Exploring the Ub/UBL landscape with activity-based probes

Witting, K.F.

Publication List

1. Pérez-Berrocal D.A., **Witting, K.F.**, Ovaa H., Mulder, M.P.C. Hybrid Chains: A Collaboration of Ubiquitin and Ubiquitin-Like Modifiers Introducing Cross-Functionality to the Ubiquitin Code.Front Chem. 2020 Jan 22, 7: 931.

2. M. P. C. Mulder, **K. F. Witting**, and H. Ovaa. Cracking the Ubiquitin Code: the Ubiqutin Toolbox. SUMOylation and Ubiquitination: Current and Emerging Concepts Caister Academic Press, 2019.: p.15-34.

3. Mulder M.P.C., **Witting K.F.**, Ovaa H. Cracking the Ubiquitin Code: The Ubiquitin Toolbox. Curr Issues Mol Biol. 2019 Nov 1;37:1-20.

4. **Witting K.F.***, van der Heden van Noort G.J.*, Kofoed C., Talavera Ormeño C., El Atmioui D., Mulder M.P.C., Ovaa H. Generation of the UFM1 Toolkit for Profiling UFM1-Specific Proteases and Ligases. Angew Chem Int Ed Engl. 2018 Oct 22;57(43):14164-14168.

5. Mulder M.P.C.*, Merkx R.*, **Witting K.F.**, Hameed D.S.,El Atmioui D., Lelieveld L., Liebelt F., Neefjes J., Berlin I., Vertegaal A.C.O., Ovaa H. Total Chemical Synthesis of SUMO and SUMO-Based Probes for Profiling the Activity of SUMO-Specific Proteases. Angew Chem Int Ed Engl. 2018 Jul 16;57(29):8958-8962.

6. Hermanns T., Pichlo C., Woiwode I., Klopffleisch K., **Witting K.F.**, Ovaa H., Baumann U., Hofmann K. A family of unconventional deUbiquitinases with modular chain specificity determinants. Nat Commun. 2018 Feb 23;9(1):799.

7. de Jong A., **Witting K.**, Kooij R., Flierman D., Ovaa H. Release of Enzymatically Active DeUbiquitinating Enzymes upon Reversible Capture by Disulfide Ubiquitin Reagents. Angew Chem Int Ed Engl. 2017 Oct 9;56(42):12967-12970.

8. Leestemaker Y., de Jong A., **Witting K.F.**, Penning R., Schuurman K., Rodenko B., Zaal E.A., van de Kooij B., Laufer S., Heck A.J.R., Borst J., Scheper W., Berkers C.R., Ovaa H. Proteasome Activation by Small Molecules. Cell Chem Biol. 2017 Jun 22;24(6):725-736.

9. **Witting K.F.***, Mulder M.P.C.,Ovaa H. Advancing our Understanding of Ubiquitination Using the Ub-Toolkit. J Mol Biol. 2017 Nov 10;429(22):3388-3394.

10. Basters A., Geurink P.P., Röcker A., **Witting K.F.**, Tadayon R., Hess S., Semrau M.S., Storici P., Ovaa H., Knobeloch K.P., Fritz G. Structural basis of the specificity of USP18 toward ISG15. Nat Struct Mol Biol. 2017 Mar;24(3):270-278.

11. Mulder M.P.C.*, **Witting K.***, Berlin I.*, Pruneda J.N., Wu K.P., Chang J.G., Merkx R., Bialas J., Groettrup M., Vertegaal A.C., Schulman B.A., Komander D., Neefjes J., El Oualid F., Ovaa H. A cascading activity-based probe sequentially targets E1-E2-E3 Ubiquitin enzymes. Nat Chem Biol. 2016 Jul;12(7):523-30.

12. **Witting K.**, Süssmuth R.D., Discovery of antibacterial and other bioactive compounds from microorganism evaluating methodologies for discovery and generation of non-ribosomal peptide antibiotics. Curr Drug Targets 2011 Oct; 12(11): 1547-59.

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Curriculum Vitae

Katharina Witting was born on April 24th 1985 in Bremen, Germany. After completing her high school education in the US, she relocated to Germany and obtained the German Abitur in 2006. Later that year, she commenced studying chemistry with focus on biochemistry and physical chemistry at the Technical University of Berlin. In 2011, Katharina completed her final internship focusing on the effects of small molecule inhibitors on the activity of the 26S proteasome in the lab of Huib Ovaa at the Netherlands Cancer Institute. Upon graduating from the Technical University of Berlin in 2012 with distinction, Katharina started her PhD which was funded by a Marie Curie Initial Training Network fellowship in the Ovaa lab. Starting by attempting to reprogram the bacterial translational machinery to insert an unnatural amino acid into proteins to enable biochemical and structural analysis, her work expanded to the development and application of activity-based probes for the conjugating and deconjugating enzymes of Ubiquitin and Ubiquitin-like modifiers. During her PhD, she initiated the development of activity-based probes targeting the enzymes of the understudied Ubiquitin-fold modifier 1 (UFM1) and a proteomics strategy for identification of its substrates, described in Chapters 5 and 6, respectively. Her PhD work was finalized by dissecting the biochemical function of UFM1 modification on its primary substrate—the ribosome (Chapter 6) and was presented at the FASEB Summer Research Conference on Ubiquitin and Cellular Regulation (Snowmass, Colorado, USA, 2018) as well as at the Netherlands Ubiquitin Meeting (Utrecht, The Netherlands, 2018).

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