FULL CURRICULUM VITAE (C.V.)

Name: Yoram Rudy

Affiliation: Washington University in St Louis

Title: The Fred Saigh Distinguished Professor of Engineering,
Professor of Biomedical Engineering, Medicine,
Cell Biology & Physiology, Radiology, and Pediatrics

Director, Cardiac Bioelectricity and Arrhythmia Center (CBAC)

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Education:

Technion, Haifa, Israel, B.Sc., 1971, Physics

Technion, Haifa, Israel, M.Sc., 1973, Physics

Case Western Reserve University, School of Medicine, 1 year, 1976

Case Western Reserve University, Ph.D., 1978, Biomedical Engineering

Professional (Research/Teaching) Experience:

2004 -	Director, Cardiac Bioelectricity and Arrhythmia Center (CBAC) Washington University in St Louis
2004 -	The Fred Saigh Distinguished Professor of Engineering, Professor of Biomedical Engineering, Medicine, Cell Biology & Physiology, Radiology, and Pediatrics Washington University in St Louis
2014 – 2020	Oxford University, Visiting Professor in Computational Medicine in the Mathematical, Physical and Life Sciences Division and the Department of Computer Science
1994 - 2004	Director, Cardiac Bioelectricity Research and Training Center (CBRTC) Case Western Reserve University, Cleveland, Ohio
2001 - 2004	The M. Frank and Margaret C. Rudy Professor of Cardiac Bioelectricity Case Western Reserve University
1989 - 2004	Professor, Department of Biomedical Engineering Case Western Reserve University
1998 - 2004	Professor, Department of Physiology and Biophysics Case Western Reserve University
1991 - 2004	Professor, Combined Program in Biophysics/Bioengineering Case Western Reserve University
1992 - 2004	Professor, Department of Medicine, Division of Cardiology Case Western Reserve University
1986-1989	Associate Professor, Department of Biomedical Engineering Case Western Reserve University
1981-1986	Assistant Professor, Department of Biomedical Engineering Case Western Reserve University

Visiting Professorships

Technion - Israel Institute of Technology, Haifa, Israel, Department of Biomedical Engineering (Dec. 1982 - Mar. 1983).

University of Parma, Italy, Institute of General Physiology (July 1986 and July 1987).

University of Berne, Switzerland, Department of Physiology (May 1990).

University of Utah, Salt Lake City, The Nora Eccles Harrison Cardiovascular Research and Training Institute (October 1990).

Tel-Aviv University, Israel, Department of Physics and Astronomy (June - July, 1991).

Columbia University, College of Physicians and Surgeons, Department of Pharmacology, New York, August 1994.

Cornell University, Department of Physiology, Ithaca, New York, October 1994.

Masonic Medical Research Laboratory, Utica, New York, December 1995.

Russian Academy of Sciences, St. Petersburg, June 1997.

University of Szeged, Department of Pharmacology and Pharmacotherapy, Szeged, Hungary, September 2004.

Reynolds Visiting Professor, The Reynolds Cardiovascular Research Center, Johns Hopkins School of Medicine, Baltimore, March 2005.

Columbia University, College of Physicians and Surgeons, Department of Pharmacology, New York, June 2005.

Nagoya University, Research Institute of Environmental Medicine, Nagoya, Japan, October 2005.

Columbia University College of Physician and Surgeons, Department of Pharmacology, New York, April 2006.

University of Berne, Switzerland, Department of Physiology, December 2006.

Stanford University Cardiovascular Institute, December 2007.

University of California, San Francisco, Department of Medicine, March 2008.

Maastricht University, The Netherlands, September 2008.

Maastricht University, The Netherlands, September 2009.

The Cleveland Clinic, Cleveland, Ohio, July 2010.

University of Pavia and Instituto di Analisi Numerica del C.N.R., Italy, September 2012.

University of Milano, Department of General Physiology and Biochemistry, Department of Biomolecular Sciences and Biotechnology, and Department of Mathematics, Italy, September 2012.

Slovak Academy of Sciences, Bratislava, Slovak Republic, September 2012.

University of Oxford, Institute of Mathematics and Department of Computer Science, UK, August 2013.

University of Oxford, the Astor Visiting Professor in Computational Medicine, UK, September 2015.

University of California, Los Angeles, Department of Medicine, Division of Cardiology, January 2017.

University of Oxford, Department of Physiology, Anatomy and Genetics, and Department of Computer Science, UK, 2014 - 2020.

University of Oxford, Merton College, September – December 2018

University College London, Institute of Cardiovascular Science, December 2018 – July 2019

University of Florence, April 2019. Florence, Italy.

Universitat Politecnica de Valencia, May 2019. Valencia, Spain.

University of Bern, June 2019. Bern, Switzerland.

University of Amsterdam, July 2019. Amsterdam, The Netherlands.

NIH and Government Committees

Member, Cardiovascular and Pulmonary Study Section, July 1, 1984 - June 30, 1988.

Member, National Institutes of Health Reviewers (NRR), July 1, 1988 - June 20, 1992.

Ad Hoc member, Cardiovascular and Pulmonary Study Section, July 1, 1983 - June 30, 1984...

Member, Special Study Section on Dysrhythmias in the Developing and Immature Heart June 27-29, 1983.

Member, Small Business Innovative Research Review Committee, February 14, 1984.

Member, site visit teams for various Program Project Grant applications.

Task force on developing a long-term plan for imaging research, 1994.

Ad Hoc member of various Study Sections, 1992 -

Panelist, Bioengineering - Building the Future of Biology and Medicine, February 27-28, 1998.

Panelist, Biomedical Imaging - Visualizing the Future of Biology and Medicine, June 25-16, 1999.

Review of Grants for Centers of Excellence in Computational Biology, October 25, 2002.

NIH Special Emphasis Review Panel, (November 2003).

Organizer and Chair, NIH-NHLBI Workshop on Systems Approach to Understanding Electromechanical Activity in the Human Heart, August 20-21, 2007.

Panel Member, Medicare Evidence Development & Coverage Advisory Committee, Centers for Medicare & Medicaid Services, Baltimore, Maryland, November 9, 2011.

FDA Cardiotoxicity Working Group Meeting: Development and Use of Computer Models. July 24, 2013, FDA Research Campus – Silver Spring MD.

Other Review Committees:

The Whitaker Foundation

National Science Foundation

Medical Research Council of Canada

American Heart Association

The Wellcome Trust

Pittsburgh Supercomputing Center (PSC)

Fondues FCAR, Canada

FRSQ, Quebec, Canada

United States-Israel Binational Science Foundation

The Israel Science Foundation

The Israel Academy of Science

The Austrian Science Fund

German-Israeli Foundation for Scientific Research and Development

Review and evaluation of research programs at the Nora Eccles Harrison Cardiovascular Research and Training Institute, University of Utah, Salt Lake City (October 18-20, 1990).

Review of the Center for Biomedical Modeling and Simulation, University of Montreal/Ecole Polytechnique, Montreal, Canada (January 8-9, 1991).

Review of the Experimental Cardiology Program, Masonic Medical Research Laboratory, Utica, New York (September 11-12, 1997).

Review and site visit, Whitaker Foundation Leadership Award Application, Johns Hopkins University (September 15-16, 1998).

Review and site visit, The University of Oklahoma Bioengineering Center, (June 2002, June 2003).

Honors:

Member of the National Academy of Engineering of the United States of America (since 2003). Citation: "For leadership in the engineering sciences of cardiac excitation at the genetic and molecular levels and for introducing new methods in clinical diagnosis and therapy"

Fellow of the National Academy of Inventors of the United States of America, since 2018. Citation: "Have demonstrated a prolific spirit of innovation in creating or facilitating outstanding inventions that have made a tangible impact on quality of life, economic development and the welfare of society"

Distinguished Scientist Award, Heart Rhythm Society, May 2010.

National Institutes of Health (NIH) MERIT Award, September 1998.

Distinguished Alumni Award, Case Western Reserve University, October 2009. "For contributions to basic science in Biomedical Engineering"

Washington University Chancellor's Award for Innovation and Entrepreneurship, November 2019.

University of Oxford, Visiting Fellow at Merton College, September – December 2018.

Technion, Israel Institute of Technology, The Israel Pollak Award, November 2018.

University of Oxford, Royal Academy of Engineering Distinguished Visiting Fellow September - October, 2016.

University of Oxford, the Burdon Sanderson Lectureship in Physiology, Anatomy and Genetics, October 11, 2016.

University of Oxford, the Astor Visiting Professor in Computational Medicine in the Mathematical, Physical and Life Sciences Division and the Department of Computer Science, September – October, 2015.

University of Oxford, the Astor Lectureship, September 25, 2015.

The Hein Wellens Distinguished Professor in Cardiology, University of Maastricht, The Netherlands, 2008-2009.

Marion G. and Loren D. Carlson Distinguished Lectureship in Physiology & Membrane Biology, University of California Davis, July 2018

Margaret & Theodore Marr Family Endowed Lectureship in Electrophysiology, University of Ottawa Heart Institute, June 2018.

Member, the Smith – Oliver Society, Washington University School of Medicine, Cardiovascular Division, 2013.

Harvard Medical School, the 11th Paul Zoll Memorial Grand Round at Beth Israel Deaconess Medical Center, Boston, April 16, 2010.

The Tawara Lecture Award, 36th International Congress of Physiological Sciences (IUPS2009), Kyoto, Japan, July 2009.

Electrogenomic Heart Rhythm – A Symposium in honor of Dr Yoram Rudy, Tainan, Taiwan, August 2009.

President, the Cardiac Electrophysiology Society, November 2006 – November 2008

The Biomedical Engineering Society (BMES) 2001 Distinguished Lectureship Award

Fellow of the Academy of Science – St. Louis

Fellow of the American Physiological Society – Cardiovascular Section

Life Time Fellow of the Institute of Electrical and Electronics Engineers (IEEE)
Citation: "For contributions to mathematical descriptions and solutions applicable to cardiac electrophysiology"

Fellow of the American Institute of Medical and Biological Engineering (AIMBE)
Citation: "In recognition of outstanding contributions to the field of medical and biological engineering"

Fellow of the Biomedical Engineering Society (BMES)
Citation: "For research of cellular mechanisms underlying cardiac electrophysiology and arrhythmias, using computational biology and mathematical modeling, and for development of Electrocardiographic Imaging (ECGI) for cardiac arrhythmias"

Fellow of the American Heart Association

Fellow of the Heart Rhythm Society

The Gordon K Moe Professorship Award, Masonic Medical Research Laboratory, 1997.
Citation: "In recognition of outstanding contributions to science and medicine in the fields of cardiac electrophysiology and arrhythmias"

The A.C. Suhren Jr. Scholar, Tulane University, 1998.
Keynote Address, Biomedical Engineering Day, Washington University in St. Louis, March, 2001.

The Rijlant Distinguished Lecturer, International Congress on Electrocardiology, Milan, Italy, 2000.

The Ueda Memorial Lecture Award, The Japanese Society of Electrocardiology and Japan College of Cardiology, Nagoya, Japan, September 2002.

The Kazuo Yamada Lecture Award, The Japanese Society of Electrocardiology, Toyama, Japan, October 2005.

Keynote Presentation, SPIE Medical Imaging, San Diego, February 2006.

Keynote Presentation, International Society for Heart Research, Manchester, UK, June 2006.

Keynote Presentation, International Congress on Electrocardiology, Cologne, Germany, June 2006.

Keynote Presentation "Noninvasive ECG Imaging (ECGI) of Cardiac Arrhythmia", Fields Institute Conference on Mathematics of Medical Imaging, University of Toronto, Canada, June 2011.

Keynote Presentation "The Molecular Basis of Cardiac Action Potential Repolarization", 4th Cardiac Physiome Workshop, Oxford University Merton College, Oxford, England, July 2011.

Michael and Ada Anbar Lecturer in Biophysical Sciences, University at Buffalo, The State University of New York, October 11, 2012.

University of Michigan, Frontiers in Cardiovascular Science Lecturer, Ann Arbor, October 29, 2012.

Keynote Presentation "Cardiac Repolarization: From Molecule to the Human Heart", Symposium in Honor of David S. Rosenbaum, MetroHealth Heart & Vascular Center, Cleveland, Ohio, May 6, 2013.

Visiting Fellow, Oxford University, UK, August 2013.

Keynote Presentation "Noninvasive Mapping of Human Cardiac Arrhythmias with ECGI", 40th International Congress on Electrocardiology, Glasgow, Scotland, 7 – 10 August 2013.

Keynote Presentation "Electrocardiographic Imaging of Cardiac Electrophysiology and Arrhythmia", Symposium "Computer Science Meets Cardiology", Oxford University, UK, August 20th, 2013

Keynote Presentation, University of Milano Department of Biotechnology and Biosciences, Department Day Celebration, "Mechanisms of Human Cardiac Arrhythmias: Noninvasive Studies with Electrocardiographic Imaging (ECGI)", Milan, Italy, December 5, 2013.

Keynote Presentation "Multiscale Integration of Cardiac Excitation: From Molecular Structure to the Human Heart", Virtual Physiological Human Conference, Norwegian University of Science and Technology, Trondheim, Norway, September 11, 2014.

Keynote Presentation "Noninvasive Mapping of Cardiac Electrophysiology and Arrhythmias in the Intact Human Heart" Simula School of Science and Innovation, Oslo, Norway, September 16, 2014.

Keynote Presentation "Arrhythmogenic substrates and arrhythmia mechanisms in the human heart – insights from noninvasive mapping in patients" Symposium Honoring Matthew N. Levy, Case Western Reserve University School of Medicine, Department of Physiology & Biophysics, Cleveland, Ohio, October 2014.

Keynote Presentation "A Noninvasive Imaging Modality for Electrical Excitation of the Heart (and Possibly Other Excitable Tissues)" March of Dimes and Burroughs Wellcome Fund 5th Symposium on Preventing Prematurity: Establishing a Network for Innovation and Discovery. Newport Beach, CA, December 2014.

Keynote Presentation "Noninvasive Imaging of Cardiac Electrophysiology and Arrhythmias" Israel Society for Medical and Biological Engineering Annual Meeting, February 24, 2016.

Keynote Presentation "Multi-scale modeling and imaging cardiac electrophysiology: A potential approach for drug development and evaluation" Sanofi – Mount Sinai Systems Pharmacology Symposium. New York, NY, June 2016.

Keynote Presentation "Hereditary repolarization disorders: ECG imaging of the clinical substrate and mathematical modeling of the molecular mechanism" The 40th meeting of the European Society of Cardiology Working Group on Cardiac Cellular Electrophysiology. Glasgow, UK, September 2016.

Keynote Presentation "ECGI – Principles, Methodology and Validation" ECG Imaging Workshop, Barts Heart Center and University College London, September 2016.

Dutch Heart Foundation Keynote Lecture "Towards a multi-scale understanding of cardiac arrhythmogenesis: Integration of mathematical modeling with electrocardiographic imaging" Frontiers in Computational Electrocardiology, Maastricht, The Netherlands, September 2016.

Keynote Lecture "Modelling and imaging human cardiac electrophysiology: Potential applications in drug development and evaluation" In silico drug safety and efficacy symposium, University of Oxford, September 21-22, 2017.

Keynote Lecture "Novel Approach in Noninvasive Mapping and Ablation of Arrhythmias - Electrocardiographic Imaging (ECGI)" 14th International Dead Sea Symposium (IDSS), Tel Aviv, Israel, October 29, 2018.

The Technion Israel Pollak Lecture 2018 “Multi-scale Integration of Cardiac Excitation and Arrhythmia: From Ion-Channel Molecular Structure to the Human Heart” Haifa, Israel, November 8, 2018.

The Technion School of Medicine Israel Pollak Lecture 2018 “NONINVASIVE ECGI MAPPING OF VENTRICULAR ARRHYTHMIC SUBSTRATES IN THE INTACT HUMAN HEART - Selected Examples” Haifa, Israel, November 6, 2018.

Keynote Lecture “Noninvasive Mapping of Ventricular Arrhythmic Substrates and Arrhythmias in the Intact Human Heart” Universitat Politecnica de Valencia, Ciudad Politecnica de la Innovacion, CARBIOyTEC 2019. May 6, 2019. Valencia, Spain.

Kenote Lecture “The Story of ECG-Imaging from Concepts to Clinical Application” UCL & Barts Heart Centre Translational Electrophysiology Symposium. London, June 17, 2019.

Elected for Top Ten in Cardiology; Lausanne, Switzerland, October 2nd, 2015.

Sigma Xi

Who's Who in America

Who's Who in Science and Engineering

Who's Who in the World

Nominations for Excellence in Teaching and Education:

John S. Diekhoff Award for Excellence in Graduate Teaching, 1994.
The Carl F. Wittke Award for Distinguished Undergraduate Teaching, 1999.
Excellence in Mentoring Graduate Students, 1999.

Editorial Boards:

Proceedings of the National Academy of Science of the USA (PNAS), Guest Editor

Circulation: Arrhythmia and Electrophysiology, Senior Consulting Editor

Cardiovascular Research

Heart Rhythm (Associate Editor; Section Editor of "Viewpoints")

Journal of Cardiovascular Electrophysiology (Section Editor, "Point of View")

Journal of Electrocardiology

Cardiac Electrophysiology Review

Cardiovascular Engineering: An International Journal

Reviewer and Editorial Consultant:

Nature

Nature Medicine

Nature Communications

Science

Science Translational Medicine

Proceedings of the National Academy of Sciences, U.S.A. (PNAS)

Journal of Physiology (London)

Circulation Research

Journal of the American College of Cardiology

Circulation

Physiological Reviews

Circulation Arrhythmia and Electrophysiology

Heart Rhythm

Biophysical Journal

Journal of General Physiology

American Journal of Physiology

Cardiovascular Research

Journal of Cardiovascular Electrophysiology

Journal of Molecular and Cellular Cardiology

Journal of Cardiovascular Pharmacology

IEEE Transactions on Biomedical Engineering

Annals of Biomedical Engineering

Journal of Electrocardiology

Medical and Biological Engineering and Computing

Medical Engineering and Physics

Mathematical Biosciences

Journal of Theoretical Biology

Journal on Inverse Problems

Inverse Problems in Engineering

Heart and Vessel

Journal of Interventional Cardiac Electrophysiology

Professional Societies:

National Academy of Engineering (NAE)

American Institute of Medical and Biological Engineering (AIMBE), (Fellow)

American Association for the Advancement of Science

IEEE Engineering in Medicine and Biology Society, (Fellow of IEEE)

American Heart Association, Basic Science Council, (Fellow)

Biomedical Engineering Society (BMES), (Fellow)

Cardiac Electrophysiology Society, (President 2006-08; Vice President, 2005-06)

American Physiological Society, (Fellow)

Heart Rhythm Society (Fellow)

Biophysical Society

New York Academy of Science

International Society for Computerized Electrocardiology

International Society of Electrocardiology

Central Society for Clinical Research

European Cardiac Arrhythmia Society (ECAS), (Founding Member)

Publications in Refereed Journals

Y. Rudy and R. Plonsey, "A note on the Brody-Effect" *J Electrocardiology* 1978; 11: 87-90. PMID: 621462

Y. Rudy and R. Plonsey, "The Eccentric Spheres Model as the Basis for a Study of the Role of Geometry and Inhomogeneities in Electrocardiography" *IEEE Trans Biomed Eng BME* 1979; 26: 392-399. PMID: 457171

Y. Rudy, R. Plonsey, and J. Liebman, "The Effects of Variations in Conductivity and Geometrical Parameters on the Electrocardiogram, Utilizing an Eccentric Spheres Model" *Circ Res 1979*; 44: 104-111. PMID: 758226

R. Plonsey and **Y.Rudy**, "Electrocardiogram Sources in a 2-Dimensional Anisotropic Activation Model" *Medical and Bio Eng and Comp* 1980; 18: 87-94. PMID: 7382595

Y. Rudy and R. Plonsey, "A Comparison of Volume Conductor and Source Geometry Effects on Body Surface and Epicardial Potentials" *Circ Res 1980*; 46: 283-291. PMID: 6444278

Y. Rudy and R. Plonsey, "Comments on the Effect of Variations in the Size of the Heart on the Magnitude of ECG Potentials" *J Electrocardiology* 1980; 13: 79-82. PMID: 6444658

J. Liebman, C. Thomas, **Y.Rudy**, and R. Plonsey, "Electrocardiographic Body Surface Potential Maps of the QRS of Normal Children" *J Electrocardiology* 1981; 14: 249-260. PMID: 7264502

Y. Rudy, R. Wood, R. Plonsey, and J. Liebman, "The Effect of High Lung Conductivity on ECG Potentials: Results Obtained from Human Subjects Undergoing Bronchopulmonary Lavage" *Circulation* 1982; 65: 440-445. PMID: 7055865

P. Diaz, **Y.Rudy**, and R. Plonsey, "A Model Study of the Effect of the Intercalated Discs on Discontinuous Propagation in Cardiac Muscle" Advances *in Experimental Medicine and Biology* 1983; 161 ("Myocardial Injury"): 79-90. PMID: 6869084

P. Diaz, **Y.Rudy**, and R. Plonsey, "The Intercalated Discs as a Cause for Discontinuous Propagation in Cardiac Muscle: A Theoretical Simulation" *Annals of Biomedical Engineering* 1983; 11: 177-189. PMID: 6670783

J. Liebman, **Y.Rudy**, P. Diaz, C.W. Thomas, and R. Plonsey, "The Spectrum of Right Bundle Branch Block as Manifested in Electrocardiographic Body Surface Potential Maps" *J Electrocardiology* 1984; 17: 329-346. PMID: 6502050

B.J. Messinger-Rapport and **Y.Rudy**, "Effects of the Torso Boundary and Internal Conductivity Interfaces in Electrocardiography: An Evaluation of the "Infinite Medium" Approximation" *Bulletin of Mathematical Biology* 1985; 47: 685-694. PMID: 4084698

B.J. Messinger-Rapport and **Y.Rudy**, "The Inverse Problem in Electrocardiography: A Model Study of the Effects of Geometry and Conductivity Parameters on the Reconstruction of Epicardial Potentials" *IEEE Trans Biomed Eng BME* 1986; 33: 667-676. PMID: 3733124

Y. Rudy and W. Quan, "A Model Study of the Effects of the Discrete Cellular Structure on Electrical Propagation in Cardiac Tissue" *Circ Res 1987*; 61: 815-823. PMID: 3677338

L. Widman, J. Liebman, C.W. Thomas, R. Fraenkel, and **Y.Rudy**, "Electrocardiographic Body Surface Potential Maps of the QRS and T of Normal Young Adults - Qualitative Description and Selected Quantifications" *J Electrocardiology* 1988; 21: 121-136. PMID: 3397696

J.N. Amoore and **Y. Rudy**, "The Effect of Variations of Ventricular Volume on the Electrocardiogram. A Comparison of Two Models" *J Electrocardiology* 1988; 21: 154-160. PMID: 3397698

B.J. Messinger-Rapport and **Y. Rudy**, "Regularization of the Inverse Problem in Electrocardiography: A Model Study" *Mathematical Biosciences* 1988; 89: 79-118. PMID: 9214798

J.N. Amoore, **Y. Rudy**, and J. Liebman, "Respiration and the ECG. A Study Using Body Surface Potential Maps" J *Electrocardiology* 1988; 21: 263-271. PMID: 3171459

Y. Rudy and B.J. Messinger-Rapport, "The Inverse Problem in Electrocardiography: Solutions in terms of Epicardial Potentials" *CRC Critical Reviews in Biomedical Engineering* 1988; 16: 215-268. PMID: 3064971

F. Dexter, G.M. Saidel, M.N. Levy, and **Y. Rudy**, "Mathematical Model of the Dependence of Heart Rate on the Tissue Concentration of Acetylcholine" Am *J Physiology* 1989; 256 (*Heart Circ Physiol* 25): H520-H526. PMID: 2916685

F. Dexter, **Y. Rudy**, M.N. Levy, "Muscarinic Autoreceptors do not Modulate Kinetics of Acetylcholine Release in Hearts" *Am J Physiol* 1989; 256 (*Heart Circ Physiol* 25): H1073-H1078. PMID: 2705550

J. Liebman, C.W. Thomas, R. Fraenkel, and **Y. Rudy**, "Analysis of the Hypoplastic Right Ventricle Utilizing Electrocardiographic Body Surface Potential Mapping" *J Electrocardiology* 1989; 22: 195-209. PMID: 2760554

F. Dexter, M.N. Levy, **Y. Rudy**, "Mathematical Model of the Changes in Heart Rate Elicited by Vagal Stimulation" *Circulation Research* 1989; 65: 1330-1339. PMID: 2805246

B.J. Messinger-Rapport and **Y. Rudy**, "Computational Issues of Importance to the Inverse Recovery of Epicardial Potential in a Realistic Heart-Torso Geometry" *Mathematical Biosciences* 1989; 97: 85-120. PMID: 2520207

D. Khoury, H. McAlister, B. Wilkoff, T. Simmons, **Y. Rudy**, R. McCowan, V. Morant, L. Castle, and J. Maloney, "Continuous Right Ventricular Volume Assessment by Catheter Measurement of Impedance for Antitachycardia System Control" *PACE* 1989; 12: 1918-1926. PMID: 2481290

F. Dexter, G.M. Saidel, and **Y. Rudy**, "Simulation of the diffusion of Acetylcholine in the Neuroeffector Junctions of the Sinus Node" *J Theo Boils* 1989; 141: 505-514. PMID: 2630802

W. Quan and **Y. Rudy**, "Unidirectional Block and Reentry of Cardiac Excitation–A Model Study" Circulation *Research* 1990; 66: 367-382. PMID: 2297808

B.J. Messinger-Rapport and **Y. Rudy**, "Non-Invasive Recovery of Epicardial Potentials in a Realistic Heart-Torso Geometry: Normal Sinus Rhythm" Circulation *Research* 1990; 66: 1023-1039. PMID: 2317885

Y. Reich, C.W. Thomas, J. Liebman, Y.H. Pao, and **Y. Rudy**, "Multi-Category Classification of Body Surface Potential Maps" IEEE *Trans Biomed Eng BME* 1990; 37: 945-955. PMID: 2249867

J. Liebman, B. Olshansky, A. Zeno, A. Geha, **Y. Rudy**, W. Henthorn, M. Cohen, and A.L. Waldo, "Electrocardiographic Body Surface Potential Mapping in the Wolff - Parkinson -White Syndrome: Non-invasive Determination of the Ventricular Insertion Sites of AV Connections" *Circulation* 1991; 83: 886-901. PMID: 1999038

F. Dexter, **Y. Rudy**, M.N. Levy, and E.N. Bruce, "Mathematical Model of Cellular Basis for the Respiratory Sinus Arrhythmia" *J Theor Biol* 1991; 150: 157-173. PMID: 1890853

A. Shimizu, A. Nozaki, **Y. Rudy** and A.L. Waldo, "Onset of Induced Atrial Flutter in the Canine Pericarditis Model" *J Amer College Cardiol* 1991; 17: 1223-1234. PMID: 2007723

A. Shimizu, A. Nozaki, **Y. Rudy**, and A.L. Waldo, "Multiplexing Studies of the Effects of Rapid Atrial Pacing on the Area of Slow Conduction During Atrial Flutter in the Canine Pericarditis Model" *Circulation* 1991; 83: 983-994. PMID: 1999046

C. Luo and **Y. Rudy**, "A Model of the Ventricular Cardiac Action Potential: Depolarization, Repolarization and their Interaction" Circulation *Research* 1991; 68: 1501-1526. PMID: 1709839

Y. Rudy and W. Quan, "Propagation Delays Across Gap Junctions and their Reflection in Extracellular Potentials: a Simulation Study" J *Cardiovascular Electrophysiology* 1991; 2: 299-315.

W. Quan and **Y. Rudy**, "Termination of Reentrant Propagation by a Single Stimulus - A Model Study" PACE 1991; 14: 1700-1706. PMID: 1721161

H.S. Oster and **Y. Rudy**, "The Use of Temporal Information in the Regularization of the Inverse Problem of Electrocardiography" *IEEE Trans Biomed Eng* 1992; 39: 65-75. PMID: 1572683

Y. Rudy and H.S. Oster, "The Electrocardiographic Inverse Problem" CRC *Critical Reviews in Biomedical Engineering* 1992; 20: 25-46. PMID: 1424685

D. Khoury and **Y. Rudy**, "A Model Study of Volume Conductor Effects on Endocardial and Intracavitary Potentials" Circulation *Research* 1992; 71: 511-525. PMID: 1499104

J. Liebman, C.W. Thomas, and **Y. Rudy**, "Electrocardiographic Body Surface Potential Mapping Many Years After Successful Surgery for Coarctation of the Aorta" *J Electrocardiology* 1993; 26: 25-41. PMID: 8433054

A. Shimizu, A. Nozaki, **Y. Rudy**, and A.L. Waldo, "Characterization of Double Potentials in a Functionally Determined Reentrant Circuit" *J Amer Coll Cardiol* 1993; 22: 2022- 2032. PMID: 8245362

J. Ortiz, M. Igarashi, H.X. Gonzalez, K. Laurita, **Y. Rudy**, and A.L. Waldo, "Mechanism of Spontaneous Termination of Stable Atrial Flutter in the Canine Sterile Pericarditis Model" Circulation 1993; 88: 1866-1877. PMID: 8403332

Y. Rudy and C. Luo, "Cellular Responses to Electrical Stimulation–A Study Using a Model of the Ventricular Cardiac Action Potential" *Adv Exp Med Biol* 1993; 346: 79-90. PMID: 8184783

F. Dexter, **Y. Rudy**, and G.M. Saidel, "Mathematical Model of Acetylcholine Kinetics in Neuroeffector Junctions" *Am J Physiol* 1994; 266 (*Heart Circ. Physiol* 35): H298-H309. PMID: 8304512

J .Ortiz, S. Niwano, H. Abe, H.X. Gonzalez, **Y. Rudy**, N. Johnson and A.L. Waldo, "Mapping the Conversion of Atrial Flutter to Atrial Fibrillation and Atrial Fibrillation to Atrial Flutter - Insights into Mechanism" *Circulation Research* 1994; 74: 882-894. PMID: 8156635

C. Luo and **Y. Rudy**, "A Dynamic Model of the Cardiac Ventricular Action Potential: I. Simulations of Ionic Currents and Concentration Changes" *Circulation Research* 1994; 74: 1071-1096. PMID: 7514509

C. Luo and **Y. Rudy**, "A Dynamic Model of the Cardiac Ventricular Action Potential: II. Afterdepolarizations, Triggered Activity and Potentiation" *Circulation Research* 1994; 74: 1097-1113. PMID: 7514510

D.W. Whalley, D.J. Wendt, C.F. Starmer, **Y. Rudy**, and A.O. Grant, "Voltage-Independent Effects of Extracellular K^+ on the Na^+ Current and Phase 0 of the Action Potential in Isolated Cardiac Myocytes" *Circulation Research* 1994; 75: 491-502. PMID: 8062422

J. Ortiz, A. Nozaki, A. Shimizu, **Y. Rudy**, and A.Waldo, "Mechanism of Interruption of Atrial Flutter by Moricizine: Electrophysiological and Multiplexing Studies in the Canine Sterile Pericarditis Model of Atrial Flutter" *Circulation* 1994; 89: 2860-2869. PMID: 8205702

S. Niwano, J.Ortiz, H. Abe, X. Gonzalez, **Y. Rudy**, and A.L. Waldo, "Characterization of the excitable gap in a functionally determined reentrant circuit" *Circulation* 1994; 90: 1997-2014. PMID: 7522990

D.S. Khoury, B. Taccardi, R.L. Lux, P.R. Ershler, and **Y. Rudy**, "Reconstruction of Endocardial Potentials and Activation Sequences from Intracavitary Probe Measurements: Localization of Pacing Sites and Effects of Myocardial Structure" *Circulation* 1995; 91: 845-863. PMID: 7828314

J. Zeng and **Y. Rudy**, "Early Afterdepolarizations in Cardiac Myocytes: Mechanism and Rate Dependence" *Biophys J* 1995; 68: 949-964. PMID: 7538806 PMCID: PMC1281819

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L. Livshitz, K. Acsai, G. Antoons, K. Sipido, **Y. Rudy,** "Model-guided estimation of sub-membrane Ca^{2+} in porcine ventricular myocyte" Gordon Research Conference on Cardiac Arrhythmia Mechanisms. Galveston, Feb. 13-18, 2011.

P. Li, **Y. Rudy**, "A Model of Canine Purkinje Cell Electrophysiology and Ca Cycling: Rate Dependence and Comparison to Ventricular Myocyte" Gordon Research Conference on Cardiac Arrhythmia Mechanisms. Galveston, Feb. 13-18, 2011.

J. Zhang, P.S. Cuculich, Y. Wang, K.A. Desouza, R. Vijayakumar, P. K. Woodard, **Y. Rudy**, "Characterization of Electrophysiologic Substrate in Post-Myocardial Infarction Patients using Noninvasive Electrocardiographic Imaging (ECGI)" Gordon Research Conference on Cardiac Arrhythmia Mechanisms. Galveston, Feb. 13-18, 2011.

R. Vijayakumar, Y. Wang, P. Cuculich, J. Zhang, K. Desouza, **Y. Rudy,** "Noninvasive Electrocardiographic Imaging (ECGI) of Human Ventricular Arrhythmias" Gordon Research Conference on Cardiac Arrhythmia Mechanisms. Galveston, Feb. 13-18, 2011.

T.J. O'Hara, L. Virág, A. Varró, **Y. Rudy**, "Mathematical model of the human ventricular action potential (AP) based on and validated by new and essential data from undiseased human hearts" Heart Rhythm Society 32nd Scientific Sessions, San Francisco May 2011. *Heart Rhythm* 2011;8, issue 5S: S108.

J. Zhang, K.A. Desouza, P.S. Cuculich, R.R. Handa, D.H. Cooper, J. Chen, **Y. Rudy,** "Noninvasive Electrocardiographic Imaging of Spontaneous Ventricular Tachycardia Initiation and termination with Anti-tachycardia Pacing" Heart Rhythm Society 32nd Scientific Sessions, San Francisco May 2011. *Heart Rhythm* 2011;8, issue 5S: S341.

J. Zhang, D.H. Cooper, K.A. Desouza, S.B. Marrus, D.R. Fansler, P.S. Cuculich, T.W. Smith, **Y. Rudy,** "ECG Imaging (ECGI) of Electrophysiologic Substrate in Ischemic Cardiomyopathy: Differences in Patients With and Without Ventricular Tachycardia (VT)" Heart Rhythm Society 32nd Scientific Sessions, San Francisco May 2011. *Heart Rhythm* 2011;8, issue 5S: S480.

N. Gaur, **Y. Rudy**, "Multiscale Modeling of Ca Cycling in Cardiac Ventricular Myocyte: Macroscopic Consequences of Microscopic Dyadic Function" Heart Rhythm Society Scientific Sessions, San Francisco May 2011. *Heart Rhythm* 2011;8, issue 5S: S256.

L.M. Livshitz, **Y. Rudy,** "Increased Ryanodine Receptors Sensitivity to Cytosolic and Luminal Ca Facilitates Diastolic Ca Release Events and Triggered Activity in a Rate-Dependent Manner" Heart Rhythm Society 32nd Scientific Sessions, San Francisco May 2011. *Heart Rhythm* 2011;8, issue 5S: S465.

Y. Rudy, "Noninvasive ECG Imaging (ECGI) of Cardiac Arrhythmias" *J of Arrhythmia* 2011;27 (S9): 243 (SS4-3).

Y. Rudy, "heart Failure and CRT: Insights from Noninvasive ECG Imaging (ECGI)" *J of Arrhythmia* 2011;27 (S9):391 (SY12-3).

L.M. Livshitz, K. Acsai, G. Antoons, K. Sipido, **Y. Rudy,** "A subcellular functional compartment for Ca during SR release: Model based properties and estimation of dynamic Ca concentration" Third annual meeting of Fondation Leducq Transatlantic CaMKII Alliance. Leuven, Belgium, Oct.19, 2011.

S. Ramasubramanian, J. Xu, A. Nekouzadeh, **Y. Rudy**, "Structure and Gating of the Cardiac I_{Ks} Channel" Gordon Research Conference on Cardiac Arrhythmia ` Mechanisms. Ventura California, Feb. 17-22, 2013.

R. Vijayakumar, J. Silva, R. Abraham, D. Roden, **Y. Rudy,** "ECGI Imaging of the Electrophysiologic Substrate in Long QT Syndrome Patients" Gordon Research Conference on Cardiac Arrhythmia Mechanisms. Ventura California, Feb. 17-22, 2013.

R. Vijayakumar, J. Silva, K. Desouza, R. Abraham, G. Van Hare, D. Roden, **Y. Rudy,** "Electrophysiologic Substrate in Patients with Long QT Syndrome (LQTS): Noninvasive Mapping with ECGI" Heart Rhythm Society 34th Scientific Sessions, Denver, May 2013. *Heart Rhythm* 2013;10, issue 5S: S54.

J. Heijman, A. Zaza, D. Johnson, **Y. Rudy**, R. Peeters, P. Volders, R. Westra, "Action-Potential Prolongation and Abnormal Ca2+ Handling Modulate Beat-to-Beat Variability of Repolarization Duration in Cellular and Computational Models of Long-QT Syndrome" Heart Rhythm Society 34th Scientific Sessions, Denver, May 2013. *Heart Rhythm* 2013;10, issue 5S: S253.

J. Zhang, F. Sacher, K. Hoffmayer, M. Strom, P. Cuculich, J. Silva, D. Cooper, M. Faddis, M. Hocini, M. Haïssaguerre, M. Scheinman, **Y. Rudy**,
"ECG Imaging of Electrophysiologic Substrate in Brugada Syndrome Patients"
Heart Rhythm Society 35th Annual Scientific Sessions, San Francisco, May 2014.
Heart Rhythm 2014;11, issue 5S: S161.

D. Cooper, J. Zhang, C. Andrews, P. Cuculich, M. Faddis, and **Y. Rudy**,
"Noninvasive Pre-procedural Mapping for Differentiating Left Ventricular and Right Ventricular Outflow Tract Arrhythmias"
Heart Rhythm Society 35th Annual Scientific Sessions, May 2014.
Heart Rhythm 2014;11, issue 5S: S253.

J. Zhang, D. Cooper, K. Desouza, P. Cuculich, P. Woodard, T. Smith, and **Y. Rudy**,
"Noninvasive high resolution EP mapping in post – MI patients:
The electrophysiological substrate in relation to ventricular arrhythmias" Heart Rhythm Society 37th Annual Scientific Sessions, May 2016.
Heart Rhythm 2016;13, issue 5S: S78.

P. Cuculich, M. Schill, R. Kashani, D. Cooper, M. Faddis, M. Gleva, A. Noheria, T. Smith, **Y. Rudy**, and C. Robinson, "First report of entirely noninvasive stereotactic cardiac ablation radiotherapy (NO-SCAR) for VT in humans" Heart Rhythm Society 37th Annual Scientific Sessions, May 2016. *Heart Rhythm* 2016;13, issue 5S: S138.

J. Zhang, M. Hocini, M. Strom, P. Cuculich, D. Cooper, F. Sacher, M. Haissaguerre, and **Y. Rudy**, "The electrophysiological substrate of human early repolarization syndrome: Noninvasive mapping with ECGI" Heart Rhythm Society 37th Annual Scientific Sessions, May 2016. *Heart Rhythm* 2016;13, issue 5S: S554.

PS Cuculich, P Samson, KMS Moore, GD Hugo, N Knutson, S Mutic, SM Goddu, DH Cooper, M Faddis, A Noheria, TW Smith, PK Woodard, RJ Gropler, DE Hallahan, **Y Rudy**, and CG Robinson, "Longer Term Results from a Phase I/II Study of EP-guided Noninvasive Cardiac Radioablation for Treatment of Ventricular Tachycardia (ENCORE-VT)" Heart Rhythm Society 41st Annual Scientific Sessions, May 2020.

Amit Noheria, Christopher M. Andrews, Phillip Cuculich, John Gorcsan, Douglas L. Mann, **Yoram Rudy "**Right-to-Left Ventricular Pacing Offset In Cardiac Resynchronization Therapy - Comparison Of Electrocardiographic Imaging With QRS Duration And QRS Area" Heart Rhythm Society 41st Annual Scientific Sessions, May 2020.

Patents

U.S. patent number 6772004 "System and Method for Non-invasive Electrocardiographic Imaging"

U.S. patent number 6839588 "Electrophysiological Cardiac Mapping System based on Non-contact Non-expandable Miniature Multi-electrode Catheter and a Method Therefore"

U.S. patent number 6975900 "Systems and Methods for Determining Surface Geometry"

U.S. patent number 7016719 "System and Method for Non-invasive Electrocardiographic Imaging (ECGI) Using Generalized Minimum Residual (GMRes)"

U.S. patent number 7471973 "Determining a Surface Geometry of an Object"

U.S. patent number 7983743 "System and Method for Noninvasive Electrocardiographic Imaging"

Canadian Letters Patent No. 2616263 "System and Method for Noninvasive Electrocardiographic Imaging (ECGI)"

U.S. patent number 9259166 "Systems and Methods for On-site and Real Time Electrocardiographic Imaging (ECGI)"

U.S. patent number 9980660 (5/29/2018) "Systems and Methods for On-site and Real Time Electrocardiographic Imaging (ECGI)"

Reports in the General Press

New York Times, April 22, 2004, "Beyond the EKG, to a Hypersensitive Heart Monitor", reported by Anne Eisenberg.

St. Louis Post – Dispatch, September 29, 2011, "Heart Activity under Study" (Online version: New way to diagnose irregular heartbeats), reported by Michele Munz.

Cardiac Rhythm News, Issue 17, p. 8, June 2012 "Stepping beyond ECG: Electrocardiographic imaging"

International Innovation, Issue 16, p. 122-124, July 2012 "Heart skips a beat"

http://dc.cn.ubm-us.com/i/604641-medical-product-manufacturing-news-november-december-2015

The New York Times, December 13, 2017 "A Game Changer for Patients with Irregular Heart Rhythm", reported by Gina Kolata.

Invited Presentations

Duke University, Department of Biomedical Engineering, March, 1981.

34th Annual Conference on Engineering in Medicine and Biology, Houston, TX, September, 1981.

Ohio State University, Department of Biomedical Engineering, Columbus, OH November,1982.

Technion - Israel Institute of Technology, Department of Biomedical Engineering, Haifa, Israel, January, 1983.

Tel-Hashomer Heart Institute, Tel-Aviv, Israel, February, 1983.

The fifth Annual Conference of the IEEE/Engineering in Medicine and Biology Society, Columbus, OH, September, 1983.

University of Montreal, Department of Biomedical Engineering, Montreal, Canada, April, 1984.

The First Henry Goldberg Workshop on 3-D Simulation and Imaging of the Cardiac System. Department of Biomedical Engineering, Technion, Haifa, Israel, March, 1984.

The Second Henry Goldberg Workshop on Simulation and Control of the Cardiac System. Department of Biomedical Engineering, Technion, Haifa, Israel, March, 1985.

3rd International Symposium on Body Surface Mapping, Nijmegen. The Netherlands, June, 1985.

University of Akron, Department of Biomedical Engineering, Akron, OH, March, 1986.

The 3rd Henry Goldberg Workshop on Simulation and Modeling of the Cardiac System. Department of Biomedical Engineering, Rutgers University, New Brunswick, NJ, April 1986.

University of Parma, Institute of General Physiology, Parma, Italy, July 1986.

University of Pavia, Institute of Numerical Analysis, Pavia, Italy, July 1986.

Technion-Israel Institute of Technology, Department of Biomedical Engineering, Haifa, Israel, August 1986.

13th International Congress on Electrocardiology, Washington, D.C., September 1986. (Opening talk of the conference).

College of Physicians and Surgeons of Columbia University, Department of Pharmacology, NY, October, 1986.

Eight Annual Conference, IEEE/Engineering in Medicine and Biology Society, Dallas - Fort Worth, TX, November 1986.

University of Utah, Cardiology Division, Salt Lake City, UT, March 1987.

University of Utah, The Nora Eccles Harrison Cardiovascular Research and Training Institute, Salt Lake City, UT, March 1987.

University of Parma, Institute of General Physiology, Parma Italy, July 1987.

Technion - Israel Institute of Technology, Department of Biomedical Engineering, August 1987.

The Canada - U.S. Symposium on Electrophysiology. Niagara Falls, NY, Sept. 1987.

The American Physiological Society Fall Meeting. San Diego, CA, Oct. 1987.

Workshop on Analysis and Simulation of the Cardiac System. Cambridge University, England, April 1988.

Summer Conference on Electrophysiological Mechanisms of Propagation in, and Activation of Cardiac and Smooth Muscle. Federation of American Societies for Experimental Biology. Saxtons River, VT Aug. 1988.

10th Annual Conference, IEEE/Engineering in Medicine and Biology Society. New Orleans, LA, Nov. 1988.

University of Utah, The Nora Eccles Harrison Cardiovascular Research and Training Institute, Salt Lake City, UT, October 1988.

Johns Hopkins University, Department of Biomedical Engineering, Baltimore, MD, October 1988.

Indiana University School of Medicine, Department of Pharmacology and Toxicology, Indianapolis, IN, May 1989.

Mayo Clinic, Department of Physiology and the Biodynamics Research Unit, Rochester MN, May 1989.

Computers in Cardiology. Jerusalem, Israel, September 1989. (A Tutorial on the Inverse Problem in Electrocardiography).

State University of New York, Department of Physiology and Biophysics. Stony Brook NY, October 1989

The 6th Henry Goldberg Workshop on Imaging, Measurement and Analysis of the Heart. Eilat, Israel, December 1989.

The 7th Henry Goldberg Workshop on Micro Phenomena in the Cardiac Muscle: Activation. Circulation and Transport. Berne Switzerland, May 1990.

University of Berne, Department of Physiology, Berne, Switzerland, May 1990.

Columbia University, College of Physicians and Surgeons, Department of Pharmacology, New York, August 1990.

17th International Congress on Electrocardiology. Florence, Italy, September 1990.

University of Utah, The Nora Eccles Harrison Cardiovascular Research and Training Institute. Salt Lake City, UT, October 1990.

Cardiac Electrophysiology Society. Dallas, TX, November 1990.

American Heart Association 63 Scientific Sessions. Dallas, TX, November 1990.

12th Annual Conference, IEEE/Engineering in Medicine and Biology Society, Philadelphia, PA, November 1990.

Washington University, Department of Medicine, St. Louis, MO April 1991.

Conference on Chaos and Sudden Death. The Johns Hopkins University, Baltimore, MD, May 1991.

Tel-Aviv University, Department of Physics and Astronomy, Tel-Aviv, Israel, June, 1991.

Meir Hospital, Kefar-Saba, Israel, July 1991.

JAPAN-USA. Symposium on Cardiac Excitation and Conduction. Palm Desert, CA, November 1991.

Penn State University, Department of Bioengineering, March, 1992.

The International Society for Computerized Electrocardiology. Keystone, CO, May 1992.

The Canadian Association for the Advancement of Science, Montreal, Canada, May, 1992 (Keynote Address).

Computers in Cardiology. Durham, NC, October 1992. (A Tutorial on Models of Cellular Excitation and Propagation in Cardiac Tissue).

Workshop on High Performance Computing in Biomedical Research. Durham, NC, October, 1992. (The Electrocardiographic Inverse Problem).

14th Annual Conference, IEEE/Engineering in Medicine and Biology Society. Paris, France, October, 1992.

The 8th Henry Goldberg Workshop on Interactive Phenomena in the Cardiac System. Bethesda, MD, December, 1992.

International Symposium on Biomedical Optics. Los Angeles, CA, January, 1993.

Cardiac Electrophysiology From Cell to Bedside: A Symposium. Keystone, CO, August, 1993.

State-of-the-Art Conference on Atrial Arrhythmias, American Heart Association, Dallas, TX, October 1993.

AAMI and NIH-NHLBI Cardiovascular Science and Technology Conference, Washington, D.C., December, 1993.

A Symposium on Atrial Flutter. Nice, France, June, 1994.

Columbia University, College of Physicians and Surgeons, Department of Pharmacology, NY, August, 1994.

Cornell University, Department of Physiology, The Gordon K. Moe Lecture, Ithaca, NY, October, 1994.

National Institutes of Health and The National Academy of Sciences, Presentation on Bioelectric/Biomagnetic Imaging. Bethesda, MD, November, 1994.

Cardiac Electrophysiology Society. Dallas, TX, November 1994.

The 9th Goldberg Workshop on Molecular and Subcellular Cardiology. Haifa, Israel, December 1994.

Procter & Gamble Pharmaceuticals, Norwich, NY, March 1995.

NASPE - North American Society of Pacing and Electrophysiology, 16th Annual Scientific Sessions. Boston, MA, May 1995.

Brookhaven National Laboratory, Upton, NY, August 1995.
IEEE Engineering in Medicine and Biology Society, 17th International Conference. Montreal, Canada, September 1995.

NIH/AHA Joint Workshop on Discontinuous Conduction in the Heart. Hilton Head Island, NC, September 1995.

Cardiac Electrophysiology Society. Anaheim, CA, November, 1995.

The Bristol-Myers Squibb Pharmaceutical Research Institute, Princeton, NJ, December 1995.

Masonic Medical Research Laboratory, Utica, NY, December 1995.

SUNY Health Science Center, Department of Pharmacology, Syracuse, NY, January, 1996.

Washington University, School of Medicine Colloquium, St. Louis, MO, January 1996.

Special Meeting on Myocardial Ion Channels and the Physiology of Cardiac Arrhythmias. Death Valley, CA, February 1996.

Duke University, NSF Center for Emerging Cardiovascular Technologies, Durham, NC, March 1996.

Group de Reflexion sur la Recherche Cardiovasculaire. Lyon, France, April 1996.

SmithKline Beecham Pharmaceuticals, Unite de Recherché, Saint-Gregoire Cedex, France, April, 1996.

Northwestern University Medical School, Department of Medicine, Chicago, IL, May 1996.

Cardiostim 96, 10th International Congress, Nice, France, June 1996

St. Jude Medical, St. Paul, MN, September 1996.

Biomedical Engineering Society 1996 Annual Fall Meeting. Penn State University, October 1996.

The 10th Goldberg Workshop on Analytical and Quantitative Cardiology: From Genetics to Function. Haifa, Israel, December 1996.

The Rammelkamp Research Conference Seminars, MetroHealth Medical Center, Cleveland, Ohio, December 1996.

American College of Cardiology, Symposium on New Horizons in Cardiac Mapping, Anaheim, California, March 1997.

International Society for Computerized Electrocardiology (ISCE), 22nd Annual Conference, Palm Coast, Florida, April 1997.

Medtronic Inc., Minneapolis, Minnesota, May 1997.

XXXIII International Congress on Physiological Sciences (IUPS), St. Petersburg, Russia, June 1997.

Masonic Medical Research Laboratory, The Gordon M. Moe Lecture, Utica, NY, September 1997.

European Society of Cardiology, Study Group on Molecular Basis of Arrhythmias, Nice, France, October 1997.

Institute for Mathematics and its Applications, University of Minnesota, Minneapolis, March 1998.

International Society for Computerized Electrocardiology (ISCE), 23rd Annual Conference, Keystone, Colorado, April 1998.

International Society for Heart Research (ISHR) World Congress, Rhodes, Greece, May 1998.

Gordon Conference on Cardiac Regulatory Mechanisms, New Hampshire, July 1998.

Cardiovascular and Pulmonary Research Institute, Allegheny University of the Health Sciences, Pittsburgh, August 1998.

Computers in Cardiology International Symposium, Cleveland, September 1998.

Tulane University, Department of Biomedical Engineering, The A.C. Suhren Lecture, New Orleans, September 1998.

Biomedical Engineering Society 1998 Annual Meeting, Cleveland, October 1998.

The University of North Carolina School of Medicine, Chapel Hill, October 1998.

American Heart Association 71st Scientific Sessions, Dallas, TX, Nov. 9 - 11, 1998.

International Workshop on Computer Simulation and Experimental Assessment of Electrical Cardiac Function, Lausanne, Switzerland, December 1998.

University of Berne, Institute of Physiology, Berne, Switzerland, December 1998.

Tel-Aviv University, Departments of Physics and Biomedical Engineering, Tel-Aviv, Israel, January 1999.

Technion-Israel Institute of Technology, Departments of Medicine and Biomedical Engineering, Haifa, Israel, January 1999.

University of California San Diego, Department of Biomedical Engineering, April 1999.

Tokyo University, Tokyo, Japan, April 1999.

International Society for Computerized Electrocardiology (ISCE) 24th Annual Conference, Nara Japan, April 1999.

NASPE - North American Society of Pacing and Electrophysiology 20th Annual Scientific Sessions, Toronto, Canada, May 1999.

Public Meeting on New Strategies for Antiarrhythmic Treatment, Tokyo, Japan, May 1999.

NIH Biomedical Imaging Symposium: Visualizing the Future of Biology and Medicine, Bethesda, Maryland, June 1999.

Physiome Symposium on Integrated Biology of the Heart, Seattle, September 1999.

Biophysical Society 44th Annual Meeting, New Orleans, February 2000.

The Rammelkamp Research Conference Seminars, MetroHealth Medical Center, Cleveland, Ohio, March 2000.

Daig/St. Jude Medical Corporation, Minneapolis, Minnesota, April 2000.

NASPE – North American Society of Pacing and Electrophysiology 21st Annual Scientific Sessions, Washington D. C., May 2000.

International Congress on Electrocardiology, Milan, Italy, June 2000 (The Rijlant Lecture).

World Congress on Medical Physics and Biomedical Engineering, Chicago, July 2000.

Center for Mathematical Research, University of Montreal, Canada, October 2000.

American Heart Association Scientific Sessions, Seminar on Cardiovascular Ion Channel Function and Human Genetics. New Orleans, LA, November 2000.

International Workshop on Computer Simulation and Experimental Assessment of Electrical Cardiac Function. Lausanne, Switzerland, December 2000.

The Whitaker Foundation Biomedical Engineering Education Summit. Lansdowne, Virginia, December 2000.

Washington University in St. Louis, Department of Medicine, March, 2001.

International Society for Computerized Electrocardiology, Hutchinson Island, Florida, April 2001.

NASPE-North American Society of Pacing and Electrophysiology 22nd Annual Scientific Sessions, Boston, May 2001.

Frontiers in Mathematical and Computational Biology, University of Texas, Dallas, June 2001.

International Congress on Electrocardiology, Sao Paulo Brazil, June 2001.

Meeting on "The Integrated Heart: Cardiac Structure and Function", Queenstown, New Zealand, August 2001.

The International Congress of Physiological Sciences, Christchurch, New Zealand, August 2001.

Biomedical Engineering Society (BMES) Annual Meeting, Durham, North Carolina, October 2001.

University of Utah, Department of Biomedical Engineering, Salt Lake City, Utah, November 2001.

Maastricht University, Department of Cardiology, Maastricht, The Netherlands, June 2002.

Einthoven 2002; 100 Years of Electrocardiography, Leiden, The Netherlands, June 2002.

University of Bern, Institute of Physiology, Bern, Switzerland, June 2002.

Cardiostim 2002; World Congress on Cardiac Arrhythmias, Nice, France, June 2002.

Japan – Canada Conference on Cardiac Arrhythmias, Montreal, Canada, July 2002.

International Congress on Electrocardiology, Montreal, Canada, July 2002.

International Society for Heart Research, Madison, Wisconsin, July 2002.

The Aspen Institute of Physics, Aspen, Colorado, August 2002.

Japan National Cardiovascular Center, Osaka, Japan, September 2002.

Combined Meeting of the Japanese College of Cardiology and the Japanese Society of Electrocardiology, Nagoya, Japan, September 2002.

Workshop on the "Virtual Heart", Nagoya, Japan, September 2002.

Research Institute of Environmental Medicine, Nagoya University, Nagoya, Japan, September 2002.

American Heart Association Scientific Sessions, Chicago, November 2002.

3rd International Workshop on Computer Simulation and Experimental Assessment of Electrical Cardiac Function. Lausanne, Switzerland, December 2002.

A Didactic Workshop on Electrophysiology of the Heart, Ecole Polytechnique Federal, Lausanne, Switzerland, December 2002.

The Technion – Bruce Rappaport School of Medicine, Haifa, Israel, January 2003.

Towards a New Era in Interventional Electrophysiology, Mont Tremblant, Canada, March 2003.

Cardiology Grand Rounds, Department of Medicine, Cornell University Medical College, New York, April 2003.

North American Society of Pacing and Electrophysiology (NASPE), 24th Annual Scientific Sessions, Washington DC, May 14-17, 2003.

International Congress on Electrocardiology, Helsinki, Finland, June 11-14, 2003.

NSF/ Pacific Institute for the Mathematical Sciences (PIMS) Workshop on Inverse Problems & Medical Imaging, Vancouver, Canada, August 4-8, 2003.

XIV Paavo Nurmi Symposium on Genetic and Molecular Basis of Cardiac Arrhythmias, Helsinki, Finland, August 27-29, 2003.

Workshop on Cardiac Engineering: From Genes and Cells to Structure and Function, Ettore Majorana Foundation and Center for Scientific Culture, Erice, Sicily, September 20-24, 2003.

American Heart Association Scientific Sessions, Orlando, Florida, November 2003.

Pfizer Global Research and Development, Groton, Connecticut, January 2004.

Workshop on Multiscale Computational Models for Biomedical Research, University of California San Diego, March 2004.

Texas Heart Institute and Baylor College of Medicine, Basic Science Seminar, Houston, April 2004.

Texas heart Institute and Baylor College of Medicine, Cardiology Grand Rounds, Houston, April 2004.

NASPE Heart Rhythm Society, San Francisco, May 2004.

International Workshop on Computer Simulation and Experimental Assessment of Cardiac Function, Cap d'Ail, France, June 2004.

Cardiostim – World Congress in Cardiac Electrophysiology and Cardiac Techniques, Nice, France, June 2004.

The 31st International Congress on Electrocardiology, Kyoto, Japan, June 2004.

International Symposium on Cardiac Arrhythmia – Molecular Basis of Arrhythmogenesis, Nagoya, Japan, July 2004.

28th Meeting of the European Working Group on Cardiac Cellular Electrophysiology, Szeged, Hungary, September 2004.

Symposium on Cardiac Arrhythmias and Sudden Death, Technion School of Medicine, Haifa, Israel, October 2004.

American Heart Association Scientific Sessions, Ask the Expert Session, New Orleans, November 2004.

Gordon Research Conference on Cardiac Arrhythmia Mechanisms, Santa Barbara, California, February 20-25, 2005.

The Reynolds Cardiovascular Research Center, Johns Hopkins School of Medicine, Division of Cardiology, Baltimore, March 2005.

International Union of Physiological Sciences (IUPS) Satellite Meeting for the Physiome Project, San Diego, California, March 2005.

University of Texas at Austin, Department of Biomedical Engineering, Austin, Texas, April 2005.

The International Society for Computerized Electrocardiology (ISCE), Kawai, Hawaii, April 2005.

Heart Rhythm Society Annual Scientific Sessions, New Orleans, May 2005.

Cardiovascular Institute at Loyola University, Medical Grand Rounds, Chicago, May 2005.

Department of Physiology, Loyola University, Chicago, May 2005.

The 32nd International Congress on Electrocardiology, Gdansk, Poland, June 2005.

The Second Key Symposium, The National Swedish Academy of Sciences, Stockholm, June 2005.

Columbia University College of Physicians and Surgeons, Department of Pharmacology, New York, June 2005.

Nagoya University, Research Institute of Environmental Medicine, Nagoya, Japan, October 2005.

The Japanese Society of Electrocardiology, Toyama, Japan, October 2005.

American Heart Association Scientific Sessions, How To Session, Dallas, November 2005.

Keystone Symposium on Cardiac Arrhythmias, Tahoe City, California, January 2006.

SPIE Medical Imaging, San Diego, California, February 2006.

International Society for Computerized Electrocardiology, Niagara-on-the-Lake, Canada, April 2006.

New Leaders in Cardiology and Electrophysiology (A Medtronic Seminar), Boston, May 2006.

International Society for Heart Research (European Section), Manchester, UK, June 2006.

International Congress on Electrocardiology, Cologne, Germany, June 2006.

Cardiostim – World Congress in Cardiac Electrophysiology and Cardiac Techniques, Nice, France, June 2006.

Workshop on Cardiac Electrophysiology and Arrhythmia, The Mathematical Biosciences Institute, Ohio State University, Columbus, Ohio, September 2006.

A joint meeting of the International Dead Sea Symposium and the Rappaport Symposium "Consensus and Controversy in Cardiac Arrhythmias" Tel - Aviv, Israel, October 2006.

Fifth International Workshop on Computer Simulation and Experimental Assessment of Electrical Cardiac Function, Lausanne, Switzerland, December 2006.

Institute of Physiology, University of Bern, Bern, Switzerland, December 2006.

Center for Neurodynamics, Department of Physics and Astronomy, University of Missouri at St Louis, February 2007.

Frontiers in Human Pathobiology, Washington University School of Medicine, St Louis, March 2007.

Cardiovascular Research Center, Department of Medicine, University of Iowa, Iowa City, March 2007.

Gordon Research Conference on Cardiac Arrhythmia Mechanisms, Ventura Beach, California, March 18 – 23, 2007.

International Society for Computerized Electrocardiology, Cancun, Mexico, April 2007.

Heart Rhythm Society 28th Annual Scientific Session, Denver, Colorado, May 2007.

University of Utah, Cardiovascular Research and Training Institute (CVRTI), Salt Lake City, May 18, 2007.

Columbia University, St Luke's-Roosevelt Hospital Center, Grand Rounds in Cardiology, New York, May 30, 2007.

Hopital Cardiologique CHU Haut-Leveque, Grand Rounds in Cardiology, Bordeaux, France, June 20, 2007.

Denis Escande Symposium on Cardiovascular Diseases, Inserm, Nantes, France, June 22, 2007.

Medtronic, Forum Presentation, Minneapolis, Minnesota, July 27, 2007.

NIH-NHLBI Workshop on Systems Approach to Understanding Electromechanical Activity in the Human Heart, Washington DC, August 20-21, 2007.

Workshop on Regulation of Transport Phenomena in the Cardiac System, Antalya, Turkey, September 16 – 20, 2007

An International Symposium on Ventricular Arrhythmias, University of Pennsylvania School of Medicine, Philadelphia, October 26-27, 2007.

University of Michigan, Department of Biomedical Engineering, Ann Arbor, Michigan, November 28, 2007.

Stanford University School of Medicine, Department of Medicine (Cardiology), Stanford, California, December 5, 2007.

Stanford University, Cardiovascular Institute Seminar, Stanford, California, December 5, 2007.

University of Wisconsin, Cardiovascular Research Conference, Madison, Wisconsin, December 18, 2007.

University of Wisconsin, Department of Physiology, Madison, Wisconsin, December, 19, 2007.

New York University (NYU), Cardiology Grand Rounds, New York City, January 4, 2008.

Cornell University, Weill Medical College, Department of Physiology and Biophysics, New York City, January 7, 2008.

University of California, San Francisco, Department of Medicine Grand Rounds, March 13, 2008.

University of California, San Francisco, Cardiology Seminar, March 13, 2008.

Ventricular Arrhythmia and Sudden Death Symposium, San Francisco, March 14-16, 2008.

Heart Rhythm Society 29th Annual Scientific Sessions, May 14-17 2008, San Francisco, California. Session on the Molecular Basis for the Clinical Electrocardiogram.

Heart Rhythm Society 29th Annual Scientific Sessions, May 14-17 2008, San Francisco, California. Session on Why do T-waves Change?

Technion – Israel Institute of Technology, Department of Biomedical Engineering, Special Lecture in memory of Professor Samuel Sideman, Haifa, Israel, June 1, 2008.

Technion – Israel Institute of Technology School of Medicine, Grand Rounds in Cardiovascular Science, Haifa, Israel, June 2, 2008.

Cardiostim – World Congress in Cardiac Electrophysiology and Cardiac Techniques, Nice, France, June 2008.

University of Cape Town, Hatter Cardiovascular Research Institute. The Molecular Basis of Cardiac Repolarization. Cape Town, South Africa, August 15, 2008.

University of Cape Town, Hatter Cardiovascular Research Institute. Noninvasive Electrocardiographic Imaging for Cardiac Arrhythmias. Cape Town, South Africa, August 16, 2008.

Maastricht University, The Netherlands, H.J.J. Wellens Distinguished Professorship presentation. Computational Biology and ECG Imaging in the Study of Cardiac Electrophysiology and Arrhythmia. September 15, 2008.

Maastricht University, The Netherlands, Workshop on Frontiers in Computational Electrocardiology. How to Understand and Model Structure-Function Relations of Ion Channels? September 17, 2008.

Maastricht University, The Netherlands, Workshop on Frontiers in Computational Electrocardiology. Basic Principles of ECG Imaging from the Viewpoint of Computational Modeling. September 17, 2008.

Cardiovascular System Dynamics Society XVIII Conference, St. Louis, Missouri, USA. Relating the Action Potential to the ECG. September 28, 2008.

Division of Biology & Biological Sciences, Washington University in St Louis. Modeling and Imaging Cardiac Electrophysiology and Arrhythmia. November 4, 2008.

Cardiac Bioelectricity and Arrhythmia Center (CBAC) Seminar. Noninvasive ECG Imaging (ECGI) of Cardiac Arrhythmias. Washington University in St Louis, November 17, 2008.

University of Alabama at Birmingham, Department of Medicine. Noninvasive ECG Imaging of Cardiac Electrophysiology and Arrhythmia. December 4, 2008.

University of Alabama at Birmingham, Cardiac Rhythm Management Laboratory. The Molecular Basis of Cardiac Action Potential Repolarization. December 4, 2008.

Duke University, Ion Channel Research Unit. The Molecular Mechanisms of Ikr and Iks Participation in Rate Dependent Repolarization of the Cardiac Ventricular Action Potential. Durham, North Carolina, January 8, 2009.

Duke University, Grand Rounds in Cardiology. Imaging Cardiac Arrhythmias. Durham, North Carolina, January 9, 2009.

The 6th Fairberg Workshop on Analysis of Cardiac Development. Noninvasive Imaging of Cardiac Electrophysiology and Arrhythmia. Technion, Haifa, Israel, March 2009.

The American Physiological Society's Experimental Biology 2009 *Physiology InFocus* program. Symposium on Integrative and Systems Physiology: An Approach to Understanding Organ System and Disease—Cardiac Ion Transport and Arrhythmias. "The molecular basis of cardiac action potential repolarization: Simulations across scales". New Orleans, April 2009.

6th International Ascona Workshop on Cardiomyocyte Biology. In Vivo Imaging of Human Cardiac Electrical Excitation. Centro Stefano Franscini, Monte Verita, Ascona, Switzerland, April 2009.

Heart Rhythm Society 30th Scientific Sessions. Noninvasive ECG Imaging in Pediatrics. Boston, May 2009.

Cleveland Clinic Heart and Vascular Institute, Symposium on Cardiovascular Care: Legacy and Innovation. "Atrial Arrhythmias: Insights from Noninvasive ECG Imaging (ECGI)" Cleveland, Ohio, June 2009.

Case Western Reserve University and University Hospitals, Grand Rounds in Cardiology "The Molecular Basis of Cardiac Repolarization", Cleveland, Ohio, June 2009.

Technion – Israel Institute of Technology, Department of Biomedical Engineering Colloquium, "Noninvasive Imaging of Cardiac Arrhythmias in Patients" Haifa, Israel, June 2009.

36th International Congress of Physiological Sciences (IUPS2009), "Cardiac Excitation and Arrhythmias in the Human Heart: Insights from Noninvasive ECG Imaging (ECGI)" , Kyoto, Japan, July 2009.

National Cheng Kung University, "Noninvasive Imaging of Cardiac Arrhythmias", Tainan, Taiwan, August 2009.

National Cheng Kung University, "The Molecular Basis of Cardiac Repolarization", Tainan, Taiwan, August 2009.

Providence University, Department of Applied Mathematics, "Modeling Structure and Function of Cardiac Ion Channels", Taichung, Taiwan, August 2009.

National Chung Hsing University, Department of Physics, "Noninvasive Imaging Modality for Cardiac Electrophysiology", Taichung, Taiwan, August 2009.

National Taiwan University College of Medicine and Hospital, Grand Rounds "Mechanisms of Human Cardiac Arrhythmias: Insights from Noninvasive ECG Imaging (ECGI)", Taipei, Taiwan, August 2009.

Safety in Pharmacology Society 9th Annual Meeting, "Noninvasive ECG Imaging (ECGI) for Cardiac Electrophysiology and Arrhythmia", Strasbourg, France, September 15-18, 2009.

Catholic University of Leuven, Department of Cardiovascular Medicine, "Modeling and Imaging Cardiac Repolarization", Leuven, Belgium, September 22, 2009.

Maastricht University and Academic Hospital, Grand Rounds in Cardiology, "Noninvasive ECG Imaging (ECGI) of Cardiac Arrhythmias", Maastricht, The Netherlands, September 24, 2009.

Maastricht University and Academic Medical Center, Hein Wellens Distinguished Professorship Presentation, "Theoretical Concepts in Cardiac Conduction and Imaging Abnormal Electrophysiological Substrate", Maastricht, The Netherlands, September 28, 2009.

Maastricht University and Academic Medical Center, Frontiers in Computational Electrocardiology Workshop, "Modeling Electrophysiological Drug Effects and Imaging Arrhythmogenic Substrate", Maastricht, The Netherlands, October 1, 2009.

Washington University, Cardiology Grand Rounds, November 4, 2009.

American Heart Association Scientific Sessions 2009, Cardiovascular Seminar "From Molecular Structure to Ion Channel Function in Repolarization", Orlando, Florida, November 15, 2009.

First European VT/VF Meeting "Noninvasive ECG Imaging [ECGI] of VT and Electrophysiological Substrate", Berlin, Germany, November 20, 2009.

Washington University, Grand Rounds in Medicine, January 28, 2010.

Washington University, Anesthesiology Grand Rounds, March 10, 2010.

Harvard Medical School, the 11th Paul Zoll Memorial Lecture at Beth Israel Deaconess Medical Center "Non-invasive Electrocardiographic Imaging for Cardiac Arrhythmias", Boston, April 16, 2010.

Heart Rhythm Society 31st Scientific Sessions. ECG-Imaging to Identify Scar. Denver, May 2010.

Heart Rhythm Society 31st Scientific Sessions. Linking Ion-Channel Molecular Dynamics and Electrostatics to the Cardiac Action Potential. Denver, May 2010.

University of Milan, Department of Biology. Modeling and Imaging Cardiac Repolarization. Milan, Italy, May 26, 2010.

University of Parma, Department of Physiology. Modeling and Imaging Cardiac Repolarization. Parma, Italy, May 28, 2010.

University of Parma, Department of Physiology. Noninvasive ECG Imaging (ECGI) of Human Cardiac Arrhythmias. Parma, Italy, May 28, 2010.

University of Florence, Center for Molecular Medicine. Modeling and Imaging Cardiac Repolarization. Florence, Italy, June 1, 2010.

Cardiostim 2010 -10th World Congress on Cardiac Arrhythmias. Perspectives on Mathematical Modeling of Cardiac Electrophysiology. Nice, France, June 2010.

Cardiostim 2010 -17th World Congress in Cardiac Electrophysiology & cardiac Techniques. "Noninvasive ECG Imaging (ECGI) of Human Atrial Fibrillation". Nice, France, June 2010.

Workshop on Cardiac Arrhythmias, "The molecular basis of cardiac repolarization" University of Bern, Switzerland, June 20-22, 2010.

Cleveland Clinic Foundation, Visiting Professor Lecture Series. "ECG Imaging". Cleveland, Ohio, July 27, 2010.

University of Missouri, Department of Biological engineering and Dalton Cardiovascular Research Center. "Modeling and Imaging Cardiac Repolarization and Arrhythmias" Columbia, Missouri, September 1, 2010.

8th Annual Heart Failure Research Symposium, "The molecular basis of cardiac action potential repolarization". Center for Heart Failure Research, University of Oslo, Norway, September 30 – October 1, 2010.

American Heart Association Scientific Sessions 2010, "Computational Modeling with Real Human Experimental Data". Chicago, Nov. 13-17, 2010.

Second European VT/VF Meeting "Noninvasive ECG Imaging [ECGI]", Berlin, Germany, November 20, 2010.

Gordon Research Conference on Cardiac Arrhythmia Mechanisms. "Molecular Dynamics of LQT1 Syndrome", Galveston, Feb. 13-18, 2011.

Heart Rhythm Society 32nd Scientific Sessions. "Novel Imaging Techniques – ECG Imaging", San Francisco, May 2011.

Heart Rhythm Society 32nd Scientific Sessions. "Imaging Modalities in Electrophysiology - Electrocardiographic Imaging", San Francisco, May 2011.

Heart Rhythm Society 32nd Scientific Sessions. "In-Silico Prediction of Drug Responses", San Francisco, May 2011.

Heart Rhythm Society 32nd Scientific Sessions. "Molecular Dynamics and Channel Structure-Function", San Francisco, May 2011.

Keynote Presentation "Noninvasive ECG Imaging (ECGI) of Cardiac Arrhythmia", Fields Institute Conference on Mathematics of Medical Imaging, University of Toronto, Canada, June 2011.

Keynote Presentation "The Molecular Basis of Cardiac Action Potential Repolarization", 4th Cardiac Physiome Workshop, Oxford University Merton College, Oxford, England, July 2011.

Cardiovascular Research Seminar "Noninvasive Imaging of cardiac Electrophysiology and Arrhythmias" , Washington University School of Medicine, St Louis, August 2011.

Asia Pacific Heart Rhythm Society 4th Scientific Sessions. Ion Channels, Arrhythmogenesis and Channelopathy Symposium , **"**Noninvasive ECG Imaging (ECGI) of Cardiac Arrhythmias" , Fukuoka, Japan, September 2011.

Asia Pacific Heart Rhythm Society 4th Scientific Sessions. Future Direction of heart failure Therapy**. "**Heart Failure and CRT: Insights from Noninvasive ECG Imaging (ECGI)" , Fukuoka, Japan, September 2011.

Third European VT/VF Meeting "Noninvasive ECG Imaging of Substrate and VT ", Berlin, Germany, November 18, 2011.

Baylor College of Medicine, Department of Molecular Physiology & Biophysics. "The Molecular Basis of Cardiac Action Potential Repolarization, and ECG Imaging of Repolarization Abnormalities", January 17, 2012.

Heart Rhythm Society 33rd Scientific Sessions. "Role of Noninvasive Electrocardiographic Mapping and Imaging in the EP Lab", Boston, May 2012.

Heart Rhythm Society 33rd Scientific Sessions. "Noninvasive Electrocardiographic Imaging of the Epicardium", Boston, May 2012.

Heart Rhythm Society 33rd Scientific Sessions. " EADs, Lessons Learned from Computer Modeling", Boston, May 2012.

Collaborative Research in Computational Neuroscience Meeting. "Mathematical Modeling and Imaging Cardiac Electrophysiology", St Louis, June 2012.

Cardiostim 2012 -11th World Congress on Cardiac Arrhythmias. "Electrocardiographic Imaging to understand Arrhythmia Mechanisms". Nice, France, June 13, 2012.

Rambam Hospital and Technion Medical School Grand Rounds "Noninvasive Electrocardiographic Imaging (ECGI) of Cardiac Electrophysiology and Arrhythmias", Haifa, Israel, June 27, 2012.

Tel Aviv University, Department of Physiology and Pharmacology. Colloquium: "Noninvasive Electrocardiographic Imaging (ECGI) of Cardiac Electrophysiology and Arrhythmias", Tel Aviv, Israel, July 3rd, 2012.

Tel Aviv Sourasky (Ichilov) Medical Center. Grand Rounds:
"Noninvasive Electrocardiographic Imaging (ECGI) of Cardiac Electrophysiology and Arrhythmias", Tel Aviv, Israel, July 4th , 2012.

Sheba (Tel Hashomer) Medical Center. Grand Rounds:
"Noninvasive Electrocardiographic Imaging (ECGI) of Cardiac Electrophysiology and Arrhythmias", Tel Aviv, Israel, July 5th , 2012.

University of Pavia and Instituto di Analisi Numerica del C.N.R.:
"Noninvasive Electrocardiographic Imaging (ECGI) of Cardiac Electrophysiology and Arrhythmias: Example Applications in Humans", Pavia, Italy, September 2012.

University of Milano, Department of General Physiology and Biochemistry, Department of Biomolecular Sciences and Biotechnology, and Department of Mathematics:
"Noninvasive Electrocardiographic Imaging (ECGI) of Cardiac Electrophysiology and Arrhythmias: Example Applications in Humans", Milan, Italy, September 2012.

University of Szeged, Faculty of Medicine, Department of Pharmacology and Pharmacotherapy:
"Noninvasive Electrocardiographic Imaging (ECGI) of Cardiac Electrophysiology and Arrhythmias: Example Applications in Humans", Szeged, Hungary, September 2012.

Slovak Academy of Sciences:
"Noninvasive Electrocardiographic Imaging (ECGI) of Cardiac Electrophysiology and Arrhythmias: Example Applications in Humans", Bratislava, Slovak Republic, September 2012.

State University of New York at Buffalo, The Anbar Lecture in Biophysical Sciences; " Electrocardiographic Imaging of Human Cardiac Electrophysiology and Arrhythmias", October 11, 2012.

State University of New York at Buffalo, Department of Physiology & Biophysics: "The Molecular Basis of Cardiac Action Potential Repolarization", October 12, 2012.

University of Michigan, Frontiers in Cardiovascular Science, Ann Arbor, October 29, 2012.

Fourth European VT/VF Meeting "Electrophysiologic Substrate and CRT in Heart Failure Patients: Insights from Noninvasive ECG Imaging (ECGI)", Berlin, Germany, November 16, 2012.

Columbia University College of Physicians and Surgeons, Department of Pharmacology, "Non-invasive ECG Imaging (ECGI) of Human Cardiac Arrhythmias" New York, April 2, 2013.

Heart Rhythm Society 34th Scientific Sessions: "Noninvasive Electrocardiographic Mapping and Imaging: Is there a Role for VT/PVC Ablation?" Denver, May 2013.

Heart Rhythm Society 34th Scientific Sessions: "Computer Modeling Human Cardiac Ventricular Myocytes" Denver, May 2013.

Fondation Leducq Transatlantic CaMKII Alliance Meeting: "Relating Molecular Dynamics of an Ion-Channel Protein to the Action Potential"
University of Iowa, July 12, 2013.

FDA Cardiotoxicity Working Group Meeting, Development and Use of Computer Models: "Constructing and Validating Models of the Human Cardiac Myocyte"
July 24, 2013, FDA Research Campus – Silver Spring MD.

40th International Congress on Electrocardiology: "Noninvasive Mapping of Human Cardiac Arrhythmias with ECGI", University of Glasgow, Scotland, August 9, 2013.

Oxford University, Department of Computer Science, "Electrocardiographic Imaging of Cardiac Electrophysiology and Arrhythmia", Oxford, UK, August 20th, 2013.

Oxford University, Institute of Mathematics, "Multiscale Modeling of Cardiac Repolarization", Oxford, UK, August 21st, 2013.

Denis Escande Symposium on Cardiac Arrhythmias, "Integrated Arrhythmia Research", University of Amsterdam Academic Medical Center, Amsterdam, The Netherlands, August 30 & 31, 2013.

Computing in Cardiology Conference, "Multiscale Modeling of Cell Electrophysiology: From Ion-Channel Molecular Structure to the Action Potential", Zaragoza, Spain, 22nd – 25th September, 2013.

Cardiac Electrophysiology Society Meeting on Ventricular Tachycardia: Mechanisms and Substrate, "Noninvasive Mapping of VT Substrate Electrophysiology in the Clinic", Dallas, Texas, November 16, 2013.

7th TRM (Theo-Rossi-di-Montelera Foundation) Forum on Computer Simulation and Experimental assessment of Cardiac function,
"Electrophysiologic Substrate and Cardiac Resynchronization Therapy (CRT) in Heart Failure Patients: Insights from Noninvasive ECG Imaging [ECGI]" , Lugano, Switzerland, 1-3 December, 2013.

First European Conference for Standardization of Advanced ECG Analysis In Arrhythmia Diagnostics. 2013 Focus: Quantification of the Atrial Fibrillation Substrate Complexity, "AF Complexity Assessed by Noninvasive ECG Imaging (ECGI)", Lugano, Switzerland, Dec. 4, 2013.

University of Milano Department of Biotechnology and Biosciences, Keynote in Department Day Celebration, "Mechanisms of Human Cardiac Arrhythmias: Noninvasive Studies with Electrocardiographic Imaging (ECGI)", Milan, Italy, December 5, 2013.

University of Milano Department of Biotechnology and Biosciences, Department Seminar "Multiscale Modeling of Cell Electrophysiology: From Ion-channel Molecular Structure to the Action Potential" , Milan, Italy, December 6, 2013.

Heart Rhythm Society 35th Scientific Sessions: "Cardiac Electrophysiology: present and future – the imprint of Silvio Weidmann" , San Francisco, May 2014.

University of California, Davis, Department of Pharmacology, "Noninvasive mapping of cardiac electrophysiology and arrhythmias in the intact human heart" Davis, CA, May 2014.

Technion – Israel Institute of Technology, School of Medicine, "Cardiac Repolarization: From Molecule to the Human Heart", Haifa, Israel, June 2014.

Technion – Israel Institute of Technology, Department of Biomedical Engineering, "Noninvasive Electrocardiographic Imaging of Cardiac Electrophysiology and Arrhythmias in the Intact Human Heart", Haifa, Israel, June 2014.

Cardiostim 2014 -12th World Congress on Cardiac Arrhythmias, "Iks Structure – Function and Noninvasive Mapping of LQTS Substrate in Patients", Nice, France, June, 2014.

6th International Workshop on Computational Methods in Pharmaceutical Sciences, "Multi-scale Modeling of Cardiac Cell Electrophysiology: From Ion-channel Molecular Structure to the Action Potential", Krakow, Poland, July 2014.

6th International Workshop on Computational Methods in Pharmaceutical Sciences , " Noninvasive Mapping of Cardiac Electrophysiology and Arrhythmias in the Intact Human Heart" , Krakow, Poland, July 2014.

Virtual Physiological Human Conference "Multiscale Integration of Cardiac Excitation: From Molecular Structure to the Human Heart", Norwegian University of Science and Technology, Trondheim, Norway, September 11, 2014.

Simula School of Science and Innovation, "Noninvasive Mapping of Cardiac Electrophysiology and Arrhythmias in the Intact Human Heart" , Oslo, Norway, September 16, 2014.

Symposium Honoring Matthew N. Levy , "Arrhythmogenic substrates and arrhythmia mechanisms in the human heart – insights from noninvasive mapping in patients" , Case Western Reserve University School of Medicine, Department of Physiology & Biophysics, Cleveland, Ohio, October 2014.

Washington University School of Medicine, the Medical Scientist Training Program, "The Future of Medicine" , St. Louis, November 6, 2014.

March of Dimes and Burroughs Wellcome Fund 5th Symposium on Preventing Prematurity: Establishing a Network for Innovation and Discovery. "A Noninvasive Imaging Modality for Electrical Excitation of the Heart (and Possibly Other Excitable Tissues)" Newport Beach, CA, December 2014.

University of Parma, Department of Bioscience "Theoretical Concepts in Cardiac Conduction". Parma, Italy, March 2015.

University of Parma, Department of Bioscience "Multi-scale Integration of Cardiac Excitation: From Molecular Structure to the Human Heart". Parma, Italy, March 2015.

Gordon Research Conference on Cardiac Arrhythmia Mechanisms "Multi-Scale Modelling and Imaging Cardiac Electrophysiology: From Ion-Channel Molecular Structure to the Human Heart Rhythm" Il Ciocco, Italy, March 2015.
University of Utah, Department of Bioengineering "Noninvasive imaging of cardiac electrophysiology and arrhythmias in the intact human heart" Salt Lake City, Utah, April 2015.

Heart Rhythm Society 36th Scientific Sessions "Noninvasive Electrocardiographic Imaging of Ventricular Arrhythmia Substrates" Boston, May 2015.

New York University (NYU) School of Medicine, Cardiology Grand Rounds, June 2015.

42nd International Congress of Electrocardiology "Noninvasive Mapping of Arrhythmic Repolarization Disorders" Comandatuba, Brazil, June 2015.

42nd International Congress of Electrocardiology "Epicardial Mapping and Sudden Cardiac Death: Noninvasive Electrocardiographic Mapping of Ventricular Arrhythmia Substrates" Comandatuba, Brazil, June 2015.

42nd International Congress of Electrocardiology "Electrophysiologic Substrate and Cardiac Resynchronization Therapy (CRT) in Heart Failure Patients: Insights from Noninvasive ECG Imaging [ECGI]" Comandatuba, Brazil, June 2015.

University of Oxford, the Astor Lecture "Noninvasive Imaging of Cardiac Electrophysiology and Arrhythmias in the Intact Human Heart" September 25, 2015.

University of Oxford, Department of Computer Science "Theoretical Concepts in Cardiac Conduction" September 16, 2015.

Top Ten in Cardiology, an International Cardiology Meeting "New insights in mechanisms of human cardiac arrhythmias gained by non-invasive mapping" Lausanne, Switzerland, October 2nd 2015.

University of Pennsylvania School of Medicine,10th International Symposium on Ventricular Arrhythmias: Pathophysiology and Therapy "Noninvasive ECG Imaging (ECGI) to Identify VT Substrate" Philadelphia, Pennsylvania, October 9, 2015.

Washington University Center for Cardiovascular Research "Substrates and Mechanisms of Cardiac Arrhythmias: Insights from Noninvasive Mapping in Patients" St Louis, December , 2015.

Israel Society for Medical and Biological Engineering Annual Meeting "Noninvasive Imaging of Cardiac Electrophysiology and Arrhythmias" February 24, 2016. (Keynote)

The 13th International Dead Sea Symposium on Innovations in Cardiac Arrhythmias and Device Therapy "New Developments in Noninvasive Mapping with ECG Imaging (ECGI) Selected Examples of Applications" Tel Aviv, Israel, March 8, 2016.

The 13th International Dead Sea Symposium on Innovations in Cardiac Arrhythmias and Device Therapy "Cardiac Electrophysiological Substrate Underlying the ECG Phenotype and Electrogram Abnormalities in J wave Syndrome Patients " Tel Aviv, Israel, March 8, 2016.

The 13th International Dead Sea Symposium on Innovations in Cardiac Arrhythmias and Device Therapy "Noninvasive ECG Imaging of Ventricular Arrhythmogenic Substrate" Tel Aviv, Israel, March 9, 2016.

Heart Rhythm Society 37th Scientific Sessions "The Inverse Solution: How is it measured, limitations, and spatial resolution" San Francisco, May 2016.

Barts Heart Center and University College London, Grand Rounds in Cardiology, London, UK, September 2016.

University of Oxford, Division of Cardiovascular Medicine "Noninvasive Imaging of Cardiac Electrophysiology and Arrhythmias in the Intact Human Heart" Oxford, UK, September 2016.

University of Oxford, Department of Pharmacology “Multi-scale Integration of Cardiac Excitation: From Ion-Channel Molecular Structure to the Human Heart” Oxford, UK, October 2016.

Web Lab Workshop, University of Oxford, UK, September 2016.

University of California Los Angeles, UCLA Cardiac Arrhythmia Center “ECGI – Principles, Methodology and Validation, and Selected Examples of Ventricular Tachycardia” Los Angeles, January 27, 2017.

University of California Los Angeles (UCLA), Cardiology Grand Rounds “Hereditary Cardiac Arrhythmias: ECG Imaging (ECGI) of the Clinical Substrate and Mathematical Modeling of Molecular Ion-Channel Mechanisms” Los Angeles, January 27, 2017.

UNIVERSITY OF PAVIA and the SCUOLA INTERNAZIONALE SUPERIORE DI STUDI AVANZATI. Workshop on Mathematical Modelling for the Cardiovascular System. Pavia, Italy, February 21 – 22, 2017.

International Congress "Sudden Cardiac Death" Prague, 30-31 March - April 1, 2017.

Washington University Biomedical Engineering Seminar, March 23, 2017.

Heart Rhythm Society 38th Scientific Sessions, Pioneers Unplugged: Basic Mechanisms, Chicago, May 10 – 13, 2017.

Technion, Department of Biomedical Engineering Seminar, June 21, 2017.

Signal Summit 2017: The forgotten Art of Electrophysiology. “Mechanisms of Slow Conduction in the Diseased Heart” Boston, September 8, 2017.

In-silico Drug Safety and Efficacy Symposium. “Modelling and imaging human cardiac electrophysiology: Potential applications in drug development and evaluation” Oxford. September 21-22, 2017.

Washington University Center for Cardiovascular Research. “Hereditary Repolarization Disorders: ECG Imaging (ECGI) of the Clinical Substrate and Mathematical Modelling of the Molecular Mechanism” St. Louis, April 19, 2018.

Libin Cardiovascular Institute of Alberta, Canada. “Multi-scale Integration of Cardiac Excitation and Arrhythmia from Ion-Channel Molecular Structure to the Human Heart” Calgary, June 6, 2018.

Libin Cardiovascular Institute of Alberta, Canada. Grand Rounds in Medicine. “Noninvasive ECGI Mapping of Ventricular Arrhythmic Substrates in the Intact Human Heart” Calgary, June 5, 2018

University of British Columbia Life Sciences Institute, Department of Anesthesiology, Pharmacology and Therapeutics. “Multi-scale Integration of Cardiac Excitation and Arrhythmia from Ion-Channel Molecular Structure to the Human Heart” Vancouver, June 19, 2018.

Oxford University, Department of Computer Science, Computational Medicine Seminar "ECGI of Heart Failure Substrate" Oxford, UK, October 22, 2018.

The 14th International Dead Sea Symposium (IDSS) "Toward Non-Invasive Ablation: Noninvasive Mapping and Ablation" Tel Aviv, Israel, October 29, 2018.

Technion - Israel Institute of Technology School of Medicine. The 2018 Israel Pollak Lecture in Medicine "NONINVASIVE ECGI MAPPING OF VENTRICULAR ARRHYTHMIC SUBSTRATES IN THE INTACT HUMAN HEART" November 6, 2018.

Technion - Israel Institute of Technology. The 2018 Israel Pollak Lecture in Biomedical Engineering "Multi-scale Integration of Cardiac Excitation and Arrhythmia: From Ion-Channel Molecular Structure to the Human Heart" November 8, 2018.

University of Oxford, Special Seminar in Physiology, Anatomy and Genetics, November 13, 2018.

University of Oxford, Seminar in Computational Medicine "ECGI – Principles, Methodology and Validation, and Examples of Ventricular Tachycardia" November 28, 2018.

University College London (UCL) Institute of Healthcare Engineering. March 19, 2019.

Gordon Research Conference on Cardiac Arrhythmia Mechanisms "Relating Ion Channel Structural Dynamics to Physiological Function – The IKs Paradigm" Il Ciocco, Italy, April 2019.

University of Florence School of Medicine. April 8, 2019. Firenze, Italy.

Imperial College London, Imperial Centre for Translational and Experimental Medicine, May 2nd 2019.

Universitat Politecnica de Valencia, Institute for Research and Innovation in Bioengineering. May 9, 2019. Valencia, Spain.

University College London (UCL) Institute of Cardiovascular Science Distinguished Speaker Seminar . June 11, 2019.

University of Bern School of Medicine Seminar in Cardiology. June 19, 2019, Bern, Switzerland.

University of Bern Department of Physiology. June 21, 2019, Bern, Switzerland.

University of Amsterdam, Grand Rounds in Cardiology, July 9, 2019.

University of Amsterdam, Department of Clinical and Experimental Cardiology Seminar, July 10, 2019.

University of Amsterdam, Department of Clinical and Experimental Cardiology, Master Class on ECGI, July 10, 2019.

6th UC Davis Cardiovascular Symposium, Davis, California, February 20, 2020.

Other Professional Activities:

Organized and chaired a workshop entitled "Interpretation of Body Surface Potential Maps: Which Is The Way To Go?" in the Second Annual Conference of the IEEE/Engineering in Medicine and Biology Society, Washington, D.C., September 1980.

Chairman of the Biomedical Engineering Society (BMES) Meetings Committee for 1981/82. Organized the 1982 Scientific Meeting in New Orleans, LA.

Chairman, Bioelectric Phenomena Committee of the IEEE Engineering in Medicine and Biology Society (IEEE/EMBS), for 1982.

Member of the Nominating Committee of the Biomedical Engineering Society (BMES) for 1982.

Guest Editor, Annals of Biomedical Engineering, 1983.

Organized and chaired a session entitled "Body Surface Potential Mapping - Imaging The Electrical Activity Of The Heart" in the Fifth Annual Conference of the IEEE/Engineering in Medicine and Biology Society, Columbus, OH, September, 1983.

Organized and chaired a session on Electrocardiology in the Seventh Annual Conference of the IEEE/Engineering in Medicine and Biology Society, Chicago, IL, September, 1985.

Organized a Symposium "Theory of ECG" for the 9th Annual Conference of the IEEE Engineering in Medicine and Biology Society, Boston, MA, November 1987.

Organized and chaired a session on the Inverse Problem in Electrocardiography. IEEE/Engineering in Medicine and Biology Society 9th Annual Conference, Boston, MA, November 1987.

Session Chairman, "Cardiac Conduction and Refractoriness" American Heart Association 60th Scientific Sessions, Anaheim, CA, November, 1987.

Reviewer, Abstracts in Electrophysiology and Electropharmacology, American Heart Association 61st Scientific Sessions, Washington D.C., November, 1988.

Session Chairman, "Electrophysiology - Activation I" American Heart Association 61st Scientific Sessions, Washington D.C., November, 1988.

Session Chairman, "Multicellular and Bidomain Systems" IEEE/Engineering in Medicine and Biology Society 10th Annual Conference, New Orleans, LA, November 1988.

Session Chairman, "Inverse Problem" IEEE/Engineering in Medicine and Biology Society 10th Annual Conference, New Orleans, LA, November 1988.

Reviewer, Abstracts in Electrophysiology and Electropharmacology, American Heart Association 62nd Scientific Sessions, New Orleans, LA, November 1989.

Session Chairman, "Electrophysiology and Electropharmacology of the Heart-Arrhythmias" American Heart Association 62nd Scientific Sessions, New Orleans, LA, November 1989.

Scientific Advisory Committee, The Henry Goldberg Workshops on the Cardiac System.

Consultant, "Studies of Atrial Flutter in a Dog Model" A. Waldo, Principal Investigator. Supported by NIH, (Case Western Reserve University).

Consultant, "Three Dimensional Mapping of Cardiac Electric Fields". B. Taccardi, Principal Investigator. Supported by NIH, (University of Utah, Salt Lake City, UT).

Consultant, "Regulation of Myocardial Gap Junctions" Jeffrey E. Saffitz, Principal Investigator. Supported by NIH, (Washington University in St. Louis).

Consultant, "Mechanism of Reentry Based on Dynamic Adaptation of Cardiac Wavelength" David Rosenbaum, Principal Investigator. Supported by VA, (Case Western Reserve University).

Session Chairman, "Electrophysiology and Electropharmacology of the Heart: Mechanisms and Therapy" American Heart Association 63rd Scientific Sessions, Dallas, TX, November 1990.

Session Chairman and Invited Faculty, "Mechanisms of Arrhythmias - Old and New Concepts" IXth World Symposium on Cardiac Pacing and Electrophysiology, Washington, D.C., May 28-31, 1991.

Organizing Committee, JAPAN-USA Symposium on Cardiac Excitation and Conduction, Palm Desert, CA, November 14-17 1991.

Organizing Committee, 14th Annual International Conference of the IEEE/Engineering in Medicine and Biology Society. Paris, France, October 29 - November 1, 1992.

Session Chairman, "New Approaches to ECG and EEG" 14th Annual International Conference of the IEEE/Engineering in Medicine and Biology Society. Paris, France, October 29 - November 1, 1992.

Congressional Liaison Committee, Biophysical Society, 1994 -

Session Chairman, "The Inverse Problem" Computers in Cardiology. Bethesda, MD, September 25-28, 1994.

Session Chairman, "Signal Processing: ECG" 16th Annual International Conference of the IEEE/Engineering in Medicine and Biology Society. Baltimore, MD, November 3-6, 1994.

Member, NIH/National Academy of Sciences special task force on developing a long-term plan for imaging research (in response to a Congressional mandate), 1994.

Session Chairman, "Cell-Cell Interactions in the Pathogenesis of Arrhythmias" American Heart Association 67th Scientific Sessions. Dallas, TX, November 14-16, 1994.

North American Society of Pacing and Electrophysiology (NASPE), Young Investigators Awards Committee, 1994-1999. (Chairman, 1996-1999).

Reviewer, Abstracts in Electrophysiology and Electropharmacology, American Heart Association 68th Scientific Sessions, Anaheim, CA, November 1995.

Session Chairman, "Pharmacology and Abnormal Conduction Patterns in Ventricular Tachycardia/Fibrillation" American Heart Association 68th Scientific Sessions, Anaheim, California, November 13-16, 1995.

Session Chairman, "Ischemia, Autonomics and Drugs" North American Society of Pacing and Electrophysiology (NASPE), 17th Annual Scientific Session. Seattle, WA, May 15-18, 1996.

Reviewer, Abstracts in Electrophysiology and Electropharmacology, American Heart Association 69th Scientific Sessions. New Orleans, LA, November 11-13, 1996.

Co-Organizer, 23rd International Congress on Electrocardiology. Cleveland, OH, July 31-August 4, 1996.

Organizer and Chairman, Symposium: "Cellular Mechanisms of Cardiac Arrhythmias" 23rd International Congress on Electrocardiology. Cleveland, OH, July 31-August 4, 1996.

Organizer and Chairman, Symposium: "Electrocardiographic Imaging: Forward and Inverse Problems" 23rd International Congress on Electrocardiology. Cleveland, OH, July 31-August 4, 1996.

Organizer and Chairman, "Modeling Cardiac Electrocardiology" Biomedical Engineering Society 1996 Annual Fall Meeting. Penn State University, October 3-6, 1996.

Chairman, "Electrocardiology: Forward and Inverse Problems" Biomedical Engineering Society 1996 Annual Fall Meeting. Penn State University, October 3-6, 1996.

Session Chairman,"Cardiac Memory" American Heart Association 69th Scientific Sessions, New Orleans, Louisiana, November 10-13, 1996.

Member, Organizing Committee, The 10th Goldberg Workshop on "Analytical and Quantitative Cardiology: From Genetics to Function" Haifa, Israel, December 2-5, 1996.

Session Chairman, “Cardiac Electrophysiology I” 41st Meeting of the Biophysical Society, New Orleans, Louisiana, March 2-6, 1997.

Organizer and Chairman, Symposium: “ New and Inventive Approaches for Electrocardiographic Imaging” 22nd Annual Conference of the International Society for Computerized Electrocardiology (ISCE), Palm Coast, Florida, April 26- May 1, 1997.

Chairman, Young Investigator Award Competition, North American Society of Pacing and Electrophysiology (NASPE), 18th Annual Scientific Sessions, New Orleans, LA, May 7-10, 1997.

Chairman, Core Curriculum “Concepts in Arrhythmogenesis”, North American Society of Pacing and Electrophysiology (NASPE), 18th Annual Scientific Sessions, New Orleans, LA, May 7-10, 1997.

Member, Study Group on Molecular Basis of Arrhythmias, European Society of Cardiology, Nice, France, October 1997.

Reviewer, Abstracts in Electrophysiology and Electropharmacology, American Heart Association 70th Scientific Sessions, Orlando, Florida, November 9-12, 1997.

Session Chairman, "Cellular and Multicellular Determinants of Cardiac Excitation" American Heart Association 70th Scientific Sessions, Orlando, Florida, November 9-12, 1997.

Session Chairman, "Computer Models of Cardiac Arrhythmia” International Society for Computerized Electrocardiology (ISCE), 23rd Annual Conference, Keystone, Colorado, April 1998.

Chairman, Young Investigator Award Competition, North American Society of Pacing and Electrophysiology (NASPE), 19th Annual Scientific Sessions, San Diego, CA, May 6-9, 1998.

Session Chairman, "The Mathematics of Ion Channels” North American Society of Pacing and Electrophysiology (NASPE), 19th Annual Scientific Sessions, San Diego, CA, May 6-9, 1998.

Session Organizer and Chairman, "Inverse and Forward Problems in Electrocardiology" Biomedical Engineering Society 1998 Annual Meeting, Cleveland, October 10 - 13, 1998.

Reviewer, Abstracts in Cardiac Electrophysiology, American Heart Association 71st Scientific Sessions, Dallas, TX, Nov. 9-11, 1998.

Chairman, Young Investigator Award Competition, North American Society of Pacing and Electrophysiology (NASPE) 20th Annual Scientific Sessions, Toronto, Canada, May 11-15, 1999.

Session Chairman, "The Remodeled Substrate and the Usefulness of Our Indicators" Cardiac Electrophysiology Society Annual Meeting, Anaheim, CA, November 2001.

Session Chairman, "Basic Cardiac Electrophysiology: What the Fellow and Practicing Electrophysiologist Should Know III: Molecular and Ionic Basis of Cardiac Excitability and Conduction in Health and Disease" NASPE 20th Annual Scientific Sessions, Toronto, Canada, May 11-15, 1999.

Organizing Committee, The Japanese Gambit Meeting on Strategies for Antiarrhythmic Drug Development (organizational meeting in Hakone, Japan, May 1999).

Reviewer, Abstracts in Cardiac Electrophysiology, American Heart Association 72nd Scientific Sessions, November, 1999.

Member, Long-Range Planning Committee, North American Society of Pacing and Electrophysiology (NASPE), 2000-2003.

Session Chairman, "What Can Computer Simulations Teach the Cardiac Electrophysiologist" North American Society of Pacing and Electrophysiology (NASPE), 21st Scientific Sessions, Washington D. C., May 17-20, 2000.

Session Chairman, "Electrocardiographic Imaging" International Congress on Electrocardiology, Milan, Italy, June 2000.

Reviewer, Abstracts in Cardiac Electrophysiology, American Heart Association 73rd Scientific Sessions, New Orleans, November, 2000.

Council Member, International Society of Electrocardiology, 2000 — .

Track Chair, "Cardiovascular Science and Engineering", World Congress on Medical Physics and Biomedical Engineering, Chicago, July 2000.

Session Chairman, "Cellular Models" Computers in Cardiology, Cambridge, Massachusetts, September 24-27, 2000.

Organizing Committee, The Gambit Meeting on New Strategies for Anti-Arrhythmic Treatment. Chatham, Cape Cod, October 15-19-2000.

Scientific Board, International Symposium on Non-Invasive Functional Source Imaging, Innsbruck, Austria, September 2001.

Session Organizer and Chairman "Cardiac Conduction and its Role in Arrhythmogenesis", International Society for Computerized Electrocardiology, Hutchinson Island, Florida, April 2001.

Session Chairman, "The Role of Computer Simulations in Understanding Basic Electrophysiology", North American Society of Pacing and Electrophysiology 22nd Scientific Sessions, Boston, May 2001.

Session Chairman, “Cardiac Dynamics”, Frontiers in Mathematical and Computational Biology, University of Texas, Dallas, June 2001.

Reviewer, Abstracts in Electrophysiology, American Heart Association Scientific Sessions, Anaheim, California, November 2001.

Session Chairman, “Cardiac Arrhythmias”, The International Congress of Physiological Sciences, Christchurch, New Zealand, August 2001.

Member, Strategic Planning, The North American Society of Pacing and Electrophysiology (NASPE), Chicago, October 26-28, 2001.

Member, NASPE Strategic Alliances Task Force Commission, The North American Society of Pacing and Electrophysiology, 2002.

Member, External Advisory Board, The University of Oklahoma Bioengineering Center.

Reviewer, Abstracts in Electrophysiology, American Heart Association Scientific Sessions, Chicago, November 2002.

Session Chairman, “Computer Simulation of Cardiac Electrical Activity “, Cardiostim 2002; World Congress on Cardiac Arrhythmias, Nice, France, June 2002.

Scientific Committee, Japan – Canada Conference on Cardiac Arrhythmias, 2002.

Judge, Poster Competition, American Heart Association Scientific Sessions, Chicago, November 2002.

Member, International Review Committee, Department of Biomedical Engineering, Technion – Israel Institute of Technology, Haifa, January 2003.

Session Chairman, "Simulation of Arrhythmias in Anatomically Correct Hearts” North American Society of Pacing and Electrophysiology (NASPE), 24th Annual Scientific Sessions, Washington DC, May 14-17, 2003.

Session Organizer and Chairman, “Ventricular Repolarization” International Congress On Electrocardiology, Helsinki, Finland, June 11-14, 2003.

Reviewer, Abstracts in Electrophysiology, American Heart Association Scientific Sessions, Orlando, Florida, November 2003.

Discussion Leader, Session on Initiation and Maintenance of Arrhythmias, Gordon Research Conference on Cardiac Arrhythmia Mechanisms, Colby-Sawyer College, New London, New Hampshire, August 10-15, 2003.

Scientific Advisory Committee, Workshop on Cardiac Engineering: From Genes and Cells to Structure and Function, Ettore Majorana Foundation and Center for Scientific Culture, Erice, Sicily, September 20-24, 2003

Session Chair, "Excitation-Contraction Coupling", Workshop on Cardiac Engineering: From Genes and Cells to Structure and Function, Ettore Majorana Foundation and Center for Scientific Culture, Erice, Sicily, September 20-24, 2003.

Session Chair, "Insights into Arrhythmia Mechanisms", NASPE Heart Rhythm Society, San Francisco, May 19-22, 2004.

Session Chair, "Pathophysiology of Reentry", NASPE Heart Rhythm Society, San Francisco, May 19-22, 2004.

Member, Scientific Committee, World Congress on Cardiac Arrhythmias (Cardiostim), Nice, France, June 16-19, 2004.

Session Chair, "Cell-to-Cell Communication in Health and Disease", World Congress on Cardiac Arrhythmias (Cardiostim), Nice, France, June 16-19, 2004.

Chairman, International Symposium on Cardiac Arrhythmia- Molecular Basis of Arrhythmogenesis, Nagoya, Japan, July 3, 2004.

Session Chair, "Cardiac Cellular Electrophysiology" Montpellier, France, September 2004.

Reviewer, Abstracts in Electrophysiology, American Heart Association Scientific Sessions, New Orleans, November 2004.

Heart Rhythm Society, Committee on Health Policy, Subcommittee on Research

Heart Rhythm Society, Governance Committee, Nominations Subcommittee

Vice President of the Cardiac Electrophysiology Society, 2005-2006.

Session Organizer and Chairman "Cardiac Conduction in Health and Disease" International Society for Computerized Electrocardiology (ISCE), Kawai, Hawaii,
April 2005.

Chairman, Clinical Tutorial "New Advances in Cardiac Mapping and Simulation" Heart Rhythm Society Annual Scientific Sessions, New Orleans, May 2005.

Chairman, session on "Computer Modeling/Simulation" Heart Rhythm Society Annual Scientific Sessions, New Orleans, May 2005.

Chairman, session on "Body Surface Potential Mapping" The 32nd International Congress on Electrocardiology, Gdansk, Poland, June 2005.

Chairman, session on "Electrocardiographic Imaging" International Society for Computerized Electrocardiology (ISCE), Niagara-on-the-Lake, Canada, June 2006.

Chairman, session on "Electrocardiography and Imaging" The 33rd International Congress on Electrocardiology, Cologne, Germany, June 2006.

International Society for Computerized Electrocardiology (ISCE) Board of Directors, 2006 - 2007.

Chair, session on "Basic Mechanisms of Cardiac Impulse Propagation and Associated Arrhythmias" A joint meeting of the International Dead Sea Symposium and the Rappaport Symposium "Consensus and Controversy in Cardiac Arrhythmias" Tel - Aviv, Israel, October 2006.

Member, Executive Scientific Board, A joint meeting of the International Dead Sea Symposium and the Rappaport Symposium "Consensus and Controversy in Cardiac Arrhythmias" Tel - Aviv, Israel, October 2006.

Reviewer, Abstracts in Electrophysiology, American Heart Association Scientific Sessions, Chicago, November 2006.

Program Committee, Gordon Research Conference on Cardiac Arrhythmia Mechanisms, Ventura Beach, California, March 18 – 23, 2007.

Organized and chaired the annual conference of the International Society for Computerized Electrocardiology, Cancun, Mexico, April 2007.

Reviewer, Abstracts in Electrophysiology, American Heart Association Scientific Sessions, Orlando, Florida, November 2007.

Heart Rhythm Society, Scientific and Clinical Documents Committee

President of the Cardiac Electrophysiology Society, 2007-2008.

Organized and chaired an NIH - NHLBI Workshop "Systems Approach to Understanding Electromechanical Activity in the Human Heart", Washington, August 20-21, 2007

Scientific Advisory Committee, Workshop on Regulation of Transport Phenomena in the Cardiac System, Antalya, Turkey, September 16 – 20, 2007

Organized and chaired the Cardiac Electrophysiology Society (CES) Meeting, Orlando, Florida, November 3rd, 2007.

Organizing Committee, Cardiovascular System Dynamics Society XVIII Conference, St. Louis, Missouri, USA, September 27-30, 2008.

Organized and chaired the Cardiac Electrophysiology Society (CES) Meeting, New-Orleans, November 8th, 2008.

Program Committee, Gordon Research Conference on Cardiac Arrhythmia Mechanisms, Il Ciocco, Italy, February 2009.

Discussion Leader, "Channelopathies: From Gene to Bedside" Gordon Research Conference on Cardiac Arrhythmia Mechanisms, Barga, Italy, February 2009.

Scientific Advisory Committee, the 6th Fairberg Workshop on Analysis of Cardiac Development, Technion, Haifa, Israel, March 2009.

Chair, Debate: "Who's Keeping Time in the SA Mode? The Funny Current Clock is more Important than the Calcium Clock", Heart Rhythm Society 30th Scientific Sessions, Boston, May 2009.

Chair, the Irisawa Memorial Symposium on Functional Imaging and Genomics of Arrhythmias, 36th International Congress of Physiological Sciences (IUPS2009), Kyoto, Japan, July 2009.

Scientific Committee, Cardiostim 2010 -10th World Congress on Cardiac Arrhythmias, Nice, France, June 2010.

Session Chair, "Models of Cardiac Electrophysiology" , Cardiostim 2010 -10th World Congress on Cardiac Arrhythmias, Nice, France, June 2010.

Session Chair, "Molecular and Cellular Electrophysiology of the Human Heart", American Heart Association Scientific Sessions, Chicago, Nov. 13-17, 2010.

Program Committee, Gordon Research Conference on Cardiac Arrhythmia Mechanisms, Galveston, February 2011.

Member, Heart Rhythm Society Advisory Panel, 2011 –

Panel Member, Medicare Evidence Development & Coverage Advisory Committee, Centers for Medicare & Medicaid Services, Baltimore, Maryland, November 9, 2011.

Session Chair, "How Does CaMKII Contribute to Arrhythmias and HF?" Heart Rhythm Society 33rd Scientific Sessions. Boston, May 2012.

Session Chair, "How to Develop New Ideas into Products and Therapies" Heart Rhythm Society 33rd Scientific Sessions. Boston, May 2012.

Scientific Committee, Cardiostim 2012 -11th World Congress on Cardiac Arrhythmias, Nice, France, June 2012.

Heart Rhythm Society Awards Committee, 2012-2013.

Program Committee, Gordon Research Conference on Cardiac Arrhythmia Mechanisms, Ventura, February 2013.

Session Chair "Heart Rhythm Bioinformatics" Heart Rhythm Society 34th Scientific Sessions, Denver, May 2013.

Session Chair "Heart Rhythm Systems Physiology" Heart Rhythm Society 34th Scientific Sessions, Denver, May 2013.

Abstract Reviewer, Heart Rhythm Society 34th Scientific Sessions, Denver, May 2013.

Member, FDA Cardiotoxicity Working Group, Silver Spring MD, July 2013.

Session Chair "Modeling" 40th International Congress on Electrocardiology, University of Glasgow, Scotland, August 7 - 10, 2013.

Session Chair "Modeling Electrophysiology" Computing in Cardiology Conference, Zaragoza, Spain, September 22 – 25, 2013.

Session Chair "Control of Repolarization" , Heart Rhythm Society 35th Scientific Sessions, San Francisco, May 2014.

Scientific Committee, Cardiostim 2014 -12th World Congress on Cardiac Arrhythmias, Nice, France, June 2014.

Program Committee, Gordon Research Conference on Cardiac Arrhythmia Mechanisms, Il Ciocco, Italy, March 2015.

Heart Rhythm Society, Ethics Oversight Committee, 2015 – 2018.

Member, Web Lab Advisory Board, Oxford University and University College London, 2016 –

Scientific Advisory Board of the International Academy of Cardiology and of the 22nd World Congress on Heart Disease, 2017 –

Abstract Reviewer, Heart Rhythm Society 38th Scientific Sessions, Chicago, May 2017.

Session Chairman, Signal Summit 2017: The forgotten Art of Electrophysiology. Electrical Propagation in Normal and Abnormal Tissue. Boston, September 8, 2017.

Discussion Leader, University of California-Davis Cardiovascular Symposium, Mechanics and Energetics in Cardiac Arrhythmias and Heart Failure, February 21-23, 2018.

Abstract Reviewer, Heart Rhythm Society 39th Scientific Sessions, Boston, May 2018.

Chair, Meet the Expert "Can We Cure Arrhythmias Noninvasively Without Catheters?" Heart Rhythm Society 39th Scientific Sessions, Boston, May 9 – 12, 2018.

Post Doctoral Fellows

Pedro Diaz, 1983-84
John Amoore, 1985
Barbara Messinger Rapport, 1987-89
Weilun Quan, 1988-90
Franklin Dexter, 1988-90
Kyoung Joung Lee, 1993-94
Xiaoqin Zou, 1993-95
Simie Platt, 1994-96
Robin Shaw, 1996-97
Jan Kucera, 2000-02
Leonid Livshitz, 2004- 2007 (Winner, Best Poster Presentation, Gordon Research Conference on Cardiac Arrhythmia Mechanisms, 2007)
Ali Nekouzadeh 2005-2007
Gregory Faber 2007
Jennifer Avari 2007-08
Philip Cuculich 2007-09
Scott Marrus 2007- 09
Pan Li 2009 – 2011 (Winner, Best Poster Presentation, Gordon Research Conference on Cardiac Arrhythmia Mechanisms, 2011)
Kavit Desouza 2009 - 2011
Subham Ghosh 2009- 2011
Ashwin Mohan 2010-
Keith Decker 2010
Hsiang-Chun Lee 2011-2012
Junjie Zhang 2016
Ramya Vijayakumar 2016 -

Graduate Students

Ph.D. Degrees Awarded

Pedro Diaz, Ph.D. - 1983
"The Effects of the Intercalated Disc on Propagation in Cardiac Muscle"

Barbara Messinger-Rapport, Ph.D. - 1987
"The Inverse Problem in Electrocardiography: Solutions In Terms Of Epicardial Potentials" (Finalist, EMBS Student Paper Competition)

Jie Cheng, Ph.D. - 1988
"Positive Feedback Mechanism in AV Nodal Wenckebach Phenomenon"

Weilun Quan, Ph.D. - 1988
"Structural Effects on Propagation and Reentry of Electrical Excitation in Cardiac Muscle"

Franklin Dexter, Ph.D. - 1988
"Mathematical Model of the Changes in Heart Rate Elicited By Vagal Stimulation"

Ching - Hsing Luo, Ph.D. - 1991
"A Dynamic Model Of The Cardiac Ventricular Action Potential: Formulation And Physiological Simulations"

Luc Mongeon, Ph.D. - 1993
"The Right Atrial Pacemaker Complex: The Underlying Mechanisms Mediating The Multicentric Origin of Atrial Depolarization"

Dirar Khoury, Ph.D. - 1993
"Recovery of Endocardial Potentials from Intracavitary Potential Data"

Howard Oster, Ph.D. - 1995
"Electrocardiographic Imaging: New Applications and New Inverse Methodology"

Madhav Kavuru, Ph.D. - 1995
"The Forward Problem Of Electrocardiography: Ventricular Model With Rotational Anisotropy"

Kenneth Laurita, Ph.D. - 1996
"Repolarization Properties Of Cardiac Tissue: Studies Using Optical Mapping And Theoretical Models"

David Igel, Ph.D. - 1996
"Autonomic Effects on Intra-Atrial Conduction"

Jinglin Zeng, Ph.D. - 1997
"A Dynamic Model of a Cardiac Ventricular Action Potential"

Robin M. Shaw, Ph.D. - 1997
"Theoretical Studies in Cardiac Electrophysiology: Roles of Membrane and Gap-Junctions in Excitability and Conduction" (Finalist, Biophysical Society Student Competition)

Steven D. Girouard, Ph.D. – 1997
"Transmembrane Potential Mapping in the Intact Heart: Role of Cardiac Wavelength in the Mechanism of Reentry"

David Kaelber, Ph.D. – 1999
"Clinical Implementation of Electrocardiographic Imaging (ECGI)"

Prakash Viswanathan, Ph.D. - 2000
"Ion Channel Heterogeneities in Cardiac Tissue and their Arrhythmogenic Consequences"

John E. Burnes, Ph.D. – 2000
"Noninvasive Electrocardiographic Imaging of Abnormal Electrophysiologic Substrate and Arrhythmias"

Colleen E. Clancy, Ph.D. – 2001
"Computational Models of Congenital Abnormalities in Ion Channels: Linking Defects to Abnormal Cellular Function"

Raja N. Ghanem, Ph.D. - 2003
"Noninvasive Electrocardiographic Imaging (ECGI): Contributions to Methodology, Imaging Repolarization and Comparison to Invasive Mapping During Surgery" (Winner, Medtronic Student Award, 3rd International Symposium on Noninvasive Functional Source Imaging, Innsbruck, Austria; Winner, Heart Rhythm Journal Outstanding Publication Award for Young Electrophysiologists)

Thomas Hund, Ph.D. - 2004
"Cardiac Arrhythmia after Myocardial Infarction: Insights from a Dynamic Canine Ventricular Myocyte Model" (Finalist, Biophysical Society Student Competition; Winner, Best Poster Presentation, Gordon Conference on Cardiac Arrhythmia Mechanisms, 2003)

Charulatha Ramanathan, Ph.D. - 2004
"Electrocardiographic Imaging (ECGI): Application of an Iterative Method and Validation in Humans"

Ping Jia, Ph.D. – 2004
"Electrocardiographic Imaging of Paced Sequences and Infarct Substrate in Canine Hearts, and in Patients Undergoing Cardiac Resynchronization Therapy (CRT)"

Gregory M. Faber, Ph.D. – 2007
"Abnormal Calcium Cycling as a Mechanism for the Initiation of Cardiac Arrhythmia: A Simulation Study in a Ventricular Myocyte Model"

Jonathan Silva, Ph.D. – 2008

"Linking Molecular Dynamics of Ion Channels to the Cardiac Action Potential: Simulations of Wild Type and Mutant I_{Ks}" (Winner, Best Poster Presentation, Gordon Conference on Cardiac Arrhythmia **Mechanisms**, 2005**)**

Subham Ghosh, Ph.D. - 2009

" Electrocardiographic Imaging : Development Of A Non-Smooth Regularization Method And Clinical Application In Patients With Wolff-Parkinson-White Syndrome And Heart Failure" (Third Prize, Best Poster Presentation, Gordon Conference on Cardiac Arrhythmia Mechanisms, 2005;
First Prize, Best Poster Presentation, 37th Annual Meeting,
North American Society of Cardiovascular Imaging, Orlando, Florida, 2009)

Yong Wang, Ph.D.- 2009

"Contributions to the Methodology of Electrocardiographic Imaging (ECGI) and Application of ECGI to Study Mechanisms of Atrial Arrhythmia,
Post Myocardial Infarction Electrophysiological Substrate, and Ventricular Tachycardia in Patients" (Recipient of the outstanding original paper award for 2006 in the *Annals of Biomedical Engineering*)

Keith Decker, Ph.D. - 2010

"Ionic Mechanisms of Action Potential Rate Dependence, Conduction and Block in Normal Epicardium and in Remodeled Epicardium Post-Infarction"

Tom O'Hara, Ph.D. - 2011

"Simulation of the Undiseased Human Cardiac Ventricular Action Potential: Model Formulation, Experimental validation and Application"

Jordi Heijman, Ph.D. – 2011 (Ph.D. awarded by Maastricht University)

"Local control of β-adrenergic stimulation: Effects on ventricular myocyte electrophysiology and Ca2+-transient"

Namit Gaur, Ph.D. - 2012

"Calcium Cycling Disturbances and Arrhythmogenesis"

Junjie Zhang, Ph.D. – 2015

"Clinical Application of Electrocardiographic Imaging
in Patients with Ischemic Cardiomyopathy, Early Repolarization Syndrome and Brugada Syndrome"

Ramya Vijayakumar, Ph.D. – 2016

"Methodology Considerations in Phase Analysis and Clinical Applications of Electrocardiographic Imaging in Patients with Long QT Syndrome

Smiruthi Ramasubramanian, Ph.D. - 2018
"Computational Studies of the Concealed Gating Pathways and Electrophysiological Function of the Human Cardiac IKs Channel"

Chris Andrews, Ph.D. – 2018
"Noninvasive Multi-Modality Studies of Cardiac Electrophysiology, Mechanics, and Anatomical Substrate in Healthy Adults, Arrhythmogenic Cardiomyopathy, and Heart Failure"

Jiajing Xu, Ph.D. – 2018
"KCNQ1/KCNE1 interaction in the cardiac IKs channel and its physiological Consequence"

M.S. Degrees Awarded

Barbara Messinger-Rapport, M.S. - 1985
"The Inverse Problem in Electrocardiography: A Model Study of Geometry, Conductivity, And Sampling Parameters"

Franklin Dexter, M.S. - 1986
"Models of Neural Control of Heart Rate"

Eugene Yeh, M.S. - 1987
"Determinants of Diminished Stroke Volume during Ventricular Tachycardia in Man"

Howard Oster, M.S. - 1989
"The Use of Temporal Information in the Regularization of the Inverse Problem of Electrocardiography"

Dirar Khoury, M.S. - 1989
"Continuous Right Ventricular Impedance Volumetry for Diagnosis And Hemodynamically Responsive Antitachycardia System Control"

David Igel, M.S. - 1993
"Feature Extraction for Pattern Recognition of Ventricular Tachyarrhythmias Using Single Surface Lead Electrograms"

Jinglin Zeng, M.S. - 1993
"Simulation Studies of Mechanism of Arrhythmogenic Early Afterdepolarizations In Cardiac Myocytes"

David Kaelber, M.S. 1994
"Feasibility of and Progress towards Clinical Implementation of Electrocardiographic Imaging"

Ann Donohoo, M.S. - 1994
"Further Developments in the Third Generation of Cardiac Potential Mapping Systems"

Steven Girouard, M.S. - 1994
"High Resolution Mapping With Optical Techniques Using Voltage-Sensitive Dyes"

Xiaohua Fang, M.S. - 1994
"Predicting Sudden Cardiac Death from Electrical Alternans of Surface ECG"

Zhiwei Liu, M.S. - 1996
"Inverse Reconstruction of Endocardial Potentials, Electrograms and Activation Sequences from Intracavitary Probe Potential Measurements"

John Burnes, M.S. - 1996
"Electrocardiographic Imaging: Implementation Issues and Interpolation Studies"

Joseph Pastore, M.S. - 1997
"Cellular Basis of Electrocardiographic T-Wave Alternans"

Fadi G. Akar, M.S.-1997
"Cellular Mechanism of Cardiac Defibrillation"

Ye He, M.S.-1997
"An Integrated System for Interactive Mapping and Display of Cardiac Arrhythmias"

Ping Jia, M.S. - 1998
"Simultaneous Reconstruction of Endocardial Potentials from Catheter Measurements"

Yan Wang, M.S. – 1999
"Action Potential Propagation in Inhomogeneous Cardiac Tissue"

Raja Ghanem, M.S. - 2000
"Hardware and Software Design for Automated Cardiac Mapping"

Gregory Faber, M.S. - 2000
"Action Potential and Contractility Changes in Sodium Overloaded Cardiac Myocytes: A Simulation Study"

Thomas Hund, M.S. - 2000
"The Dynamics of Action Potential Head-Tail Interaction During Reentry in Cardiac Tissue"

Charulatha Ramanathan, M.S. - 2000
"Electrocardiographic Imaging: Effect of Torso Inhomogeneities on Body Surface ECG potentials and on the Noninvasive Reconstruction of Epicardial Potentials, Electrograms, and Isochrones"

Kazutaka Gima, M.S. - 2002
"Ionic Basis of Electrocardiographic Waveforms"

Kyungmoo Ryu, M.S. - 2002
"Frequency Analysis of Atrial Electrograms during Atrial Arrhythmia"

Subham Ghosh, M.S. – 2004
"Accuracy of Quadratic versus Linear Interpolation in Noninvasive Electrocardiographic Imaging"

Jonathan Silva, M.S. – 2004
"Molecular Interactions Determine Effects of Iks on the Cardiac Action Potential: Modulation by KCNE1 and Chromanol 293B"

Thomas O'Hara, M.S. – 2007
"Modeling the Normal Human Ventricular Myocyte"

University and Departmental Activities at Case Western Reserve University

Graduate Studies Committee, Case School of Engineering

Chairman, Departmental Graduate Education Committee. This committee administers a large graduate program (over 100 graduate students) and recommends policies to the department.

Search Committee for Chairman Position, Department of Biomedical Engineering

Departmental Seminar Series Coordinator

Training Faculty and Associate Program Director, Training Program in Biomedical Engineering - Systems and Integrative Biology, NIH

Training Faculty, Cleveland Training Program in Cardiovascular Research, NIH

Training Faculty, Medical Scientist Training Program, NIH

Training Faculty, Cell Physiology Training Grant, NIH

Training Faculty, Heart-Lung Physiology: Molecular-Systemic Integration, Training Grant, NIH

Planning and Steering Committee, Ph.D. program in Biophysics/Bioengineering

Executive Committee, Case School of Engineering

Appointments, Tenure and Promotion Committee, Case School of Engineering

Awards Committee, Case School of Engineering

Ad hoc committee for the implementation of The Case School of Engineering

Planning Committee, Case School of Engineering

Search Committee for Chair of Biomedical Engineering

Search Committee for Dean of The Case School of Engineering

Executive Committee of the General Faculty

President's Advisory Committee on Tenure and Promotion

Research Committee, Case School of Engineering

Appointments, Tenure and Promotion Committee, Department of Physiology & Biophysics

Faculty Liaison to the Graduate Student Association in the Department of Biomedical Engineering

Commission for the Establishment of a Cleveland Center for Biomedical Engineering

The University Honorary Degree Committee

University and Departmental Activities at Washington University

Review Committee for Chairman of the Department of Electrical and Systems Engineering

Training Faculty, Principles in Cardiovascular Research Training Program

Training Faculty, Training the Pediatric Emergency Physician – Scientist

Training Faculty, Basic Science Research Training - Cardiopulmonary Surgery

Washington University Academic Delegation to Israel, January 2006.

School of Engineering and Applied Science Alumni Presentation, February 28, 2006.

Washington University's Ambassador to Technion-Israel Institute of Technology (in the McDonnell International Scholars Academy), 2006-

Committee for appointment, tenure and promotion evaluation

Participated in planning the IP20 initiative on Diabetic Cardiovascular Disease (Department of Medicine, Daniel Kelly, P.I.).

Participated in planning of the Congenital Heart Disease Center – The Children's Discover Institute (Pediatrics, Jonathan Gitlin, Director).

Member, Committee on Research Integrity, 2011- 2017.

Search Committee for Chair of Biomedical Engineering, 2012-2013

HHMI Review Committee, 2013

Faculty Mentor to:

Shelly Sakiyama-Elbert (BME)

Don Elbert (BME)

Kurt Thoroughman (BME)

Barani Raman (BME)

Stacey Rentschler (Cardiology and Developmental Biology)

Mark Levin (Pediatrics)

Scott Marrus (Cardiology)

Teaching

Mathematical Modeling of Biomedical Systems

Bioelectric Phenomena

Cardiac Excitation, Rhythm, and Control

Lectures in Cardiac Electrophysiology, Medical School, 1st year

Lectures in Electrocardiography, Medical School, 2nd year

Introduction to Biomedical Engineering

Quantitative Bioelectricity and Cardiac Excitation

Integrative Cardiac Electrophysiology

Grants

Current

Principal Investigator	NIH-R37-HL033343* 07/01/85-05/31/2016	"Inverse and Forward Problems in Electrocardiography"

*This grant was selected for an NIH MERIT Award.

Principal Investigator	NIH-RO1-HL049054 02/01/93-11/30/2017	"Cardiac Excitation and Arrhythmias"

Previous

Member	FONDATION LEDUCQ 10/01/08- 12/31/2013	"Alliance for CaMK2 Signaling in Heart Disease"
Principal Investigator	NATIONAL SCIENCE FOUNDATION CBET-0929633 08/15/09-07/31/2013	"Modeling Spatial Organization of Cardiac Cell Function: Application to Calcium Waves and Arrhythmia"
Investigator (Dr. Cecil Thomas, P.I.)	NIH (SBIR) 05/85-12/85	"Electrocardiographic Imaging System"
CO-Principal Investigator (with Dr. Plonsey)	NIH-HL23645 04/01/79-03/03/82	"Study of Cardiac Sources of the ECG"
CO-Principal Investigator (with Dr. Plonsey)	NIH-HL17931 06/01/81-05/31/84	"Normalized Body Surface Potential Maps"
Principal Investigator	AHA-HANEO - 4426 07/01/84-06/30/85	"Inverse and Forward Problems in Electrocardiography"
Collaborating Investigator (Dr. Liebman, P.I.)	AHA-HANEO 07/01/84-06/30/85	"Clinical Application of Electrocardiographic Body Surface Potential Mapping"
CO-Principal Investigator (with Dr. Liebman)	NIH 12/01/84-11/30/87	"Normalized Body Surface Potential Maps"
CO-Investigator (Dr. Albert Waldo, P.I.)	AHA Research Initiative Award 1/87-12/89	"Studies of Ventricular Arrhythmias and of Neural Stimulation"
Principal Investigator	AHA 07/01/90-06/30/91	"Recovery of Endocardial Potential from Cavity Potential Data"

Principal Investigator	NSF (Super computer) 4/87-4/94	"Inverse Problem and Propagation in Cardiac Tissue"
Principal Investigator	AHA - NATIONAL 07/01/91-06/30/94	"Recovery of Endocardial Potential from Cavity Potential Data"
Principal Investigator	NASA Lewis Center (Supercomputer) 05/01/91-05/01/94	"Elliptic Boundary Value Problems" 400 hours of Cray Computer time.
Associate Director	Whitaker Foundation Development Award 07/01/1996 - 12/31/2000	"Integrated Program for Structural and Functional Cardiovascular and Neural Engineering"
Principal Investigator	NATIONAL SCIENCE FOUNDATION CBET-0929633 08/15/09-07/31/2012	"Modeling Spatial Organization of Cardiac Cell Function: Application to Calcium Waves and Arrhythmia"

c. <u>As Sponsor</u>

AHA Postdoctoral Fellowship for Dr. Pedro Diaz	01/0183-01/01/84
AHA Postdoctoral Fellowship for Dr. Weilun Quan	07/01/88-06/30/90
Whitaker Foundation Award for Dr. Weilun Quan	01/01/90-12/31/92
Fellowship for Dr. Kyoung Joung Lee from the Korean Academy of Science	01/01/93-01/01/94
AHA Postdoctoral Fellowship for Dr. Xiaoqin Zou	09/01/94-08/31/95
NASPE Fellowship for Dr. Simie Platt	07/01/95-06/30/96
Postdoctoral Fellowship to Dr. Jan Kucera From the Swiss Government	04/01/00 – 03/31/02
Postdoctoral Fellowship to Dr. Ali Nekouzadeh Children's Discovery institute	02/01/08- 01/31/10
AHA Pre-doctoral Fellowship to Tom O'Hara	07/01/08-06/30/10
AHA Pre-doctoral Fellowship to Namit Gaur	07/01/10 - 06/30/12
AHA Post-doctoral Fellowship to Kavit Desouza	07/01/11 – 06/30/12

Yoram Rudy

Washington University in St. Louis

The Fred Saigh Distinguished Professor.

Professor of Biomedical Engineering, Cell Biology & Physiology, Medicine, Radiology, and Pediatrics. Director, Cardiac Bioelectricity and Arrhythmia Center (CBAC)

Member, National Academy of Engineering of the USA National Academies

Fellow, National Academy of Inventors

Ph.D., Biomedical Engineering, Case Western Reserve University, 1978

M.Sc., Physics, Technion – Israel Institute of Technology, 1973

B.Sc., Physics, Technion – Israel Institute of Technology, 1971

RESEARCH INTERESTS

Cardiac bioelectricity; cardiac electrophysiology and arrhythmias; computational biology and mathematical modeling; cardiac imaging and mapping

CURRENT RESEARCH

Our research aims at understanding the mechanisms that underlie normal and abnormal rhythms of the heart at various levels, from the molecular (ion channel) and cellular to the whole heart. We are also developing and applying a novel noninvasive imaging modality (Electrocardiographic Imaging, ECGI) for the diagnosis and guided therapy of cardiac arrhythmias. Rhythm disorders of the heart lead to over 400,000 cases of sudden death annually in the US alone, and to many more cases of disability and compromised quality of life. Through the development of detailed mathematical models of ion channels, cardiac cells (the Luo-Rudy, Hund – Rudy, and O'Hara -Rudy models) and tissue, we are investigating the mechanisms and consequences of genetically-inherited cardiac arrhythmias, impaired cell-to-cell communication, and abnormal spread of the cardiac impulse in the diseased heart (e.g. myocardial infarction). ECGI imaging has been tested and evaluated extensively with excellent results in experimental setups and in patients with various heart conditions, including comparisons to catheter mapping and multi-electrode mapping directly from the heart during open-heart surgery. ECGI is currently used to study mechanisms of various cardiac arrhythmias (e.g. atrial fibrillation, ventricular tachycardia) in patients and to guide therapeutic interventions. Our premise is that an integrated approach to the study of mechanisms at all levels of the cardiac system, and the development of novel diagnostic and therapeutic tools will lead to successful strategies for prevention and treatment of cardiac arrhythmias and sudden death.