Prof. Dr. Uwe Bornscheuer

Researcher ID: C-4612-2012; ORCID: 0000-0003-0685-2696; Scopus-ID: 7006947469

Institute of Biochemistry, Dept. of Biotechnol. & Enzyme Catalysis,
University Greifswald, Greifswald, Germany

Publications, Books, Reviews and Patents List

2020

[578] Müller, H., Godehard, S.P., Palm, G.J., Berndt, L., Badenhorst, C.P.S., Becker, A.K., Lammers, M., Bornscheuer, U.T. (2020), Discovery and design of family VIII carboxylesterases as highly efficient acyltransferases, *Angew. Chem. Int. Ed*., DOI: 10.1002/anie.202014169; Entdeckung und Design promiskuitiver Acyltransferase-Aktivität in Carboxylesterasen der Familie VIII, *Angew. Chem*., DOI: 10.1002/ange.202014169.

[577] Tang, Q., Grathwol, C.W., Aslan-Üzel, A.S., Wu, S., Link, A., Pavlidis, I.V., Badenhorst, C.P.S., Bornscheuer, U.T., (2020), Directed evolution of a halide methyltransferase enables biocatalytic synthesis of diverse SAM analogues, *Angew. Chem. Int. Ed*., DOI: 10.1002/anie.202013871; Die gerichtete Evolution einer Halogenid-Methyltransferase erlaubt die biokatalytische Synthese diverser SAM-Analoga, *Angew. Chem.*, DOI: 10.1002/ange.202013871.

[576] Grobe, S., Bayer, T., Hamnevik, E., Wu, S., Grathwol. C.W., Link, A., Koban, S., Brundiek, H., Großjohann, B., Bornscheuer, U.T. (2020), Engineering regioselectivity of a P450 monooxygenase enables the synthesis of ursodeoxycholic acid via 7β-hydroxylation of lithocholic acid, *Angew. Chem. Int. Ed*., online; Modifikation der Regioselektivität einer P450-Monooxygenase ermöglicht die Synthese von Ursodeoxycholsäure durch die 7β-Hydroxylierung von Lithocholsäure, *Angew. Chem.*, online. (**V.I.P., top 5%)**.

[575] Schweder, T., Bornscheuer, U., Hehemann, J.H., Amann, R. (2020), The sweet ocean – Bakterielle Mechanismen der marinen Polysaccharidverwertung, *Biospektrum*, accepted.

[574] Wei, R., Tiso, T., Bertling, J., O'Connor, K., Blank, L.M., Bornscheuer, U.T. (2020), Possibilities and limitations of biotechnological plastic degradation and recycling, *Nature Catal.*, **3,** 867-871.

[573] Goris, T., Pérez-Valero, A., Martínez, I., Yi, D., Fernández-Calleja, L., san Leon, D., Bornscheuer, U.T., Magadán-Corpas, S., Lombó, F., Nogales, J. (2020), Repositioning microbial biotechnology against COVID-19: The case of microbial production of flavonoids, *Microbial Biotechnol*., accepted.

[572] Wu, S., Snajdrova, R., Moore, J., Baldenius, K., Bornscheuer, U.T. (2020), Biocatalysis: Enzymatic synthesis for industrial applications, *Angew. Chem. Int. Ed*., online, DOI: 10.1002/anie.202006648; Biokatalyse: Enzymatische Synthesen für industrielle Anwendungen, *Angew. Chem.*, online, DOI: 10.1002/ange.202006648.

[571] Schmidt, S., Bornscheuer, U.T. (2020), Baeyer-Villiger monooxygenases: from protein engineering to biocatalytic applications in: *Flavin-dependent enzymes* (Tamanoi F. Chaiyen, P., Eds.), Elsevier, Amsterdam, online, DOI: 10.1016/bs.enz.2020.05.007.

[570] Drienovská, I., Gajdoš, M., Kindler, A., Takhtehchian, M., Darnhofer, B., Birner-Gruenberger, R., Dörr, M., Bornscheuer, U.T., Kourist, R. (2020), Folding assessment of incorporation of non-canonical amino acids facilitates expansion of functional group diversity for enzyme engineering, *Chem. Eur. J.*, **26**, 12338-12342.

[569] Yan, F., Wei, R. Cui, Q., Bornscheuer, U.T., Liu Y.J. (2020) Thermophilic whole cell degradation of polyethylene terephthalate (PET) using engineered *Clostridium thermocellum*, *Microbiol. Biotechnol*., online, DOI: 10.1111/1751-7915.13580.

[568] Becker, A., Böttcher, D., Katzer, W., Siems, K., Müller-Kuhrt, L., Bornscheuer, U.T. (2020), A biocatalytic cascade reaction to access valuable long-chain ω-hydroxy fatty acids, *ChemCatChem*, **12**, 4084-4089.

[567] Godehard, S.P., Badenhorst, C.P.S., Müller, H., Bornscheuer, U.T (2020), Protein engineering for enhanced acyltransferase activity, substrate scope and selectivity of the *Mycobacterium smegmatis* acyltransferase MsAcT, *ACS Catal*., **10**, 7552-7562.

[566] Szymańska, M., Drozd. R., Karakulska, J., Sobolewski, P., Kowalska, U., Grygorcewicz, B., Böttcher, D., Bornscheuer, U.T. (2020) Glycoside hydrolase (PelAh) immobilization prevents *Pseudomonas aeruginosa* biofilm formation on cellulose-based wound dressing, *Carbohydr. Polym*., **246**, 116625.

[565] Biundo, A., Stamm, A., Bornscheuer, U.T., Syrén, P.O. (2020), Enzymatic synthesis of pinene-derived lactones, in *Practical Methods in Biocatalysis and Biotransformations*, (Whittall, J., Sutton, P.J., Eds.), Wiley, New York, pp. 319-326.

[564] Tang, Q., Vianney, Y.M., Weisz, K., Grathwol, C.W. Link, A., Bornscheuer, U.T., Pavlidis, I.V. (2020), Influence of substrate binding residues on the substrate scope and regioselectivity of a plant *O*-methyltransferase against flavonoids, *ChemCatChem*, **12**, 3721-3727.

[563] Müller, H., Becker, A.K, Palm, G.J., Berndt, L., Badenhorst, C.P.S., Godehard, S.P., Reisky, L., Lammers, M., Bornscheuer, U.T. (2020), Sequence-based prediction of promiscuous acyltransferase activity in hydrolases, *Angew. Chem. Int. Ed*., **59**, 11607-11612; *Angew. Chem*., **132**, 11704-11709 (**V.I.P., top 5%)**.

[562] Cha, H.J., Hwang, S.Y., Lee, D.S., Akula, R.K., Kwon, Y.U., Voß, M., Schuiten, E., Bornscheuer, U.T., Hollmann, F., Oh, D.K., Park, J.B. (2020), Whole cell photoenzymatic cascades to synthesize long chain aliphatic amines and esters from renewable fatty acids, *Angew. Chem. Int. Ed.*, **59**, 7024-7028; *Angew. Chem.*, **132**, 7090-7094.

[561] Aslan-Üzel, A.S., Beier, A., Kovář, D., Cziegler, C., Padhi, S.K., Schuiten, E.D., Dörr M., Böttcher, D., Hollmann, F., Rudroff, F., Mihovilovic, M.D., Buryška, T., Damborský, J., Prokop, Z., Badenhorst, C.P.S., Bornscheuer, U.T. (2020), An ultrasensitive fluorescence assay for detection of halides and enzymatic dehalogenation, *ChemCatChem*, **12**, 2032-2039.

[560] Grobe, S., Wszołek, A., Brundiek, H., Fekete, M., Bornscheuer, U.T. (2020), Highly selective bile acid hydroxylation by the multifunctional bacterial monooxygenase CYP107D1 (OleP), *Biotechnol. Lett.*, **42**, 819-824.

[559] Matassa, C., Ormerod, D., Bornscheuer, U.T., Höhne, M., Satyawali, Y. (2020), Three-liquid-phase spinning reactor for the transaminase-catalyzed synthesis and recovery of chiral amines, *ChemCatChem*, **12**, 1288-1291.

[558] Matassa, C., Romani, A., Ormerod, D., Bornscheuer, U.T., Höhne, M., Satyawali, Y. (2020), Jeffamine® ED-600 as polyether amine donor for enzymatic transamination in organic solvent/ solvent-free medium with membrane-assisted product extraction, *J. Chem. Tech. Biotechnol.*, **95**, 604-613.

[557] Minges, H., Schnepel, C., Böttcher, D., Weiß, M.S., Sproß, J., Bornscheuer, U.T., Sewald, N. (2020), Targeted enzyme engineering unveiled unexpected patterns of halogenase stabilization, *ChemCatChem*, **12**, 818-831.

[556] Voss, M., Xiang, C., Esque, J., Nobili, A., Menke, M.J., André, I., Höhne, M., Bornscheuer, U.T. (2020), Creation of (*R*)-amine transaminase activity within an α-amino acid transaminase scaffold, *ACS Chem. Biol*., **15**, 416-424.

[555] Srinivasamurthy, V.S.T., Böttcher, D., Engel, J., Kara, S., Bornscheuer, U.T. (2020) A whole-cell process for the production of ε-caprolactone in aqueous media, *Proc. Biochem*., **88**, 22-30.

[554] Song, J.W., Seo, J.H., Oh, D.K., Bornscheuer, U.T., Park, J.B. (2020), Mechanistic understanding-based design of cascade enzyme whole-cell biocatalytic processes, *Cat. Sci. Technol.*, **10**, 46-64.

[553] Oroz-Guinea, I., Zorn, K., Bornscheuer, U.T. (2020) Enhancement of lipase CAL-A selectivity

in the hydrolysis of erucic acid from *Crambe* oil by protein engineering, *Eur. J. Lipid Sci. Technol.*, **122**, 1900115.

2019

[552] Wei, R., Song, C., Gräsing, D., Schneider, T., Bielytskyi, P., Böttcher, D., Matysik, J., Bornscheuer, U., Zimmermann, W. (2019), Conformational fitting of a flexible oligomeric substrate does not explain the enzymatic PET degradation, *Nature Commun.*, **10**, 5581.

[551] Oroz-Guinea, I., Zorn, K., Bornscheuer, U.T. (2019) Enrichment of erucic and gondoic fatty acids from *Crambe* and *Camelina* oils catalysed by *Geotrichum candidum* lipases I and II, *J. Am. Oil Chem. Soc.*, **96**, 1327-1335.

[550] Martens, U., Böttcher, D., Talbot, D., Bornscheuer, U., Abou-Hassan, A., Delcea, M. (2019), Maghemite nanoparticles stabilize protein corona formed with transferrin presenting different iron-saturation levels, *Nanoscale*, **11**, 16063-16070.

[549] Reisky, L., Préchoux, A., Zühlke, A.K., Bäumgen, M., Robb, C.S., Gerlach, N., Roret, T., Stanetty, C., Larocque, R., Michel, G., Song, T., Markert, S., Unfried, F., Mihovilovic, M.D., Trautwein-Schulz, A., Becher, D., Schweder, T.*, Bornscheuer, U.T.*, Hehemann, J.H.* (2019), A marine bacterial enzymatic cascade degrades the algal polysaccharide ulvan, *Nature Chem. Biol.*, **15**, 803-812.

[548] Tang, Q., Bornscheuer, U.T., Pavlidis, I.V. (2019), Specific residues expand the substrate scope and enhance the regioselectivity of a plant *O*-methyltransferase, *ChemCatChem*, **11**, 3227-3233.

[547] Bornscheuer, UT. (2019), Maßgeschneiderter Proteine durch gerichtete Evolution und Phage Display, *Chem. in unserer Zeit*, **53**, 382-385.

[546] Schwendenwein, D., Ressmann, A.K., Dörr, M., Höhne, M., Mihovilovic, M.D., Bornscheuer, U.T., Rudroff, F., Winkler, M., (2019), Random mutagenesis driven improvement of carboxylate reductase activity using an amino benzamidoxime-mediated high-throughput assay, *Adv. Synth. Catal.*, **361**, 2544-2549.

[545] Ressmann, A.K., Schwendenwein, D., Leonhartsberger, S., Mihovilovic, M.D., Bornscheuer, U.T., Winkler, M., Rudroff, F. (2019), Substrate independent high-throughput assay for the quantification of aldehydes, *Adv. Synth. Catal.*, **361**, 2538-2543.

[544] Matassa, C., Ormerod, D., Bornscheuer, U.T., Höhne, M., Satyawali, Y. (2019), Application of novel high molecular weight amine donors in chiral amine synthesis facilitates integrated downstream processing and provides in situ product recovery, *Proc. Biochem.*, **80**, 17-25.

[543] Zhao, Z.X, Lan, D., Tang, X., Hollmann, F., Bornscheuer, U.T., Yang, B., Wang, Y. (2019), How to break the Janus effect of H_2O_2 in biocatalysis? Understanding inactivation mechanisms to generate more robust enzymes, *ACS Catal.* **9**, 2916-2921.

[542] Palm, G.J., Reisky, L., Böttcher, D., Müller, H., Michels, E., Walczak, M. C., Berndt, L., Weiss, M.S., Bornscheuer, U.T., Weber, G. (2019), Structure of the plastic-degrading *I. sakaiensis* MHETase bound to a substrate, *Nature Commun.*, **10**, 1717.

[541] Stamm, A., Biundo, A., Schmidt, B., Brücher, J., Lundmark, S., Olsen, P., Fogelström, L., Malmström, E., Bornscheuer, U.T., Syren, P.E. (2019), A retrobiosynthesis-based route to generate pinene-derived polyesters, *ChemBioChem*, **20**, 1664-1671.

[540] Bornscheuer, U.T. (2019), (Chemo-) enzymatic cascade reactions, *Z. Naturforsch.*, **74**, 61-62.

[539] Srinivasamurthy, V.S.T., Böttcher, D., Bornscheuer, U.T. (2019), A multi-enzyme cascade reaction for the production of 6-hydroxyhexanoic acid. *Z. Naturforsch.*, **74**, 71-76.

[538] Reisky, L., Srinivasamurthy, V.S.T., Badenhorst, C.P.S., Godehard, S.P., Bornscheuer, U.T. (2019), A novel high-throughput assay enables the direct identification of acyltransferases, *Catalysts*, **9**, 64.

[537] Lee, D.S., Song, J.W., Voß, M., Schuiten, E., Kwon, Y.U., Bornscheuer, U., Park, J.B. (2019) Enzyme cascade reactions for the biosynthesis of long chain aliphatic amines from renewable fatty acids, *Adv. Synth. Catal.*, **361**, 1359-1367.

[536] Aumala, V., Mollerup, F., Jurak, E., Blume, F., Karppi, J., Koistinen, A.E., Schuiten, E., Voß, M., Bornscheuer, U., Deska, J., Master, E.R. (2019), Biocatalytic production of amino-carbohydrates through oxidoreductase and transaminase cascades, *ChemSusChem*, **12**, 848-857.

[535] Chuaboon, L., Wongnate, T., Punthong, P., Lawan, N., Kiattisewee, C., Hsu, C.-Y., Lin, C.H., Bornscheuer, U.T., Chaiyen, P. (2019), One-pot bioconversion of L-arabinose to L-ribulose in an enzymatic cascade, *Angew. Chem. Int. Ed*., **58**, 2428-2432; *Angew. Chem*., **131**, 2450-2454.

[534] Zorn, K., Oroz-Guinea, I., Bornscheuer, U.T. (2019) Strategies for enriching erucic acid from *Crambe abyssinica* oil by improved *Candida antarctica* lipase A variants, *Proc. Biochem.*, **79**, 65-73.

[533] Mattos, M.V.M., Costa I.C.R., de Souza, R.O.M.A., Bornscheuer, U.T. (2019), Biocatalytic cascade reaction for the asymmetric synthesis of L- and D-homoalanine, *ChemCatChem*, **11**, 407-411.

[532] Bornscheuer, U.T., Hauer, B., Jaeger, K.E., Schwaneberg, U. (2019), Directed evolution empowered redesign of natural proteins for the sustainable production of chemicals and pharmaceuticals, *Angew. Chem. Int. Ed*., **58**, 36-40; Gerichtete Evolution ermöglicht das Design von maßgeschneiderten Proteinen zur nachhaltigen Produktion von Chemikalien und Pharmazeutika, *Angew. Chem*., **131**, 36-41.

2018

[531] Voss, M., Das, D., Genz, M., Kumar, A., Kulkarni, N., Kustosz, J., Kumar, P., Bornscheuer, U.T., Höhne, M. (2018), In silico based engineering approach to improve transaminases for the conversion of bulky substrates, *ACS Catal.*, **8**, 11524-11533.

[530] Schaaf, P., Baeyer, T., Koley, M., Schnürch, M., Bornscheuer, U., Rudroff, F., Mihovilovic, M. (2018), Biocompatible metal-assisted C-C cross-coupling combined with biocatalytic chiral reductions in a concurrent tandem cascade, *Chem. Commun*., **54**, 12978-12981.

[529] Robb, C.S, Reisky, S., Bornscheuer, U.T, Hehemann, J.H. (2018), Specificity and mechanism of carbohydrate demethylation by cytochrome P450 monooxygenases, *Biochem. J.*, **475**, 3875-3886.

[528] Dawood, A.W.H., Bassut, J., de Souza, R.O.M.A., Bornscheuer, U.T. (2018) Combination of the Suzuki-Miyaura-cross coupling reaction with engineered transaminases, *Chem. Eur. J*., **24**, 16009-16013.

[527] Zorn, K. Oroz-Guinea, I., Brundiek, H., Dörr, M., Bornscheuer, U.T. (2018) Alteration of chain length selectivity of *Candida antarctica* lipase A by semi-rational design for the enrichment of erucic and gondoic fatty acids, *Adv. Synth. Catal*., **360**, 4115-4131.

[526] Morlock, L.K., Grobe, S., Balke, K., Mauersberger, S., Böttcher, D., Bornscheuer, U.T. (2018), Protein engineering of the progesterone hydroxylating P450-monooxygenase CYP17A1 alters its regioselectivity, *ChemBioChem*, **19**, 1954-1958.

[525] Dawood, A.W.H., Weisz, M.S., Schulz, C., Pavlidis, I.V., Iding, H., de Souza, R.O.M.A., Bornscheuer, U.T. (2018), Isopropylamine as amine donor in transaminase-catalyzed reactions: better acceptance through reaction and enzyme engineering, *ChemCatChem*, **10**, 3943-3949.

[524] Reisky, L., Stanetty, C., Mihovilovic, M.D, Schweder, T., Hehemann, J.H., Bornscheuer, U.T. (2018), Biochemical characterization of an ulvan lyase from the marine flavobacterium *Formosa agariphila* KMM 3901T, *Appl. Microbiol. Biotechnol*., **102**, 6987-6996.

[523] Buß, O., Voß, M., Delavault, A., Gorenflo, P. Syldatk, C., Bornscheuer, U.T., Rudat, J. (2018), β-phenylalanine ester synthesis from stable β-keto ester substrate using engineered ω-transaminases, *Molecules*, **23**, 1211.

[522] Dawood, A.W.H., de Souza, R.O.M.A., Bornscheuer, U.T. (2018), Asymmetric synthesis of chiral halogenated amines using amine transaminases, *ChemCatChem*, **10**, 951-955.

[521] Badenhorst C.P.S., Bornscheuer, U.T. (2018) Getting momentum: from biocatalysis to advanced synthetic biology, *Trends Biochem. Sci.*, **43**, 180-198.

[520] Obitte, N., Zorn, K., Oroz-Guinea, I., Bornscheuer, U.T., Klein, S. (2018), Enzymatically modified shea butter and palm kernel oil as potential lipid drug delivery matrices, *Eur. J. Lipid Sci. Technol.*, **120**, 1700332.

[519] Reisky, L., Büchsenschütz, H.C., Engel, J., Song, T., Schweder, T., Hehemann, J.H., Bornscheuer, U.T. (2018), Oxidative demethylation of algal carbohydrates by cytochrome P450 monooxygenases, *Nature Chem. Biol*., **14**, 342-344.

[518] Rudroff, F., Mihovilovic, M.D., Gröger, H., Snajdrova, R., Iding, H., Bornscheuer, U.T. (2018), Opportunities and challenges for combining chemo- and biocatalysis, *Nature Catal*. **1**, 12-22.

[517] Balke, K., Beier, A., Bornscheuer, U.T. (2018), Hot spots in the protein engineering of Baeyer-Villiger monooxygenases, *Biotechnol. Adv.*, **36**, 247-263.

[516] Morlock, L.K., Böttcher, D., Bornscheuer, U.T. (2018), Simultaneous detection of NADPH consumption and H_2O_2 production using the Ampliflu Red assay for screening of P450 activities and uncoupling, *Appl. Microbiol. Biotechnol*., **102**, 985-994.

[515] Bordewick, S. Beier, A, Balke, K., Bornscheuer, U.T. (2017), Baeyer-Villiger monooxygenases from *Yarrowia lipolytica* catalyze preferentially sulfoxidations, *Enzyme Microb. Technol*, **109**, 31-42.

[514] Kohl, A., Srinivasamurthy, V., Böttcher, D., Kabisch, J., Bornscheuer, U.T. (2017), Co-expression of an alcohol dehydrogenase and a cyclohexanone monooxygenase for cascade reactions facilitates the regeneration of the NADPH cofactor, *Enzyme Microb. Technol.*, **108**, 53-58.

[513] Bornscheuer, U.T. (2018), Lipid modification by enzymes and engineered microbes, AOCS Press/Academic Press, London ISBN: 978-0-1281-3167-1.

[512] Bornscheuer, U.T. (2018), Enzymes in lipid modification, *Ann. Rev. Food Sci. Technol.*, **9**, 85-103.

[511] Bornscheuer, U.T. (2018), The 4th wave of biocatalysis is approaching, *Phil. Trans. R. Soc. A.,* **376**, 20170063.

[510] Bornscheuer, U.T., Höhne, M. (Eds.) (2018) *Protein Engineering*, *Meth. Mol. Biol.*, **Vol. 1685**, Humana Press, New York, ISBN 978-1-4939-7364-4, DOI: 10.1007/978-1-4939-7364-4

[509] Schmidt, S., Dörr, M., Bornscheuer, U.T. (2018), Library growth and protein expression: optimal and reproducible microtiter plate expression of recombinant enzymes in *E. coli* using MTP shakers. In: *Meth. Mol. Biol.*, **1685**, 145-156, Bornscheuer, U.T., Höhne, M. (Eds.), *Protein Engineering*, Humana Press, New York.

[508] Dörr, M., Bornscheuer, U.T. (2018), Program-guided design of high-throughput enzyme screening experiments and automated data analysis/evaluation. In: *Meth. Mol. Biol.*, **1685**, 269-282, Bornscheuer, U.T., Höhne, M. (Eds.), *Protein Engineering*, Humana Press, New York.

[507] Santos-Aberturas, J., Dörr, M., Bornscheuer, U.T. (2018), Normalized screening of protein engineering libraries by split-GFP crude cell extract quantification. In: *Meth. Mol. Biol.*, **1685**, 157-170, Bornscheuer, U.T., Höhne, M. (Eds.), *Protein Engineering*, Humana Press, New York.

[506] Weiß, M., Bornscheuer, U.T., Höhne, M. (2018), Solid phase agar plate assay for screening amine transaminases. In: *Meth. Mol. Biol.*, **1685**, 283-296, Bornscheuer, U.T., Höhne, M. (Eds.), *Protein Engineering*, Humana Press, New York.

2017

[505] Calvelage, S., Dörr, M., Höhne, M., Bornscheuer, U.T. (2017), A systematic analysis of the substrate scope of (*S*)- and (*R*)-selective amine transaminases, *Adv. Synth. Catal*., **359**, 4235-4243.

[504] Costa, I.C.R., de Souza, R.O.M.A., Bornscheuer, U.T. (2017), Asymmetric synthesis of serinol-monoesters catalyzed by amine transaminases, *Tetrah.: Asymmetry*, **28**, 1183-1187.

[503] de Souza, R.O.M.A., Miranda, L.S.M., Bornscheuer, U.T. (2017), A retrosynthetic approach for biocatalysis in organic synthesis, *Chem. Eur. J.*, **23**, 12040-12063.

[502] Balke, K., Bäumgen, M., Bornscheuer, U.T. (2017) Controlling the regioselectivity of Baeyer-Villiger monooxygenases by mutation of active site residues, *ChemBioChem*, **8**, 1627-1638.

[501] Milker, S., Fink, M.J., Oberleitner, N., Ressmann, A.K., Mihovilovic, M.D., Bornscheuer, U.T., Rudroff, F. (2017) Kinetic modeling of an enzymatic redox cascade *in vivo* reveals cofactor-caused bottlenecks, *ChemCatChem*, **9**, 3420-3427.

[500] Stein, N., Gumataotao, N., Hajnas, N., Wu, R., Lankathilaka, K.P., Bornscheuer, U.T., Liu, D., Fiedler, A.T., Holz, R.C., Bennett, B. (2017), Multiple states of nitrile hydratase from *Rhodococcus equi* TG328-2: Structural and mechanistic insights from EPR and DFT studies, *Biochemistry*, **56**, 3068-3077.

[499] Kotapati, H.K., Robinson, J.D., Lawrence, D.R., Fortner, K.R., Stanford, C.W., Powell, D.R., Wardenga, R., Bornscheuer, U.T., Masterson, D.S. (2017), Diastereoselective hydrolysis of branched malonate diesters by porcine liver esterase: synthesis of 5-benzyl substituted C^{α}-methyl-β-proline, *Eur. J. Org. Chem.*, 3009-3016.

[498] van den Bergh, T., Tamo, G., Nobili, A., Tao, Y., Tan, T., Bornscheuer, U.T., Kuipers, R.R.K.P., Vroling, B., de Jong, R., Subramanian, V., Schaap, P.J., Desmet, T., Niedetzky, B., Vriend, G., Joosten, H.J. (2017) CorNet: Assigning function to networks of co-evolving residues by automated literature mining, *PLOS One*, **12**, e0176427.

[497] Schwarte, A., Genz M., Skalden, L., Nobili, A., Vickers, C., Melse, O., Kuipers, R., Joosten, H.J., Stourac, J., Bendl, J., Black, J., Baakman, C., Damborsky, J., Bornscheuer, U., Vriend, G., Venselaar, H. (2017) NewProt – a protein engineering portal, *Prot. Eng. Des. Sel.*, **30**, 441-447.

[496] Weiß, M.S., Pavlidis, I.V., Genz., M., Spurr, P., Hanlon, S.P., Wirz, B. Iding, H., Bornscheuer, U.T. (2017), Amine transaminase engineering for spatially bulky substrate acceptance, *ChemBioChem*, **18**, 1022-1026.

[495] Scherkus, C., Schmidt, S., Bornscheuer, U., Gröger, H., Kara, S., Liese, A. (2017) Kinetic insights into ε-caprolactone synthesis: improvement of an enzymatic cascade reaction, *Biotechnol. Bioeng.*, **114**, 1215-1221.

[494] Zühlke, M.K., Schlüter, R., Mikolasch, A., Zühlke, D., Giersberg, M., Schindler, H., Henning, A.K., Frenzl, H., Hammer, E., Lalk, M., Bornscheuer, U.T., Riedel, K., Kunze, G., Schauer, F. (2017), Biotransformation and reduction of estrogenicity of bisphenol A by the biphenyl-degrading *Cupriavidus basilensis*, *Appl. Microbiol. Biotechnol.*, **101**, 3743-3758.

[493] Bornscheuer, U.T., Hashmi, A.S.K., Garcia, H., Rowan, M.A. (2017), Catalysis at the heart of success!, *ChemCatChem*, **9**, 6-9.

[492] Wedde, S., Rommelmann, P., Scherkus, C., Schmidt, S., Bornscheuer, U.T., Liese, H., Gröger H. (2017), An alternative approach towards poly-ε-caprolactone through a chemoenzymatic synthesis: combined hydrogenation, bio-oxidations and polymerization without isolation of intermediates, *Green Chem.*, **19**, 1286-1290.

[491] Böttcher, D., Zägel, P., Schmidt, M., Bornscheuer, U.T. (2017), A microtiter plate-based assay to screen for active and stereoselective hydrolytic enzymes in enzyme libraries, *Meth. Mol. Biol.*, **1539**, 197-204.

[490] Rudroff, F., Fink, M.J., Pydi, R., Bornscheuer, U.T., Mihovilovic, M.D. (2017), First chemo-enzymatic synthesis of the (*R*)-Taniguchi lactone and substrate profiles of CAMO and OTEMO, two new Baeyer-Villiger monooxygenases, *Chem. Month.*, **148**, 157-165.

[489] Joo, J.C., Khusnutdinova, A.N., Flick, R., Kim, T., Bornscheuer, U.T., Yakunin, A.F., Mahadevan, R. (2017), Alkene hydrogenation activity of enoate reductases for an environmentally benign biosynthesis of adipic acid, *Chem. Sci.*, **8**, 1406-1413.

[488] Oberleitner, N., Ressmann, A.K., Bica, K., Gärtner, P., Fraaije, M.W., Bornscheuer, U.T., Rudroff, F., Mihovilovic, M. D. (2017) From waste to value - Direct utilization of limonene from orange peel in a biocatalytic cascade reaction towards chiral carvolactone, *Green Chem.*, **19**, 367-371.

[487] Knight, A.M., Nobili, A., van den Bergh, T., Genz, M., Joosten, H.J., Albrecht, D., Riedel, K., Pavlidis, I.V., Bornscheuer, U.T. (2017), Bioinformatic analysis of fold-type III PLP-dependent enzymes discovers multimeric racemases, *Appl. Microbiol. Biotechnol*., **101**, 1499-1507.

[486] Bornscheuer, U.T., Kourist, R. (2017), Evolving enzymes for biocatalysis. In: Consequences of Microbial Interactions with Hydrocarbons, Oils, and Lipids: Production of Fuels and Chemicals Lee, S.Y. (Ed.), Springer, Berlin, pp. 1-17.

[485] Peters, C., Rudroff, F., Mihovilovic, M.D., Bornscheuer, U.T. (2017), Fusion proteins of an enoate reductase and a Baeyer-Villiger monooxygenase facilitate the synthesis of chiral lactones, *Biol. Chem.* **398**, 31-37.

[484] Reimer, A., Wedde, S., Staudt, S., Schmidt, S., Höffer, D., Hummel, W., Kragl, U., Bornscheuer, U., Gröger, H. (2017), Process development through solvent engineering in the biocatalytic synthesis of the heterocyclic bulk chemical ε-caprolactone, *J. Heterocycl. Chem*., **54**, 391-396.

[483] Buchholz, K., Bornscheuer, U.T. (2017), History and current trends, in: *Enzyme Technology* (Ed. Yoshida, T.), Wiley Biotechnology Series, pp. 11-46.

[482] Bornscheuer, U.T., Hashmi, A.S.K., Garcia, H., Rowan, M.A. (2017), Catalysis at the heart of success!*, ChemCatChem*, **9**, 6-9.

2016

[481] Cuetos, A., Steffen-Munsberg, F., Mangas Sanchez, J., Frese, A., Bornscheuer, U.T., Höhne, M., Grogan**,** G. (2016), Structural basis for phospholyase activity of a Class III transaminase homolog, *ChemBioChem*, **17**, 2308-2311.

[480] Beier, A., Bordewick, S., Genz, M., Schmidt, S., van den Bergh, T., Peters, C., Joosten, H.J., Bornscheuer, U.T. (2016), Switch in cofactor specificity of a Baeyer-Villiger Monooxygenase, *ChemBioChem*, **17**, 2312-2315.

[479] Bornscheuer, U. T. (2016), A radical change in enzyme catalysis, *Nature*, **540**, 345-346.

[478] Bornscheuer, U. T. (2016), Handing over a safe sailing boat, *Eur. J. Lipid Sci. Technol.*, **118**, 1799.

[477] Weiß, M.S., Pavlidis, I.V., Genz., M., Spurr, P., Hanlon, S.P., Wirz, B. Iding, H., Bornscheuer, U.T. (2016), Protein-engineering of an (*S*)-amine transaminase for the asymmetric synthesis of a pharmaceutically relevant bicyclic amine, *Org. Biol. Chem*., **14**, 10249-10254.

[476] Scherkus, C., Schmidt, S., Bornscheuer, U., Gröger, H., Kara, S., Liese, A. (2016) A fed-batch synthetic strategy for a multi-enzymatic synthesis of poly-ε-caprolactone, *ChemCatChem*, **8**, 3446-3452

[475] Pavlidis, I.V, Gall, M., Geissler, T., Gross, E., Bornscheuer, U.T. (2016) Flavonoid biotechnology - new ways to high-added value compounds, Wiley, Weinheim.

[474] Genz, M., Melse, O., Schmidt, S., Vickers, C., Dörr, M., van den Bergh, T., Joosten, H.J., Bornscheuer, U.T. (2016), Engineering the amine transaminase from *Vibrio fluvialis* towards branched-chain substrates, *ChemCatChem*, **8**, 3199-3202.

[473] Bauch, M., Böttcher, D., Bornscheuer, U.T., Linker, T. (2016), Enzymatic cleavage of aryl acetates, *ChemCatChem*, **8**, 2853-2857.

[472] Song, J.W., Woo, J.M., Jung, G. Y., Bornscheuer, U.T., Park, J.B. (2016), 3'-UTR engineering to improve soluble expression and fine-tuning of activity of cascade enzymes in *Escherichia coli*, *Sci. Reports*, **6**, 29406.

[471] Pavlidis, I.V., Weiß, M.S., Genz., M., Spurr, P., Hanlon, S.P., Wirz, B. Iding, H., Bornscheuer, U.T. (2016), Identification of (*S*)-selective transaminases for the asymmetric synthesis of bulky chiral amines, *Nature Chem.*, **8**, 1076-1082.

[470] Hinze, J., Süss, P., Bornscheuer, U.T., Wardenga, R., von Langermann, J. (2016), Recombinant pig liver esterase-catalyzed synthesis of (1*S*,4*R*)-4-hydroxy-2-cyclopentenyl acetate combined with subsequent enantioselective crystallization, *Org. Proc. Res. Dev.*, **20**, 1258-1264.

[469] Zorn, K., Oroz-Guinea, I., Brundiek, B., Bornscheuer, U.T. (2016), Engineering and application of enzymes for lipid modification, an update, *Prog. Lipid Res.*, **63**, 153-164.

[468] Last, D., Krüger, G.H.E., Dörr, M. Bornscheuer, U.T. (2016), Fast, continuous and high-throughput (bio)chemical activity assay for *N*-acyl-L-homoserine lactone quorum quenching enzymes, *Appl. Environm. Microbiol.*, **82**, 4145-4154.

[467] Dörr, M., Böttcher, D., Bornscheuer U.T. (2016), Automatisiertes Protein-Hochdurchsatzscreening: Wie Roboter auf der Suche nach neuen Enzymen helfen, *GIT*, Febr., 30-32.

[466] Steffen-Munsberg, F., Matzel, P., Sowa, M., Berglund, P., Bornscheuer, U.T., Höhne, M. (2016), *Bacillus anthracis* ω-amino acid:pyruvate transaminase employs a different mechanism for dual substrate recognition than other amine transaminases, *Appl. Microb. Biotechnol.*, **100**, 4511-4521.

[465] Bornscheuer, U., Hanlon, S.P., Iding, H., Pavlidis, I., Spurr, P., Weiss, M.S. Wirz, B. (2016) Mutant transaminases as well as methods and uses relating thereto, PCT Patent Application, WO2016/166120; US 2016/0304843.

[464] Bornscheuer, U.T. (2016), Feeding on plastic, *Science*, **351**, 1155-1156.

[463] de Souza, S. P., Junior, I. I., Miranda, L.S.M., Santiago, M.F. Lam,, F.L.Y. Dawood, A., Bornscheuer, U.T., de Souza, R.O.M.A. (2016), Cellulose as an efficient matrix for lipase and transaminase immobilization, *RSC Adv.*, **6**, 6665-6671.

[462] Dörr, M., Fibinger, M.P.C., Last, D., Schmidt, S., Santos-Aberturas, J., Vickers, C., Voss, M., Bornscheuer, U.T. (2016), Fully automatized high-throughput enzyme library screening using a robotic platform, *Biotechnol. Bioeng*. **113**, 1421-1432.

[461] Oberleitner, N., Peters, C., Muschiol, J., Rudroff, F. S., Mihovilovic, M.D., Bornscheuer, U.T., (2016), Three enzyme-catalyzed redox cascade for the production of a carvo-lactone. In: Practical Methods in Biocatalysis and Biotransformations, Sutton, P., Whittall, J. (Eds.), Wiley-VCH, Weinheim, 222-226.

[460] Kourist, R. Herter, S., Bornscheuer, U.T. (2016), Identification of new biocatalysts for the enantioselective conversion of tertiary alcohols. In: Practical Methods in Biocatalysis and Biotransformations, Sutton, P., Whittall, J. (Eds.), Wiley-VCH, Weinheim, 58-60.

[459] Fibinger, M.P.C., von Saß, J., Herrfurth, C., Feussner, I., Bornscheuer, U.T. (2016), The putative linoleate isomerase of *Lactobacillus acidophilus* does neither exhibit isomerase nor hydratase activity, *Eur. J. Lipid Sci. Technol.*, **118**, 841-848.

[458] Last, D., Müller, J., Dawood, A.W.H., Moldenhauer, E.J., Pavlidis, I.P., Bornscheuer, U.T. (2016), Highly efficient and easy protease-mediated protein purification, *Appl. Microb. Biotechnol.*, **100**, 1945-1953.

[457] Bornscheuer, U.T. (2016), Beating the odds, *Nature Chem. Biol.*, **12**, 54-55.

[456] Bornscheuer, U.T. (2016), Biocatalysis: successfully crossing boundaries, *Angew. Chem. Int. Ed.*, **55**, 4372-4373; Biokatalyse: ein erfolgreicher Blick über den Tellerrand, *Angew. Chem.*, **128**, 4446-4447.

[455] Skalden, L., Peters, C., Ratz, L., Bornscheuer, U. T. (2016), Synthesis of (1*R*,3*R*)-1-amino-3-methylcyclohexane by an enzyme cascade reaction, *Tetrahedron*, **72**, 7207-7211.

[454] Choojit, S., Bornscheuer, U.T., Kittikun, A. (2016), Efficient phosphatidylserine synthesis by a phospholipase D from *Streptomyces* sp. SC734 isolated from soil contaminated palm oil, *Eur. J. Lipid Sci. Technol.*, **118**, 803-813.

[453] Balke, K., Schmidt, S., Genz, M., Bornscheuer, U.T. (2016), Switching the regioselectivity of a cyclohexanone monooxygenase towards (+)-*trans*-dihydrocarvone by rational protein design, *ACS Chem. Biol.*, **11**, 38-43.

2015

[452] Süss, P., Borchert, S., Hinze, J., Illner, S., von Langermann, J., Kragl, U., Wardenga, R., Bornscheuer, U.T. (2015), Chemoenzymatic sequential multistep one-pot reaction for the synthesis of (1*S*,2*R*)-1-(methoxycarbonyl)cyclohex-4-ene-2-carboxylic acid with recombinant pig liver esterase, *Org. Proc. Res. Dev.*, **19**, 2034-2038.

[450] Genz, M., Vickers, C., van den Bergh, T., Joosten, H.J., Dörr, M., Höhne, M., Bornscheuer, U.T. (2015), Alteration of the donor/acceptor spectrum of the (*S*)-amine transaminase from *Vibrio fluvialis*, *Int. J. Mol. Sci.*, **16**, 26953-26963.

[449] Wang, Y., Guo, S., Xu, J., Pavlidis, I., Lan, D., Bornscheuer, U., Liu, J. (2015), Structure of product-bound SMG1 lipase: active site gating implications, *FEBS J.*, **282**, 4538-4547.

[448] Smith, M., Fibinger, M., Bornscheuer, U.T., Masterson, D. (2015), An investigation of the interaction of co-solvent with substrates in the pig liver esterase catalyzed hydrolysis of malonate esters, *ChemCatChem*, **7**, 3179-3185.

[443] Santos-Aberturas, J., Dörr, M., Waldo, G.S., Bornscheuer, U.T. (2015), In-depth high-throughput screening of protein engineering libraries by split-GFP direct crude cell extract data normalization, *Chem. Biol.*, **22**, 1406-1414.

[442] Schmidt, S., Büchsenschütz, H.C., Scherkus, C., Liese, A., Gröger, H., Bornscheuer, U.T. (2015), Biocatalytic access to chiral polyesters by an artificial enzyme cascade synthesis, *ChemCatChem*, **7**, 3951-3955.

[441] Müller, J., Sowa, M.A., Dörr, M., Bornscheuer, U.T. (2015), The acyltransferase activity of lipase CAL-A allows efficient fatty acid esters formation from plant oil even in an aqueous environment, *Eur. J. Lipid Sci. Technol.*, **117**, 1903-1907.

[440] Isupov, M.N., Schröder, E., Gibson, R.P., Beecher, J., Donadio, G., Saneei, V., Dcunha, S.A., McGhie, E.J., Sayer, C., Davenport, C.F., Lau, P.C., Hasegawa, Y., Iwaki, H., Kadow, M., Balke, K., Bornscheuer, U.T., Bourenkov, G., Littlechild, J.A. (2015), The oxygenating constituent of 3,6-diketocamphane monooxygenase from the CAM plasmid of *Pseudomonas putida*: the first crystal structure of type II Baeyer-Villiger monooxygenase, *Acta Cryst., Sect. D*, **D71**, 2344–2353.

[439] Fibinger, M.P.C., Davids, T., Böttcher, D., Bornscheuer, U.T. (2015), A selection assay for haloalkane dehalogenase activity based on toxic substrates, *Appl. Microb. Biotechnol*, **99,** 8955-8962.

[438] Schmidt, S., Genz, M., Balke, K., Bornscheuer, U.T. (2015), The effect of disulfide bond introduction and related Cys/Ser mutations on the stability of a cyclohexanone monooxygenase, *J. Biotechnol.*, **214**, 199-211.

[437] Schmidt, S., Bornscheuer, U.T., Menyes, U., Wardenga, R., Borchert, S., Process for the production of polyesters using an enzyme cascade of alcohol dehydrogenase, cyclohexanone monooxygenase and lipase A. Patent Application, EP 2899280; WO 2015113848

[436] Bornscheuer, U.T., Nielsen, A.T. (2015), Interdisciplinary concepts for modern biotechnological production of biochemicals and biofuels, *Curr. Opin. Biotechnol.*, **35**, 133-134.

[435] Bornscheuer, U.T. (2015), Discovery, engineering and application of enzymes in lipid modification, *INFORM*, **26**, 468-471.

[434] Müller, J., Sowa, M.A., Fredrich, B., Brundiek, H., Bornscheuer, U.T. (2015), Enhancing the acyltransferase activity of *Candida antarctica* lipase A by rational design, *ChemBioChem*, **16,** 1791-1796.

[433] Kohls, H. Anderson, M., Dickerhoff, J., Weisz, K., Córdova, A., Berglund, P., Brundiek, H., Bornscheuer, U.T., Höhne, M. (2015), Selective access to all four diastereomers of an 1,3-amino alcohol by combination of a keto reductase- and an amine transaminase-catalysed reaction, *Adv. Synth. Catal.*, **357**, 1808-1814.

[432] Lan, D., Popowicz, G.M., Pavlidis, I.V., Zhou P., Bornscheuer, U.T., Wang, Y. (2015) Conversion of a mono- and diacylglycerol lipase into a triacylglycerol lipase by protein engineering, *ChemBioChem*, **16**, 1431-1434.

[431] Byström, E. Scherman, H., Bornscheuer, U., Irgum K. (2015), Immobilization of enzymes or cells on a rotating flow distributor for efficient chemical or biological transformation. PCT Patent Application, WO2915050491.

[430] Jeon, Y.' Baek, A.H., Bornscheuer, U.T., Park, J.B. (2015), Enzyme fusion for whole-cell biotransformation of long chain *sec*-alcohols into esters, *Appl. Microbiol. Biotechnol*., **99,** 6267-6275.

[429] Skalden, L., Peters, C., Dickerhoff, J., Nobili, A., Joosten, H.J., Weisz, K., Höhne,M., Bornscheuer, U.T. (2015), Two subtle amino acid changes in a transaminase substantially enhance or invert enantiopreference in cascade syntheses, *ChemBioChem*, **16,** 1041-1045.

[428] Nobili, A., Tao, Y, Pavlidis, I.V., van den Bergh, T., Joosten, H.-J., Tan, T., Bornscheuer, U.T. (2015), Simultaneous use of *in silico* design and a correlated mutation network as a tool to efficiently guide enzyme engineering, *ChemBioChem*, **16,** 805-810.

[427] Steffen-Munsberg, F., Vickers, C., Kohls, H., Land, H., Mallin, H., Nobili, A., Skalden, L., van den Bergh, T., Joosten, H.-J., Berglund, P., Höhne, M., Bornscheuer, U.T. (2015), Bioinformatic analysis of a PLP-dependent enzyme superfamily suitable for biocatalytic applications, *Biotechnol. Adv.*, **33**, 566-604.

[426] Thomsen, M., Tuukkanen, A., Dickerhoff, J., Palm, G.J., Kratzat, H. Svergun, D., Weisz, K., Bornscheuer, U.T., Hinrichs, W. (2015), Structure and catalytic mechanism of the evolutionarily unique bacterial chalcone isomerase, *Acta Cryst. Sect. D.*, **D71**, 907-917.

[425] Dörr, M., Böttcher, D., Hummel, A., Höhne, M., Bornscheuer, U.T. (2015), Eine Roboterplattform für das Hochdurchsatz-Screening von Biokatalysatoren, *Biospektrum*, **21**, 230-231.

[424] Bornscheuer, U.T. (2015), Protein-Engineering in der Biokatalyse, *Biospektrum*, **21**, 112-113.

[423] Nobili, A., Steffen-Munsberg, F., Kohls, H., Trentin, I., Schulzke, C., Höhne, M., Bornscheuer, U.T. (2015), Engineering the active site of the amine-transaminase from *Vibrio fluvialis* for the asymmetric synthesis of aryl-alkyl amines and amino alcohols, *ChemCatChem*, **7,** 757-760.

[422] Schmidt, S., Scherkus, C., Muschiol, J., Menyes, U., Winkler, T., Hummel, W., Gröger, H., Liese, A., H.-G. Herz, Bornscheuer, U.T. (2015), An enzyme cascade synthesis of ε-caprolactone and its oligomers, *Angew. Chem. Int. Ed*., **54**, 2784-2787; Eine Enzymkaskade zur Synthese von ε-Caprolacton und dessen Oligomeren, *Angew. Chem.*, **127**, 2825-2828.

[421] Muschiol, J., Peters, C., Oberleitner, N., Mihovilovic, M.D., Bornscheuer, U.T., Rudroff, F. (2015), Cascade catalysis – strategies and challenges en route to preparative synthetic biology, *Chem. Comm.*, **51,** 5798-5811.

[420] Oh, H.J., Kim, S.U., Song, J.W., Lee, J.H., Kang, W.R., Jo, Y.S., Kim, K.R., Bornscheuer, U.T., Oh, D.K., Park, J.B. (2015), Biotransformation of linoleic acid into hydroxy fatty acids and carboxylic acids using a linoleate double bond hydratase as key enzyme, *Adv. Synth. Catal.*, **357**, 408-416.

[419] Santos-Aberturas, J., Engel, J., Dickerhoff, J., Dörr, M., Rudroff, F., Weisz, K., Bornscheuer U.T. (2015), Exploration of the substrate promiscuity of biosynthetic tailoring enzymes as a new source of structural diversity for polyene macrolide antifungals, *ChemCatChem*, **7**, 490-500.

[418] Skalden, L., Thomsen, M., Höhne, M., Bornscheuer, U.T., Hinrichs, H. (2015), Structural and biochemical characterization of the dual substrate recognition of the (*R*)-selective amine transaminase from *Aspergillus fumigatus*, *FEBS J*., **282**, 407-415.

[417] Schwenteit, J.M., Weber, B., Milton, D.L., Bornscheuer, U.T., Gudmundsdottir. B.K. (2015), Construction of *Aeromonas salmonicida* subsp. *achromogenes* AsaP1-toxoid strains and study of their ability to induce immunity in Arctic charr (*Salvelinus alpinus*, L.), *J. Fish Disease*, **38**, 891-900.

2014

[416] Beier, A., Hahn, V., Bornscheuer, U.T., Schauer, F. (2014), Metabolism of alkenes and ketones by *Candida maltosa* and related yeasts, *AMB Express*, **4**, http://www.amb-express.com/content/4/1/75.

[415] Lee, Y.A., Jeon, E.Y., Song, J.W., Bornscheuer, U.T., Park, J.B. (2014), Engineering the substrate binding domain of an esterase enhances hydrolytic activity towards fatty acid esters, *Proc. Biochem.*, **49**, 2101-2016.

[414] Weiss, S.A., Pavlidis, I., Vickers, C., Höhne, M., Bornscheuer, U.T. (2014), A glycine oxidase based high-throughput solid-phase-assay for substrate profiling and directed evolution of (*R*)- and (*S*)-selective amine transaminases, *Anal. Chem.*, **86**, 11847-11853.

[413] Thomsen, M., Bornscheuer U.T., Hinrichs, W., Gross, E., Ley, J., Geissler, T. Process for the biotechnological production of flavanonglycoside dihydrochalcones (2014), European Patent Application EP2963109.

[412] Bornscheuer, U.T. (2014), Enzymes in lipid modification: past achievements and current trends, *Eur. J. Lipid Sci. Technol.*, **116**, 1322-1331.

[411] Süss, P., Illner, S., von Langermann, J., Borchert, S., Wardenga, R. Bornscheuer, U.T., Kragl, U. (2014), Scale-up of a recombinant pig liver esterase-catalyzed desymmetrization of dimethyl-cyclohex-4-ene-*cis*-1,2-dicarboxylate, *Org. Proc. Res. Dev.*, **18**, 897-903.

[410] Mallin, H., Höhne, M., Bornscheuer, U.T. (2014), Immobilization of (*R*)- and (*S*)-amine transaminases on chitosan support and their application for amine synthesis using isopropylamine as donor, *J. Biotechnol.*, **191**, 32-37.

[409] Oberleitner, N., Peters, C., Rudroff, F., Bornscheuer, U.T., Mihovilovic, M.D. (2014), *In vitro* characterization of an enzymatic redox cascade composed of an alcohol dehydrogenase, enoate reductases and a Baeyer-Villiger monooxygenase, *J. Biotechnol.*, **192**, 393-399.

[408] Bornscheuer, U.T., Buchholz, K., Seibel, J. (2014), Enzymatic degradation of (ligno-)celluloses, *Angew. Chem. Int. Ed.*, **53**, 10876-10893; Enzymatischer Abbau von (Ligno-)cellulose, *Angew. Chem.*, **126**, 11054-11073.

[407] Pavlidis, I.V. Patila, M. Bornscheuer, U.T., Bournis, D., Stamatis, H. (2014), Graphene-based nanobiocatalytic systems: Recent advances and future prospects, *Trends Biotechnol.*, **32**, 312-320.

[406] Moore, J.C., Bornscheuer, U.T. (2014), Riding the third wave of biocatalysis, *Curr. Opin. Chem. Biol.,* **19**, v-vi.

[405] Beller, M., Bornscheuer, U.T. (2014), CO_2 fixation through hydrogenation by chemical or enzymatic methods, *Angew. Chem. Int. Ed.*, **53**, 4527-4528; Fixierung von CO_2 durch Hydrierung mit chemischen oder enzymatischen Methoden, *Angew. Chem.*, **126**, 4615-4617.

[404] Song, J.W., Lee, J.H., Bornscheuer, U.T., Park, J.B. (2014), Microbial synthesis of medium chain α,ω-dicarboxylic acids and ω-aminocarboxylic acids from renewable long chain fatty acids, *Adv. Synth. Catal.,* **356**, 1782-1788.

[403] Schmidt, S., Bornscheuer, U.T., Menyes, U., Wardenga, R., Borchert, S., Process for the enzymatic production of oligo-/polyesters. Patent Application, EP14152848.

[402] Thomsen, M., Skalden, L., Palm, G.J., Höhne, M., Bornscheuer, U.T., Hinrichs, W. (2014), Crystallographic characterization of the (*R*)-selective amine transaminase from *Aspergillus fumigatus*, *Acta Cryst. Section D.*, **70**, 1086-1093.

[401] Hilmer, J.M., Gross, E., Krammer G., Ley, J.P., Gall, M., Bornscheuer, U.T., Thomsen, M., Peters, C., Jonczyk, P., Beutel, S., Scheper, T. (2014) Method for the biotechnological manufacture of dihydrochalcones, Patent Application. EP 2692729, DE 102012213492.

[400] Peters, C., Kölzsch, R., Kadow, M., Skalden, L., Rudroff, F., Mihovilovic, M.D., Bornscheuer, U.T. (2014), Identification, characterization and application of three enoate reductases from *P. putida* in *in vitro* enzyme cascade reactions, *ChemCatChem*, **6**, 1021-1027.

[399] Hackenschmidt, S., Moldenhauer, E.V., Behrens, G.A., Gand, M., Pavlidis, I.V., Bornscheuer, U.T. (2014), Enhancement of promiscuous amidase activity of a *Bacillus subtilis* esterase by formation of a π-π-network, *ChemCatChem*, **6**, 1015-1020.

[398] Kadow, M., Balke, K., Willetts, A., Bornscheuer, U.T., Bäckvall, J.E. (2014), Functional assembly of camphor converting two-component Baeyer-Villiger monooxygenases with a flavin reductase from *E. coli.*, *Appl. Microb. Biotechnol.*, **98**, 3975-3986.

[397] Gall, M., Thomsen, M., Peters, C., Pavlidis, I.V., Jonczyk, P., Grünert, P.P., Beutel, S., Scheper, T., Gross, E., Backes, M., Ley, J.P., Hilmer, J.M., Krammer, G., Geissler, T., Palm, G., Hinrichs, W., Bornscheuer, U.T. (2014), Enzymatic conversion of flavonoids using bacterial chalcone isomerase and enoate reductase, *Angew. Chem. Int. Ed.,* **53**, 1439-1442; Enzymatische Umsetzung von Flavonoiden mit einer bakteriellen Chalconisomerase und einer Enoatreduktase, *Angew. Chem*., **126**, 1463-1466.

[396] Hidalgo, A., Schließmann, A., Bornscheuer, U.T (2014), One-pot, simple methodology for cassette randomization and recombination for focused directed evolution (OSCARR), *Methods Mol. Biol*., **1179**, 207-212.

[395] Kourist, R., Bornscheuer, U.T. (2017), Biocatalysis, in: *Applied Homogenous Catalysis with Organometallic Compounds* (Eds. Cornils, B., Hermann, W.A., Beller, M., Renken, A., Paciello, R.), Wiley-VCH, Weinheim, ISBN 978-3-527-32897-0.

[394] Müller, J., Fredrich, B., Kohlmann, C., Maksym, L., Bornscheuer, U.T. (2014), A high-throughput assay for the determination of acyltransferase activity of lipase CAL-A, *Eur. J. Lipid Sci. Technol.*, **116**, 232-236.

[393] Gall, M., Nobili, A., Pavlidis, I.V., Bornscheuer, U.T. (2014), Improved thermostability of a *Bacillus subtilis* esterase by domain exchange, *Appl. Microb. Biotechnol.*, **98**, 1719-1726.

[392] Höhne, M., Bornscheuer, U.T. (2014), Protein engineering from 'scratch' is maturing, *Angew. Chem. Int. Ed*., **53**, 1200-1202; Protein engineering aus dem "Nichts" wird praktikabel, *Angew. Chem*., **126**, 1222-1224.

2013

[391] Thomsen, M. Skalden, L., Palm, G., Höhne, M., Bornscheuer, U.T., Hinrichs, W. (2013), Crystallization and preliminary X-ray diffraction studies of the (*R*)-selective amine transaminase from *Aspergillus fumigatus*, Ac*ta Cryst. Sect. F*., **69**, 1415-1417.

[390] Leipold F., Rudroff, F., Mihovilovic, M.D., Bornscheuer, U.T. (2013), The steroid monooxygenase from *Rhodococcus rhodochrous* – a versatile biocatalyst, *Tetrahedron: Asymmetry*, **24**, 1620-1624.

[389] Mallin, H., Muschiol, J., Byström, E., Bornscheuer, U.T. (2013), Efficient biocatalysis with immobilized enzymes or encapsulated whole cell microorganism using the SpinChem® reactor system, *ChemCatChem*, **5**, 3529-3532.

[388] Oberleitner, N., Peters, C., Muschiol, J. , Kadow, M., Saß, S., Bayer, T., Schaaf, P., Iqbal, N., Rudroff, F., Mihovilovic, M.D., Bornscheuer, U.T. (2013), An enzymatic toolbox for cascade reactions: a showcase for an *in vivo* redox sequence in asymmetric synthesis, *ChemCatChem*, **5**, 3524-3528.

[387] Bornscheuer, U., Brundiek, H., Evitt, A., Sass, S., Boenisch, F., Kourist, R. (2013), Polynucleotides, vectors, and host cells expressing improved lipase variants, US Patent Application, US20130196411.

[386] Bornscheuer, U., Brundiek, H., Evitt, A., Sass, S., Boenisch, F., Kourist, R. (2013), Reduced-fat foodstuffs and cooking oils, and methods for making the same, US Patent Application, US20130171321.

[385] Schwenteit, J.M., Breithaupt, A., Teifke, J.P. Koppang, E.O., Bornscheuer, U.T., Fischer, U., Gudmundsdottir. B.K. (2013), Innate and adaptive immune response of Arctic charr (*Salvelinus alpinus*, L.) during bacterial infection with *A. salmonicida* subsp. *achromogenes* and the effect of the AsaP1 toxin, *Fish Shellfish Immunol*., **35**, 866-873.

[384] Berger, R., Bornscheuer, U., Liese, A., Schwaneberg, U., Syldatk, C., Wessjohann, L. (2013), DECHEMA/VAAM-Fachgruppe Biotransformationen, *Biospektrum*, **19**, 208-210.

[383] Staudt, S., Bornscheuer, U.T., Menyes, U., Hummel, W., Gröger, H. (2013), Direct biocatalytic one-pot-transformation of cyclohexanol with molecular oxygen into ε-caprolactone, *Enzyme Microb. Technol*., **53**, 288-292.

[382] Wulf, H., Mallin, H., Bornscheuer, U.T. (2013), A self-sufficient Baeyer-Villiger biocatalysis system for the synthesis of □-caprolactone from cyclohexanol, *Enzyme Microb. Technol*., **53**, 283-287.

[381] Bornscheuer, U.T. (2013), Protein engineering as a tool for the development of novel bioproduction systems, *Adv. Biochem. Eng. / Biotechnol*., **137**, 25-40.

[380] Adamczak, M., Bornscheuer, U.T. (2013), Application of medium engineering in the synthesis of structured triacylglycerols from evening primrose oil (*Oenothera biennis* L.), *Eur. J. Lipid Sci. Technol.*, **115**, 405-412.

[379] Davids, T., Schmidt, M., Böttcher, D., Bornscheuer, U.T. (2013) Strategies for the discovery and engineering of enzymes for biocatalysis, *Curr. Opin. Chem. Biol.,* **17**, 215-220.

[378] Herter, S., Michalik, D., Mikolasch, A., Schmidt, M., Schauer, F., Wohlgemuth, R., Bornscheuer, U.T. (2013), Enzyme-mediated synthesis of mitomycine-derivatives catalyzed by *Myceliophthora thermophila* and *Pycnoporus cinnabarinus* laccase, *J. Mol. Catal. B: Enzymatic*, **90**, 91-97.

[377] Nobili, A., Gall, M.G. Pavlidis, I.V., Thompson, M.L., Schmidt, M., Bornscheuer, U.T. (2013), Use of "*small, but smart"* libraries to enhance the enantioselectivity of an esterase from *Bacillus stearothermophilus* towards tetrahydrofuran-3-yl-acetate, *FEBS J*., **280**, 3084-3093.

[376] Song, J.W., Jeon, E.Y., Song, D.H., Jang, H.Y., Bornscheuer, U.T., Oh, D.K., Park, J.B. (2013), Multistep enzymatic synthesis of long-chain α,ω-dicarboxylic and ω- hydroxycarboxylic acids from renewable fatty acids and plant oils, *Angew. Chem. Int. Ed.*, **52**, 2534-2537, *Angew. Chem.*, **125**, 2594-2597.

[375] Koudelakova, T., Chaloupkova, R., Brezovsky, J., Prokop,Z., Sebestova, E., Hesseler, M., Khabiri, M., Plevaka, M., Kulik, D., Smatanova, I.K., Rezacova, P., Ettrich, R., Bornscheuer, U.T., Damborsky, J. (2013), Engineering enzyme stability and resistance to organic co-solvent by modification of residues in the access tunnel, *Angew. Chem. Int. Ed.*, **52**, 1959-1963, *Angew. Chem.*, **125**, 2013-2017.

[374] Steffen-Munsberg, F., Vickers, C., Thontowi, A., Schätzle, S., Tumlirsch, T., Svedendahl Humble, M., Land, H., Berglund, P., Bornscheuer, U.T., Höhne, M. (2013), Connecting unexplored protein crystal structures to enzymatic function, *ChemCatChem*, **5**, 150-153.

[373] Steffen-Munsberg, F., Vickers, C., Thontowi, A., Schätzle, S., Meinhardt, T., Svedendahl Humble, M., Land, H., Berglund, P., Bornscheuer, U.T., Höhne, M. (2013), Revealing the structural basis of promiscuous amine transaminase activity, *ChemCatChem*, **5**, 154-157.

[372] Mallin, H., Menyes, U., Vorhaben, T., Höhne, M., Bornscheuer, U.T. (2013), Immobilization of two *(R)*-amine transaminases on an optimized chitosan support for the enzymatic synthesis of optically pure amines, *ChemCatChem*, **5**, 588-593.

[371] Bornscheuer, U.T. (2013), Enzymes in lipid modification: from classical biocatalysis with commercial enzymes to advanced protein engineering tools, *Oléagineux Corps gras Lipides*, **20**, 45-49.

[370] Bornscheuer, U.T. (2013), From commercial enzymes to biocatalysts designed by protein engineering, *Synlett*, **24**, 150-156.

[369] Schwenteit, J., Bogdanović, X., Fridjonsson, O.H., Bornscheuer, U.T., Hinrichs, W. Gudmundsdottir. B.K. (2013), Toxoid construction of AsaP1, a lethal toxic aspzincin metalloendopeptidase of *Aeromonas salmonicida* subsp. *achromogenes,* and studies of its activity and processing, *Vet. Microbiol*., **162**, 687-694.

2012

[368] Chow, J., Krauss, U., Dall Antonia, Y. Fersini, F., Schmeisser, C., Schmid, M. Menyes, I., Bornscheuer, U.T., Lauinger, B., Bongen, P., Pietruszka, J., Eckstein, M., Thum, O., Liese, Mueller-Dieckmann, J., Jaeger, K.-E., Streit, W.R. (2012), LipS and LipT, two metagenome-derived lipolytic enzymes increase the diversity of known lipase and esterase families, PLOS One, **7**, e47665.

[367] Kazlauskas, R.J., Bornscheuer, U.T. (2012) Enzyme catalytic promiscuity: explanding the catalytic action of enzymes to new reactions. In Comprehensive Chirality, Yamamoto, H., Carreira, E. (Eds.), Vol. 7, pp. 465-480.

[366] Bornscheuer, U., Brundiek, H., Evitt, A., Sass, S., Boenisch, F., Kourist, R. (2012), Lipase variants, US Patent Application, US20120276247.

[365] Bornscheuer, U., Brundiek, H., Evitt, A., Sass, S., Boenisch, F., Kourist, R. (2012), Lipase variants having increased enzyme specificity or enhanced trans-selectivity, and methods of use, PCT Patent Application, WO 2012146935.

[364] Bornscheuer, U., Brundiek, H., Evitt, A., Sass, S., Boenisch, F., Kourist, R. (2012), Lipase variants of ustilaginaceae, PCT Patent Application, WO 2012146937.

[363] Geitner, K., Bornscheuer, U.T. (2012), Large scale Baeyer-Villiger monooxygenase-catalyzed conversion of (*R*,*S*)-3-phenylbutan-2-one. In: Practical Methods in Biocatalysis and Biotransformations, Sutton, P., Whittall, J. (Eds.), Wiley-VCH, Weinheim, 186-190.

[362] Kuhn, M.L., Martinez, S., Gumataotao, N., Bornscheuer, U.T., Liu, D., Holz, R.C. (2012), The Fe-type nitrile hydratase from *Comamonas testosteroni* Ni1 does not require an activator accessory protein for expression in *Escherichia coli*, *Biochem. Biophys. Res. Commun*., **424**, 365-370.

[361] Wulf, H., Mallin, H., Bornscheuer, U.T. (2012), Protein engineering of a thermostable polyol-dehydrogenase, *Enzyme Microb. Technol*., **51**, 217-224.

[360] Soumanou, M.M., Djenontin, S.T., Tchobo, F.P., Sohounhloue, D.C.K., Bornscheuer, U.T. (2012), Lipase-catalyzed biodiesel production from *Jatropha curcas* oil, *Lipid Technol*., **24**, 158-160.

[359] Balke, K., Kadow, M., Mallin, H., Saß, S., Bornscheuer, U.T. (2012), Discovery, application and protein engineering of Baeyer-Villiger monooxygenases in organic synthesis, *Org. Biomol. Chem*., **10**, 6249-6265.

[358] Saß, S. Kadow, M., Geitner, K. Thompson, M., Talmann, L., Böttcher, D., Schmidt, M., Bornscheuer, U.T. (2012), A high-throughput assay method to quantify Baeyer-Villiger monooxygenase activity, *Tetrahedron*, **68**, 7575-7580.

[357] Bornscheuer, U.T. (2012) Biocatalytic processes. In: *Catalysis: From Principles to Applications*, Beller, M., Renken, A., van Santen, R.A. (Eds.), Wiley-VCH, Weinheim, pp. 250-260.

[356] Bornscheuer, U.T. (2012) Biocatalysis. In: *Catalysis: From Principles to Applications*, Beller, M., Renken, A., van Santen, R.A. (Eds.), Wiley-VCH, Weinheim, 171-200.

[355] Hasenpusch, S., Möller, D, Bornscheuer, U.T., Langel, W. (2012), Substrate-enzyme interaction in pig liver esterase, online: http://arxiv.org/abs/1204.6186.

[354] Oh, K.H., Nguyen, G.-S., Kim, E.Y., Kourist, R., Bornscheuer, U.T., Oh, T.-K., Yoon, J.-H. (2012), Characterization of a novel esterase isolated from intertidal flat metagenome and its tertiary alcohols synthesis, J. *Mol. Catal. B: Enzym*. **80**, 67-73.

[353] Brundiek, H., Padhi, S.K., Evitt, A., Kourist, R., Bornscheuer, U.T. (2012), Altering the scissile fatty acid binding site of *Candida antarctica* lipase A by protein engineering for the selective hydrolysis of medium chain fatty acids, *Eur. J. Lipid Sci. Technol*., **114**, 1148-1153.

[352] Pavlidis, I.V., Vorhaben, T., Gournis, D., Papadopoulos G.K., Bornscheuer, U.T., Stamatis, H. (2012), Regulation of catalytic behavior of hydrolases through interactions with functionalized carbon-based nanomaterials, *J. Nanoparticle Res*., **14**, 842.

[351] Gröger, H., Asano, Y., Bornscheuer, U.T., Ogawa, J., (2012) Development of biocatalytic processes in japan and germany – from research synergies to industrial applications, *Chem. Asian J*., **7**, 1138-1153.

[350] Padhi, S.K., Haas, M., Bornscheuer, U.T. (2012), Lipase-catalyzed transesterification to remove saturated monoacylglycerols from biodiesel, *Eur. J. Lipid Sci. Technol*., **114**, 875-879.

[349] Bornscheuer, U.T., Huisman, G., Kazlauskas, R.J., Lutz, S., Moore, J., Robins, K. (2012) Engineering the third wave in biocatalysis, *Nature*, **485**, 185-194.

[348] Smith, M.E., Banerjee, S., Shi, Y., Schmidt, M., Bornscheuer, U.T. Masterson, D.S. (2011), Investigation of the cosolvent effect on six isoenzymes of PLE in the enantioselective hydrolysis of selected α□α-disubstituted malonate esters, *ChemCatChem*, **4**, 472-475.

[347] Torres, L.L., Schließmann, S., Schmidt, M., Silva-Martín, N., Hermoso, J.A., Berenguer, J., Bornscheuer, U.T., Hidalgo, A. (2012) Promiscuous enantioselective (–)-γ-lactamase activity in the *Pseudomonas fluorescens* esterase I, *Org. Biomol. Chem*., **10**, 3388–3392.

[346] Gerstenbruch, S., Wulf, H., Mußmann, N., O'Connell, T., Maurer, K.-H., Bornscheuer, UT. (2012), Directed evolution of an alditol oxidase from *Streptomyces coelicolor* for enhanced oxidative activity towards glycerol, *Appl. Microb. Biotechnol*., **96**, 1243–1252.

[345] Kadow, M., Loschinski, K., Saß, S., Schmidt, M., Bornscheuer, U.T. (2012), Completing the series of BVMOs involved in camphor metabolism of *Pseudomonas putida* NCIMB 10007 by identification of the two missing genes, their functional expression in *E. coli* and biochemical characterization, *Appl. Microb. Biotechnol*., **96**, 419-429.

[344] Pavlidis, I.V., Vorhaben, T., Tsoufis, T., Rudolf, P., Bornscheuer, U.T., Gournis, D., Stamatis, H. (2012) Development of effective nanobiocatalytic systems through the immobilization of hydrolases on functionalized carbon-based nanomaterials, *Biores. Technol*., **115**, 164-171.

[343] Leipold, F., Wardenga, R., Bornscheuer, U.T. (2012), Cloning, expression and characterisation of an eukaryotic cycloalkanone monooxygenase from *Cylindrocarpon radicicola* ATCC 11011, *Appl. Microb. Biotechnol*., **94**, 705–717.

[342] Bornscheuer, U.T., Kazlauskas, R.J. (2012) Enzymatic catalytic promiscuity and the design of new enzyme catalyzed reactions. In: *Enzymes in Organic Synthesis*, May, O., Gröger, H., Drauz, W. (Eds.), Wiley-VCH, Weinheim, 1695-1733.

[341] Höhne, M., Bornscheuer, U.T., (2012) Application of transaminases in organic synthesis. In: *Enzymes in Organic Synthesis*, May, O., Gröger, H., Drauz, W. (Eds.), Wiley-VCH, Weinheim, 779-820.

[340] Brundiek, H., Sass, S., Evitt, A., Kourist, R., Bornscheuer, U.T. (2012), The short form of the recombinant CAL-A-type lipase UM03410 from the smut fungus *Ustilago maydis* exhibits an inherent *trans* fatty acid selectivity, *Appl. Microb. Biotechnol*., **94**, 141-150; erratum: **94**, 285.

[339] Brundiek, H.B., Evitt, A.S., Kourist, R., Bornscheuer, U.T. (2012), Creation of a lipase highly selective for *trans* fatty acid by protein engineering, *Angew. Chem. Int. Ed.*, **51**, 412-414; Erzeugung einer für *trans*-Fettsäuren hochselektiven Lipase durch Protein-Engineering, *Angew. Chem.*, **124**, 425-428.

[338] Wulf, H., Perzborn, M., Sievers, G., Scholz, F., Bornscheuer, U.T. (2012), Kinetic resolution of glyceraldehyde using an aldehyde dehydrogenase from *Deinococcus geothermalis* DSM11300 combined with electrochemical cofactor recycling, J*. Mol. Catal. B: Enzymatic*, **74**, 144-150.

[337] Rehdorf, J., Behrens, G.A., Nguyen, G.-S., Kourist, R., Bornscheuer, U.T. (2012) *Pseudomonas putida* esterase contains a GGG(A)X-motif confering activity for the kinetic resolution of tertiary alcohols, *Appl. Microb. Biotechnol.*, **93**, 1119-1126.

2011

[336] Jonczyk, P., Schmidt, A., Bice, I., Lück, M., Gross, E., Hilmer, J.M., Bornscheuer, U., Beutel, S., Scheper, T. (2011), Strikt anaerobe batch-Kultivierung von *Eubacterium ramulus* in neuartigem Einweg-Beutelreaktorsystem, *Chem. Ing. Techn*., **83**, 2147-2152.

[335] Vorhaben, T., Häckel, M., Bornscheuer, U.T., Menyes, U. (2011) Plasmagestützte Immobilisierung von Enzymen, *Nachrichten Chemie*, **59**, 1147-1149.

[334] Bornscheuer, U.T., Kazlauskas, R.J. (2011), Survey of protein engineering strategies, *Curr. Prot. Prot. Sci*., **66**, 26.7.1-26.7.14.

[333] Herter, S., Mikolasch, A., Hammer, E., Schauer, F., Bornscheuer, U.T., Schmidt M. (2011), C-N coupling of 3-methylcatechol with primary amines using native and recombinant laccases from *Trametes versicolor* and *Pycnoporus cinnabarinus*, Tetrahedron, **67**, 9311-9321.

[332] Bornscheuer, U.T. (2011) Can synthetic biology/metabolic engineering contribute to the microbial production of triglycerides and oleochemicals?, *Eur. J. Lipid Sci. Technol.*, **113**, 1075-1076.

[331] Khademhosseini, A., Bornscheuer, U.T. (2011) Engineering of pathways, cells and tissues, *Curr. Opin. Biotechnol.*, **22**, 601-603.

[330] Schätzle, S., Steffen-Munsberg, F., Höhne, M., Robins, K., Bornscheuer, U.T. (2011), Enzymatic asymmetric synthesis of enantiomerically pure aliphatic, aromatic and arylaliphatic amines with (*R*)-selective amine transaminases, *Adv. Synth. Catal.*, **353**, 2439-2445.

[329] Behrens, G.A., Hummel, A., Padhi, S.K., Schätzle, S., Bornscheuer, U.T. (2011) Discovery and protein engineering of biocatalysts for organic synthesis, *Adv. Synth. Catal.*, **353**, 2191-2215.

[328] Kadow, M., Saß, S., Schmidt, M., Bornscheuer, U.T. (2011), Recombinant expression and purification of the 2,5-diketocamphane 1,2-monooxygenase from the camphor metabolizing *Pseudomonas putida* strain NCIMB 10007, AMB-express, **1**, 13, doi:10.1186/2191-0855-1-13.

[327] Fernández-Àlvaro, E., Snajdrova, R., Jochens, H., Davids, T., Böttcher, D., Bornscheuer, U.T. (2011), A combination of *in vivo* selection and cell sorting for the identification of enantioselective biocatalysts, *Angew. Chem. Int. Ed.*, **50**, 8584-8587; Eine Kombination aus In-vivo-Selektion und Zellsortierung zur Identifizierung enantioselektiver Biokatalysatoren, *Angew. Chem.*, **123**, 8742-8746.

[326] Palm, G.J., Fernández-Alvaro, E., Bogdanovic, X., Bartsch, S., Sczodrok, J., Böttcher, D., Singh, R.K., Atomi, H., Bornscheuer, U.T., Hinrichs, W. (2011), The crystal structure of an esterase from the hyperthermophilic microorganism *Pyrobaculum calidifontis* VA1 supports explanation of its enantioselectivity, *Appl. Microbiol. Biotechnol*, **91**, 1061–1072.

[325] Hesseler, M., Bogdanovic, X., Hidalgo, A., Berenguer, J., Palm, G., Hinrichs, W., Bornscheuer, U.T. (2011), Cloning, functional expression, biochemical characterization and structural analysis of a haloalkane dehalogenase from *Plesiocystis pacifica* SIR-1, *Appl. Microb. Biotechnol.*, **91**, 1049–1060.

[324] Kourist, R., Bornscheuer, U.T. (2011), Biocatalytic synthesis of optically active tertiary alcohols, *Appl. Microb. Biotechnol.*, **91**, 505–517.

[323] Ni, Y., Li, C.X., Zhang, J., Shen, N.-D., Bornscheuer, U.T., Xu, J.H. (2011), Efficient reduction of ethyl 2-oxo-4-phenylbutyrate at 620 g/L by a bacterial reductase with broad substrate spectrum, *Adv. Synth. Catal.*, **353**, 1213-1217.

[322] Weckhuysen, B.M., Oro, L.A., Bornscheuer, U.T. (2011) Solving the material and energy challenges of the future, *ChemCatChem*, **3**, 619-621.

[321] Jochens, H., Hesseler, M., Stiba, K., Padhi, S.K., Kazlauskas, R.J., Bornscheuer, U.T. (2011), Protein engineering of α/β-hydrolase fold enzymes, *ChemBioChem*, **12**, 1508-1517.

[320] Nguyen, G.S., Thompson, M.L., Grogan, G., Bornscheuer, U.T., Kourist, R. (2011), Identification of novel esterases for the synthesis of sterically demanding chiral alcohols by sequence-structure guided genome mining, *J. Mol. Catal. B: Enzymatic*, **70**, 88-94.

[319] Cassimjee, K.E, Kourist, R., Lindberg, D., Wittrup-Larsen, M., Nguyen, H.T., Widersten, M., Bornscheuer, U.T., Berglund, P. (2011), One-step enzyme extraction and immobilisation for biocatalysis applications, *Biotechnol. J.*, **6**, 463-469.

[318] Evitt, A., Bornscheuer, U.T. (2011), Lipase CAL-B does not catalyze a promiscuous decarboxylative aldol addition or Knoevenagel reaction, *Green Chem.*, **13**, 1141-1142.

[317] Herter, S., Nguyen, G.S., Thompson, M.L., Steffen-Munsberg, F., Schauer, F., Bornscheuer, U.T., Kourist, R. (2011), Comparative analysis of tertiary alcohol esterase activity in bacterial strains isolated from enrichment cultures and from screening strain libraries, *Appl. Microbiol. Biotechnol.*, **90**, 929-939.

[316] Biermann, U., Bornscheuer, U.T., Meier, M.A.R., Metzger, J.O., Schäfer, H.J. (2011) New developments for the chemical utilization of oils and fats as renewable raw materials, *Angew. Chem. Int. Ed.*, **50**, 3854-3871; Neue Entwicklungen zur stofflichen Nutzung von Fetten und Ölen als nachwachsende Rohstoffe, *Angew. Chem.*, **123**, 3938-3956.

[315] Bornscheuer, U., Hesseler, M. (2011), Method for the conversion of 3-halogen-1,2-propanediol and its mono- and diester derivatives to 1,2,3-propanetriol, Patent Applications DE 10 2009 042 760.0; WO 2011036072.

[314] Robins, K., Höhne, M., Bornscheuer, U.T. (2011), Screening, purification and characterization of microbial (*R*)-specific ω-transaminases and use for asymmetric synthesis of (*R*)-amines, WO 2011026556.

[313] Hasenpusch, D., Bornscheuer, U.T., Langel, W. (2011), Simulation of the structure of pig liver esterase, *J. Mol. Model.*, **17**, 1493-1506.

[312] Schwenteit, J., Gram, L., Nielsen, K.F., Fridjonsson, O.H., Bornscheuer, U.T., Givskov, M., Gudmundsdottir, B.K. (2011), Quorum sensing in *Aeromonas salmonicida* subsp. *achromogenes* and the effect of the autoinducer synthase AsaI on bacterial virulence, *Vet. Microbiol.*, **147**, 389-397.

2010

[311] Bornscheuer, U., Böttcher, D., Brüsehaber, E., Doderer, K. (2010), Recombinant production of pig liver esterase in *E. coli* using GroEL/GroES chaperone system, US Patent application.

[310] Bartsch, S., Bornscheuer, U.T. (2010) Mutational analysis of phenylalanine ammonia lyase to improve reaction rates for various substrates, *Protein Eng. Des. Sel.*, **23**, 929-933.

[309] Jochen

s, H., Bornscheuer, U.T. (2010) Thermostabilization of an esterase by alignment-guided focused directed evolution, *Prot. Eng. Des. Sel.*, **23**, 903-909.

[308] Höhne, M., Schätzle, S., Jochens, H., Robins, K., Bornscheuer, U.T. (2010) Rational assignment of key motifs for function guides *in silico* enzyme identification, *Nature Chem. Biol.*, **6**, 807-813.

[307] Böttcher, D., Schmidt, M., Bornscheuer, U.T. (2010), Screens for active and stereoselective hydrolytic enzymes. *Methods Mol. Biol.*, **668**, 169-176.

[306] Jochens, H., Bornscheuer, U.T. (2010), Natural diversity to guide focused directed evolution, *ChemBioChem*, **11**, 1861-1866.

[305] Geitner, K., Rehdorf, J., Snajdrova, R., Bornscheuer, U.T. (2010) Scale-up of Baeyer-Villiger monooxygenase-catalyzed synthesis of enantiopure compounds, *Appl. Microb. Biotechnol.*, **88**, 1087-1093.

[304] Rehdorf, J., Mihovilovic, M.D., Fraaije, M.W., Bornscheuer, U.T. (2010), Enzymatic synthesis of enantiomerically pure ß-amino ketones, ß-amino esters and ß-amino alcohols with Baeyer-Villiger-monooxygenases, *Chem. Eur. J.*, **16**, 9525-9535.

[303] Antranikian, G., Bornscheuer, U.T., Liese, A. (2010) Highlights in Biocatalysis, *ChemCatChem*, **2**, 879-880.

[302] Bornscheuer, U.T. (2010) The first artificial cell: a revolutionary step in synthetic biology?, *Angew. Chem. Int. Ed.*, **49**, 5228-5230; Die erste künstliche Zelle: ein revolutionärer Schritt für die synthetische Biologie?, *Angew. Chem.*, **122**, 5357-5359.

[301] Vorhaben, T., Böttcher, D., Jasinski, D., Brüser, V., Menyes, U., Schröder, K., Bornscheuer, U.T. (2010) Plasma-modified polypropylene as carrier for the immobilization of *Candida antarctica* lipase B and *Pyrobaculum calidifontis* esterase, *ChemCatChem*, **2**, 992-996.

[300] Bassegoda, A., Nguyen, G.S., Kourist, R., Schmidt, M., Diaz, P., Bornscheuer, U.T. (2010), Rational protein design of *Paenibacillus barcinonensis* esterase EstA for kinetic resolution of tertiary alcohols, *ChemCatChem*, **2**, 962-967.

[299] Bogdanovic, X., Hesseler, M., Palm, G.J., Bornscheuer, U.T., Hinrichs, W. (2010), Crystallization and preliminary X-ray diffraction studies on the putative haloalkane dehalogenase DPpA from *Plesiocystis pacifica SIR-I*, Acta *Cryst. Sect. F: Struct. Biol. Cryst. Commun.*, **66**, 828-830.

[298] Bornscheuer, U.T. (2010), Meeting report of the 1st Workshop on "Microbial Lipids – From

Genomics to Lipidomics", Vienna, Austria, 2010. *Eur. J. Lipid Sci. Technol.*, **112**, 275-287.

[297] Kourist, R., Jochens, H., Bartsch, S., Kuipers, R., Kumar, S.P., Gall, M., Böttcher, D., Joosten, H.-J., Bornscheuer, U.T. (2010), The α/β-hydrolase fold 3DM database (ABHDB) as a tool for protein engineering, *ChemBioChem*, **11**, 1635-1643.

[296] Bornscheuer, U.T, Vorhaben, T., Böttcher, D., Jasinski, D., Menyes, U., Häckel, M., Schröder, K. (2010) Immobilisierung von Enzym unter Verwendung von Plasmen, Patent Application. WO 2011131594

[295] Bornscheuer, U.T. Gerstenbruch, S., Mußmann, N., Maurer, K.-H., O'Connell, T. (2010) Mutanten einer Sorbitoloxidase mit verbesserter spezifischer Aktivität auf Glycerin, German Patent Application DE102010028008.

[294] Bornscheuer, U.T., Hesseler, M. (2010), Enzymatic removal of 3-monochloropropane diol (3-MCPD) and its esters from oils, *Eur. J. Lipid Sci. Technol.*, **112**, 552-556.

[293] Theurer, M., Fischer, P., Baro, A., Nguyen, G.S., Kourist, R., Bornscheuer, U.T., Laschat, S. (2010), Formation of chiral tertiary homoallylic alcohols via Evans aldol reaction or enzymatic resolution and their influence on the Sharpless asymmetric dihydroxylation, *Tetrahedron*, **66**, 3814-3823.

[292] Kuipers, R.K., Joosten, H.J., van Berkel, W.J.H., Leferink, N.G.H., Rooijen, E., Ittmann, E., van Zimmeren, F., Jochens, H., Bornscheuer, U., Vriend, G., Martins dos Santos, V.A.P., Schaap, P.J. (2010), 3DM: systematic analysis of heterogeneous super-family data to discover protein functionalities, *Proteins*, **78**, 2101-2113.

[291] Gall, M., Kourist, R., Schmidt, M., Bornscheuer, U.T. (2010), The role of the GGG(A)X-motif on enantioselectivity of pig liver esterase towards tertiary alcohols, *Biocat. Biotransform*, **28**, 201-208.

[290] Bornscheuer, U.T. (2010), Lipases, applications in synthesis of chiral compounds and in organic solvents, *Encyclopedia of Industrial Biotechnology, Bioprocess, Bioseparation and Cell Technology,* Flickinger, M.C. (Ed.)., John Wiley & Sons, Hoboken, 5, 3572-3607.

[289] Rehdorf, J., Bornscheuer, U.T. (2010), Monooxygenases, Baeyer-Villiger oxidations in organic synthesis, *Encyclopedia of Industrial Biotechnology, Bioprocess, Bioseparation and Cell Technology,* Flickinger, M.C. (Ed.)., John Wiley & Sons, Hoboken, 5, 3165-3180.□□

[288] Bornscheuer, U.T. (2010), Evolving enzymes for biocatalysis. In: *Microbiology of Hydrocarbons, Oils, Lipids and Derived Compounds*, Timmis, K. (Ed.), Springer, Berlin, pp. 2930-2938.

[287] Kellens, M., Bornscheuer, U.T., Schurz, K. (2010), Editorial: 8th Euro Fed Lipid Congress Oils, Fats, and Lipids: Health & Nutrition, Chemistry & Energy 21–24 November 2010, Munich, Germany, *Eur. J. Lipid Sci. Technol.*, **112**, 517-518.

[286] Rehdorf, J., Mihovilovic, M.D., Bornscheuer, U.T. (2010), Exploiting regioselectivity of Baeyer-Villiger-monooxygenases – a route to the formation of β-amino acids and β-amino alcohols, *Angew. Chem. Int. Ed.*, **49**, 4506-4508; Durch Nutzen der Regioselektivität von Baeyer-Villiger-Monooxygenasen zu β-Aminosäuren und β-Aminoalkoholen, *Angew. Chem.*, **122**, 4609-4611.

[285] Nguyen, G.S., Kourist, R., Paravidino, M., Hummel, A., Rehdorf, J., Orru, R.V.A., Hanefeld, U., Bornscheuer, U.T. (2010), An enzymatic toolbox for the kinetic resolution of 2-(pyridinyl)but-3-yn-2-ols and tertiary cyanohydrins, *Eur. J. Org. Chem.*, 2753-2758.

[284] Wittrup-Larsen, M., Zielinska, D.F., Martinelle, M., Hidalgo, A., Jensen, L.J., Bornscheuer, U.T., Hult, K. (2010), Suppression of water as a nucleophile in *Candida antarctica* lipase B catalysis, *ChemBioChem*, **11**, 796-801.

[283] Böttcher, D., Bornscheuer, U.T. (2010), Protein engineering of microbial enzymes, *Curr. Opin. Microbiol.*, **13**, 274-282.

[282] Brüsehaber, E., Schwiebs, A., Schmidt, M., Böttcher, D., Bornscheuer, U.T. (2010), Production of pig liver esterase in batch fermentation of *E. coli* Origami, *Appl. Microb. Biotechnol.*, **86**, 1337-1344.

[281] Schätzle, S., Höhne, M., Robins, K., Bornscheuer U.T. (2010), A conductometric method for

the rapid characterization of the substrate specificity of amine-transaminases, *Anal. Chem*., **82**, 2082-2086.

[280] Daum, G., Bornscheuer, U.T., Amoneit, F. (2010), Meeting report of the 7th Euro Fed Lipid Congress, Graz, Austria, 2009. *Eur. J. Lipid Sci. Technol*., **112**, 275-287.

[279] Bornscheuer, U.T. (2010), Looking back into the future, *Eur. J. Lipid Sci. Technol*., **112**, 153-154.

[278] Schmidt, M., Böttcher, D., Bornscheuer, U.T. (2010), Directed evolution of industrial biocatalysts. In: Industrial Biotechnology, Soetaert, W., Vandamme, E. (Eds.), Wiley-VCH, Weinheim, pp. 173-205.

[277] Rzeznicka, K., Schätzle, S., Böttcher, D., Klein, J., Bornscheuer, U.T. (2010), Cloning and functional expression of a nitrile hydratase (NHase) from *Rhodococcus equi* TG328-2 in *Escherichia coli*, its purification and biochemical characterization, *Appl. Microbiol. Biotechnol.*, **85**, 1417-1425.

[276] Wardenga, R., Lindner, H.A., Hollmann, F., Thum, O., Bornscheuer, U.T. (2010) Increasing the synthesis/ hydrolysis ratio of aminoacylase-1 by site-directed mutagenesis, *Biochimie*, **92**, 102-109.

[275] Kourist, R., Brundiek, H., Bornscheuer, U.T. (2010), Protein engineering and discovery of lipases, *Eur. J. Lipid Sci. Technol*., **112**, 64-74.

[274] Fernandez-Alvaro, E., Kourist, R., Winter, J., Böttcher, D., Liebeton, E., Eck, J., Naumer, C., Jäger, K.E., Streit, W. Bornscheuer, U.T. (2010), Enantioselective kinetic resolution of phenylalkyl carboxylic acids using metagenome-derived esterases, *Microb. Biotechnol.*, **3**, 59-64.

2009

[273] Bornscheuer, U.T. (2009) Modern tools in the discovery and design of biocatalysts, *Enzyme Engineering News Japan*, **62**, 5-14.

[272] Schließmann, A., Hidalgo, A., Berenguer, J., Bornscheuer, U.T. (2009) Engineering bottleneck mutants in an esterase from *Pseudomonas fluorescens*, *ChemBioChem*, **10**, 2920-2923.

[271] Brüsehaber, E., Böttcher, D., Bornscheuer, U.T. (2009), Insights into the physiological role of pig liver esterase: Isoenzymes show differences in the demethylation of prenylated proteins, *Bioorg. Med. Chem*., **17**, 7878-7883.

[270] Thodi, K., Barbayianni, E., Fotakopoulou, I., Bornscheuer, U.T., Constantinou-Kokotou, V., Moutevelis-Minakakis, P., Kokotos, G. (2009), Study of the removal of allyl esters by Candida antarctica lipase B (CAL-B) and pig liver esterase (PLE), *J. Mol. Catal. B: Enzymatic*, **61**, 241-246.

[269] Barbayianni, E., Kokotos, C.G., Bartsch, S., Drakou, C., Bornscheuer, U.T., Kokotos, G. (2009), *Bacillus subtilis* esterase (BS2) and its double mutant have different selectivity in the removal of carboxyl protecting groups), *Adv. Synth. Catal.*, **351**, 2325-2332.

[268] Schmidt, M., Böttcher, D., Bornscheuer, U.T. (2009), Protein engineering of carboxyl esterases by rational design and directed evolution, *Protein Peptide Lett*. **16**, 1162-1171.

[267] Robins, K., Höhne, M., Bornscheuer, U.T. (2009), A process for the identification and preparation of a (*R*)-specific transaminase. European Patent application.

[266] Hesseler, M., Bornscheuer, U.T. (2009), Verfahren zur enzymatischen Hydrolyse von 3-Monochlorpropandiol und dessen Estern, German Patent Application.

[265] Kirschner, A., Bornscheuer, U.T. (2009), Enantioselective kinetic resolution of (R,S)-3-phenylbutane-2-one using a Baeyer-Villiger monooxygenase. In: Practical Methods in Biocatalysis and Biotransformations, Sutton, P., Whittall, J. (Eds.), Wiley-VCH, Weinheim, pp. 115-149.

[264] Schätzle, S., Höhne, M., Redestad, E., Robins, K., Bornscheuer U.T. (2009), A rapid and sensitive kinetic assay for characterization of ω-transaminases, *Anal. Chem*., **81**, 8244-8248.

[263] Adamczak, M., Bednarski, W., Bornscheuer, U.T. (2009), The application of biotechnological methods for synthesis of biodiesel, *Eur. J. Lipid Sci. Technol*., **111**, 808-813.

[262] Royter, M., Schmidt, M., Elend, C., Höbenreich, H., Schäfer, T., Bornscheuer, U.T., Antranikian, G. (2009), Thermostable lipases from the extreme thermophilic anaerobic bacteria *Thermoanaerobacter thermohydrosulfuricus* SOL1 and *Caldanaerobacter subterraneus* subsp. *tengcongensis*, *Extremophiles*, **13**, 769-783.

[261] Kazlauskas, R.J., Bornscheuer, U.T. (2009), Finding better protein engineering strategies, *Nature Chem. Biol.*, **5**, 526-529.□□

[260] Höhne, M., Bornscheuer, U.T. (2009), Biocatalytic routes to optically active amines, *ChemCatChem*, **1**, 42-51.□□

[259] Bornscheuer, U.T. (2009) Author profile, *Angew. Chem. Int. Ed.* **48**, 5236; *Angew. Chem.***121**, 5338.

[258] Bornscheuer, U.T. (2009) Combined success for efficient catalysis, *ChemCatChem* **1**, 5.

[257] Rehdorf, J., Lengar, A., Bornscheuer, U.T., Mihovilovic, M.D. (2009), Kinetic resolution of arylaliphatic acyclic ß-hydroxyketones by recombinant whole-cell Baeyer-Villiger monooxygenases – formation of enantiocomplementary regioisomeric esters, *Bioorg. Med. Chem. Lett.*, **19**, 3739-3743.

[256] Wigger, M., Holt, J., Kourist, R., Bartsch, S., Arends, I.W.C.E., Minnaard, A.J., Bornscheuer, U.T., Hanefeld, U. (2009), Probing the enantioselectivity of *Bacillus subtilis* esterase BS2 for tert. alcohols, *J. Mol. Catal. B: Enzymatic*, **60**, 82-86.

[255] Kourist, R., Höhne, M., Bornscheuer, U.T. (2009), Protein Design: Im Spannungsfeld zwischen gerichteter Evolution und rationalem Design, *Chemie in unserer Zeit*, **43**, 132-142.

[254] Rehdorf, J., Zimmer, C., Bornscheuer, U.T. (2009), Cloning, expression and biocatalytic investigation of 4-hydroxyacetophenone monooxygenase from *Pseudomonas putida* JD1, *Appl. Environm. Microbiol.*, **75**, 3106-3114.

[253] Kolisis, F., Bornscheuer, U.T., Amoneit, F. (2009), Report of the 6th Euro Fed Lipid Congress, Athens, Greece, 2008. *Eur. J. Lipid Sci. Technol.*, **111**, 303-309.

[252] Rachinsky, K., Schultz, H. Boy, M., Bornscheuer, U.T., Büchs, J. (2009), "Enzyme test bench", a high throughput enzyme characterization technique including the long term stability, *Biotechnol. Bioeng.*, **103**, 305-322.

[251] Jochens, H., Stiba, K., Savile, C., Fujii, R., Yu., J.-G., Gerassenkov, T., Kazlauskas, R.J., Bornscheuer, U.T. (2009), Converting an esterase into an epoxide hydrolase, *Angew. Chem. Int. Ed.*, **48**, 3532-3535.□□

[250] Bartsch, S., Bornscheuer, U.T. (2009), A single residue influences the reaction mechanism of ammonia lyases and mutases, *Angew. Chem. Int. Ed.*, **48**, 3362-3365.□□

[249] Bornscheuer, U.T. (2009), Meeting report: Protein Design and Evolution for Biocatalysis. *Biotechnol. J.*, **4**, 444-446.

[248] Krause, P., Hilterhaus, L., Fieg, G., Liese, A., Bornscheuer, U.T. (2009), Chemically and enzymatically catalyzed synthesis of C6-C10 alkyl benzoates, *Eur. J. Lipid Sci. Technol.*, **111**, 194-201.

[247] Böttcher, D., Schmidt, M., Bornscheuer, U.T. (2009), Alteration of substrate specificity and stereoselectivity of lipases and esterases. In: Protein Engineering Handbook, Lutz, S., Bornscheuer, U.T., (Eds.), Wiley-VCH, Weinheim, pp. 753-775.

[246] Lutz, S., Bornscheuer, U.T. (Eds.) (2009), Protein Engineering Handbook, Wiley-VCH, Weinheim.

[245] Adamczak, M., Bornscheuer, U.T., Bednarski, W. (2009), Improving ascorbyl oleate synthesis by application of ionic liquids and water activity control by salt hydrates, *Proc. Biochemistry*, **44**, 257-261.

[244] Kirschner, A., Bornscheuer, U.T. (2009), Baeyer-Villiger monooxygenases in organic synthesis. In: Green Chemistry, Vol. 3: Biocatalysis, Anastas, P.T. (Ed.), Wiley-VCH, Weinheim, pp. 115-149.

2008

[243] Wardenga, R., Hollmann, F., Thum, O., Bornscheuer, U.T. (2008) Functional expression of porcine aminoacylase 1 in *E. coli* using a codon optimized synthetic gene and molecular chaperones, *Appl. Microbiol. Biotechnol.*, **81**, 721-729.

[242] Kirschner, A., Bornscheuer, U.T. (2008), Directed evolution of a Baeyer-Villiger monooxygenase to enhance enantioselectivity, *Appl. Microbiol. Biotechnol*., **81**, 465-472.

[241] Heinze, B., Hoven, N., O'Connell, T., Maurer, K.H., Bartsch, S., Bornscheuer, U.T. (2008) Recovery of choline oxidase activity by in vitro recombination of individual segments, *Appl. Microbiol. Biotechnol.*, **81**, 275-282.

[240] Böttcher, D., Doderer, K., Brüsehaber, E., Bornscheuer, U.T. (2006), Mikroorganismus zur Herstellung von rekombinanter Schweineleberesterase, German Patent Application.

[239] Bornscheuer, U.T. (2008), Alteration of lipase properties by protein engineering methods, *Oléagineux Corps Gras Lipides*, **15**, 184-188.

[238] Wittrup-Larsen, M., Bornscheuer, U.T., Hult, K. (2008), Expression of non-glycosylated *Candida antarctica* lipase B in *Pichia pastoris* and various *Escherichia coli* systems, *Prot. Expr. Purif.*, **62**, 90-97.

[237] Kourist, R., Nguyen, G.S., Strübing, S., Böttcher, D., Liebeton, E., Eck, J., Naumer, C., Bornscheuer, U.T. (2008), Hydrolase-catalyzed stereoselective preparation of protected α,α-dialkyl-α-hydroxycarboxylic acids, *Tetrahedron: Asymmetry*, **19**, 1839-1843.

[236] Hidalgo, A., Schliessmann, A., Molina, R. Hermoso, J., Bornscheuer, U.T. (2008), An one-pot, simple methodology for cassette randomization and recombination for focused directed evolution (OSCARR), *Prot. Des. Eng. Sel.*, **21**, 567-576.

[235] Adamczak, M., Bornscheuer, U.T., Bednarski, W. (2008), Properties and biotechnological methods to produce lipids containing conjugated linoleic acid (CLA), *Eur. J. Lipid Sci. Technol*., **110**, 491-502.

[234] Höhne, M., Robins, K., Bornscheuer, U.T. (2008), A protection strategy substantially enhances rate and enantioselectivity in transaminase-catalyzed kinetic resolutions, *Adv. Synth. Catal.*, **350**, 807-812.

[233] Brüsehaber, E., Böttcher, D., Liebeton, E., Eck, J., Naumer, C., Bornscheuer, U.T. (2008), Asymmetric synthesis of *cis*-3,5-diacetoxycyclopent-1-ene using metagenome derived hydrolases, *Tetrahedron: Asymmetry*, **19**, 730-732.

[232] Kourist, R., Dominguez de Maria, P., Bornscheuer, U.T. (2008), Enzymatic synthesis of optically active tertiary alcohols: Expanding the biocatalytic toolbox, *ChemBioChem*, **9**, 491-498.

[231] Vahl, K. Kahlert, H., Böttcher, D, Wardenga, R, Komorsky-Lovric, S., Bornscheuer, U., Scholz, F. (2008), A potential high-throughput method for the determination of lipase activity by potentiometric FIA titrations, *Anal. Chim. Acta*, **610**, 44-49.

[230] Bartsch, S., Kourist, R., Bornscheuer, U.T. (2008), Complete inversion of enantioselectivity towards acetylated tertiary alcohols by a double mutant of a *Bacillus subtilis* esterase, *Angew. Chem. Int. Ed.*, **47**, 1508-1511; Vollständige Umkehrung der Enantioselektivität gegen acetylierte tertiäre Alkohole durch eine Doppelmutation in einer Esterase aus *Bacillus subtilis*, *Angew. Chem.*, **120**, 1531-1534.

[229] Höhne, M., Kühl, S., Robins, K., Bornscheuer, U.T. (2007), Efficient asymmetric synthesis of chiral amines by combining transaminase and pyruvate decarboxylase, *ChemBioChem*, **9**, 363-365.

[228] Völker, A., Kirschner, A., Bornscheuer, U.T., Altenbuchner, J. (2008), Functional expression, purification and characterization of the recombinant Baeyer-Villiger monooxygenase MekA from *Pseudomonas veronii* MEK700, *Appl. Microbiol. Biotechnol*., **77**, 1251-1260.

[227] Bornscheuer, U.T. (2008), Taking over a safe sailing boat heading to new discoveries. *Eur. J. Lipid Sci. Technol.*, **110**, 1.

[226] Bertram, M. Hildebrandt, P., Weiner, D.W., Patel, J. S., Bartnek, F., Hitchman, T., Bornscheuer, U.T. (2008), Characterization of lipases and esterases from metagenomes for lipid modification, *J. Am. Oil Chem. Soc*., **85**, 47-53.

[225] Kourist, R., Bartsch, S., Fransson, L., Hult, K., Bornscheuer, U.T. (2008), Understanding promiscuous amidase activity of an esterase from *Bacillus subtilis*, *ChemBioChem*, **9**, 67-69.

2007

[224] DiLorenzo, M., Hidalgo, A., Molina, R., Hermoso, J.A., Pirozzi, D., Bornscheuer, U.T. (2007), Enhancement of the stability of a prolipase from *Rhizopus oryzae* towards aldehydes by saturation mutagenesis, *Appl. Environm. Microbiol*., **73**, 7291-7299.

[223] Hummel, A., Brüsehaber, E., Böttcher, D., Doderer, K., Trauthwein, H., Bornscheuer, U.T. (2007), Isoenzyme der Schweineleberesterase zeigen bemerkenswerte Unterschiede in ihrer Enantioselektivität, *Angew. Chem.*, **119**, 8644-8646; Isoenzymes of pig liver esterase reveal striking differences in enantioselectivities of *Angew. Chem. Int. Ed*., **46**, 8492-8494.

[222] Robins, K., Bornscheuer, U., Höhne, M. (2007), Process for the preparation of optically active chiral amines. European Patent EP 1818411.

[221] Kourist, R., Krishna, S.H., Patel, J.S., Bartnek, F., Weiner, D.W., Hitchman, T., Bornscheuer, U.T. (2007), Identification of a metagenome-derived esterase with high enantioselectivity in the kinetic resolution of arylaliphatic tertiary alcohols, *Org. Biomol. Chem*., **5**, 3310-3313.

[220] Gruber, C.C., Nestl, B.M., Gross., J., Hildebrandt, P., Bornscheuer, U.T., Faber, K., Kroutil, W. (2007), Emulation of racemase activity employing a pair of stereo-complementary biocatalysts, *Chem. Eur. J.,* **13**, 8271-8276.

[219] Brüsehaber, E., Musidlowska-Persson, A., Albrecht, D., Hecker, M., Doderer, K., Bornscheuer, U.T. (2007), Identification of pig liver esterase variants by tandem mass spectroscopy analysis and their characterization, *Appl. Microbiol. Biotechnol.*, **76**, 853-859.

[218] Rehdorf, J., Kirschner, A., Bornscheuer, U.T. (2007), Cloning, expression and characterization of a Baeyer-Villiger monooxygenase from *Pseudomonas putida* KT2440, *Biotechnol. Lett*., **29**, 1393-1398.

[217] Jackisch, B.O., Simmler-Hübenthal, H., Zschau, W., Bornscheuer, U.T., Durban, M., Riemer, C. (2007), Use of a thermostable phospholipase in the degumming of an oil or fat, and a method for obtaining a thermostable phospholipase, European Patent Application.

[216] Kourist, R., Bartsch, S., Bornscheuer, U.T., (2007), Highly enantioselective synthesis of arylaliphatic tertiary alcohols using mutants of an esterase from *Bacillus subtilis*, *Adv. Synth. Catal.*, **349**, 1393-1398.

[215] Geitner, K., Kirschner, A., Rehdorf, J., Schmidt, M., Mihovilovic, M.D., Bornscheuer, U.T. (2007), Enantioselective kinetic resolution of 3-phenyl-2-ketones using Baeyer-Villiger monooxygenases, *Tetrahedron: Asymmetry*, **18**, 892-895.

[214] Durban, M., Bornscheuer, U.T. (2007), An improved assay for the determination of phospholipase C activity, *Eur. J. Lipid Sci. Technol.*, **109**, 469-473.

[213] Bornscheuer, U.T., Schmidt, M., Kähler, M., Rieks, A. (2007), New esterases and their use for processes for kinetic resolution of butinolesters, Intern. Patent Application.

[212] Bornscheuer, U.T., Grüning, B., Hills, G., Möbius, P. (2007), Process for the enzymatic synthesis of ethers, German Patent Application.

[211] Kirschner, A., Altenbuchner, J., Bornscheuer, U.T. (2007), Design of a secondary alcohol degradation pathway from *Pseudomonas fluorescens* DSM50106 in an engineered *E. coli*, *Appl. Microbiol. Biotechnol*., **75**, 1095-1101.

[210] Heinze, B., Kourist, R., Fransson, L., Hult, K., Bornscheuer, U.T. (2007), Highly enantioselective kinetic resolution of two tertiary alcohols using mutants of an esterase from *Bacillus subtilis*, *Prot. Eng. Des. Sel*., **20**, 125-131.

[209] Bertram, M., C. Manschot-Lawrence, E. Flöter, Bornscheuer, U.T. (2007), A microtiter plate-

based assay method to determine fat quality, *Eur. J. Lipid Sci. Technol.*, **109**, 180-185.

[208] Bornscheuer, U.T. (2007), Editorial: Protein design and evolution for biocatalysis (special issue), *Biotech. J.*, **2**, 155.

[207] Fotakopoulou, I., Barbayianni, E., Constantinou-Kokotou, V., Bornscheuer, U.T., Kokotos, G. (2007), Enzymatic removal of carboxyl protecting groups. Part III: Fast removal of the allyl and chloroethyl esters by *Bacillus subtilis* esterase (BS2), *J. Org. Chem.*, **72**, 782-786.

[206] Schmidt, M., Henke, E., Heinze, B., Kourist, R., Hidalgo, A., Bornscheuer, U.T. (2007), A versatile esterase from *Bacillus subtilis*: Cloning, expression, characterization, and its application in biocatalysis, *Biotech. J.*, **2**, 249-253.

[205] Durban, M., Silbersack, J., Schweder, T., Schauer, F., Bornscheuer, U.T. (2007), High level expression of a recombinant phospholipase C from *Bacillus cereus* in *B. subtilis*, *Appl. Microbiol. Biotechnol*. **74**, 634-639.

[204] Kirschner, A., Altenbuchner, J., Bornscheuer, U.T. (2007), Cloning, expression and characterization of a Baeyer-Villiger monooxygenase from *Pseudomonas fluorescens* DSM50106 in *E. coli*, *Appl. Microbiol. Biotechnol*., **73**, 1065-1072.

[203] Böttcher, D., Brüsehaber, E., Doderer. K., Bornscheuer, U.T. (2007), Functional expression of the gamma-isoenzyme of pig liver carboxyl esterase in *Escherichia coli*, *Appl. Microbiol. Biotechnol*., **73**, 1282-1289.

2006

[202] Höhne, M. Robins, K., Bornscheuer, U.T. (2006), Process for the enzymatic cleavage of a racemate, European Patent Application.

[201] Böttcher, D., Doderer, K., Brüsehaber, E., Bornscheuer, U.T. (2006), Mikroorganismus zur Herstellung von rekombinanter Schweineleberesterase, German Patent Application.

[200] Kirschner, A., Bornscheuer, U.T. (2006), Enantioselektive Darstellung von aliphatischen azyklischen Estern und Ketonen, German Patent Application 10 2006 039 189, granted 05. March 2010.

[199] Kirschner, A., Bornscheuer, U.T. (2006), Katalytische kinetische Racematspaltung von 4-Hydroxy-2-Ketonen durch eine Baeyer-Villiger Monooxygenase, *Angew. Chem.,* **118**, 7161-7163; Kinetic resolution of 4-hydroxy-2-ketones by a Baeyer-Villiger monooxygenase, *Angew. Chem. Int. Ed.* **45**, 7004-7006.

[198] Böttcher, D., Bornscheuer, U.T. (2006), High-throughput screening of activity and enantioselectivity of esterases, *Nature Protocols*, **1**, 2340-2343.

[197] Chaparro-Riggers, J.F., Breves, R., Maurer, K.H., Bornscheuer U.T. (2006), Modulation of infectivity in phage display as a tool to determine the substrate specificity of proteases, *ChemBioChem*, **7**, 965-970.

[196] Bellur, E., Freifeld, I., Holtz, E., Böttcher, D., Bornscheuer, U.T., Langer, P. (2006), Synthesis of (tetrahydrofuran-2-yl)acetates and (pyrrolidin-2-yl)acetates based on a 'cyclization / hydrogenation' strategy, *Tetrahedron*, **62**, 7132-7139..

[195] Brandt, B., Hidalgo, A., Bornscheuer, U.T. (2006), Immobilization of enzymes in the microtiter plate scale, *Biotech. J.*, **1**, 582-587.

[194] Metzger, J.O., Bornscheuer, U.T. (2006), Lipids as renewable resources: Current state of chemical and biotechnological conversion and diversification, *Appl. Microbiol. Biotechnol*., **71**, 13-22.

[193] Hidalgo, A., Bornscheuer, U.T. (2006), Directed evolution of lipases and esterases for organic synthesis. In: *Biocatalysis in the Pharmaceutical and Biotechnological Industries* (Ed. R. Patel), Marcel Dekker, New York, pp. 159-179.

[192] Böttcher, D., Liebeton, K., Eck,. J., Langer, P., Bellur, E., Bornscheuer, U.T. (2006), A novel group of esterases for the enantioselective production of fine and specialty chemicals, European Patent Application.

[191] Höhne, M. Robins, K., Bornscheuer, U.T. (2006), Process for the preparation of optically active amines, European Patent Application.

[190] Bellur, E., Böttcher, D., Bornscheuer, U.T., Langer, P. (2006), Enantioselective synthesis of 2-alkylidenetetrahydrofurans based on a 'cyclization / enzymatic resolution' strategy, *Tetrahedron: Asymmetry*, **17**, 892-899.

[189] Schmidt, M., Hasenpusch, D., Kähler, M., Kirchner, U., Wiggenhorn, K., Langel, W., Bornscheuer, U.T. (2006), Directed evolution of an esterase from *Pseudomonas fluorescens* yields a mutant with excellent enantioselectivity and activity for the kinetic resolution of a chiral building block, *ChemBioChem*, **7**, 805-809.

[188] Ganske, F., Bornscheuer, U.T. (2006), Growth of *Escherichia coli*, *Pichia pastoris* and *Bacillus cereus* in the presence of the ionic liquids [BMIM][BF_4] and [BMIM][PF_6] and organic solvents, *Biotechnol. Lett.*, **28**, 465-469.

2005

[187] Möbius, P., Bornscheuer, U.T., Thum, O., Hills, G., Grüning, B., Weitemeyer, C. (2005), Verfahren zur enzymatischen Synthese von Ethern, German Patent Application

[186] Schmidt, M, Bornscheuer, U.T., Rieks, A., Kähler, M. (2005), Process and esterase for the synthesis of optically pure 3-butyn-2-ol, European Patent Application

[185] Durban, M., Bornscheuer, U.T., Jackisch, B., Riemer, C. (2005), Use of a thermostable phospholipase in the degumming of an oil or fat, and a method for obtaining a thermostable phospholipase, European Patent Application.

[184] Bornscheuer, U.T., Henke, E., Pleiss, J. (2005), Enzymatic Methods. In: Quaternary Stereocenters (Ed. Christoffers, J., Baro, A.), Wiley-VCH, Weinheim, pp. 315-327.

[183] Sareen, R., Bornscheuer, U.T., Mishra, P. (2005), Cloning, functional expression and characterization of an alkaline protease from *Bacillus licheniformis* RSP-09-37, *Biotechnol. Lett.*, **27**, 1901-1907.

[182] Poessl, T.M., Kosjek, B., Ellmer, U., Gruber, C.C., Edegger, K., Faber, K. Hildebrandt, P., Bornscheuer, U.T., Kroutil, W. (2005), Stereo-complementary non-racemic halohydrins via biocatalytic hydrogen transfer-reduction of halo-ketones and one-pot cascade-reaction to enantiopure epoxide, *Adv. Synth. Catal.*, **345**, 1827-1834.

[181] Di Lorenzo, M., Hidalgo, A., Haas, M., Bornscheuer, U.T. (2005), Heterologous production of functional *Rhizopus oryzae* lipase forms in *Eschericha coli*, *Appl. Environm. Microbiol.*, **71**, 8974-8977.

[180] Xu, J.-H., Zhou, R., Bornscheuer, U.T. (2005), Comparison of differently modified *Pseudomonas cepacia* lipases in enantioselective preparation of a chiral alcohol for agrochemical use, *Biocatal. Biotransform.*, **23**, 415-422.

[179] Ödman, P., Wessjohann, L.A., Bornscheuer, U.T. (2005), Chemoenzymatic dynamic kinetic resolution of acyloins, *J. Org. Chem.*, **70**, 9551-9555.

[178] Ganske, F., Bornscheuer, U.T. (2005), Optimization of lipase-catalyzed glucose fatty acid ester synthesis in a two-phase systems containing ionic liquids and t-BuOH, *J. Mol. Catal. B: Enzym.*, **36**, 40-42.

[177] Buchholz, K., Bornscheuer, U.T. (2005), Highlights in biocatalysis – Historical landmarks and current trends, *Eng. Life Sci.*, **5**, 309-323.

[176] Barbayianni, E., Fotakopoulou, I., Schmidt, M., Constantinou-Kokotou, V., Bornscheuer, U.T., Kokotos, G. (2005), Enzymatic removal of carboxyl protecting groups. Cleavage of the benzyl and methyl moieties, *J. Org. Chem.*, **70**, 8730-8733..

[175] Bornscheuer, U.T., Rodriguez Ordonez, G., Hidalgo, A., Gollin, A., Lyon, J., Hitchman, T.S., Weiner, D.P. (2005), Selectivity of lipases and esterases towards phenol esters, *J. Mol. Catal. B: Enzym* **36**, 8-13.

[174] Bornscheuer, U.T., Kazlauskas, R.J., *Hydrolases in Organic Synthesis – Regio- and Stereoselective Biotransformations* (2005), 2nd edition, Wiley-VCH, Weinheim.

[173] Bornscheuer, U.T. (2005), Trends and Challenges in Enzyme Technology, *Adv. Biochem. Eng. / Biotechnol.*, **100**, 181-203.

[172] Ganske, F., Bornscheuer, U.T. (2005), Lipase-catalyzed glucose fatty acid ester synthesis in ionic liquids, *Org. Lett.*, **7**, 3097-3098.

[171] Strübing, D., Kirschner, A., Neumann, H., Hübner, S., Klaus, S., Bornscheuer, U.T., Beller, M. (2005), Synthesis of enantiomerically pure cyclohex-2-en-1-ols: Development of novel multicomponent reactions, *Chem. Eur. J.*, **11**, 4210-4218.

[170] Chaparro-Riggers, J.F., Breves, R., Michels, A., Maurer, K.H., Bornscheuer U.T. (2005), A GFP-based assay for the determination of hydrolytic activity and substrate specificity of subtilisins under washing conditions, J. *Mol. Catal. B: Enzymatic*, **35**, 74-77.

[169] Adamczak, M., Bornscheuer, U.T., Bednarski, W. (2005), Synthesis of ascorbyloleate by immobilized *Candida antarctica* lipases, *Proc. Biochem.*, **40**, 3177-3180.

[168] Bornscheuer U.T. (2005), White biotechnology for lipids, fats and oils, *Eur. J. Lipid Sci. Technol.*, **107**, 445-446,

[167] Bornscheuer, U.T. (2005), Deep-sea mining for unique biocatalysts, *Chem. Biol.*, **12**, 859-860.

[166] Buchholz, K., Kasche, V., Bornscheuer, U.T. (2005), Biocatalysts and Enzyme Technology, Wiley-VCH Weinheim.

[165] Bornscheuer, U.T., Weiner, D.P., Hitchman, T., Lyon, J., Wongsakul, S. (2005), Hydrolases, nucleic acids encoding them and mehods for making and using them. (Diversa Corporation, USA). PCT Int. Appl. (2005), CODEN: PIXXD2 WO 2005032496 A2 20050414

[164] Robertson, D.E., Bornscheuer, U.T. (2005), Biocatalysis and biotransformation. New technologies, enzymes and challenges, *Curr. Opin. Chem. Biol.*, **9**, 164-165.

[163] Schmidt, M., Barbayianni, E., Fotakopoulou, I., Höhne, M., Constantinou-Kokotou, V., Bornscheuer, U.T., Kokotos, G. (2005), Enzymatic removal of carboxyl protecting groups. Part I: cleavage of the tert-butyl moiety, *J. Org. Chem.*, **70**, 3737-3040,

[162] Schmidt, M., Bornscheuer, U.T. (2005), High-throughput assays for lipases and esterases, *Biomol. Eng.*, **22**, 51-56.

2004

[161] Bornscheuer, U.T., Musidlowska-Persson, A., Trauthwein, H. (2004), Mutant esterases with altered specific activity, enantioselectivity, and/or thermostability for use in hydrolysis or preparation of chiral esters. German Patent Application, DE 10258327 A1, Chem. Abstr. 141: 67292.

[160] Bornscheuer, U.T. (2004), High-throughput-screening systems for hydrolases, *Eng. Life. Sci.*, **4**, 539-542.

[159] Bornscheuer, U.T. (2004), Finding enzymatic gold on silver surfaces, *Nature Biotechnol.*, **22**, 1098-1099.

[158] Sareen, R., Bornscheuer, U.T., Mishra, P. (2004), Synthesis of Kyotorphin by an organic solvent–stable protease from *Bacillus licheniformis* RSP-09-37, *J. Mol. Catal. B: Enzym.*, **32**, 1-5.

[157] Wongsakul, S., Bornscheuer, U.T. Kittikun, H. (2004), Lipase-catalyzed acidolysis and Phospholipase D-catalyzed transphosphatidylation of phosphatidylcholine, *Eur. J. Lipid Sci. Technol.*, **106**, 665-670.

[156] Scheid, G., Ruijter, E., Konarzycka-Bessler, M., Bornscheuer, U.T., Wessjohann, L.A. (2004), Synthesis and resolution of a key building block for epothilones – a comparison of asymmetric synthesis, chemical, and enzymatic resolution, *Tetrahedron: Asymmetry*, **15**, 2861-2869.

[155] Kirschner, A., Langer, P., Bornscheuer, U.T. (2004), LIpase-catalyzed highly enantioselective kinetic resolution of a-hydroxy butenolides, *Tetrahedron: Asymmetry*, **15**, 2871-2874.

[154] Bornscheuer, U.T., Kazlauskas, R.J. (2004), Catalytic promiscuity in biocatalysis: Using old enzymes to form new bonds and follow new pathways, *Angew. Chem. Int. Ed. Engl.*, **42**, 6032-6040; Untreue Enzyme in der Biokatalyse: Mit alten Enzymen zu neuen Bindungen und Synthesewegen, *Angew. Chem.*, **116**, 6156-6165.

[153] Sareen, R., Bornscheuer, U.T., Mishra, P. (2004), A microtiter plate assay for the determination of the synthetic activity of protease, *Anal. Biochem.*, **333**, 193-195.

[152] Schmidt, M., Baumann, M., Henke, E., Konarzycka-Bessler, M., Bornscheuer U.T. (2004), Directed evolution of lipases and esterases, *Methods Enzymol.*, **388**, 199-207.

[151] Wongsakul, S., Kittikun, A., Bornscheuer, U.T. (2004), Lipase-catalyzed synthesis of structured triglycerides from 1,3-diglycerides, *J. Am. Oil Chem. Soc.*, **81**, 151-155.

[150] Schönfeld, D.L., Bornscheuer, U.T. (2004), A polarimetric assay for the medium-throughput determination of amino acid racemase activity, *Anal. Chem.*, **76**, 1184-1188.

[149] Wessjohann, L.A., Scheid, G., Orru, R.V.A., Kuit, W., Ruijter, E., Henke, E., Bornscheuer, U.T. (2004), A new route to protected acyloins and their enzymatic resolution with lipases, *Eur. J. Org. Chem.*, 1063-1074.

2003

[148] Bornscheuer, U.T.; Konarzycka, M., Hills, G. (2003). Assay for synthesis activity of hydrolases in nonaqueous media using enzymic transesterification reaction releasing a carbonyl compd. European Patent Application, EP 1354960 A1, Chem. Abstr. 139:303791.

[147] Musidlowska-Persson, A., Bornscheuer, U.T. (2003), Recombinant porcine intestinal carboxyl esterase: Cloning from the pig liver esterase gene by site-directed mutagenesis, functional expression and characterization, *Protein Eng.*, **16**, 1139-1145.

[146] Soumanou, M.M., Bornscheuer, U.T. (2003), Lipase-catalyzed alcoholysis of vegetable oils, *Eur. J. Lipid Sci. Technol.*, **105**, 656-660.

[145] Durban, M., Bornscheuer, U.T. (2003), An assay system for the detection of Phospholipase C activity, *Eur. J. Lipid Sci. Technol.*, **105**, 633-637.

[144] Ganske, F., Meyer, H.H., Deutz, H., Bornscheuer, U.T. (2003), Enzyme-catalyzed hydrolysis of 18-methyl eicosanoic acid-cysteine thioester, *Eur. J. Lipid Sci. Technol.*, **105**, 627-632.

[143] Bornscheuer, U.T.,Assay systems for screening or selection of biocatalysts. In: Enzyme functionality: Design, engineering and screening (Svendsen, A, ed.) Marcel Dekker, New York, pp. 475-492.

[142] Bornscheuer, U.T., Musidlowska-Persson, A., Böttcher, D., Liebeton, K., Lorenz, P., Eck, J., Zinke, H., Schleper, C., Langer, P., Trauthwein, H., Karau, A., Buchholz, S. (2003), Esterasen und Lipasen aus kultivierten und nicht-kultivierten Mikroorganismen, *Transkript*, **9** (10), 81-84.

[141] Kähler, M., Rieks, A., Kirchner, U., Wiggenhorn, K., Bornscheuer, U.T., Schmidt, M., Eisner, A., Petersen, W., Ellerbrock, F., Bollow, S. (2003), Biokatalytische Synthese enantiomerenreiner building blocks, *Transkript*, **9** (10), 78-80.

[140] Bornscheuer, U.T. (2003), Immobilizing enzymes: how to create more suitable biocatalysts, *Angew. Chem. Int. Ed. Engl.* **42**, 3336-3337; Enzymimmobilisierung: ein Weg zu verbesserten Biokatalysatoren, *Angew. Chem.*, **115**, 3458-3459.

[139] Soumanou, M.M., Bornscheuer, U.T. (2003), Improvement in lipase-catalyzed synthesis of fatty acid methyl esters from sunflower oil to Biodiesel using immobilized lipases, *Enzyme Microb. Technol.*, **33**, 97-103.

[138] Henke, E., Bornscheuer, U.T., Schmid, R.D., Pleiss, J. (2003), The molecular mechanism of enantiorecognition of tertiary alcohols by carboxylesterases, *ChemBioChem.*, **4**, 485-493.

[137] Musidlowska-Persson, A., Bornscheuer, U.T. (2003), Site-directed mutagenesis of recombinant pig liver esterase yields mutants with altered enantioselectivity, *Tetrahedron: Asymmetry*, **14**, 1341-1344.

[136] Horsman, G.P., Liu, A.F.M., Henke, E., Bornscheuer, U.T., Kazlauskas, R.J. (2003), Mutations in distant residues moderately increase the enantioselectivity of Pseudomonas fluorescens esterase toward methyl 3-Bromo-2-methylpropanoate and ethyl 3-phenylbutyrate, *Chem. Eur. J.*, **9**, 1933-1939.

[135] Konarzycka-Bessler, M. Bornscheuer, U.T. (2003), A high-throughput-screening method for the determination of the synthetic activity of hydrolases, *Angew. Chem. Int. Ed. Engl.*, **42**, 1418-1420; Eine Hochdurchsatz-Screeningmethode zur Bestimmung der Syntheseaktivität von Hydrolasen, *Angew. Chem.*, **115**, 1449-1451.

[134] Persson, M.M., Bornscheuer, U.T. (2003), Increased stability of an esterase from Bacillus subtilis in ionic liquids as compared to organic solvents, *J. Mol. Catal. B: Enzymatic*, **22**, 21-27.

[133] Wongsakul, S., Prasertsan, P., Bornscheuer, U.T., H-Kittikun, A. (2003), Synthesis of 2-monoglycerides by alcoholysis of palm oil and tuna oil using immobilized lipases, *Eur. J. Lipid Sci. Technol.*, **105**, 68–73.

2002

[132] Bornscheuer, U.T.; Baumann, M. (2002), Detection method for identifying hydrolases. International Patent Application, PWO 0294949 Chem. Abstr. 137:06410.

[131] Henke, E., Bornscheuer, U.T. (2003), Fluorophoric assay for the high-throughput determination of amidase activity, Anal. Chem., **75**, 255-260.

[130] Hari Krishna, S., Persson, M.M., Bornscheuer, U.T. (2002), Enantioselective transesterification of a tertiary alcohol by Lipase A from Candida antarctica, Tetrahedron: Asymmetry, **13**, 2693-2696.

[129] Bornscheuer, U.T. (2002), Methods to increase enantioselectivity of lipases and esterases, Curr. Opin. Biotechnol., **13**, 543-547.

[128] Vorlová, S., Bornscheuer, U.T., Gatfield, I., Hilmer, J.M., Bertram, H.J., Schmid, R.D., (2002), Enantioselective hydrolysis of D,L-menthyl benzoate to L-menthol by recombinant Candida rugosa lipases, Adv. Synth. Catal., **344**, 1152-1155.

[127] Short, J., Mathur, E., Baumann, M., Bornscheuer, U. (2002), Identification, cloning and sequences of hydrolases and their use in kinetic resolution of enantiomers. International Patent Application, WO 2002057411, Chem. Abstr. 137:121607.

[126] Tscherry, B., Bornscheuer, U., Musidlowska, A., Werlen, J. Zimmermann, T. (2002), Manufacture of L-carnitine from betaine esters with microorganisms bearing a betaine ester hydrolase. International Patent Application, WO 2002061094, Chem. Abstr. 137:139488.

[125] Riermeier, T., Bornscheuer, U., Altenbuchner, J., Hildebrandt, P. (2002), An alcohol dehydrogenase from Pseudomonas fluorescens for use in the manufacture of alcohols from ketones. European Patent Application, EP1241263, Chem. Abstr. 137:228601.

[124] Henke, E., Bornscheuer, U.T., (2002), Esterases from *Bacillus subtilis* and *Bacillus stearothermophilus* share high sequence homology but differ substantially in their properties, *Appl. Microbiol. Biotechnol.*, **60**, 320-326.

[123] Musidlowska-Persson, A., Bornscheuer, U.T. (2002), Substrate specificity of the gamma-isoenzyme of recombinant pig liver esterase towards acetates of secondary alcohols, *J. Mol. Catal. B: Enzymatic*, **19-20C**, 129-133.

[122] Bornscheuer, U.T., Adamczak, M., Soumanou, M.M. (2002) Lipase-catalyzed synthesis of modified lipids. In: Lipids as constituents of functional foods (Gunstone, FD, ed.) PJ Barnes & Associates, Bridgwater, pp. 149-182.

[121] Bornscheuer, U.T., Bessler, C., Srinivas, R., Krishna, S.H. (2002), Optimizing lipases and related enzymes for efficient application, *Trends Biotechnol.*, **20**, 433-437.

[120] Henke, E., Pleiss, J., Bornscheuer, U.T. (2002), Activity of lipases and esterases towards tertiary alcohols: Insights into structure-function relationships, *Angew. Chem. Int. Ed. Engl.*, **41**,

3211-3213. Aktivität von Lipasen und Esterasen gegenüber tertiären Alkoholen: Neue Einblicke in Struktur-Funktions-Beziehungen, *Angew. Chem.*, **114**, 3338-3341.

[119] Bornscheuer, U.T., Meyer, H.H., Altenbuchner, J., (2002), Alteration of substrate specificity of enzymes, US Patent Application, US 6,365,398.

[118] Bornscheuer, U., Henke, E., Yang, H. (2002), Process for the resolution of esters of arylalkylcarboxylic acids, US Patent Application, US 6,201,147.

[117] Gatfield, I., Hilmer, J.M., Bornscheuer, U., Schmid, R.D., Vorlova, S., (2002), Method for preparing D- and L-menthol, European Patent Application, EP 1223223.

[116] Hildebrandt, P., Musidlowska-Persson, A., Bornscheuer, U.T., Altenbuchner, J. (2002), Cloning, functional expression and biochemical characterization of a stereoselective dehydrogenase from *Pseudomonas fluorescens* DSM50106, *Appl. Microbiol. Biotechnol.*, **59**, 483-487.

[115] Bornscheuer, U., Musidlowska, A., Schmidt-Dannert, C., Lange, S. (2002), Rekombinante Schweineleber-esterase, deren Verwendung sowie ein Verfahren zu deren Herstellung. German Patent, DE 100 61 864 A1.

[114] Wessjohann L.A., Scheid G., Bornscheuer U., Henke E., Kuit W., Orru R. (2002), Epothilone synthesis components III and IV: Asymmetrically substituted acyloins and acyloin derivatives, method for the production thereof and method for the production of Epothilone B, D and Epothilone derivatives. International Patent Application, PCT, WO 02/32844 A2.

[113] Bornscheuer, U.T. (2002), Microbial carboxyl esterases - Classification, properties and application in biocatalysis, *FEMS Microbiol. Rev*. **26**, 73-81.

[112] Henke, E., Baumann, M., Musidlowska-Persson, A., Bornscheuer, U.T. (2002), Innovative Methoden zur Erzeugung stereoselektiver Esterasen, *BIOforum* **4**, 218-219.

[111] Bornscheuer, U.T. (2002), Evolutionary Generation of Enzymes with Novel Substrate Specificities, in: Directed Evolution of Proteins; (Brakmann, S., Johnsson, K.; Ed.), Weinheim: Wiley-VCH, pp. 329-341.

[110] Yan, Y., Bornscheuer, U.T., Schmid, R.D. (2002), Efficient water removal in lipase-catalyzed esterifications using a low-boiling-point azeotrope, *Biotechnol. Bioeng*. **78**, 31-34.

2001

[109] Baumann, M., Stürmer, R., Bornscheuer, U.T. (2001), A high-throughput-screening method for the identification of active and enantioselective hydrolases, *Angew. Chem. Int. Ed. Engl*.,**40**, 4201-4204. Eine Hochdurchsatz-Screening-Methode zur Identifizierung aktiver und enantioselektiver Hydrolasen, *Angew. Chem*. **113**, 4329-4333. (HOT PAPER).

[108] Bornscheuer, U.T. (2001), Lipase-catalyzed synthesis of structured triglycerides, *Lipid Technology*, **7**, 105-107.

[107] Yan, Y., Stadler, G., Lutz-Wahl, S., Otto, R.T., Reuss, M., Bornscheuer, U.T., Schmid, R.D. (2001), Regioselective glucose ester synthesis on preparative scale, *Eur. J. Lipid Sci. Technol.*, **103**, 583-587.

[106] Brocca, S., Bornscheuer, U., Pleiss, J., Schmid, R.D., Schmid, U., Schmitt, J. Modified lyoplytic enzymes and their use. European Patent EP 00200513 (Unilever).

[105] Lange, S., Musidlowska,A., Schmidt-Dannert, C., Schmitt, J., Bornscheuer, U.T. (2001), Cloning,functional expression and characterization of recombinant pig liver esterase, *ChemBioChem*, **2**, 576-582.

[104] Musidlowska, A., Lange, S., Bornscheuer, U.T. (2001), Via Overexpression in the yeast *Pichia pastoris* to enhanced enantioselectivity: New aspects in the application of pig liver esterases, *Angew. Chem. Int. Ed. Engl.*, **40**, 2851-2853. Durch Überexpression in der Hefe *Pichia pastoris* zu erhöhter Enantioselektivität: Neue Aspekte in der Anwendung von Schweineleberesterase, *Angew. Chem.*, **113**, 2934-2936.

[103] Hildebrandt, P., Riermeier, T., Altenbuchner, J., Bornscheuer, U.T. (2001), Efficient resolution of prostereogenic arylaliphatic ketones using a recombinant alcohol dehydrogenase from *Pseudomonas fluorescens* DSM50106 expressed in *E. coli*, *Tetrahedron: Asymmetry*, **12**, 1207-1210.

[102] Yan, Y., Bornscheuer,U.T., Schmid, R.D. (2001), Applicationof crystallization technique for the lipase-catalyzed solid phase synthesis of sugar fatty acid monoesters; (Wildlak, N., Hartel, R., Narine, S.; Ed.),Champaign: AOCS Press, Vol. **15**, 168-175.

[101] Bornscheuer, U.T. (2001), Directed evolution of enzymes for biocatalytic applications, *Biocatal. Biotransform.*, **19**, 84-96.

[100] Liu, A. M. F., Somers, N. A., Kazlauskas, R. J., Brush, T. S., Zocher, F., Enzelberger, M. M., Bornscheuer, U. T., Horsman, G. P., Mezzetti, A., Schmidt-Dannert, C., Schmid, R. D. (2001), Mapping the substrate selectivity of new hydrolases using colorimetric screening: lipases from *Bacillus thermocatenulatus* and *Ophiostoma piliferum*, esterases from *Pseudomonas fluorescens* and *Streptomyces diastatochromogenes*, *Tetrahedron: Asymmetry*, **12**, 545-556.

[99] Bornscheuer,U. T.,Pohl, M. (2001), Improved biocatalysts by directed evolution and rationalprotein design, *Curr. Opin. Chem. Biol.*, **5**, 137-142.

[98] Yan, Y., Bornscheuer, U. T., Stadler, G., Lutz-Wahl, S., Reuss, M., Schmid, R. D. (2001), Production of sugar fatty acid esters by enzymatic esterification in a stirred-tankmembrane reactor: Optimization of parameters by response surface methodology, J. *Am. Oil Chem. Soc*. **78**, 147-152.

2000

[97] Yan, Y., Bornscheuer, U.T., Stadler, G., Reuss, R., Schmid, R.D. (2000), Enzymatic production of biosurfactant 6-*O*-glucose fatty acid monoester, *J. Deterg. Cosmetics* (in Chinese), **23**, 71-77.

[96] Baumann, M., Hauer,B.H., Bornscheuer, U.T. (2000), Rapid screening of hydrolases for the enantioselective conversion of "difficult-to-resolve substrates", *Tetrahedron: Asymmetry*, **11**, 4781-4790.

[95] Bornscheuer, U. T. (2000), Directed evolution of enzymes, *Chim. Oggi/ Chem. Today*, **18**, 65-67.

[94] Bornscheuer, U., Schmid, R.D., Syldatk, C., Youchun, Y., Otto, R. (2000), Verfahren zur selektiven Veresterung von Polyolen. German Patent DE 199 24 221 A1.

[93] Stander, M. A., Bornscheuer, U. T., Henke, E., Steyn, P. S. (2000), Screening of commercial hydrolases for the degradation of Ochratoxin A, *J. Agric. Food Chem.*, **48**, 5736-5739.

[92] Schwaneberg, U., Bornscheuer, U.T. (2000), Fatty acid hydroxylations using P450 monooxygenases, in: Enzymes in Lipid Modification (Bornscheuer, U.T., Ed), Weinheim: Wiley-VCH, pp.394-414.

[91] Bornscheuer, U.T. (Ed.) (2000), Enzymes in Lipid Modification, Weinheim: Wiley-VCH.

[90] Peters, H., Schmidt-Dannert, C., Cao, L., Bornscheuer, U.T., Schmid, R.D. (2000), Purification and reconstitution of an integral membrane protein, the photoreaction center of *Rhodobacter sphaeroides*, using synthetic sugar esters, *Biotechniques* **28**, 1214-1219.

[89] Henke, E., Schuster, S., Yang, H., Bornscheuer, U.T., (2000), Lipase-catalyzed resolution ofIbuprofen, *Chem. Month*. **131**, 633-638.

[88] Yang,H., Henke, E., Bornscheuer, U.T. (2000), Verfahren zur Racematspaltung von Arylalkylcarbonsäureestern. German Patent DE 198 44 876A1.

[87] Bornscheuer,U.T. (2000), Strategies for Improving the Lipase-Catalysed Preparation of Chiral Compounds, in: Methods and Tools in Biosciences and Medicine,Methods in Non-aqueous Enzymology (Gupta, M.N.; Ed.), Basel: Birkhäuser,pp. 90-109.

[86] Bornscheuer,U.T. (2000), Industrial Biotransformations, in: Biotechnology-Series (Rehm,H.J., Reed, G., Pühler, A. Stadler, P.J.W.; Eds.), Vol.8b, Weinheim: Wiley-VCH, pp. 277-294.

[85] Bornscheuer, U.T, Schmid, R.D., Scheib, H., Otto, R.T., (2000), Method for the production of uronic acid esters in a lipase-catalyzed process. German Patent DE 198 39 219 A1, Chem. Abstr. 132:179660

[84] Otto, R., Scheib, H., Bornscheuer, U.T., Pleiss, J., Syldatk, C., Schmid, R.D. (2000), Substrate specificity of lipase B from *Candida antarctica* in the synthesis of arlyaliphatic glycolipids, *J. Mol. Catal. B: Enzymatic* **8** ,210-211.

1999

[83] Yan, Y., Bornscheuer, U.T., Schmid, R.D. (1999), Lipase-catalyzed synthesis of vitamin C fattyacid esters, *Biotechnol. Lett*., **21**, 1051-1054.

[82] Zocher, F., Enzelberger, M.M., Bornscheuer, U.T., Hauer, B., Wohlleben, W., Schmid, R.D. (1999), Epoxide hydrolase activity of *Streptomyces* strains, *J. Biotechnol*., **77** ,287-292.

[81] Bornscheuer, U.T. (1999), ~250 keywords, in: Dictionary of Biotechnology and Gentechnology (in german language) (Deckwer, W.D., Pühler, A., Schmid, R.D.; Eds.). Stuttgart: Thieme, ISBN: 3137364027

[80] Bornscheuer, U.T., Pleiss, J., Schmidt-Dannert, C., Schmid, R.D. (1999), Lipases from *Rhizopus oryzae*: genetics, structure and applications, in.: Protein Engineeringin Industrial Biotechnology (Alberghina, L.; Eds.), 115-134. London: Harwood.

[79] Bornscheuer, U.T. (1999), Extending the applicability of lipases and esterases for organic synthesis, in.: Bioorganic Chemistry - Highlights and New Aspects (Diederichsen, U., Lindhorst, T.K., Wessjohann, L. , Westermann, B.; Eds.) (1999), Weinheim: Wiley-VCH, ISBN 3-527-29665-4, pp. 127-131.

[78] Wolfangel, P., Meyer, H.H., Bornscheuer, U.T., Müller, K. (1999), Solid state NMR and FTIR studies on bilayer membranes from 1,2-dioctadec-(14-ynoyl)-*sn*-glycero-3-phosphatidylcholine, *Biochim. Biophys. Acta* **1420**, 121-138.

[77] Henke, E., Bornscheuer, U.T. (1999), Directed evolution of an esterase from *Pseudomonas fluorescens*. Random mutagenesis by error-prone PCR or a mutator strain and identification of mutants showing enhanced enantioselectivity by a resorufin-based fluorescence assay, *Biol. Chem*. **380**, 1029-1033.

[76] Yan, Y., Bornscheuer, U.T., Cao, L., Schmid, R.D. (1999), Lipase-catalyzed solid phase synthesis of sugar fatty acid esters. Removal of by-products by azeotropic distillation, *Enzyme Microb. Technol.* **25**, 725-728.

[75] Bornscheuer, U.T., Altenbuchner, J., Meyer., H.H. (1999), Directed evolution of an esterase: Screening of enzyme libraries based on pH-indicators and a growth assay, *Bioorg. Med. Chem*., **7**, 2169-2173.

[74] Bornscheuer, U.T. (1999), Recent advances in the lipase-catalyzed biotransformation of fats and oils, in.: Recent Research Developments in Oil Chemistry,Vol. **3**,93-106. Trivandrum: Transworld Research Network.

[73] Schmid, U., Bornscheuer, U.T., Soumanou, M.M., McNeill, G.P., Schmid, R.D. (1999), Highly-selective synthesis of 1,3-oleyl-2-palmitoyl-glycerol by lipase catalysis, *Biotechnol. Bioeng*. **64**, 678-684.

[72] Otto, R., Syldatk, C., Cao, L., Bornscheuer, U., Schmid, R.D. (1999), Verfahren zur selektiven Veresterung von Polyolen. German Patent DE 197 53789 A1

[71] Ji, H.-S., McNiven,S., Yano, K., Ikebukuro, K., Bornscheuer, U.T., Schmid, R.D., Karube, I.(1999), Highly sensitive trilayer piezoelectric odor sensor, *Anal. Chim. Acta*, **387**, 39-45.

[70] Zocher, F., Enzelberger, M.M., Bornscheuer, U.T., Hauer, B., Schmid, R.D. (1999), A colorimetricassay suitable for screening epoxide hydrolase activity, *Anal. Chim. Acta*, **391**, 345-351.

[69] Bornscheuer, U.T., Altenbuchner, J., Meyer, H.H. (1999), Verfahren zur Veränderung der Substratspezifität von Enzymen, German Patent DE 197 43 683 A1; European Patent EP 0909821A2, US Patent, US 6,365,398

[68] Khalameyzer, V., Bornscheuer, U.T. (1999), Overexpression and characterization of an esterase from *Streptomyces diastatochromogenes*, *Biotechnol. Lett.*, **21**, 101-104.

[67] Yang, H., Henke, E., Bornscheuer, U.T. (1999), Highly efficient double enantioselection by lipase-catalyzed transesterification of (*R*,*S*)-carboxylic acid vinyl esters with (*R*,*S*)-1-phenylethanol, *Tetrahedron: Asymmetry*, **10**, 957-960.

[66] Bornscheuer, U.T., Kazlauskas, R.J. (1999), Hydrolases in Organic Synthesis - Regio- and Stereoselective Biotransformations, Weinheim: Wiley-VCH, ISBN 3-527-30104-6.

[65] Bornscheuer, U.T., Neue Strategien zum Einsatz von Lipasen und Esterasen in der organischen Synthese, Aachen: Shaker, ISBN 3-8265-4558-3.

[64] Yang, H., Henke, E., Bornscheuer, U.T. (1999), The use of vinyl esters significantly enhanced enantioselectivities and reaction rates in lipase-catalyzed resolutions of arlyaliphatic carboxylic acids, J. Org. Chem., **64**, 1709-1712.

[63] Bornscheuer, U., Padmanabhan, P., Scheper, T. (1999), Emulsion immobilized enzymes, in: Microspheres, microcapsules & liposomes (Arshady, R.; Ed.) 541-558. London: Citus Books.

[62] Cao, L., Bornscheuer, U.T., Schmid, R.D. (1999), Lipase-catalyzed solid-phase synthesis of sugar esters. Influence of immobilization on productivity and stability of the enzyme, *J. Mol. Catal. B: Enzymatic*, **6**, 279-285.

[61] Khalameyzer, V., Fischer, I., Bornscheuer, U.T., Altenbuchner, J. (1999), Screening, nucleotide sequence and biochemical characterization of an esterase from *Pseudomonas fluorescens* with high activity toward lactones, *Appl. Environm. Microbiol.*, **65**,477-482.

[60] Minning, S., Weiss, A., Bornscheuer, U.T., Schmid, R.D. (1999), Determination of peracid andputative enzymatic peracid formation by an easy colorimetric assay, *Anal. Chim. Acta*, **378**, 295-300.

[59] Soumanou, M.M., Bornscheuer, U.T., Schmid, U., Schmid, R.D. (1999), Crucial role of support and wateractivity on the lipase-catalyzed synthesis of structured triglycerides, *Biocatal. Biotransform.*, **16**, 443-459.

1998

[58] Bornscheuer, U.T., Soumanou, M.M., Schmid, R.D., Schmid, U. (1998), Preparation of symmetrical triglycerides ABA, European Patent EP 88 27 92 (Chem. Abstr. 130:51410).

[57] Cao, L., Bornscheuer, U.T., Schmid, R.D. (1998), Lipase-catalyzed solid phase synthesis of sugar esters, IV: Selectivity of lipases towards primary and secondary hydroxyl groups in carbohydrates, *Biocatal. Biotransform*. **16**, 249-257.

[56] Bornscheuer, U.T. (1998), Directed evolution of enzymes, *Angew. Chem*. **110**, 3285-3288; *Angew. Chem. Int. Ed. Engl*. **37**, 3105-3108.

[55] Schmid, U., Bornscheuer, U.T., Soumanou, M.M., McNeill, G.P., Schmid, R.D. (1998), Optimization of the reaction conditions in the lipase-catalyzed synthesis of structured triglycerides, *J. Am. Oil Chem. Soc*. **75**, 1527-1531.

[54] Otto, R.T., Bornscheuer, U.T., Scheib, H., Pleiss, J., Syldatk, C., Schmid, R.D. (1998), Lipase-catalyzed esterification of unusual substrates: Synthesis of glucuronic acid and ascorbic acid (vitamin C) esters, *Biotechnol. Lett*. **20**, 1091-1094.

[53] Takahashi, S., Ueda, M., Atomi, H., Beer, H.D., Bornscheuer, U.T., Schmid, R.D., Tanaka, A.(1998), Extracellular production of active *Rhizopus oryzae* lipase by *Saccharomyces cerevisiae*, J. Ferment. Bioeng. **86**, 164-168.

[52] Otto, R., Bornscheuer, U.T., Syldatk, C., Schmid, R.D. (1998), Lipase-catalyzed synthesis of arylaliphatic esters of β-D(+)-glucose, alkyl- and arylglucosides and characterization of their surfactant properties, *J. Biotechnol*. **64**, 231-237.

[51] Beer, H.D., Bornscheuer, U.T., McCarthy, J.E.G., Schmid, R.D. (1998), Cloning, expression, characterization and role of the leader sequence of a lipase from *Rhizopus oryzae*, *Biochim. Biophys. Acta* **1399**, 173-180.

[50] Bornscheuer, U., Heinz, E. (1998), Toward new fats, oils through biotechnology, *Inform* **9**, 485-488.

[49] Minning, S., Bornscheuer, U., Schmid, R.D. (1998), Azo dye for detectionof percarboxylic acids, German Patent DE 19651797 (Chem. Abstr. 129:68839).

[48] Wagegg, T., Enzelberger, M.M., Bornscheuer, U.T., Schmid, R.D. (1998), The use of methoxy acetoxyesters significantly enhances reaction rates in the lipase-catalyzed preparation of optical pure 1-(4-chloro-phenyl) ethyl amines, *J. Biotechnol*. **61**, 75-78.

[47] Enzelberger, M.M., Zocher, F., Schmidt-Dannert, C., Bornscheuer, U.T., Schmid, R.D., Hauer, B., Eipel, H. (1998), Singularization of enzyme mutants by use of a cell sorter and green fluorescent protein, *BIOforum* **4**, 192-194.

[46] Otto, R.T., Bornscheuer, U.T., Syldatk, C., Schmid, R.D. (1998), Synthesis of aromatic *n*-alkyl-glucoside esters in a coupled ß-glucosidase and lipase reaction, *Biotechnol. Lett*. **20**, 437-440.

[45] Soumanou, M.M., Bornscheuer, U.T., Schmid, R.D. (1998), Two-step enzymatic reaction for the synthesisof pure structured triglycerides, *J. Am. Oil Chem. Soc.* **75**, 703-710.

[44] Soumanou, M.M., Bornscheuer, U.T., Schmid, U., Schmid, R.D. (1998), Synthesis of structured triglycerides by lipase catalysis, *Fett/Lipid* **100**, 156-160.

[43] Krebsfänger, N., Zocher, F., Altenbuchner, J., Bornscheuer, U.T. (1998), Characterization, and enantioselectivity of a recombinant esterase from *Pseudomonas fluorescens*, *Enzyme Microb. Technol*. **21**, 641-646.

[42] Yano, K., Bornscheuer, U.T., Schmid, R.D., Yoshitake, H., Ikebukuro, K., Yokoyama, K., Masuda,Y., Karube, I. (1998), Development of odorant sensor using polymer-coated quartz crystals immobilized with unusual lipids, *Biosensors Bioelectronics* **13**, 397-405.

[41] Zocher, F., Krebsfänger, N., Yoo, O.J., Bornscheuer, U.T. (1998), Enantioselectivity of a recombinant esterase from *Pseudomonas fluorescens*, *J. Mol. Catal. B, Enzymatic* **5**, 187-190.

[40] Bornscheuer, U.T., Altenbuchner, J., Meyer, H.H. (1998), Directed evolution of an esterase for the stereoselective resolution of a key intermediate in the synthesis of Epothilones, *Biotechnol. Bioeng*. **58**, 554-559.

[39] Kazlauskas, R.J., Bornscheuer, U.T. (1998), Biotransformations with Lipases, in.: Biotechnology-Series (Rehm, H.J., Reed, G., Pühler, A., Stadler, P.J.W., Kelly, D.R.; Eds.), Vol. 8a, 37-191. Weinheim: Wiley-VCH.

[38] Krebsfänger, N., Schierholz, K., Bornscheuer, U.T. (1998), Enantioselectivity of a recombinant esterase from *Pseudomonas fluorescens* towards alcohols and carboxylic acids, *J. Biotechnol*. **60**, 105-111.

[37] Bornscheuer, U.T., Enzelberger, M.M., Altenbuchner, J., Meyer, H.H. (1998), Mutator strain *Epicurian coli* XL1-red generates esterase variants, *Strategies* **11**,16-17.

[36] Kisselev, P., Wessel, R., Pisch, S., Bornscheuer, U., Schmid, R.D., Schwarz, D. (1998), Branched phosphatidylcholines stimulate activity of cytochrome P450SCC (CYP11A1) in phospholipid vesicles by enhancing cholesterol binding, membrane incorporation, and protein exchange, *J. Biol. Chem*. **273**, 1380-1286.

1997

[35] Soumanou, M.M., Schmid, U., Bornscheuer, U.T., Schmid, R.D. (1997), Lipasekatalysierte Synthesevon strukturierten Triglyceriden, in: Biokonversion nachwachsender Rohstoffe ,Vol.10, 184-190. Münster: Landwirtschaftsverlag.

[34] Yano, K., Yoshitake, H., Bornscheuer, U.T., Schmid, R.D., Ikebukuro, K., Yokoyama, K., Masuda, Y., Karube, I. (1997), Development of a chemical vapor sensor using piezoelectric quartz crystals coated with unusual lipids, *Anal. Chim. Acta* **340**, 41-48.

[33] Thude, S., Shukun, L., Said, M.B., Bornscheuer, U.T. (1997), Lipase-catalyzed synthesis of monoacylglycerides by glycerolysis of campher tree seed oil and cocoa-butter, *Fett/Lipid* **99**, 246-250.

[32] Blüher, A., Grube, A., Bornscheuer, U., Banik, G. (1997), A reappraisal of the enzyme lipase for removing drying-oil stains on paper, *Paper Conservator* **21**, 37-47.

[31] Soumanou, M.M., Bornscheuer, U.T., Menge, U., Schmid, R.D. (1997), Synthesis of structured triglycerides from peanut oil with immobilized lipase, *J. Am. Oil Chem. Soc*. **74**, 427-433.

[30] Cao, L., Fischer, A., Bornscheuer, U.T., Schmid, R.D. (1997), Lipase-catalyzed solid phase preparation of sugar fatty acid esters, *Biocatal. Biotransform*. **14**, 269-283.

[29] Schwarz, D., Kisselev, P., Wessel, R., Pisch, S., Bornscheuer, U., Schmid, R.D. (1997), Possible involvement of nonbilayer lipids in the stimulation of the activity of cytochrome P450SCC (CYP11A1) and its propensity to induce vesicle aggregation, *Chem. Phys. Lipids* **85**, 91-99.

[28] Pisch, S., Bornscheuer, U., Meyer, H.H., Schmid, R.D. (1997), Properties of unusual phospholipids IV: Chemoenzymatic synthesis of phospholipids bearing acetylenic fatty acids, *Tetrahedron* **53**, 14627-14634.

[27] Negelmann, L., Pisch, S., Bornscheuer, U., Schmid, R.D. (1997), Properties of unusual phospholipids III: Synthesis, monolayer investigations and DSC studies of hydroxy octadeca(e)noic acids and diacylglycerophosphocholines derived therefrom, *Chem. Phys. Lipids* **90**, 117-134.

[26] Schwarz, D., Kisselev, P., Pfeil, W., Pisch, S., Bornscheuer, U., Schmid, R.D. (1997), Evidence that nonbilayer phase propensity of the membrane is important for the side chain cleavage activity of cytochrome P450SCC (CYP11A1), *Biochemistry* **36**,14262-14270.

[25] Enzelberger, M.M., Bornscheuer, U.T., Gatfield, I., Schmid, R.D. (1997), Lipase-catalysed resolution of γ-and δ-lactones, *J. Biotechnol*. **56**, 129-133.

1996

[24] Gaziola, L., Bornscheuer, U., Schmid, R.D. (1996), A rapid and effective separation of enantiomersof glycerol derivatives by gas chromatography and their lipase-catalyzed biotransformation, *Enantiomer* **1**, 49-54.

[23] Wünsche, K., Schwaneberg, U., Bornscheuer, U.T., Meyer, H.H. (1996), Chemoenzymic route to β-blockers via 3-hydroxy esters, *Tetrahedron: Asymmetry* **7**, 2017-2022.

[22] Bornscheuer, U., Gaziola, L., Schmid, R.D. (1996), Application of vinyl esters for the lipase-catalyzed high-yield synthesis of monoacylglycerols, *Ann. N.Y. Acad. Sci*. **799**, 757-761.

[21] Lampe, T.F.J., Hoffmann, H.M.R., Bornscheuer, U.T. (1996), Lipase mediated desymmetrization of *meso* 2,6-di(acetoxymethyl)tetrahydropyran-4-one derivatives. An innovative route to enantiopure 2,4,6-trifunctionalized C-glycosides, *Tetrahedron:Asymmetry* **7**, 2889-2900.

[20] Bornscheuer, U., Capewell, A., Wendel, V., Scheper, T. (1996), Online determination of the conversion in a lipase-catalyzed kinetic resolution in supercritical carbon dioxide, *J. Biotechnol*. **46**, 139-143.

[19] Heidt, M., Bornscheuer, U., Schmid, R.D. (1996), Studies on the enantioselectivity in the lipase-catalyzed synthesis of monoacylglycerols from the isopropylidene glycerol, *Biotechnol. Tech*. **10**, 25-30.

[18] Cao, L., Bornscheuer, U.T., Schmid, R.D. (1996), Lipase-catalyzed solid-phase synthesis of sugar esters, *Fett/Lipid* **98**, 332-335.

[17] Capewell, A., Wendel, V., Bornscheuer, U., Meyer, H.H., Scheper, T. (1996), Lipase-catalyzed kinetic resolution of 3-hydroxy esters in organic solvents and supercritical carbon dioxide, *Enzyme Microb. Technol*. **19**, 181-186.

1995

[16] Bornscheuer, U., Herar, A., Capewell, A., Wendel, V., Kreye, L., Scheper, T., Voß, E., Wünsche, K., Meyer, H.H. (1995), Lipase-catalyzed kinetic resolution of 3-hydroxyesters: Optimization, batch, and continuous reactions, *Ann. N.Y. Acad. Sci*. **750**, 215-221.

[15] Bornscheuer, U.T., Yamane, T. (1995), Fatty acid vinyl esters as acylating agents: a new method for the enzymic synthesis of monoacylglycerols, *J. Am. Oil Chem. Soc*. **72**,193-197.

[14] Bornscheuer, U.T. (1995), Lipase-catalyzed syntheses of monoacylglycerols, *Enzyme Microb. Technol*. **17**, 578-586.

[13] Bornscheuer, U. (1995), Lipase-catalyzed synthesis of monoglycerides, *Fat Sci. Technol*. **97**, 241-249.

[12] Ballesteros, A., Bornscheuer, U., Capewell, A., Combes, D., Condoret, J.-S., König, K., Kolisis, F.N., Marty, A., Menge, U., Scheper, T., Stamatis, H., Xenakis, A. (1995), Review article: Enzymes in non-conventional phases, *Biocatal. Biotransform*. **13**, 1-42.

[11] Heß, R., Bornscheuer, U., Capewell, A., Scheper, T. (1995), Lipase-catalyzed synthesis of monostearoylglycerol in organic solvents from 1,2-*O*-isopropylidene glycerol, *Enzyme Microb. Technol*. **17**, 725-728.

1994

[10] Bornscheuer, U., Stamatis, H., Xenakis, A., Yamane, T., Kolisis, F.N. (1994), A comparison of different strategies for lipase-catalyzed synthesis ofpartial glycerides, *Biotechnol. Lett*. **16**, 697-702.

[9] Bornscheuer, U.T., Yamane, T. (1994), Activity and stability of lipase in the solid-phase glycerolysis of triolein, *Enzyme Microb. Technol*. **16**, 864-869.

[8] Bornscheuer, U., Reif, O.-W., Lausch, R., Freitag, R., Scheper, T., Kolisis, F.N., Menge, U. (1994), Lipase of *Pseudomonas cepacia* for biotechnological purposes: purification, crystallization and characterization, *Biochim. Biophys. Acta* **1201**, 55-60.

[7] Kreye, L., Herar, A., Bornscheuer, U., Scheper, T. (1994), Enzymic conversions in organic solvents in batch and continuous systems, *Fat Sci. Technol*. **96**, 246-251.

1993

[6] Stamatis, H., Xenakis, A., Bornscheuer, U., Scheper, T., Menge, U., Kolisis, F.N. (1993), *Pseudomonas cepacia* lipase: esterification reactionsin AOT microemulsion systems, *Biotechnol. Lett*. **15**, 703-708.

[5] Bornscheuer, U., Herar, A., Kreye, L., Wendel, V., Capewell, A., Meyer,H.H., Scheper, T., Kolisis, F.N. (1993), Factors affecting the lipase catalyzed transesterification reactions of 3-hydroxy esters in organic solvents, *Tetrahedron:Asymmetry* **4**, 1007-1016.

1992

[4] Capewell, A., Bornscheuer, U., Herar, A., Scheper, T., Meyer, H.H., Kolisis, F. (1992), A comparison of enzymic reactions in aqueous, organic and supercritical phases, *DECHEMA Biotechnol. Conf.* **5**, 57-60.

[3] Bornscheuer, U., Schapöhler, S., Scheper, T., Schügerl, K., König, W.A. (1992), Application of enantioselective capillary gas chromatography in lipase-catalyzed transesterification reactions in organic media, *J. Chromatogr*. **606**, 288-290.

[2] Bornscheuer, U., Capewell, A., Scheper, T., Meyer, H.H. (1992), A comparison of enzymic reactions in aqueous, organic, and supercritical phases, *Ann. N.Y. Acad. Sci*. **672**, 336-342.

1991

[1] Bornscheuer, U., Schapöhler, S., Scheper, T., Schügerl, K. (1991), Influences of reaction conditions on the enantioselective transesterification using *Pseudomonas cepacia* lipase, *Tetrahedron: Asymmetry* **2**, 1011-1014.