

Publications

Weber T, Hengoju S, Samimi A, Roth M, Tovar M, Rosenbaum MA (2022) Recovery and isolation of individual microfluidic picoliter droplets by triggered deposition. *Sens Actuators B Chem* 369, 132289.

Hengoju S, Shvydkiv O, Tovar M, Roth M, Rosenbaum MA (2021) Advantages of optical fibers for facile and enhanced detection in droplet microfluidics. *Biosens Bioelectron* 200, 113910. (Review)

Mahler L, Niehs SP, Martin K, Weber T, Scherlach K, Hertweck C, Roth M, Rosenbaum MA (2021) Highly parallelized droplet cultivation and prioritization of antibiotic producers from natural microbial communities. *eLife* 10, e64774.

Scharf DH, Chankhamjon P, Scherlach K, Dworschak J, Heinekamp T, Roth M, Brakhage AA, Hertweck C (2021) N-heterocyclization in gliotoxin biosynthesis is catalyzed by a distinct cytochrome P450 monooxygenase. *Chembiochem* 22(2), 336-339.

Edenhardt S, Denneler M, Spohn M, Doskocil E, Kavsek M, Amon T, Kosec G, Smole J, Bardl B, Biermann M, Roth M, Wohlleben W, Stegmann E (2020) Metabolic engineering of *Amycolatopsis japonicum* for optimized production of [S,S]-EDDS, a biodegradable chelator. *Metab Eng* 60, 148-156.

Hengoju S, Wohlfeil S, Munser AS, Shvydkiv O, Boehme S, Beckert E, Tovar M, Roth M, Rosenbaum MA (2020) Optofluidic detection setup for multi-parametric analysis of microbiological samples in droplets. *Biomicrofluidics* 14(2), 024109.

Tovar M, Mahler L, Buchheim S, Roth M, Rosenbaum M (2020) Monitoring and external control of pH in microfluidic droplets during microbial culturing. *Microb Cell Fact* 19(1), 16.

Svensson C-M*, Shvydkiv O*, Dietrich S, Mahler L, Weber T, Choudhary M, Tovar M, Figge MT**, Roth M** ; authors contributed equally; * corresponding authors; ** authors contributed equally (2019) Coding of experimental conditions in microfluidic droplet assays using colored beads and machine learning supported image analysis. *Small* 15(4), e1802384.

Tovar M, Hengoju S, Weber T, Mahler L, Choudhary M, Becker T, Roth M (2019) One sensor for multiple colors: Fluorescence analysis of microdroplets in microbiological screenings by frequency-division multiplexing. *Anal Chem* 91(4), 3055-3061.

Dewald C, Lüdecke C, Firkowska-Boden I, Roth M, Bossert J, Jandt KD (2018) Gold nanoparticle contact point density controls microbial adhesion on gold surfaces. *Colloids Surf B Biointerfaces* 163, 201-208.

Mahler L, Wink K, Beulig RJ, Scherlach K, Tovar M, Zang E, Martin K, Hertweck C, Belder D, Roth M (2018) Publisher Correction: Detection of antibiotics synthesized in microfluidic picolitre-droplets by various actinobacteria. *Sci Rep* 8(1), 15859.

Niehs SP, Dose B, Scherlach K, Roth M, Hertweck C (2018) Genomics-driven discovery of a symbiont-specific cyclopeptide from bacteria residing in the rice seedling blight fungus. *ChemBioChem* 19(20), 2167-2172.

Tovar M, Weber T, Hengoju S, Lovera A, Munser AS, Shvydkiv O, Roth M (2018) 3D-glass molds for facile production of complex droplet microfluidic chips. *Biomicrofluidics* 12(2), 024115.

Wiegand C, Völpel A, Ewald A, Remesch M, Kuever J, Bauer J, Griesheim S, Hauser C, Thielmann J, Tonndorf-Martini S, Sigusch BW, Weisser J, Wyrwa R, Elsner P, Hipler UC, Roth M, Dewald C, Lüdecke-Beyer C, Bossert J (2018) Critical physiological factors influencing the outcome of antimicrobial testing according to ISO 22196 / JIS Z 2801. *PLOS One* 13(3), e0194339.

Wink K, Mahler L, Beulig J, Piendl S, Roth M, Belder D (2018) An integrated chip-mass spectrometry and epifluorescence approach for online monitoring of bioactive metabolites from incubated Actinobacteria in picoliter droplets. *Anal Bioanal Chem* 410(29), 7679-7687.

Pan X, Domin N, Schieferdecker S, Kage H, Roth M, Nett M (2017) Herpetopanone, a diterpene from *Herpetosiphon aurantiacus* discovered by isotope labeling. *Beilstein J. Org. Chem.* 13, 2458-2465.

Lüdecke C, Roth M, Yu W, Horn U, Bossert J, Jandt KD (2016) Nanorough titanium surfaces reduce adhesion of *Escherichia coli* and *Staphylococcus aureus* via nano adhesion points *Colloids Surf B Biointerfaces* 145, 617-625.

Walther E, Boldt S, Kage H, Lauterbach T, Martin K, Roth M, Hertweck C, Sauerbrei A, Schmidtke M, Nett M (2016) Zincophorin – biosynthesis in *Streptomyces griseus* and antibiotic properties *GMS Infect Dis* 4, Doc08.

Elschner T, Lüdecke C, Kalden D, Roth M, Löffler B, Jandt KD, Heinze T (2015) Zwitterionic cellulose carbamate with regioselective substitution pattern: a coating material possessing antimicrobial activity *Macromol Biosci* 16(4), 522-534.

Mahler L, Tovar M, Weber T, Brandes S, Rudolph MM, Ehgartner J, Mayr T, Figge MT, Roth M, Zang E (2015) Enhanced and homogeneous oxygen availability during incubation of microfluidic droplets. *RSC Advances* 5, 101871-101878.

Phieler R, Merten D, Roth M, Büchel G, Kothe E (2015) Phytoremediation using microbially mediated metal accumulation in *Sorghum bicolor* *Environ Sci Pollut Res* 22(24), 19408-19416.

Schäberle TF, Schmitz A, Zocher G, Schiefer A, Kehraus S, Neu E, Roth M, Vassilyev DG, Stehle T, Bierbaum G, Hoerauf A, Pfarr K, König GM (2015) Insights into Structure–Activity Relationships of Bacterial RNA Polymerase Inhibiting Coralopyronin Derivatives *J Nat Prod* 78(10), 2505-2509.

Schieferdecker S, Domin N, Hoffmeier C, Bryant DA, Roth M, Nett M (2015) Structure and absolute configuration of auriculamide, a natural product from the predatory bacterium *Herpetosiphon aurantiacus*. *Eur J Org Chem* 14, 3057-3062.

Shabuer G, Ishida K, Pidot SJ, Roth M, Dahse HM, Hertweck C (2015) Plant pathogenic anaerobic bacteria use aromatic polyketides to access aerobic territory. *Science* 350(6261), 670-674.

van Dissel D, Claessen D, Roth M, van Wezel GP (2015) A novel locus for mycelial aggregation forms a gateway to improved *Streptomyces* cell factories *Microbial Cell Factories* 14:44,

Kroll K, Pähz V, Hillmann F, Vaknin Y, Schmidt-Heck W, Roth M, Jacobsen ID, Osharov N,

- Brakhage AA, Kniemeyer O (2014) Identification of hypoxia-inducible target genes of *Aspergillus fumigatus* by transcriptome analysis reveals cellular respiration as important contributor to hypoxic survival. *Eukaryot Cell* 13(9), 1241-1253.
- Lüdecke C, Jandt KD, Siegismund D, Kujau MJ, Zang E, Rettenmayr M, Bossert J, Roth M (2014) Reproducible biofilm cultivation of chemostat-grown *Escherichia coli* and investigation of bacterial adhesion on biomaterials using a non-constant-depth film fermenter. *PLOS One* 9(1), e84837.
- Schieferdecker S, Exner TE, Gross H, Roth M, Nett M (2014) New myxothiazols from the predatory bacterium *Myxococcus fulvus*. *J Antibiot* 67(7), 519-525.
- Schmitz A, Kehraus S, Schäberle TF, Neu E, Almeida C, Roth M, König GM (2014) Corallorazines from the myxobacterium *Corallococcus coralloides*. *J Nat Prod* 77(1), 159-163.
- Schütze E, Ahmed E, Voit A, Klose M, Greyer M, Svatoš A, Merten D, Roth M, Holmström SJ, Kothe E (2014) Siderophore production by streptomycetes-stability and alteration of ferrihydroxamates in heavy metal-contaminated soil. *Environ Sci Pollut Res Int* 22(24), 19376-19383.
- Schütze E, Klose M, Merten D, Nietzsche S, Senftleben D, Roth M, Kothe E (2014) Growth of streptomycetes in soil and their impact on bioremediation. *J Hazard Mater* 267, 128-135.
- Cao J, Kürsten D, Krause K, Kothe E, Martin K, Roth M, Köhler JM (2013) Application of micro-segmented flow for two-dimensional characterization of the combinatorial effect of zinc and copper ions on metal-tolerant *Streptomyces* strains. *Appl Microbiol Biotechnol* 97(20), 8923-8930.
- Lüdecke C, Bossert J, Roth M, Jandt KD (2013) Physical vapor deposited titanium thin films for biomedical applications: Reproducibility of nanoscale surface roughness and microbial adhesion properties. *Applied Surface Science* 280, 578-589.
- Schütze E, Miltner A, Nietzsche S, Achtenhagen J, Klose M, Merten D, Greyer M, Roth M, Kästner M, Kothe E (2013) Live and death of streptomycetes in soil - what happens to the biomass? *Journal of Plant Nutrition and Soil Science* 176, 665-673.
- Zang E*, Brandes S*, Tovar M, Martin K, Mech F, Horbert P, Henkel T, Figge MT, Roth M (2013) Real-time image processing for label-free enrichment of Actinobacteria cultivated in picolitre droplets. *Lab Chip* 13(18), 3707-3713, *authors contributed equally.
- Graupner K, Scherlach K, Bretschneider T, Lackner G, Roth M, Gross H, Hertweck C (2012) Imaging mass spectrometry and genome mining reveal highly antifungal virulence factor of mushroom soft rot pathogen. *Angew Chem Int Ed Engl* 51(52), 13173-13177.
- Moebius N, Ross C, Scherlach K, Rohm B, Roth M, Hertweck C (2012) Biosynthesis of the respiratory toxin bongkrekic acid in the pathogenic bacterium *Burkholderia gladioli*. *Chem Biol* 19(9), 1164-1174.
- Roth M, Martin K, Zang E, Nett M, Henkel T (2012) A microfluidics-based approach to drug discovery. *Biomed Tech (Berl)* 57(SI-1 Track-B), 270.
- Sarkar A, Funk AN, Scherlach K, Horn F, Schroeckh V, Chankhamjon P, Westermann M, Roth M, Brakhage AA, Hertweck C, Horn U (2012) Differential expression of silent polyketide biosynthesis gene clusters in chemostat cultures of *Aspergillus nidulans*. *J Biotechnol* 160(1-2), 64-71.

Scharf DH, Chankhamjon P, Scherlach K, Heinekamp T, Roth M, Brakhage AA, Hertweck C (2012) Epidithiol formation by an unprecedented twin carbon-sulfur lyase in the gliotoxin pathway. *Angew Chem Int Ed* 51(40), 10064-10068.

Scherlach K, Sarkar A, Schroeckh V, Dahse HM, Roth M, Brakhage AA, Horn U, Hertweck C (2011) Two induced fungal polyketide pathways converge into antiproliferative spiroanthrones. *Chembiochem* 12(12), 1836-1839.

Vödisch M, Scherlach K, Winkler R, Hertweck C, Braun HP, Roth M, Haas H, Werner ER, Brakhage AA, Kniemeyer O (2011) Analysis of the *Aspergillus fumigatus* proteome reveals metabolic changes and the activation of the pseurotin A biosynthesis gene cluster in response to hypoxia. *J Proteome Res* 10(5), 2508-2524.

Kusebauch B, Busch B, Scherlach K, Roth M, Hertweck C (2010) Functionally distinct modules operate two consecutive alpha,beta-->beta,gamma double-bond shifts in the rhizoxin polyketide assembly line. *Angew Chem Int Ed Engl* 49(8), 1460-1464.

Lincke T, Behnken S, Ishida K, Roth M, Hertweck C (2010) Closthioamide: an unprecedented polythioamide antibiotic from the strictly anaerobic bacterium *Clostridium cellulolyticum*. *Angew Chem Int Ed Engl* 49(11), 2011-2013.

Schachtschabel D, Menzel KD, Krauter G, David A, Roth M, Horn U, Boland W, Wöstemeyer J, Schimek C (2010) Production and derivate composition of trisporoids in extended fermentation of *Blakeslea trispora*. *Appl Microbiol Biotechnol* 88(1), 241-249.

Werneburg M, Busch B, He J, Richter ME, Xiang L, Moore BS, Roth M, Dahse HM, Hertweck C (2010) Exploiting enzymatic promiscuity to engineer a focused library of highly selective antifungal and antiproliferative aureothin analogues. *J Am Chem Soc* 132(30), 10407-10413.

Kusebauch B, Busch B, Scherlach K, Roth M, Hertweck C (2009) Polyketide-chain branching by an enzymatic Michael addition. *Angew Chem Int Ed Engl* 48(27), 5001-5004.

Peschel G, Dahse HM, Konrad A, Wieland GD, Mueller PJ, Martin DP, Roth M (2008) Growth of keratinocytes on porous films of poly(3-hydroxybutyrate) and poly(4-hydroxybutyrate) blended with hyaluronic acid and chitosan. *J Biomed Mater Res A* 85(4), 1072-1081.

Partida-Martinez LP, de Looss CF, Ishida K, Ishida M, Roth M, Buder K, Hertweck C (2007) Rhizonin, the first mycotoxin isolated from the zygomycota, is not a fungal metabolite but is produced by bacterial endosymbionts. *Appl Environ Microbiol* 73(3), 793-797.

Partida-Martinez LP, Groth I, Schmitt I, Richter W, Roth M, Hertweck C (2007) *Burkholderia rhizoxinica* sp. nov. and *Burkholderia endofungorum* sp. nov., bacterial endosymbionts of the plant-pathogenic fungus *Rhizopus microsporus*. *Int J Syst Evol Microbiol* 57(Pt 11), 2583-2590.

Herold K, Gollmick FA, Groth I, Roth M, Menzel KD, Möllmann U, Gräfe U, Hertweck C (2005) Cervimycin A-D: a polyketide glycoside complex from a cave bacterium can defeat vancomycin resistance. *Chemistry* 11(19), 5523-5530.

Köhler JM, Henkel T, Grodrian A, Kirner T, Roth M, Martin K, Metze J (2004) Digital reaction technology by micro segmented flow—components, concepts and applications *Chemical Engineering Journal* 101, 201-216.

Martin K, Henkel T, Baier V, Grodrian A, Schön T, Roth M, Michael Köhler J, Metze J (2003)
Generation of larger numbers of separated microbial populations by cultivation in segmented-flow
microdevices. *Lab Chip* 3(3), 202-207.

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