

Publications

- 50) Wei R., Weber G., Blank L.M., Bornscheuer U.T., 2025. Process insights for Harnessing Biotechnology for Plastic Depolymerization. *Nat. Chem. Eng.* **22** 2 (2), 110–117.
- 49) Li, Z., Han X., Cong L., Singh P., Paiva P., Branson Y., Li W., Chen Y., Jaradat D.M.M., Lennartz F., Bayer T., Schmidt L., Garscha U., You S., Fernandes P.A., Ramos M.J., Bornscheuer U.T., Weber G.**, Wei R., Liu W., 2025. Structure-Guided Engineering of a Versatile Urethanase Improves Its Polyurethane Depolymerization Activity. *Adv. Sci.*, 2416019.
- 48) Paiva P., Teixeira L.M.C., Wei, R., Liu W., Weber, G., Morth, J.P., Westh P., Petersen A.R., Johansen M.B., Sommerfeldt A., Sandahl A., Otzen D.E., Fernandes P.A. and Ramos M.J., 2024. Unveiling the Enzymatic Pathway of UMG-SP2 Urethanase: Insights into Polyurethane Degradation at the Atomic Level. *Chem. Sci.* **16**, 2437-2452
- 47) Barthel T., Benz L., Basler Y., Crosskey T., Dillmann A., Förster R., Fröling P., Dieguez, C.G., Gless C., Hauß T., Hellmig M., Jänisch L., James D., Lennartz F., Mijatovic J., Oelker M., Scanlan J.W., Weber G., Wollenhaupt J., Mueller U., Dobbek H., Wahl M.C. and Weiss, M.S., 2024. The HZB F2X-Facility - An Efficient Crystallographic Fragment Screening Platform. *Appl. Res.*, **3** (6)
- 46) Mican J., Jaradat D.M.M., Liu W., Weber G., Mazurenko S., Bornscheuer U.T., Damborsky J., Wei R. and Bednar D., 2024. Exploring New Galaxies: Perspectives on the Discovery of Novel PET-Degrading Enzymes. *Appl. Catal. B Environ.*, **342**, 123404.
- 45) Weber G. and Weber G., Method for optimising a nucleotide sequence by exchanging synonymous codons for the expression of an amino acid sequence in a target organism. (2023) Patent **WO2024018050A1** <https://patents.google.com/patent/WO2024018050A1/en>
- 44) Arnal G., Anglade J., Gavalda S., Tournier V., Chabot N., Bornscheuer U.T., Weber G.**, Marty A., 2023. Assessment of four engineered PET degrading enzymes considering large-Scale Industrial applications. *ACS Catalysis*. **13**(20):13156-13166
- 43) Wei R., and Weber G.**, 2022. Performance of PET hydrolases with tethered binding modules in large-scale applications. *Chem Catalysis* **2** (10), pp. 2406–2408.
- 42) Preussner M., Santos K.F., Alles J., Heroven C., Heyd F., Wahl M.C.. and Weber G.**, 2022. Structural and functional investigation of the human snRNP assembly factor AAR2 in complex with the RNase H-like domain of PRPF8. *Acta Cryst. D*, **78**(11), 1373–1383.
- 41) Bergfort A., Hilal T., Kuropka B., Ilik İ.A., Weber G., Aktaş T., Freund C., and Wahl M.C., 2022. The intrinsically disordered TSSC4 protein acts as a helicase inhibitor, placeholder and multi-interaction coordinator during snRNP assembly and recycling. *Nucleic Acids Research*, **50**(5), 2938–2958.
- 40) Bergfort A., Preußner M., Kuropka B., Ilik İ.A., Hilal T., Weber G., Freund C., Aktaş T., Heyd, F., and Wahl M.C., 2022. A multi-factor trafficking site on the spliceosome remodeling enzyme BRR2 recruits C9ORF78 to regulate alternative splicing. *Nature Communications*, **13**(1).
- 39) Jehle S., Kunowska N., Benlasfer N., Woodsmith J., Weber G., Wahl M.C. and Stelzl, U., 2022. A human kinase yeast array for the identification of kinases modulating phosphorylation-dependent protein–protein interactions. *Molecular Systems Biology*, **18**(3).
- 38) Pfaff L., Gao J., Li Z., Jäckering A., Weber G., Mican J., Chen Y., Dong W., Han X., Feiler C.G., Ao Y.F., Badenhorst C.P.S., Bednar D., Palm G.J., Lammers M., Damborsky J., Strodel B., Liu W., Bornscheuer U.T. and Wei R., 2022. Multiple substrate binding mode-guided engineering of a thermophilic PET hydrolase. *ACS Catalysis*, **12**(15), 9790–9800.

- 37) Von Haugwitz G., Han X., Pfaff L., Li Q., Wei H., Gao J., Methling K., Ao Y., Brack Y., Mican J., Feiler C.G., Weiss M.S., Bednar D., Palm G.J., Lalk M., Lammers M., Damborsky J., Weber G., Liu W., Bornscheuer U.T. and Wei R., 2022. Structural Insights into (Tere)phthalate-Ester Hydrolysis by a Carboxylesterase and Its Role in Promoting PET Depolymerization. *ACS Catalysis*, **12**(24), 15259–15270.
- 36) Wei R., Von Haugwitz G., Pfaff L., Mican J., Badenhorst C.P.S., Liu W., Weber G., Austin H.P., Bednar D., Damborsky J., and Bornscheuer U.T., 2022. Mechanism-based design of efficient PET hydrolases. *ACS Catalysis*, **12**(6), 3382–3396.
- 35) Wu S., Xiang C., Zhou Y., Khan M.S.H, Liu W., Feiler C.G., Wei R., Weber G., Höhne M. and Bornscheuer U.T., 2022. A growth selection system for the directed evolution of amine-forming or converting enzymes. *Nature Communications*, **13** (1).
- 34) Takenaka M., Takenaka S., Barthel T., Frink B., Haag S., Verbitskiy D., Oldenkott B., Schallenberg-Rüdinger M., Feiler C., Weiss M.S., Palm G.J. and Weber G.**, DYW domain structures imply an unusual regulation mechanism in plant organellar RNA editing catalysis. 2021. *Nature Catalysis* **4** 510–522
- 33) Weber G.**, Bornscheuer U.T. and Wei R.. (Volume Editors) 2021. *Methods in Enzymology*. Enzymatic Plastic Degradation Academic Press Inc., Vol. **648**.
- 32) Graf L.G., Michels E.A.P., Yew Y. Liu W., Palm G.J., and Weber G.**, 2021. Structural analysis of PET-degrading enzymes PETase and MHETase from *Ideonella sakaiensis*. In *Methods in Enzymology*. Academic Press Inc., Vol. **648**, pp. 337–356.
- 31) Chen Z., Xiao Y., Weber G., Wei R. and Wang Z., 2021. Yeast cell surface display of bacterial PET hydrolase as a sustainable biocatalyst for the degradation of polyethylene terephthalate. In *Methods in Enzymology*. Academic Press Inc., Vol. **648**, pp. 457–477.
- 30) Lang I., Bashir S., Lorenz M., Rader S. and Weber G.**, 2020. Exploiting the potential of Cyanidiales as valuable resource for biotechnological applications. *Applied Phycology* **1** S11, 1-12
- 29) Palm G.J., Reisky L., Böttcher D., Müller H., Michels E.A.P., Walczak M., Berndt L., Weiss M.S., Bornscheuer U.T. and Weber G.**, 2019. Structure of the plastic-degrading *Ideonella sakaiensis* MHETase bound to a substrate. *Nature Communications* **10**, 1717
- 28) Qu Y., Legen, J., Arndt J., Henkel S., Hoppe G., Thieme C., Ranzini G., Muino J., Weihe A., Ohler U., Weber G., Osterseker-Biran O. and Schmitz-Linneweber C., 2018. Ectopic transplastomic expression of a synthetic MatK gene leads to cotyledon-specific leaf variegation. *Frontiers in Plant Sciences*, **9**, 1-14.
- 27) Weber G.**, DeKoster G.T., Holton N., Hall K.B. and Wahl M.C., 2018. Molecular principles underlying dual RNA specificity in the *Drosophila* SNF protein. *Nature Communications* **9**, 2220
- 26) Berggren O., Hagberg N., Alexsson A., Weber G., Rönnblom L. and Eloranta M.L. 2017. Plasmacytoid dendritic cells and RNA-containing immune complexes drive expansion of peripheral B cell subsets with an SLE-like phenotype. *PLoS One*, **12**, 1–16.
- 25) Said N., Krupp F., Anedchenko E., Santos K.F., Dybkov O., Huang Y.-H., Lee C.-T., Loll B., Behrmann E., Bürger J., Mielke T., Loerke J., Urlaub H., Spahn C.M.T., Weber G. and Wahl M.C., 2017. Structural basis for λ N-dependent processive transcription antitermination. *Nature Microbiol.*, **17062**, 1–13.
- 24) Haag S., Schindler M., Berndt L., Brennicke A., Takenaka M. and Weber G., 2017. Crystal structures of the *Arabidopsis thaliana* organellar RNA editing factors MORF1 and MORF9. *Nucleic Acids Res.*, **45**, 4915–4928.
- 23) Schütze T., Ulrich A.K., Apelt L., Will C.L., Bartlick N., Seeger M., Weber G., Lührmann R., Stelzl U. and Wahl M.C., 2016. Multiple protein-protein interactions converging on the Prp38 protein during activation of the human spliceosome. *RNA*.Feb;22(2):265-77.

- 22) Santos K., Preußner M., Heroven A.C. and Weber G.**, 2015. Crystallization and biochemical characterization of the human spliceosomal Aar2-Prp8-RNaseH complex. *Acta Crystallogr F Struct Biol Commun.* **71**(Pt 11):1421-8.
- 21) Berggren O., Alexsson A., Morris D.L., Tandre K., Weber G., Vyse T.J., Syvänen A.C., Rönnblom L. and Eloranta M.-L., 2015. IFN- α production by plasmacytoid dendritic cell associations with polymorphisms in gene loci related to autoimmune and inflammatory diseases. *Human Molecular Genetics* **24**(12):3571-81
- 20) Weber G.**, Cristao V.F., Santos K.F., Jovin S.M., Heroven A.C., Holton N., Lührmann R., Beggs J.D. and Wahl M.C., 2013. Structural basis for dual roles of Aar2p in U5 snRNP assembly. *Genes & Development* **27**: 525-540.
- 19) Brakemann T., Stiel A., Weber G., Andresen M., Testa I., Urlaub H., Eggeling C., Wahl M.C., Hell S. and Jakobs S., 2012. Dreiklang - the one, two, three in photoswitching. *Protein Science* **21**:164-164.
- 18) Berggren O., Hagberg N., Weber G., Alm G.V., Rönnblom L. and Eloranta M.-L., 2012. B lymphocytes enhance interferon- α production by plasmacytoid dendritic cells. *Arthritis and Rheumatism* **64**: 3409-3419.
- 17) Santos K.F., Jovin S.M., Weber G., Pena V., Lührmann R. and Wahl M.C., 2012. Structural basis for functional cooperation between tandem helicase cassettes in Brr2-mediated remodeling of the spliceosome. *PNAS* **109**: 17418-17423.
- 16) Brakemann T., Stiel A.C., Weber G., Andresen M., Testa I., Grotjohann T., Leutenegger M., Plessmann U., Urlaub H., Eggeling C. and Jakobs S., 2011. A reversibly photoswitchable GFP-like protein with fluorescence excitation decoupled from switching. *Nature Biotechnology* **29**: 942-U132.
- 15) Weber G*, Cristao V.F.*, Alves F.d.L., Santos K.F., Holton N., Rappsilber J., Beggs J.D., and Wahl M.C., 2011. Mechanism for Aar2p function as a U5 snRNP assembly factor. *Genes & Development* **25**: 1601-1612.
- 14) Hagberg N., Berggren O., Leonard D., Weber G., Bryceson Y.T., Alm G.V., Eloranta M.-L. and Rönnblom L. 2011. IFN- α Production by Plasmacytoid Dendritic Cells Stimulated with RNA-Containing Immune Complexes Is Promoted by NK Cells via MIP-1 beta and LFA-1. *Journal of Immunology* **186**: 5085-5094.
- 13) Rönnblom L., Berggren O., Weber G., Hagberg N. and Eloranta M.-L., 2011. B Cells Enhance the Type I Interferon Production by Plasmacytoid Dendritic Cells Via CD31. *Arthritis and Rheumatism* **63**: S976-S977.
- 12) Brakemann T.*, Weber G.*, Andresen M.*, Groenhof G., Stiel A.C., Trowitzsch S., Eggeling C., Grubmüller H., Hell S.W., Wahl M.C. and Jakobs S. 2010. Molecular Basis of the Light-driven Switching of the Photochromic Fluorescent Protein Padron. *Journal of Biological Chemistry* **285**: 14603-14609.
- 11) Strzelecka M., Trowitzsch S., Weber G., Lührmann R., Oates A.C. and Neugebauer K.M., 2010. Coilin-dependent snRNP assembly is essential for zebrafish embryogenesis. *Nature Structural & Molecular Biology* **17**: 403-U435.
- 10) Weber G., Trowitzsch S., Kastner B., Lührmann R. and Wahl M.C., 2010. Functional organization of the Sm core in the crystal structure of human U1 snRNP. *EMBO Journal* **29**: 4172-4184.
- 9) Stein A., Weber G., Wahl M.C. and Jahn R., 2009. Helical extension of the neuronal SNARE complex into the membrane. *Nature* **460**: 525-28.
- 8) Netter C., Weber G., Benecke H. and Wahl M.C., 2009. Functional stabilization of an RNA recognition motif by a noncanonical N-terminal expansion. *RNA* **15**: 1305-1313.

- 7) Trowitzsch S., Weber G., Lührmann R. and Wahl M.C., 2009. Crystal Structure of the Pml1p Subunit of the Yeast Precursor mRNA Retention and Splicing Complex. *Journal of Molecular Biology* **385**: 531-541.
- 6) Trowitzsch S., Weber G., Lührmann R. and Wahl M.C., 2008. An Unusual RNA Recognition Motif Acts as a Scaffold for Multiple Proteins in the Pre-mRNA Retention and Splicing Complex. *Journal of Biological Chemistry* **283**: 32317-32327.
- 5) Luo X., Hsiao H.-H., Bubunenko M., Weber G., Court D.L., Gottesman M.E., Urlaub H. and Wahl M.C., 2008. Structural and Functional Analysis of the E. coli NusB-S10 Transcription Antitermination Complex. *Molecular Cell* **32**: 791-802.
- 4) Andresen M., Stiel A.C., Trowitzsch S., Weber G., Eggeling C., Wahl M.C., Hell SW and Jakobs S., 2007. Structural basis for reversible photoswitching in Dronpa. *PNAS* **104**: 13005-13009.
- 3) Stiel A.C.*, Trowitzsch S.*, Weber G.*, Andresen M., Eggeling C., Hell S.W., Jakobs S. and Wahl M.C., 2007. 1.8 Angstrom bright-state structure of the reversibly switchable fluorescent protein Dronpa guides the generation of fast switching variants. *Biochemical Journal* **402**: 35-42.
- 2) Savarese E., Chae O.W., Trowitzsch S., Weber G., Kastner B., Akira S., Wagner H., Schmid R.M., Bauer S. and Krug A., 2006. U1 small nuclear ribonucleoprotein immune complexes induce type I interferon in plasmacytoid dendritic cells through TLR7. *Blood* **107**: 3229-3234.
- 1) Andresen M., Wahl M.C., Stiel A.C., Gräter F., Schäfer L.V., Trowitzsch S., Weber G., Eggeling C., Grubmüller H., Hell S.W. and Jakobs S. 2005. Structure and mechanism of the reversible photoswitch of a fluorescent protein. *PNAS* **102**: 13070-13074.

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