

Dr. Eliot Morrison

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Postdoc

Prof. Dr. Christian Freund

Freie Universität, Berlin, Germany

Jan. 2018 – present

Structural investigation of DHHC PATs. Investigated the enzymatic and structural properties of the multipass membrane DHHC PAT family.

Previous Experience

Doctoral Student

Prof. Dr. Christian Freund

Freie Universität, Berlin, Germany

Oct. 2012 – Jan. 2018

Stimulation-dependent Palmitoylation in T Cells. Used quantitative proteomics to establish stimulation-dependent palmitoylated proteins involved in TCR signaling.

M.Sc. Candidate

Dr. George Gassner

San Francisco State University, San Francisco, CA

Jan. 2011 – Aug. 2012

Developed kinetic and thermodynamic experiments to establish flavin-transfer mechanism in styrene monooxygenase system.

Publications

Niemz, J.; Kliche, S.; Pils, M.C.; **Morrison, E.**; Manns, A.; Freund, C.; Crittenden, J.; Graybiel, A.; Galla, M.; Jansch, L.; Huehn, J. The guanine-nucleotide exchange factor CalDAG GEF1 fine-tunes functional properties of regulatory T cells. *Eur. J. Microbiol. Immun.*, 7(2), 112-126 (2017)

***Morrison, E.**; Wiedemann, H.; Brügger, B.; Freund, C. Reversible Palmitoylierung von Proteinen. *BIOspektrum*, 23(1), 32-35 (2017)

Alvaro-Benito, M.; **Morrison, E.**; Wiczorek, M.; Sticht, J.; Freund, C. Human leukocyte Antigen-DM polymorphisms in autoimmune diseases. *Open Biol.*, 6(8), pii: 160165 (2016)

***Morrison, E.**; Kuroпка, B.; Kliche, S.; Brügger, B.; Krause, E.; Freund, C. Quantitative analysis of the human T cell palmitome. *Sci. Rep.*, 5, 11598 (2015)

Freund, C.; Kuroпка, B.; Albert, G.; **Morrison, E.**; Krause, E. Investigation of phosphorylation-dependent interactions in T cells. *J. Proteomics Bioinform.*, 7:8 (2014)

***Morrison, E.**; Kantz, A.; Gassner, G.; Sazinsky, M. Structure and Mechanism of Styrene Monooxygenase Reductase: New Insight into the FAD-Transfer Reaction. *Biochemistry*, 52, 6063-6075 (2013)

***Morrison, E.**; Kantz, A.; Chandrasekaran, P.; Liao, S.; Singh, B.; Tischler, D.; Sazinsky, M.; Gassner, G. Mechanism of FAD Reduction and Transport in the Two-Component Flavoenzyme, Styrene Monooxygenase from *Pseudomonas putida* S12. *Proceedings of the 17th International Symposium on Flavins and Flavoproteins* (2011)

*First author. **Co-first author.

Education

Doctorate (2018)

Doctor rerum naturalium

summa cum laude

Freie Universität

Berlin, Germany

M.Sc. Biochemistry (2012)

summa cum laude

San Francisco State University

San Francisco, CA

B.S. Biochemistry (2010)

magna cum laude

Portland State University

Portland, OR

Awards / Honors

Berlin Science Hack Day: Best Hardware Hack (DIY PCR Thermocycler) (2015)

Proteomic Forum 2015: Best Poster (nom.) (2015)

DAAD Ph.D. Research Scholarship (2014–15), (2013–14), (2012–13)

SFSU Graduate Award for Distinguished Achievement (2013)

SFSU Summer Research Scholar (2012), (2011)

CSU Research Competition Finalist: Physical Sciences (2012)

Don Eden Graduate Student Research Award Finalist (2012)

ARCS Foundation Scholar (2011-12)

References

Prof. Dr. Christian Freund

Doctoral Research Advisor

Department of Biochemistry

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Additional references available upon request.

Recent Presentations

SFB/TRR186 Annual Meeting (Heidelberg, Germany, Oct 2017) *The palmitoylation switch of activated T cells* (talk/poster)

FU Berlin Biochemistry Department Retreat (Berlin, Germany, July 2017) *Dynamic Palmitoylation of VAMP7 during TCR Signaling: Proteomic and Enzymatic Approaches* (talk)

FEBS Young Scientists' Forum / 40th FEBS Congress (Berlin, Germany, July 2015): *Quantitative analysis of dynamic palmitoylation in human T cells* (poster)

Proteomic Forum 2015 (Berlin, Germany, March 2015): *Quantification of palmitoylated proteins in T cells using acyl-biotin exchange* (poster)

Future Tensing (Berlin, Germany, February 2015): *Who Owns Life? Unraveling Biological Patents* (talk)

Pop Science Cafe (Berlin, Germany, January 2015): *The Future Face of Infection: Antibiotic Resistance and Phage Therapy* (talk)

Free University Department of Chemistry and Biochemistry (Berlin, Germany, June 2014): *Tracking Inducible Palmitoylation in T Cells Using Quantitative Proteomics* (talk)

56th Annual Biophysical Society Meeting (San Diego, CA, Feb 2012): *Unlocking the Flavin Reduction and Transfer Mechanisms of the Two-Component Flavoenzyme Styrene Monooxygenase in Pseudomonas putida S12* (poster)

24th Annual CSU Biotechnology Symposium (Santa Clara, CA, Jan 2012): *Biodegradation of Styrene: Understanding Styrene Metabolism in Pseudomonas putida S12* (talk)

CSU Research Competition (Long Beach, CA, May 2012): *Biodegradation of Styrene: Understanding Styrene Metabolism in Pseudomonas putida S12* (talk)

17th International Symposium of Flavins and Flavoproteins (Berkeley, CA, Jul 2011): *Mechanism of FAD Reduction and Transport in the Two-Component Flavoenzyme, Styrene Monooxygenase from Pseudomonas putida S12* (poster)

Research Experience / Skills

Quantitative Mass Spectrometry (2012–17): *Extensive LC-MS/MS training on Orbitrap Elite (Thermo Fisher) (AG Krause, FMP, Berlin) and LTQ Orbitrap Velos (FU Berlin Core Facility). Quantitative mass spectrometry performed using SILAC-labeled Jurkat T cells and ¹⁸O-labeled primary human T cells.*

Relevant Skills: Sample preparation, usage, troubleshooting and data analysis on Orbitrap Elite and LTQ Orbitrap Velos instruments. Data analysis using MaxQuant, Mascot Distiller and Perseus.

Improved Analysis of Quantitative Mass Spectrometric Data (2014–16): *Used Python to develop software to improve experimental workflow and quality of data analysis. Projects include the extraction low-abundance peptides from background of ¹⁸O-labeled primary T cell data, the global identification and prediction of N-glycosylated proteins, and a peptide alignment script with a custom label-free quantification algorithm.*

Relevant Skills: Python, R, Mascot Distiller, MaxQuant, Perseus

Established Acyl-Biotin Exchange Protocol in AG Freund (2013–14): *Adapted acyl-biotin exchange protocol (Wan et al., Nat. Prot. 2007) for use with Jurkat and primary T cells; improved efficiency of N-ethylmaleimide labeling; increased yield of precipitation steps.*

Relevant Skills: Palmitoylation enrichment via chemical labeling, Western blot

T Cell Costimulation (2012–13): *Established costimulation protocol for Jurkat E6.1 cell line using IgM-coupled anti-CD3 and anti-CD28 antibodies, producing reliable T cell stimulation (with AG Kliche, Universitätsklinikum Magdeburg)*

Relevant Skills: Jurkat T cell culture/harvest, Primary T cell isolation from blood, T cell costimulation

Kinetic and Thermodynamic Properties of SMOA/B (2011–12): *Headed a research project requiring the expression of styrene monooxygenase SMOA/B in E. coli, purification by HPLC, determination of binding constants by steady-state fluorescence and spectroscopic determination of redox potentials of the monooxygenase flavin system. (Morrison et al., Biochemistry, 2013)*

Relevant Skills: Protein expression, purification and refolding; Stopped-flow kinetics studies

Additional Information

United States citizen.

Six years German language experience