

J. Kevin Donahue, M.D.

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Professor of Medicine
Director of Electrophysiology Research
The University of Massachusetts School of Medicine
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Education and Training

BA	8/83-5/87	Washington University College of Arts and Sciences. Chemistry, magna cum laude
MD	8/87-5/92	Washington University School of Medicine.
Residency	6/92-6/94	Hospital of the University of Pennsylvania. Internal Medicine.
Fellowship	7/94-3/99	Johns Hopkins University School of Medicine. Cardiology and Cardiac Electrophysiology.

Professional Appointments

9/85-8/87	Washington University. Research student, advisor Michael J. Welch, PhD
6/90-9/91	Washington University School of Medicine. Four Schools Physician-Scientist Program research fellowship, advisor Peter B. Corr, PhD
7/95-7/97	Johns Hopkins University School of Medicine. Post-doctoral fellow, advisor John H. Lawrence, MD
4/99-10/04	Johns Hopkins University. Assistant Professor of Medicine
4/99-9/05	Johns Hopkins Hospital. Active full-time staff, cardiac electrophysiology
1/03-9/05	Johns Hopkins University. Director of Cardiac Genetics
10/04-9/05	Johns Hopkins University. Associate Professor of Medicine
9/05-6/11	Case Western Reserve University. Associate Professor of Medicine
9/05-9/13	MetroHealth Medical Center, Cleveland, OH. full-time staff, cardiac electrophysiology.
1/07-6/11	Case Western Reserve University. Associate Professor of Physiology and Biophysics.
1/09-6/11	Case Western Reserve University. Associate Professor of Biomedical Engineering.
6/11-9/13	Case Western Reserve University. Professor (with tenure)
10/13-	Case Western Reserve University. Adjunct Professor of Biomedical Engineering
10/13-	University of Massachusetts School of Medicine. Professor of Medicine (with tenure), Director of Electrophysiology Research.
10/13-	University of Massachusetts Medical Group. Attending Cardiac Electrophysiologist

Licensure and Board Certification

7/94-9/06	Maryland Medical License D46652
11/95-11/05	American Board of Internal Medicine: internal medicine board certified

11/99-11/19 American Board of Internal Medicine: cardiovascular diseases board certified
11/01-11/21 American Board of Internal Medicine: cardiac electrophysiology board certified
10/05-4/15 Ohio Medical License 35-087096
9/13-present MA Medical License 257122

Professional Society memberships

1996- Cardiac Electrophysiology Society
1998- American Society of Gene and Cell Therapy
2003-2005, 2017 CV abstracts review committee (chair 2005)
2004-2010 Cardiovascular Committee
2005 Cardiovascular Sessions organizer
1998- American Heart Association basic sciences council
2001- Fellow of the American Heart Association
2005-2007 Electrocardiography and Arrhythmias Committee
2008, 2011 Cleveland Affiliate Research Committee
2001- Heart Rhythm Society
2001 NASPE Futures Conference invited participant
2002-2003 Publications Task Force
2003-2005 Scientific Sessions Program Committee
2004-2008 Research Subcommittee
2005-2012 Fellowship Subcommittee (Chair 2008-2012)
2005-2010 Young Investigator Award Committee (Chair 2009)
2008-2012 Clinical and Research Training Committee
2008-2009 Awards Subcommittee
2008 Strategic Planning Summit invited participant
2010-2012 Internet Subcommittee
2010 Interviews at HR10 working group
2012-2014 Journal subcommittee
2014-2017 Board of Trustees
2014-2016 Scientific and Clinical Documents Committee (Board Liaison)
2015-2016 Audit Committee
2016-2017 Education Committee (Board Liaison)
2014-2015 35th Anniversary Task Force
2017 Investment Advisor working group
2017-2019 Nominations Committee
2009- American Society for Clinical Investigation

Awards and Honors

1987 Phi Beta Kappa Honorary Society
1987 American Chemical Society, Charles D. Coryell Award
1990 Four Schools Physician-Scientist Training Program
1996 Astra-Merck, Young Investigator Competition, national finalist

1998 NASPE, Wilson Greatbatch, Ltd. Travel Award
 1999 Johns Hopkins University, Richard S. Ross Clinician Scientist Award
 2000 American Heart Association, “Top 10 Research Advances in Cardiovascular Disease”
 2001 David H. Bernstein Idea Award in cardiovascular biology
 2009 Induction into the American Society for Clinical Investigation
 2011 Reuter Foundation award for the study of atrial fibrillation gene therapy
 2011 Award of tenure. Case Western Reserve University
 2011-16 named to US News Top Doctors and Castle Connolly top 1% of clinical cardiac electrophysiologist in the US lists.
 2013 named to Cleveland Magazine Top Doctors list.
 2014 Award of tenure. University of Massachusetts
 2016 Worcester Foundation, Jack and Susan Bassick Award
 2017 Fellow of the Royal College of Physicians of Ireland

Professional Service

National Institutes of Health:

Recombinant DNA Advisory Committee 2014 – 2018

Subspecialty Board:

American Board of Internal Medicine, Test Committee on Clinical Cardiac Electrophysiology 2010 - 2016

Editorial Board:

Circulation Research 1999-2005, Journal of Cardiovascular Electrophysiology 2009 - present, Journal of Interventional Cardiac Electrophysiology 2011 – present, Trends in Cardiovascular Medicine 2015 – present, Circulation Arrhythmias and Electrophysiology 2017 – present.

Invited reviewer:

Nature Medicine, New England Journal of Medicine, Lancet, JAMA, Circulation, Circulation Research, Journal of the American College of Cardiology, The Journal of Gene Medicine, Molecular Therapy, American Journal of Physiology, Journal of Electrocardiography, Heart Rhythm, Journal of Cardiovascular Electrophysiology, PACE, Journal of Interventional Cardiac Electrophysiology, Journal of Molecular and Cellular Cardiology, Gene Therapy.

Grant reviewer:

Ad hoc: Food and Drug Administration Orphan Drug Program 2000, Israel Science Foundation 2003, United States-Israel Binational Science Foundation 2009, Health Research Council of New Zealand 2011; Deutsche Forschungsgemeinschaft (German DFG) 2011.

AHA—Mid-Atlantic Affiliate Basic Cardiac Physiology study section 2002-2005;

National: Biotechnology study section 2006-2009

NIH— ZHL1 “Ancillary Studies in Clinical Trials” special emphasis panel 2007-2014 (Chair 2013-2014); Ad hoc PPG review 2002, 2004, 2017; SBIR review 2008, 2010, 2012 (chair 2013, co-chair 2014), BRP review 2009, CICS 2017.

Abstract reviewer:

American Heart Association national meeting, American Society of Gene Therapy national meeting, Heart Rhythm Society national meeting

Advisory Committees:

- 2003-2005 Data Safety Monitoring Board, Clinical trial on the use of D-Stat to prevent hematoma formation in prepectoral pockets. (Sponsor: Vascular Solutions, Inc.)
- 2005-2010 External Advisory Board for P01 HL039707 Intercellular communication and impulse propagation (PI Jose Jalife)
- 2005-2010 Consultant for P01 HL078931 Cardiac fibrillation: mechanisms and therapy (PI James Weiss)
- 2007-2011 Consultant for P01 HL028958 Cardiac rhythm and arrhythmias (PI Michael Rosen)
- 2008-2017 Consultant for R01 HL96652 CaMKII in sinus node physiology and disease (PI Mark Anderson)

Medical School Service

- 1999-2005 JHU Division of Cardiology, Mentor, T32 training grant (David Kass PI)
- 2001 JHU Department of Medicine Research Protocol Prioritization Committee
- 2006-2009 CWRU Department of Biomedical Engineering, PhD Advisory Committee. Maria Dikshteyn Strom.
- 2007 MetroHealth Campus, CWRU, Chester Summer Scholars selection committee.
- 2007-2009 MetroHealth Campus, CWRU, Rammelkamp Research Day Young Investigator Award judge
- 2007-2009 MetroHealth Campus, CWRU, EP fellowship selection committee
- 2007-2011 CWRU Department of Physiology and Biophysics, PhD Advisory Committee. Krekwit Shinlapawittayatorn.
- 2007-2011 MetroHealth Campus CWRU, Cardiology Grand Rounds selection committee
- 2008-2010 Cleveland Clinic Lerner College of Medicine, CWRU, Graduate Program Advisory Committee. Sharmila Basu.
- 2008-2013 CWRU Institutional Animal Care and Use Committee
- 2009-2013 CWRU Department of Physiology & Biophysics, Mentor, T32 training grant
- 2009-2013 CWRU Mentor, KL2 multidisciplinary clinical research training program.
- 2009-2013 CWRU Mentor, Medical Scientist Training Program
- 2009-2012 MetroHealth Campus CWRU, Appointments, Promotions and Tenure Committee
- 2011 MetroHealth Campus CWRU, search committee for Division Chief, Gastroenterology
- 2014- UMASS Medical School Capstone Scholarship and Discovery Course. Advisor.

Educational activities:

Teaching

- 1999-2005 Johns Hopkins University Attending Physician: Electrophysiology Service and Electrophysiology Laboratory (25% effort)
- 2002-2005 Johns Hopkins University Molecular and Cellular Physiology journal club
- 2005-2013 MetroHealth Hospital Attending Physician: Electrophysiology Laboratory and Electrophysiology service (25% effort)

2006-2013 Ad hoc CWRU teaching: cardiac pathophysiology and physiology small group discussion sections. Masters in Science program translational physiology section.

2013-present U-Mass Memorial Hospital Attending Physician: Electrophysiology Laboratory (25% effort)

2014-present University of Massachusetts Medical School. Ad hoc teaching: molecular basis for disease course.

Mentoring

Basic Research Trainees:

<u>Name</u>	<u>Rank/dates</u>	<u>Current Position</u>
Xiao-Lei Pan, MD	Post-doctoral fellow 4-12/2000	lost contact
Harikrishna Tandri, MD (2003 NASPE Young Investigator Award finalist)	Medical resident 7/2000-6/2003	Associate Professor Johns Hopkins University
Stephan Lehnart, MD (Deutsche Forschungsgemeinschaft post-doctoral research fellowship)	Post-doctoral fellow 11/2000-9/2001	Professor University of Göttingen
Alexander Bauer, MD (Deutsche Forschungsgemeinschaft post-doctoral research fellowship)	Post-doctoral fellow 4/2001-4/2003	Assistant Professor University of Heidelberg
Kan Kikuchi, MD	Post-doctoral fellow 9/2002-9/2004	Lecturer in Cardiology Second Department of Internal Medicine University of Occupational and Environmental Health, Japan
Tetsuo Sasano, MD (2006 Heart Rhythm Society Young Investigator Award winner)	Post-doctoral fellow 7/2003-9/2005	Associate Professor Tokyo Medical and Dental University
Ning Feng, MD, PhD	Post-doctoral fellow 10/2004-9/2005	Staff Scientist Johns Hopkins University
Maria Strom, PhD (co-sponsor with David Rosenbaum)	Graduate student 12/2005 – 3/2010	Scientist CardioInsight Technologies, Inc.
Kamilla Kelemen, MD (Heart Rhythm Society post-doctoral research fellowship)	Post-doctoral fellow 2/2006 – 5/2007	Post-doctoral fellow University of Heidelberg

Hao Qin, PhD (Individual F32 National Research Service Award)	Post-doctoral fellow 4/2006 – 3/2008	Computer Programmer Federal Express
Guy Amit, MD	Post-doctoral fellow 7/2007 – 6/2008	Cardiac Electrophysiology Section Head Lecturer in Cardiology Soroka University Medical Center Ben-Gurion University of the Negev
Tomonori Igarashi (Heart Rhythm Society post-doctoral research fellowship, 2011 Heart Rhythm Society Young Investigator Award winner)	Post-doctoral fellow 4/2009 – 4/2011	Assistant Professor Second Department of Internal Medicine University of Occupational and Environmental Health, Japan
J. Emanuel Finet, MD (2012 American College of Cardiology Young Investigator Award winner)	Post-doctoral fellow 3/2006 – 6/2013	Assistant Professor Indiana University
Ian Greener, PhD (American Heart Association post-doctoral research fellowship)	Post-doctoral fellow 3/2008 – 9/2011	Instructor Brown University
Ramnath Nayak, MD, PhD	Post-doctoral fellow 4/2011 – 5/2013	Internal Medicine Residency India
Julie Wolfram, PhD	Post-doctoral fellow 9/2011 – 10/2013	Staff Scientist Athersys, Inc.
Michelle Jennings, MS (American Heart Association pre-doctoral research fellowship)	graduate student 4/2012 – 12/2015	Medical Student Case Western Reserve University
Zhao Liu, MS	graduate student 6/2012 – 3/2017	Post-doctoral fellow Yale University
Freny Varghese, PhD	Post-doctoral fellow 1/2017 – present	
Shankar Parajuli, PhD	Post-doctoral fellow 2/2017 - present	

Clinical Trainees:

<u>Name</u>	<u>Dates</u>	<u>Current Position</u>
Eric Taylor, MD	4-6/1999	private practice

Sunny Po, MD, PhD	1999-2000	Professor University of Oklahoma
Pete Jumrussirikul, MD	1999-2000	private practice
Charles Leng, MD	2000-2001	Assistant Professor University of Pennsylvania
Richard Wu, MD	2000-2002	Associate Professor University of Texas-Southwestern
Piamsook Angekeow, MD	2000-2002	private practice
George Juang, MD	2000-2002	private practice
Zayd Eldadah, MD, PhD	2002-2003	Assistant Professor Georgetown University
David Bradley, MD, PhD	2002-2003	Assistant Professor Mayo Clinic
Vinod Jayam, MD	2002-2003	private practice
Glenn Meininger, MD	2003-2004	private practice
Lars Lickfett, MD	2003-2004	Assistant Professor University of Bonn
Timm Dickfeld, MD	2003-2004	Professor University of Maryland
Charles Henrickson, MD	2003-2004	Associate Professor Oregon Health Sciences University
Alan Cheng, MD, PhD	2004-2005	Assistant Professor Johns Hopkins University
David Spragg, MD	2004-2005	Assistant Professor Johns Hopkins University
Ken Bilchick, MD	2005	Assistant Professor University of Virginia
Saman Nazarian, MD	2005	Associate Professor University of Pennsylvania

Hari Tandri, MD	2005	Associate Professor Johns Hopkins University
Irfan Khan, MD	2005-2006	private practice
Quan Pham, MD	2005-2006	private practice
Guy Amit, MD	2006-2008	Cardiac Electrophysiology Section Head Lecturer in Cardiology Soroka University Medical Center Ben-Gurion University of the Negev
Roopinder Sandhu, MD	2007-2009	Assistant Professor University of Calgary
Devi Gopinath, MD	2009 – 2011	private practice
Michael Cutler, DO PhD	2011 – 2013	Assistant Professor Case Western Reserve University
Khalid Abozguia, MD	2013 – 2013	Cardiac Electrophysiology Fellow MetroHealth Hospital, CWRU

Research Support

Current

2017-2021 NIH/NHLBI R01 HL134185

“Integrative analysis of electrophysiology in the healed myocardial infarction scar”

Role: Principal Investigator, 25% effort, Direct cost \$447,000/year

2016-2020 NIH/NHLBI R01 HL130376

“Final preclinical development of AAV gene therapy for atrial fibrillation”

Role: Principal Investigator, 40% effort, Direct cost \$430,000/year

2016-2018 US Department of Defense Therapy Development Award PR150043

“Biodistribution and toxicology assessment of gene therapy for postoperative atrial fibrillation”

Role: Principal Investigator, 25% effort. Direct cost \$1,800,000 over 2 years.

2015-2018 AHA Grant-in-aid 15GRNT25550012

“AAV gene therapy-mediated prevention of atrial fibrillation”

Role: Principal Investigator, 10% effort. Direct cost \$66,000/year.

2009-2016 NIH/NHLBI Gene Therapy Resource Program

RSA1106 “Immunology testing of AAV serotypes for atrial gene transfer”

RSA1122 “Regulatory support: gene therapy to prevent post-operative atrial fibrillation”

RSA1095 “Pharm/tox: gene therapy to prevent post-operative atrial fibrillation”
Role: Principal Investigator, no defined effort. No direct cost. Service provision only.

Completed

2013-2017 NIH/NIA R21 AG042701-01
“Final preclinical development of gene therapy for post-operative atrial fibrillation”
Role: Principal Investigator, 10% effort. Direct cost \$275,000 over 2 years.

2008-2015 NIH/NHLBI R01 HL93486
“Gene Transfer Approaches to Atrial Fibrillation”
Role: Principal Investigator, 25% effort. Direct cost \$250,000/year

2008-2013 Fondation Leducq Transatlantic Networks of Excellence program
“Alliance for Calmodulin Kinase Signaling in Heart Disease”
Role: Associate Member

2001-2013 NIH/NHLBI R01 HL67148
“Focal Modification of Electrical Conduction in the Heart”
Role: Principal investigator

2009-2012 NIH/NHLBI RC1 HL100105
“Targeted Cell Therapy for the Treatment of Ventricular Tachycardia”
Role: Co-investigator (Laurita PI)

2009-2010 NIH/NHLBI Gene Therapy Resource Program
RSA1058 “Survey of AAV serotypes for atrial gene transfer”
RSA1065 “Immunology testing of AAV serotypes for atrial gene transfer”
RSA1090 “Regulatory support: gene therapy to prevent post-operative atrial fibrillation”
Role: Principal Investigator, no defined effort. No direct cost. Service provision only.

2003-2007 NIH/NIBIB R01 EB002846
“Improved methods for myocardial gene transfer”
Role: Principal Investigator

2006 Excigen, Inc.
“Pilot study evaluating AF in a miniature swine model”
Role: Principal Investigator

2003-2005 Foundation For Fighting Blindness (P.I. Quan Dong Nguyen)
An open label pilot (phase I/II) study of combretastatin A4 phosphate in macular degeneration
Role: Co-Investigator

2003-2005 NIH/NHLBI R01 HL072922 (P.I. Richard Rivers)
“Network vasomotor response to tissue adenosine”
Role: Co-Investigator

2003-2005 Reynolds Cardiovascular Clinical Research Center (P.I. Eduardo Marbán)
“Novel therapeutics targeted at prevention of sudden cardiac death”
Role: Associate Investigator

2005 Genzyme Corporation
“Serotype comparison for AAV gene transfer in cardiac myocytes”
Role: Principal Investigator

2001-2004 AHA. Scientist-Development Grant #0130350N
“Focal Modification of Electrical Conduction in the Heart”
Role: Principal Investigator

2000-2004 NIH/NHLBI. P50 HL52307 (P.I. Eduardo Marbán)
“Specialized Center of Research in Sudden Cardiac Death”
Role: Co-investigator on Project 1 and Director of the Virus Vector Core

2000-2002 NIH/NHLBI. R01 HL66381-01 (P.I. Brad Nuss)
“Gene Therapy for Heart Failure”
Role: Associate Investigator

Conference Organizer/ Session Chair Responsibilities

11/99 AHA, session chair: Advances in Defibrillator Therapy
5/00 NASPE, sessions chair: Neurohumoral and Pharmacological Modulation of Arrhythmias; Congestive Heart Failure—Autonomic Nervous System
9/00 European Muscle Conference, session chair: Myocardial Gene Therapy
2/01-2/03 CARDIAC EP SUMMIT, Scientific Director and Conference Organizer
5/01 NASPE, session chair: Mutations, Polymorphisms and Alternative Splicing of Channel Genes and Arrhythmias
5/03 NASPE, session chair: Pharmacogenetics
5/04 ASGT, session chair: Cardiovascular gene therapy
6/04 Cardiostim 14th World Congress in Cardiac Electrophysiology, session chair: cardiac genetics
5/05 Heart Rhythm 2005, session chair: Gene transfer techniques in arrhythmia research
5/06 ASGT, session chair: Cardiovascular gene therapy
10/06 Rappaport Symposium, session chair: Ion channels in health and disease
5/08 HRS session chair: Research Fellowship Awards
5/09 HRS session chair: Research Fellowship Awards, Young Investigator Competition Oral Presentations
2/10 Winter Arrhythmia School session chair: Novel interventions in atrial fibrillation
5/10 HRS session chair: Research Fellowship Awards, “Getting back into rhythm; can gene transfer deliver?”
5/10 ASGCT session chair: Scientific Symposium: Gene and Cell Therapy Translational Studies
5/11 HRS session chair: Research Fellowship Awards
5/12 HRS session chair: Research Fellowship Awards
5/13 Conference organizer: A Symposium in Honor of David S. Rosenbaum, MD

- 5/13 HRS session chair: VT/VF mechanisms. Basic arrhythmia mechanisms
- 5/14 HRS session chair: “Large animal models: How close are they to humans?” “How to use experimental models to study arrhythmias.”
- 5/15 HRS session chair: “Nature Rules! The Rise of Biologicals to Replace Catheters, Drugs, and Devices in Antiarrhythmic Therapy.”
- 6/16 Cardiostim. Nice, Fr. Session chair: “Creating novel pacemakers to drive the heart.”

Invited Lectures

- 1/99 Baylor University Division of Cardiology Grand Rounds, Houston, TX. “Factors Affecting Adenoviral Gene Transfer to the Myocardium.”
- 4/99 German Society of Cardiology, Mannheim, Germany. “An Update on Myocardial Gene Therapy.”
- 6/99 International Symposium on Molecular Approaches to the Therapy of Heart Failure, Göttingen, Germany. “*In vivo* Myocardial Gene Transfer Delivery Systems.”
- 6/00 International Society of Heart Research, Louisville, KY. “Basic Parameters Relevant to Myocardial Virus Delivery.”
- 5/01 Dartmouth University Division of Cardiology Grand Rounds, Hanover, NH. “Gene Therapy for Cardiac Arrhythmias.”
- 5/01 National Institutes of Health. US-Russia Joint Symposium on New Developments in Cardiac Arrhythmias, Washington, DC. “Prospects for Gene Therapy to Treat Arrhythmic Diseases.”
- 6/01 Visiting Professor of Cardiology. King Edward VI Memorial Hospital, Bermuda.
- 9/01 Visiting Professor of Pharmacology. State University of New York, Syracuse, NY.
- 11/01 University of Maastricht Department of Cardiology Grand Rounds, Maastricht, the Netherlands. “Gene Therapy for Cardiac Arrhythmias.”
- 12/01 European Science Foundation Workshop on Cardiovascular Genomics. Maastricht, the Netherlands. “Ion Channel Regulation: from arrhythmias to genes to channels (to cures?).”
- 4/02 Cardiovascular Cell and Gene Therapy Conference. Massachusetts General Hospital. Boston, MA. “Gene Therapy for Arrhythmias in Heart Failure”.
- 5/02 North American Society of Pacing and Electrophysiology Annual Meeting. “Combining a career in clinical EP and basic research: from the perspective of a young investigator”, “Myocardial Gene Transfer”.
- 6/02 CardioStim. 13th World Congress in Cardiac Electrophysiology. Nice, France. “AV Node Gene Therapy for Rate Control in Atrial Fibrillation”
- 9/02 Duke University Division of Cardiology Grand Rounds, Durham, NC. “The Prospects for Gene Therapy to Treat Cardiac Arrhythmias”.
- 5/03 North American Society of Pacing and Electrophysiology Annual Meeting. “Gene Therapy for Cardiac Arrhythmias.”
- 7/03 Atrial Fibrillation Summit. The Cleveland Clinic Foundation. Cleveland, OH. “Cellular and Molecular Alterations in Atrial Fibrillation”.

- 8/03 XIV Paavo Nurmi Symposium. Genetic and Molecular Basis of Cardiac Arrhythmias. Helsinki, Finland. "Gene transfer techniques in treatment of cardiac channelopathies".
- 9/03 University of California San Diego Division of Cardiology Grand Rounds. "Gene Therapy for Cardiac Arrhythmias".
- 9/03 2nd Fairberg Workshop. Cardiac Engineering: From Genes & Cells to Structure & Function. Erice, Sicily, Italy. "Gene Therapy for Arrhythmias".
- 10/03 Washington University Division of Cardiology Grand Rounds, St. Louis, MO. "Gene Therapy for Cardiac Arrhythmias".
- 10/03 Harold W. Siebens Conference on Genetic and Cell Therapies for Cardiovascular Disease. Mayo Clinic Foundation. Rochester, MN. "Gene Therapy and Arrhythmogenesis".
- 11/03 University of Wisconsin Division of Cardiology Grand Rounds, Madison, WI. "Gene Therapy for Cardiac Arrhythmias".
- 11/03 University of Indiana Division of Cardiology Grand Rounds, Indianapolis, IN. "Gene Therapy for Cardiac Arrhythmias".
- 12/03 The Cleveland Clinic Foundation Division of Cardiology Grand Rounds, Cleveland, OH. "Gene Therapy for Cardiac Arrhythmias".
- 3/04 Keystone Symposium on the Molecular Biology of Cardiac Disease. Keystone, CO. "Gene Therapy for Cardiac Arrhythmias."
- 4/04 Visiting Professor of Cardiac Electrophysiology. University of Western Ontario. London, Ontario, Canada.
- 5/04 Heart Rhythm Society Annual Meeting. San Francisco, CA. "Plenary session: Genetics, Genomics and Gene Therapy of Electrophysiology", "Bench to bedside. Life in the middle"
- 5/04 American Medical Association Media Briefing, New York, NY. "The next generation of therapies for atrial fibrillation."
- 6/04 Cardiostim. 14th World Congress in Cardiac Electrophysiology. Nice, France. "AV node gene therapy", "The future of somatic gene therapy"
- 10/04 NIBIB. Bioengineering grantees meeting. Washington, DC. "Targeted genetic alteration of the cardiac atria by homogeneous transmural gene transfer."
- 10/04 New Arrhythmia Technologies Retreat, Chicago, IL. "Gene therapy for tachyarrhythmias."
- 11/04 American Heart Association Policy Conference. Challenges in Cardiology Training Roundtable, New Orleans, LA. "Transition from trainee to faculty."
- 11/04 American Heart Association Annual Meeting. New Orleans, LA. "Therapeutic applications of myocardial gene transfer."
- 1/05 3rd Fairberg Workshop. The Communicative Cell. Sintra, Portugal. "Modification of cellular communication by gene transfer".
- 5/05 Heart Rhythm Society Annual Meeting. San Francisco, CA. "Nuts and bolts of myocardial gene transfer".
- 11/05 William Beaumont Hospital, Royal Oaks, MI. Visiting Professor in Cardiology.
- 1/06 Carle Clinic, University of Illinois School of Medicine, Urbana, IL. Department of Medicine Grand Rounds.
- 5/06 Heart Rhythm Society Annual Meeting. New Orleans, LA. "Gene Therapy for AF."

- 6/06 American Society of Gene Therapy Annual Meeting. Baltimore, MD. "Large animal models in gene therapy preclinical studies."
- 6/06 Cardiostim. 15th World Congress in Cardiac Electrophysiology. Nice, France. "Atrial Gene Transfer".
- 8/06 Inherited arrhythmias: a National Heart, Lung, and Blood Institute and Office of Rare Diseases workshop consensus report about the diagnosis, phenotyping, molecular mechanisms, and therapeutic approaches for primary cardiomyopathies of gene mutations affecting ion channel function. Washington, DC. "Gene and cell transfer for rare and inherited arrhythmias."
- 10/06 17th Rappaport Symposium. Tel Aviv, Israel. "Mechanisms of ventricular tachycardia ablation by somatic gene transfer".
- 10/06 8th International Dead Sea Symposium, Tel Aviv, Israel. "Future Therapies for SCD: will there be a role for targeted gene and cell therapies?"
- 4/07 International Society for Computerized Electrocardiography Annual Meeting, Cancun, Mexico. "Gene therapy for cardiac tachyarrhythmias."
- 5/07 Heart Rhythm Society Annual Meeting. Denver, CO. "Sudden Cardiac Death: Is the substrate monogenetic or polygenetic"; "Targeting gap junctions with cell and gene therapy to suppress arrhythmias."
- 10/07 2nd International Symposium on Ventricular Arrhythmias. Philadelphia, PA. "Molecular potassium channel ablation."
- 3/08 American College of Cardiology Annual Meeting. Chicago, IL. "Gene therapy in the treatment of cardiac arrhythmias."
- 5/08 Heart Rhythm Society Annual Meeting. San Francisco, CA. "Gene therapies directed at potassium channels"; "Strategies for a successful career in translational EP."
- 6/08 Cardiostim. 16th World Congress in Cardiac Electrophysiology. Nice, France. "Gene constructs for antiarrhythmic therapy."
- 10/08 California Heart Rhythm Conference. San Diego, CA. "Genetic ablation of ventricular tachycardia."
- 11/08 Cardiac EP Society Annual Meeting. New Orleans, LA. "Antiarrhythmic AV node ablation and genetic modification."
- 4/09 MedStar Cardiology Update. Washington, DC. "Gene therapy for ventricular tachyarrhythmias after myocardial infarction."
- 5/09 Heart Rhythm Society Annual Meeting. Boston, MA "Gene therapy for atrial fibrillation", "Gene therapy for ventricular tachyarrhythmias", "Fundamentals of myocardial gene transfer."
- 10/09 4th International Symposium on Ventricular Arrhythmias. Philadelphia, PA. "Themes in basic science that will be important to clinical electrophysiologists in the next 5-10 years."
- 2/10 7th Winter Arrhythmia School. Collingwood, ON, Canada. "Molecular/cellular therapies for arrhythmia treatment"
- 3/10 American College of Cardiology Annual Meeting. Atlanta, GA. "Gene therapy for atrial fibrillation".
- 4/10 European Cardiac Arrhythmia Society Annual Meeting. Munich, Germany. "Biological therapies as replacement for device therapies."

- 5/10 Heart Rhythm Society Annual Meeting. Denver, CO. “Basic concepts in gene therapy.”
- 5/10 American Society of Gene and Cell Therapy Annual Meeting. Washington, DC. “Development of a gene therapeutic for atrial arrhythmias.”
- 6/10 Cardiostim. 17th World Congress in Cardiac Electrophysiology. Nice, France. “Gene therapy for atrial fibrillation and ventricular tachycardia.”
- 1/11 16th Annual Boston Atrial Fibrillation Symposium. Boston, MA. “Gene therapy for atrial fibrillation.”
- 2/11 Electrophysiology Grand Rounds. University Hospitals, Case Medical Center. “Gene therapy for atrial fibrillation.”
- 5/11 Heart Rhythm Society Annual Meeting. San Francisco, CA. “Reentry and atrial fibrillation.”
- 6/11 Board meeting. American Heart Association, Cleveland Chapter. “Arrhythmia gene therapy.”
- 11/11 Division of Cardiology, University of North Carolina-Chapel Hill, Grand Rounds.
- 12/11 Department of Molecular Cardiology, Lerner Research Institute, Cleveland Clinic. Grand Rounds.
- 4/12 Division of Cardiology, Dartmouth University, Grand Rounds.
- 5/12 Stanford University Biodesign New Arrhythmia Technologies Retreat. “Gene therapy for atrial fibrillation.”
- 5/12 Heart Rhythm Society Annual Meeting. Boston, MA. “My path: basic, translational and clinical EP career development in the mid-Atlantic and mid-West.”
- 6/12 Division of Cardiology, University of Massachusetts, Worcester, MA, Grand Rounds.
- 7/12 Division of Cardiology, State University of New York, Stony Brook, NY, Grand Rounds.
- 7/12 Division of Cardiology, Indiana University, Indianapolis, IN, Grand Rounds.
- 9/12 California Heart Rhythm Symposium. San Francisco, CA. “What can we learn from animal models of ventricular tachycardia?”
- 11/12 American Heart Association Annual Meeting. Los Angeles, CA. “Genetic ablation of ventricular tachycardia.”
- 2/13 Division of Cardiology, Duke University, Durham, NC. Grand Rounds.
- 5/13 Electrophysiology conference. University of Pennsylvania. Philadelphia, PA. “Mechanisms of VT in the post-infarct heart.”
- 5/13 Division of Cardiology, University of Pennsylvania. Philadelphia, PA. Grand Rounds.
- 5/13 Stanford University Biodesign New Arrhythmia Technologies Retreat. “Gene therapy for ventricular tachycardia.”
- 5/13 Pittsburgh Atrial Fibrillation Symposium. Pittsburgh, PA. Keynote Address. “Gene therapy for atrial fibrillation.”
- 8/13 Cleveland Clinic Foundation Heart Failure Conference. “Gene Therapy for Cardiovascular Disease.”
- 10/13 8th International Symposium on Ventricular Arrhythmias. Philadelphia, PA. “Gene therapy for post-myocardial infarction ventricular tachycardia.”

- 11/13 American Heart Association Annual Meeting. Dallas, TX. "Gene therapy for atrial fibrillation."
- 3/14 University of Massachusetts Medical School. Primary Care Days. "Stroke prevention in atrial fibrillation."
- 4/14 Visiting Professor. Department of Physiology. Stritch School of Medicine, Loyola University. Chicago, IL.
- 5/14 Heart Rhythm Society Annual Meeting. San Francisco, CA. "Large Animal Gene Delivery", "Translating basic research findings into clinical trials."
- 5/14 Stanford University Biodesign New Arrhythmia Technologies Retreat. "Recent advances in arrhythmia gene therapy."
- 6/14 Cardiostim. 19th World Congress in Cardiac Electrophysiology. Nice, France. "The use of gene transfer for ablation of atrial fibrillation."
- 9/14 California Heart Rhythm Symposium. Los Angeles, CA. "Transgenic Therapy for Atrial and Ventricular Arrhythmias"
- 5/15 Stanford University Biodesign New Arrhythmia Technologies Retreat. "Gene Therapy of Arrhythmias."
- 5/15 Heart Rhythm Society Annual Meeting. Boston, MA. "Molecular Approaches for Treatment of VT", "Porcine Genetic Models".
- 8/15 Kansas City Heart Rhythm Society Meeting. Kansas City, MO. "Biological Pacemakers, Cardiac Regeneration and Gene Therapy in 2015"
- 9/15 California Heart Rhythm Symposium. San Diego, CA. "Transgenic therapy for atrial and ventricular arrhythmias"
- 5/16 Stanford University Biodesign New Arrhythmia Technologies Retreat. "Gene Therapy of Arrhythmias."
- 5/16 Heart Rhythm Society Annual Meeting. San Francisco, CA. "A genetic cure for ventricular tachycardia."
- 5/16 Visiting Professor. Division of Cardiology. Washington University School of Medicine. St. Louis, MO.
- 7/16 Visiting Professor. Division of Cardiology. UCLA School of Medicine. Los Angeles, CA.
- 10/16 NHLBI Innovator Meeting. participant. Bethesda, MD
- 3/17 The Third UCLA Autonomic Nervous System Control of the Heart Symposium. Los Angeles, CA. "Gene therapy approaches to autonomic targets."
- 5/17 Stanford University Biodesign New Arrhythmia Technologies Retreat. "Gene therapy for arrhythmias."
- 5/17 Heart Rhythm Society Annual Meeting. Chicago, IL. "Pathophysiology of scar-related reentry."
- 7/17 NIH Guidelines: Honoring the past, charting the future workshop. Panelist. Bethesda, MD.
- 9/17 6th Annual Symposium of the UAB Comprehensive Cardiovascular Center: Focus on Cardiovascular Electrophysiology. Birmingham, AL. "Gene therapy for cardiac arrhythmias."
- 11/17 California Heart Rhythm Symposium. Los Angeles, CA. "Why is basic science important to EP?"
- 4/18 NIA T1 Translational R21 Awardees Meeting. Bethesda, MD. "Preclinical development of gene therapy for post-operative atrial fibrillation."

- 5/18 Stanford University Biodesign New Arrhythmia Technologies Retreat. “Yearly update on arrhythmia gene therapy.”
- 5/18 Heart Rhythm Society Annual Meeting. Boston, MA. “Genetic modulation for AF prevention.”

Bibliography

Editorials

1. Tomaselli GF and Donahue JK. Point of View: Somatic Gene Transfer and Cardiac Arrhythmias – Problems and Prospects. *J Cardiovasc Electrophysiol* 2003;14:547-551.
2. Donahue JK. Sonic the Hedgehog to the rescue? *Gene Ther* 2006;13:998-999.
3. Donahue JK. Gender and the Heart. *Heart Rhythm* 2006;3:840-841.
4. Donahue JK. Novel strategy to reduce sudden death risk in the healing phase after myocardial infarction. *Circulation* 2009;119:6-8.
5. Donahue JK. Advice for management of the Long-QT patient. *J Cardiovasc Electrophysiol* 2010;21:902-4.
6. Donahue JK. ARVD: “what would you do?” *Trends Cardiovasc Med* 2015;25:189-90.
7. Donahue JK. Cardiac gene therapy: a call for basic method development. *Lancet* 2016;387:1137-9.
8. Donahue JK. Sequencing of uncertain significance. *J Cardiovasc Electrophysiol* 2018;29:105-6.
9. Donahue JK. Epigenetics and cardiovascular disease—from concept to reality. *Trends Cardiovasc Med* 2018;28:323-4.

Book chapters

1. Donahue JK. Adenovirus-mediated myocardial gene therapy, in Hasenfuss G, Marbán E (eds): *Molecular Approaches to Heart Failure Therapy*. Darmstadt, Germany, Steinkopff Verlag Publishing, 2000, pp 100-111.
2. Janssen PML, Lehnart SE, Donahue JK, Prestle J, Marbán E and Hasenfuss G. Adenovirus-mediated transfection of multicellular cardiac preparations, in Hasenfuss G, Marbán E (eds): *Molecular Approaches to Heart Failure Therapy*. Darmstadt, Germany, Steinkopff Verlag Publishing, 2000, pp 112-125.
3. Donahue JK. Ion Channel Regulation: from arrhythmias to genes to channels (to cures?). Doevendans P and Kääh S (eds) *Cardiovascular Genomics: new pathophysiological concepts*. Dordrecht, the Netherlands, Kluwer Academic Publishers, 2002 pp 159-165.

4. Donahue JK and Marbán E. Gene therapy for cardiac arrhythmias, in Runge MS, Patterson C (eds) *Principles of Molecular Cardiology*. Totowa, NJ, Humana Press, Inc., 2005, pp 353-358.
5. Donahue JK, McDonald AD, Fraser H, Rade JJ, Miller JM, and Heldman AH. Gene therapy for atrial fibrillation, in Zenati M and Schwartzman D (eds) *Innovative Management of Atrial Fibrillation*. Malden, MA, Blackwell Publishing, Inc., 2005, pp 171-177.
6. Strom M, Greener ID, and Donahue JK. Introduction to translational research, in Sigg D, He B, Iaizzo P and Xiao YF (eds) *Cardiac Electrophysiology, methods and models*. New York, NY, Springer Publishing Co. 2010, pp 441-456.
7. Donahue JK and Laurita KR. Approaches to atrial fibrillation and post-infarction ventricular tachycardia, in Cohen I and Gaudette G (eds) *Stem Cell Biology and Regenerative Medicine*. New York, NY, Springer Publishing Co., 2011, pp349-378.
8. Donahue JK. The biological pacemaker, in Ellenbogen K, Wilcoff B, Kay GN and Lau CP (eds) *Clinical Cardiac Pacing, Defibrillation, and Resynchronization Therapy*, 4th Edn, Philadelphia, PA, Saunders an imprint of Elsevier, Inc., 2011, pp 191-195.
9. Igarashi T and Donahue JK. Gene therapy for ventricular tachyarrhythmias, in Dudley S, Kocheril A and Alizadehsovari A (eds) *Ventricular Arrhythmias: From Principles to Patients*, Hauppauge, NY, Nova Science Publishers, Inc, 2013, pp121-132.
10. Donahue JK. The biological pacemaker, in Ellenbogen K, Wilcoff B, Kay GN and Lau CP (eds) *Clinical Cardiac Pacing, Defibrillation, and Resynchronization Therapy*, 5th Edn, Philadelphia, PA, Elsevier, Inc., 2016, pp. 589-594.
11. Parajuli S and Donahue JK. Gene and cell therapy approaches for the prevention and treatment of ventricular arrhythmias, in Nussinovitch U (ed) *Emerging therapeutic technologies for heart diseases*, Philadelphia, PA, Elsevier, Inc., 2018 (in press).

Peer-reviewed articles

1. Yamada K, McHowat J, Yan G, Donahue K, Peirick K, Kléber A, and Corr P. Cellular uncoupling induced by the accumulation of long chain acetylcarnitine during ischemia. *Circ Res* 74:83-95, 1994.
2. Donahue JK, Kikkawa K, Johns D, Marbán E, and Lawrence JH. Ultrarapid, highly efficient viral gene transfer to the heart. *Proc Natl Acad Sci USA* 94:4664-4668, 1997.
3. Donahue JK, Kikkawa K, Thomas AD, Marbán E, and Lawrence JH. Acceleration of widespread adenoviral gene transfer to intact rabbit hearts by coronary perfusion with low calcium and serotonin. *Gene Ther* 5:630-634, 1998.
4. Donahue JK, Orias D, Berger RD, Tomaselli GF, Lawrence JH, and Calkins H. Comparison of adenosine effects on AV node reentry and atrioventricular reciprocating tachycardias. *Clin Cardiol* 21:743-746 1998.

5. Lehnart SE, Janssen PML, Franz WM, Donahue JK, Lawrence JH, Marbán E, Prestle J, and Hasenfuss G. Preservation of myocardial function after adenoviral gene transfer in isolated myocardium. *Am J Physiol Heart Circ Physiol* 279: H986-H991 2000.
6. Donahue JK*, Heldman AH, Fraser H, McDonald AD, Miller JM, Rade JJ, Eschenhagen T and Marbán E. Focal modification of electrical conduction in the heart by viral gene transfer. *Nature Medicine* 6:1395-1398 2000. *first and corresponding author
7. Nagata K, Marbán E, Lawrence JL and Donahue JK. Phosphodiesterase inhibitor-mediated potentiation of adenovirus delivery to myocardium. *J Mol Cell Cardiol* 33:575-580 2001.
8. Lehnart SE and Donahue JK. Gene therapy for the treatment of common cardiac arrhythmias, Braunwald E (ed) *MDConsult.com* published online 3/2001.
9. Calkins H, Ramza BM, Brinker J, Atiga W, Donahue K, Nsah E, Taylor E, Halperin H, Lawrence JH, Tomaselli G, and Berger RD. Prospective randomized comparison of the safety and effectiveness of placement of endocardial pacemaker and defibrillator leads using the extrathoracic subclavian vein guided by contrast venography versus the cephalic approach. *Pacing Clin Electrophysiol* 24:456-464 2001.
10. Neyroud N, Nuss HB, Lepo M, Marbán E, Donahue JK. Gene delivery to cardiac muscle. *Methods Enzymol* 346:323-34 2002.
11. Zhou L, Burnett AL, Huang PL, Becker LC, Kuppusamy P, Kass DA, Donahue JK, Proud D, Sham J, Dawson TM and Xu KY. Lack of nitric oxide synthase depresses ion transporting enzyme function in cardiac muscle. *Biochem Biophys Res Commun* 294:1030-1035 2002.
12. Janssen P, Schillinger W, Donahue JK, Zeitz O, Emami S, Weil J, Eschenhagen T, Hasenfuss G, Prestle J. Gi α -2 overexpression depresses the β -adrenergic response in multicellular myocardial preparations and isolated cardiac myocytes. *Cardiovasc Res* 55:300-308 2002.
13. Marbán E, Nuss HB, Donahue JK. Gene therapy for cardiac arrhythmias. *Cold Spring Harb Symp Quant Biol* 67: 527-531 2002.
14. Atiga WL, Worley SJ, Hummel J, Berger RD, Gohn, DC, Mandalakas NJ, Kalbfleisch S, Halperin H, Donahue K, Tomaselli G, Calkins H, and Daoud E. Prospective Randomized Comparison of Cooled Radiofrequency Versus Standard Radiofrequency Energy for Ablation of Typical Atrial Flutter *Pacing Clin Electrophysiol* 25:1172-1178 2002.
15. Lehnart S, Donahue JK. Coronary perfusion cocktails for in vivo gene transfer. *Methods Mol Biol* 219:213-218 2003.
16. Bauer A, McDonald AD, Donahue JK. Pathophysiological findings in a model of persistent atrial fibrillation and severe congestive heart failure. *Cardiovasc Res* 61:764-770 2004.

17. Vasamreddy CR, Jayam V, Lickfett L, Nasir K, Bradley DJ, Eldadah Z, Dickfeld T, Donahue K, Halperin HS, Berger R, Calkins H. Technique and results of pulmonary vein angiography in patients undergoing catheter ablation of atrial fibrillation. *J Cardiovasc Electrophys* 15:21-26 2004.
18. Eldadah Z and Donahue JK. Successful implantable cardioverter defibrillator placement in an ambulatory patient without thoracic venous access. *J Cardiovasc Electrophys* 15:716-718 2004.
19. Bauer A, Donahue JK, Voss F, Becker R, Kraft P, Senges JC, Kelemen K, Katus HA, Schoels W. Pro- and antiarrhythmic effects of fast cardiac pacing in a canine model of acquired long QT syndrome. *Naunyn Schmiedebergs Arch Pharmacol* 369:447-454 2004.
20. Donahue JK, Bauer A, Kikuchi K, McDonald AD. Gene Transfer Techniques for Cardiac Arrhythmias. *Ann Med* 36 (supplement 1):98-106 2004.
21. Donahue JK. Gene Therapy for Cardiac Arrhythmias. *Annals of the New York Acad Sci* 1015:332-338 2004.
22. Murata M, Cingolani E, McDonald AD, Donahue JK, Marban E. Creation of a genetic calcium channel blocker by targeted GEM gene transfer in the heart. *Circ Res* 95:398-405 2004.
23. Bauer A, McDonald AD, Peller L, Rade JJ, Miller JM, Heldman AW and Donahue JK. Physiologically-relevant heart rate control from gene therapy in persistent atrial fibrillation. *Circulation* 110:3115-3120 2004.
24. Kikuchi K, McDonald AD, Donahue JK. Targeted modification of atrial electrophysiology by homogeneous transmural atrial gene transfer. *Circulation* 111:264-270 2005.
25. Roguin A, Donahue JK, Bomma CS, Bluemke DA, Halperin HR. Cardiac magnetic resonance imaging in a patient with implantable cardioverter-defibrillator. *Pacing Clin Electrophysiol* 28:336-338 2005.
26. Lickfett L, Calkins H, Nasir K, Dickfeld T, Eldadah Z, Jayam V, Leng C, Tomaselli G, Donahue K, Halperin H, Luderitz B, Berger R. Clinical prediction of cavotricuspid isthmus dependence in patients referred for catheter ablation of "typical" atrial flutter. *J Cardiovasc Electrophysiol* 16:969-973 2005.
27. Donahue JK, Kikuchi K, Sasano T. Gene therapy for cardiac arrhythmias. *Trends Cardiovasc Med* 15:219-224 2005.
28. Donahue JK, Bauer A, Kikuchi K, Sasano T. Modification of cellular communication by gene transfer. *Annals of the New York Acad Sci* 1047:157-165 2005.

29. Reynolds DW, Chen PS, Deal BJ, Donahue JK, Ellenbogen KA, Epstein AE, Friedman PA, Hammill SC, Hohnloser SH, Kanter RJ, Lindsay BD, Natale A, Saffitz J, Stevenson WG. Highlights of Heart Rhythm 2005, the Annual Scientific Sessions of the Heart Rhythm Society, May 4-7, 2005, New Orleans, Louisiana. *Heart Rhythm* 2:1025-1033 2005.
30. Henrikson CA, Brinker JA, Donahue JK. Temporary placement of a defibrillating lead in the treatment of infection and ventricular tachycardia. *Heart Rhythm* 3:222-224 2006.
31. Tandri H, Griffith LS, Tang T, Nasir K, Zardkoohi O, Vasamreddy C, Capps M, Calkins H, Donahue JK. Clinical course and long-term follow-up of patients receiving implantable cardioverter-defibrillators. *Heart Rhythm* 3:762-768 2006.
32. Kelemen K and Donahue JK. Approaches for cardiovascular gene therapy in animal models. *Drug Discovery Today: Disease Models* 3:305-310 2006.
33. Sasano T, Kikuchi K, McDonald A, Donahue JK. Molecular ablation of ventricular tachycardia after myocardial infarction. *Nature Medicine* 12:1256-8 2006.
34. Kapur NK, Deming CB, Kapur S, Bian C, Champion HC, Donahue JK, Kass DA, Rade JJ. Hemodynamic regulation of endocardial thromboresistance. *Circulation* 115:67-75 2007.
35. Donahue JK. Gene therapy for cardiac arrhythmias; a dream soon to come true? *J Cardiovasc Electrophys* 18:553-9 2007.
36. Sasano T, Kikuchi N, McDonald A, Lai S, Donahue JK. Targeted, high efficiency homogeneous gene transfer. *J Mol Cell Cardiol* 42:954-61 2007.
37. Lehnart SE, Ackerman MJ, Benson DW Jr, Brugada R, Clancy CE, Donahue JK, George AL Jr, Grant AO, Groft SC, January CT, Lathrop DA, Lederer WJ, Makielski JC, Mohler PJ, Moss A, Nerbonne JM, Olson TM, Przywara DA, Towbin JA, Wang LH, Marks AR. Inherited arrhythmias: a National Heart, Lung, and Blood Institute and Office of Rare Diseases workshop consensus report about the diagnosis, phenotyping, molecular mechanisms, and therapeutic approaches for primary cardiomyopathies of gene mutations affecting ion channel function. *Circulation* 116:2325-2345 2007.
38. Ashikaga H, Sasano T, Dong J, Zviman MM, Evers R, Hopenfeld B, Castro V, Helm RH, Dickfeld T, Nazarian S, Donahue JK, Berger RD, Calkins H, Abraham MR, Marbán E, Lardo AC, McVeigh ER, Halperin HR. Magnetic resonance-based anatomical analysis of scar-related ventricular tachycardia: implications for catheter ablation. *Circ Res* 101:939-947 2007.
39. Donahue JK, Sasano T, Kelemen K. Gene therapy approaches to ventricular tachyarrhythmias. *J Electrocardiol* 40:S187-91 2007.
40. Amit G, Qin H, Donahue JK. Biological therapies for the treatment of atrial fibrillation. *J Cardiovasc Pharm* 52:222-7 2008.

41. Finet JE, Rosenbaum DS, Donahue JK. Information learned from animal models of atrial fibrillation. *Cardiol Clin* 27: 45-54 2009.
42. Sasano T, Kelemen K, Greener ID, Donahue JK. Ventricular tachycardia from the healed myocardial infarction scar: validation of an animal model and utility of gene therapy. *Heart Rhythm* 6:S91-97 2009.
43. Chugh SS, Donahue JK, Kaufman ES, Link MS, Markowitz SM, Narayan SM, Quan KJ, Tomaselli GF, Verdino R; CCEP Fellowship Program Directors Group. The future of fellowship training in clinical cardiac electrophysiology: Program directors' perspective 2008. *Heart Rhythm*. 6:1606-12 2009.
44. Amit G, Kikuchi K, Greener ID, Yang L, Novack V, Donahue JK. Selective molecular potassium channel blockade prevents atrial fibrillation. *Circulation* 121 :2263-70 2010.
45. Greener ID and Donahue JK. Gene therapy for arrhythmias. *J Mol Cell Cardiol* 2011;50:759-65.
46. Swaminathan PD, Purohit A, Soni S, Voigt N, Singh MV, Glukhov AV, Gao Z, He BJ, Luczak ED, Joiner ML, Kutschke W, Yang J, Donahue JK, Weiss RM, Grumbach IM, Ogawa M, Chen PS, Efimov I, Dobrev D, Mohler PJ, Hund TJ, Anderson ME. Oxidized CaMKII causes cardiac sinus node dysfunction in mice. *J Clin Invest* 2011;121:3277-88. PMID 21785215
47. Igarashi T, Finet JE, Takeuchi A, Fujino Y, Strom M, Greener ID, Rosenbaum DS, Donahue JK. Connexin gene transfer preserves conduction velocity and prevents atrial fibrillation. *Circulation* 2012;125:216-25. PMID 22158756
48. Donahue JK. Gene therapy for ventricular tachyarrhythmias. *Gene Ther* 2012;19:600-5. PMID 22534468.
49. Greener ID, Sasano T, Igarashi T, Strom M, Rosenbaum DS, Donahue JK. Connexin 43 gene transfer improves conduction velocity and reduces ventricular arrhythmia susceptibility. *J Am Coll Cardiol* 2012;60:1103-10. PMID 23883636
50. Ibrahim MA, Do DV, Sepah YJ, Shah SM, Van Anden E, Hafiz G, Donahue JK, Rivers R, Balkissoon J, Handa JT, Campochiaro PA, Nguyen QD. Vascular disrupting agent for neovascular age-related macular degeneration: a pilot study of safety, tolerability, and efficacy of intravenous combretastatin a-4 phosphate BMC Pharm Tox 2013;14:7 PMID 23316779.
51. Wolfram JA and Donahue JK. Gene therapy for cardiovascular disease. *J Am Heart Assoc*. 2013;2:e000119. PMID 23963752
52. Jennings MM and Donahue JK. Connexin remodeling contributes to atrial fibrillation. *JAFIB* 2013;6:72-78.

53. Panda NC, Zuckerman ST, Mesubi OO, Rosenbaum DS, Penn MS, Donahue JK, Alsberg E, Laurita KR. Improved conduction and increased cell retention in healed MI using mesenchymal stem cells suspended in alginate hydrogel. *J Interv Card Electrophysiol* 2014;41:117-27. PMID 25234602
54. Liu Z and Donahue JK. The use of gene transfer for ablation of atrial fibrillation. *Arrhythmia Electrophysiol Rev* 2014;3:139-44.
55. McManus DD, Tanriverdi K, Lin H, Esa N, Kinno M, Mandapati D, Tam S, Okike ON, Ellinor PT, Keaney JK, Donahue JK, Benjamin EJ, Freedman JE. Plasma microRNAs are associated with atrial fibrillation and change after catheter ablation (the miRhythm study). *Heart Rhythm* 2015;12:3-10. PMID 25257092
56. Shaikh AY, Esa N, Martin-Doyle W, Kinno M, Nieto I, Floyd KC, Browning C, Ennis C, Donahue JK, Rosenthal LS, McManus DD. Addition of B-type natriuretic peptide to existing clinical risk scores enhances identification of patients at risk for atrial fibrillation recurrence after pulmonary vein isolation. *Crit Pathw Cardiol* 2015;14:157-65.
57. Donahue JK. Biological therapies for atrial fibrillation: ready for prime time? *J Cardiovasc Pharmacol* 2016;67:19-25. PMID 26222989
58. Nassal MMJ, Werdich AA, Wan X, Hoshi M, Deschenes I, Rosenbaum DS, Donahue JK. Phosphorylation at connexin43 serine-368 is necessary for myocardial conduction during metabolic stress. *J Cardiovasc Electrophysiol* 2016;27:110-9.
59. Sardana M, Ogunsua AA, Spring M, Shaikh A, Asamoah O, Stokken G, Browning C, Ennis C, Donahue JK, Rosenthal LS, Floyd KC, Aurigemma GP, Parikh NI, McManus DD. Association of left atrial function index with late atrial fibrillation recurrence after catheter ablation. *J Cardiovasc Electrophysiol* 2016;27:1411-9.
60. Donahue JK. Gene therapy for treating ventricular arrhythmias. *Methods Mol Biol* 2017;1521:307-21.
61. Bostrom JK, Saczynski JK, Hajduk, Donahue K, Rosenthal LS, Browning C, Ennis C, Floyd KC, Richardson H, Esa N, Ogarek J, McManus DD. Burden of psychosocial and cognitive impairment in patients with atrial fibrillation. *Crit Pathw Cardiol* 2017;16:71-75.
62. Donahue JK. Current state of the art for cardiac arrhythmia gene therapy. *Pharmacol Ther* 2017;176:60-65.
63. Liu Z, Hutt JA, Rajeshkumar B, Azuma Y, Duan KL, Donahue JK. Preclinical efficacy and safety of KCNH2-G628S gene therapy for post-operative atrial fibrillation. *J Thorac Cardiovasc Surg* 2017;154:1644-51.
64. Finet JE, Wan X and Donahue JK. Fusion of anthopleurin-B to AAV2 increases specificity of cardiac gene transfer. *Virology* 2018;513:43-51.

Patents

Gene delivery compositions and methods (US Patents 6376471, 6855701, 7256182)

Methods and compositions for nucleic acid delivery (US Patent 6992070)

Cardiac arrhythmia treatment methods, (US Patent 7034008, pending US application 20150183842)

Entrepreneurship

Excigen, Inc. Co-founder 2002.

Rithim Biologics, Inc. Co-founder 2016.