

**Professor Mauro Giacca**  
**Brief Curriculum Vitae**

**Current position.** Full Professor of Molecular Biology (BIO/11) at the Department of Medical Sciences of the University of Trieste, Italy. Professor of Cardiovascular Sciences, King's College London, School of Cardiovascular Medicine & Sciences, London, United Kingdom. Email: mgiacca@units.it - ORCID ID: 0000-0003-2927-7225



**Personal data.** Born

**Education.** 1984, Degree in Medicine; Faculty of Medicine, University of Trieste, Italy. 1985, Professional License; registered to the Medical Doctors and Surgeons Board, Italy. 1989, Ph.D. in Microbiology and Virology; University of Genoa, Italy.

**Past Positions.** 2014-2019, Director-General, International Centre for Genetic Engineering and Biotechnology (ICGEB), Trieste, Italy (ICGEB is an International Organisation for research and training in the United Nations common system). 2004-14, Director, Italian Component of ICGEB, Trieste Italy. 2000-04, Founder and Director, Molecular Biology Laboratory of the Scuola Normale Superiore, in Pisa, Italy. 1990-1994, Staff Scientist, ICGEB Trieste. 1995-2019, Group Leader, Molecular Medicine Laboratory, ICGEB Trieste, Italy.

**Commissions of Trust (selected).** 2020-, Scientific Advisory Board, Centro Nacional de Investigaciones Cardiovasculares Carlos III (CNIC), Madrid, Spain. 2019-, Scientific Advisory Board, Scuola Normale Superiore, Pisa, Italy. 2018-, President Elect of the International Society for Heart Research (ISHR), European Section (ES). 2016-, elected member of the Council of the ISHR-ES. 2015-, member of the International Governing Board of the International Centre for Biotechnology at the University of Nigeria Nsukka (UNN) of UNESCO. 2014-, elected member of the Nucleus of the Working Group on Myocardial Function of the European Society of Cardiology (ESC). 2013-19, member of the Ethics Committee of the Regione Friuli Venezia Giulia, Italy. 2012-16, Expert Member in the National Committee for Biotechnology, Biosafety and Life Sciences (CNBBSV), an advisory body to the President of the Council of Ministries of the Republic of Italy. 2005-10, member of the Scientific Council of the National Center for Genetic Engineering and Biotechnology (BIOTEC) of Bangkok, Thailand. 2001-05, member of the Executive Committee of NEST (National Enterprise for NanoScience and NanoTechnology) at the Scuola Normale Superiore in Pisa, Italy. 1998-13, member of the Ethics Committee of the University Hospital, Trieste, Italy. 1995-97, member of the Scientific Board of the Italian Society of Molecular Biology and Biophysics (SIBBM).

**Managerial responsibilities.** 2014-19, Director-General of the ICGEB, with top managerial responsibilities over all the activities of the Centre, including those in its seats in New Delhi, India) and Cape Town, South Africa), including over 700 personnel and a total of 50 research groups. He promoted the establishment of new seats for the ICGEB in China and Panama. He responded to a Board of Government representatives from over 65 Countries. 2004-2014, Director of the ICGEB Italian Component, Trieste, Italy; responsibility on more than 200 people representing over 25 nationalities in 18 research groups. He reported to a Council of Scientific Advisors, including various Nobel Laureates.

**Teaching and mentoring activity.** Since 2019, Professor of Cardiovascular Sciences, King's College London, London, UK. Since 2005, Full Professor of Molecular Biology at the Department of Medical Sciences of the University of Trieste, Italy. 2000-2005, Associate Professor of Molecular Biology at the Scuola Normale Superiore in Pisa, Italy. Member of the PhD School Faculties of several Italian Universities. In his career, he has supervised the activity of over 100 PhD students and post-docs of various nationalities. Several of his former collaborators hold positions of responsibility in various research institutions at the international level. He has served as external examiner of PhD students from Universities in Italy, Portugal, Switzerland, France, Sweden and the United Kingdom.

**Honours and awards.** 2020, The Janice Pfeffer Distinguished Lecture Award of the International Society for Heart Research (ISHR). 2018, Robert Reneman Lecture Prize 2018. CARIM 2018. Maastricht, The Netherlands. 2011, San Giusto d'Oro Prize from the City of Trieste. The most important award given by the Municipality of Trieste, Italy to a citizen with outstanding international recognition. 2007, Lenghi-Magrassi International prize for outstanding research in virology, Accademia Nazionale dei Lincei, Italy. 1993, TOYP (To-the-Outstanding Young Person) Prize for scientific Research, Junior Chamber Italy.

**Editorial Boards.** Circulation Research (2019-, Guest Editor), Cardiovascular Research (2017-, Associate Editor), Molecular Therapy (2013), Transcription (2009-15), Retrovirology (2009-18), BCM Infectious Diseases (2008-, Editorial Advisor), Journal of Molecular Medicine (2007-10), Genome Letters (2006-13).

**Review activity.** Reviewer for over 30 peer-reviewed international journals in the fields of gene therapy, stem cell research, cardiovascular disorders and HIV infection. These include Nature, Nature Medicine, Nature Biotechnology, Science, Science Translational Medicine, The Lancet, Cell Host Microbe, PNAS, Molecular Therapy, the EMBO Journal, Circulation Research and others. Member of the evaluation committees of various granting programs, including calls from the European Commission (ERC and Horizon 2020) and numerous funding agencies in Italy (MIUR, CNR and MS), France (AFM, ANR, AXA, FRM), Spain, Greece, Israel, UK (MRC and AICR), Switzerland and others. Member of Site Visit Panels for various research centres and PIs across Europe.

**Scientific interests.** His current research interests focus on the development of novel biotherapeutics for cardiovascular disorders. He aims at identifying cytokines and microRNAs that stimulate cardiac repair and regeneration in patients with myocardial infarction and heart failure. He has an experience of over 30 years in the development of viral vectors for gene therapy (in particular, AAV) and in HIV molecular biology.

**Publications, seminars and meetings.** He has published over 360 papers in peer-reviewed international journals (Citations: >17,000; H index: 71; Scopus) and over 20 reviews or chapters in published books and university text books. The journals in which his articles have been published include Nature, Science, Cell, Nature Med, Nature Struct and Mol Biol, Circulation, Circ Res, Mol Cell, Cell Host Microbe, PLoS Path, EMBO J, J Clin Invest, PNAS, and others. He presents his research activity at meetings and seminars worldwide. He regularly contributes articles to national newspapers and popular science magazines.

**Grants.** He has obtained grants for his research activity from various public and private bodies, including the European Commission, World Antidoping Agency (WADA), Montreal, Canada, Ataxia UK Charity, UK, Italian Ministry for Education and Research, Consiglio Nazionale delle Ricerche (CNR), Italy, Telethon foundation Italy, Istituto Superiore di Sanita' Italy, and others. He has been the European Coordinator of a Leducq Foundation Transatlantic Network of Excellence grant and is currently a Leducq grantee in another consortium. He has been the recipient of two consecutive Advanced Grants from the European Research Council (ERC) and is funded by the British Heart Foundation through a Programme Grant. He currently manages over £4M grants from public bodies and charities.

**Public engagement.** Over the last several years, he has been active in the dissemination of science for the lay public. He is the creator of "*Science & The City*", a series of public events in Trieste, Italy in which top scientist present their activity and discuss with the lay public on topics of current relevance. Since 2011, he holds a weekly column "*Al microscopio*" (*Under the microscope*) in the Italian newspaper "*Il Piccolo*", where he discusses scientific topics for the general public. Since 2013, he is a registered member of the National Board of Journalist of Italy (N. 152255).

### Selected publications (of >360 total)

- Cannata, A., Ali, H., Sinagra, G., Giacca, M. 2020. *Gene Therapy for the Heart Lessons Learned and Future Perspectives*. **Circ Res** 126, 1394-1414.
- Braga, L., Ali, H., Secco, I., Giacca, M. 2020. *Non-coding RNA therapeutics for cardiac regeneration*. **Cardiovasc Res**, pii: cvaa071. doi: 10.1093/cvr/cvaa071.
- Torrini, C., Cubero, R.J., Dirkx, E., Braga, L., Ali, H., Prosdocimo, G., Gutierrez, M.I., Collesi, C., Licastro, D., Zentilin, L., Mano, M., Zacchigna, S., Vendruscolo, M., Marsili, M., Samal, A., Giacca, M. 2019. *Common Regulatory Pathways Mediate Activity of MicroRNAs Inducing Cardiomyocyte Proliferation*. **Cell Rep** 27, 2759-2771 e5.
- Gabisonia, K., Prosdocimo, G., Aquaro, G.D., Carlucci, L., Zentilin, L., Secco, I., Ali, H., Braga, L., Gorgodze, N., Bernini, F., Burchielli, S., Collesi, C., Zandona, L., Sinagra, G., Piacenti, M., Zacchigna, S., Bussani, R., Recchia, F.A., Giacca, M. 2019. *MicroRNA therapy stimulates uncontrolled cardiac repair after myocardial infarction in pigs*. **Nature** 569, 418-422.
- Ali, H., Mano, M., Braga, L., Naseem, A., Marini, B., Vu, D.M., Collesi, C., Meroni, G., Lusic, M., Giacca, M. 2019. *Cellular TRIM33 restrains HIV-1 infection by targeting viral integrase for proteasomal degradation*. **Nat Commun** 10, 926.
- Zacchigna, S., Martinelli, V., Moimas, S., Colliva, A., Anzini, M., Nordio, A., Costa, A., Rehman, M., Vodret, S., Pierro, C., Colussi, G., Zentilin, L., Gutierrez, M.I., Dirkx, E., Long, C., Sinagra, G., Klatzmann, D., Giacca, M. 2018. *Paracrine effect of regulatory T cells promotes cardiomyocyte proliferation during pregnancy and after myocardial infarction*. **Nat Commun** 9, 2432.
- Collesi, C., Felician, G., Secco, I., Gutierrez, M.I., Martelletti, E., Ali, H., Zentilin, L., Myers, M.P., Giacca, M. 2018. *Reversible Notch1 acetylation tunes proliferative signalling in cardiomyocytes*. **Cardiovasc Res** 114, 103-122.
- Lesizza, P., Prosdocimo, G., Martinelli, V., Sinagra, G., Zacchigna, S., Giacca, M. 2017. *Single-Dose Intracardiac Injection of Pro-Regenerative MicroRNAs Improves Cardiac Function After Myocardial Infarction*. **Circ Res** 120, 1298-1304.
- Bortolotti, F., Ruozi, G., Falcione, A., Doimo, S., Dal Ferro, M., Lesizza, P., Zentilin, L., Banks, L., Zacchigna, S., Giacca, M. 2017. *In Vivo Functional Selection Identifies Cardiotrophin-1 as a Cardiac Engraftment Factor for Mesenchymal Stromal Cells*. **Circulation** 136, 1509-1524.
- Agostini, S., Ali, H., Vardabasso, C., Fittipaldi, A., Tasciotti, E., Cereseto, A., Bugatti, A., Rusnati, M., Lusic, M., Giacca, M. 2017. *Inhibition of Non Canonical HIV-1 Tat Secretion Through the Cellular Na<sup>+</sup>,K<sup>+</sup>-ATPase Blocks HIV-1 Infection*. **EBioMedicine** 21, 170-181.
- Giacca, M. 2016. *HIV Latency TORn Down*. **Cell Host Microbe** 20, 700-702.
- Ruozi, G., Bortolotti, F., Falcione, A., Dal Ferro, M., Ukovich, L., Macedo, A., Zentilin, L., Filigheddu, N., Gortan Cappellari, G., Baldini, G., Zweyer, M., Barazzoni, R., Graziani, A., Zacchigna, S., Giacca, M. 2015. *AAV-mediated in vivo functional selection of tissue-protective factors against ischaemia*. **Nat Commun** 6, 7388.
- Marini, B., Kertesz-Farkas, A., Ali, H., Lucic, B., Lisek, K., Manganaro, L., Pongor, S., Luzzati, R., Recchia, A., Mavilio, F., Giacca\*, M., Lusic\*, M. 2015. *Nuclear architecture dictates HIV-1 integration site selection*. **Nature** 521, 227-31; \* last co-authorship.
- Mano, M., Ippodrino, R., Zentilin, L., Zacchigna, S., Giacca, M. 2015. *Genome-wide RNAi screening identifies host restriction factors critical for in vivo AAV transduction*. **Proc Natl Acad Sci USA** 112, 11276-81.
- Zacchigna, S., Zentilin, L., Giacca, M. 2014. *Adeno-associated virus vectors as therapeutic and investigational tools in the cardiovascular system*. **Circ Res** 114, 1827-46.
- Zacchigna, S., Giacca, M. 2014. *Extra- and intracellular factors regulating cardiomyocyte proliferation in postnatal life*. **Cardiovasc Res** 102, 312-20.
- Puente, B.N., Kimura, W., Muralidhar, S.A., Moon, J., Amatruda, J.F., Phelps, K.L., Grinsfelder, D., Rothermel, B.A., Chen, R., Garcia, J.A., Santos, C.X., Thet, S., Mori, E., Kinter, M.T., Rindler, P.M., Zacchigna, S., Mukherjee, S., Chen, D.J., Mahmoud, A.I., Giacca, M., Rabinovitch, P.S., Aroumougame, A., Shah, A.M., Szveda, L.I., Sadek, H.A. 2014. *The Oxygen-Rich Postnatal Environment Induces Cardiomyocyte Cell-Cycle Arrest through DNA Damage Response*. **Cell** 157, 565-79.
- Lusic, M., Giacca, M. 2014. *Ground Control to Major Tom: "Prepare for HIV Landing"*. **Cell Host Microbe** 16, 557-559.

- Felician, G., Collesi, C., Lusic, M., Martinelli, V., Ferro, M.D., Zentilin, L., Zacchigna, S., Giacca, M. 2014. *Epigenetic modification at Notch responsive promoters blunts efficacy of inducing Notch pathway reactivation after myocardial infarction*. **Circ Res** 115, 636-49.
- Aguirre, A., Montserrat, N., Zacchigna, S., Nivet, E., Hishida, T., Krause, M.N., Kurian, L., Ocampo, A., Vazquez-Ferrer, E., Rodriguez-Esteban, C., Kumar, S., Moresco, J.J., Yates, J.R., 3rd, Campistol, J.M., Sancho-Martinez, I., Giacca, M., Izpisua Belmonte, J.C. 2014. *In vivo activation of a conserved microRNA program induces mammalian heart regeneration*. **Cell Stem Cell** 15, 589-604.
- Lusic, M., Marini, B., Ali, H., Lucic, B., Luzzati, R., Giacca, M. 2013. *Proximity to PML Nuclear Bodies Regulates HIV-1 Latency in CD4+ T Cells*. **Cell Host Microbe** 13, 665-77.
- Eulalio, A., Mano, M., Dal Ferro, M., Zentilin, L., Sinagra, G., Zacchigna, S., Giacca, M. 2012. *Functional screening identifies miRNAs inducing cardiac regeneration*. **Nature** 492, 376-81.
- Allouch, A., Di Primio, C., Alpi, E., Lusic, M., Arosio, D., Giacca, M., Cereseto, A. 2011. *The TRIM Family Protein KAP1 Inhibits HIV-1 Integration*. **Cell Host Microbe** 9, 484-95.
- Pepe, M., Mamdani, M., Zentilin, L., Csiszar, A., Qanud, K., Zacchigna, S., Ungvari, Z., Puligadda, U., Moimas, S., Xu, X., Edwards, J.G., Hintze, T.H., Giacca, M., Recchia, F.A. 2010. *Intramyocardial VEGF-B167 gene delivery delays the progression towards congestive failure in dogs with pacing-induced dilated cardiomyopathy*. **Circ Res** 106, 1893-903.
- Manganaro, L., Lusic, M., Gutierrez, M.I., Cereseto, A., Del Sal, G., Giacca, M. 2010. *Concerted action of cellular JNK and Pin1 restricts HIV-1 genome integration to activated CD4+ T lymphocytes*. **Nature Med** 16, 329-33.
- Paolinelli, R., Mendoza-Maldonado, R., Cereseto, A., Giacca, M. 2009. *Acetylation by GCN5 regulates CDC6 phosphorylation in the S phase of the cell cycle*. **Nature Struct Mol Biol** 16, 412-20.
- Zacchigna, S., Patarini, L., Zentilin, L., Moimas, S., Carrer, A., Sinigaglia, M., Arsic, N., Tafuro, S., Sinagra, G., Giacca, M. 2008. *Bone marrow cells recruited through the neuropilin-1 receptor promote arterial formation at the sites of adult neoangiogenesis in mice*. **J Clin Invest** 118, 2062-75.
- Collesi, C., Zentilin, L., Sinagra, G., Giacca, M. 2008. *Notch1 signaling stimulates proliferation of immature cardiomyocytes*. **J Cell Biol** 183, 117-28.
- Zentilin, L., Giacca, M. 2007. *Competitive PCR for precise nucleic acid quantification*. **Nature Protoc** 2, 2092-104.
- Fischer, C., Jonckx, B., Mazzone, M., Zacchigna, S., Loges, S., Patarini, L., Chorianopoulos, E., Liesenborghs, L., Koch, M., De Mol, M., Autiero, M., Wyns, S., Plaisance, S., Moons, L., van Rooijen, N., Giacca, M., Stassen, J.M., Dewerchin, M., Collen, D., Carmeliet, P. 2007. *Anti-PlGF Inhibits Growth of VEGF(R)-Inhibitor-Resistant Tumors without Affecting Healthy Vessels*. **Cell** 131, 463-75.
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- Marcello, A., Ferrari, A., Pellegrini, V., Pegoraro, G., Lusic, M., Beltram, F., Giacca, M. 2003. *Recruitment of human cyclin T1 to nuclear bodies through direct interaction with the PML protein*. **EMBO J.** 22, 2156-2166.
- Abdurashidova, G., Deganuto, M., Klima, R., Riva, S., Biamonti, G., Giacca, M., Falaschi, A. 2000. *Start sites of bidirectional DNA synthesis at the human lamin B2 origin*. **Science** 287, 2023-2026.
- Marzio, G., Tyagi, M., Gutierrez, M.I., Giacca, M. 1998. *HIV-1 Tat transactivator recruits p300 and CBP histone acetyl transferases to the viral promoter*. **Proc. Natl. Acad. Sci. USA** 95, 13519-13524.
- Giacca, M., Zentilin, L., Norio, P., Diviacco, S., Dimitrova, D., Contreas, G., Biamonti, G., Perini, G., Weighardt, F., Riva, S., Falaschi, A. 1994. *Fine mapping of a replication origin of human DNA*. **Proc. Natl. Acad. Sci. USA** 91, 7119-7123.

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