 **ESB-ITA** *Frontier Biomechanical Challenges in Cardiovascular Physiopathology*. Palermo (IT). **GIMC-GMA National Conference - AIMETA** IMT School for Advanced Studies Lucca (IT).