

CURRICULUM VITAE

PERSONAL INFORMATION

Name: Isabella Brigitte Derler Date of Birth: 10.03.1983 in Linz
Nationality: Austrian Martial Status: Married, one son, one daughter
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EDUCATION

2021	Venia Docendi (Habilitation) in Biophysics	Johannes Kepler University Linz, Austria
2010 - 2013	Master for Legal and Business Aspects in Techniques (sideline additional postgraduate studies)	Johannes Kepler University Linz, Austria
2005 - 2008	PhD in Biophysics (Thesis title: Dynamic regulation of Ca ²⁺ ion channels by Ca ²⁺ binding proteins.)	Johannes Kepler University Linz, Austria
2001 - 2005	Diploma Technical Physics	Johannes Kepler University Linz, Austria

POSITION

since 2020	Assistant Professor (University of Linz)
2019	University Assistant – Tenure Track Position; Project leader (University of Linz)
2013 – 2019	Project leader (* maternity leaves (1 year each) 2016, 2019/2020) (University of Linz)
2008-2012	Postdoctoral fellow at the Institute for Biophysics (University of Linz)
2005-2008	Postgraduate fellow at the Institute for Biophysics (University of Linz)

AWARDS

2018	Linz Institute of Technology SEED Excellence Grant – LIT-2018-5-SEE-111 (Novel control of Ca ²⁺ entry via light-sensitive unnatural amino acids)
2009	Hertha Firnberg Position – FWF (Molecular determinants and stoichiometry of STIM1/Orai1 activation)
2006	Scholarship for PhD thesis of the Austrian Academy of Science (STIM1: the missing link to store-operated channel activation of TRP channels?)
2008	Award of Excellence for PhD thesis: Dynamic regulation of Ca ²⁺ channels by Ca ²⁺ binding proteins
2008	Junior Research Award – GEN-AU Summer School Litschau 2008 for the talk: Increased hydrophobicity at the N-terminus/membrane interface impairs ORAI1 SCID mutant gating
2005	Wilhelm-Macke-Award 2005 for diploma thesis: Molecular mechanism of TRP channel regulation

RESEARCH STAYS

2013	Visiting scientist in the laboratory of Prof. Robert Tampé at the Institute of Biochemistry (Johann Wolfgang Goethe University in Frankfurt, Germany) During this research stay I got familiar with Microscale Thermophoresis Measurements. Performed studies were published in Derler et al., JBC, 2013.
2012	Visiting scientist in the lab of Prof. Mitsu Ikura at the Department of Medical Biophysics (University of Toronto, Canada)

During this research stay in a structural biology lab, I got familiar with protein purification and got insight in structural studies. Our collaborative work was published in Derler et al., Sci Signal, 2016.

RESEARCH INTERESTS

- Ca²⁺ signalling
- Ca²⁺ ion channels: Orai & STIM proteins, TRP proteins, voltage-gated Ca²⁺ ion channels, Ca²⁺ activated potassium ion channels
- Ion channel structure-function relationships
- Electrophysiology, FRET microscopy, Ca²⁺-imaging
- Genetic Code Expansion, Optoproteomics
- Pharmacology

FUNDED GRANTS

2021-2025	FWF project P32851: Interplay of CRAC channels with Ca ²⁺ activated K ⁺ channels	400.000,00€
2019-2021	LIT project 2018-5-SEE-111: Novel control of calcium entry via light-sensitive unnatural amino acids	170.000,00€
2018-2022	FWF project P30567: Orai subunit interactions control Orai channel function	400.000,00€
2015-2019	FWF project P27641: Gating of the Orai channel complex involves outer regions surrounding the pore	340.000,00€
2013-2017	FWF project P25210: Cholesterol regulates Orai currents via an N-terminal cholesterol binding motif	280.000,00€
2010-2013	T 466-B09 Hertha Firnberg-Nachwuchsstelle: Molecular determinants and stoichiometry of STIM1/Orai activation	190.000,00€
2009	Post-Doc career scholarship by JKU (Disease-related STIM1 and ORAI1 mutants affecting store-operated currents)	55.000,00€
2006-2007	Scholarship for PhD thesis 2006 of the Austrian academy of science for 24 months (STIM: the missing link to store-operated channel activation of TRP channels?)	65.000,00€
TOTAL		1.900.000,00€

CONTRIBUTIONS TO CONFERENCES

28 contributions to conferences, including 12 invited talks:

2021: Linz, Austria: Seminar at Zentrum für Medizinische Forschung (From deep understanding of Ca²⁺ signal transduction to potential novel target-specific therapeutics – Insights, breakthroughs and challenges in the STIM1/Orai1 choreography)

2021: Linz, Austria, LIT Lectures – Science in a nutshell (Proteins as marionettes of light)

2019: Leipzig, Germany, Invitation of Irene Coin for a talk in the framework of the Biochemistry colloquium at the University of Leipzig (Dynamic insights into Orai1 pore opening mechanisms using optoproteomics)

2019: Linz, Austria, DK NanoCell Colloquium (Dynamics into Ca²⁺ ion channels using unnatural amino acids)

2018: Sete, France, 29th ion channel meeting (The role of cholesterol in the regulation of Orai1)

2018: Zrece, Slovenia, Regional Biophysics Conference (The multifaceted role of Orai1 N-terminus)

2013: Frankfurt – Seminar Talk (The STIM1/Orai1 signaling machinery)

2012: FASEB Meeting (Snowmass; Ca²⁺ signaling: Loss of Orai1 function by N-terminal truncations can be compensated by structures of Orai3)

2012: Toronto – Seminar Talk (Regulation of Orai1 activity by its cytosolic segments and the lipid cholesterol)

2008: Litschau, GEN-AU Summer School (Increased hydrophobicity at the N-terminus/membrane interface impairs ORAI1 SCID mutant gating)

2008: Graz – Seminar Talk (Insights in the mechanisms of an ORAI1 SCID mutant)

2008: Long Beach, California, USA – Biophysical Society Meeting (Dynamic physical coupling of STIM1 and ORAI1 is mediated by the C-terminus of ORAI1 rather than by its N-terminus.)

2008: Vienna, Department for medical/pharmaceutical chemistry, Workshop for “Bio-Science and Medicine” chaired by Prof. Christian Noe (STIM: the missing link to store-operated activation of TRP channels?)

2018: Corvallis, Oregon: Accepted participation and contribution to the 2nd Genetic Code Expansion Conference at Oregon State University (Poster presentation: Genetic Code Expansion on Ca²⁺ ion channels.)

CO-SUPERVISION OF STUDENT THESIS

Since 2006 I have been continuously involved in co-supervision of PhD, Master and Bachelor thesis. For details please see attachments.

REVIEWING ACTIVITIES

I am currently guest editor for the special issue “STIM and Orai communication in health and disease” in Cells (open access MDPI journal) and review editor in the editorial board of Pharmacology of Ion Channels and Channelopathies (specialty section of Frontiers in Pharmacology)

I am presently reviewer for Nature Research (Nature Communications, Communications Biology, Scientific Reports), British Pharmacological Society (British Journal of Pharmacology), American Society for Biochemistry and Molecular Biology (Journal of Biological Chemistry) and American Society (Cellular Physiology and Biochemistry), Rockefeller University Press (Journal General Physiology).

TEACHING ACTIVITIES

I have experience in teaching students from the study programs Bachelor Biological Chemistry, Bachelor Molecular BioSciences, Master Biophysics and Master Molecular Biology. I have been teaching the courses Biophysics, Biochemistry, Cell Culture in theory and practice. For details please see the attached information.

I developed the courses Biophysics, Basics on (patho)-physiological aspects of Ca²⁺ signalling, Characterization of Bio- and Nanostructures and Biological Interaction Analysis.