

Prof. Brigitte M. Frey-von Matt, PhD



Department of Nephrology and Hypertension
 Inselspital, CH-3010 Berne, Switzerland
 Phone office 031 632 94 39
 E-mail: brigitte.frey@dbmr.unibe.ch

<http://www.nephrologie.insel.ch/de/ueber-uns/details/person/detail/brigitte-frey-von-matt>

Education

1963-1968	Baccalauréat A, College in Fribourg, Switzerland
1968-1973	Graduate Studies at the Departments of Chemistry and Microbiology, University of Berne, Berne, Switzerland
1973	Graduation in Biology, Chemistry and Bacteriology, University of Berne, Berne, Switzerland

Professional Experience

1975-1978	Research Fellow, Laboratories of Medicine and Clinical Chemistry, University of Berne, Berne, Switzerland
1978-1980	Research Fellow in Immunology and Clinical Pharmacology, School of Medicine, University of California, San Francisco, USA
1980- 2013	Senior Fellow and Head of the Research Laboratories of the Department of Nephrology and Hypertension, University of Berne, Berne, Switzerland, supervising the Research Groups
1983	Editorial Secretary, J. Chromatography
1988-1989	Visiting Scientist, Depts. Physiology and Biochemistry, University of California, San Francisco, USA
2005-	Member of the Guidance Committee of the Graduate School for Cellular and Biomedical Sciences, Section Biological Systems
2007-2013	Quality management and development (QSE) of the University of Bern: QSE-Coach
2010-2012	Representative of the Canton of Berne in the management board of the Bernese University day care center
2010	Visiting Scientist, Skaggs School of Pharmacy and Pharmaceutical Sciences and Dept. of Chemistry, University of California San Diego, La Jolla

University or Professional Degrees

1973-1975	PhD, Department of Immunopathology, University of Berne, Berne, Switzerland
1979	Board Certificate as Specialist for Laboratory and Medical Analytical Chemistry, FAMH
1985	Assistant Professor for Laboratory Medicine at the Medical Faculty of the University of Berne, Berne, Switzerland
1994	Associate Professor for Laboratory Medicine at the University of Berne, Berne, Switzerland

Awards

1989-1991	Max Cloetta-Foundation , Scholarship
2003	Arnold und Susanne Huggenberger Bischoff Foundation for cancer research Price for excellent achievements on steroid mediated gene transfer as basic element for gene therapy of malignant tumors
2004	Invitation by the Editorial Board of the American Bibliographical Institute for Bibliographic Publication in the "Great Women of the 21st Century", Edition 2004
2004	Nomination by the Governing Board of Editors of the American Bibliographical Institute upon recommendation of the International Board of Research for the "Woman of the year 2004" award

Editorial Advisory Board

2007-	Biochemical Pharmacology, Section: Cardiovascular and Metabolic Diseases, Associate Editor
2012-	International Scholarly Research Network, ISRN Hypertension
2014	PLOS ONE Academic Editor

Grants

1980-2012	Swiss National Science Foundation , Scientific Research Grants (Co- Investigator)
1996-2001	NFP37 (Co-Investigator): Gene Therapy
2004	Walter Honegger Stiftung (Principal Investigator)
2004- 2007	Gottfried und Julia Bangerter-Rhyner Stiftung (Principal Investigator)
2004	Stiftung zur Krebsbekämpfung
2005-2008	Swiss National Science Foundation , Scientific Research Grants (Steroid Mediated Gene Delivery; Principle Investigator)
2007-2010	Schweiz. Krebsliga (Principal Investigator)
2013-2018	KTI : A new class of oligonucleotide compounds to treat muscle dystrophy disease (15167.1 PFLS-LS) (in collaboration with Synthena AG)

Patent Specifications

"Conjugates of DNA interacting groups with steroid hormones for use as nucleic acid transfection agents"

Inventors: Frey, Felix, Ruston, Sandro, Frey, Brigitte, Wehrli, Hans-Ueli

US Patent Nr. 6753424

Europäisches Patent Nr. 1105408 Australien Patent Nr. 755710 New Zealand Patent Nr. 509294

US Patent Application to be submitted January 2014: "RB390: AR Antagonist for PET Imaging of Prostate Cancer"

Research Interests

Topics

- - Regulation of Annexin I: Calcium dependency, phospholipases, tumorigenesis
- - Regulation of 11beta-hydroxysteroid dehydrogenases
- - ENaC, Sgk and Nedd4-2 in hypertension, kidney and liver diseases using molecular biology technology and gas chromatography mass spectrometry GC-MS
- - Gene delivery systems: synthesis of delivery vehicles
- - Steroid metabolism

Publications Original Articles

Androgen biosynthesis during minipuberty favors the backdoor pathway over the classic pathway: Insights into enzyme activities and steroid fluxes in healthy infants during the first year of life from the urinary steroid metabolome.

Dhayat NA, Dick B, Frey BM, d'Uscio CH, Vogt B, Flück CE. *J Steroid Biochem Mol Biol.* 2017 Jan;165(Pt B):312-322. doi: 10.1016/j.jsbmb.2016.07.009. Epub 2016 Jul 25.

Corrigendum to "Estimation of reference curves for the urinary steroid metabolome in the first year of life in healthy children: Tracing the complexity of human postnatal steroidogenesis" [*J. Steroid Biochem. Mol. Biol.* 154 (2015) 226-236].

Dhayat NA, Frey AC, Frey BM, d'Uscio CH, Vogt B, Rousson V, Dick B, Flück CE. *J Steroid Biochem Mol Biol.* 2018 Oct;183:238. doi: 10.1016/j.jsbmb.2018.08.005. Epub 2018 Aug 16. PMID: 30121346

Mechanism of the Dual Activities of Human CYP17A1 and Binding to Anti-Prostate Cancer Drug Abiraterone Revealed by a Novel V366M Mutation Causing 17,20 Lyase Deficiency.

Fernández-Cancio M, Camats N, Flück CE, Zalewski A, Dick B, Frey BM, Monné R, Torán N, Audí L, Pandey AV. *Pharmaceuticals (Basel).* 2018 Apr 29;11(2):37. doi: 10.3390/ph11020037. PMID: 29710837

Estimation of reference curves for the urinary steroid metabolome in the first year of life in healthy children: Tracing the complexity of human postnatal steroidogenesis.

Dhayat NA, Frey AC, Frey BM, d'Uscio CH, Vogt B, Rousson V, Dick B, Flück CE. *J Steroid Biochem Mol Biol.* 2015 Nov;154:226-36. doi: 10.1016/j.jsbmb.2015.07.024. Epub 2015 Aug 19. PMID: 26297192

18F-RB390: innovative ligand for imaging the T877A androgen receptor mutant in prostate cancer via positron emission tomography (PET).

Bertolini R, Goepfert C, Andrieu T, Nichols S, Walter MA, Frey FJ, McCammon JA, Frey BM. *Prostate.* 2015 Mar 1;75(4):348-59. doi: 10.1002/pros.22919. Epub 2014 Oct 30. PMID: 25358634

Vascular Endothelial Growth Factor-A and Aldosterone: Relevance to Normal Pregnancy and Preeclampsia.

Gennari-Moser C, Khankin EV, Escher G, Burkhard F, Frey BM, Karumanchi SA, Frey FJ, Mohaupt MG. *Hypertension.* 2013 Mar 4. [Epub ahead of print]

Regulation of 11beta-Hydroxysteroid Dehydrogenase Type 1 and 2 in Rheumatoid Arthritis

Christine Beyeler, Bernhard Dick, Howard A. Bird, Brigitte M. Frey *International Journal of Clinical Medicine*, Vol. 3 No. 4, 2012, pp. 254-262.

High salt intake down-regulates colonic mineralocorticoid receptors, epithelial sodium channels and 11 β -hydroxysteroid dehydrogenase type 2.

Lienhard D, Lauterburg M, Escher G, Frey FJ, Frey BM.
PLoS One. 2012;7(5):e37898. Epub 2012 May 31.

A novel steroidal antiandrogen targeting wild type and mutant androgen receptors.

Andrieu T, Bertolini R, Nichols SE, Setoud R, Frey FJ, Baker ME, Frey BM. Biochem Pharmacol. 2011 Dec 1;82(11):1651-62. Epub 2011 Sep 1.

Characterization of major zinc containing myonecrotic and procoagulant metalloprotease 'malabarin' from non lethal trimeresurus malabaricus snake venom with thrombin like activity: its neutralization by chelating agents.

Gowda CD, Shivaprasad HV, Kumar RV, Rajesh R, Saikumari YK, Frey BM, Frey FJ, Sharath BK, Vishwanath BS.
Curr Top Med Chem. 2011;11(20):2578-88.

Sodium thiosulfate pharmacokinetics in hemodialysis patients and healthy volunteers.

Farese S, Stauffer E, Kalicki R, Hildebrandt T, Frey BM, Frey FJ, Uehlinger DE, Pasch A.
Clin J Am Soc Nephrol. 2011 Jun;6(6):1447-55. Epub 2011 May 12.

Epigenetic regulation of somatic angiotensin-converting enzyme by DNA methylation and histone acetylation.

Rivière G, Lienhard D, Andrieu T, Vieau D, Frey BM, Frey FJ. Epigenetics. 2011 Apr;6(4):478-89. Epub 2011 Apr 1.

Single application of low-dose mycophenolate mofetil-OX7-immunoliposomes ameliorates experimental mesangial proliferative glomerulonephritis.

Suana AJ, Tuffin G, Frey BM, Knudsen L, Mühlfeld C, Rödder S, Marti HP. J Pharmacol Exp Ther. 2011 May;337(2):411-22. Epub 2011 Feb 24

Regulation of placental growth by aldosterone and cortisol.

Gennari-Moser C, Khankin EV, Schüller S, Escher G, Frey BM, Portmann CB, Baumann MU, Lehmann AD, Surbek D, Karumanchi SA, Frey FJ, Mohaupt MG.
Endocrinology. 2011 Jan; 152(1):263-271

Effect of electroporation-mediated diphtheria toxin A expression on PSA positive human prostate xenograft tumors in SCID mice.

Goepfert C, Gazdhar A, Frey FJ, Frey BM.
Prostate. 2010 Nov 4.

Urinary proteomics before and after extracorporeal circulation in patients with and without acute kidney injury.

Aregger F, Pilop C, Uehlinger DE, Brunisholz R, Carrel TP, Frey FJ, Frey BM.
J Thorac Cardiovasc Surg. 2010 Mar;139 (3):692-700.

'Pergularain e I'--a plant cysteine protease with thrombin-like activity from Pergularia extensa latex.

Shivaprasad HV, Rajaiah R, Frey BM, Frey FJ, Vishwanath BS.
Thromb Res. 2010 Mar;125 (3):e100-5. Epub 2009 Oct 24.

Glycyrrhetic acid food supplementation lowers serum potassium concentration in chronic hemodialysis.

Farese S, Kruse A, Pasch A, Dick B, Frey BM, Uehlinger DE, Frey FJ.
Kidney Int. 2009 Oct; 76(8):877-84. Epub 2009 Jul 29.

Proteomic Analysis in Aortic Media of Patients With Marfan Syndrome Reveals Increased Activity of Calpain 2 In Aortic Aneurysms.

Pilop C, Aregger F, Gorman RC, Brunisholz R, Gerrits B, Schaffner T, Gorman JH, Mátyás G, Carrel T, Frey BM.

Circulation. 2009; 120:983-991.

Role of DNA methylation in the tissue-specific expression of the CYP17A1 gene for steroidogenesis in rodents.

Missaghian E, Kempná P, Dick B, Hirsch A, Alikhani-Koupaei R, Jégou B, Mullis PE, Frey BM, Flück CE.

J Endocrinol. 2009 Jul;202(1):99-109. Epub 2009 Apr 29.

Tumor Necrosis Factor Alpha Upregulates 11beta-Hydroxysteroid Dehydrogenase Type 1 Expression by CCAAT/Enhancer Binding Protein Beta in HepG2 cells.

Ignatova ID, Kostadinova RM, Goldring CE, Nawrocki AR, Frey FJ, Frey BM.

Am J Physiol Endocrinol Metab. 2009 Feb;296(2):E367-77. Epub 2008 Dec 16.

Prematurity is Related to High Placental Cortisol in Preeclampsia.

Aufdenblatten M, Baumann M, Raio L, Dick B, Frey BM, Schneider H, Surbek D, Hoche B, Mohaupt MG.

Pediatr Res. 2008 Dec 4. [Epub ahead of print]

Sodium thiosulfate prevents vascular calcifications in uremic rats.

Pasch A, Schaffner T, Huynh-Do U, Frey BM, Frey FJ, Farese S. Kidney Int. 2008

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Age-dependent decrease in 11beta-hydroxysteroid dehydrogenase type 2 (11beta-HSD2) activity in hypertensive patients.

Henschkowski J, Stuck AE, Frey BM, Gillmann G, Dick B, Frey FJ, Mohaupt MG.

Am J Hypertens. 2008 Jun;21(6):644-9.

Identification of polymorphisms in the human 11beta-hydroxysteroid dehydrogenase type 2 gene promoter: functional characterization and relevance for salt sensitivity.

Alikhani-Koupaei R, Fouladkou F, Fustier P, Cenni B, Sharma AM, Deter HC, Frey BM, Frey FJ.

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Purification and characterization of a 34-kDa, heat stable glycoprotein from Synadenium grantii latex: action on human fibrinogen and fibrin clot.

Rajesh R, Nataraju A, Gowda CD, Frey BM, Frey FJ, Vishwanath BS.

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Extracellular ATP Determines 11beta-Hydroxysteroid Dehydrogenase Type 2 Activity via Purinergic Receptors.

Kadereit B, Fustier P, Shojaati K, Frey BM, Frey FJ, Mohaupt MG.

J Am Soc Nephrol. 2005 Dec;16(12):3507-16.

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Jameel NM, Frey BM, Frey FJ, Gowda TV, Vishwanath BS.

Mol Cell Biochem. 2005 Aug;276(1-2):219-25.

Hypoxia up-regulates expression of Eph receptors and ephrins in mouse skin.

Vihanto MM, Plock J, Erni D, Frey BM, Frey FJ, Huynh-Do U. FASEB J. 2005 Oct;19(12):1689-91.

Regulation of Epithelial Sodium Channel in Puromycin Aminonucleoside-Induced Unilateral Experimental Nephrotic Syndrome in Normal and Analbuminemic Nagase Rats.

Yu Z, Schumacher M, Frey BM, Frey FJ, Vogt B.

Nephron Physiol. 2005 Jul 12;101(3):p51-p62.

Sodium retention in rats with liver cirrhosis is associated with increased renal abundance of NaCl cotransporter (NCC).

Yu Z, Serra A, Sauter D, Loffing J, Ackermann D, Frey FJ, Frey BM, Vogt B.

Nephrol Dial Transplant. 2005 Sep;20(9):1833-41.

Use of Pavo cristatus feather extract for the better management of snakebites: Neutralization of inflammatory reactions.

Murari SK, Frey FJ, Frey BM, Gowda TV, Vishwanath BS.

J Ethnopharmacol. 2005 Jun 3;99(2):229-37.

Tumor necrosis factor alpha and phorbol 12-myristate-13-acetate down-regulate human 11beta-hydroxysteroid dehydrogenase type 2 through p50/p50 NF-kappaB homodimers and Egr-1.

Kostadinova RM, Nawrocki AR, Frey FJ, Frey BM.

FASEB J. 2005 Apr;19(6):650-2.

Evidence for compromised aldosterone synthase enzyme activity in preeclampsia.

Shojaati K, Causevic M, Kadereit B, Dick B, Imobersteg J, Schneider H, Beinder E, Kashiwagi M, Frey BM, Frey FJ, Mohaupt MG.

Kidney Int. 2004 Dec;66(6):2322-8.

CYP11B2-CYP11B1 haplotypes associated with decreased 11beta-hydroxylase activity.

Ganapathipillai S, Laval G, Hoffmann IS, Castejon AM, Nicod J, Dick B, Frey FJ, Frey BM, Cubeddu LX, Ferrari P.

J Clin Endocrinol Metab. 2005 Feb;90(2):1220-5.

Epigenetic regulation of 11 beta-hydroxysteroid dehydrogenase type 2 expression.

Alikhani-Koopaei R, Fouladkou F, Frey FJ, Frey BM. J Clin Invest. 2004 Oct;114(8):1146-57.

Low prevalence of nonconservative mutations of serum and glucocorticoid-regulated kinase (SGK1) gene in hypertensive and renal patients.

Trochen N, Ganapathipillai S, Ferrari P, Frey BM, Frey FJ.

Nephrol Dial Transplant. 2004 Oct;19(10):2499-504.

A naturally occurring human Nedd4-2 variant displays impaired ENaC regulation due to differential phosphorylation of Nedd4-2 in Xenopus laevis oocytes.

Fouladkou F, Koopaei RA, Vogt B, Flores SY, Malbert-Colas L, Lecomte MC, Loffing J, Frey FJ, Frey BM, Staub O.

Am J Physiol Renal Physiol. 2004 Sep;287(3):F550-61.

The 11-ketosteroid 11-ketodexamethasone is a glucocorticoid receptor agonist.

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Mol Cell Endocrinol. 2004 Feb 12;214(1-2):27-37.

A rapid screening assay for inhibitors of 11beta-hydroxysteroid dehydrogenases (11beta-HSD): flavanone selectively inhibits 11beta-HSD1 reductase activity.

Schweizer RA, Atanasov AG, Frey BM, Odermatt A.

Mol Cell Endocrinol. 2003 Dec 30; 212(1-2): 41-9.

Angiotensin II regulates 11beta-hydroxysteroid dehydrogenase type 2 via AT2 receptors.

Lanz B, Kadereit B, Ernst S, Shojaati K, Causevic M, Frey BM, Frey FJ, Mohaupt MG. *Kidney Int.* 2003 Sep; 64(3): 970-7.

Hypoxia causes down-regulation of 11beta-hydroxysteroid dehydrogenase

Heiniger CD, Kostadinova RM, Rochat MK, Serra A, Ferrari P, Dick B, Frey BM, Frey FJ type 2 by induction of Egr-1.

FASEB J. 2003 May;17(8):917-9.

Epithelial sodium channel (ENaC) subunit mRNA and protein expression in rats with puromycin aminonucleoside-induced nephrotic syndrome.

Audige A, Yu ZR, Frey BM, Uehlinger DE, Frey FJ, Vogt B.

Clin Sci (Lond). 2003 Apr;104(4):389-95.

Gene delivery by a steroid-peptide nucleic acid conjugate.

Rebuffat AG, Nawrocki AR, Nielsen PE, Bernasconi AG, Bernal-Mendez E, Frey BM, Frey FJ.

FASEB J. 2002 Sep;16(11):1426-8.

Salt-sensitivity of blood pressure and decreased 11beta-hydroxysteroid dehydrogenase type 2 activity after renal transplantation.

Schumacher M, Frey FJ, Montani JP, Dick B, Frey BM, Ferrari P.

Transplantation. 2002 Jul 15;74(1):66-72.

Glucocorticoids and 11beta-hydroxysteroid dehydrogenase type 2 gene expression in the aging kidney.

Audige A, Dick B, Frey BM, Frey FJ, Corman B, Vogt B.

Eur J Clin Invest. 2002 Jun;32(6):411-20.

Increased cortisol metabolites and reduced activity of 11beta-hydroxysteroid dehydrogenase in patients on hemodialysis.

N'Gankam V, Uehlinger D, Dick B, Frey BM, Frey FJ.

Kidney Int. 2002 May;61(5):1859-66.

Reduced 11beta-hydroxysteroid dehydrogenase activity in experimental nephrotic syndrome.

Vogt B, Dick B, Marti HP, Frey FJ, Frey BM. *Nephrol Dial Transplant.* 2002 May;17(5):753-8.

Role of the alpha-adducin genotype on renal disease progression.

Nicod J, Frey BM, Frey FJ, Ferrari P. *Kidney Int.* 2002 Apr;61(4):1270-5.

In vivo footprinting of the human 11beta-hydroxysteroid dehydrogenase type 2 promoter: evidence for cell-specific regulation by Sp1 and Sp3.

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Glycyrrhetic acid decreases plasma potassium concentrations in patients with anuria.

Serra A, Uehlinger DE, Ferrari P, Dick B, Frey BM, Frey FJ, Vogt B. *J Am Soc Nephrol.* 2002

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Lanz CB, Causevic M, Heiniger C, Frey FJ, Frey BM, Mohaupt MG. *Hypertension.* 2001

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Identification of receptor ligands by screening phage-display peptide libraries ex vivo on microdissected kidney tubules.

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J Am Soc Nephrol. 2001 Feb;12(2):308-16.

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Zaehner T, Plueschke V, Frey BM, Frey FJ, Ferrari P.
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