

## Veröffentlichungen von Dr. Xiulan Xie

- [76] "Manipulation of the Precursor Supply in Yeast Significantly Enhances the Accumulation of Prenylated beta-Carbolines", K. Backhaus, L. Ludwig-Radtke, X. Xie, S.-M. Li, *ACS Synth. Biol.* **2017**, 6, 1056-1064.
- [75] "A Phosphorus Bisylide: Exploring a New Class of Superbases with Two Interacting Carbon Atoms as Basicity Centers", J. F. Kögel, D. Margetic, X. Xie, L. H. Finger, J. Sundermeyer, *Angew. Chem. Int. Ed.* **2017**, 56, 3090-3093.
- [74] "Chelating P2-Bis-phosphazenes with a (R, R)-1,2-Diaminocyclohexane Skeleton: Two New Chiral Superbases", J. F. Kögel, B. Kovacevic, S. Ullrich, X. Xie, J. Sundermeyer, *Chem. Eur. J.* **2017**, 23, 2591-2598.
- [73] "Formation and Reactivity of Organo-Functionalized Tin Selenide Clusters", N. Rinn, J.P. Eußner, W. Kaschuba, X. Xie, S. Dehnen, *Chem. Eur. J.* **2016**, 22, 3094–3104.
- [72] "Insights into the Unique Phosphorylation of the Lasso Peptide Paeninodin" S. Zhu, J. D. Hegemann, C. D. Fage, M. Zimmermann, X. Xie, U. Linne, M. A. Marahiel, *J. Biol. Chem.* **2016**, 291, 13662-13678
- [71] "Metal Templatet Design: Enantioselective Hydrogen Bond Driven Catalysis Requiring Only Parts per Million Catalyst Loading", W. Xu, M. Arieno, H. Löw, K. Huang, X. Xie, T. Cruchter, Q. Ma, J. Xi, B. Huang, O. Wiest, L. Gong, E. Meggers, *J. Am. Chem. Soc.* **2016**, 138, 8774-8780.
- [70] "Identification of HcgC as a SAM-Dependent Pyridinol Methyltransferase in [Fe]-Hydrogenase Cofactor Biosynthesis", T. Fujishiro, L. Bai, T. Xu, X. Xie, M. Schick, J. Kahnt, M. Rother, X. Hu, U. Ermler, S. Shima, *Angew. Chem. Int. Ed.* **2016**, 55, 9648-9651.
- [69] "Metal-Assisted One-Pot Synthesis of Isoporphyrin Complexes", P. Schweyen, M. Hoffmann, J. Krumsiek, B. Wolfram, X. Xie, M. Broering, *Angew. Chem. Int. Ed.* **2016**, 55, 10118-10121.
- [68] "Characterisation of 6-DMATS(Mo) from Micromonospora olivasterospora leading to identification of the divergence in enantioselectivity, regioselectivity and multiple prenylation of tryptophan prenyltransferases", J. Winkelblech, X. Xie; S.-M. Li, *Org. Biomol. Chem.* **2016**, 14, 9883-9895.

- [67] “*Tryptophan prenyltransferases showing higher catalytic activities for Friedel-Crafts alkylation of o- and m-tyrosines than tyrosine prenyltransferases*”, F. Aili, X. Xie, S.-M. Li, *Org. Biomol. Chem.* **2015**, *13*, 7551-7557.
- [66] “*Ionic-Radius-Driven Selection of the Main-Group-Metal Cage for Intermetalloid Clusters [Ln@PbxBi(14-x)](q-) and [Ln@PbyBi(13-y)](q-)/x/q=7/4, 6/3; y/q=4/4, 3/3*”, A. Rodica, W. Massa, B. Weinert, P. Pollak, X. Xie, R. Clerac, F. Weigend, S. Dehnena, *Chem. Eur. J.* **2015**, *21*, 386-394.
- [65] “*Tryptophan C5-, C6- and C7-Prenylating Enzymes Displaying a Preference for C-6 of the Indole Ring in the Presence of Unnatural Dimethylallyl Diphosphate Analogues*”, J. Winkelblech, M. Liebold, J. Gunera, X. Xie, P. Kolb, S.-M. Li, *Adv. Synth. Catal.* **2015**, *357*, 975-986.
- [64] “*Lasso Peptides: An Intriguing Class of Bacterial Natural Products*”, J. D. Hegemann, M. Zimmermann, X. Xie, M. A. Marahiel, *Acc. Chem. Res.* **2015**, *48*, 1909-1919.
- [63] “*Tyrosine O-prenyltransferases TyrPT and SirD displaying similar behavior toward unnatural alkyl or benzyl diphosphate as their natural prenyl donor dimethylallyl diphosphate*”, H. Yu, M. Liebold, X. Xie, S.-M. Li, *Appl. Microbiol. Biotechnol.* **2015**, *99*, 7115-7124.
- [62] “*Complementary Flavonoid Prenylations by Fungal Indole Prenyltransferases*”, K. Zhou, X. Yu, X. Xie, S.-M. Li, *J. Nat. Prod.* **2015**, *78*, 2229-2235.
- [61] “*a selective inversion recovery experiment on X-nuclei for the determination of the exchange rate of slow chemical exchanges between two sites SirX*”, X. Xie, F. Boenisch, *Magn. Reson. Chem.* **2015**, *53*, 801-804.
- [60] “*Two Pathways for Glutamate Biosynthesis in the Syntrophic Bacterium Syntrophus aciditrophicus*”, M. Kim, H. M. Le, X. Xie, X. Feng, Y. J. Tang, H. Mouttaki, M. J. McInerney, W. Buckel, *Appl. Environ. Microbiol.* **2015**, *81*, 8434-8444.
- [59] “*Plant-derived compatible solutes proline betaine and betonicine confer enhanced osmotic and temperature stress tolerance to Bacillus subtilis*”, A. Bashir, T. Hoffmann, B. Kempf, X. Xie, S. Smits, E. Bremer, *Microbiol.* **2014**, *160*, 2283-2294.
- [58] “*Biochemical and X-Ray Crystal Structure Analyses of Hcp Proteins Involved in Biosynthesis of the FeGp Cofactor of Fe -Hydrogenase*”, T. Fujishiro, H. Tamura, M. Schick, J. Kahnt, X. Xie, U. Ermler, S. Shima, *J. Biol. Inorg. Chem.* **2014**, *19*, S223-S23.

- [57] "Identification of the Hcg Enzymes in Biosynthesis of Fe -Hydrogenase Cofactor by a Structural Genomics-Based Approach", T. Fujishiro, H. Tamura, M. Schick, J. Kahnt, X. Xie, U. Ermler, S. Shima, *J. Biol. Inorg. Chem.* **2014**, *19*, S767-S67.
- [56] "Rational Improvement of the Affinity and Selectivity of Integrin Binding of Grafted Lasso Peptides", J. D. Hegemann, M. De Simone, M. Zimmermann, T. A. Knappe, X. Xie, F. S. Di Leva, L. Marinelli, E. Novellino, S. Zahler, H. Kessler, and M. A. Marahiel, *J. Med. Chem.* **2014**, *57*, 5829-34.
- [55] "A New Class of Lasso Peptides with a Seven-Residue Macrolactam Ring", J. D. Hegemann, M. Zimmermann, S. Zhu, H. Steuber, K. Harms, X. Xie, and M. A. Marahiel, *Angew. Chem. Int. Ed.* **2014**, *53*, 2230-34.
- [54] "K-H3c and K-Sn Interactions in Potassium Trimethylstannyl Complexes: A Structural, Mechanochemical, and NMR Study", C. Kleeberg, J. Grunenberg, X. Xie, *Inorg. Chem.* **2014**, *53*, 4400-10.
- [53] "Superbasic Alkyl-Substituted Bisphosphazene Proton Sponges: Synthesis, Structural Features, Thermodynamic and Kinetic Basicity, Nucleophilicity and Coordination Chemistry", J. F. Koegel, X. Xie, E. Baal, D. Gesevicius, B. Oelkers, B. Kovacevic, J. Sundermeyer, *Chem. Eur. J.* **2014**, *20*, 7670-85.
- [52] "An Organometallic Inhibitor for the Human Repair Enzyme 7,8-Dihydro-8-Oxoguanosine Triphosphatase", M. Streib, K. Kraeling, K. Richter, X. Xie, H. Steuber, E. Meggers, *Angew. Chem. Int. Ed.* **2014**, *53*, 305-09.
- [51] "Substrate and Catalytic Promiscuity of Secondary Metabolite Enzymes: O-Prenylation of Hydroxyxanthones with Different Prenyl Donors by a Bisindolyl Benzoquinone C- and N-Prenyltransferase", S. Tarcz, X. Xie, and S.-M. Li, *RSC Adv.* **2014**, *4*, 17986-92.
- [50] "Characterization of Caulonodin Lasso Peptides Revealed Unprecedented N-Terminal Residues and a Precursor Motif Essential for Peptide Maturation", M. Zimmermann, J. D. Hegemann, X. Xie, and M. A. Marahiel, *Chem. Sci.* **2014**, *5*, 4032-43.
- [49] "Catalytic Mechanism of Stereospecific Formation of cis-Configured Prenylated Pyrroloindoline Diketopiperazines by Indole Prenyltransferases", X. Yu, G. Zocher, X. Xie, M. Liebhold, S. Schütt, T. Stehle, S. Li, *Chem. Biol.* **2013**, *20*, 1492 – 1501.

- [48] "The Astexin-1 Lasso Peptides: Biosynthesis, Stability, and Structural Studies", M. Zimmermann, J. Hegemann, X. Xie, M. A. Marahiel, *Chem. Biol.* **2013**, *20*, 558 – 569.
- [47] "Caulosegnins I-III: A Highly Diverse Group of Lasso Peptides Derived from a Single Biosynthetic Gene Cluster ", J. Hegemann, M. Zimmermann, X. Xie, M. A. Marahiel, *J. Am. Chem. Soc.* **2013**, *135*, 210 – 222.
- [46] "Breaking Cyclic Dipeptide Prenyltransferase Regioselectivity by Unnatural Alkyl Donors", M. Liebhold, X. Xie, S. Li, *Org. Lett.* **2013**, *15*, 3062 – 3065.
- [45] "Structural Characterization of the Heterobactin Siderophores from Rhodococcus erythropolis PR4 and Elucidation of Their Biosynthetic Machinery", M. Bosello, M. Zeyadi, F. I. Kraas, U. Linne, X. Xie, M. A. Marahiel, *J. Nat. Prod.* **2013**, *76*, 2282 – 2290.
- [44] "Unusual 14-Electron Fragments [Pd(eta(3)-Bi<sub>3-x</sub>Pbx)]<sub>x+1</sub> as Pseudo Lead Atoms in closo-[Pd@Pd<sub>2</sub>Pb<sub>10</sub>Bi<sub>6</sub>]<sub>4</sub>", R. Ababei, W. Massa, K. Harms, X. Xie, F. Weigend, S. Dehnen, *Angew. Chem. Int. Ed.* **2013**, *52*, 13544 – 13548.
- [43] "Identification of the HcgB Enzyme in [Fe]-Hydrogenase-Cofactor Biosynthesis", T. Fujishiro, H. Tamura, M. Schick, J. Kahnt, X. Xie, U. Ermler, S. Shima, *Angew. Chem. Int. Ed.* **2013**, *52*, 12555 – 12558.
- [42] "*In vitro* Conversion of Chanoclavine-I Aldehyde to the Stereoisomers Festuclavine and Pyroclavine Controlled by the Second Reduction Step", M. Matuschke, C. Wallwey, B. Wollinsky, X. Xie, S. Li, *RSC Adv.* **2012**, *2*, 3662 – 3669.
- [41] "Making Practical Use of the Pseudo-Element Concept: an Efficient Way to Ternary Intermetalloid Clusters by an Isoelectronic Pb–Bi Combination", R. Ababei, J. Heine, M. Holynska, G. Thiele, B. Weinert, X. Xie, F. Weigend, S. Dehnen, *Chem. Comm.* **2012**, *48*, 11295 – 11297.
- [40] "Breaking the Regioselectivity of Indole Prenyltransferases: Identification of Regular C3-Prenylated Hexahydropyrrolo[2,3-b]Indoles as Side Products of the Regular C2-Prenyltransferase FtmPT1", B. Wollinsky, L. Ludwig, X. Xie, S. Li, *Org. Biomol. Chem.* **2012**, *10*, 9262 – 9270.
- [39] "Biochemical Characterization of Indole Prenyltransferases Filling the Last Gap of Prenylation Positions by a 5-Dimethylallyltryptophan Synthase from *Aspergillus Clavatus*", X. Yu, Y. Liu, X. Xie, X. Zheng, S. Li, *J. Biol. Chem.* **2012**, *287*, 1371 – 1380.

- [38] “Biosynthesis of the Iron-Guanylylpyridinol Cofactor of [Fe]-Hydrogenase in Methanogenic Archaea as Elucidated by Stable-Isotope Labeling”, M. Schick, X. Xie, K. Ataka, J. Kahnt, U. Linne, S. Shima, *J. Am. Chem. Soc.* **2012**, *134*, 3271 – 3280.
- [37] “NMR as an Effective Tool for the Structure Determination of Lasso Peptides”, X. Xie, M. A. Marahiel, *ChemBioChem* **2012**, *13*, 621 – 625.
- [36] “Isolation, Structure Elucidation, and Biosynthesis of an Unusual Hydroxamic Acid Ester-Containing Siderophore from *Actinosynnema mirum*”, T. W. Giessen, K. B. Franke, T. A. Knappe, F. I. Kraas, M. Bosello, X. Xie, U. Linne, M. A. Marahiel, *J. Nat. Prod.* **2012**, *75*, 905 – 914.
- [35] “Genome Mining Reveals the Presence of a Conserved Gene Cluster for the Biosynthesis of Ergot Alkaloid Precursors in the Fungal Family Arthrodermataceae”, C. Wallwey, C. Heddergott, X. Xie, A. A. Brakhage, S. Li, *Microbiology* **2012**, *158*, 1634 – 1644.
- [34] “Structure and Catalytic Mechanism of a Cyclic Dipeptide Prenyltransferase with Broad Substrate Promiscuity”, J. M. Schuller, G. Zocher, M. Liebhold, X. Xie, M. Stahl, S. Li, T. Stehle, *J. Mol. Biol.* **2012**, *422*, 87 – 99.
- [33] “Expansion of Enzymatic Friedel-Crafts Alkylation on Indoles: Acceptance of Unnatural beta-Unsaturated Allyl Diphosphates by Dimethylallyl-tryptophan Synthases”, M. Liebhold, X. Xie, S. Li, *Org. Lett.* **2012**, *14*, 4882 – 4885.
- [32] “New Insight into Ergo Alkaloid Biosynthesis in *Claviceps purpurea*: the Conversion of Chanoclavine-I Aldehyde to Agroclavine”, M. Matuschke, C. Wallwey, X. Xie, S. Li, *Org. Biomol. Chem.* **2011**, *9*, 4328 – 4335.
- [31] “Introducing Lasso Peptides as Molecular scaffolds for Drug Design: Engineering of an Integrin Antagonist”, T. A. Knappe, F. Manzentieder, C. Mas-Moruno, U. Linne, F. Sasse, H. Kessler, X. Xie, M. A. Marahiel, *Angew. Chem.* **2011**, *123*, 8873 – 8876; *Angew. Chem. Int. Ed.* **2011**, *50*, 8714 – 8717.
- [30] “Biosynthesis of the Siderophore Rhodochelin Requires the Coordinated Expression of Three Independent Gene Clusters in *Rhodococcus jostii* RHA1”, M. Bosello, L. Robbel, U. Linne, X. Xie, M. A. Marahiel, *J. Am. Chem. Soc.* **2011**, *133*, 4587 – 4595.
- [29] “Formyl Migration Product of Chanoclavine-I Aldehyde in the Presence of the Old Yellow Enzyme FgaOx3 from *Aspergillus fumigatus*: a NMR Structure Elucidation”, X. Xie, C. Wallwey, M. Matuschke, S. Li, *Magn. Reson. Chem.* **2011**, *49*, 678 – 681.

- [28] "Substrate Promiscuity of Secondary Metabolite Enzymes: Prenylation of Hydroxynaphthalenes by Fungal Indole Prenyltransferases", X. Yu, X. Xie, S. Li, *Appl. Microbiol. Biotechnol.* **2011**, *92*, 737 – 748.
- [27] "The Tyrosine O-prenyltransferase SirD Catalyzes O-, N-, and C-prenylations", H. Zou, X. Xie, X. Zheng, S. Li, *Appl. Microbiol. Biotechnol.* **2011**, *89*, 1443 – 1451.
- [26] "Ergot alkaloid biosynthesis in *Aspergillus fumigatus*: Conversion of chanoclavine-I aldehyde to festuclavine by the festuclavine synthase FgaFS in the presence of the old yellow enzyme FgaOx3", C. Wallwey, M. Matuschek, X. Xie, S. Li, *Org. Biomol. Chem.* **2010**, *8*, 3500 – 3508.
- [25] "Simultaneous C7-and N1-prenylation of cyclo-L-Trp-L-Trp catalyzed by a prenyltransferase from *Aspergillus oryzae*", H. Zou, X. Xie, U. Linne, X. Zheng, S. Li, *Org. Biomol. Chem.* **2010**, *8*, 3037 – 3044.
- [24] "Preparation of pyrrolo[2,3-b]indoles carrying a beta-configured reverse C3-dimethylallyl moiety by using a recombinant prenyltransferase CdpC3PT", W. Yin, Y. Xia, X. Xie, S. Li, *Org. Biomol. Chem.* **2010**, *8*, 2430 – 2438.
- [23] "Reconstruction of pyrrolo[2,3-b]indoles carrying an alpha-configured reverse C3-dimethylallyl moiety by using recombinant enzymes", W. Yin, X. Xie, M. Matuschek, S. Li, *Org. Biomol. Chem.* **2010**, *8*, 1133 – 1141.
- [22] "Solution and Solid State Structure of a BisBODIPY Fluorophor", M. Bröring, Y. Yuan, R. Krüger, C. Kleeberg, X. Xie, Z. *Anorg. Allg. Chem.* **2010**, *636*, 518 – 523.
- [21] "The glucagon receptor antagonist BI-32169 constitutes a new class of lasso peptides", T. A. Knappe, U. Linne, X. Xie, M. A. Marahiel, *FEBS Lett.*, **2010**, *584*, 785 – 789.
- [20] "Erythrochelin – a Hydroxamate-type Siderophore Predicted from the Genome of *Saccharopolyspora erythraea*", L. Robbel, T. A. Knappe, U. Linne, X. Xie, M. A. Marahiel, *FEBS J.*, **2010**, *277*, 663 – 676.
- [19] "Conformational Dynamics of Bis(BF<sub>2</sub>)-2,2'-Bidipyrins Revealed by Through-Space <sup>13</sup>C–<sup>19</sup>F and <sup>19</sup>F–<sup>19</sup>F Couplings", X. Xie, Y. Yuan, R. Krüger, M. Bröring, *Magn. Reson. Chem.* **2009**, *47*, 1024.

- [18] "Strategy for the Stereochemical Assignment of Tris-Heteroleptic Ru(II) Complexes by NMR Spectroscopy", X. Xie, S. P. Mulcahy, E. Meggers, *Inorg. Chem.* **2009**, *48*, 1053-1061.
- [17] "Insights into the High Duplex Stability of the Simplified Nucleic Acid GNA", M. K. Schlegel, X. Xie, L. Zhang, E. Meggers, *Angew. Chem. Int. Ed.* **2009**, *48*, 960-963.
- [16] "Isolation and Structural Characterization of Capistruin, a Lasso Peptide Predicted from the Genome Sequence of *Burkholderia thailandensis* E264", T. A. Knappe, U. Linne, S. Zirah, S. Rebuffat, X. Xie, M. A. Marahiel, *J. Am. Chem. Soc.* **2008**, *130*, 11446-11454.
- [15] "Solid-phase Synthesis of Tris-heteroleptic Ruthenium(II) Complexes and Application to Acetylcholinesterase Inhibition", S. P. Mulcahy, S. Li, R. Korn, X. Xie, E. Meggers, *Inorg. Chem.* **2008**, *47*, 5030-5032.
- [14] "Biodegradable Branched Polyesters Poly(vinyl Sulfonate-covinyl Alcohol)-Graft Poly(D,L-lactic-coglycolic acid) as a Negatively Charged Polyelectrolyte Platform for Drug Delivery: Synthesis and Characterization", X. Y. Wang, X. Xie, C. F. Cai, E. Ryttig, T. Steele, T. Kissel, *Macromolecules* **2008**, *41*, 2791-2799.
- [13] "Bis(BF<sub>2</sub>)-2,2'-bidipyrins (BisBODIPYs): Highly Fluorescent BODIPY Dimers with Large Stokes shifts", M. Broring, R. Kruger, S. Link, C. Kleeberg, S. Kohler, X. Xie, B. Ventura, L. Flamigni, *Chem. Euro. J.* **2008**, *14*, 2976-2983.
- [12] "Hierarchical Self-assembly of Aminopyrazole Peptides into Nanorosettes in Water", P. Rzepecki, K. Hochdorffer, T. Schaller, J. Zienau, K. Harms, C. Ochsenfeld, X. Xie, T. Schrader, *J. Am. Chem. Soc.* **2008**, *130*, 586-591.
- [11] "Determination of the Stereochemistry of Gamma-butyrolactones by DPFGSE-NOE Experiments", X. Xie, S. Tschan, F. Glorius, *Magn. Reson. Chem.* **2007**, *45*, 381-388.
- [10] "N-Heterocyclic Carbene-catalyzed Conjugate Umpolung for the Synthesis of  $\gamma$ -butyrolactones", C. Burstein, S. Tschan, X. Xie, F. Glorius, *Synthesis* **2006**, 2418-2439.
- [9] "Tuning Linear Copolymers into Protein-Specific Hosts", S. Koch, C. Renner, X. Xie, T. Schrader, *Angew. Chem. Int. Ed.* **2006**, *45*, 6352-6355.

- [8] "Dendrimeric Bisphosphonates for Multivalent Protein Surface Binding", M. Arendt, W. Sun, J. Thomas, X. Xie, T. Schrader, *Chem. Asia J.* **2006**, 1, 544-554.
- [7] "An Asymmetric Ion Channel Derived from Gramicidin A: Synthesis, Function and NMR Structure", X. Xie, L. Al-Momani, P. Reiß, C. Griesinger, U. Koert, *FEBS J.* **2005**, 272, 975-986.
- [6] "Synthesis, Characterization and Cytotoxicity of Poly(ethylene glycol)-graft-trimethyl Chitosan Block copolymers", S. Mao, X. Shuai, F. Unger, M. Wittmar, X. Xie, T. Kissel, *Biomaterials* **2005**, 26, 6343-6356.
- [5] "Gs-HSQC-NOESY versus GS-NOESY-HSQC Experiments: Signal Attenuation due to Diffusion; Application to Symmetrical Molecules", R. Gschwind, X. Xie, P. Rajamohana, *Magn. Reson. Chem.* **2004**, 42, 308-312.
- [4] "The Cofactor of the Iron-Sulfur Cluster Free Hydrogenase Hmd: Structure of the Light-Inactivation Product", S. Shima, E. Lyon, R. Thauer, K. Steinbach, X. Xie, C. Griesinger, *Angew. Chem. Int. Ed.* **2004**, 43, 2547-2551.
- [3] "A Two-Dimensional NMR Study of Poly(Vinyl(Dialkylamino)Alkylcarbamate-co-Vinyl Acetat-co-Vinyl Alcohol)", X. Xie, M. Wittmar, T. Kissel, *Macromolecules* **2004**, 37, 4598-4606.
- [2] "SmI<sub>2</sub>/Sm-Based  $\beta$ -Butyrolactone- $\beta$ -Caprolactone Copolymers: Microstructural Characterization Using One- and Two-Dimensional NMR Spectroscopy", S. Agarwal, X. Xie, *Macromolecules* **2003**, 36, 3545-3549.
- [1] "Dimethyl- and Bis[(trimethylsilyl)methyl]cuprates Show Aggregates Higher Than Dimer in Diethyl Ether: Molecular Diffusion Studies by PFG NMR and Aggregation-reactivity Correlations", X. Xie, C. Auel, R. Gschwind, *J. Am. Chem. Soc.* **2003**, 125, 1595-1601.