

CURRICULUM VITAE

Thomas Jeffrey Hund, Ph.D.

PROFESSIONAL DATA

Education:

- 2004 **Ph.D.**, Biomedical Engineering, Case Western Reserve University,
 Advisor: Yoram Rudy, Ph.D.
- 2000 **M.S.**, Biomedical Engineering, Case Western Reserve University,
- 1996 **B.S.E.**, Biomedical Engineering, Duke University

Employment History:

- 2020-present **William D. and Jacquelyn L. Wells Chair at the Dorothy M. Davis Heart and Lung Research Institute**, The Ohio State University Wexner Medical Center
- 2017-present **Associate Director**, Davis Heart and Lung Research Institute, The Ohio State University Wexner Medical Center
- 2017-present **Professor**, Departments of Biomedical Engineering and Internal Medicine, The Ohio State University
- 2015-2017 **Associate Professor (with tenure)**, Departments of Biomedical Engineering and Internal Medicine, The Ohio State University
- 2011-2015 **Assistant Professor**, Department of Biomedical Engineering, The Ohio State University (secondary appointment in Department of Internal Medicine, Division of Cardiovascular Medicine)
- 2010-2011 **Assistant Professor**, Internal Medicine, University of Iowa Carver College of Medicine (secondary appointment in Biomedical Engineering)
- 2007-2010 **Associate**, Internal Medicine, University of Iowa Carver College of Medicine
- 2004-2007 **Postdoctoral Fellow**, Washington University School of Medicine, St. Louis,
 Advisor: Jeffrey Saffitz, M.D., Ph.D.

HONORS, AWARDS and PROFESSIONAL ACTIVITIES

- 2019 **Fellow of the American Heart Association**, Council on Basic Cardiovascular Sciences
- 2019 **Harrison Faculty Award for Excellence in Engineering Education**, The Ohio State University College of Engineering
- 2018-present **Permanent member**, NIH Electrical Signaling, Ion Transport, and Arrhythmias Study Section
- 2017 **Lumley Research Award**, The Ohio State University College of Engineering
- 2015 **Melissa G. Piper Distinguished Mentor Award**, Davis Heart and Lung Research Institute, The Ohio State University Wexner Medical Center

2014 **Herman R. Weed Excellence in Teaching Award**, Department of Biomedical Engineering, The Ohio State University

2013-2019 **Studying Complex Systems Scholar**, James S. McDonnell Foundation

2011-2012 **Research Scholar in Cardiovascular Disease**, Gilead Sciences Research Scholar Program

2009-2013 **Pathway to Independence Award (K99/R00)**, NIH NHLBI

2008 **Early-Career Authors Prize**, International Society for Heart Research/ *Journal of Molecular and Cellular Cardiology*

2006-2007 **Ruth L. Kirchstein National Research Service Award (F32)**, NIH NHLBI

2006 **Kenneth M. Rosen Fellowship**, Heart Rhythm Society (declined)

2004-2006 **Postdoctoral Fellowship**, Washington University in St. Louis

1996-2001 **Dissertation Fellowship**, Case Western Reserve University

SCHOLARSHIP

Funding:

Ongoing funding

R01 HL135096 (NIH/NHLBI)	07/17-06/21
“Spectrin-based regulation of cardiac remodeling and heart failure”	PI: Hund
Role: Principal investigator	
R01 HL134824 (NIH/NHLBI)	01/17-11/20
“Defining novel mechanisms for regulation of atrial I_{Na} and arrhythmias”	PIs: Hund, Mohler
Role: Principal investigator	
R01 HL063043 (NIH/NHLBI)	07/20-06/21
“Controlled and uncontrolled calcium release in heart”	PI: Gyorke
Role: Co-investigator	
R01 GM128055 (NIH/NIGMS)	01/19-11/20
“Role of spectrin signaling complex in angiogenesis”	PI: Lee
Role: Co-investigator	
VA New Jersey Health Care System	04/19-9/20
“War related illness and injury study center (WRIISC) PM2.5 exposure animal model project”	PI: Wold
Role: Co-investigator	
Leducq Foundation	01/20-12/24
“Fighting against sinus node dysfunction and associated arrhythmias”	PIs: Mohler/Mangoni
Role: Co-investigator	

Completed funding (since 2010)

James S. McDonnell Foundation Studying Complex Systems	09/13-08/19
---	-------------

Scholar Award (#220020368) “Synchronization of spontaneous activity in the cardiac pacemaker” Role: Principal investigator	PI: Hund
R01 HL114893 (NIH/NHLBI) “CaMKII-based regulation of cardiac excitability”	09/12-07/18 PI: Hund
Saving tiny Hearts Society “Novel arrhythmia mechanisms in congenital Long QT Syndrome”	01/17-12/18 PI: Hund
K99/R00 HL096805 (NIH/NHLBI) “Spectrin-based signaling complex regulates cardiac excitability”	09/09-08/13 PI: Hund
Gilead Sciences Research Scholar Program in Cardiovascular Disease “CaMKII-dependent regulation of voltage-gated Na ⁺ channels in health and disease”	01/11-12/12 PI: Hund

As Sponsor

American Heart Association – Postdoctoral Fellowship (PI: Nassal) “Mechanisms of β-spectrin degradation and its role in myocardial infarction remodeling”	07/18-06/20 Sponsor: Hund
American Heart Association – Postdoctoral Fellowship (PI: Greer-Short) “Role of the late Na ⁺ current in Ca ²⁺ dysregulation, abnormal excitability and structure in atrial fibrillation”	07/17-06/19 Sponsor: Hund
American Heart Association – Postdoctoral Fellowship (PI: Unudurthi) “Spectrin-based complex for regulation of STAT3 signaling and heart function”	07/16-06/18 Sponsor: Hund
F31 HL129766 (NIH/NHLBI) (PI: Onal) “Spectrin-based pathway for regulation of cardiac pacemaking”	07/15-06/17 Sponsor: Hund
American Heart Association – Predoctoral Fellowship (PI: Glynn) “Spectrin-based pathway for regulation of Na _v membrane localization”	11/14-05/15 Sponsor: Hund

Publications and Scholarly Works:

Peer-reviewed publications (96 total peer-reviewed publications in reverse chronological order)

1. Konstantinidis K, Bezzerides VJ, Lai L, Isbell HM, Wu Y, Viswanathan MC, Blum ID, Granger JM, Zhang D, Heims-Waldron D, Luczak ED, Murphy KR, Lu F, Gratz DH, Manta B, Wang Q, Wang Q, Kolodkin AL, Gladyshev VN, **Hund TJ**, Pu WT, Wu MN, Cammarato A, Bianchet MA, Shea MA, Levine RL, Anderson ME. MICAL1 constrains cardiac stress responses and protects against disease by oxidizing CaMKII. *J Clin Invest*. 2020; Accepted.
2. Mesirca P, Fedorov VV, **Hund TJ**, Torrente AG, Bidaud I, Mohler PJ and Mangoni ME. Pharmacologic approach to SAN dysfunction. *Ann Rev Pharmacol*. 2020; Accepted.
3. Liu CH, Seo R, Ho TS, Stankewich M, Mohler PJ, **Hund TJ**, Noebels JL, Rasband MN. β spectrin-dependent and domain specific mechanisms for Na⁺ channel clustering. *eLife*. 2020; 9:e56629.
4. Unudurthi SD*, Nassal DM, Patel NJ, Thomas E, Yu J, Pierson CG, Bansal SS, Mohler PJ, **Hund TJ***. Fibroblast growth factor-inducible 14 mediates macrophage infiltration in heart

- to promote pressure overload-induced cardiac dysfunction. *Life Sci.* 2020;247:117440. *co-corresponding authors.
5. Greer-Short A, Musa H, Alsina KM, Ni L, Word TA, Reynolds JO, Gratz D, Lane C, El-Refaey M, Unudurthi S, Skaf M, Li N, Fedorov VV, Wehrens XHT, Mohler PJ, **Hund TJ***. Calmodulin kinase II regulates atrial myocyte late current, calcium handling and atrial arrhythmia. *Heart Rhythm.* 2020;17:503-510. *corresponding author
 6. Liu CH, Stevens SR, Teliska LH, Stankewich M, Mohler PJ, **Hund TJ**, Rasband MN. Nodal β spectrins are required to maintain Na^+ channel clustering and axon integrity. *eLife.* 2020; 9:e52378.
 7. Nassal D, Gratz D, **Hund TJ***. Challenges and opportunities for therapeutic targeting of calmodulin kinase II in heart. *Front Pharmacol.* 2020; 11:35. *corresponding author.
 8. Long VP, Bonilla IM, Baine S, Glynn P, Kumar S, Schober K, Mowrey K, Weiss R, Lee NY, Mohler PJ, Gyorke S, **Hund TJ**, Fedorov VV, Carnes CA. Chronic heart failure increases negative chronotropic effects of adenosine in canine sinoatrial cells via A1R stimulation and GIRK-mediated $I_{K\text{ado}}$. *Life Sci.* 2020; 240:117068.
 9. Gratz D, Winkle AJ, Dalic A, Unudurthi SD, **Hund TJ***. Computational tools for automated histological image analysis and quantification in cardiac tissue. *MethodsX.* 2019; 7:22-34. *corresponding author.
 10. Patel NJ, Nassal DN, Greer-Short AD, Unudurthi SD, Scandling BW, Gratz D, Xu X, Kalyanasundaram A, Fedorov VV, Accornero F, Mohler PJ, Gooch KJ, **Hund TJ***. β_{IV} -spectrin/STAT3 complex regulates fibroblast phenotype, fibrosis and cardiac function. *JCI Insight.* 2019; 4:e131046. *corresponding author
 11. Roberts JD, Murphy NP, Hamilton RM, Lubbers ER, James CA, Kline CF, Gollob MH, Krahn AD, Sturm AC, Musa H, El-Refaev M, Koenig S, Astrom Aneq M, Hoorntje ET, Graw SL, Aafaqi S, Davies RW, Fatah M, Rafiq MA, Chiasson DA, Koopmann TT, Taylor MRG, Simmons SL, Han M, van Opbergen CJM, Wold LE, Sinagra G, Mittal K, Tichnell C, Murray B, Codima A, Nazer B, Nguyen DT, Marcus FI, Sobriera N, Lodder EM, van den Berg MP, Spears DA, Robinson JF, Ursell PC, Green AK, Skanes AC, Tang AS, Gardner MJ, Hegele RA, van Veen TAB, Wilde AAM, Healey JS, Janssen PML, Mestroni L, van Tintelen JP, Calkins H, Judge DP, **Hund TJ**, Scheinman MM, Mohler PJ. Ankyrin-B dysfunction predisposes to arrhythmogenic cardiomyopathy and is amenable to therapy. *J Clin Invest.* 2019; 129:3171-3184.
 12. Lubbers ER, Murphy NP, Musa H, Huang CYM, Gupta R, Price MV, Han M, Daoud G, Gratz D, El Refaey M, Xu X, Hoeflinger NK, Friel EL, Lancione P, Wallace MJ, Cavus O, Simmons SL, Williams JL, Skaf M, Koenig SN, Janssen PML, Rasband MN, **Hund TJ**, Mohler PJ. Defining new mechanistic roles for α_{II} spectrin in cardiac function. *J Biol Chem.* 2019; 294:9576-9591.
 13. Dorn L, Lasman L, Chen J, Xu X, **Hund TJ**, Medvedovic M, Hanna J, van Berlo J, and Accornero F. The m^6A mRNA methylase METTL3 controls cardiac homeostasis and hypertrophy. *Circulation.* 2019; 139:533-545.
 14. El Refaey M, Musa H, Murphy NP, Lubbers ER, Skaf M, Han M, Cavus O, Koenig SN, Wallace MJ, Gratz D, Bradley E, Alsina KM, Wehrens XHT, **Hund TJ**, Mohler PJ. Protein phosphatase 2A regulates cardiac Na^+ channels. *Circ Res.* 2019; 124:737-746.
 15. Unudurthi SD, Nassal D, Greer-Short A, Patel N, Howard T, Xu X, Onal B, Satroplus T, Hong D, Lane C, Dalic A, Koenig SN, Lehnig AD, Baer LA, Musa H, Stanford KI, Smith S,

- Mohler PJ, **Hund TJ***. β_{IV} -spectrin regulates STAT3 targeting to tune cardiac response to pressure overload. *J Clin Invest*. 2018; 128:5561-5572. *corresponding author.
16. Makara MA, Curran J, Lubbers ER, Murphy NP, Little SC, Musa H, Smith SA, Unudurthi SD, Rajaram MVS, Janssen PML, Boyden PA, Bradley EA, **Hund TJ** and Mohler PJ. Novel mechanistic roles for ankyrin-G in cardiac remodeling and heart failure. *J Am Coll Cardiol Basic Trans Sci*. 2018; 3:675-89.
 17. Yoo S, Aistrup G, Shiferaw Y, Ng J, Mohler PJ, **Hund TJ**, Waugh TA, Browne S, Gussak G, Gilani M, Knight BP, Passman R, Goldberger J, Wasserstrom JA, Arora R. Oxidative stress creates a unique, CaMKII mediated substrate for atrial fibrillation in heart failure. *J Clin Invest Insight*. 2018; 3:e120728.
 18. Howard T, Greer-Short A, Satroplus T, Patel N, Nassal D, Mohler PJ, and **Hund TJ***. CaMKII-dependent late sodium current increases electrical dispersion and arrhythmia in ischemia/reperfusion. *Am J Physiol Heart Circ Physiol*. 2018; 315:H794-H801. *corresponding author.
 19. Gratz D, Onal B, Dalic A, **Hund TJ***. Synchronization of pacemaking in the sinoatrial node: a mathematical modeling study. *Front Phys*. 2018; 6:63. *corresponding author.
 20. Unudurthi SD, Greer-Short A, Patel N, Nassal D, **Hund TJ***. Spectrin-based pathways underlying electrical and mechanical dysfunction in cardiac disease. *Exp Rev Cardiovasc Ther*. 2018; 16:59-65. *corresponding author.
 21. Onal B, Gratz D and **Hund TJ***. Ca^{2+} /calmodulin-dependent regulation of atrial myocyte late Na^+ current, Ca^{2+} cycling and excitability: a mathematical modeling study. *Am J Physiol Heart Circ Physiol*. 2017; 313:H1227-H1239. *corresponding author
 22. Knierim E, Gill E, Seifert F, Gonzalez SM, Unudurthi SD, **Hund TJ**, Stenzel W, Schuelke M. A mutation in betaIV-spectrin (*SPTBN4*) associates with congenital myopathy, neuropathy, and central deafness. *Human Genetics*. 2017; 136:903-10.
 23. Onal B, Gratz D, **Hund T***. *LongQt*: A cardiac electrophysiology simulation platform. *MethodsX*. 2016; 3:589-599. *corresponding author
 24. Unudurthi SD, Wu X, Qian L, Amari F, Onal B, Li N, Makara MA, Smith SA, Snyder J, Fedorov VV, Coppola V, Anderson ME, Mohler PJ, **Hund TJ***. The two-pore K^+ channel TREK-1 regulates sinoatrial node membrane excitability. *J Am Heart Assoc*. 2016; 5:e002865. *corresponding author
 25. Smith SA, Hughes LD, Kline CF, Kempton AN, Dorn LE, Curran J, Makara M, Webb TR, Wright P, Voigt N, Binkley PF, Janssen PML, Kilic A, Carnes CA, Dobrev D, Rasband MN, **Hund TJ**, Mohler PJ. Dysfunction of the β_{II} -spectrin-based pathway in human heart failure. *Am J Physiol Heart Circ Physiol*. 2016; 310:H1583-91.
 26. Unudurthi SD and **Hund TJ***. Late sodium current dysregulation as a causal factor in arrhythmia. *Exp Rev Cardiovasc Ther*. 2016; 14:545-7. *corresponding author
 27. Musa H, Murphy NP, Curran J, Higgins JD, Webb TR, Makara MA, Wright P, Lancione PJ, Lubbers ER, Healy JA, Smith SA, Bennett V, **Hund TJ**, Kline CF, Mohler PJ. Common human *Ank2* variant confers in vivo arrhythmia phenotypes. *Heart Rhythm*. 2016; 13:1932-40.
 28. Radwanski PB, Ho HT, Veeraraghavan R, Brunello L, Liu B, Belevych AE, Unudurthi SD, Makara MA, Priori SG, Volpe P, Aroundas AA, Dillmann WH, Knollmann BC, Mohler PJ, **Hund TJ**, Gyorke S. Neuronal Na^+ channels are integral components of pro-arrhythmic Na^+/Ca^{2+} signaling nanodomain that promotes cardiac arrhythmias during beta-adrenergic stimulation. *J Am Coll Cardiol Basic Trans Sci*. 2016; 1:251-66.

29. Liu B, Ho HT, Brunello L, Unudurthi SD, Lou Q, Belevych AE, Qian L, Kim DH, Cho C, Janssen PML, **Hund TJ**, Knollmann BC, Kranias EG, and Gyorke S. Ablation of HRC alleviates cardiac arrhythmia and improves abnormal Ca handling in CASQ2 knockout mice prone to CPVT. *Cardiovasc Res*. 2015; 108:299-311.
30. Glynn P, Musa H, Wu X, Unudurthi SD, Little S, Qian L, Wright PJ, Radwanski PB, Gyorke S, Mohler PJ, **Hund TJ***. Voltage-gated sodium channel phosphorylation at Ser571 regulates late current, arrhythmia, and cardiac function *in vivo*. *Circulation*. 2015;132:567-577. **corresponding author*
31. Musa H, Kline CF, Sturm AC, Murphy N, Adelman S, Wang C, Johnson B, Higgins RS, Janssen PML, Fedorov V, Weiss R, Salazar C, **Hund TJ**, Pitt GS, Mohler PJ. SCN5A variant that blocks Fibroblast Growth Factor Homologous Factor regulation causes human arrhythmia. *Proc Natl Acad Sci U S A*. 2015; 112:12528-33.
32. Little SC, Curran J, Makara MA, Ho H, Xu Z, Kline CF, Wu X, Polina I, Musa H, Meadows AM, Carnes CA, Biesiadecki BJ, Davis JP, Weisleder N, Gyorke S, Wehrens XH, **Hund TJ**, Mohler PJ. Protein phosphatase 2A regulatory subunit B56a is an inhibitor of cardiac phosphatase signaling. *Sci Signal*. 2015;8:ra72.
33. Sturm AC, Kline CF, Glynn P, Johnson BL, Curran J, Kilic A, Higgins RSD, Binkley PF, Janssen PML, Weiss R, Raman SV, Fowler SJ, Priori SG, **Hund TJ**, Carnes CA, Mohler PJ. Use of whole exome sequencing for the identification of *I_{to}*-based arrhythmia mechanism and therapy. *J Am Heart Assoc*. 2015;4:e001762.
34. Curran J, Musa H, Kline CF, Makara MA, Little SC, Higgins JD, **Hund TJ**, Band H, Mohler PJ. Eps15 Homology Domain-containing Protein 3 regulates cardiac T-type Ca²⁺ channel targeting and function in the atria. *J Biol Chem*. 2015;290:12210-21.
35. Chen-Izu Y, Shaw RM, Pitt GS, Yarov-Yarovoy V, Sack JT, Abriel H, Aldrich RW, Belardinelli L, Cannell MB, Catterall WA, Chazin WJ, Chiamvimonvat N, Deschenes I, Grandi E, **Hund TJ**, Izu LT, Maier LS, Maltsev VA, Marionneau C, Mohler PJ, Rajamani S, Rasmusson RL, Sobie EA, Clancy CE, Bers DM. Na⁺ channel function, regulation, structure, trafficking and sequestration. *J Physiol*. 2015; 593:1347-60.
36. Smith SA, Sturm AC, Curran J, Kline CF, Little SC, Bonilla IM, Long VP, Makara M, Polina I, Hughes LD, Webb TR, Wei Z, Wright P, Voigt N, Bhakta D, Spoonamore KG, Zhang C, Weiss R, Binkley PF, Janssen PM, Kilic A, Higgins RS, Sun M, Ma J, Dobrev D, Zhang M, Carnes CA, Vatta M, Rasband MN, **Hund TJ**, Mohler PJ. Dysfunction in the β II spectrin-dependent cytoskeleton underlies human arrhythmia. *Circulation*. 2015; 131:695-708.
37. Radwanski PB, Brunello L, Veeraghavan R, Ho HT, Lou Q, Makara MA, Belevych AE, Anghelescu M, Priori SG, Volpe P, **Hund TJ**, Janssen PM, Mohler PJ, Bridge JHB, Poelzing S, Gyorke S. Neuronal Na⁺ channel blockade suppresses arrhythmogenic diastolic Ca²⁺ release. *Cardiovasc Res*. 2015; 106:143-52.
38. **Hund TJ**, Mohler PJ. Role of CaMKII in cardiac arrhythmias. *Trends Cardiovasc Med*. 2015; 25:392-397.
39. Unudurthi SD, Wolf RM, **Hund TJ***. Role of sinoatrial node architecture in maintaining a balanced source-sink relationship and synchronous cardiac pacemaking. *Front Physiol*. 2014; 5:446. **corresponding author*.
40. Makara MA, Curran J, Little S, Musa H, Polina I, Smith SA, Wright PJ, Unudurthi SD, Snyder JS, Bennett V, **Hund TJ**, and Mohler PJ. Ankyrin-G coordinates intercalated disc signaling platform to regulate cardiac excitability *in vivo*. *Circ Res*. 2014; 115:929-38.

41. Glynn P, Unudurthi SD, **Hund TJ***. Mathematical modeling of physiological systems: An essential tool for discovery. *Life Sci.* 2014; 111:1-5. **corresponding author*
42. Glynn P, Onal B, **Hund TJ***. Cycle length restitution in sinoatrial node cells: A theory for understanding spontaneous action potential dynamics. *PLoS ONE.* 2014; 9:e89049. **corresponding author*
43. Onal B, Unudurthi SD, **Hund TJ***. Modeling CaMKII in cardiac physiology: From molecule to tissue. *Front Pharmacol.* 2014; 5:9. **corresponding author*
44. **Hund TJ***, Snyder JS, Wu X, Glynn P, Koval OM, Onal B, Leymaster ND, Unudurthi SD, Curran J, Camardo C, Wright PJ, Binkley PF, Anderson ME, Mohler PJ. BetaIV-spectrin regulates TREK-1 membrane targeting in heart. *Cardiovasc Res.* 2014; 102:166-75. **corresponding author*
45. Vreeker A, van Stuijvenberg L, **Hund TJ**, Mohler PJ, Nikkels PGJ, van Veen TAB. Assembly of the cardiac intercalated disk during pre- and postnatal development of the human heart. *PLoS ONE.* 2014; 9:e94722.
46. Dybkova N, Wagner S, Backs J, **Hund TJ**, Mohler PJ, Nikolaev VO, Maier LS. Tubulin polymerization disrupts cardiac beta-adrenergic activation of late *I_{Na}*. *Cardiovasc Res.* 2014; 103:168-77.
47. Curran J, Makara MA, Little SC, Wu X, Polina I, Alecusan J, Wright P, Li J, Band H, **Hund TJ**, Mohler PJ. EHD3-dependent endosome trafficking pathway regulates cardiac membrane excitability and physiology. *Circ Res.* 2014; 115:68-78.
48. Ho HT, Liu B, Snyder JS, Lou Q, Anderson ME, Sen CK, Wehrens XHT, Fedorov VV, **Hund TJ**, and Gyorke S. Ryanodine receptor phosphorylation by oxidized CaMKII contributes to the cardiotoxic effects of cardiac glycosides. *Cardiovasc Res.* 2014; 101:165-74.
49. Bonilla IM, Vargas-Pinto P, Nishijima Y, Pedraza-Toscano A, Ho HT, Long III VP, Belevych AE, Glynn P, Houmsse M, Rhodes T, Weiss R, **Hund TJ**, Hamlin RL, Gyorke S, Carnes CA. Ibandronate and ventricular arrhythmia risk. *J Cardiovasc Electrophysiol.* 2014; 25:299-306.
50. Kline CF, Scott J, Curran J, **Hund TJ**, Mohler PJ. Ankyrin-B regulates Ca_v2.1 and Ca_v2.2 expression and targeting. *J Biol Chem.* 2014; 289:5285-95.
51. Wolf RM, Glynn P, Hashemi S, Zarei K, Mitchell CC, Anderson ME, Mohler PJ, **Hund TJ***. Atrial fibrillation and sinus node dysfunction in human ankyrin-B syndrome: A computational analysis. *Am J Physiol Heart and Circ Physiol.* 2013; 304:H1253-66. **corresponding author*
52. Luo M, Guan X, Di L, Kutschke W, Gao Z, Yang J, Luczak ED, Glynn P, Swaminathan PD, Weiss RM, Yang B, Rokita AG, Sossalla S, Maier LS, Efimov I, **Hund TJ**, Anderson ME. Diabetes increases mortality after myocardial infarction by oxidizing CaMKII. *J Clin Invest.* 2013; 123:1262-74.
53. Gao Z, Rasmussen TP, Yue L, Kutschke W, Koval OM, Wu Y, Wu Y, Hall DD, Joiner MA, Wu X, Swaminathan PD, Purohit A, Zimmerman KA, Weiss RM, Philipson K, Song LS, **Hund TJ**, and Anderson ME. Genetic inhibition of Na⁺-Ca²⁺ exchanger current disables fight or flight sinoatrial node activity without affecting resting heart rate. *Circ Res.* 2013; 112:309-17.
54. DeGrande ST, Nixon DJ, Wright P, Snyder J, Dun W, Murphy N, Kilic A, Higgins R, Binkley PF, Boyden PA, Carnes CA, Anderson ME, **Hund TJ**, and Mohler PJ. Molecular

- mechanisms underlying cardiac protein phosphatase 2A regulation in heart. *J Biol Chem.* 2013; 288:1032-46.
55. Noorman M, Hakim S, Kessler E, Groeneweg J, Cox MG, Asimaki A, van Rijen HV, van Stuivenberg L, Chkourko H, van der Heyden MA, Vos MA, de Jonge N, van der Smagt JJ, Dooijes D, Vink A, de Weger RA, Varro A, de Bakker JM, Saffitz JE, **Hund TJ**, Mohler PJ, Delmar M, Hauer RN, van Veen TA. Remodeling of the cardiac sodium channel, connexin43 and plakoglobin at the intercalated disk in patients with arrhythmogenic cardiomyopathy. *Heart Rhythm.* 2013; 10:412-9.
 56. Zhang W, Zhao S, Rao W, Snyder J, Choi J, Wang J, Khan IA, Saleh NB, Mohler PJ, Yu J, **Hund TJ**, Tang C, and He X. A novel core-shell microcapsule for encapsulation and 3D culture of embryonic stem cells. *J Mater Chem B.* 2013; 1:1002-1009.
 57. Toischer K, Hartmann N, Wagner S, Fischer T, Herting J, Danner BC, Sag CM, **Hund TJ**, Mohler PJ, Belardinelli L, Hasenfuss G, Maier LS, Sossalla S. Role of late sodium current as a potential arrhythmogenic mechanism in the progression of pressure-induced heart disease. *J Mol Cell Cardiol.* 2013; 61:111-22.
 58. Dun W, Lowe JS, Wright P, **Hund TJ**, Mohler PJ, and Boyden PA. Ankyrin-G participates in I_{Na} remodeling in myocytes from the border zones of infarcted canine heart. *PLoS ONE.* 2013; 8:e78087.
 59. Kline CF, Wright PJ, Koval O, Zmuda EJ, Johnson BL, Anderson ME, Hai T, **Hund TJ**, Mohler PJ. A betaIV-spectrin/CaMKII complex facilitates Kir6.2 regulation in pancreatic beta cells. *Proc Natl Acad Sci U S A.* 2013; 110:17576-81.
 60. Koval OM, Snyder JS, Wolf RM, Pavlovicz RE, Glynn P, Curran J, Leymaster ND, Dun W, Wright PJ, Cardona N, Qian L, Mitchell CC, Boyden PA, Binkley PF, Li C, Anderson ME, Mohler PJ, and **Hund TJ***. Ca^{2+} /calmodulin-dependent protein kinase II-based regulation of voltage-gated Na^+ channel in cardiac disease. *Circulation.* 2012; 126:2084-2094.
*corresponding author
 61. Swaminathan PD, Purohit AS, **Hund TJ**, and Anderson ME. CaM Kinases: Linking heart failure and arrhythmias. *Circ Res.* 2012;110:1661-1677.
 62. Jansen JA, Noorman M, Musa H, Stein M, de Jong S, van der Nagel R, **Hund TJ**, Mohler PJ, Vos MA, van Veen TA, de Bakker JM, Delmar M, van Rijen HV. Reduced heterogeneous expression of Cx43 results in decreased Nav1.5 expression and reduced sodium current which accounts for arrhythmia vulnerability in conditional Cx43 knockout mice. *Heart Rhythm.* 2012; 9:600-7.
 63. Gudmundsson H, Curran J, Kashef F, Snyder JS, Smith SA, Vargas-Pinto P, Bonilla IM, Weiss RM, Anderson ME, Binkley P, Felder RB, Carnes CA, Band H, **Hund TJ**, and Mohler PJ. Differential regulation of EHD3 in human and mammalian heart failure. *J Mol Cell Cardiol.* 2012;52:1183-90.
 64. Smith S, Curran J, **Hund TJ**, and Mohler PJ. Defects in cytoskeletal signaling pathways, arrhythmia and sudden cardiac death. *Front in Cardiovasc Electrophys.* 2012;3:122.
 65. Cerrone M, Noorman M, Lin X, Chkourko H, Liang FX, van der Nagel R, **Hund T**, Birchmeier W, Mohler P, van Veen TA, van Rijen HV, Delmar, M. Sodium current deficit and arrhythmogenesis in a murine model of plakophilin-2 haploinsufficiency. *Cardiovasc, Res.* 2012; 95:460-8.
 66. Kashef F, Li J, Wright P, Snyder J, Suliman F, Kilic A., Higgins RSD, Anderson ME, Binkley PF, **Hund TJ**, and Mohler PJ. Ankyrin-B in heart failure: Identification of a new component of metazoan cardioprotection. *J Biol Chem.* 2012; 287:30268-81.

67. DeGrande S, Nixon D, Koval O, Curran JW, Wright P, Wang Q, Kashef F, Chiang D, Li N, Wehrens XHT, Anderson ME, **Hund TJ**, and Mohler PJ. CaMKII inhibition rescues pro-arrhythmic phenotypes in model of human ankyrin-B syndrome. *Heart Rhythm*. 2012; 9:2034-41.
68. Mohler PJ and **Hund TJ***. Role of CaMKII in cardiovascular health, disease, and arrhythmia. *Heart Rhythm*. 2011; 8:142-4. **corresponding author*
69. Swaminathan PD, Purohit A, Soni S, Voigt N, Singh MV, Glukhov AV, Gao Z, He JB, Luczak ED, Joiner MA, Kutschke W, Yang J, Donahue JK, Weiss RM, Grumbach IM, Ogawa M, Chen PS, Efimov I, Dobrev D, Mohler PJ, **Hund TJ***, and Anderson ME. Oxidized CaMKII causes cardiac sinus node dysfunction. *J Clin Invest*. 2011; 121:3277-88. **co-corresponding author*
70. Gao Z, Singh MV, Hall DD, Koval OM, Luczak ED, Joiner MA, Chen B, Wu Y, Chaudhary AK, Martins JB, **Hund TJ**, Mohler PJ, Song LS, and Anderson ME. Catecholamine-independent heart rate increases require CaMKII. *Circ Arrhythm Electrophysiol*. 2011; 4:379-87.
71. Cunha SR, **Hund TJ**, Hashemi S, Voigt N, Li N, Wright P, Koval O, Li J, Gudmundsson H, Gumina RJ, Karck M, Schott J, Probst V, Le Marec H, Anderson ME, Dobrev DD, Wehrens XHT, and Mohler PJ. Defects in ankyrin-based membrane protein targeting pathways underlie atrial fibrillation. *Circulation*. 2011; 124:1212-1222.
72. Besse IM, Mitchell CC, **Hund TJ**, and Shibata EF. A computational investigation of cardiac caveolae as a source of persistent sodium current. *Front in Physiol*. 2011; 2:87.
73. ***Hund TJ**, Koval OM, Li J, Wright PJ, Qian L, Snyder JS, Gudmundsson H, Kline CF, Davidson NP, Cardona N, Rasband MN, Anderson ME, and Mohler PJ. A betaIV spectrin/CaMKII signaling complex is essential for membrane excitability in mice. *J Clin Invest*. 2010;120:3508-19. **co-corresponding author*
74. Wolf RM, Mitchell CC, Christensen MD, Mohler PJ, and **Hund TJ***. Defining new insight into atypical arrhythmia: a computational model of ankyrin-B-syndrome. *Am J Physiol Heart Circ Physiol*. 2010; 299:H1505-H1514. **corresponding author*
75. Kline CF, **Hund TJ**, and Mohler PJ. Ankyrin regulates K_{ATP} channel membrane trafficking and gating in excitable cells. *Channels (Austin)*. 2010; 4:55-7.
76. Koval OM, Guan X, Wu Y, Joiner M, Gao Z, Chen B, Grumbach IM, Luczak ED, Colbran RJ, Song LS, **Hund TJ**, Mohler PJ, and Anderson ME. The Cav1.2 β subunit coordinates CaMKII-triggered cardiomyocyte death and afterdepolarizations. *Proc Natl Acad Sci U S A*. 2010; 107:4996-5000.
77. Gudmundsson H, **Hund TJ**, Wright PW, Kline CF, Snyder JS, Qian L, Koval OM, Cunha SR, George M, Rainey MA, Kashef FE, Dun W, Boyden PA, Anderson ME, Band H, and Mohler PJ. EH domain proteins regulate cardiac membrane targeting. *Circ Res*. 2010; 107:84-95.
78. Li J, Kline CF, **Hund TJ**, Anderson ME, and Mohler PJ. Ankyrin-B regulates Kir6.2 membrane expression and function in heart. *J Biol Chem*. 2010;285:28723-30.
79. Christensen MD, Dun W, Boyden PA, Anderson ME, Mohler PJ, and **Hund TJ***. Oxidized calmodulin kinase II regulates conduction following myocardial infarction: A computational analysis. *PLoS Comput Biol*. 2009; 5:e1000583. **corresponding author*
80. **Hund TJ***, Wright P, Dun W, Snyder JS, Boyden PA, and Mohler PJ. Regulation of ankyrin-B-based targeting pathway following myocardial infarction. *Cardiovasc Res*. 2009; 81:742-749. **corresponding author*

81. Decker KF, Heijman J, Silva JR, **Hund TJ**, and Rudy Y. Properties and ionic mechanisms of action potential adaptation, restitution and accommodation in canine epicardium. *Am J Physiol Heart Circ Physiol*. 2009; 296:H1017-26.
82. Wu Y, Gao Z, Chen B, Koval OM, Singh MV, Guan X, **Hund TJ**, Kutschke WJ, Sarma S, Grumbach IM, Wehrens XHT, Song LS, Mohler PJ, Anderson ME. Calmodulin kinase II is required for fight or flight sinoatrial node physiology. *Proc Natl Acad Sci U S A*. 2009; 106:5972-7.
83. Hashemi SM, **Hund TJ**, and Mohler PJ. Cardiac ankyrins in health and disease. *J Mol Cell Cardiol*. 2009; 47:203-9.
84. Kline CF, Kurata HT, **Hund TJ**, Cunha SR, Koval OM, Wright PJ, Christensen M, Anderson ME, Nichols CG, and Mohler PJ. Dual role of K_{ATP} channel C-terminal motif in membrane targeting and metabolic regulation. *Proc Natl Acad Sci U S A*. 2009; 106:16663-16668.
85. **Hund TJ***, Decker KF, Kanter E, Mohler PJ, Boyden PA, Schuessler RB, Yamada KA, and Y Rudy. Role of activated CaMKII in abnormal calcium homeostasis and I_{Na} remodeling after myocardial infarction: Insights from mathematical modeling. *J Mol Cell Cardiol*. 2008; 45:420-8. *co-corresponding author
86. Lowe JS, Palygin O, Bhasin N, **Hund TJ**, Boyden PA, Shibata E, Anderson ME, and PJ Mohler. Voltage-gated Na_v channel targeting in heart requires an ankyrin-G-dependent pathway. *J Cell Biol*. 2008; 180:173-186.
87. Kline CF, Cunha SR, Lowe JS, **Hund TJ**, and PJ Mohler. Revisiting ankyrin-InsP3 receptor interactions: Ankyrin-B associates with the cytoplasmic N-terminus of the InsP3 receptor. *J Cell Biochem*. 2008; 104:1244-53.
88. Le Scouarnec S, Bhasin N, Vieyres C, **Hund TJ**, Cunha SR, Koval O, Marionneau C, Chen B, Wu Y, Bemolombe S, Song LS, Le Marec H, Probst V, Schott JJ, Anderson ME, and Mohler PJ. Dysfunction in ankyrin-B-dependent ion channel and transporter targeting causes human sinus node disease. *Proc Natl Acad Sci U S A*. 2008; 105:15617-22.
89. Thiel WH, Chen B, **Hund TJ**, Koval OM, Purohit A, Song LS, Mohler PJ, and Anderson ME. Proarrhythmic defects in Timothy Syndrome require calmodulin kinase II. *Circulation*. 2008; 118:2225-2234.
90. **Hund TJ** and Mohler PJ. Ankyrin-based targeting pathway regulates human sinoatrial node automaticity. *Channels (Austin)*. 2008; 2:404-6.
91. **Hund TJ**, Lerner DL, Yamada KA, Schuessler RB, and JE Saffitz. Protein kinase Cε mediates salutary effects on electrical coupling induced by ischemic preconditioning. *Heart Rhythm*. 2007; 4:1183-1193.
92. **Hund TJ** and Y Rudy. A role for calcium/calmodulin-dependent protein kinase II in cardiac disease and arrhythmia. *Handb Exp Pharmacol*. 2006; 171:201-220.
93. **Hund TJ** and Y Rudy. Rate dependence and regulation of the action potential and calcium transient in a canine cardiac ventricular cell model. *Circulation*. 2004; 110:3168-3174.
94. **Hund TJ**, Otani NF, and Y Rudy. The dynamics of action potential head-tail interaction during reentry in cardiac tissue: ionic mechanisms. *Am J Physiol Heart Circ Physiol*. 2000; 279:H1869-H1879.
95. **Hund TJ**, Otani NF, Kucera JP, and Y Rudy. Ionic charge conservation and long-term steady state in the Luo-Rudy dynamic model of the cardiac cell. *Biophys J*. 2001; 81:3324-31.

96. **Hund TJ** and Y Rudy. Determinants of excitability in cardiac myocytes: mechanistic investigation of memory effect. *Biophys J*. 2000; 79:3095-3104.

Editorials

1. Gratz D, **Hund TJ**, Falvo MJ, Wold LE. Reverse translation – using computational modeling to enhance translational research. *Circ Res*. 2018; 122:1496-1498.
2. Greer-Short A, **Hund TJ***. Mathematical modeling as a tool to elucidate fundamental principles in cardiac electrophysiology. *Trends Cardiovasc Med*. 2017; 28:243-245. **corresponding author*.
3. Mohler PJ and **Hund TJ**. Novel pathways for regulation of sinoatrial node plasticity and heart rate. *Circ Res*. 2017; 121:1027-28.
4. **Hund TJ*** and Mohler PJ. Science advocacy in a changing political climate: Speak up and speak well. *Science Editor*. 2017; 2. **corresponding author*
5. Onal B and **Hund TJ***. Integrative approaches for prediction of cardiotoxic drug effects and mitigation strategies. *J Mol Cell Cardiol*. 2017; 102:1-2. **corresponding author*
6. **Hund TJ** and Mohler PJ. Atrial-specific pathways for control of intracellular signaling and myocyte function. *J Clin Invest*. 2016; 126:3731-34.
7. Onal B and **Hund TJ***. Physiological variability and atrial fibrillation therapy: Insights from population-based mathematical modeling. *Heart Rhythm*. 2016; 13:2366-2367. **corresponding author*
8. **Hund TJ**, Mohler PJ. Nav channel complex heterogeneity: New targets for the treatment of arrhythmia? *Circulation*. 2014; 130:132-134.
9. Mohler PJ and **Hund TJ***. Membrane-select regulation of cardiac Nav isoforms. *Heart Rhythm*. 2011; 8:1931-2. **corresponding author*
10. **Hund TJ** and Mohler PJ. Differential roles for SUR subunits in K_{ATP} channel membrane targeting and regulation. *Am J Physiol Heart Circ Physiol*. 2011; 300:H33-5.
11. **Hund TJ** and Mohler PJ. Cardiac spectrins: Alternative splicing encodes functional diversity. *J Mol Cell Cardiol*. 2010; 48:1031-2.
12. **Hund TJ**, Ziman A, Lederer WJ, and PJ Mohler. The cardiac IP₃ receptor: Uncovering the role of “the other” calcium release channel. *J Mol Cell Cardiol*. 2008; 45:159-61.
13. **Hund TJ** and JE Saffitz. Is CaMKII a therapeutic target for ventricular rate control? *Heart Rhythm*. 2005; 2:641-642.

Book Chapters

1. Veeraraghavan R, Parinandi NL, **Hund TJ**. Chapter 6: Oxidant-induced models of vascular leak. *Measuring Oxidants and Oxidative Stress in Biological Systems*. Eds Berliner and Parinandi. Springer Publishers. 2020; In press.
2. Gratz D, Winkle D, Greer-Short A, **Hund TJ**. Chapter 6: Modeling cardiomyocyte signaling pathways. *Modeling and Simulating Cardiac Electrical Activity*. Eds. Krogh-Madsen and Christini. IOP Publishing. 2020; In press.
3. **Hund TJ** and Mohler PJ. Chapter 23: Function and dysfunction of ion channel membrane trafficking and post translational modification. *Cardiac Electrophysiology: From Cell to Bedside, 7th Edition*. Eds. Zipes and Jalife. Elsevier, Philadelphia, PA, 2016.
4. **Hund TJ**, Smith SA, Makara MA, and Mohler PJ. Chapter 7: Cellular and Molecular Pathobiology of the Cardiac Conduction System. *Cellular and Molecular Pathobiology of*

Cardiovascular Disease. Eds. Willis, Homeister and Stone. Academic Press, San Diego, CA, 2014.

5. **Hund TJ** and Mohler PJ. Chapter 9: Biophysical regulation of cardiac sodium channels in health and disease. *Cardiac Electrophysiology: From Cell to Bedside, 6th Edition*. Eds. Zipes and Jalife. Elsevier, Philadelphia, PA, 2014.
6. **Hund TJ**, Cunha SR, and Mohler PJ. Chapter 2: Principles of Cellular Architecture and Physiology with Applications in Electrophysiology. *Electrophysiological Disorders of the Heart, 2nd Edition*. Eds. Saksena and Camm. Elsevier, Philadelphia, PA. 2012;17-25.
7. **Hund TJ**. Chapter 31: Calmodulin kinase II regulation of heart rhythm and disease. *Heart Rate and Rhythm: Molecular basis, pharmacological modulation, and clinical implications*. Eds. Tripathi, Ravens, and Sanguinetti. Springer-Verlag, Berlin. 2011; 351-364.

Abstracts and Conference Presentations (first author or trainee first author only)

1. Patel NJ, Nassal D, Greer-Short A, Unudurthi S, Scandling B, Gratz D, Xu X, Kalyanasudaram A, Fedorov V, Accornero F, Mohler PJ, Gooch K, **Hund TJ**. β IV-spectrin/STAT3 complex regulates cardiac fibroblast phenotype, fibrosis and cardiac function. AHA Basic Cardiovascular Sciences 2019 Scientific Sessions. July 29-August 1, 2019, Boston, MA.
2. Unudurthi S, Thomas E, Patel N, Winkle A, Gratz D, **Hund T**. TWEAK-Fn14 axis: A potential therapeutic target for treating heart failure. AHA Basic Cardiovascular Sciences 2019 Scientific Sessions. July 29-August 1, 2019, Boston, MA.
3. Greer-Short A, Musa H, Alsina KM, Ni L, Word T, Reynolds J, Gratz D, Lane C, El-Rafaei M, Unudurthi SD, Skaf M, Wehrens XHT, Mohler PJ, **Hund TJ**. Phosphorylation of Nav1.5 at Ser571 promotes atrial late Na⁺ current, Ca²⁺ dysregulation and atrial arrhythmia. Heart Rhythm Society 2019 Scientific Sessions. May 8-11, 2019, San Francisco, CA.
4. Greer-Short A, Howard T, Satroplus T, Patel N, Nassal D, Mohler P and **Hund T**. The role of CaMKII-dependent late sodium current in ischemia/reperfusion-associated arrhythmogenesis. AHA Basic Cardiovascular Sciences 2018 Scientific Sessions. July 30-August 2, 2018, San Antonio, TX.
5. Greer-Short A, **Hund TJ**, Veeraraghavan R. Structural changes in sodium channel-rich nanodomains contribute to progression of atrial fibrillation. *Microscopy & Microanalysis*. 2018; 24(S1), 1268-1269.
6. Unudurthi S, Patel N, Greer-Short A, Taylor H, Musa H, Mohler P and **Hund TJ**. β IV-spectrin/Ca²⁺/calmodulin-dependent kinase II complex regulates signal transducer and activator of transcription 3 targeting to tune cardiac response to pressure overload. *Circulation*. 2017;136:A16520.
7. Onal B, Gratz D, **Hund TJ**. Increased CaMKII-activated $I_{Na,L}$ alters calcium dynamics in atrial cells: A mathematical modeling study. Biomedical Engineering Society Annual Meeting. October 11-14, 2017, Phoenix, AZ.
8. Gratz D, Onal B, **Hund TJ**. Influence of cell- and tissue-level factors on sinoatrial node cell firing: A mathematical modeling study using the expanded *LongQt* user interface. Biomedical Engineering Society Annual Meeting. October 11-14, 2017, Phoenix, AZ.
9. Onal B, Gratz D, **Hund TJ**. *LongQt*: A cardiac electrophysiology simulation platform. Gordon Research Conference on Cardiac Arrhythmia Mechanisms. February 5-10, 2017, Ventura, CA.

10. Unudurthi SD, Wu X, Qian L, Amari F, Onal B, Fedorov VV, Coppola V, Anderson ME, Mohler PJ, **Hund TJ**. The two-pore K⁺ channel TREK-1 regulates sinoatrial node membrane excitability. Heart Rhythm Scientific Sessions. May 4-7, 2016, San Francisco, CA. (selected for oral presentation).
11. Onal B, Coulibaly Z, Gelastopoulos A, **Hund TJ**, Zhao Z. Synchrony and phase coherence in the sinoatrial node. Biomedical Engineering Society Annual Meeting. October 7-10, 2015, Tampa, FL.
12. Glynn P, Onal B, **Hund TJ**. Cycle length restitution and spontaneous action potential dynamics in sinoatrial node disease. Biomedical Engineering Society Annual Meeting. October 22-25, 2014, San Antonio, TX. (selected for oral presentation).
13. Wolf RM, Glynn P, Hashemi S, Zarei K, Mitchell CC, Anderson ME, Mohler PJ, and **Hund TJ**. Atrial fibrillation and sinus node dysfunction in human ankyrin-B syndrome: A computational analysis. *Biophys J*. 2013;104:A287.
14. Wolf RM, Mitchell CC, Mohler PJ, and **Hund TJ**. Molecular mechanisms for cardiac electrical instability in human heart disease a predictive and multiscale computational model of “ankyrin-B syndrome.” Joint Mathematics Meeting. January 4-7, 2012, Boston, MA.
15. **Hund TJ**, Wright P, Dun W, Snyder JS, Boyden PA, and PJ Mohler. Regulation of ankyrin-B-based targeting pathway following myocardial infarction. Keystone Symposia on Common Mechanisms in Arrhythmias and Heart Failure. April 2-7, 2009, Keystone, CO.
16. **Hund TJ**, Decker KF, and Y Rudy. Altered calcium handling and action potential in post-infarction remodeled myocytes: Role of CaMKII. *Heart Rhythm*. 2006; 3:S65.
17. **Hund TJ**, Yamada KA, Schuessler RB, and JE Saffitz. PKCepsilon-deficient mice show altered Cx43 phosphorylation and distribution during ischemia and preconditioning. *Heart Rhythm*. 2006; 3:S181.
18. **Hund TJ** and Y Rudy. Altered Ca²⁺ handling in cells from infarcted myocardium. 2005 Gordon Research Conference on Cardiac Arrhythmias. February 20-25, 2005, Buellton, CA.
19. **Hund TJ** and Y Rudy. Regulation of electrophysiology and calcium handling in a model of the canine cardiac ventricular myocyte. 2003 Gordon Research Conference on Cardiac Arrhythmias, August 10-15, 2003, New London, NH.
20. **Hund TJ** and Y Rudy. Ca²⁺/calmodulin-dependent protein kinase underlies rate dependence in a dynamic model of the ventricular action potential. *Circulation*. 2002;106:II-227.
21. **Hund TJ**, Otani NF, Kucera JP, and Y Rudy. Charge conservation and steady state in the Luo-Rudy dynamic model of the cardiac cell. *Ann Biomed Eng*. 2001;29:S-50.
22. **Hund TJ**, Otani NF, and Y Rudy. The dynamics of action potential head-tail interaction during reentry in cardiac tissue: ionic mechanisms. *Biophys J*. 2000; 78:454A.
23. **Hund TJ** and Y Rudy. Restitution of excitability and action potential duration in cardiac myocytes: mechanistic investigation of memory effect. *Biophys J*. 1999;76:A369.

Inventions and Patents

1. Carnes, Cynthia; **Hund, Thomas**; Li, Pui-Kai; Li, Chenglong; Mohler, Peter. PP2A regulatory subunit modification in disease. Publication number 20140031291 (published 01/30/14).
2. **Hund, Thomas**; Mohler, Peter. SCN5A S571A mouse model. TechID T2014-107 (submitted 11/19/13).
3. **Hund, Thomas**; Mohler, Peter. SCN5A S571E mouse model. TechID T2014-108 (submitted 11/19/13).

Invited Talks (since 2010):

1. American Heart Association Basic Cardiovascular Sciences Virtual Scientific Sessions; “Novel pathways for regulation of cardiac fibrosis and inflammation.” Online meeting, 2020.
2. University of California Davis Cardiovascular Symposium; “Ca²⁺ handling and Ca²⁺ channels – Modeling studies.” Davis, CA, 2020.
3. University of Utah Nora Eccles Harrison Cardiovascular Research and Training Institute Seminar; “Novel roles for the spectrin-based cytoskeleton in cardiac cell signaling and disease.” Salt Lake City, UT, 2019.
4. Cardiovascular Research Institute Seminar Series, Baylor College of Medicine; “Novel pathways for regulation of cardiac electrical and mechanical function.” Houston, TX, 2019.
5. Institute of Computational Medicine Distinguished Seminar Series, Johns Hopkins University; “Defining novel mechanisms for regulation of cardiac excitability.” Baltimore, MD, 2018.
6. Department of Biomedical Engineering Colloquium, University of Akron; “Novel pathways for regulation of cardiac electrical and mechanical function.” Akron, OH, 2018.
7. American Heart Association Basic Cardiovascular Sciences Scientific Sessions; “CaMKII-dependent regulation of Nav1.5, late sodium current and arrhythmias.” San Antonio, TX, 2018.
8. Weill Cornell Cardiovascular Research Institute Seminar Series; “Novel pathways for regulation of cardiac electrical and mechanical function.” New York, NY, 2017.
9. American Heart Association Scientific Sessions; “Sodium channel macromolecular complexes in HF,” and “Late sodium current and CaMKII.” New Orleans, LA, 2016.
10. Distinguished Speaker, Purdue University Weldon School of Biomedical Engineering Seminar Series; “Defining novel mechanisms for regulation of cardiac excitability.” West Lafayette, IN, 2016.
11. Advanced Biomedical Modeling: From Image to Simulation Seminar and Workshop. “Defining novel mechanisms underlying atrial arrhythmias: Insights from computational studies.” Columbus, OH, 2016.
12. Heart Rhythm Society’s 37th Annual Scientific Sessions; “Regulation of the late sodium current by CaMKII.” San Francisco, CA, 2016.
13. Biomedical Engineering Seminar Series; “Defining novel mechanisms for regulation of cardiac excitability and function.” Department of Biomedical Engineering; Washington University in St. Louis, MO, 2016.
14. American Heart Association Scientific Sessions; “Sodium channel scaffolds,” and “Protein phosphatase post-translation regulation in heart disease.” Orlando, FL, 2015.
15. Heart Rhythm Society’s 35th Annual Scientific Sessions; “Mathematical modeling of mitochondria,” and “Modeling for non-modelers.” San Francisco, CA, 2014.
16. UC Davis Cardiovascular Symposium 2014: Systems Approach to Understanding Cardiac Excitation-Contraction Coupling and Arrhythmias; “CaMKII-dependent Na⁺ channel regulation: Modeling studies.” Davis, CA, 2014.
17. Heart Rhythm Society’s 34th Annual Scientific Sessions; “Automaticity and cardiac pacemaking: A computational analysis.” Denver, CO, 2013.
18. Biomedical Engineering Seminar Series; “Excitable cell disease from *in silico* to *in vivo*.” Department of Biomedical Engineering; Case Western Reserve University; Cleveland, OH, 2013.

19. Gordon Research Conference on Cardiac Regulatory Mechanisms; “Ankyrin-B dysfunction and arrhythmias.” New London, NH, 2012.
20. Biomedical Engineering Seminar Series; “CaMKII-dependent regulation of cardiac excitability in health and disease.” Department of Biomedical Engineering, University of Wisconsin, Madison, WI, 2012.
21. Cardiac Bioelectricity and Arrhythmia Center Seminar; “CaMKII-dependent regulation of cardiac excitability in health and disease.” Department of Biomedical Engineering, Washington University in St. Louis, MO, 2012.
22. Annual Meeting of the Central Society for Clinical Research; “Integrating *in vivo*, *in vitro*, and *in silico* approaches to define excitable cell disease.” Chicago, IL, 2011. *CME Credit Issued.*
23. 3rd Annual Leducq Meeting of the Transatlantic CaMKII Alliance; “CaMKII-dependent regulation cardiac excitability in health and disease.” Leuven, Belgium, 2011.
24. Biochemistry workshop; “A betaIV-spectrin/CaMKII signaling complex is essential for vertebrate membrane excitability.” Department of Biochemistry, University of Iowa, Iowa City, IA, 2011.
25. 2nd Annual Leducq Meeting of the Transatlantic CaMKII Alliance; “A betaIV-spectrin/CaMKII signaling complex is essential for vertebrate membrane excitability.” Chicago, IL, 2010.
26. American Heart Association Scientific Sessions, Molecular and Cellular Electrophysiology of the Human Heart; “Modeling intercellular coupling in post-MI arrhythmias.” Chicago, IL, 2010. *CME Credit Issued.*

Session Chair or Invited Participant at National Meetings (since 2010):

1. American Heart Association Scientific Sessions; Moderator: “The exposome and cardiometabolic health,” Philadelphia, PA, 2019.
2. American Heart Association Basic Cardiovascular Sciences Scientific Sessions; Panelist: “Fostering mutually beneficial collaborations between clinicians and basic scientists,” Boston, MA, 2019.
3. Heart Rhythm Society’s Scientific Sessions; Chair: “Transcriptional Regulation of Heart Rhythm,” San Francisco, CA, 2019.
4. Heart Rhythm Society’s Scientific Sessions; Chair: “Harnessing the Power of New Computational Approaches to Transform Arrhythmia Treatment,” San Francisco, CA, 2019.
5. American Heart Association Sciences Scientific Sessions; Poster Professor: “Ion Channel and Protein Regulation of Cardiac Function,” Chicago, IL, 2018.
6. UC Davis Cardiovascular Symposium; Panelist: “Mechano-Electro Transduction,” Davis, CA, 2018.
7. Experimental Biology; Chair: “Mathematical Modeling of Cardiac Excitability and Arrhythmias,” Chicago, IL, 2017.
8. American Heart Association Scientific Sessions; New Orleans, LA, 2016.
9. Heart Rhythm Society’s Scientific Sessions; Chair: “How and When Should I Learn to ‘Model’?” San Francisco, CA, 2014
10. Heart Rhythm Society’s Heart Rhythm Society’s Scientific Sessions; Chair: “The Sinus Node, from Ion Channel Regulation to Biopacemakers”, San Francisco, CA, 2014.

TEACHING

Didactic teaching:

Courses Taught at OSU

- BME 2700 **Numerical Simulations in BME** – Core undergraduate course that addresses application of computer-based numerical and graphical display skills for solving problems in biomedical engineering. Hund served as Instructor in Spring 2015, 2016, 2018; co-Instructor in Fall 2020.
- BME 3703 **Quantitative Physiology** – Core undergraduate course that introduces students to mathematical and numerical techniques to develop, solve, and analyze quantitative models of physiological systems. Hund served as Co-instructor in Spring 2014.
- BME 5580 **Excitable Cell Engineering** – Graduate course (open to senior level undergraduates) that addresses quantitative approaches and advanced engineering methods to study excitable cell function. Hund served as Instructor in Spring 2012 (listed as BME 694), 2013, 2014, 2017, 2019, 2020.

Mentoring:

Postdoctorate Advisor

1. Dr. Olha Koval, Iowa, 2010-2011. She is currently a Research Assistant Professor at University of Iowa.
2. Dr. Sathya Unudurthi, OSU, 2013-2018. Dr. Unudurthi was the recipient of an **American Heart Association Post-doctoral Fellowship**. He is currently a Research Scientist at Masonic Medical Research Institute.
3. Dr. Amara Greer-Short, OSU, 2016-2019. Dr. Greer-Short was the recipient of an **American Heart Association Post-doctoral Fellowship** and was awarded **Best Postdoctoral Presentation** at DHLRI Research Day (2018). She is currently a Scientist at Tenaya Therapeutics in San Francisco, CA.
4. Dr. Drew Nassal, OSU, 2017-present. Dr. Nassal is the recipient of an **American Heart Association Post-doctoral Fellowship**.
5. Dr. Mona El Refaey (Co-mentor), OSU, 2019-present. Dr. El Refaey is the recipient of an **American Heart Association Career Development Award** and **NIH K99/R00 Pathway to Independence Award**.

Graduate Student Dissertation Research Advisor

1. Roseanne Wolf (Mathematics, Iowa) - **Dr. Wolf received her Ph.D. in May 2012**. She is currently an Associate Professor with tenure and holds the **Hazel Rothlisberger Chair** in Mathematics at University of Dubuque.
2. Patric Glynn (Biomedical Engineering, OSU) – **Dr. Glynn received his Ph.D. in May 2015**. He was the recipient of an **American Heart Association Pre-doctoral Fellowship**, was awarded **Best Graduate Student Presentation** at DHLRI Research Day (2013), and received honorable mention for the **Andreas von Recum Graduate Research Achievement Award** (2015). He is currently a Data Scientist in the Data Analytics Group at Stitch Fix in San Francisco, CA.

3. Birce Onal (Biomedical Engineering, OSU) – **Dr. Onal received her Ph.D. in December 2017.** She received the **OSU BME Graduate Service Award (2015), OSU BME Chair’s Award for Outstanding Contribution (2016), OSU BME Andreas von Recum Graduate Research Achievement Award (2017),** and was the recipient of an **NIH F31 National Research Service Award (2016-2017).** She is currently a Clinical Liaison Officer at Medtronic in Minneapolis, MN.
4. Taylor Howard (Biomedical Engineering, OSU) – **Mr. Howard received his M.S. in May 2018.** He is currently a clinical specialist at Medtronic in Columbus, OH.
5. Nehal Patel (Biomedical Engineering, OSU) – **Mr. Patel received his Ph.D. in May 2020.** He was appointed to the NIH T32 Cardiac Predoctoral Fellowship and was awarded **Best Predoctoral Presentation** at DHLRI Research Day (2018). He is currently a postdoctoral fellow at OSU Wexner Medical Center.
6. Cemantha Lane (Biomedical Engineering, OSU) – **Ms. Lane is a Ph.D. candidate** She is the recipient of a **4-year OSU Dean’s Extended Fellowship.**

Graduate Student Dissertation Committee Member

1. Xu Zhang (Biomedical Engineering, OSU) – Graduate 2015.
2. Michael Makara (Biomedical Sciences Graduate Program, OSU) – Graduated 2016.
3. Chris Scheitlin (Biomedical Engineering, OSU) – Graduated 2016.
4. Kevin Nelson (Biomedical Engineering, OSU) – Graduated 2016.
5. Alexis Ortiz-Rosario (Biomedical Engineering, OSU) – Graduated 2016.
6. Jalal Siddiqui (Biophysics, OSU) – Graduated 2016.
7. Sam Colachis (Biomedical Engineering, OSU) – Graduated 2018.
8. Alexis Burns (Biomedical Engineering, OSU) – Graduated 2019.
9. Nathaniel Murphy (Biomedical Sciences Graduate Program, OSU) – Graduated 2019.
10. Ellen Lubbers (Biomedical Sciences Graduate Program, OSU) – Graduated 2019.
11. Kevin McElhanon (Biomedical Sciences Graduate Program, OSU) – Graduated 2020.
12. Tyler Stevens (Molecular, Cellular and Developmental Biology, OSU) – Expected graduation 2021.

Undergraduate Senior Honors Advisor

1. Michael Whipple (Biomedical Engineering, OSU) – Graduated with **Honors Research Distinction** in Spring 2014; Recipient of an **Honors Thesis Undergraduate Research Scholarship (2013)**; 3rd place - Undergraduate Research Forum for Engineering and Architecture (2014); and 2nd place - Denman Undergraduate Research Forum (2014).
2. Nehal Patel (Biomedical Engineering, OSU) – Graduated with **Honors Research Distinction** in Spring 2016; Recipient of **OSU Undergraduate Research Office Research Scholar Award (2015-2016)**; **Best Advanced Research Award** – OSU Undergraduate Research Forum for Engineering and Architecture (2016).
3. Deborah Hong (Biomedical Engineering, OSU) – Graduated in May 2018; Recipient of **OSU Undergraduate Research Office Research Scholar Award (2017-2018).**
4. Cemantha Lane (Biomedical Engineering, OSU) – Graduated in May 2018; Recipient of **OSU Undergraduate Research Office Research Scholar Award (2017-2018).**
5. Tony Satroplus (Biomedical Engineering, OSU) – Graduated in May 2018; Recipient of **OSU Undergraduate Research Office Research Scholar Award (2017-2018)**; and 2nd place - Denman Undergraduate Research Forum (2018).

6. Dennison Min (Biomedical Engineering, OSU) – Graduated May 2020; Recipient of an **Honors Thesis Undergraduate Research Scholarship** (2019); Recipient of **AHA Summer Undergraduate Research Fellowship** at OSU (2019); **Best Undergraduate Presentation at DHLRI Research Day** (2019).
7. Curtis Pierson (Biomedical Engineering, OSU) – Graduated May 2020; Recipient of an **Honors Thesis Undergraduate Research Scholarship** (2019).

Undergraduate Research Advisor

1. Shivangi Mohta (Biomedical Engineering, OSU) – Expected graduation May 2024; **Recipient of OSU College of Engineering Summer Research Scholarship** (2020).
2. Nicholas Leahy (Biomedical Engineering, OSU) – Expected graduation May 2023.
3. Connor Niefert (Biomedical Engineering, OSU) – Expected graduation May 2022; Recipient of an **Honors Thesis Undergraduate Research Scholarship** (2020).
4. Jane Yu (Biomedical Engineering, OSU) – Expected graduation May 2021; Recipient of an **Honors Thesis Undergraduate Research Scholarship** (2020).
5. Alex Winkle (Mechanical Engineering, OSU) – Graduated May 2020.
6. Evelyn Thomas (Biology, OSU) – Graduated May 2019
7. Alyssa Dalic (Biomedical Engineering, OSU) – Graduated May 2018.
8. Daniel Gratz (Computer & Information Science, OSU) – Graduated 2017.
9. Danielle Beckley (Computer Science Engineering, OSU) – Graduated 2016.
10. Taylor Howard (Biomedical Engineering, OSU) – Graduated 2016; Recipient of **OSU AHA Summer Undergraduate Research Fellowship** (2015); **Best Presentation** – DHLRI Research Day (2015) and OSU BME I/R Symposium (2016).
11. Gayathri Veeraraghavan (Biophysics, OSU) – Graduated 2016.
12. Celia Camardo (Zoology, OSU) – Graduated 2014; Recipient of an **AHA Summer Undergraduate Research Fellowship** (2013).
13. Natalia Cardona (Biomedical Engineering, Iowa) – Graduated 2011; Iowa Biosciences Advantage Program Scholar (2010-2011).
14. Jed Snyder (Civil and Environmental Engineering, Iowa) – Graduated 2010; 12 co-author publications; Received MPH from Emory University in 2015.
15. Matthew Christensen (Chemical Engineering, Iowa) – Graduated 2009; Recipient of an **Iowa Research Experience for Undergraduates Scholarship** (2008-2009).

SERVICE

Departmental or collegiate (College of Engineering) service positions

1. Chair, Appointment, Promotion & Tenure Committee (2017-present), Department of Biomedical Engineering, The Ohio State University.
2. Member, Promote and Tenure committee (2020-present), College of Engineering, The Ohio State University
3. Member, Strategic Planning Group to Grow Partnerships with the Health Sciences (2018-present), College of Engineering, The Ohio State University
4. Member, Honors and Awards Committee (2017-present), Department of Biomedical Engineering, The Ohio State University.
5. Member, Undergraduate Studies Committee (2011-present), Department of Biomedical Engineering, The Ohio State University.
6. Member, Computer Services Committee (2011-present), Department of Biomedical

- Engineering, The Ohio State University.
7. Faculty Mentor, Metro High School Student Internship Program (2011-present), Columbus, OH.
 8. Faculty Advisor, Alpha Eta Mu Beta National Biomedical Engineering Honor Society, OSU Chapter (2013-present).
 9. Chair, Biomedical Engineering Research Committee (2017-2020), Department of Biomedical Engineering, The Ohio State University.
 10. Chair, Arrhythmia & Heart Failure Faculty Search Committee (2018-2019), Department of Biomedical Engineering, The Ohio State University.
 11. Chair, Publications and Web Committee (2016-2017), Department of Biomedical Engineering, The Ohio State University.
 12. Chair, Arrhythmia & Heart Failure Faculty Search Committee (2016-2017), Department of Biomedical Engineering, The Ohio State University.
 13. Member, Core Committee (2014-2017), College of Engineering, The Ohio State University.
 14. Member, Executive Committee (2014-2016), Department of Biomedical Engineering, The Ohio State University.
 15. Member, Advanced Medical Devices Faculty Search Committee (2012-2013), Department of Biomedical Engineering, The Ohio State University.

Collegiate (outside Engineering), DHLRI or university service positions

1. Member, University Facilities Committee (2017-present), The Ohio State University.
2. Member, College of Medicine Investigation Committee (2019-present), The Ohio State University.
3. Member, Search Committee for Director of the Division of Cardiovascular Medicine Division in the Department of Internal Medicine (2019), The Ohio State University College of Medicine.
4. Member, Space Committee (2017), Davis Heart and Lung Research Institute, The Ohio State University Wexner Medical Center.
5. Member, Education Committee (2013-2016), Davis Heart and Lung Research Institute, The Ohio State University Wexner Medical Center.
6. Chair, Shared Resources Committee (2011-2014), Davis Heart and Lung Research Institute, The Ohio State University Wexner Medical Center.
7. Member, Web Committee (2011-2014), Davis Heart and Lung Research Institute, The Ohio State University Wexner Medical Center.
8. Member, Director of Transplant Research Search Committee (2012), Comprehensive Transplant Center, The Ohio State University Wexner Medical Center

Editorial and advisory board membership: *Am J Physiol-Heart Circ Physiol* (2013-present); *Circulation Research* (2019-present); *J Mol Cell Cardiol* (2020-present); *Frontiers in Cardiac Electrophysiology* (Review Editor; 2011-present); *JACC Clinical Electrophys* (2020-present); *MethodsX* (Advisory Board Member; 2015-present); *PLoS ONE* (Academic Editor; 2014-present); *Trends in Cardiovascular Medicine* (2014-present); Saving tiny Hearts Society (Medical Advisory Board; 2019-present).

Journal peer review (*ad hoc* activity from 2011-present): *Am J Physiol Heart Circ Physiol*; *Arch*

Biochem Biophys; Biophys J; Cardiovasc Res; Circulation; Circulation: Arr and Electrophys; Circ Res; eLife; FASEB J; Front Physiol; Heart Rhythm; J Clin Invest; J Gen Physiol; J Mol Cell Cardiol; J Physiol; MethodsX; Phys Bio; PLoS ONE; PLoS Comp Biol; Prog Biophys Mol Biol; Nat Commun; Nat Med; Sci Rep; Trends Cardiovasc Med.

Grant peer review: **American Heart Association** – Bioeng BSc2 (2012), Cardiac Elec BSc 2 (2012-2016), Cardiac Elect BSc 1 (2016); **NIH** – Electrical Signaling, Ion Transport, and Arrhythmias Standing Study Section (*ad hoc*: 10/17, 02/18; permanent: 10/18-present); Special Emphasis Panel (NHLBI 2018/01 HLBP 1; NHLBI 2017/01 HLBP 1); Multi-Scale Modeling Program Review (NIBIB U01; 2012-2014), Mentored Transition to Independence Review (NHLBI K Awards; 2016), Mentored Career Development Award to Promote Faculty Diversity in Biomedical Research (NHLBI K01, 2017); **NSF** – Graduate Research Fellowship Program Review (Organismal & Systematic Biology, 2014); **Israeli Ministry of Science, Technology & Space** (2015); **Israeli Science Foundation** – Joint UBC-ISF Research Grant (2015); **Dutch Heart Foundation** (2015); **French National Research Agency** (2017); **German Research Foundation** (2017).

Society Member:

Alpha Eta Mu Beta National Biomedical Engineering Honor Society
American Heart Association, Fellow and Silver Heart Member
Biomedical Engineering Society