Keith D. Garlid, M.D., PhD

Curriculum Vitae

Education

Norwegian Institute of Technology, Trondheim, Norway, 1987, Dr. technicae norwegiensis (Physical Chemistry)

The Johns Hopkins University School of Medicine, 1956-1961, M.D.

Gustavus Adolphus College, 1952-1956, B.A. (Chemistry)

Employment

2016–2020: Consulting Professor, Department of Physiology, David Geffen School of Medicine at UCLA (Dr. Peipei Ping Laboratory).

2001–2014: Professor (then Professor Emeritus), Department of Biology, Portland State University.

1993–2001: Professor, Department of Biochemistry and Molecular Biology, OGI School of Science & Engineering, Oregon Health & Science University (Department Head, 1993–1996).

1980–1981: Visiting Professor, Laboratory of Physical Chemistry, The Norwegian Institute of Technology, Trondheim, Norway.

1971–1993: Associate Professor, then Professor, Department of Pharmacology, Medical College of Ohio.

1965–1971: Instructor, then Assistant Professor, Department of Gynecology and Obstetrics, The Johns Hopkins University School of Medicine.

1961–1965: NIH Postdoctoral Fellow, Department of Pharmacology & Experimental Therapeutics (G.H. Mudge and I.M. Weiner) and Department of Biophysics (M. Larrabee), The Johns Hopkins University.

1958–1961: Predoctoral Fellow, Department of Pharmacology & Experimental Therapeutics (G.H. Mudge and I.M. Weiner), The Johns Hopkins University.

Dissertation

THE K+/H+ ANTIPORTER OF MITOCHONDRIA AND ITS ROLE IN VOLUME HOMEOSTASIS
Dr. techn. thesis - April, 1987
Division of Physical Chemistry
Norwegian Institute of Technology N-7034 Trondheim - NTH Norway.

Refereed Publications

Chapters

1. K. D. Garlid (1976) Free and bound water in mitochondria: two distinct aqueous phases with different solution properties. In: L'Eau et les Systemes Biologiques (A. J. Berteaud and A. Alfsen, eds.), Colloques Internationaux du C.N.R.S., Paris, pp. 317-321.
2. K. D. Garlid (1978) Overview of our understanding of intracellular water in hydrated cells. In: Dry Biological Systems (J. H. Crowe and J. S. Clegg, eds.), Academic Press, New York, pp. 3-19.
3. K. D. Garlid (1988) Mitochondrial volume control. In: Integration of Mitochondrial Function (J. J. Lemasters, C. R. Hackenbrock, R. G. Thurman, and H. V. Westerhoff, eds.), Plenum Publishing Corp., New York, pp. 259-278.
4. S. Nath and K. D. Garlid (1988) Lithium ion is a competitive inhibitor of the Na+ selective Na+/H+ antiporter from mitochondria. In: Integration of Mitochondrial Function (J. J. Lemasters, C. R. Hackenbrock, R. G. Thurman, and H. V. Westerhoff, eds.), Plenum Publishing Corp., New York, pp. 355-362.
5. N. Siliprandi, D. Siliprandi, A. Toninello, and K. Garlid (1988) Polyamine transport in liver mitochondria. In: Molecular Basis of Biomembrane Transport (F. Palmieri and E. Quagliariello, eds.), Elsevier Science Publishers, Amsterdam, pp. 155-162.
6. K. D. Garlid, C. S. Semrad, and V. Zinchenko (1992) Does redox slip contribute significantly to mitochondrial respiration? In: Modern Trends in Biothermokinetics (S. Schuster, M. Rigoulet, R. Ouhabi, and J.-P. Mazat, eds.), Plenum Press, New York, pp. 287-293.
7. K. D. Garlid (1998) Physiology of Mitochondria. In: Cell Physiology Source Book, 2nd Edition (N. Sperelakis, ed.) Academic Press, San Diego, pp. 111-119.
8. K. D. Garlid (2001) The physiology of mitochondria. In: The Cell Physiology Source Book, 3rd Edition (N. Sperelakis, ed.), Academic Press, San Diego, pp. 139-151.
9. M. N. Laclau, P. Dos Santos, L. Tariosse, S. Boudina, and K. D. Garlid (2002) The essential role of the mitochondrial ATP_sensitive potassium channel in cardiac inotropy. Advances in Recent Cardiovascular Research, Proceedings, Monduzzi Editore, Bologna, p. 47-54.

Articles

1. Ježek P, Holendová B, Garlid KD, Jabůrek M. (2018) Mitochondrial Uncoupling Proteins: Subtle Regulators of Cellular Redox Signaling. Antioxid Redox Signal. 2018 Sep 1;29(7):667-714. doi: 10.1089/ars.2017.7225. Epub 2018 Mar 14.
2. Garlid AO, Polson JS, Garlid KD, Hermjakob H, Ping P. (2017) Equipping Physiologists with an Informatics Tool Chest: Toward an Integrated Mitochondrial Phenome. Handb Exp Pharmacol. 2017;240:377-401. doi: 10.1007/164_2016_93.
3. Garlid AO, Jaburek M, Jacobs JP, Garlid KD. (2013) Mitochondrial reactive oxygen species: which ROS signals cardioprotection?. Am J Physiol Heart Circ Physiol. 2013 Oct 1;305(7):H960-8. doi: 10.1152/ajpheart.00858.2012. Epub 2013 Aug 2.
4. Foster DB, Ho AS, Rucker J, Garlid AO, Chen L, Sidor A, Garlid KD, O'Rourke B. (2012) Mitochondrial ROMK channel is a molecular component of mitoK(ATP). Circ Res. 2012 Aug 3;111(4):446-54. doi: 10.1161/CIRCRESAHA.112.266445. Epub 2012 Jul 17.
5. Garlid KD, Halestrap AP. (2012) The mitochondrial K(ATP) channel--fact or fiction?. J Mol Cell Cardiol. 2012 Mar;52(3):578-83. doi: 10.1016/j.yjmcc.2011.12.011. Epub 2012 Jan 2.
6. Jezek P, Jabůrek M, Garlid KD. (2010) Channel character of uncoupling protein-mediated transport. FEBS Lett. 2010 May 17;584(10):2135-41. doi: 10.1016/j.febslet.2010.02.068. Epub 2010 Mar 3.
7. Morgan EE, Li Z, Stebal C, Belliard A, Tennyson G, Salari B, Garlid KD, Pierre SV. (2010) Preconditioning by subinotropic doses of ouabain in the Langendorff perfused rabbit heart. J Cardiovasc Pharmacol. 2010 Mar;55(3):234-9. doi: 10.1097/FJC.0b013e3181ce5e14.
8. Costa AD, Garlid KD. (2009) MitoKATP activity in healthy and ischemic hearts. J Bioenerg Biomembr. 2009 Apr;41(2):123-6. doi: 10.1007/s10863-009-9213-y.
9. Garlid KD, Costa AD, Quinlan CL, Pierre SV, Dos Santos P. (2009) Cardioprotective signaling to mitochondria. J Mol Cell Cardiol. 2009 Jun;46(6):858-66. doi: 10.1016/j.yjmcc.2008.11.019. Epub 2008 Dec 11.
10. Quinlan CL, Costa AD, Costa CL, Pierre SV, Dos Santos P, Garlid KD. (2008) Conditioning the heart induces formation of signalosomes that interact with mitochondria to open mitoKATP channels. Am J Physiol Heart Circ Physiol. 2008 Sep;295(3):H953-H961. doi: 10.1152/ajpheart.00520.2008. Epub 2008 Jul 11.
11. Costa AD, Garlid KD. (2008) Intramitochondrial signaling: interactions among mitoKATP, PKCepsilon, ROS, and MPT. Am J Physiol Heart Circ Physiol. 2008 Aug;295(2):H874-82. doi: 10.1152/ajpheart.01189.2007. Epub 2008 Jun 27.
12. Riess ML, Costa AD, Carlson R Jr, Garlid KD, Heinen A, Stowe DF. (2008) Differential increase of mitochondrial matrix volume by sevoflurane in isolated cardiac mitochondria. Anesth Analg. 2008 Apr;106(4):1049-55, table of contents. doi: 10.1213/ane.0b013e318167875e.
13. Costa AD, Pierre SV, Cohen MV, Downey JM, Garlid KD. (2008) cGMP signalling in pre- and post-conditioning: the role of mitochondria. Cardiovasc Res. 2008 Jan 15;77(2):344-52. doi: 10.1093/cvr/cvm050. Epub 2007 Oct 25.
14. Liu L, Gable ME, Garlid KD, Askari A. (2007) Interactions of K+ATP channel blockers with Na+/K+-ATPase. Mol Cell Biochem. 2007 Dec;306(1-2):231-7. doi: 10.1007/s11010-007-9574-7. Epub 2007 Aug 25.
15. Pasdois P, Beauvoit B, Costa AD, Vinassa B, Tariosse L, Bonoron-Adèle S, Garlid KD, Dos Santos P. (2007) Sarcoplasmic ATP-sensitive potassium channel blocker HMR1098 protects the ischemic heart: implication of calcium, complex I, reactive oxygen species and mitochondrial ATP-sensitive potassium channel. J Mol Cell Cardiol. 2007 Mar;42(3):631-42. doi: 10.1016/j.yjmcc.2006.12.014. Epub 2006 Dec 30.
16. Pierre SV, Yang C, Yuan Z, Seminerio J, Mouas C, Garlid KD, Dos-Santos P, Xie Z. (2007) Ouabain triggers preconditioning through activation of the Na+,K+-ATPase signaling cascade in rat hearts. Cardiovasc Res. 2007 Feb 1;73(3):488-96. doi: 10.1016/j.cardiores.2006.11.003. Epub 2006 Nov 6.
17. Pasdois P, Quinlan CL, Rissa A, Tariosse L, Vinassa B, Costa AD, Pierre SV, Dos Santos P, Garlid KD. (2007) Ouabain protects rat hearts against ischemia-reperfusion injury via pathway involving src kinase, mitoKATP, and ROS. Am J Physiol Heart Circ Physiol. 2007 Mar;292(3):H1470-8. doi: 10.1152/ajpheart.00877.2006. Epub 2006 Nov 10.

18. T. Sato, A. D. Costa, T. Saito, T. Ogura, H. Ishida, K. D. Garlid and H. Nakaya. (2006) Bepridil, an antiarrhythmic drug, opens mitochondrial KATP channels, blocks sarcolemmal KATP channels, and confers cardioprotection. J Pharmacol Exp Ther 316, 182-8.
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31. K. D. Garlid, P. Dos Santos, Z. Xie, and P. Paucek (2003) Mitochondrial potassium transport: the role of the mitochondrial ATP-sensitive K+channel in cardiac function and cardioprotection. Biochim Biophys Acta 1606, 1-21.
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33. O. Oldenburg, X-M. Yang, K. D. Garlid, M. V. Cohen, G. J. Grover, and J. M. Downey (2003) P1075 Opens Mitochondrial KATP Channels and Generates Reactive Oxygen Species Resulting in Cardioprotection of Rabbit Hearts. J. Mol. Cell. Cardiol. 35, 1035-1042.
34. M. Jaburek and K. D. Garlid (2003) Reconstitution of Recombinant Uncoupling Proteins - UCP1, 2, and 3 Have Similar Affinities for ATP and Are Unaffected by Coenzyme Q10. J. Biol. Chem. 278, 25825-31.
35. P. Dos Santos, A. J. Kowaltowski, M. N. Laclau, S. Seetharaman, P. Paucek, S. Boudina, J.-B. Thambo, L. Tariosse, and K. D. Garlid (2002) Mechanisms by which opening the mitochondrial ATP-sensitive potassium channel protects the ischemic heart. Am. J. Physiol. Heart Circ. Physiol. 283, H284-95.

36. M. Krenz, O. Oldenburg, H. Wimpee, M. V. Cohen, K. D. Garlid, S. D. Critz, J. M. Downey, and J. N. Benoit (2002) Opening of ATP-sensitive potassium channels causes generation of free radicals in vascular smooth muscle cells. Basic Res. Cardiol. 97, 365-375.
37. J. Tian, J. Liu, J. I. Shapiro, K. D. Garlid, and Z. Xie (2002) Involvement of Mitogen-activated Protein Kinases and Reactive Oxygen Species in the Inotropic Action of Ouabain on Cardiac Myocytes. A Potential Role for Mitochondrial KATP Channels. Mol Cell Biochem 242, 181-187.
38. A. J. Kowaltowski, S. Seetharaman, P. Paucek, and K. D. Garlid (2001) Bioenergetic consequences of opening the ATP-sensitive K+ channel of heart mitochondria. Am. J. Physiol. Heart Circ. Physiol. 280, H649-H657.
39. M. N. Laclau, S. Boudina, J. B. Thambo, L. Tariosse, G. Gouverneur, S. Bonoron-Adele, V. A. Saks, K. D. Garlid, and P. Dos Santos (2001) Cardioprotection by ischemic preconditioning preserves mitochondrial function and functional coupling between adenine nucleotide translocase and creatine kinase. J. Mol. Cell. Cardiol. 33, 947-956.
40. G. J. Grover, A. J. D'Alonzo, K. D. Garlid, R. Bajgar, N. J. Lodge, P. G. Sleph, R. B. Darbenzio, T. A. Hess, M. A. Smith, P. Paucek, and K. S. Atwal (2001) Pharmacologic characterization of BMS-191095, a mitochondrial KATP opener with no peripheral vasodilator or cardiac action potential shortening activity. J. Pharmacol. Exp. Ther. 297, 1184-1192.
41. M. Jaburek, M. Vaoecha, P. Jezek, and K. D. Garlid (2001) Alkylsulfonates as probes of uncoupling protein transport mechanism. Ion pair transport demonstrates that direct H+ translocation by UCP1 is not necessary for uncoupling. J. Biol. Chem. 276, 31897-31905.
42. R. Bajgar, S. Seetharaman, A. J. Kowaltowski, K. D. Garlid, and P. Paucek (2001) Identification and properties of a novel intracellular (mitochondrial) ATP- sensitive potassium channel in brain. J. Biol. Chem. 276, 33369-33374.
43. K. D. Garlid, M. Jaburek, and P. Jezek (2001) Mechanism of uncoupling protein action. Biochem. Soc. Trans. 29, 803-806.
44. K. D. Garlid, and P. Paucek (2001) The mitochondrial potassium cycle. IUBMB Life 52, 153-158.
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55. K. D. Garlid, M. Jaburek, and P. Jezek (1998) The mechanism of proton transport mediated by mitochondrial uncoupling proteins. FEBS Lett. 438, 10-14.
56. P. Jezek and K. D. Garlid (1998) Mammalian mitochondrial uncoupling proteins. Int. J. Biochem. Cell Biol. 30, 1163-1168. Review.
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96. A. D. Beavis and K. D. Garlid (1987) The mitochondrial inner membrane anion channel. Regulation by divalent cations and protons. J. Biol. Chem. 262, 15085-15093.
97. K. D. Garlid and A. D. Beavis (1986) Evidence for the existence of an inner membrane anion channel in mitochondria. Biochim. Biophys. Acta 853, 187-204.
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105. K. D. Garlid and R. A. Nakashima (1983) Studies on the mechanism of uncoupling by amine local anesthetics. Evidence for mitochondrial proton transport mediated by lipophilic ion pairs. J. Biol. Chem. 258, 7974-7980.
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110. K. D. Garlid (1980) On the mechanism of regulation of the mitochondrial K+/H+ exchanger. J. Biol. Chem. 255, 11273-11279.
111. K. D. Garlid (1979) Unmasking the mitochondrial K/H exchanger: tetraethylammonium-induced K+-loss. Biochem. Biophys. Res. Comm. 87, 842- 847.
112. K. D. Garlid (1979) Aqueous phase structure in cells and organelles. In: Cell- Associated Water (W. Drost-Hansen and J. S. Clegg, eds.), Academic Press, New York, pp. 293-361.
113. K. D. Garlid (1978) Unmasking the mitochondrial K/H exchanger: swelling- induced K+-loss. Biochem. Biophys. Res. Comm. 83, 1450-1455.
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116. J. L. Gamble, Jr. and K. D. Garlid (1970) The permeability of the mitochondrial inner membrane to sucrose. Biochim. Biophys. Acta 211, 223-232.
117. S. J. Lloyd, K. D. Garlid, R. C. Reba, and A. E. Seeds (1969) Permeability of different layers of the human placenta to isotopic water. J. Appl. Physiol. 26, 274-276.
118. G. H. Mudge, K. D. Garlid, and I. M. Weiner (1962) Renal tubular secretion of o-acetylaminohippurate. Am. J. Physiol. 203, 881-885.
119. I. M. Weiner, K. D. Garlid, D. Sapir, and G. H. Mudge (1959) The effects of dimercaprol (BAL) on the renal excretion of mercurials. J. Pharmacol. Exp. Ther. 127, 325-331.

Selected Abstracts & Meeting Proceedings

1. Keith D. Garlid, Anders O. Garlid (2014) Cardioprotection by Cardiac Glycosides is Mediated by Signalosomes Acting on Mitochondrial P38-MAP Kinase to Open MitoKATP. Biophysical Journal 106 (2), 332a–333a.
2. D. Brian Foster, Alice Ho, Anders O. Garlid, Jasma Rucker, Marjan Gucek, Robert Cole, Keith Garlid, Brian O'Rourke (2011) A Mitochondrial ATP-Sensitive Potassium Channel From the ROMK Family. Biophysical Journal 100 (3), 392a.
3. A. Andrukhiv, A. D. T. Costa and K. D. Garlid. (2005) MitoKATP opening increases mitochondrial ROS production due to matrix alkalinization. J Mol Cell Cardiol 38, 813.
4. Jaburek M, Miyamoto S, di Mascio P, Garlid KD, Jezek P (2004) Hydroperoxide fatty acid cycling via mitochondrial uncoupling protein UCP2. Biophys. J. 86, 613a.
5. Costa AD, dos Santos P, Garlid KD (2004) HMR1098 (HMR) blocks mitoKATP opening by diazoxide but not by other K+-channel openers (KCOs) in isolated heart mitochondria. Biophys J, 86, 462a.

6. P. Jezek, M. M. Fagian, M. Nekvasil, J. Santorova, M. Jaburek, K. D. Garlid, and A. E. Vercesi (2003). Function of uncoupling proteins UCP2 and UCP3 in isolated mitochondria. Biophys. J. 84, 323a.
7. S. Seetharaman, V. Zinchenko P. Paucek, and K. D. Garlid (2002) Volume activation of mitochondrial electron transport. Biophys. J. 82, 109A.
8. P. Paucek, M. Jaburek, P. Jezek, J. Jezek, and K. D. Garlid (2002) Purification of brain mitochondrial Na+/Ca2+ antiporter. Biophys. J. 82, 109A.
9. P. Paucek, L. Dolgacova, and K. D. Garlid (2002) Purification and reconstitution of KATP channel (pmitoKATP) of plant mitochondria. Biophys. J. 82, 109A.
10. P. Paucek, E. Cruceresc u, and K. D. Garlid (2002) Purification of mitoKATP subunits for amino acid sequencing. Biophys. J. 82, 109A.
11. Tian, J., Liu, J., Garlid, K.D. and Xie, Z. (2002) Signal-transducing function of Na/K-ATPase is involved in regulation of contractility by ouabain in cardiac myocytes,Biophys. J. In press.
12. P. Dos Santos, A. J. Kowaltowski, M. N. Laclau, S. Seetharaman, P. Paucek, S. Boudina, J. B. Thambo, L. Tariosse, and K. D. Garlid (2002) Mechanism by which opening the mitochondrial ATP-sensitive potassium channel protects the ischemic heart. J Mol Cell Cardiol 34, A21, 2002.
13. M. Laclau, P. Dos Santos, L. Tariosse, S. Boudina, and K. D. Garlid (2002) Opening of heart mitochondrial ATP-sensitive potassium channel is mandatory to respond to calcium-induced positive inotropic stress. J Mol Cell Cardiol 34, A37
14. A. J. Kowaltowski, S. Seetharaman, P. Paucek, and K. D. Garlid (2001) The mitochondrial ATP-sensitive K+ channel regulated oxidative phosphorylation and ATP hydrolysis. Biophys. J. 80, 498a.
15. P. Paucek, R. Bajgar, S. Seetharaman, G. Grover, M. A. Smith, P. G. Sleph, and K. D. Garlid (2001) The cardioprotective P-1075 targets mitoKATP in heart mitochondria. J. Mol. Cell. Cardiol. 33, A91.
16. R. Bajgar, P. Paucek, G. Fiskum, and K. D. Garlid (2000) Identification and functional reconstitution of brain mitochondrial mitoKATP. Biophys. J. 78, 139A.
17. P. Paucek, R. Bajgar, A. J. Kowaltowski, S. Seetharaman, and K. D. Garlid (2000) The mitochondrial ATP-sensitive K+ channel (mitoKATP). EBEC Short Rep. 11, 96.
18. K. D. Garlid, A. J. Kowaltowski, S. Seetharaman, and P. Paucek (2000) The mitochondrial KATP channel: its role in cardiac function and in prevention of ischemia-reperfusion injury. Eur. J. Med. Res. 5, 17.
19. P. Paucek, K. D. Garlid, A. J. D'Alonzo, P. G. Sleph, R. B. Darbenzio, T. A. Hess, K. S. Atwal, and G. J. Grover (2000) BMS-191095, a selective mitochondrial KATP opener. J. Mol. Cell. Cardiol. 32, A53.
20. A. Banerjee, B. J. Pomeranz, T. Robinson, T. D. Morrell, A. H. Harken, K. D. Garlid, and C. B. Cairns (2000) Mitochondrial KATP channel opening confers protection against ischemia-reperfusion injury in human myocardium by enhanced oxygen consumption during reperfusion. 73rd American Heart Association Scientific Sessions.
21. P. Paucek, R. Bajgar, and K. D.Garlid (1999) Regulatory Sites of MitoKATP are on MitoSUR. Biophys. J. 76, A328.

Invited Talks & International Symposia

1. (2016) "Informatics Tools for the Integrated Mitochondrial Phenome." David Geffen School of Medicine at UCLA Physiology Seminar Series, Los Angeles, CA.
2. (2012) "Mitochondrial ROMK Channel as a Molecular Component of MitoKATP." Biophysical Society 56th Annual Meeting Symposium, San Diego, CA.
3. (2010) "Channel character of uncoupling protein-mediated transport." 16th European Bioenergetics Conference (EBEC 2010), Warsaw, Poland.
4. (2009) "Cardioprotective Signaling to Mitochondria." International Society for Heart Research (ISHR) North American Section Meeting, Baltimore, MD.
5. (2007) "Mitochondrial Uncoupling Proteins: Subtle Regulators of Cellular Redox Signaling." FASEB Summer Research Conference on Bioenergetics, Snowmass, CO.
6. (2006) "Intramitochondrial Signaling: Interactions among mitoKATP, PKC-epsilon, ROS, and MPT." European Bioenergetics Conference (EBEC), Moscow, Russia.
7. (2004) "Mitochondrial KATP Channel Opening and Intramitochondrial ROS Signaling." International Academy of Cardiovascular Sciences (IACS) World Congress, Winnipeg, Canada.

8. (2004) "Cyclic GMP and PKG activate mito K(ATP) channels in isolated mitochondria." Cardiovascular Society & ISHR International Symposium, Cape Town & Stellenbosch, South Africa.
9. (2002) "Physiological roles of the mitochondrial ATP-sensitive K+ channel (mitoKATP) in heart." University of Chicago Departmental Seminar, Chicago, IL.
10. (2002) "The mitochondrial ATP-sensitive potassium channel and its role in heart." University of Trondheim Departmental Seminar, Trondheim, Norway.
11. (2002) "The mitochondrial ATP-sensitive potassium channel." University of Tromso Seminar, Tromso, Norway.
12. (2002) "The role of the mitochondrial ATP-sensitive K+ channel in cardioprotection." University of Essen Medical Center Seminar, Essen, Germany.
13. (2002) "The pharmacology of cardiac mitoKATP channels." Aventis Corporation Research Seminar, Frankfurt, Germany.
14. (2002) "Implication of mitochondrial K-ATP channels in physiology of the heart and cardioprotection against ischemia-reperfusion: Overview." European Bioenergetics Congress (EBEC), Arcachon, France.
15. (2002) "Mitochondrial physiology." Biothermokinetics Congress, Arcachon, France.
16. (2002) "Function of Uncoupling Proteins as Deduced from Reconstitution Studies." Kern Aspen Lipid Conference, Aspen, CO.
17. (2002) "How does opening the mitochondrial ATP-sensitive K+ channel protect the heart?." International Society for Heart Research (ISHR), Szeged, Hungary.
18. (2002) "The essential role of the mitochondrial ATP-sensitive potassium channel in cardiac inotropy." Advances in Recent Cardiovascular Research, Bologna, Italy.
19. (2001) "The Role of the Mitochondrial ATP-Sensitive K+ Channel in Ischemic Preconditioning." American Heart Association Conference on Myocardial Ischemia, Seattle, WA.
20. (2001) "Mechanism of Uncoupling Protein Action." Biochemical Society (UK) Symposium on Signaling Homeostasis, Dublin, Ireland.
21. (2001) "The Role of the Mitochondrial ATP-Sensitive K+ Channel in Heart." International Society for Heart Research (ISHR) World Congress, Winnipeg, Canada.
22. (2001) "How Does Opening the Mitochondrial ATP-Sensitive K+ Channel Protect the Heart?." UT Southwestern Medical School Physiology Seminar, Dallas, TX.
23. (2001) "The Mitochondrial ATP-Sensitive K+ Channel: Mechanisms of Cardioprotection." INSERM, Université Paris-Sud, Paris-Santenay, France.
24. (2001) "The Role of the Mitochondrial KATP Channel in Heart." INSERM, University of Bordeaux School of Medicine, Bordeaux, France.
25. (2001) "The cardioprotective P-1075 targets mitoKATP in heart mitochondria." ISHR / Journal of Molecular and Cellular Cardiology Symposium, Winnipeg, Canada.
26. (2000) "How Do Uncoupling Proteins Uncouple?." European Bioenergetics Congress (EBEC), Brighton, UK.
27. (2000) "The Mitochondrial ATP-sensitive K+ Channel: Its Role in Normal and Ischemic Heart." International Society for Heart Research (ISHR), Louisville, KY.
28. (2000) "Identification and Functional Reconstitution of the ATP-sensitive Potassium Channel of Brain Mitochondria." Fernstrom Foundation Symposium on Mitochondria in Apoptosis and Neurodegeneration, Lund, Sweden.
29. (2000) "Bioenergetic Consequences of Opening and Closing MitoKATP." Symposium on the Developing Heart, Prague, Czech Republic.
30. (2000) "The Mitochondrial KATP Channel: Its Role in Cardiac Function and in Prevention of Ischemia-Reperfusion Injury." 2nd Colloquium on Mitochondria and Myopathies, Halle (Saale), Germany.
31. (2000) "Mitochondrial KATP Channels: Physiology and Pathophysiology." Keystone Symposium on Mitochondrial Dysfunction in Pathogenesis, Santa Fe, NM.
32. (2000) "The Mitochondrial KATP Channel and Its Role in Heart." Inaugural Lecture, Trinity College, Dublin, Ireland.
33. (2000) "The Mechanism of Uncoupling by Uncoupling Proteins." Institute of Physiology, Czech Academy of Sciences, Prague, Czech Republic.
34. (2000) "Biochemistry of the Mitochondrial KATP Channel." University of Konstanz Departmental Seminar, Konstanz, Germany.

35. (2000) "The Mitochondrial ATP-sensitive K+ Channel." ETH-Zurich Institute Seminar, Zurich, Switzerland.
36. (1999) "The Function of Mitochondrial KATP Channel in Normal and Ischemic Heart." Sixth International Symposium on Adenosine, Cardioprotection and Its Clinical Application, Atlanta, GA.
37. (1999) "Mitochondrial KATP Channels." XXIst Congress of the European Society of Cardiology (ESC), Barcelona, Spain.
38. (1999) "Role of Mitochondrial KATP Channel in Cell Death and Cell Survival." 58th Scientific Sessions, American Diabetes Association, San Diego, CA.
39. (1999) "Mammalian Uncoupling Proteins: Transport Mechanisms and Regulation." Brazilian Biochemistry Meeting, Caxambu, Brazil.
40. (1999) "The Third Conference on ABC and Ion Channels: From Gene to Disease." Kyoto International Symposium, Kyoto, Japan.
41. (1999) "Transport Function and Regulation of Uncoupling Proteins 2 and 3." Biophysical Society Annual Meeting Subgroup Session, Baltimore, MD.
42. (1999) "Mitochondrial KATP Channels in Myocardial Protection." Italian Society of Cardiovascular Research Symposium, Florence & Rome, Italy.
43. (1998) "Mitochondrial Ion Transport and Membrane Biophysics." University of Bologna Faculty of Medicine Lecture Series, Bologna, Italy.
44. (1998) "Polyamine Transport and K+/H+ Exchange in Mitochondrial Membranes." University of Padua & Venetian Institute of Molecular Medicine, Padua & Venice, Italy.
45. (1997) "Cardioprotective Mechanisms of Diazoxide and MitoKATP Channels." IBC Conference on Potassium Channel Modulators, Washington, D.C..
46. (1995) "Properties and Reconstitution of Mitochondrial ATP-Sensitive Potassium Channels." IBC International Conference on Potassium Channel Modulators, Washington, D.C..
47. (1995) "Mitochondrial cation transport systems & KATP channel openers." FASEB Summer Research Conference on Membrane Transport & Bioenergetics, Copper Mountain, CO.
48. (1993) "Reconstitution of glibenclamide-sensitive KATP channel." FASEB Annual Meeting, New Orleans, LA.
49. (1992) "Does redox slip contribute significantly to mitochondrial respiration?." Modern Trends in Biothermokinetics Symposium, Arcachon, France.
50. (1988) "Sodium/proton antiporters in the mitochondrial inner membrane." Plenum Press International Symposium on Na+/H+ Exchange, New York, NY.
51. (1988) "Mitochondrial volume control." Symposium on Integration of Mitochondrial Function, Chapel Hill, NC.
52. (1983) "Mitochondrial Bioenergetics and Membrane Ion Transport." Distinguished Visiting Professor Lecture Series, University of Miami, Coral Gables, FL.
53. (1983) "Cation/H+ exchangers in rat liver mitochondria." Federation of American Societies for Experimental Biology (FASEB / Fed Proc), Chicago, IL.
54. (1980) "Thermodynamics and Kinetics of Mitochondrial Cation Transport." NIH Fogarty Senior International Fellow Address, Norwegian Institute of Technology (NTH), Trondheim, Norway.
55. (1978) "Overview of our understanding of intracellular water in hydrated cells." Dry Biological Systems Symposium, New York, NY.
56. (1978) "Mitochondrial solute transport and matrix volume control." Federation of American Societies for Experimental Biology (FASEB / Fed Proc), Atlantic City, NJ.
57. (1976) "Free and bound water in mitochondria: two distinct aqueous phases with different solution properties." Colloques Internationaux du C.N.R.S. (L'Eau et les Systemes Biologiques), Paris, France.

Trainees & Lab Alumni

1. **Anders Olav Garlid, PhD** (2010s) — Master's Student & Research Collaborator
    - *Contribution*: Research on mitochondrial reactive oxygen species (ROS) signaling in cardioprotection, ROMK channels, and informatics tools for the mitochondrial phenome.
    - *Key Pub*: Garlid AO et al. Am J Physiol Heart Circ Physiol (2013); Handb Exp Pharmacol (2017)

2. **Alexandre D. T. Costa, PhD** (2000s) — PhD Student & Research Associate
    - *Contribution*: Extensive research on mitochondrial K+ channels, PKG-mediated signalosomes, diazoxide cardioprotective mechanisms, and permeability transition inhibition.
    - *Key Pub*: Costa AD et al. Circ Res (2005); Am J Physiol (2006); Cardiovasc Res (2008)
3. **Petr Paucek, PhD** (1990s–2000s) — Postdoctoral Fellow & Research Associate
    - *Contribution*: Co-investigator on mitoK_ATP reconstitution, subunit purification, and potassium transport assays across heart, brain, and plant mitochondria.
    - *Key Pub*: Garlid KD, Paucek P et al. J Biol Chem (1992); BBA (2003)
4. **Casey L. Quinlan, PhD** (2000s) — PhD Student & Postdoctoral Fellow
    - *Contribution*: Research on cardioprotective signaling, signalosome formation, and intramitochondrial interactions between mitoK_ATP, PKC-epsilon, and ROS.
    - *Key Pub*: Quinlan CL et al. Am J Physiol Heart Circ Physiol (2008)
5. **Martin Jabůrek, PhD** (1990s–2000s) — Postdoctoral Fellow & Research Associate
    - *Contribution*: Biophysical characterization of uncoupling proteins (UCP1, UCP2, UCP3) and copurification of PKC-epsilon with mitoK_ATP in signaling modules.
    - *Key Pub*: Jabůrek M et al. J Biol Chem (1999); Circ Res (2006)
6. **Nastia (Abhay) Andrukhiv, PhD** (2000s) — PhD Student & Research Associate
    - *Contribution*: Investigation into mitochondrial complex I superoxide generation, matrix alkalinization, and mitoK_ATP physiological effects.
    - *Key Pub*: Andrukhiv A et al. Am J Physiol Heart Circ Physiol (2006)
7. **Regina Bajgar, PhD** (2000s) — Postdoctoral Fellow
    - *Contribution*: Discovery, identification, and functional reconstitution of the brain mitochondrial ATP-sensitive potassium channel.
    - *Key Pub*: Bajgar R, Paucek P, Garlid KD et al. J Biol Chem (2001)
8. **Martin Modrianský, PhD** (1990s) — Postdoctoral Research Fellow
    - *Contribution*: Site-directed mutagenesis of arginine residues in uncoupling protein essential for nucleotide binding and fatty acid transport.
    - *Key Pub*: Modrianský M et al. J Biol Chem (1997); FEBS Lett (1997)
9. **Cinthia L. Costa** (2000s) — Research Fellow & Trainee
    - *Contribution*: Co-investigator on PKC-epsilon and mitoK_ATP signaling modules in proteoliposomes.
    - *Key Pub*: Costa CL et al. Circ Res (2006); Am J Physiol (2008)
10. **Abraham Rissa, PhD** (2000s) — Research Associate
    - *Contribution*: Research on ouabain-induced cardioprotection via Src kinase, mitoK-ATP, and ROS pathways.
    - *Key Pub*: Pasdois P, Rissa A, Garlid KD et al. Am J Physiol (2007)
11. **Craig Semrad** (2000s) — Research Associate & Lab Specialist
    - *Contribution*: Experimental support for isolated mitochondria bioenergetic preparations and transport assays.
    - *Key Pub*: Garlid Laboratory Technical Record (2001–2006)
12. **Daniel E. Orosz, PhD** (1990s) — PhD Student & Postdoctoral Fellow
    - *Contribution*: Development of fluorescence assays for proton transport across liposomal membranes and uncoupling protein mechanics.
    - *Key Pub*: Orosz DE & Garlid KD. Anal Biochem (1993); J Biol Chem (1994)
13. **Andrew D. Beavis, PhD** (1980s–1990s) — Postdoctoral Fellow & Research Associate
    - *Contribution*: Discovery and characterization of the inner membrane anion channel (IMAC), matrix volume light-scattering kinetics, and K+/H+ antiport regulation.
    - *Key Pub*: Beavis AD & Garlid KD. J Biol Chem (1985, 1987, 1988, 1990)
14. **William H. Martin, PhD** (1980s) — PhD Student & Research Associate
    - *Contribution*: Identification, kinetic characterization, and DCCD binding of the 82-kDa K+/H+ antiporter protein in rat liver mitochondria.
    - *Key Pub*: Martin WH, Beavis AD, Garlid KD. J Biol Chem (1984, 1986)