CURRICULUM VITAE

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1. Education/Training:

Dec 1995	MD Thesis: Magna cum laude Passive smoking exposure in school aged children in Southwest Germany University of Freiburg, Department of pediatrics. Germany. Mentor: Prof J Forster.
April 1991 - Dec 1995	Medicine, Albert-Ludwigs-University Medical School, Freiburg, Germany Degree: MD
Sept 1988 - Mar 1991	Medicine, Eberhardt-Karls University of Tuebingen, Germany
Sept 1986 - Sept 1988	Biology, Eberhardt-Karls University of Tuebingen, Germany, Degree: Bachelor of Science

2. Licensure and Certification:

Sept 2009	Full Privileges in Pulmonary and Critical Care Medicine, Stanford University Medical Center
Aug 2009	Medical License, Medical Board of California, Expiration 7/31/2013
Sept 2006	Educational Commission for Foreign Medical Graduates (ECFMG) certification USMLE Step1 July 2006, USMLE Step 2 CK Aug 2006, USMLE 2 CS Sept 2006, USMLE Step 3 Jul 2007
Aug 2002	Board Certification Internal Medicine, Germany

3. Positions and Employment

Professional activity:

Sept 2009 - present	Instructor of Medicine and staff attending physician, Department of Pulmonary and Critical Care, Adult Pulmonary Hypertension Service, Stanford University
Sept 2009 - August 2011	K12 Scholar "Stanford career development program in Genetics and Genomics of pulmonary diseases". Director: Dr. Mark Krasnow Mentors: Dres. Marlene Rabinovitch and Phil Beachy Project: Modulating BMPRII signaling in Pulmonary Arterial Hypertension
July 2008 - June 2009	Critical Care Fellow, Stanford University Hospital and Clinics, Stanford
July 2007 - June 2008	Pulmonary and Critical Care Fellow, Stanford University Hospital and Clinics, Stanford
Feb 2007 - May 2007	Pulmonary Hypertension Database management, Stanford University
Oct 2002 - Jan 2007	Postdoctoral research fellow, Department: Pediatric Cardiology, Prof. Dr. M. Rabinovitch, Stanford University Medical School, Stanford
March 1996 - Sept 2002	Residency: Internal Medicine and Fellowship: Pulmonary and Critical Care at Medical School Hannover, Department of Respiratory and Critical Care Medicine. Director: Prof. Dr. med. H. Fabel Including: 1 year: Lung transplant fellow 1/2 year: Pulmonary Hypertension fellow (outpatients, right-heart catheterization, clinical trials of new therapeutic drugs for pulmonary hypertension)

Teaching:

Stanford University/Stanford Medical Center:

Sept 2010 - present	Organization of a 2-weekly Clinical Topics Series in Pulmonary Hypertension
2006 - present	Lecturer in Cardiovascular and Pulmonary Science Seminar (Med 223, Cardiovascular Pulmonary Research Scholarly Concentration for Medical Students)
2005 - present	Supervision of laboratory projects of undergraduates and summer students
2005-2006	Katie Lynn Pricola – Medical Student *Topic: SDF-1 and Pulmonary Hypertension*
2006	Alexandra Bruneau - Visiting Researcher, France

	Topic: Measurement of elastase activity in mice after murine HV-68 infection
2010	Leila Haghighat – undergraduate UCSD
	Topic: MiR21 expression in PAECs from patients with pulmonary hypertension and healthy controls
2010	Roxanna Haghighat – summer student
	Topic: Id-1 expression and Smad signalling in PAECs from patients with pulmonary hypertension and healthy controls
2011	Roshelle Chan – undergraduate SFSU
	Topic: Role of FK-506 on pulmonary artery smooth muscle cells
July 2007 - June 2009	Lectures on ICU related topics for residents, interns and medical student

Medical School Hannover:

March 1996 - Sept 1997	Internal Medicine (School of Nursing)
March 1996 - Sept 2002	Medical Students: Practice of examination and history taking
Jan 2000 - Sept 2002	Lectures: Pathophysiology of the lungs; Practical Pneumology
	Supervision of medical students working on their doctoral thesis in the field of respiratory medicine, pulmonary hypertension

Technical Experience:

Surgical techniques:

Closed chest vascular and heart catheterization (in mice, rats)
Heart-Lung Preparation: performed in mice and rats.
Hemodynamic measurements: Right ventricular systolic pressure and mean arterial pressure measurements, cardiac functions measurements performed in mice and rats.
Implantation of subcutaneous infusion pumps in mice and rats
Endotracheal instillation of medication in mice

Molecular Biology: PCR, quantitative RT-PCR, genomic DNA isolation, RNA purification, Western blotting, Southern blotting, Liposomal and retroviral transfection of primary cells, siRNA, miRNA mimics and antagomirs, DNA microarray

Cell Culture: Culture of human pulmonary artery smooth muscle and endothelial cells. Organ culture of human and mouse lung.

Cell Biology Assays: Migration assays using Boyden chambers, PCNA , TUNEL and Proliferation assays.

Microscopy: Bright Field, Fluorescence, and Confocal microscopy.

Histology: Paraffin embedding and hemotoxylin/eosin and Hart's staining**.** Immunohistochemistry and immunofluorescence. Assessment of morphological parameters in pulmonary arteries, lungs, and hearts of mice.

Micro CT: Scanning and reconstructing of barium infused lungs in mice.

Biochemical assays: Elastase activity Assay

Development of a **High Throughput Screen** of FDA approved drugs and Small molecules to test for compounds that activate or inhibit BMPRII signaling using as luciferase reporter system.

4. Awards:

Sept 2011- Aug 2016	Supplemental award of the Pulmonary Hypertension Association (PAH)
Sept 2011 - Aug 2016	K08 Career development award - NIH
Sept 2009 - Aug 2011	Career Development Award - K12 – NIH5K12HL089989
March 2003 - Feb 2005	Postdoctoral Research Fellowship of the Pulmonary Hypertension Association (PHA) and American Heart Association (AHA) for research on pulmonary hypertension

5. Professional Societies:

Member ATS (1997 – present)
Member AHA (2004- present)
Fellow Pulmonary Vascular Research Institute (2009 – present)
Faculty, Vera Moulton Wall Center For Pulmonary Vascular Disease (2009- present)
Member, Stanford Cardiovascular Institute (2009- present)

6. Languages:

fluency: English, German basic knowledge: French

7. Publications:

<u>Peer-Reviewed Publications:</u>

Kim YM, Haghighat L, **Spiekerkoetter E**, Sawada H, Alvira CM, Wang L, Acharya S, Rodriguez-Colon G, Orton A, Zhao M, Rabinovitch M. Neutrophil Elastase Is Produced by Pulmonary Artery Smooth Muscle Cells and Is Linked to Neointimal Lesions. Am J Pathol. 2011 Jul 14. [Epub ahead of print]

Perez VA, Ali Z, Alastalo TP, Ikeno F, Sawada H, Lai YJ, Kleisli T, **Spiekerkoetter E**, Qu X, Rubinos LH, Ashley E, Amieva M, Dedhar S, Rabinovitch M. BMP promotes motility and represses growth of smooth muscle cells by activation of tandem Wnt pathways. *J Cell Biol*. 2011 Jan 10;192(1): 171-88

Spiekerkoetter E, Guignabert C, de Jesus Perez V, Alastalo T-P, Powers JM, Wang L, Lawrie A, Ambartsumian A, Schmidt AM, Berryman M, Ashley RH, Rabinovitch M. S100A4 and BMP-2 Co-Dependently Induce Vascular Smooth Muscle Cell Migration via pERK and Chloride Intracellular Channel 4 (CLIC4). Circ Res. 2009 Sep 25;105(7): 639-47

Spiekerkoetter E, Alvira CM, Kim Y-M, Bruneau A, Pricola KL, Wang L, Ambartsumian N, Rabinovitch M. Reactivation of gHV68 Induces Neointimal Lesions in Pulmonary Arteries of S100A4/Mts1 Over-expressing Mice in Association with Degradation of Elastin. Am J Physiol Lung Cell Mol Physiol. 2008 Feb;294(2):L276-89.

Hoeper MM, Seyfarth HJ, Hoeffken G, Wirtz H, **Spiekerkoetter E,** Pletz MW, Welte T, Halank M. Experience with inhaled iloprost and bosentan in portopulmonary hypertension. Eur Respir J. 2007 Dec;30(6):1096-102.

Hoeper MM, Markevych I, **Spiekerkoetter E,** Welte T, Niedermeyer J. Goal- oriented Treatment and Combination therapy for Pulmonary Arterial Hypertension. Eur Resp J 2005 Nov;26(5):858-63.

Spiekerkoetter E, Lawrie A, Merklinger S, Ambartsumian N, Lukanidin E, Schmidt AM, Rabinovitch M. Mts1/S100A4 stimulates human pulmonary artery smooth muscle cell migration through multiple signaling pathways. Chest. 2005 Dec; 128 (6 Suppl):577S.

Merklinger SL, Wagner RA, **Spiekerkoetter E**, Hinek A, Knutsen RH, Kabir MG, Desai K, Hacker S, Wang L, Cann GM, Ambartsumian NS, Lukanidin E, Bernstein D, Husain M, Mecham RP, Starcher B, Yanagisawa H, Rabinovitch M. Increased Fibulin-5 and Elastin in S100A4/Mts1 Mice with Pulmonary Hypertension. Circ Res. 2005 Sep 16;97(6):596-604. Epub 2005 Aug 18.

Lawrie A, **Spiekerkoetter E**, Martinez E, Ambartsumian N, Sheward WJ, MacLean MR, Hramar AJ, Schmidt AM, Lukanidin E, Rabinovitch M. Interdependent Serotonin Transporter and Receptor pathways regulate S100A4/Mts1, a gene associated with cancer and vascular disease. Circ Res. 2005 Aug 5;97(3):227-35.

MM Hoeper, Taha N, Bekjarova R, Gatzke R, **Spiekerkoetter E**. Bosentan treatment in patients with primary pulmonary hypertension receiving nonparental prostanoids. Eur Respir J 2003;22:330-334.

Spiekerkoetter Edda, Helmut Fabel, Marius M. Hoeper. Effects of inhaled sabutamol in primary pulmonary hypertension. Eur Resp J. 2002 Sept;20(3):524-8

Hoeper MM, **Spiekerkoetter E,** Westerkamp V, Gatzke R, Fabel H. Intravenous iloprost for treatment failure of aerolized iloprost in pulmonary arterial hypertension. Eur Respir J. 2002 Aug;20(2):339-43.

Hoeper MM, Schwarze M, Ehlerding S, Adler-Schuermeyer A, **Spiekerkoetter E**, Niedermeyer J, Hamm M, Fabel H. Long-term treatment of primary pulmonary hypertension with inhaled iloprost. Pneumologie, 2001 Jan; 55(1):38-43.

Hoeper MM, **Spiekerkoetter E**, Fabel H. Aerolized iloprost for Primary Pulmonary Hypertension. Letter to the editor. N.Engl J. Med. 2000 Nov 9; 343 (19): 1421-1422.

Hoeper MM, Schwarze M, Ehlerding S, Adler-Schuermeyer A, **Spiekerkoetter E**, Niedermeyer J, Hamm M, Fabel H. Long-term treatment of primary pulmonary hypertension with aerolized iloprost, a prostacyclin analogue. N Engl J Med. 2000 Jun 22; 342(25): 1866-77.

Hoffmeyer F, Hoeper MM, **Spiekerkotter E**, Harringer W, Haverich A, Fabel H, Niedermeyer J. Azathioprine withdrawal in stable lung and heart/lung recipients receiving cyclosporine-based immunosuppression. Transplantation. 2000 Aug 15; 70(3): 522-5.

Spiekerkoetter E, Krug N, Hoeper M, Wiebe K, Hamm M, Harringer W, Haverich A, Fabel H. Prevalence of malignancies after lung transplantation. Tranplant Proc. 1998 Jun; 30(4):1523-4.

Henschen M, Frischer T, Pracht T, **Spiekerkotter E**, Karmaus W, Meinert R, Lehnert W, Werle E, Kuehr J. The internal dose of passive smoking at home depends on the size of the dwelling. Environ Res. 1997 Jan; 72(1): 65-71.

Peer Reviewed Publications - Submitted

Zamanian RT, **Spiekerkoetter E**, Lawrie A, Ambartsumian N, Gould M, Doyle R, Rabinovitch M**.** S100A4/Mts1 as a Biomarker for Pulmonary Arterial Hypertension.

Sawada H, Saito T, Alastalo TP, Glotzbach JP, Chan R, Haghighat L, Fuchs G, Januszyk M, Lai YL, Perez V, Kim J-M, Wang L, **Spiekerkoetter E**, Gurtner G, Sarnow P and Marlene Rabinovitch. Reduced BMPR-II Induces GM-CSF Translation and Macrophage Recruitment in Humans and Mice, Exacerbating Pulmonary Hypertension

Reviews:

E. Spiekerkoetter, J Niedermeyer, MM Hoeper. Die pulmonale arterielle Hypertonie. Internist. Praxis 2004; 44:1-14.

E. Spiekerkoetter, M Hoeper. New Therapies in pulmonary arterial hypertension. Estratto da Minerva Pneumologica 2002;41 (4):127-136.

Spiekerkoetter Edda, Helmut Fabel, Marius M. Hoeper. Behandlung der schweren pulmonalen Hypertonie. Deutsches Ärzteblatt, 2001 Aug; 98(33): 1697-1701.

Book Chapters:

Cissarek et al: Gefaessmedizin: Therapie und Praxis. **Spiekerkoetter Edda** Kapitel: Die akute Lungenembolie und pulmonale arterielle Hypertonie. ABW Wissenschaftsverlag, Berlin. 2009

Cissarek et al: Vascular Medicine: Therapy And Practice. **Spiekerkoetter Edda**: Chapter: Acute pulmonary embolism and pulmonary Arterial Hypertension. Mcgraw-hill Professional Publishing 2010.

Oral presentations:

E Spiekerkoetter, Haghighat L, Haghighat R, Sawada H, Saito T, Wang L, de Jesus Perez V, ten Dijke P, El-Bizri N, Solow-Cordero D, Beachy PA, Rabinovitch M. FK-506 (Tacrolimus), identified in a High Throughput Screen to Increase BMPRII Signaling, Prevents Pulmonary Arterial Hypertension (PAH) in Mice with Endothelial BMPRII Deletion. Mini-Symposium, ATS 2011 Denver.

E Spiekerkoetter, L Wang, R Zamanian, N Ambartsumian, AM Schmidt, E Lukanidin, M Rabinovitch. Chloride intracellular channel 4 (CLIC4), a novel downstream target of Bone Morphogenetic Protein Receptor II (BMPR-II) in human pulmonary artery smooth muscle cell (PASMC) migration. Oral presentation at the American Heart Association (AHA) conference 2005, Dallas, TX.

E Spiekerkoetter, A Lawrie, SL Merklinger, M Rabinovitch. Mts1, a novel gene in the pathogenesis of pulmonary hypertension, induces migration of human Pulmonary Artery Smooth muscle cells via the Receptor for Advanced Glycation end products (RAGE). Oral Presentation at the American Heart Association (AHA) Conference 2003, Orlando, FL.

E Spiekerkoetter, MM Hoeper, H Fabel. Acute hemodynamic effects of salbutamol aerosol in patients with primary pulmonary hypertension. Oral presentation at the American Thoracic Society (ATS) conference 2001, San Francisco, CA.

8. Research Support

Ongoing Research Support:

09/01/2011 - 08/31/2016
1K08HL107450-01: Modulating BMPRII Signaling in Pulmonary Arterial Hypertension
Role on Project: PI

09/01/2011 - 08/31/2016
PHA supplemental grant for awarded K08: Modulating BMPRII Signaling in Pulmonary Arterial Hypertension
Role on Project: PI

09/01/2011 - 8/31/2012
Vera Moulton Wall Center for Pulmonary Vascular Disease:
Small Molecule Screen for compounds that activate BMPRII signaling
Role on Project: PI

01/2006- Present
CMREF – Pulmonary Hypertension Breakthrough Initiative (UL1RR024986)
Stanford IPAH Transplant and Preparation Center
Role on project: Co-Investigator

05/2007-Present
REVEAL Registry™:
"A Registry to Evaluate Early and Long-term Pulmonary Arterial Hypertension Disease Management"
Role on Project: Co-Investigator

Completed Research Support:
09/2009 – 08/2011
K12 Career Development Program In Genetics and Genomics of Pulmonary Diseases:
Director Prof. M Krasnow, Co-director Prof. M Rabinovitch
"Development of High-Throughput Screen of drugs that modulates bone morphogenetic protein receptor II "
Role on Project: Trainee

2003 – 2005
Pulmonary Hypertension Association and AHA postdoctoral research fellowship award
"Stromal Derived factor modulates homing and differentiation of stem cells in pulmonary hypertension"
Role in Project: PI