

Roberto Rizzi

Curriculum Vitae

General Information

Full Name	Roberto Rizzi
Spoken Languages	Italian - English

Education

Type	Year	Institution	Notes (Degree, Experience)
National Academic Qualification (ASN) as Associate Professor	2018	Italian Ministry of Education, University and Research	CALL 1532/2016 (Sector 06/N1)
Specialty	2005	Clinical Sexology Institute, RM	Consultant in clinical sexology
PhD	2003	'La Sapienza' University, RM	Psychobiology and Psychopharmacology
University graduation	1999	'La Sapienza' University, RM	Psychology

Other Education

Specialization Course	2009	Bichat Hospital, Paris	Mouse phenotyping-Catheter-based in vivo hemodynamics of murine hearts
Specialization Course	2009	Bichat Hospital, Paris	Mouse phenotyping-small rodents' echocardiography
Specialization Course	2002	University of Siena, SI	Physiology of pain
National examination certificate	2001	'La Sapienza' University, RM	Psychology (national license – Esame di Stato)

Professional Appointments

Start	End	Institution	Position
2021	Present	Organoids Center, Fondazione Invernizzi, c/o INGM	Head of Bioprinting and Biofabrication Unit
2019	Present	Fondazione Istituto Nazionale di Genetica Molecolare (INGM)	Head of Regenerative Medicine Lab
2017	Present	Consiglio Nazionale delle Ricerche, Milan	Permanent Researcher
2018	2020	Fondazione Gemelli Molise	Scientific Consultant
2015	2017	IRCCS San Donato	Scientific Consultant
2009	2015	IRCCS Multimedica, Milan	Scientific Consultant
2008	2017	Consiglio Nazionale delle Ricerche, Rome	Fixed Term Researcher
2007	2008	Harvard University (Medical School), Boston	Postdoctoral research scholarship
2006	2007	New York Medical College, Valhalla, NY	Postdoctoral research scholarship
2005	2006	Istituto Dermatologico dell'Immacolata, Rome	Researcher/Post-Doc
2004	2005	Tor Vergata University, Rome	Human physiology expert (Cultore)

Society memberships, Awards and Honors

Year	Title
2006-2008	Member of American Heart Association (AHA)

Funding Information [grants as PI-principal investigator or I-investigator]

Year	Title and Role	Founding Source
2020	GRENADE – “Generazione di tessuti individuo-specifici per il riparo di organi danneggiati. (PI)	Italian Ministry of Defense
2020	The role of microRNA-34 in regulating autoimmune T cell response in the depressive syndrome. (PI)	Caripto Foundation
2018	Generazione di tessuti umani individuo-specifici per test di efficacia di nuovi farmaci. (PI)	Lazioinnova – Regione Lazio
2017	Role of the HDAC inhibitor givinostat in cardiac remodelling in mdx mice. (PI)	Duchenne Parent Project Foundation
2017	ACE and HDAC inhibitors effects after myocardial infarction. (PI)	Italfarmaco SPA
2014	Cluster ALISEI IRMI Project- Creation of a multiregional infrastructure for the development of advanced therapies for organ and tissue regeneration. (I)	Italian Ministry of Education, University and Research (PON)
2013	Research and development of products and technological platforms for the competitiveness of the Lombard industry. (I)	Lombardy Region, Framework agreement, RSPPTech
2011	Technological platform for using the pig model in biomedical (organ and tissue transplantation) and biotechnological (animal model) fields. (I)	Lombardy Region

Rizzi's Lab Team Funding

Year	Title	Founding Source
2021	Chondroitin sulfate proteoglycan-4, secreted by a binding imbalance between SP1 and NF-kB on CHST11 gene, triggers sympathetic cardiac denervation in Duchenne Muscular Dystrophy.	Regional Foundation for Biomedical Research - Lombardy Region (Early Career Award)
2021	Engineered T cells (CAR-T) for the treatment of cardiac fibrosis in Duchenne Muscular Dystrophy.	Ministry of Health - Starting Grant (Ricerca Finalizzata Giovani)
2018	Characterization of HDACi Givinostat effects of in restoring the function of the neurocardiac synapse of mdx mouse, through the modulation of NGF expression in cardiac interstitial fibroblasts.	Roche Foundation
2017	Dissecting the role of heterochromatic conformation in age-related sarcopenia and frailty.	Caripto Foundation
2017	Epigenome and Transcriptome profiling of human iPS cells to identify new therapeutic biomarkers involved in Myotonic Dystrophy Type-1	National Research Council (CNR), FLAGSHIP project

Publications and Book Chapter

Scientific Publications

1. Tackling current biomedical challenges with frontier biofabrication and organ-on-A-chip technologies. Celikkin N, Presutti D, Maiullari F, Fornetti E, Agarwal T, Paradiso A, Volpi M, Świąszkowski W, Bearzi C, Barbetta A, Zhang Ys, Gargioli C, **Rizzi R**, Costantini M. FRONTIERS IN BIOENGINEERING AND BIOTECHNOLOGY. 2021. ISSN 2296-4185; doi: 10.3389/fbioe.2021.732130.
2. Focus on the Road to Modelling Cardiomyopathy in Muscular Dystrophy. Canonico F, Chirivi M, Maiullari F, Milan M, **Rizzi R**, Arcudi A, Galli M, Pane M, Gowran A, Pompilio G, Mercuri E, Crea F, Bearzi C, D'Amario D. CARDIOVASCULAR RESEARCH. 2021. ISSN 1755-3245; <https://doi.org/10.1093/cvr/cvab232>.
3. Tumor Extracellular Matrix Stiffness Promptly Modulates the Phenotype and Gene Expression of Infiltrating T Lymphocytes. Chirivi M, Maiullari F, Milan M, Presutti D, Cordiglieri C, Crosti M, Sarnicola Ml, Soluri A, Volpi M, Świąszkowski W, Prati D, Rizzi M, Costantini M, Seliktar D, Parisi C, Bearzi C, **Rizzi R***. INTERNATIONAL JOURNAL OF MOLECULAR SCIENCES. 2021. EISSN 1422-0067; <https://doi.org/10.3390/ijms22115862>.
4. Inhibition of the mTOR pathway and reprogramming of protein synthesis by MDM4 reduce ovarian cancer metastatic properties. Lucà R, Assenza Mr, Maiullari F, Pieroni L, Maiullari S, Federici G, Marini F, **Rizzi R**, Urbani A, Soddu S, Moretti F. CELL DEATH AND DISEASE. 2021. ISSN 2041-4889; <https://doi.org/10.1038/s41419-021-03828-z>.
5. Role of Cdkn2a in the Emery-Dreifuss Muscular Dystrophy Cardiac Phenotype. Pegoli G, Milan M, Manti P, Bianchi A, Lucini F, Santarelli P, Bearzi C, **Rizzi R**, Lanzuolo C. BIOMOLECULES. 2021. EISSN 2218-273X; doi: 10.3390/biom11040538.
6. In vivo organized neovascularization induced by 3D bioprinted endothelial-derived extracellular vesicles. Maiullari F, Chirivi M, Costantini M, Ferretti Am, Recchia S, Maiullari S, Milan M, Presutti D, Pace V, Raspa M, Scavizzi F, Massetti M, Petrella L, Fanelli M, Rizzi M, Fortunato O, Moretti F, Caradonna E, Bearzi C, **Rizzi R***. BIOFABRICATION. 2021. EISSN 1422-0067; doi: 10.3390/ijms22115862.
7. Daily intermittent β -blockade improves cardiac function in post-infarction heart failure *Tipologia*. Maccari S, Pace V, Barbagallo F, Stati T, Ambrosio C, Vezzi V, Gro' C, Catalano L, Matarrese P, Molinari P, **Rizzi R**, Marano G. EUROPEAN JOURNAL OF PHARMACOLOGY. 2020. ISSN 0014-2999; doi: 10.1016/j.ejphar.2020.173287.
8. Extracellular Vesicles from skeletal muscle cells efficiently promote myogenesis in induced pluripotent stem cells. Baci D, Chirivi M, Pace V, Maiullari F, Milan M, Rampin A, Somma P, Presutti D, Garavelli S, Bruno A, Cannata S, Lanzuolo C, Gargioli C, **Rizzi R***, Bearzi C. CELLS. 2020. ISSN 2073-4409; doi: 10.3390/cells9061527.
9. Dysfunctional polycomb transcriptional repression contributes to Lamin A/C dependent muscular dystrophy. Bianchi A, Mozzetta C, Pegoli G, Lucini F, Valsoni S, Rosti V, Petrini C, Cortesi A, Gregoret F, Antonelli L, Oliva G, De Bardi M, **Rizzi R**, Bodega B, Pasini D, Ferrari F, Bearzi C, Lanzuolo C. JOURNAL OF CLINICAL INVESTIGATION. 2020. ISSN 1558-8238; doi: 10.1172/JCI128161.
10. A multi-cellular 3D bioprinting approach for vascularized heart tissue engineering based on HUVECs and iPSC-derived cardiomyocytes. Maiullari F, Costantini M, Milan M, Pace V, Chirivi M, Maiullari S, Baci D, Marei HE, Seliktar D, Rainer a, Gargioli C, Bearzi C, **Rizzi R***. SCIENTIFIC REPORT. 2018. ISSN 2045-2322; doi: 10.1038/S41598-018-31848-X.
11. Givinostat reduces adverse cardiac remodeling through regulating fibroblasts activation. Milan M, Pace V, Maiullari F, Chirivi M, Baci D, Maiullari S, Madaro L, Maccari S, Stati T, Marano G, Frati G, Puri PL, De Falco E, Bearzi C, **Rizzi R***. CELL DEATH AND DISEASE. 2018. ISSN 2041-4889; <https://doi.org/10.1038/s41419-017-0174-5>.
12. Potential of stem cell-based therapy for ischemic stroke. Marei H, **Rizzi R**, Althani A, Affifi N, Cenciarelli C, Caceci T, Shuaib A. FRONTIERS IN NEUROLOGY. 2018. ISSN 1664-2295; doi: 10.3389/FNEUR.2018.00034.

13. Differentiation of human olfactory bulb-derived neural stem cells toward oligodendrocyte. Marei HE, Shouman Z, Althani A, Afifi N, AE A, Lashen S, Hasan A, Caceci T, **Rizzi R**, Cenciarelli C, Casalbore P. *JOURNAL OF CELLULAR PHYSIOLOGY*. 2018. ISSN 1097-4652; doi: 10.1002/JCP.26008.
14. Role of the gastrointestinal tract microbiome in the pathophysiology of diabetes mellitus. Sohail MU, Althani A, Anwar H, **Rizzi R**, Marei HE. *JOURNAL OF DIABETES RESEARCH*. 2017. ISSN 2314-6753; doi: 10.1155/2017/9631435.
15. Surface functionalization of acrylic based photocrosslinkable resin for 3D printing application. Ronca A, Maiullari F, Milan M, Pace V, Gloria A, **Rizzi R**, De Santis R, Ambrosio L. *BIOACTIVE MATERIALS*. 2017. ISSN 2452-199X; doi: 10.1016/j.bioactmat.2017.04.002.
16. Oxidative stress-induced miR-200c disrupts the regulatory loop among SIRT1, FOXO1 and eNOS. Carlomosti F, D'Agostino M, Beji S, Torcinaro A, **Rizzi R**, Zaccagnini G, Maimone B, Di Stefano V, De Santa F, Cordisco S, Antonini A, Ciarapica R, Dellambra E, Martelli F, Avitabile D, Capogrossi MC, Magenta A. *ANTIOXIDANT & REDOX SIGNALING*. 2016. ISSN 1523-0864; doi: 10.1089/ars.2016.6643.
17. Biphase effects of propranolol on tumour growth in B16F10 melanoma-bearing mice. Maccari S, Buoncervello M, Rampin A, Spada M, Macchia D, Giordani L, Stati T, Bearzi C, Catalano L, **Rizzi R**, Gabriele L, Marano G. *BRITISH JOURNAL OF PHARMACOLOGY*. 2016. ISSN 0007-1188; doi: 10.1111/bph.13662.
18. Activation of the pro-oxidant PKC β II-p66Shc signaling pathway contributes to pericyte dysfunction in skeletal muscles of diabetic patients with critical limb ischemia. Vono R, Fuoco C, Testa S, Pirrò S, Maselli D, Mc Collough DF, Sangalli E, Pintus G, Giordo R, Finzi G, Sessa F, Cardani R, Gotti A, Losa S, Cesareni G, **Rizzi R**, Bearzi C, Cannata S, Spinetti G, Gargioli C, Madeddu P. *DIABETES*. 2016. ISSN 0012-1797; doi: 10.2337/db16-0248.
19. DOT1L-mediated H3K79me2 modification critically regulates gene expression during cardiomyocyte differentiation. Cattaneo P, Kunderfranco P, Greco C, Guffanti A, Stirparo GG, Rusconi F, **Rizzi R**, Di Pasquale E, Locatelli SL, Latronico MV, Bearzi C, Papait R, Condorelli G. *CELL DEATH AND DIFFERENTIATION*. 2016. ISSN 1350-9047; doi: 10.1038/cdd.2014.199.
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21. Self-assembled polydimethylsiloxane structures from 2D to 3D for bio-hybrid actuation. Vannozzi L, Ricotti L, Cianchetti M, Bearzi C, Gargioli C, **Rizzi R**, Dario P, Mencassi A. *BIOINSPIRATION & BIOMIMETICS*. 2015. ISSN 1748-3182; doi: 10.1088/1748-3190/10/5/056001.
22. In vivo generation of an artificial, functional skeletal muscle. Fuoco C, **Rizzi R**, Biondo A, Longa E, Mascaro A, Shapira-Schweitzer K, Kossov O, Benedetti S, Salvatori MI, Santoleri S, Testa S, Bernardini S, Bottinelli R, Bearzi C, Cannata Sm, Seliktar D, Cossu G, Gargioli C. *EMBO MOLECULAR MEDICINE*. 2015. ISSN 1757-4676; doi: 10.15252/emmm.201404062.
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24. Human placenta-derived neurospheres are susceptible to transformation after extensive in vitro expansion. Amendola D, Nardella M, Guglielmi L, Cerquetti L, Carico E, **Rizzi R**, Bearzi C, D'agnano I, Stigliano A, Novelli G, Bucci B. *STEM CELL RESEARCH & THERAPY*. 2014. ISSN 1757-6512; doi: 10.1186/scrt444.
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28. Tissue engineering for skeletal muscle regeneration. **Rizzi R**, Bearzi C, Mauretti A, Bernardini S, Cannata S, Gargioli C. MUSCLE, LIGAMENTS AND TENDONS JOURNAL. 2012. ISSN 2240-4554; PMCID: PMC3666528; PMID:23738301.
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31. Altered SDF-1-mediated differentiation of bone marrow-derived endothelial progenitor cells in diabetes mellitus. De Falco E, Avitabile D, Totta P, Straino S, Spallotta F, Cencioni C, Torella AR, **Rizzi R**, Porcelli D, Zacheo A, Di Vito L, Pompilio G, Napolitano M, Melillo G, Capogrossi Mc, Pesce M. JOURNAL OF CELLULAR AND MOLECULAR MEDICINE. 2009. ISSN 1582-4934; doi: 10.1111/j.1582-4934.2009.00655.x.
32. Spontaneous calcium oscillations regulate human cardiac progenitor cell growth. Ferreira-Martins J, Rondon-Clavo C, Tugal D, Korn JA, **Rizzi R**, Padin-Iruegas ME, Ottolenghi S, De Angelis A, Urbanek K, Ide-Iwata N, D'amario D, Hosoda T, Leri A, Kajstura J, Anversa P, Rota M. CIRCULATION RESEARCH. 2009. ISSN 0009-7330; doi: 10.1161/CIRCRESAHA.109.206698.
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34. The VGF-derived peptide TLQP-21: a new modulatory peptide for inflammatory pain. **Rizzi R**, Bartolomucci A, Moles A, D'amato F, Sacerdote P, Levi A, La Corte G, Ciotti Mt, Possenti R, Pavone F. NEUROSCIENCE LETTERS. 2008. ISSN 0304-3940; doi: 10.1016/j.neulet.2008.06.018.
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38. Psychosocial stress affects energy balance in mice: modulation by social status. Moles A, Bartolomucci A, Garbugino L, Conti R, Caprioli A, Coccorello R, **Rizzi R**, Ciani B, D'amato FR. *PSYCHONEUROENDOCRINOLOGY*. 2006. ISSN 0306-4530; doi: 10.1016/j.psyneuen.2006.01.004.
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40. Postnatal Stress in mice: Does stressing the mother have the same effect as stressing in pups? Moles A, **Rizzi R**, D'amato FR. *DEVELOPMENTAL PSYCHOBIOLOGY*. 2004. ISSN 1098-2302; doi: <https://doi.org/10.1002/dev.20008>.
41. The number of male pups within the litter of NMRI mice is associated with the dam's food preferences late in pregnancy. Moles A, **Rizzi R**, D'amato FR. *PSYCHONEUROENDOCRINOLOGY*. 2003. ISSN 0306-4530; doi: 10.1016/s0306-4530(02)00018-5.
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BOOK CHAPTER

1. Modelli sperimentali avanzati per lo studio delle patologie psichiatriche. Bearzi C, Parisi C, **Rizzi R***. ISBN 978-88-5532-068-9. 2021. Torino: Edizioni Minerva Medica; 2021.
2. The Heart-Brain Connection in Patients with Duchenne Muscular Dystrophy. Bearzi C, **Rizzi R***. ISBN 978-3-030-28007-9. 2019. In: Govoni S, Politi P, Vanoli E. (eds) Brain and Heart Dynamics. Springer, Cham. DOI: https://doi.org/10.1007/978-3-319-90305-7_64-1.

Research Activities

Keywords	Brief Description
Regenerative Medicine	Projects regarding regenerative medicine concern the re-generation of large portions of myocardium and skeletal muscles, through different approaches that can be combined or used individually. Initially, the projects could be traced back to cell therapy approaches (Cardiac Precursor Cells, and induced Pluripotent Stem Cells), but today we are trying to use only the good part of the cells as infusions of extracellular vesicles of cardiovascular origin. Furthermore, we are generating large portions of myocardium thanks to 3D bioprinting technology, that we will apply on the cardiac wall to tackle the harmful effects of acute myocardial infarction. Finally, we have developed innovative approaches to reconstruct large portions of skeletal muscle (complete tibialis muscle) using autologous pericytes.
3D Bioprinting	The projects stand out in the context of the development of advanced technologies such as custom manufacture of two hand-made 3D bio-inks extrusion Bioprinters for biomedical applications (Cecilia 2.0 and Scilla). The first machine uses a concentric extruder needle capable of 4 bio-inks independent or simultaneous printing, while the second is developed with core/shell technology, where the printed fiber with a diameter of 100µm, is made up of two different concentric bio-inks. The skills acquired on cellular reprogramming, integrated with these technologies and the development of innovative biohydrogels derived from the decellularized extracellular matrix, have allowed considerable progresses in the field of physiological modeling.
Biofabrication	Biofabrication projects allow to recapitulate in vitro, highly complex and functional physiological systems, such as the patient-specific Tumor Microenvironment, in which matched T lymphocytes are drained, to study immune-escaping mechanisms in breast cancer. Other projects consist in three-dimensional construction of functional pancreas-muscle axis and the neuro-cardiac junction in the context of dystrophic cardiomyopathy. Finally, A complete coronary artery integrated into cardiac tissue was created in the context of a project that plans to study the effects of Sars-Cov-2 infection in the myocardium.

Duchenne	In 2017 we were funded by the Parent Project Foundation and Italfarmaco to characterize the role of the histone deacetylase Givinostat and the angiotensin converting enzyme in cardiac remodeling of the dystrophic mice. To date, we have identified the molecular mechanism at the myocardial level, that prevents the correct sympathetic innervation in Duchenne Muscular Dystrophy. Perturbing this mechanism, we were able to restore cardiac performance. In the same context we are generating a bio-ink derived from decellularized cardiac matrix of DMD pigs to recreate in vitro, a dystrophic microenvironment for the pathological modeling of cellular cocultures.
Organoids	A new design context envisages the generation of hetero cellular organoids (Organoids 2.0) in which all the populations that make up the organ are inserted. We have already developed breast cancer and colon rectal cancer organoids, with the integration of CAF, TAM and endothelial cells, for the remodeling of the tumor microenvironment. We have also developed hetero-cellular organoids also to represent mini-brains for the study of resistance to serotonergic therapies in depressed patients. Finally, we generated beating cardiac organoids integrating cardiac fibroblasts and endothelial cells.

Luogo e data: Roma, 15-09-21

Firma ...

