

Curriculum Vitae PD Dr. rer. nat. Maria A. Brehm

PD Dr. rer. nat. Maria Alexandra Brehm

Born the 07/20/1976 in Hamburg, Germany, Nationality: German

SCIENTIFIC POSITIONS

12/2011 – present

Group Leader, Lecturer

Interdisciplinary DFG Research Group FOR1543
(SHENC: Shear flow regulation of Hemostasis)
Speaker SHENC: Prof. Dr. Reinhard Schneppenheim
Director: Prof. Stefan Rutkowski
Department of Pediatric Hematology and Oncology
University Medical Center Hamburg-Eppendorf

02/2010 – 11/2011

Junior Group Leader

Center of Experimental Medicine, Institute of Biochemistry and
Molecular Biology I,
Prof. Georg W. Mayr
University Medical Center Hamburg-Eppendorf

11/2006 – 01/2010

Postdoctoral NIH Transition Awards Program Fellow

Inositol Signaling Section, Laboratory of Signal Transduction,
Dr. Stephen B. Shears,
NIEHS / NIH, North Carolina, USA

EDUCATION

12/2015

Habilitation and Venia Legendi, Habilitation thesis: „*From Protein Localization to Function in Health and Disease*“

06/2006

PhD in Biochemistry, “summa cum laude”

University Hamburg, University Hospital Hamburg-Eppendorf
Dissertation: „*Novel functions of inositol phosphate kinases identified by investigation of their intracellular translocation*“

10/2002

Diploma (MSc) in Chemistry, University Hamburg

Thesis: „*Cloning, Expression and Characterization of dihydrofolate reductases from extremophile bacteria*“

TEACHING

01/2012 – present	Classes in Chemistry and Biochemistry for medical students
05/2012 – present	Practical courses in tumor biology for MSc students
2003 – present	Supervision of bachelor, master, and PhD students

SCIENTIFIC VISITS

07- 09/2014	The Scripps Research Institute Prof. Dr. Z.M. Ruggeri, La Jolla, CA, USA
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EXPERIENCE AND OFFICES

12/2011– present	Coordination of interdisciplinary DFG Research Group FOR1543 (Design, planning, coordination and publication of interdisciplinary translational research projects, writing of grant applications)
09/2003 - 02/2006	Speaker of Graduates of the Research Training Group 336
10/2000 - 11/2002	Graduate Assistant, Bernhard-Nocht-Institut, Hamburg

EXTRAMURAL FUNDING

06/2014	Critical contribution to grant application for the 2 nd funding period of FOR1543 (2.8 Mio €)
11/2013	Guenter Landbeck Excellence Award (25,000 €)
11/2006 – 11/2011	NIH/DFG Research Career Transition Awards Program (280,000 €)
11/2002 – 11/2005	Doctorate funded by the research training group 336, Molecular Endocrinology - Molecular Metabolism, German Research Council (DFG)

AWARDS

02/2015	Best Abstract Award, GTH 2015
11/2013	ASH Abstract Achievement Award
10/2012	ASH Abstract Achievement Award
2006	“Best Dissertation in 2006” in the Department of Chemistry, University Hamburg

TRAINING

- 2013 “Management of interdisciplinary research groups”,
University of Bern (3 day course)
- 2012 “Lecturer training”
University of Hamburg (3 day course)
- 2012 “Personnel management and core values”
DFG (3 day course)

MEMBERSHIPS

- 2015 Society of Thrombosis and Hemostasis Research

PEER REVIEWER

- ❖ Cellular and Molecular Life Sciences
- ❖ Journal of Thrombosis and Hemostasis
- ❖ Data in Brief
- ❖ Landsteiner Foundation for Blood Transfusion Research,
Netherlands

CONFERENCE ORGANIZATION

- 2015 1st International SHENC Symposium on the Function of VWF in
Primary and Secondary Hemostasis, September 13-15, 2015
Hamburg, Germany
- 2012 – present biannual meetings of DFG Research Group 1543

LANGUAGES

- ❖ English - fluent
- ❖ French - basic

PUBLICATIONS

- 1) Obser T, Ledford-Kraemer M, Oyen F, **Brehm MA**, Denis CV, Marschalek R, Montgomery RR, Sadler JE, Schneppenheim S, Budde U, Schneppenheim R, "Identification and characterization of the elusive mutation causing the historical von Willebrand Disease type IIC Miami", JTH, **2016**, in press
- 2) Posch S, Aponte-Santamaría C, Schwarzl R, Karner A, Radtke M, Gräter F, Obser T, König G, **Brehm MA**, Gruber HJ, Netz RR, Baldauf C, Schneppenheim R, Tampé R, Hinterdorfer P., „Mutual A domain interactions in the force sensing protein von Willebrand factor“, J Struct Biol. **2016** Apr 23. pii: S1047-8477(16)30081-8. doi: 10.1016/j.jsb.2016.04.012. [Epub ahead of print]
- 3) Lippok S, Kolšek K, Löf A, Eggert D, Vanderlinden W, Müller JP, König G, Obser T, Röhrs K, Schneppenheim S, Budde U, Baldauf C, Aponte-Santamaría C, Gräter F, Schneppenheim R, Rädler JO, **Brehm MA**, „Von Willebrand Factor is dimerized by Protein Disulfide Isomerase, Blood, **2016** Mar 3;127(9):1183-91.
- 4) Aponte-Santamaría C, Huck V, Posch S, Bronowska AK, Grässle A, **Brehm MA**, Obser T, Schneppenheim R, Hinterdorfer P, Schneider SW, Baldauf C, Gräter F, “Force-sensitive autoinhibition of the von Willebrand factor mediated by inter-domain interactions”, Biophys J. **2015** May 5;108(9):2312-21.
- 5) Kraus E, Obser T, Kraus K, Oyen F, Klemm U, Schneppenheim R, **Brehm MA**, “Platelet-free shear flow assay facilitates analysis of shear-dependent functions of VWF and ADAMTS13”, Thromb Res. **2014** Jul 3;112(1):96-108.
- 6) Kublun I, Ehm P, **Brehm MA**, Nalaskowski MM, “Efficacious inhibition of Importin α/β -mediated nuclear import of human inositol phosphate multikinase”, Biochimie, **2014** Jul;102:117-23.
- 7) **Brehm MA**, Huck V, Aponte-Santamaría C, Obser T, Grässle S, Oyen F, Budde U, Schneppenheim S, Baldauf C, Gräter F, Schneider SW, Schneppenheim R, “VWD type 2A phenotypes IIC, IID and IIE: A day in the life of shear stressed mutant VWF”, Thromb Haemost, **2014** Jul 3;112(1):96-108.
- 8) **Brehm MA**, Williams J, Wundenberg T, Mayr GW, Shears SB, “A non-catalytic role for inositol 1,3,4,5,6-pentakisphosphate 2-kinase in the synthesis of ribosomal RNA”, J Cell Sci., **2013** Jan 15;126(Pt 2):437-44.
- 9) Windhorst S, Lin H, Blechner C, Fanick W, Brandt L, **Brehm MA**, Mayr GW, “How tumor cells employ extracellular phytate and MINPP1 to promote cell growth.”, Biochem J, **2013** Feb 15;450(1):115-25.
- 10) Nalaskowski MM, Metzner A, **Brehm MA**, Sabiadh S, Brauer H, Grabinski N, Mayr GW, Jücker M, “The inositol 5-phosphatase SHIP1 is a nucleo-cytoplasmic shuttling protein and enzymatically active in cell nuclei”, Cell Signalling, **2012** 24:621-628.

- 11) Meyer R, Nalaskowski MM, Ehm P, Schröder C, Naj X, **Brehm MA**, Mayr GW, "Nucleocytoplasmic shuttling of human inositol phosphate multikinase is influenced by CK2 phosphorylation", *Biol Chem*, **2012** Mar; 393(3):149-60.
- 12) Nalaskowski MM, Fliegert R, Ernst O, **Brehm MA**, Fanick W, Windhorst S, Lin H, Giehler S, Hein J, Lin Y-N, Mayr GW, "Human inositol-1,4,5-trisphosphate 3-kinase isoform B (IP3KB) is a nucleocytoplasmic shuttling protein specifically enriched at cortical actin filaments and at invaginations of the nuclear envelope", *J Biol Chem*, **2011** Vol 286, No. 6: 4500-4510.
- 13) **Brehm MB**, Schenk TMH, Zhou X, Fanick W, Lin H, Windhorst S, Nalaskowski MM, Kobras M, Shears SB, Mayr GW, "Intracellular localization of human Ins(1,3,4,5,6)P5 2-kinase", *Biochem J*, **2007** 408: 335-345.
- 14) Redecke L, **Brehm MA**, Bredehorst R, "Cloning and characterization of dihydrofolate reductase from a facultative alkaliphilic and halotolerant bacillus strain", *Extremophiles*, **2007** 11(1):75-83.
- 15) **Brehm MA**, Schreiber I, Bertsch U, Wegner A, Mayr GW, "Identification of the actin-binding domain of inositol 1,4,5-trisphosphate 3-kinase isoform B (IP3K-B)", *Biochem J* **2004** 382: 353-62.
- 16) Brieler F , **Brehm MA**, Chen L, Klar PJ, Heimbrodt W, Fröba M, "MCM-41 silica monoliths and diluted magnetic semiconductors: a promising union for fabricating nanosized quantum wires. Zeolites and Mesoporous Materials at the Dawn of the 21st Century", *Stud.Surf.Sci.Catal.*, v.135, Eds. Anne Galarneau, Francesco Di Renzo, François Fajula, Jacques Védrine, Amsterdam e.a., Elsevier, CD, 21-O-03, **2001**

TALKS AND POSTERS

Invited Talks:

- 1) State of the Art-Lecture on "*Assembly of von Willebrand factor*", GTH (**2017**), Basel, Switzerland
- 2) Biophysical approaches promote advances in the understanding of von Willebrand factor processing (**2016**), 57th Symposium of the Advances in Biological Regulation, Bologna, Italy
- 3) "Studying VWF mutations under flow" (**2015**) ISTH 2015 Congress and 61st Annual SSC Meeting, Toronto, Canada

Talks:

- 1) "Role of Protein Disulfide Isomerase PDI in von Willebrand factor dimerization" **(2015)** ISTH 2015 Congress and 61st Annual SSC Meeting, Toronto, Canada
- 2) "The (patho)-physiological role of von Willebrand factor - protein disulfide isomerase interaction", **(2015)** 59th Annual Meeting of the Society of Thrombosis and Hemostasis Research, Düsseldorf, Germany
- 3) "A novel platelet-free shear flow assay to investigate shear-dependent dysfunction of VWF and ADAMTS13", **(2014)**, 58th Annual Meeting of the Society of Thrombosis and Hemostasis Research, Vienna, Austria
- 4) "Functional analysis of TTP-associated ADAMTS13 mutants under shear flow", **(2013)**, 44. Hämophilie Symposion, Hamburg, Germany
- 5) "Subcellular Localization of Von Willebrand Factor Mutants Correlates with Particular VWF Multimer Patterns", **(2012)** 54th ASH Annual Meeting and Exposition, Atlanta, GA, USA
- 6) "Correlation between subcellular localization of von Willebrand factor mutants and VWD patient multimer patterns" **(2012)**, 43. Hämophilie Symposion, Hamburg, Germany
- 7) "A novel non-catalytic function of InsP₅ 2-kinase in rRNA synthesis" **(2009)** Gordon Research Conference, Signal Transduction within the Nucleus, Ventura, CA, USA

Posters:

- 1) **Maria A. Brehm**, Sarah Vollmers, Tobias Obser, Reinhard Schneppenheim **(2016)** "Possible Role of Protein Disulfide Isomerase PDIA in Mechanisms of von Willebrand Disease Type 3" 62nd Annual Scientific and Standardization Committee Meeting of the International Society on Thrombosis and Haemostasis, Montpellier, France
- 2) Nina Erdmann, Ulrike Klemm, Bernhard H. Rauch, Andrew M. Riley, Barry V.L. Potter, **Maria A. Brehm**, Sabine Windhorst **(2016)** "Inositol polyphosphates: new players in hemostasis?", 8th Symposium on Hemostasis: Translational and Basic Science Discoveries, Chapel Hill, NC, USA
- 3) Nina Erdmann, Ulrike Klemm, Bernhard H. Rauch, Andrew M. Riley, Barry V.L. Potter, Sabine Windhorst, **Maria A. Brehm** **(2016)** "Effects of inositol phosphates on platelet aggregate size and fibrin structure" 60th Annual Meeting of the Society of Thrombosis and Haemostasis Research, Münster, Germany

- 4) Nina Erdmann, Ulrike Klemm, Bernhard H. Rauch, Andrew M. Riley, Barry V.L. Potter, Sabine Windhorst, **Maria A. Brehm (2015)** "Influence of inositol phosphates on platelet function and fibrin structure" 46. Hämophilie Symposium, Hamburg, Germany
- 5) Nina Erdmann, Ulrike Klemm, Bernhard H. Rauch, Andrew M. Riley, Barry V.L. Potter, Sabine Windhorst, **Maria A. Brehm** "One answer to the question why there are no higher inositol phosphates in human plasma" **(2015)** Signalling 2015: Cellular Functions of Phosphoinositides and Inositol Phosphates, Cambridge, UK
- 6) **Maria A. Brehm**, Emma Kraus, Tobias Obser, Reinhard Schneppenheim „Functional analysis of TTP-associated ADAMTS13 mutants under shear flow" **(2014)** 7th Symposium on Hemostasis, UNC School of Medicine, Chapel Hill, NC, USA
- 7) **Maria A. Brehm**, Emma Kraus, Tobias Obser, Reinhard Schneppenheim „Functional analysis of TTP-associated ADAMTS13 mutants under shear flow" **(2013)** 55th ASH Annual Meeting and Exposition, New Orleans, LA, USA
- 8) **Maria A. Brehm**, Tobias Obser, Florian Oyen, Ulrich Budde, Sonja Schneppenheim, Reinhard Schneppenheim "Subcellular localization of von Willebrand factor mutants correlates with particular VWF multimer patterns" **(2013)** 57th Annual Meeting of the Society of Thrombosis and Haemostasis Research, Munich, Germany
- 9) **Maria A. Brehm** and Stephen B Shears, "InsP₅ 2-kinase: Organizing the Nucleolus", **(2011)** Gordon Research Conference, Signal Transduction within the Nucleus, Ventura, CA, USA
- 10) **Maria A. Brehm**, Isabell Schreiber, and Georg W. Mayr **(2005)** "Nuclear localization of inositol phosphate kinases in vertebrates", Gordon Research Conference, Signal Transduction within the Nucleus, Buellton, CA, USA
- 11) **Maria A. Brehm**, Isabell Schreiber, Uwe Bertsch, Albrecht Wegner and Georg W. Mayr **(2004)** "Identification of the actin-binding domain of inositol 1,4,5-trisphosphate 3-kinase isoform B (IP3K-B)", ELSO 2004, Nice, France
- 12) Marcus M. Nalaskowski, **Maria A. Brehm**, Natalie Bischoff, Heike Gustke, Sabine Windhorst, Werner Fanick, and Georg W. Mayr **(2004)** "Intracellular Distribution of Inositol Phosphate Metabolizing Enzymes in Mammalian Cells", 55. Mosbacher Kolloquium, Mosbach, Germany
- 13) Marcus M. Nalaskowski, **Maria A. Brehm**, Natalie Bischoff, Heike Gustke, Sabine Windhorst, Werner Fanick and Georg W. Mayr **(2003)** "Intracellular Distribution of Inositol Phosphate Metabolizing Enzymes in Mammalian Cells" ELSO 2003, Dresden, Germany