Curriculum Vitae

INFORMAZIONI PERSONALI

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ATTIVITA' DIDATTICA

Presso UCL ho progettato e implementato integralmente il modulo MSc Biofluids & Medical Devices. Il corso integra fondamenti di meccanica dei fluidi, reologia del sangue e modellazione del sistema cardiovascolare con l'analisi dell'interazione tra flussi fisiologici e dispositivi artificiali. Ho inoltre sviluppato il corso undergraduate di Mechanics of Solids and Materials, definendone struttura e contenuti e introducendo strumenti di e-learning per migliorare l'esperienza formativa. Nell'ambito di Engineering Design ho ideato casi studi applicativi sulla progettazione, fabbricazione e verifica di pompe idraulica, finalizzati a integrare teoria e pratica e a promuovere apprendimento attivo e competenze trasversali. L'iniziativa è stata successivamente integrata nel corso di Manufacturing and Design.
All'Università degli Studi di Palermo, dall'anno accademico 2025-26 tengo il modulo di Dispositivi Biomedicali del corso di Biofisica, Segnali Bioelettrici e Dispositivi Biomedicali nel Corso di studi in Medicina e Chirurgia (Indirizzo Tecnologico). Il corso si propone di fornire agli studenti le conoscenze fondamentali sui dispositive medici, illustrandone i principi di funzionamento e i criteri progettuali. Vengono analizzati i dispositivi più diffusi nei diversi distretti anatomici, evidenziandone indicazioni cliniche e caratteristiche tecnologiche.

PUBBLICAZIONE

International Journals (↑)

h-index = 30, average *IF*/paper (2022-23 journal IF WoS) of the last ten years: ~7

· Ghgorbel, M.T., Salih, T., Parolari, G., Skeffington, K, Di Leonardo, S., Vella, D., **Burriesci, G.**, Caputo. M., Iacobazzi, D. (2026) The use of human decellularized amniotic membrane as pulmonary valve leaflets in right ventricular outflow tract reconstruction – An *in vivo* proof of concept study. *Frontiers in Bioengineering and Biotechnology* 14:1735821. DOI: 10.3389/fbioe.2026.1735821

· Pinto, V., Di Leonardo, S., Pitarresi, G., **Burriesci, G.** (2026) Critical analysis of strain measurement approaches in tensile testing of nitinol. *Journal of Mechanical Engineering Science: Part C.* DOI: 10.1177/09544062251414215

· Sheward, F., **Burriesci, G.**, Romano, D. (2026) Artificial Muscles for Footwear Technology: Knitting Structures with Variable Elasticity. *Advances in Materials Science and Engineering*, 2026:9046033. DOI: 10.1155/amse/9046033

· Pinto, V., Di Leonardo, S., Pitarresi, G., **Burriesci, G.** (2025) Inversion of the thermomechanical response in nitinol under cyclic loading: an analytical interpretation based on the thermoelastic effect theory. *Mechanics of Materials*, 211: 105506. DOI: 10.1016/j.mechmat.2025.105506

· Petillo, A., Di Rosa, A., Burgio, C., Di Leonardo, S., **Burriesci, G.**, Bosco, F., Lucenti, L., Camarda, L. (2025) Double-loop suture repair of radial meniscal tears provides favorable biomechanical performance compared to conventional repair techniques: a biomechanical study. *Journal of Experimental Orthopaedics*, 12(3):e70366. DOI: 10.1002/jeo2.70366

· Hunter, L., Torii, R., **Burriesci, G.**, Bertazzo, S. (2025) Retrokinetics of crystallization. *Scripta Materialia*, 276:116799. DOI: 10.1016/j.scriptamat.2025.116799

· Vella, D., Boodagh, P.· Modica de Mohac, L., Ye, S.H., Cosentino, F., Scaglione, F., Dei Bardi, S., Polizzi, G., Coyan, G., Wagner, W.R., **Burriesci, G**., D'Amore, A. (2025) In vitro evaluation of biomaterials for heart valve prosthesis: high hydrostatic and enzymatic treatments as alternative for bio-derived materials. *Journal of Biomedical Materials Research: Part B - Applied Biomaterials*, 113(**6**): e35592. DOI: 10.1002/jbm.b.35592

· Di Leonardo, S., Vella, D., Pisano, C., Argano, V., **Burriesci, G.** (2025) Hydrodynamic alterations produced by subaortic membranes: an in vitro study. *Innovation and Research in BioMedical engineering (IRBM)*, 46(4): 100897.

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· Md, R.I., Lee, M.T., Cook, A.C, Weir-McCall, J., Martin, C.A., Peach, T.W., **Burriesci, G**., Bosi, G.M. (2025) A new braided model of the Amulet Amplatzer for accurate simulations of left atrial appendage occlusion procedures. *Computers in Biology and Medicine*, 192 (Part B): 110355. DOI: 10.1016/j.compbiomed.2025.110355 (co-last)

· Hunter, L., Torii, R., **Burriesci, G.**, Bertazzo, S. (2025) Whitlockite can be a substrate for apatite growth in simulated body fluid. *Materialia*, 105334. DOI: 10.1016/j.mtla.2025.102409

· Lo Presti, A.M., Monteleone, A., Musotto, G., Tamburini, A., Napoli, E., **Burriesci, G.** (2025) Modelling of thrombus formation, growth and embolisation in the left atrial appendage under atrial fibrillation. *Computers in Biology and Medicine*, 191: 110134. DOI: 10.1016/j.compbiomed.2025.110134

· Pinto, V., Cappello, R., Di Leonardo, S., Catalanotti, G., **Burriesci, G.**, Pitarresi, G. (2025) Evaluation of NiTi under low-amplitude cyclic loading by means of thermographic harmonic analysis. *Mechanics of Materials*, 206: 10534. DOI: 10.1016/j.mechmat.2025.105334

· Di Stefano, A.B., Di Marco, C., Toia, F., Trapani, M., Testa, M., Di Leonardo, S., **Burriesci, G.**, Franza, M., Cammarata, E., Cordova, A., Lopresti, F., La Carrubba, V. (2025) Effect of nanocomposite chitosan/hydroxyapatite pH-induced hydrogels on the osteogenic differentiation of spheroids from adipose stem cells. *International Journal of Biological Macromolecules*, 299: 140213. DOI: 10.1016/j.ijbiomac.2025.140213.

· Boodagh, P., Modica De Mohac, L., Hayashi, Y., Vella, D., Ye, S.H., Cosentino, F., Fujii, T., Gorge, E., Coyan, G., Laubrie Soto, J.D., **Burriesci, G.**, Wagner, W.R., D'Amore, A. (2025) Photo-oxidation crosslinked, glutaraldehyde crosslinked, or enzyme and hydrostatic pressure processed decellularized biomaterials for cardiovascular repair do not affect host response in a rat right ventricular outflow flow tract reconstruction (RVOT) model. *Journal of Biomedical Materials Research: Part B - Applied Biomaterials*, 113(2):e35529. DOI: 10.1002/jbm.b.35529

· Tango, A.M., Monteleone, A., Ducci, A., **Burriesci, G.** (2025) Analysis of the haemodynamic changes caused by surgical and transcatheter aortic valve replacements by means fluid-structure interaction simulations. *Computers in Biology and Medicine*, 186: 109673. DOI: 10.1016/j.compbiomed.2025.109673

· Lee, M.T.E, Martorana, V., Md, R.I., Sivera, R., Cook, A.C., Menezes, L., **Burriesci, G.**, Torii, R., Bosi, G.M. (2025) On Preserving Anatomical Detail in Statistical Shape Analysis for Clustering: Focus on Left Atrial Appendage Morphology. *Frontiers in Network Physiology, section Networks in the Cardiovascular System*, 4: 1467180. DOI: 10.3389/fnetp.2024.1467180

· Yao, J., Pi, X., Bosi, G.M., **Burriesci, G.**, Wurdemann, H. (2025) Synchronous Inflation of a Valvuloplasty Balloon Catheter with Heart Rate: In-vitro Evaluation in Terms of Dilatation Performance. *IEEE Robotics and Automation Letters,* 10(2): 1114-1121. DOI: 10.1109/LRA.2024.3518066

· Vella, D., Musotto, G., Cook, A., Bosi, G.M., **Burriesci, G.** (2024) Left atrial appendage inversion: first computational study to shed light on the phenomenon. *Heliyon* 10: e26629. DOI: 10.1016/j.heliyon.2024.e26629

· Musotto, G., Monteleone, A., Vella, D., Zuccarello, B., Cannova, R., Cook, A., Bosi, G.M., **Burriesci, G.** (2024) Fluid-structure interaction analysis of the thromboembolic risk in the left atrial appendage under atrial fibrillation: effect of hemodynamics and morphological features. *Computer Methods and Programs in Biomedicine* 246: 108056. DOI: 10.1016/j.cmpb.2024.108056

· Yao, J., Salmonsmith, J., Bosi, G.M., **Burriesci, G.**, Wurdemann, H. (2024) Finite element and fluid-structure interaction modelling of a balloon catheter. *IEEE Transactions on Medical Robotics and Bionics* (*TMRB*) 6(1): 68-72. DOI: 10.1109/TMRB.2023.3332434

· Monteleone, A., Di Leonardo, S., Napoli, E., **Burriesci, G.** (2024) A novel mono-physics particle-based approach for

the simulation of cardiovascular fluid-structure interaction problems. *Computer Methods and Programs in Biomedicine* 254: 108034. DOI: 10.1016/j.cmpb.2024.108034

· Di Leonardo, S., Monteleone, A., Caruso, P., Meecham-Garcia, H., Pitarresi, G., **Burriesci, G.** (2024) Effect of the apron in the mechanical characterisation of hyperelastic materials by means of biaxial testing: a new method to improve accuracy. *Journal of The Mechanical Behavior of Biomedical Materials* 150: 106291. DOI: 10.1016/j.jmbbm.2023.106291

· McGregor, C.G., Salmonsmith, J., **Burriesci, G.**, Byrne, G. (2023) Biological equivalence of genetically engineered porcine pericardium for biological heart valve manufacture: a randomized 150 day blind study in sheep. *Transplantation* 107(10S2):p 24. DOI: 10.1097/01.tp.0000993852.97979.3a

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· Yao, J., Bosi, G.M., **Burriesci, G.**, Wurdemann, H. (2023) Compliant Aortic Annulus Sizing with Different Elliptical Ratios Through a Valvuloplasty Balloon Catheter. *IEEE Transactions on Biomedical Engineering (TBME).* DOI: 10.1109/TBME.2023.3289300.

· Di Leonardo, S., Vella, D., Grillo, C.S., Martorana, C., Torre, S., Argano, V., **Burriesci, G.** (2023) Hydrodynamic ex-vivo analysis of valve sparing techniques: assessment and comparison. *European Journal of Cardio-Thoracic Surgery* 63(3): ezad040. DOI: 10.1093/ejcts/ezad040

· Monteleone, A., Viola, A., Napoli, E., **Burriesci, G.** (2023) Modelling of thrombus formation using smoothed particle hydrodynamics method. *Plos One* 18(**2**): e0281424. DOI: 10.1371/journal.pone.0281424.

· Montgomery-Liljeroth, E., Schievano, S., **Burriesci, G.** (2023) Elastic properties of 2D Auxetic Honeycomb structures - A review. *Applied Materials Today* **23**, 101722. DOI: 10.1016/j.apmt.2022.101722.

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· Di Leonardo, S., Pitarresi, G., **Burriesci, G.** (2022) Standard mechanical testing is inadequate for the mechanical characterisation of shape-memory alloys: source of errors and a new corrective approach. *Material & Design* **216**: 110538. DOI: 10.1016/j.matdes.2022.110538

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· Di Leonardo, S., Cappello, R., **Burriesci, G.**, Pitarresi, G. (2021) Investigation of the thermomechanical response of cyclically loaded NiTi alloys by means of temperature frequency domain analyses. *Materials*, **14**: 7866. DOI: 10.3390/ma14247866

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· Annio, G., Torii, R., Ducci, A., Muthurangu, V., Tsang, V., **Burriesci, G.** (2021) Experimental validation of Enhanced Magnetic Resonance Imaging (EMRI) using Particle Image Velocimetry (PIV). *Annals of Biomedical Engineering* **49**: 3481–3493. DOI: 10.1007/s10439-021-02811-1

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· Salmonsmith, J., Ducci, A., **Burriesci, G.** (2019) Does Transcatheter Aortic Valve Alignment Matter *Open Heart* **6**: e001132. DOI: 10.1136/openhrt-2019-001132

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· Di Micco, L., Peruzzo, P., Colli, A., **Burriesci, G.**, Boso, D., Besola, L., Gerosa, G., Susin, F.M. (2019) The Neochord Mitral Valve Repair Procedure: Numerical Simulation of Different Neochords Tensioning Protocols. *Medical Engineering & Physics* **74**:121-128. DOI: 10.1016/j.medengphy.2019.09.014

· Peruzzo, P., **Burriesci, G.**, Susin, M.F., Colli, A. (2019) In vitro and ex-vivo Hemodynamic Testing of an Innovative Occluder for Paravalvular Leak after Transcather Aortic Valve Implantation. *Journal of Cardiovascular Translational Research*, 12(6):551-559. DOI: 10.1007/s12265-019-09902-4

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· Peruzzo, P., Susin, F.M., Colli, A., **Burriesci, G.** (2019) In-vitro assessment of pacing as therapy for aortic regurgitation. *Open Heart*, **6**: e000976. DOI: 10.1136/openhrt-2018-000976.

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Exhibitions

· Innovabiomed, *Cardiovascular Bioengineering at Ri.MED Foundation*, 2-3 July 2021, Verona, Italy.

· Medtec Europe, *UCL Cardiovascular Engineering Laboratory*, 21-23 April 2015 at, Messe Stuttgat, Germany

· Medtec UK, *UCL IBME stand*, 3-4 March 2015, London, UK

· BA Festival of Science, 'Replumbing the Human Heart', 11 September 2008, Liverpool, UK

AMBITI DI RICERCA

Sono Professore Ordinario di Bioingegneria presso l'Università degli Studi di Palermo, Professore Onorario presso University College London (UCL), Regno Unito, e coordinatore del *Gruppo di Bioingegneria e Dispositivi Medici* di Fondazione Ri.MED, Italia.
Nel corso della mia esperienza, maturata tra gli ambiti accademici ed industriali, ho acquisito competenze in analisi numerica e sperimentale, progettazione ingegneristica, simulazione dei sistemi fisiologici e sviluppo di tecnologie avanzate per applicazioni cardiovascolari. Ho guidato programmi di ricerca interdisciplinari in collaborazione con partner scientifici e aziende multinazionali del settore medicale, ottenendo finanziamenti competitivi per la creazione e il consolidamento di infrastrutture e gruppi di ricerca.
La mia ricerca si è concentrata sullo sviluppo di soluzioni terapeutiche innovative (oltre 50 brevetti), applicando le competenze ingegneristiche maturate alla progettazione di dispositivi medici di nuova generazione, alla definizione di tecniche diagnostiche più efficaci e allo sviluppo di nuovi strumenti di pianificazione terapeutica. L'attività integra ricerca di base e applicata, comprendendo la caratterizzazione dei biomateriali, lo studio della durabilità in ambienti ostili, la simulazione sperimentale e numerica dei sistemi fisiologici, l'ottimizzazione strutturale e lo sviluppo di nuove metodologie di valutazione.