

Curriculum Vitae

Michael Köttgen, M.D.

PERSONAL INFORMATION

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EDUCATION, TRAINING AND POSITIONS

- 1997 M.D., School of Medicine, Albert-Ludwigs-University Freiburg, Germany
- 1997 Doctoral degree in Physiology, Albert-Ludwigs-University Freiburg, Germany
Dissertation: pH regulation in colon carcinoma cells (summa cum laude)
- 1997 Visiting scientist (3 months), Cellular and Molecular Physiology (Yale University, Dr. G. Giebisch, advisor)
- 1997-1998 Residency, Department of Nephrology, University Hospital Freiburg (Dr. P. Schollmeyer)
- 1998-2000 Postdoctoral Fellow, Institute of Physiology, University of Freiburg (Dr. R. Greger, advisor)
- 2000-2004 Postdoctoral Fellow, Department of Nephrology, University Hospital Freiburg (Dr. G. Walz, advisor)
- 2004-2007 Postdoctoral Fellow, Department of Biological Chemistry, Johns Hopkins University, Baltimore (Dr. C. Montell/ Dr. T. Watnick, advisors)
- 2007-2009 Research Associate/Junior Faculty – Department of Biological Chemistry, Johns Hopkins University, Baltimore
- 2009 Offers for tenure track faculty positions in the Department of Physiology and Biophysics, Case Western Reserve University and in the Department of Nephrology, University of Maryland
- 2010 Adjunct Professor, Johns Hopkins University School of Medicine, Baltimore, MD, USA – Department of Nephrology
- 2/2010 Full Professor (W3), University Hospital Freiburg, Germany – Department of Nephrology

RESEARCH ACTIVITIES

Publications

Peer-reviewed primary research publications

1. Woodward OM^{*}, Köttgen A^{*}, Coresh J, Boerwinkle E, Guggino WB, **Köttgen M.** (2009) Identification of a novel urate transporter, ABCG2, with a common functional polymorphism causing gout. (2009) **PNAS**, 106, 10338-10342. ^{*}equal contribution
2. Wegierski T^{*}, Steffl D^{*}, Kopp C^{*}, Tauber R, Buchholz B, Nitschke R, Kuehn EW, Walz G, **Köttgen M.** (2009) TRPP2 channels regulate apoptosis via the Ca²⁺ concentration in the endoplasmic reticulum. **EMBO J**, 28, 490-9. ^{*}equal contribution
3. **Köttgen M^{*}**, Buchholz B^{*}, Garcia-Gonzalez MA, Kotsis F, Fu, X, Doerken M, Steffl, D, Tauber, R, Wegierski, T, Suzuki, M, Kramer-Zucker, A, Germino, GG, Watnick, T, Prenen, J, Nilius B, Kuehn, EW, Walz, G. (2008) TRPP2 and TRPV4 form a polymodal sensory channel complex, **J Cell Biol**, 182(3):437-47. ^{*}equal contribution
4. Wang Y, Fu X, Gaiser S, **Köttgen M**, Kramer-Zucker A, Walz G, Wegierski T. (2007) OS-9 regulates the transit and polyubiquitination of TRPV4 in the endoplasmic reticulum. **J Biol Chem**, 14, 282, 36561-70
5. Moon SJ, **Köttgen M**, Jiao Y, Xu H and Montell C. (2006) A taste receptor required for the caffeine response in vivo, **Curr Biol**, 16, 1812-7.
6. Schermer B, Hopker K, Omran H, Ghenoiu C, Fliegau M, Fekete A, Horvath J, **Köttgen M**, Hackl M, Zschiedrich S, Huber TB, Kramer-Zucker A, Zentgraf H, Blaukat A, Walz G, Benzing T. (2005) Phosphorylation by casein kinase 2 induces PACS-1 binding of nephrocystin and targeting to cilia. **EMBO J**, 24, 4415-24
7. **Köttgen M^{*}**, Benzing T^{*}, Simmen T, Tauber R, Buchholz B, Feliciangeli S, Huber TB, Schermer B, Kramer-Zucker A, Hopker K, Simmen KC, Tschucke CC, Sandford R, Kim E, Thomas G, Walz G. (2005) Trafficking of TRPP2 by PACS proteins represents a novel mechanism of ion channel regulation. **EMBO J**, 24, 705-16. (^{*} equal contribution)
8. Buchholz B^{*}, Tauber R^{*}, Steffl D, Walz G, **Köttgen M.** (2004) An inwardly rectifying whole cell current induced by G_q-coupled receptors. **Biochem Biophys Res Commun**, 322, 177-85. (^{*} equal contribution)
9. **Köttgen M**, Loffler T, Jacobi C, Nitschke R, Pavenstadt H, Schreiber R, Frische S, Nielsen S, Leipziger J. (2003) P2Y₆ receptor mediates colonic NaCl secretion via differential activation of cAMP-mediated transport. **J Clin Invest**, 111, 371-9.
10. Benzing T^{*}, **Köttgen M^{*}**, Johnson M, Schermer B, Zentgraf H, Walz G, Kim E. (2002) Interaction of 14-3-3 protein with regulator of G protein signaling 7 is dynamically regulated by tumor necrosis factor- α . **J Biol Chem**, 277, 32954-62. (^{*} equal contribution)

11. Huber TB, **Köttgen M**, Schilling B, Walz G, Benzing T. (2001) Interaction with podocin facilitates nephrin signaling. **J Biol Chem**, 276, 41543-6.
12. von Hahn T, Thiele I, Zingaro L, Hamm K, Garcia-Alzamora M, **Köttgen M**, Bleich M, Warth R. (2001) Characterisation of the rat SK4/IK1 K⁺ channel. **Cell Physiol Biochem**, 11, 219-30.
13. Nitschke R, Henger A, Ricken S, Muller V, **Köttgen M**, Bek M, Pavenstadt H. (2001) Acetylcholine increases the free intracellular calcium concentration in podocytes in intact rat glomeruli via muscarinic M(5) receptors. **J Am Soc Nephrol**, 12, 678-87.
14. **Köttgen M**, Hoefler A, Kim SJ, Beschorner U, Schreiber R, Hug MJ, Greger R. (1999) Carbachol activates a K⁺ channel of very small conductance in the basolateral membrane of rat pancreatic acinar cells. **Pflugers Arch**, 438, 597-603.
15. **Köttgen M**, Busch AE, Hug MJ, Greger R, Kunzelmann K. (1996) N-Acetyl-L-cysteine and its derivatives activate a Cl⁻ conductance in epithelial cells. **Pflugers Arch**, 431, 549-
16. Bleich M, **Köttgen M**, Schlatter E, Greger R. (1995) Effect of NH₄⁺/NH₃ on cytosolic pH and the K⁺ channels of freshly isolated cells from the thick ascending limb of Henle's loop. **Pflugers Arch**, 429, 345-54.
17. **Köttgen M**, Leipziger J, Fischer KG, Nitschke R, Greger R. (1994) pH regulation in HT29 colon carcinoma cells. **Pflugers Arch**, 428, 179-85.

Invited reviews (peer-reviewed)

1. **Köttgen M**, Walz G. (2005) Subcellular localization and trafficking of polycystins. **Pflugers Arch**, 451; 286-293.
2. **Köttgen M**. TRPP2 and Autosomal Dominant Polycystic Kidney Disease. **Biochim. Biophys. Acta** 8, 836-850 (2007).

Editorial activities

Ad hoc reviewer: Nature, Cell, Nature Genetics, Nature Cell Biology, Nature Neuroscience, PNAS, EMBO Journal, EMBO Reports, FASEB Journal, Development, Pflugers Archive, ...

Reviewer: DFG, Swiss National Science Foundation, National Kidney Foundation-USA, Department of Defense, ASBS, USA. *Associate Editor:* Nephron Physiology

Extramural funding

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| 2008-2011 | DFG Clinical Research Unit 201, "Polycystic Kidney Disease: from model organisms to novel therapies". |
| 2008-2011 | Young Investigator Career Development Grant |
| 2005-2007 | Research Fellowship PKD Foundation |
| 2005 | Young Investigator Travel Award, ERA-EDTA |
| 2002 | Travel scholarship for the FASEB Summer Research Conference "Calcium and cell function" in Salt Lake City |

EDUCATIONAL ACTIVITIES

Teaching

Classroom instruction/lectures

1994-1997	Physiology labs for MD students (teaching assistant)
1998-2000	Physiology labs for MD students (covering all topics of physiology; instructor)
1998-2000	Gastrointestinal physiology lecture for pharmacy/biology students (lecturer)
2000-2004	Acid-base and electrolyte disorders, lecture for medical students (lecturer)
2000-2010	Molecular mechanisms of disease, seminar series for advanced MD students

Clinical instruction

1997-1998	Basics in Internal Medicine, bedside teaching course
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CME instruction

6/2004	ADPKD: Regulation of polycystin trafficking; CME course "Genetics and renal diseases", Genoa, Italy
6/2005	Regulation of localization and function of polycystin-2; Basic Science Young Investigator Forum; Satellite meeting of the XLII ERA-EDTA Congress, Istanbul
9/2007	Keystone Conference, "The Transient Receptor Potential Channel Superfamily", Breckenridge, Colorado
09/2009	Annual Meeting of the German Society of Nephrology, Goettingen, Germany

Mentoring

2002	Annette Hoefler, Clinical Fellow, M.D. (<i>magna cum laude</i>)
2004	Robert Tauber, Resident, M.D. (<i>summa cum laude</i>)
2004	Björn Buchholz, Research Fellow, M.D. (<i>summa cum laude</i>)
2005	Daniel Steffl, Resident, M.D. (<i>summa cum laude</i>)
2007	Christoph Kopp, Resident, M.D. (<i>summa cum laude</i>)
presently	Alexis Hofherr, MD (Ph.D. candidate SGBM)

RECOGNITION

Awards/Honors

1997	Award of the Scientific Society Freiburg for the best doctoral thesis
2002	Travel scholarship for the FASEB Summer Research Conference "Calcium and cell function" in Salt Lake City
2005	Young Investigator Travel Award, ERA-EDTA
2005	PKD Foundation Research Fellowship
2005	Poster award: FASEB Summer Research Conference "Polycystic Kidney Disease"
2007	National Kidney Foundation "Young Investigator Award"
2008	Young Investigator Career Development Grant, PKD Foundation
2009	German Researcher Relocation Program Award, Alfried Krupp von Bohlen und Halbach Foundation
2010	Cozzarelli Prize, Proceedings of the National Academy of Sciences, USA

Patents

Provisional patent: “Modulation of ABCG2-mediated transport to treat hyperuricemia and gout” # 61/159,154 filed on March 11, 2009

Invited talks

- 3/2001 Aventis, Cardiovascular Research Unit, Frankfurt, Germany
- 5/2002 Aarhus University, Denmark, Department of Physiology
- 7/2003 University Zurich, Switzerland, Department of Physiology
- 3/2004 1.) Vollum Institute, Portland, Oregon, USA
2.) Harvard University, Boston, MA, USA
3.) Johns Hopkins University, Baltimore, MD, USA
- 5/2004 Friedrich-Alexander-University Erlangen, Department of Physiology
- 6/2004 University Genoa, Italy, Department of Nephrology
- 9/2004 GFN Nephrology meeting, Basel, Switzerland
- 1/2006 NIH, LKEM, Bethesda, MD, USA
- 2/2007 1.) Phillips-University, Marburg, Department of Pharmacology
2.) Julius-Maximilians-University Wurzburg, Dpt. of Physiology
3.) Albert-Ludwigs-University Freiburg, Department of Biology
- 6/2007 "Frontiers in Epithelial Research Symposium", Aarhus, Denmark
- 7/2007 Max-Delbruck Center Berlin, Germany
- 9/2007 Keystone Conference, “The Transient Receptor Potential Channel Superfamily”, Colorado, USA
- 11/2007 University of Regensburg, Department of Physiology, Germany
- 2/2009 Case Western University, Department of Physiology, Cleveland, Ohio, USA
- 7/2009 International Union of Physiology Meeting, Kyoto, Japan
- 2/2010 FEBS special meeting: “ATP-Binding Cassette (ABC) Proteins: From Multidrug Resistance to Genetic Diseases”, Innsbruck, Austria
- 6/2010 FASEB Summer Research Conference: “Transport ATPases: From Molecules to Maladies”, Snowmass Village, Colorado, USA
- 8/2010 Gordon Research Conference: “Membrane Transport Proteins”, Biddeford, Maine, USA