Eduardo Marbán, M.D., Ph.D.

CURRICULUM VITAE
(As of 06/20/2020)

Personal Data and Contact Information:

Executive Director, Smidt Heart Institute
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U.S. Citizenship

Education:

1974	Wilkes College, B.S., mathematics, summa cum laude
1980	Yale University, M.D.
1981	Yale University, Ph.D., physiology
1976-1980	Ph.D. student in physiology, Yale University. Dr. R.W. Tsien, advisor.
1980-1981	Postdoctoral fellow, Department of Physiology, Yale University School of Medicine. Laboratory of R.W. Tsien.
1981-1984	Intern and resident, Osler Medical Service, The Johns Hopkins Hospital, Dr. Victor A. McKusick, Chairman.
1984-1985	Fellow in Cardiology, The Johns Hopkins Hospital, Dr. Myron L. Weisfeldt, Chief of Cardiology.

Licensure:
1982 - Diplomate, National Board of Medical Examiners (201384)
1983 - Licensee, Maryland State Board of Medical Examiners (D28890)
2007 - Licensee, Medical Board of California (G88145)

Board Certification:
1984 - Board certified, American Board of Internal Medicine (97243)
1987 - Board certified, Cardiovascular Subspecialty (97243)

Professional Experience:

Present institution:

2007 - 2019	Director, Heart Institute, Cedars-Sinai Medical Center (renamed Smidt Heart Institute in 2018)
2007 -	Professor in Residence, Departments of Medicine and Physiology, University of California, Los Angeles
2007 -	Adjunct Professor of Medicine, Johns Hopkins University
2008 -	Professor, Cedars-Sinai Medical Center Professoriate Series and Professor in Residence of Medicine and Physiology, UCLA School of Medicine
2009 -	Mark S. Siegel Family Foundation Distinguished Chair
2019 -	Executive Director, Smidt Heart Institute

Previous:

1985-1988	Assistant Professor, Department of Medicine, Johns Hopkins University
1988-1991	Associate Professor, Johns Hopkins University
1991-	Professor (tenured) of Medicine, Physiology and Biomedical Engineering, Johns Hopkins University
1991-1992	Special Volunteer, National Institutes of Health. Sabbatical leave in the laboratory of Dr. Marshall Nirenberg
1992-1998	Robert L. Levy Professor of Cardiology, Johns Hopkins University
1998-2007	Michel Mirowski, M.D. Professor of Cardiology, Johns Hopkins University
1998-2007	Founder and Director, Institute of Molecular Cardiobiology, Johns Hopkins University
2000-2003	Vice Chairman for Research, Department of Medicine, Johns Hopkins University
2003-2007	Director, Donald W. Reynolds Center for Cardiovascular Clinical Research, Johns Hopkins University
2003-2007	Chief of Cardiology, Johns Hopkins University

Professional Activities:
Societies:

1980-2014	Biophysical Society
1993-2000	Program Committee
1985-	Cardiac Electrophysiology Society
1986-	American Association for the Advancement of Science
1987-	International Society for Heart Research
1988-1997	Councilor, North American Section
2001-2007	Councilor, international
1987-	Basic Science Council, American Heart Association
1989-1991	Executive Committee
1991-1999	Program Committee (1996-1999: Chairman)
1999-	Basic Cardiovascular Sciences Council, American Heart Association
1999-2001	Vice Chairman
2001-2003	Chairman
1987-	Japanese Circulation Society
1989-	Society of Latin American Biophysicists
1991-	Fellow, American College of Cardiology
1992-1994	Scientific Board, The Stanley J. Sarnoff Endowment for Cardiovascular Science
1992-	Society of General Physiologists
1994-	Cardiac Muscle Society
1996-1999	Secretary/Treasurer
1999-2003	President
1994-2003	Society for Neuroscience
1994-	The Physiological Society (London)
1995-2004	Scientific Advisory Board, CARE Foundation
1996-	Heart Rhythm Society
1998-2001	Committee for the Promotion of Basic Science
2006-	Fellow, Cardiovascular Section
2000-	American Physiological Society
2006-	Fellow

Institutional Service:

2007-	Cedars-Sinai Medical Center, Medical Leadership Group
2007-	Cedars-Sinai Medical Center, Executive Management Committee
2008-	Search Committees for Cedars-Sinai Medical Center: Director, Regenerative Medicine Institute; Director, Biomedical Research Imaging Institute; Chairman, Department of Medicine; Vice President for Research Administration; Chair, Department of Cardiac Surgery

Peer-review activities:

1989-1992	Cardiovascular Study Section, National Institutes of Health (1991 - 1992: Chairman)
1994-	Ad hoc reviewer, Swiss National Academy of Sciences, Alberta Heritage Foundation, Medical Research Council of Canada, Welcome Trust, New York Academy of Sciences, Netherlands Heart Foundation, VA Merit Review Board, Austrian Science Foundation, NIH
1996-2000	Program Project Review Committee, National Heart, Lung and Blood Institute
1998-1999	Data and Safety Monitoring Board, NHLBI Intramural Program
2005-2009	Board of Scientific Counselors for the Intramural Research Program, NHLBI

Editorial boards and other editorial duties:

1989-1993	Consulting Editor, **Hypertension**
	Circulation Research
1989-1998	Editorial Board
1998-1999	Associate Editor
1999-2009	Editor in Chief
2009-	Editor Emeritus
1991-1996	Editorial Committee, **Journal of Clinical Investigation**
1992-1996	**Journal of Cardiovascular Electrophysiology**
	Circulation
1993-1996	Editorial Board
1999-	Consulting Editor/Guest Editor

1993-1998	**American Journal of Physiology (Heart and Circulatory Physiology)**
1995	**Basic Research in Cardiology**
1996-	International Advisory Board, **Japanese Circulation Journal**
1996-1999	Cardiovascular Section Editor, **Annual Reviews of Physiology**
1998-	Consulting Editor, **Journal of Molecular and Cellular Cardiology**
2009-	Editorial Board, Founding Member, **Medical Innovation & Business**
	European Heart Journal
2011-2012	Associate Editor
2013-	Editorial Board
1983-	Invited referee for **Circulation, Circulation Research, Journal of Molecular and Cellular Cardiology, American Journal of Physiology, Journal of Clinical Investigation, Pharmacological Reviews, Journal of General Physiology, International Journal of Cardiology, Pediatric Research, Biophysical Journal, FASEB Journal, Trends in Cardiovascular Medicine, Journal of Membrane Biology, New England Journal of Medicine, Pflügers Archiv, Journal of Pharmacology and Experimental Therapeutics, Journal of Physiology, Proceedings of the National Academy of Sciences, Cardiovascular Research, Journal of Cardiovascular Electrophysiology, Science, Journal of Applied Physiology, Basic Research in Cardiology, Journal of Biological Chemistry, Molecular Pharmacology, Nature Medicine, Nature Genetics, Nature, Nature Biotechnology, Circulation Journal, Journal of the American College of Cardiology, Science Translational Medicine, Nature Communications, Nature Biomedical Engineering**

Industrial and corporate relationships:

1995-1998	Cardiac Research Advisory Panel, Procter and Gamble Pharmaceuticals
1997-2001	Consultant, Physiome Sciences, Inc.
1998-2001	Consultant, Otsuka Pharmaceutical Co., Inc.
2001-2002	Consultant and Founder, Paralex, Inc. (acquired by Cardiome Pharma, 2002)
2003-2012	Founder, Excigen Inc.
2005-	Founder and Scientific Advisory Board Chairman (unpaid), Capricor, Inc.

Honors and Special Awards:

1973	Sigma Xi Scientific Research Honor Society
1974-1980	Medical Scientist Training Program, Yale University
1982	Distinguished Young Alumnus Award, Wilkes College
1986-1991	Research Career Development Award, N.I.H.
1990-	American Society for Clinical Investigation
1991-2007	Interurban Clinical Club
1992-	Association of University Cardiologists
1996-2005	MERIT Award, National Heart, Lung and Blood Institute
1998-	Association of American Physicians
1999	Louis and Artur Lucian Award for Research in Cardiovascular Diseases
2000	Basic Research Prize, American Heart Association
2001	Research Achievement Award, International Society for Heart Research
2001-	Fellow of the American Heart Association
2001-	Fellow of the International Society for Heart Research
2002-	Popular Science's "Best of What's New for 2002" Award (Biological Pacemaker, *Popular Science* 261:74, 2002)
2004-	Distinguished Scientist of the American Heart Association
2004	Distinguished Service Award, Basic Cardiovascular Sciences Council, American Heart Association
2005	Fellow of the American Physiological Society
2005	Fellow, Heart Rhythm Society
2006	Award for Outstanding Contributions to Cardiovascular Research, Gill Heart Institute
2007	Hatter Award, Hatter Institute, University of Cape Town, South Africa

2009	Canadian Institute of Health Research Distinguished Lectureship Prize
2011	Douglas P. Zipes Keynote Lectureship Award, Heart Rhythm Society
2012	14th Annual Jay N. Cohn, M.D. Lectureship Award, University of Minnesota
2014	Distinguished Scientist Award, American College of Cardiology
2017	Johns Hopkins Society of Scholars
2017	Cedars-Sinai Medical Center Pioneer in Medicine Award

Research Grants and Fellowships Received:

Active

2017 – 2021	Principal Investigator, NIH 1R01HL133835-01, "Cardioprotective Mechanisms of Cell Therapy for Myocardial Infarction"
2017 – 2020	Co-Principal Investigator, CIRM CLIN2-09444, "Pulmonary Arterial Hypertension Treated with Cardiosphere-Derived Allogeneic Stem Cells"
2016 – 2021	Multi-Principal Investigator, NIH R01HL135866, "Biological Pacemaker: From Proof-of-Concept to Clinic"
2016 – 2020	Principal Investigator, DoD PR150620, "Heart Failure with Preserved Ejection Fraction: Mechanism and Novel Therapeutics"
2014 – 2022	Principal Investigator, NIH 1R01HL124074-01, "Exosome-Based Therapeutics for Heart Failure"
2013 – 2023	Principal Investigator/Mentor, NIH/NHLBI Institutional Research Training Grants T32, "Training in Advanced Heart Disease Research"
2017 – 2021	Multi-Principal Investigator, NIH 1 R01HL133407-01, "Developing a MRI-guided Disease-Modifying Therapy for Post Infarction Chronic Heart Failure"

Also, sponsor on various active fellowships and career development awards not itemized here.

Patents (issued only, others pending):

1. US20190000888A1, issued 01/03/19, "Cardiosphere-derived cells and exosomes secreted by such cells in the treatment of heart failure with preserved ejection fraction"

2. US20190255119A1, issued 08/22/19, “Cardiosphere-derived cells and their extracellular vesicles to retard or reverse aging and age-related disorders”

3. US20190160111A1, issued 05/30/19, “CDC-derived exosomes for treatment of ventricular tachyarrythmias”

4. US10457942B2, published 10/29/2019, “Exosomes and micro-ribonucleic acids for tissue regeneration”

5. US9845457B2, published 12/19/17, “Maintenance of genomic stability in cultured stem cells”

6. 9763999, issued 09/19/2017, “Transcription factor-based generation of pacemaker cells and methods of using same”

7. WO2016196822A1, published 12/08/2016, “Urodele exosomes as therapeutic agents”

8. US9480719B2, published 11/01/2016, “Modulation of bio-electrical rhythms via a novel engineering approach”

9. 13/096,931, issued 02/02/2016, “Methods and compositions for maintaining genomic stability in cultured stem cells”

10. 8617877, issued 12/31/2013, “Cardiac stem cell and myocyte secreted paracrine factors”

11. 12/680,152, issued 12/24/2013, “Combined multi-detector CT angiography and CT myocardial perfusion imaging for the diagnosis of coronary artery disease”

12. 10/678,723, issued 08/23/2011, “Focal calcium channel modulation”

13. WO2006052925A3, published 05/15/2009, “Cardiac stem cells”

14. WO2008058273A3, published 11/27/2008, “Dedifferentiation of adult mammalian cardiomyocytes into cardiac stem cells”

15. 09/187,669, issued 05/02/2006, “Somatic transfer of modified genes to predict drug effects”

16. 09/947,953, issued 04/25/2006, “Cardiac arrhythmia treatment methods”

17. 09/977,865, issued 01/31/2006, “Methods and compositions for nucleic acid delivery**”**

18. 09/977,558, issued 02/18/2003, “Treatment of apoptotic cell death”

19. 09/407,945, issued 04/10/2001, “Inducible genetic suppression of cellular excitability”

20. 09/684,730, issued 02/06/2001, “Methods to identify compounds affecting mitochondria”

Lectures and Presentations:

INVITED LECTURES (last six years only; others omitted for brevity)

04/24/15 ISEV, Washington, DC: "Therapeutic Regeneration of the 'Irreversibly' Injured Heart"

05/06/15 KUMC Cardiovascular Grand Rounds, Kansas City: "Therapeutic Regeneration of the 'Irreversibly' Injured Heart"

05/11/15 University of Toronto Heart & Stroke/Richard Lewar Centre of Excellence Distinguished Visiting Professor: "Therapeutic Regeneration of the 'Irreversibly' Injured Heart"

05/27/15 UPMC Heart & Vascular Institute Grand Rounds, Pittsburgh, PA: "Therapeutic Regeneration of the 'Irreversibly' Injured Heart"

05/27/15 Cleveland MetroHealth Louis Rakita Visiting Professor Lecture: "Therapeutic Regeneration of the 'Irreversibly' Injured Heart"

09/01/15 Cedars-Sinai Medical Center PI Seminar: "Biological Pacemakers as Alternatives to Electronic Devices"

11/14/15 American Heart Association Scientific Sessions, Chiacgo IL, invited platform talk: "Therapeutic Regeneration of the Human Heart"

04/05/16 Experimental Biology Meeting, San Diego, CA: "Exosomes and Their RNA Contents as Mediators of Therapeutic Regeneration"

04/11/16 Northwestern University Cardiovascular Research Day, Chicago, IL: "Therapeutic Regeneration of the 'Irreversibly' Injured Heart"

04/27/16 ISHLT 2016 Annual Meeting, Washington, DC: "Cell Therapy for the Failing Organ: Patch Up the Heart"

04/27/16 Beth Israel Deaconess Medical Center Cardiovascular Seminar, Boston, MA: "Therapeutic Regeneration of the 'Irreversibly' Injured Heart"

05/21/16 Keynote Speaker, Dongwu International Forum of Translational Medicine, Suzhou, China: "Therapeutic Regeneration of the 'Irreversibly' Injured Heart"

05/30/16 University of Ottawa Heart Institute Research Day, Ottawa, Canada: "Therapeutic Regeneration of the 'Irreversibly' Injured Heart"

05/31/16 Ottawa Hospital Research Institute, Ottawa, Canada: "Heart Failure with Preserved Ejection Fraction: New Insights from Cell Therapy"

07/18/16 Basic Cardiovascular Sciences 2016, Phoenix, AZ, "Exosomes as Therapeutic Agents for Heart Disease"

07/20/16 5th Lugano Stem Cell Meeting (SIRM), Lugano, Switzerland: "Exosomes as Therapeutic Agents"

07/21/16 5th Lugano Stem Cell Meeting (SIRM), Lugano, Switzerland: "Update on Clinical Trials of Allogenic CDCs: ALLSTAR, DYNAMIC and HOPE-Duchenne"

09/06/16 Cedars-Sinai Heart Institute Grand Rounds, Los Angeles, CA: "Heart Failure with Preserved Ejection Fraction: Light at the End of the Tunnel?"

09/14/16 The Medical College of South Carolina Cardioloy Grand Rounds, Charleston, SC: "Heart Failure with Preserved Ejection Fraction: Light at the End of the Tunnel?"

09/15/16 The Medical College of South Carolina Molecular and Cellular Biology Pathobiolgy Seminar Series, Charleston, SC: "Therapeutic Regeneration of the 'Irreversibly' Injured Mammalian Heart"

09/16/16 4th Annual Midwest Conference on Cell Therapy and Regenerative Medicine, Overland Park, KS: "Therapeutic Regeneration of the 'Irreversibly' Injured Mammalian Heart"

10/13/16 The State of the Science in the Field of Regenerative Medicine: Challenges of and Opportunities for Cellular Therapies, Washington, DC: "Exosomes as Next-Generation Therapeutic Candidates"

10/22/16 ASEMV 2016, Pacific Grove, CA: "Therapeutic Regeneration of the 'Irreversibly' Injured Heart"

11/14/16 American Heart Association Scientific Sessions, New Orleans, LA: "Therapeutic Regeneration of the 'Irreversibly' Injured Heart

11/17/16 Controversies and Advances in the Treatment of Cardiovascular Disease, Los Angeles: The Sixteenth in the Series – "Duchenne Muscular Dystrophy and the HOPE Trial"

12/05/16 LSU Cardiovascular Center of Excellence Seminar Series, New Orleans, LA: "Therapeutic Regeneration of the 'Irreversibly' Injured Heart"

03/08/17 University of Alabama, Birmingham, AL: "Therapeutic Regeneration of the 'Irreversibly' Injured Heart"

03/09/17 Keystone Symposium, Boston, MA: "Therapeutic Regeneration of the 'Irreversibly' Injured Heart"

04/21/17 University of Chicago Cardiology Grand Rounds & Arnsdorf Lecture, Chicago, IL: "Deconstructing Cell Therapy for Heart Disease"

05/02/17 University of Virginia Cardiology Grand Rounds, Richmond, VA: "Deconstructing Cell Therapy for Heart Disease"

05/03/17 University of Virginia Grollman Lecture, Richmond, VA: "Biological Therapies for Cardiac Arrhythmias: Do We Really Need Devices and Ablations?"

06/01/17 The Eli & Edythe Broad Center of Regenerative Medicine & Stem Cell Research at UCLA and the Jonsson Comprehensive Cancer Center (BSCRC-JCCC,), Los Angeles, CA: "Deconstructing Cell Therapy for Heart Disease"

06/15/17 The 14th International Symposium on Stem Cell Therapy & Cardiovascular Innovations, Madrid, Spain: "Clinical Trials of Allogeneic CDCs for HFrEF, HFpEF and Pulmonary Hypertension: DYNAMIC, Regress-HFpEF and ALPHA"

06/16/17 The 14th International Symposium on Stem Cell Therapy & Cardiovascular Innovations, Madrid, Spain: "Scientific Advance in Cardiovascular Regenerative Therapies. Obstacles and Opportunities in the American and Global Scenario"

09/15/17 UCSD Supizio Cardiovascular Medicine Grand Rounds, San Diego, CA: "Deconstructing Cell Therapy for Heart Disease"

09/21/17 UC Davis Precision Medicine and Muscular Dystrophy: Similarities and Synergies Between Human and Canine Models, Davis, CA: "Intraveneous Delivery of CAP-1002 Allogeneic Cardiosphere-Derived Cells"

11/14/17 American Heart Association Scientific Sessions, Anaheim, CA: "Deconstructing Cell Therapy"

02/02/18 Cedars-Sinai Department of Medicine Grand Rounds, Los Angeles, CA: "Deconstructing Cell Therapy for Heart Disease"

04/26/18 Washington University of St. Louis Department of Medicine Grand Rounds, St. Louis, MO: "Deconstructing Regenerative Medicine: From Cells to Cell-Free Exosomes and Defined Factors"

04/26/18 Washington University of St. Louis Department of Medicine Seminar, St. Louis, MO: "The Biological Pacemaker"

05/17/18 Hermann Rahn Memorial Lecture, Buffalo, NY: "Deconstructing Regenerative Medicine: From Cells to Cell-Free Exosomes and Defined Factors"

05/18/18 Hermann Rahn Memorial Seminar, Buffalo, NY: "The Biological Pacemaker"

09/04/18 Frontiers in Research SHRIS, Los Angeles, CA: "Healing the Heart with Cells, Exosomes or Noncoding RNA: Prospects for Translation to the Clinic"

10/04/18 Houston Methodist Grand Rounds, Houston, TX: "Deconstructing Regenerative Medicine: From Cells to Exosomes and Defined Factors"

10/15/18 Peking University, Peking, China: "Healing the Heart with Cells, Exosomes or Noncoding RNA: Prospects for Ttranslation to the Clinic"

10/18/18 APRHS, Beijing, China: "Biological Therapies for Cardiac Arrhythmias"

10/18/18 APHRS, Beijing, China: "Biological Pacemaker: Past, Present and Future"

10/18/18 APHRS, Beijing, China: "Regenerative Alternatives to VT Ablation"

11/06/18 AHA Board Meeting, Los Angeles, CA: "The Smidt Heart Institute: An 11 Year Progress Report"

11/16/18 Controversies & Advances in the Treatment of Cardiovascular Disease, Los Angeles, CA: "Cell Therapy for Heart Disease – What Have We Learned and Where Are We Headed?"

12/05/18 Inaugural UNLV Department of Internal Medicine Grand Rounds, Las Vegas, NV: "Deconstructing Regenerative Medicine: From Cells to Exosomes and Defined Factors"

02/18/19 2019 HFpEF Summit, New Orleans, LA: "Distinct Mechanisms of Cellular Calcium Handling in Heart Failure with Preserved versus Reduced Ejection Fraction"

02/20/19 Weill Cornell Medical College Grand Rounds, New York, NY: "Deconstructing Regenerative Medicine: From Cells to Exosomes and Defined Factors"

03/08/19 Working Groups of Electrophysiology & Arrhythmia, and Cardiac Pacing of the Spanish Society of Cardiology, Ritmo18, Barcelona, Spain: "Biological Therapies for Cardiac Arrhythmias"

05/09/19 16th International Symposium on Cardiovascular Regeneration and Repair, Madrid, Spain: "Cells and Cardiac Repair. Products and Lessons"

09/07/19 Bakersfield Multi-Specialty Symposium, Bakersfield, CA: "Regenerative Medicine: From Cells to Exosomes and Defined Factors"

10/01/19 ESC Working Group on Cardiovascular Regenerative and Reparative Medicine, online webinar: "Exosomes as Next Generation Therapeutics"

10/18/19 Michael Mirowski, M.D. Lecture in Cardiology, Johns Hopkins Hospital, Baltimore, MD: “Biological Therapies for Cardiac Arrhythmias”

11/13/19 George and Angelina Kostas Research Center for Cardiovascular Nanomedicine Annual International Meeting, Houston, TX: “

11/17/19 American Heart Association Scientific Sessions, Philadelphia, PA: “Myocyte Calcium Handling in HFpEF vs HFrEF”

11/18/19 American Heart Association Scientific Sessions, Philadelphia, PA: “Dose and Administration of Exosomes”

02/19/20 Keck School of Medicine of USC Department of Translational Genomics Translational Biotechnology Seminar, Los Angeles, CA: “Deconstructing Regenerative Medicine: From Cells to Exosomes to Defined Factors”

03/24/20 Smidt Heart Institute Grand Rounds, Cedars-Sinai Medical Center, Los Angeles, CA: “Covid and the Heart”

04/02/20 ISHR Cardiovascular Webinar Series: “Covid and the Heart”

04/20/20 ISHR Cardiovascular Webinar Series: “Covid and the Heart”

04/27/20 COE Webinar Series: “Covid and the Heart”

04/28/20 Yale University Cardiology Grand Rounds Webinar Series: “Covid and the Heart”

04/29/20 Preventive and Consultative Heart Center of Excellence, Smidt Heart Institute, Cedars-Sinai Medical Center: “Covid and the Heart”

05/08/20 Facebook Live: “Coronavirus y Tu Corazón”

05/14/20 International Society for Stem Cell Research COVID-19 Networking Meeting #2: “Covid and the Heart”

06/17/20 Preventive, Consultative Heart COE, Cedars-Sinai Medical Center: “Covid-19: Is Cardiac Involvement Overstated?”

Teaching Activities:

1979 Co-instructor, "Physiology of excitable tissues", Yale University School of Medicine

1995-2007 Seminar leader, lecturer, and clerkship instructor in various courses for the Cellular and Molecular Medicine graduate program, the School of Medicine (Physiology,

Medicine, Biomedical Engineering, and Neuroscience Departments), The Johns Hopkins University

2007- Lecturer, PhD program in Biomedical Sciences, Cedars-Sinai Medical Center

2007- Research mentor, numerous postdoctoral fellows and PhD students, Cedars-Sinai Medical Center

2007- Cedars-Sinai Medical Center, Graduate Program in Biomedical Science and Translational Medicine, Mentor and Steering & Oversight Committee, Member

RESEARCH PAPERS - Peer-Reviewed

1. Marbán, E., Rink, T.J., Tsien, R.W. and Tsien, R.Y. Free calcium in heart muscle at rest and during contraction measured with calcium-sensitive microelectrodes. **Nature 286**:845-850, 1980.

2. Marbán, E. Inhibition of transient outward current by intracellular ion substitution unmasks slow inward calcium current in cardiac Purkinje fibers. **Pflügers Archiv 390**: 102-106, 1981.

3. Marbán, E. and Tsien, R.W. Effects of nystatin-mediated intracellular ion substitutions on membrane currents in calf Purkinje fibres. **Journal of Physiology 329**:569-587, 1982.

4. Marbán, E. and Tsien, R.W. Enhancement of calcium current during digitalis inotropy in mammalian heart: positive feedback regulation by intracellular calcium? **Journal of Physiology 329**:589-614, 1982.

5. Wier, W.G., Kort, A., Stern, M., Lakatta, E. and Marbán, E. Cellular calcium fluctuations in mammalian heart: direct evidence from noise analysis of aequorin signals in Purkinje fibers. **Proceedings of the National Academy Sciences of the U.S.A. 80**:7367-7371, 1983.

6. Wier, W.G., Yue, D.T. and Marbán, E. Effects of ryanodine on intracellular Ca transients in canine cardiac Purkinje fibers and ferret ventricular muscle. **Federation Proceedings 44**:2989-2993, 1985.

7. Marbán, E. and Wier, W.G. Ryanodine as a tool to determine the contributions of calcium entry and calcium release to the calcium transient and contraction of cardiac Purkinje fibers. **Circulation Research 56**:133-138, 1985.

8. Lee, K.S., Marbán, E. and Tsien, R.W. Inactivation of calcium channels in mammalian heart cells: joint dependence on membrane potential and intracellular calcium. **Journal of Physiology 364**:395-411, 1985.

9. Kort, A.A., Lakatta, E.G., Marbán, E., Stern, M.D., and Wier, W.G. Fluctuations in intracellular [Ca^{2+}] and their effect on tonic tension in canine cardiac Purkinje fibres. **Journal**

of Physiology 367:291-308, 1985.

10. Yue, D.T., Marbán, E. and Wier, W.G. Relationship between force and intracellular [Ca^{2+}] in tetanized mammalian heart muscle. **Journal of General Physiology 87**:223-242, 1986.

11. Marbán, E., Kusuoka, H., Yue, D.T., Weisfeldt, M.L. and Wier, W.G. Maximal Ca^{2+}-activated force elicited by tetanization of ferret papillary muscle and whole heart. Mechanism and characteristics of steady contractile activation in intact myocardium. **Circulation Research 59**:262-269, 1986.

12. Kusuoka, H., Weisfeldt, M.L., Jacobus, W.E., Zweier, J. and Marbán, E. Mechanism of early contractile failure during hypoxia in intact ferret heart: evidence for modulation of maximal Ca^{2+}-activated force by inorganic phosphate. **Circulation Research 59**:270-282, 1986.

13. Marbán, E., Robinson, S.W. and Wier, W.G. Mechanisms of arrhythmogenic delayed and early after depolarizations in ferret ventricular muscle. **Journal of Clinical Investigation 78**:1185-1192, 1986.

14. Wier, W.G., Cannell, M.B., Berlin, J.R., Marbán, E. and Lederer, W.J. Fura-2 fluorescence imaging reveals cellular and sub-cellular heterogeneity of $[Ca^{2+}]_i$ in single heart cells. **Science 235**:325-328, 1987.

15. Kusuoka, H., Porterfield, J.K., Weisman, H.F., Weisfeldt, M.L. and Marbán, E. Pathophysiology and pathogenesis of stunned myocardium. Depressed Ca^{2+}-activation as a consequence of reperfusion-induced cellular calcium overload in ferret hearts. **Journal of Clinical Investigation 79:**950-961, 1987.

16. Marbán, E., Kitakaze, M., Kusuoka, H., Porterfield, J.K., Yue, D.T. and Chacko, V.P. Intracellular free calcium concentration measured with ^{19}F NMR spectroscopy in intact ferret hearts. **Proceedings of the National Academy of Sciences of the USA. 84**:6005-6009, 1987.

17. Marbán, E. and Kusuoka, H. Maximal Ca^{2+}-activated force and myofilament Ca^{2+} sensitivity in intact mammalian hearts. Differential effects of inorganic phosphate and hydrogen ions. **Journal of General Physiology 90**:609-623, 1987.

18. Kusuoka, H., Jacobus, W.J. and Marbán, E. Calcium oscillations in digitalis-induced ventricular fibrillation. Pathogenetic role and metabolic consequences in isolated ferret hearts. **Circulation Research 62**:609-619, 1988.

19. Kitakaze, M., Weisman, H. and Marbán, E. Contractile dysfunction and ATP depletion after transient calcium overload in perfused ferret hearts. **Circulation 77**:685-695, 1988.

20. Marbán, E., Kitakaze, M., Chacko, V.P. and Pike, M.M. Ca^{2+} transients in perfused ferret hearts revealed by gated ^{19}F NMR spectroscopy. **Circulation Research 63**:673-678, 1988.

21. Kitakaze, M., Weisfeldt, M.L. and Marbán, E. Acidosis during early reperfusion prevents myocardial stunning in perfused ferret hearts. **Journal of Clinical Investigation 82**:920-927, 1988.
22. Yue, D.T., Marbán, E. A novel cardiac potassium channel that is active and conductive at depolarized potentials. **Pflügers Archiv 413**:127-133, 1988.

23. Kitakaze, M. and Marbán, E. Cellular mechanism of the modulation of contractile function by coronary perfusion pressure in ferret hearts. **Journal of Physiology 414**:455-472, 1989.

24. Tomaselli, G.F., Marbán E. and Yellen, G. Sodium channels from human brain expressed and characterized in Xenopus oocytes: basic characteristics and their modification by diphenylhydantoin. **Journal of Clinical Investigation 83**:1724-1732, 1989.

25. Yue, D.T., Lawrence, J.H. and Marbán, E. Two molecular transitions influence cardiac sodium channel gating. **Science 244**:349-352, 1989.

26. Koretsune, Y., Marbán, E. Cell calcium in the pathophysiology of ventricular fibrillation and in the pathogenesis of post-arrhythmic contractile dysfunction. **Circulation 80**:369-379, 1989.

27. Koretsune, Y. and Marbán, E. Mechanisms of ischemic contracture in ferret hearts: relative roles of $[Ca^{2+}]_i$ elevation and ATP depletion. **American Journal of Physiology 258 (Heart and Circulatory Physiology 27)**:H9-H16, 1990.

28. Yue, D.T., Herzig, S. and Marbán, E. ß-adrenergic stimulation of calcium channels occurs by potentiation of high-activity gating modes. **Proceedings of the National Academy of Sciences of the U.S.A. 87**:753-757, 1990.

29. Yue, D.T. and Marbán, E. Permeation in the dihydropyridine-sensitive calcium channel: multi-ion occupancy but no anomalous mole-fraction effect between Ba^{2+} and Ca^{2+}. **Journal of General Physiology 95**:911-939, 1990.

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Invited Papers

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