

CURRICULUM VITAE

Prof. Dr. Matthias A. Hediger

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1. General information

Demographic information:

Family name, first name: Hediger Matthias A.
Date of birth: August 7, 1953
Nationality: Swiss
Family status: Married to Heidi Hediger
Son: David Samuel Hediger

URL for web sites: https://www.dbmr.unibe.ch/research/research_programs/hediger_lab/index_eng.html
<https://www.bioparadigms.org/>

H-index: 106 (google scholar)
<https://scholar.google.com/citations?user=khdoO98AAAAJ&hl=en>

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Work Experience and Vision

Professional with broad experience in basic and pre-clinical research on SLC membrane transport proteins, aiming both to explore the untapped potential of SLCs in the treatment of human disease and to transform domain-specific biological expertise into structured, machine-readable, and interoperable ICT resources that enable data-driven biomedical research.

2. Education and training

1983	Dr. sc. nat. ETH (Ph.D.)	Swiss Federal Institute of Technology, Switzerland
1977	Dipl. sc. nat. (Biochemistry)	Swiss Federal Institute of Technology, Switzerland

3. Professional activities:

2023-	Continued leadership of the Membrane Transport Discovery Lab as Professor Emeritus and external collaborator of the Inselspital Bern.
2019-2023	Head of Membrane Transport Discovery Lab, Department of Nephrology and Hypertension, University Hospital Bern Inselspital, Bern, Switzerland and Professor Ordinarius em, University of Bern, Switzerland.
2005-2019	Professor Ordinarius, Institute of Biochemistry and Molecular Medicine, University of Bern, Switzerland.
1995-2005	Associate Professor of Medicine (Biological Chemistry and Molecular Pharmacology), Harvard Medical School, Boston, MA, USA.
1989-1995	Assistant Professor of Medicine, Harvard Medical School, Boston, MA, USA.
1986-1989	Assistant Research Physiologist, Dept. of Physiology, UCLA School of Medicine, Los Angeles, CA, USA.

- 1984-1986 Postgraduate Research Biochemist, Dept. of Biological Chemistry, UCLA School of Medicine, Los Angeles, CA, USA.
- 1982-1983 Postgraduate Research Biochemist, Dept. of Biochemistry, University of Connecticut Health Center, Farmington, CT, USA.

4. Institutional responsibilities:

- 2005-2017 Director, Institute of Biochemistry and Molecular Medicine, University of Bern, Switzerland.
- 2010-2014 Director, NCCR TransCure (the Swiss National Center of Competence in Research, TransCure), Medical Faculty, University of Bern, Switzerland.
- 1999-2005 Director, Membrane Biology Program, Brigham and Women's Hospital, Harvard Medical School, Boston, USA.

5. Supervision of junior researchers at graduate and postgraduate level

1. Ongoing supervision and training of master students. Current Master Student is Anojh Thevarasa. Recent master theses were completed by Sven Baumann, Gabriel Jonathan Klesse, Paola Bermudez Lekerika Jan DERNIČ, Marina Troxler, Mey Boukenna, Damian Nydegger, Stefanie Graeter, Andrea Amati and Nicolas Wenger.
2. Doctoral theses in biology: Current PhD student is Sven Baumann. Recent PhD theses were completed by Damian Nydegger (2023), Mey Boukenna (2019), Marie-Christine Franz (2015), Marc Bürzle (2012), Katrin A. Bolanz (January 2010).
3. Over the past 25 years, Matthias Hediger has supervised and trained more than 40 post-doctoral researchers.

6. Teaching activities

Supervision of Master's/PhD students (ongoing), membrane biochemistry lectures (until 2019), lectures to veterinary medicine (VetSuisse) and medical students (until 2018); organizer of the endocrinology lecture series for 2nd year medical students (until 2018).

7. Memberships in panels, boards, etc., and individual scientific reviewing activities

- 2003-2005 Vice Chair, Steering Committee, Epithelial Transport Group, Am. Physiol. Society
- 1995- Specialist Advisor, HUGO Gene Nomenclature Committee (<http://www.gene-names.org>)
- 1995 Partners Research Task Force of Massachusetts General Hospital and Brigham and Women's Hospital, Harvard Medical School to support new joint studies
- 1989- Ongoing peer review (Science, Nature, Cell, PNAS, Nature Commun, eLife, etc.)

8. Active memberships in scientific societies, fellowships in renowned academies

- Ongoing American Physiological Society (APS), International BioIron Society (IBS), Life Sciences Switzerland (LS2), Biochemische Vereinigung Bern (BVB), American Association for the Advancement of Science (AAAS)

9. Organization of conferences (past 10 years)

- 2019 Organizer BioMedical Transporters Conference, Lucerne, Swiss Museum of Transport
 "Membrane transporters and channels: From basic research to drug" August 4-8

- 2017 Organizer BioMedical Transporters Conference, Lausanne, Olympic Museum, “SLC Transporters and Ion Channels in Drug Discovery and Preclinical Development” August 6-10
- 2015 Organizer BioMedical Transporters Conference, Lugano, Palazzo dei Congressi “Membrane Transporters – from Basic Science to Drug Discovery” August 9-13
- 2013 Organizer BioMedical Transporters Conference, St. Moritz, Hotel Laudinella “Transporters and Channels in Drug Discovery and Preclinical Development”, August 11-15
- 2011 Organizer BioMedical Transporters Conference, Grindelwald Congress Center “Membrane Transporters in Drug Discovery”, August 7-11
- 2009 Organizer and Chair, USGEB Meeting 2009: Membranes in Motion, January 29-30, Interlaken, Switzerland <http://www.bioparadigms.org/biomedical09/USEGB%202009/index.html>

10. Prizes, awards, fellowships

- 2018 Special Award, MDO/JSSX International Joint Meeting, Kanazawa, Japan.
- 2009 Japanese Society for the Study of Xenobiotics Award (Kyoto, Japan)
- 2003 Rank Prize Funds, Surrey, UK *Award in recognition of work on the identification, molecular characterization and control of cellular nutrient transporters*
- 1998 Recipient of an award to support interdisciplinary and interdepartmental research at Brigham and Women’s Hospital
- 1996 Visiting Professor, University College London
- 1989 Annual Award for Excellence in Renal Research in recognition of research of the human Na⁺/glucose cotransporters. American Physiological Society

Peer-reviewed publications, past 10 years (out of 248)

1. Baumann SP, Gyimesi G, Albano G, **Hediger MA**, Pujol-Giménez J 2025. A homology-based 3D model and structure–function studies reveal key elements for divalent metal ion transporter ZIP8 (SLC39A8) function. *J. Biol. Chem*, 301(12):110930.
2. Gyimesi G, Tweedie S, Bruford E, **Hediger MA**. The SLC-ome of membrane transport: From molecular discovery to physiology and clinical applications. *Physiological Reviews*.2025 Epub ahead of print. <https://doi.org/10.1152/physrev.00001.2024>
3. Lee S, Weiss T, Bühler M, Mena J, Lottenbach Z, Wegmann R, Sun M, Bihl M, Augustynek B, Baumann SP, Goetze S, van Drogen A, Pedrioli PGA, Penton D, Festl Y, Buck A, Kirschenbaum D, Zeitlberger AM, Neidert MC, Vasella F, Rushing EJ, Wollscheid B, **Hediger MA**, Weller M, Snijder B. High-throughput identification of repurposable neuroactive drugs with potent anti-glioblastoma activity. *Nat Med*. 2024 Nov;30(11):3196-3208. doi: 10.1038/s41591-024-03224-y. Epub 2024 Sep 20.
4. Pujol-Giménez J, Baumann SP, Ho TM, Augustynek B, **Hediger MA**. Functional Characterization of the Lysosomal Peptide/Histidine Transporter PHT1 (SLC15A4) by Solid Supported Membrane Electrophysiology (SSME). *Biomolecules*. 2024 Jun 28;14(7):771. doi: 10.3390/biom14070771.
5. Zaugg J, Pujol Giménez J, Cabra RS, Hofstetter W, **Hediger MA**, Albrecht C. New Insights into the Physiology of Iron Transport: An Interdisciplinary Approach. *Chimia (Aarau)*. 2022 Dec 21;76(12):996-1004. doi: 10.2533/chimia.2022.996.
6. Tscherrig D, Bhardwaj R, Biner D, DERNIČ J, Ross-Kaschitza D, Peinelt C, **Hediger MA**, Lochner M. Cell Calcium. Development of chemical tools based on GSK-7975A to study store-operated

- calcium entry in cells. 2024 Jan;117:102834. doi: 10.1016/j.ceca.2023.102834. Epub 2023 Nov 15.
7. Radvanyi Z, Yoo EJ, Kandasamy P, Salas-Bastos A, Monnerat S, Refardt J, Christ-Crain M, Hayashi H, Kondo Y, Jantsch J, Rubio-Aliaga I, Sommer L, Wagner CA, **Hediger MA**, Kwon HM, Loffing J, Pathare G. Extracellular sodium regulates fibroblast growth factor 23 (FGF23) formation. *J Biol Chem*. 2023 Nov 21;300(1):105480. doi: 10.1016/j.jbc.2023.105480
 8. Nydegger DT, Pujol-Giménez J, Kandasamy P, Vogt B, **Hediger MA**. Applications of the Microscale Thermophoresis Binding Assay in COVID-19 Research. *Viruses*. 2023 Jun 25;15(7):1432. doi: 10.3390/v15071432. PMID: 37515120 Free PMC article.
 9. Schlosser P, Scherer N, Grundner-Culemann F, Monteiro-Martins S, Haug S, Steinbrenner I, Uluvar B, Wuttke M, Cheng Y, Ekici AB, Gyimesi G, Karoly ED, Kotsis F, Mielke J, Gomez MF, Yu B, Grams ME, Coresh J, Boerwinkle E, Köttgen M, Kronenberg F, Meiselbach H, Mohney RP, Akilesh S; GCKD Investigators; Schmidts M, **Hediger MA**, Schultheiss UT, Eckardt KU, Oefner PJ, Sekula P, Li Y, Köttgen A. Genetic studies of paired metabolomes reveal enzymatic and transport processes at the interface of plasma and urine. *Nat Genet*. 2023 Jun;55(6):995-1008. doi: 10.1038/s41588-023-01409-8. Epub 2023 Jun 5. PMID: 37277652 Free PMC article.
 10. Pujol-Giménez J, Mirzaa G, Blue EE, Albano G, Miller DE, Allworth A, Bennett JT, Byers PH, Chanprasert S, Chen J, Doherty D, Folta AB, Gillentine MA, Glass I, Hing A, Horike-Pyne M, Leppig KA, Parhin A, Ranchalis J, Raskind WH, Rosenthal EA, Schwarze U, Sheppard S, Strohhahn S, Sybert VP, Timms A, Wener M; University of Washington Center for Mendelian Genomics (UW-CMG)a, Undiagnosed Diseases Network (UDN); Bamshad MJ, Hisama FM, Jarvik GP, Dipple KM, **Hediger MA**, Stergachis AB. Dominant-negative variant in SLC1A4 causes an autosomal dominant epilepsy syndrome. *Ann Clin Transl Neurol*. 2023 Jun;10(6):1046-1053. doi: 10.1002/acn3.51786. Epub 2023 May 16. PMID: 37194416 Free PMC article.
 11. Gyimesi G, **Hediger MA**. Transporter-Mediated Drug Delivery. *Molecules*. 2023 Jan 24;28(3):1151. doi: 10.3390/molecules28031151. PMID: 36770817 Free PMC article. Review.
 12. Sanchez-Collado J, Nieto-Felipe J, Jardin I, Bhardwaj R, Berna-Erro A, Salido GM, Smani T, **Hediger MA**, Lopez JJ, Rosado JA. Store-Operated Calcium Entry in Breast Cancer Cells Is Insensitive to Orail and STIM1 N-Linked Glycosylation. *Cancers (Basel)*. 2022 Dec 29;15(1):203. doi: 10.3390/cancers15010203. PMID: 36612199 Free PMC article.
 13. Gyimesi G, **Hediger MA**. Systematic in silico discovery of novel solute carrier-like proteins from proteomes. *PLoS One*. 2022 Jul 28;17(7):e0271062. doi: 10.1371/journal.pone.0271062. eCollection 2022. PMID: 35901096 Free PMC article.
 14. Augustynek B, Gyimesi G, Dergiç J, Sallinger M, Albano G, Klesse GJ, Kandasamy P, Grabmayr H, Frischauf I, Fuster DG, Peinelt C, **Hediger MA**, Discovery of novel gating checkpoints in the Orail calcium channel by systematic analysis of constitutively active mutants of its paralogs and orthologs. Bhardwaj R. *Cell Calcium*. 2022 Jul;105:102616. doi: 10.1016/j.ceca.2022.102616. Epub 2022 Jun 22. PMID: 35792401 Free article.
 15. Verouti SN, Pujol-Giménez J, Bermudez-Lekerika P, Scherler L, Bhardwaj R, Thomas A, Lenglet S, Siegrist M, Hofstetter W, Fuster DG, **Hediger MA**, Escher G, Vogt B. The Allelic Variant A391T of Metal Ion Transporter ZIP8 (SLC39A8) Leads to Hypotension and Enhanced Insulin Resistance. *Front Physiol*. 2022 Jun 15;13:912277. doi: 10.3389/fphys.2022.912277. eCollection 2022. PMID: 35784893 Free PMC article.

16. Anderegg MA, Gyimesi G, Ho TM, **Hediger MA**, Fuster DG. The Less Well-Known Little Brothers: The SLC9B/NHA Sodium Proton Exchanger Subfamily-S structure, Function, Regulation and Potential Drug-Target Approaches. *Front Physiol.* 2022 May 25;13:898508. doi: 10.3389/fphys.2022.898508. eCollection 2022. PMID: 35694410 Free PMC article. Review.
17. Tiffner A, Hopf V, Schober R, Sallinger M, Grabmayr H, Höglinger C, Fahrner M, Lunz V, Mal-tan L, Frischauf I, Krivic D, Bhardwaj R, Schindl R, **Hediger MA**, Derler I. Orai1 Boosts SK3 Channel Activation. 2021 Dec 17;13(24):6357. doi: 10.3390/cancers13246357. PMID: 34944977 Free PMC article.
18. Pujol-Giménez J, Poirier M, Bühlmann S, Schuppisser C, Bhardwaj R, Awale M, Visini R, Javor S, **Hediger MA**, Reymond JL. Inhibitors of Human Divalent Metal Transporters DMT1 (SLC11A2) and ZIP8 (SLC39A8) from a GDB-17 Fragment Library. *ChemMedChem.* 2021 Nov 5;16(21):3306-3314. doi: 10.1002/cmdc.202100467. Epub 2021 Aug 31. PMID: 34309203 Free PMC article.
19. Havukainen S, Pujol-Giménez J, Valkonen M, **Hediger MA**, Landowski CP. Functional characterization of a highly specific L-arabinose transporter from *Trichoderma reesei*. *Microb Cell Fact.* 2021 Sep 8;20(1):177. doi: 10.1186/s12934-021-01666-4. PMID: 34496831 Free PMC article.
20. Havukainen S, Pujol-Giménez J, Valkonen M, Westerholm-Parvinen A, **Hediger MA**, Landowski CP. Electrophysiological characterization of a diverse group of sugar transporters from *Trichoderma reesei*. *Sci Rep.* 2021 Jul 19;11(1):14678. doi: 10.1038/s41598-021-93552-7. PMID: 34282161 Free PMC article.
21. Kandasamy P, Zlobec I, Nydegger DT, Giménez JP, Bhardwaj R, Shirasawa S, Tsunoda T, **Hediger MA**. Oncogenic KRAS mutations enhance amino acid uptake by colorectal cancer cells via the hippo signaling effector YAP1. *Mol Oncol.* 2021 (10):2782-2800. doi: 10.1002/1878-0261.12999.
22. Kar P, Lin YP, Bhardwaj R, Tucker CJ, Bird GS, **Hediger MA**, Monico C, Amin N, Parekh AB. The N terminus of Orai1 couples to the AKAP79 signaling complex to drive NFAT1 activation by local Ca^{2+} entry. *Proc Natl Acad Sci U S A.* 2021, 118(19):e2012908118. doi: 10.1073/pnas.2012908118.
23. Bhardwaj R, Lindinger S, Neuberger A, Nadezhdin KD, Singh AK, Cunha MR, Derler I, Gyimesi G, Reymond JL, **Hediger MA***, Romanin C, Sobolevsky AI. Inactivation-mimicking blocks the epithelial calcium channel TRPV6. *Sci Adv.* 2020 Nov 27;6(48).
24. Gyimesi G, **Hediger MA**. Sequence Features of Mitochondrial Transporter Protein Families. *Bio-molecules.* 2020 Nov 28;10(12):E1611 - Review
25. Gibhardt CS, Cappello S, Bhardwaj R, Schober R, Kirsch SA, Bonilla Del Rio Z, Gahbauer S, Bochicchio A, Sumanska M, Ickes C, Stejerean-Todoran I, Mitkovski M, Alansary D, Zhang X, Revazian A, Fahrner M, Lunz V, Frischauf I, Luo T, Ezerina D, Messens J, Belousov VV, Hoth M, Böckmann RA, **Hediger MA**, Schindl R, Bogeski I. Oxidative Stress-Induced STIM2 Cysteine Modifications Suppress Store-Operated Calcium Entry. *Cell Rep.* 2020 Oct 20;33(3):108292.
26. Anderegg MA, Albano G, Hanke D, Deisl C, Uehlinger DE, Brandt S, Bhardwaj R, **Hediger MA**, Fuster DG. The sodium/proton exchanger NHA2 regulates blood pressure through a WNK4-NCC dependent pathway in the kidney. *Kidney Int.* 2020 Sep 18;S0085-2538(20)31066-8.
27. Schild A, Bhardwaj R, Wenger N, Tscherrig D, Kandasamy P, Dergiç J, Baur R, Peinelt C, **Hediger MA**, Lochner M. Synthesis and Pharmacological Characterization of 2-Aminoethyl Diphenylborinate (2-APB) Derivatives for Inhibition of Store-Operated Calcium Entry (SOCE) in MDA-MB-231 Breast Cancer Cells. *Int J Mol Sci.* 2020 Aug 5;21(16):5604.

28. Cunha, MR, Bhardwaj R, Carrel AL, Lindinger S, Romanin C, Parise-Filho R, **Hediger MA^{*)}** and Reymond J-L. Natural product inspired optimization of a selective TRPV6 calcium channel inhibitor. *RSC Med Chem* 2020, **11**, 1032–1040.
29. Gyimesi G, Pujol-Giménez J, Kanai Y and **Hediger MA**. Sodium-coupled glucose transport, the SLC5 family and therapeutically relevant inhibitors: From molecular discovery to clinical application. *Pflugers Arch* 2020, Sep; **472**(9):1177-1206.
30. Poirier M, Pujol-Giménez J, Bühlmann S, Embaby A, Manatchal C, **Hediger MA^{*)}** and Reymond J-L. Pyrazolyl-pyrimidones inhibit the function of human solute carrier protein SLC11A2 (hDMT1) by metal chelation. *RSC Med Chem* 2020, **11**, 1023–1031.
31. Bhardwaj R, Augustynek BS, Ercan-Herbst E, Kandasamy P, Seedorf M, Peinelt C, **Hediger MA**. Ca^{2+} /Calmodulin Binding to STIM1 Hydrophobic Residues Facilitates Slow Ca^{2+} -Dependent Inactivation of the Orail Channel. *Cell Physiol Biochem*. 2020; **54**:252-270.
32. Manatschal C, Pujol-Giménez, J, Poirier M, Reymond JL, **Hediger MA**, Dutzler R. Mechanistic basis of the inhibition of SLC11/NRAMP-mediated metal 1 ion transport by aromatic bis-isothiourea substituted compounds. *eLife*. 2019, Elife. 2019 Dec 5;8:e51913.
33. Cunha MR, Bhardwaj R, Lindinger S, Butorac C, Romanin C, **Hediger MA^{*)}**, Reymond JL. Photoswitchable Inhibitor of the Calcium Channel TRPV6. *ACS Med Chem Lett*. 2019; **10**:1341-1345.
34. Lüscher BP, Surbek DV, Cléménçon B, Huang X, Albrecht C, Marini C, **Hediger MA**, Baumann MU. Different Pharmacological Properties of GLUT9a and GLUT9b: Potential Implications in Preeclampsia. *Cell Physiol Biochem*. 2019; **53**:508-517.
35. Pereira GJV, Tavares MT, Azevedo RA, Martins BB, Cunha MR, Bhardwaj R, Cury Y, Zambelli VO, Barbosa EG, **Hediger MA**, Parise-Filho R. Capsaicin-like analogue induced selective apoptosis in A2058 melanoma cells: Design, synthesis and molecular modeling. *Bioorg Med Chem*. 2019; **27**:2893-2904.
36. Stergachis AB, Pujol-Giménez J, Gyimesi G, Fuster D, Albano G, Troxler M, Picker J, Rosenberg PA, Bergin A, Peters J, El Achkar CM, Harini C, Manzi S, Rotenberg A, **Hediger MA^{*)}**, Rodan LH. Recurrent SLC1A2 variants cause epilepsy via a dominant negative mechanism. *Ann Neurol*. 2019; **85**:921-926.
37. Gyimesi G, Albano G, Fuster DG, **Hediger MA^{*)}** and Pujol-Giménez J. Unraveling the structural elements of pH sensitivity and substrate binding in the human zinc transporter SLC39A2 (ZIP2). *J Biol Chem*. 2019; **294**:8046-8063.
38. Butorac C, Muik M, Derler I, Stadlbauer M, Lunz V, Krizova A, Lindinger S, Schober R, Frischauf I, Bhardwaj R, **Hediger MA**, Groschner K, Romanin C. A novel STIM1-Orail gating interface essential for CRAC channel activation. *Cell Calcium*. 2019; **79**:57-67.
39. Bulla M, Gyimesi G, Kim JH, Bhardwaj R, **Hediger MA**, Frieden M, Demaurex N. ORAI1 channel gating and selectivity is differentially altered by natural mutations in the first or third transmembrane domain. *J Physiol* 2019; **597**:561-582.
40. Franz MC, Pujol-Gimenez J, Montalbetti N, Fernandez-Tenorio M, DeGrado TR, Niggli E, Romero MF, **Hediger MA**. Reassessment of the transport mechanism of the human zinc transporter SLC39A2. *Biochemistry* 2018; **57**:3976-3986.
41. Kandasamy P, Gyimesi G, Kanai Y, **Hediger MA**. Amino acid transporters revisited: New views in health and disease *Trends Biochem Sci*. 2018; **43**:752-789
42. Cléménçon B, Lüscher BP, **Hediger MA**. Establishment of a novel microscale thermophoresis ligand-binding assay for characterization of SLC solute carriers using oligopeptide transporter PepT1 (SLC15 family) as a model system. *J Pharmacol Toxicol Methods* 2018; **92**:67-76.

43. Pujol-Giménez J, **Hediger MA**^{*)}, Gyimesi G. A novel proton transfer mechanism in the SLC11 family of divalent metal ion transporters. *Sci Rep.* 2017;**7**:6194.
44. Dalghi MG, Ferreira-Gomes M, Montalbetti N, Simonin A, Strehler EE, **Hediger MA**, Rossi JP. Cortical cytoskeleton dynamics regulates plasma membrane calcium ATPase isoform-2 (PMCA2) activity. *Biochim Biophys Acta.* 2017;**1864**:1413-1424.
45. Lüscher BP, Marini C, Jorger-Messerli M, Huang X, **Hediger MA**, Albrecht C, Baumann MU, Surbek DV. Placental glucose transporter (GLUT)-1 is down-regulated in preeclampsia. *Placenta* 2017;**55**:94-99
46. Bhardwaj R, **Hediger MA**, Demaurex N. Redox modulation of STIM-ORAI signaling. *Cell Calcium.* 2016;**60**:142-52.
47. Cléménçon B, Fine M, **Hediger MA**. Conservation of the oligomeric state of native VDAC1 in detergent micelles. *Biochimie.* 2016;**127**:163-72.
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53. Damseh N, Simonin A, Jalas C, Picoraro JA, Shaag A, Cho MT, Yaacov B, Juusola J, Al-Ashhab M, Bale S, Telegrafi A, Retterer K, Pappas JG, Cappell J, Yeboa KA, Abu-Libdeh B, **Hediger MA**, Chung WK, Elpeleg O, Edvardson S. Mutations in SLC1A4, encoding the brain serine transporter, associated with developmental delay, microcephaly and hypomyelination. *J Med Genet.* 2015;**52**:541-7.
54. Montalbetti N, Simonin A, Simonin C, Awale M, Reymond JL, **Hediger MA**. Discovery and characterization of a novel non-competitive inhibitor of the divalent metal transporter DMT1/SLC11A2 *Biochem Pharmacol.* 2015;**96**:216-24.
55. Cléménçon B, Fine M, Schneider P, **Hediger MA**. Rapid method to express and purify human membrane protein using the *Xenopus* oocyte system for functional and low-resolution structural analysis. *Methods Enzymol.* 2015;**556**:241-65.