

**BIOGRAPHICAL SKETCH**

NAME: Chugh, Sumeet S., MD, FAHA, FHRS, FACC

eRA COMMONS USER NAME (credential, e.g., agency login): chughs

POSITION TITLE: Professor of Medicine-in-Residence, David Geffen School of Medicine at UCLA; Pauline and Harold Price Endowed Chair in Cardiac Electrophysiology Research, Cedars-Sinai, Los Angeles

EDUCATION/TRAINING (*Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable. Add/delete rows as necessary.*)

INSTITUTION AND LOCATION	DEGREE (if applicable)	Completion Date MM/YYYY	FIELD OF STUDY
D.A.V. College, Chandigarh, India	BS	1983	Pre-Medical Studies
Government Medical College, Patiala, Punjab, India	MD	1988	Medicine

**A. Personal Statement**

As a clinician-scientist, I have been involved in population-based investigation of sudden cardiac death (SCD) for over 15 years. In 2002, I initiated, and continue to direct the Oregon Sudden Unexpected Death Study (Oregon SUDS), a prospective evaluation of all residents (~1 million) of the Portland, Oregon metro area. With 300,000-350,000 SCDs in US/year making up 50% of all cardiovascular mortality, the lack of community-based studies represented a significant knowledge gap. The Oregon SUDS effort was designed to close this knowledge gap. Due to a seamless collaboration between Oregon SUDS researchers, emergency medical responders (Jonathan Jui MD, Director Emergency Medical Services, Co-investigator), the medical examiner network (Karen Gunson MD, State Medical Examiner, collaborator) and 16 hospitals of the Portland Oregon metro area, this study has been conducted successfully for >16 years, and is ongoing. In 2015 we expanded this effort to include a new population cohort of 850,000 in Ventura County, California (Prediction of Sudden Death in Multi-ethnic Communities, PRESTO Study) that will allow for race and ethnicity-specific evaluation of sudden death risk predictors. As a consequence we have gained significant experience in community-based SCD investigative methodology and the actively growing clinical database contains detailed phenotyping information on >4000 SCD cases plus matched controls with a DNA/blood/tissue sample archive. The implantable cardioverter- defibrillator has been a major contribution to SCD prevention methodology but there is increasing recognition of the fact that current clinically utilized methods of predicting SCD risk (largely measurement of the left ventricular ejection fraction, LVEF<35%) are inadequate. In fact, the vast majority of patients who suffer SCD have preserved LVEF. The overall goal of our effort is to identify novel risk markers that will enhance the clinical approaches to prediction and prevention of this condition. Over the past decade we have reported on several such novel determinants of SCD risk that include phenotypic markers, genetic variants as well as other biomarkers. I have authored >200 peer-reviewed publications and accepted >280 speaking engagements in the fields of cardiac electrophysiology and sudden cardiac death.

**B. Positions and Honors****Positions and Employment**

1989-1991	Research Assistant, Hematology, Tufts New England Medical Center, Boston, MA
1991-92	Resident, Internal Medicine, Tufts Newton-Wellesley Hospital, Newton, MA
1992-94	Resident, Internal Medicine, Hennepin County Medical Center, Mpls, MN
1994-1997	Fellow, Cardiovascular Medicine, University of Minnesota, Mpls, MN
1997-1999	Fellow, Clinical Cardiac Electrophysiology, Mayo Clinic, Rochester, MN
1999-2003	Assistant Professor of Medicine, Oregon Health & Science University, Portland, OR
2002-2008	Director, Fellowship Training Program, Clinical Cardiac Electrophysiology, Oregon Health & Science University, Portland, OR
2003-2008	Associate Professor of Medicine, Oregon Health & Science University, Portland, OR
2006-2008	Section Chief, Clinical Cardiac Electrophysiology, Health & Science University, Portland, OR

2006-2008 Director, Cardiac Arrhythmia Center, Oregon Health & Science University, Portland, OR  
 2008-2011 Professor of Medicine-in-Residence, David Geffen School of Medicine at UCLA, Los Angeles, CA  
 2008- Professor of Medicine, Cedars-Sinai Professorial series  
 2008- Associate Director of the Heart Institute, Cedars-Sinai Medical Center, Los Angeles, CA  
 2008- Section Chief, Clinical Electrophysiology, Cedars-Sinai Medical Center, Los Angeles, CA  
 2008- Pauline and Harold Price Chair in Cardiac Electrophysiology Research  
 2009- Professor of Emergency Medicine (Affiliate), Oregon Health & Science University, Portland, OR  
 2010- Director, Heart Rhythm Center of Excellence, Cedars-Sinai Medical Center  
 2010- Professor of Human Genetics, Cedars-Sinai Professorial Series  
 2011- Professor of Medicine-in-Residence Step III, David Geffen School of Medicine at UCLA  
 2014-2017 Professor of Medicine-in-Residence Step IV, David Geffen School of Medicine at UCLA  
 2017- Professor of Medicine-in-Residence Step V, David Geffen School of Medicine at UCLA

**Other Professional Membership**

1993 Diplomate, American Board of Internal Medicine  
 1999 Diplomate, American Board of Internal Medicine (Cardiovascular Disease)  
 2000 Diplomate, American Board of Internal Medicine (Clinical Cardiac Electrophysiology)  
 2000 Fellow, American College of Cardiology  
 2005-2007 Member, Steering Committee, Functional Genomics IWG, American Heart Association  
 2009 Fellow, Heart Rhythm Society  
 2009 Fellow, American Heart Association

**Honors**

2000 New Investigator Award, American Heart Association  
 2001 Doris Duke Innovation in Clinical Research Award  
 2003 Accelerated promotion to Associate Professor (2003) and Professor (2008)  
 2004 Donald W. Reynolds Visiting Professor, the Johns Hopkins University Division of Cardiology  
 2005 Heart Researcher of the Year Award, Oregon Health & Science University  
 2007-2008 Excellence in Teaching Award, School of Medicine, Oregon Health and Science University, Portland OR  
 2008- Chair, World Health Organization Panel on Global Disease Burden Assessment of Arrhythmias and Conduction System Disorders  
 2011 Elected Member, Association of University Cardiologists  
 2012 Elected Fellow, International Academy of Cardiovascular Sciences  
 2013 Howard Morgan Award for Distinguished Achievements in Cardiovascular Research (The International Academy of Cardiovascular Sciences)  
 2014 Simon Dack Award for Outstanding Scholarship (The Journal of the American College of Cardiology)  
 2015 Elected Member, American Society for Clinical Investigation  
 2016 Elected to Leadership Council, Association of University Cardiologists  
 2018 Elected Secretary-Treasurer, Association of University Cardiologists

**Peer Review Experience**

2006 Reviewer (Ad hoc), Special Emphasis Panel (ZRG1 CVS D-90), Center for Scientific Review, National Institutes of Health  
 2007- Reviewer (Ad hoc), Electrical Signaling, Ion Transport, and Arrhythmias Study Section (ESTA), Center For Scientific Review, National Institutes of Health  
 2007- Reviewer (Ad hoc), Bioengineering, Technology and Surgical Sciences Study Section (BTSS), Center For Scientific Review, National Institutes of Health  
 2007- Reviewer (Ad hoc), Special Emphasis Panel, Vascular Cell and Molecular Biology Study Section (VCMB), Center For Scientific Review, National Institutes of Health  
 2008-2012 Charter member, Electrical Signaling, Ion Transport, and Arrhythmias Study Section (ESTA), Center For Scientific Review, National Institutes of Health  
 2008-2009 Member, American Heart Association Peer Review committee for Electrophysiology Research (National)  
 2010- Member, American Heart Association Peer Review committee for Genomics and Observational Epidemiology (National)

2013-	Phase 1 reviewer, 2013 NIH Director's New Innovator Award Program (ZRG1 MOSS-C)
2014-	Member, Scientific Advisory Committee, National Registry for Sudden Death in the Young
2016-	Reviewer (Ad hoc), Clinical and Integrative Cardiovascular Sciences Study Section (CICS)
2016-	Reviewer (Ad hoc), Cancer, Heart, and Sleep Epidemiology Study Section (CHSA)
2017-2021	Member, Clinical and Integrative Cardiovascular Sciences Study Section (CICS)

### C. Contribution to Science

My career has been dedicated to understanding sudden cardiac death (SCD): how often it occurs, the underlying causes, and the identification of novel risk factors with the overall goal of improving prevention. Toward this goal I have employed population science as a means of identifying and following up on pathways to SCD risk that would be meaningful from a clinical and public health standpoint. I offer a description of my contributions, with selected corresponding publications.

1) As a resident in internal medicine (1992-94) I was fortunate to be mentored in autopsy-based evaluations of sudden unexpected death and continued this work as a fellow in cardiovascular medicine (1994-97) and clinical electrophysiology (1997-99). In 2000 I published a paper on sudden death with apparently normal heart that drew attention to the subgroup of patients with autopsy-negative unexplained sudden death. This initial work led to two original investigations in these patients both in 2004. One described a novel condition in young adults – idiopathic myocardial fibrosis – that led to SCD in the absence of any other etiologies. The second represents what may be the first report of successful molecular autopsies from postmortem tissue in SCD cases, leading to a diagnosis of familial arrhythmia syndromes.

- Chugh SS, Kelly KL, Titus JL. Sudden Cardiac Death with Apparently Normal Heart. *Circulation* 2000;102(6):649-54. **(224 citations)**
- John B, Titus JL, Edwards WD, Shen W-K, Chugh SS. Global Remodeling of Ventricular Interstitium in Idiopathic Myocardial Fibrosis and Sudden Cardiac Death. *Heart Rhythm* 2004; 1(2):141-9. **(35 citations)**
- Chugh SS, Senashova O, Watts A, Tran PT, Zhou Z, Gong Q, Titus JL and Hayflick SJ. Postmortem Molecular Screening in Unexplained Sudden Death. *J Am Coll Cardiol* 2004; 43(9):1625-9. **(163 citations)**

2) In 2002 I initiated and continue to direct, a real-time prospective, population-based evaluation of sudden cardiac arrest (deceased and surviving patients) in an entire community of approximately 1 million residents of the Portland, Oregon metro area, the Oregon Sudden Unexpected Death Study (Oregon SUDS). This was accomplished by bringing together the emergency medical services, 16 hospitals, the fire and police departments as well as the medical examiner's office. In 2004 we reported that population-based analysis of SCD is conducted far more effectively using prospective methodology rather than using retrospective death certificate based data. This approach has set the standard for population-based approaches to SCD and has since informed the initiation of similar population based efforts around the world. In 2009 we performed a population based analysis of SCA in children.

- Chugh SS, Jui J, Gunson K, Stecker EC, John BT, Thompson B, Ilias N, Vickers C, Dogra V, Daya M, Kron J, Zheng Z-J, Mensah G, McAnulty J. Current Burden of Sudden Cardiac Death: Multiple Source Surveillance Versus Retrospective Death Certificate-Based Review in a Large US Community. *J Am Coll Cardiol* 2004;44(6):1268-75. **(599 citations)**
- Chugh SS, Reinier K, Balaji S, Uy-Evanado A, Vickers C, Mariani R, Gunson K, Jui J. Population-Based Analysis of Sudden Death in Children: The Oregon Sudden Unexpected Death Study. *Heart Rhythm* 2009;6(11):1618-22. **(66 citations)**

3) We also started the practice of obtaining the lifetime clinical history (including all tests/treatments performed) of each SCD case that was ascertained and populated a clinical database with >800 variables. Matched controls from the same geographic area are also recruited on an ongoing basis so that case-control analyses can be performed to identify risk predictors for SCA. In 2006 we published observations from this study that highlighted the relatively large proportion (at least two-thirds, possibly higher in women) of patients that suffer SCA with preserved left ventricular ejection fraction, highlighting the importance of extending beyond the LV ejection fraction in order to meaningfully enhance risk stratification for SCD.

- Stecker EC, Vickers C, Waltz J, Socoteanu C, John BT, Mariani R, McAnulty JH, Gunson K, Jui J, Chugh SS. Population-based analysis of sudden cardiac death with and without left ventricular systolic



This study is a population-based translational approach to identifying mechanisms of fatal arrhythmia among subjects with left ventricular hypertrophy.

Cardiovascular Clinical Research Center, Johns Hopkins University (Marban) 7/1/03 – 6/31/09  
Donald W. Reynolds Foundation

**Genomic Determinants of Sudden Cardiac Death:** The goals of this study were to discover the genetic underpinnings of sudden cardiac death in patients with coronary artery disease

Role: Co-investigator

**Emergency Prehospital Investigative Consortium (EPIC).** National Heart Lung and Blood Institute HL-04-001 (7/1/2004 – 6/30/2009). Role: Co-Investigator (5%). PI Jerris Hedges MD

US Centers for Disease Control and Prevention, Project TS 0660. Principal Investigator (20%) Total costs \$838,442; 2001-2004 for **Mechanisms of Unexplained Sudden Cardiac Death: A Population-Based Cohort Study in Multnomah County, Oregon**