

Dr. Sabine Kleinsteuber: Publications since 1995

Publications in peer-reviewed scientific journals (75 articles)

Ziganshin AM, Wintsche B, Seifert J, Carstensen M, Born J, **Kleinsteuber S**. 2019. Spatial separation of metabolic stages in a tube anaerobic baffled reactor: reactor performance and microbial community dynamics. *Appl Microbiol Biotechnol*. doi.org/10.1007/s00253-019-09767-2

Bonk F, Popp D, Weinrich S, Sträuber H, Becker D, **Kleinsteuber S**, Harms H and Centler F. 2019. Determination of microbial maintenance in acetogenesis and methanogenesis by experimental and modeling techniques. *Front Microbiol* 10:166. doi: 10.3389/fmicb.2019.00166

Lv Z, Leite AF, Harms H, Glaser K, Liebetrau J, **Kleinsteuber S**, Nikolausz M. 2019. Microbial community shifts in biogas reactors upon complete or partial ammonia inhibition. *Appl Microbiol Biotechnol* 103:519-533. doi.org/10.1007/s00253-018-9444-0

Bonk F, Popp D, Weinrich S, Sträuber H, **Kleinsteuber S**, Harms H, Centler F. 2018. Ammonia inhibition of anaerobic volatile fatty acid degrading microbial communities. *Front Microbiol* 9:2921. doi.org/10.3389/fmicb.2018.02921

Bonk F, Popp D, Weinrich S, Sträuber H, **Kleinsteuber S**, Harms H, Centler F. 2018. Intermittent fasting for microbes: how discontinuous feeding increases functional stability in anaerobic digestion. *Biotechnol Biofuels* 11:274. doi: 10.1186/s13068-018-1279-5

Günther S, Becker D, Hübschmann T, Reinert S, **Kleinsteuber S**, Müller S, Wilhelm C. 2018. Long-term biogas production from glycolate by diverse and highly dynamic communities. *Microorganisms* 6:103. doi: 10.3390/microorganisms6040103

Sträuber H, F Bühligen, **S Kleinsteuber**, and M Dittrich-Zechendorf. 2018. Carboxylic acid production from ensiled crops in anaerobic solid-state fermentation - trace elements as pH controlling agents support microbial chain elongation with lactic acid. *Eng Life Sci* doi: 10.1002/elsc.201700186

Özbayram EG, **S Kleinsteuber**, M Nikolausz, B Ince, and O Ince. 2018. Bioaugmentation of anaerobic digesters treating lignocellulosic feedstock by enriched microbial consortia. *Eng Life Sci* doi: 10.1002/elsc.201700199

Wintsche B, N Jehmlich, D Popp, H Harms, and **S Kleinsteuber**. 2018. Metabolic adaptation of methanogens in anaerobic digesters upon trace element limitation. *Front Microbiol* 9:405. doi:10.3389/fmicb.2018.00405

Kahl S, **S Kleinsteuber**, J Nivala, M van Afferden, and T Reemtsma. 2018. Emerging biodegradation of the previously persistent artificial sweetener acesulfame in biological wastewater treatment. *Environ Sci Technol* 52:2717-2725

Özbayram EG, O Ince, B Ince, H Harms, and **S Kleinsteuber**. 2018. Comparison of rumen and manure microbiomes and implications for the inoculation of anaerobic digesters. *Microorganisms* 6:15. doi: 10.3390/microorganisms6010015

Özbayram EG, **S Kleinsteuber**, M Nikolausz, B Ince, and O Ince. 2018. Enrichment of lignocellulose-degrading microbial communities from natural and engineered methanogenic environments. *Appl Microbiol Biotechnol* 102:1035-1043

Keller AH, **S Kleinsteuber**, and C Vogt. 2018. Anaerobic benzene mineralization by nitrate-reducing and sulfate-reducing microbial consortia enriched from the same site: Comparison of community composition and degradation characteristics. *Microb Ecol* 75:941-953

Popp D, CM Plugge, **S Kleinsteuber**, H Harms, and H Sträuber. 2017. Inhibitory effect of coumarin on syntrophic fatty acid oxidizing and methanogenic cultures and biogas reactor microbiomes. *Appl Environ Microbiol* 83:e00438-17

Özbayram EG, **S Kleinsteuber**, M Nikolausz, B Ince, and O Ince. 2017. Effect of bioaugmentation by cellulolytic bacteria enriched from sheep rumen on methane production from wheat straw. *Anaerobe* 46:122-130

Lucas R, J Groeneveld, H Harms, K Johst, K Frank, and **S Kleinsteuber**. 2017. A critical evaluation of ecological indices for the comparative analysis of microbial communities based on molecular datasets. *FEMS Microbiol Ecol* 93:fiw209

- Wintsche B, K Glaser, H Sträuber, F Centler, J Liebetrau, H Harms, and **S Kleinsteuber**. **2016**. Trace elements induce predominance among methanogenic activity in anaerobic digestion. *Front Microbiol* 7:2034. doi:10.3389/fmicb.2016.02034
- Ziganshin AM, EE Ziganshina, **S Kleinsteuber**, and M Nikolausz. **2016**. Comparative analysis of methanogenic communities in different laboratory-scale anaerobic digesters. *Archaea*. doi:10.1155/2016/3401272
- Bühligen F, R Lucas, M Nikolausz, and **S Kleinsteuber**. **2016**. A T-RFLP database for the rapid profiling of methanogenic communities in anaerobic digesters. *Anaerobe* 39:114-116
- Ziganshin AM, T Schmidt, Z Lv, J Liebetrau, HH Richnow, **S Kleinsteuber**, and M Nikolausz. **2016**. Reduction of the hydraulic retention time at constant high organic loading rate to reach the microbial limits of anaerobic digestion in various reactor systems. *Bioresour Technol* 217:62-71
- Starke R, A Keller, N Jehmlich, C Vogt, HH Richnow, **S Kleinsteuber**, M von Bergen, and J Seifert. **2016**. Pulsed ¹³C₂-acetate protein-SIP unveils *Epsilonproteobacteria* as dominant acetate utilizers in a sulfate-reducing microbial community mineralizing benzene. *Microb Ecol* 71:901-911
- Sträuber H., R Lucas, and **S Kleinsteuber**. **2016**. Metabolic and microbial community dynamics during the anaerobic digestion of maize silage in a two-phase process. *Appl Microbiol Biotechnol* 100:479-491
- Akyol Ç, EG Özbayram, O Ince, **S Kleinsteuber**, and B Ince. **2016**. Anaerobic co-digestion of cow manure and barley: Effect of cow manure to barley ratio on methane production and digestion stability. *Environ Prog Sustainable Energy* 35:589-595
- Keller AH, KM Schleinitz, R Starke, S Bertilsson, C Vogt, and **S Kleinsteuber**. **2015**. Metagenome-based metabolic reconstruction reveals the ecophysiological function of *Epsilonproteobacteria* in a hydrocarbon-contaminated sulfidic aquifer. *Front Microbiol* 6:1396. doi:10.3389/fmicb.2015.01396
- Popp D, S Schrader, **S Kleinsteuber**, H Harms, and H Sträuber. **2015**. Biogas production from coumarin-rich plants – inhibition by coumarin and recovery by adaptation of the bacterial community. *FEMS Microbiol Ecol* 91:fiv103
- Sträuber H, F Bühligen, **S Kleinsteuber**, M Nikolausz, and K Porsch. **2015**. Improved anaerobic fermentation of wheat straw by alkaline pre-treatment and addition of alkali-tolerant microorganisms. *Bioengineering* 2:66-93
- Lucas R, A Kuchenbuch, I Fetzer, H Harms, and **S Kleinsteuber**. **2015**. Long-term monitoring reveals stable and remarkably similar microbial communities in parallel full-scale biogas reactors digesting energy crops. *FEMS Microbiol Ecol* 91:fiv004
- Bozinovski D, M Taubert, **S Kleinsteuber**, H-H Richnow, M von Bergen, C Vogt, and J Seifert. **2014**. Metaproteogenomic analysis of a sulfate-reducing enrichment culture reveals genomic organization of key enzymes in *m*-xylene degradation pathway and metabolic activity of proteobacteria. *Syst Appl Microbiol* 37:448-501
- Schmidt T, AM Ziganshin, M Nikolausz, F Scholwin, M Nelles, **S Kleinsteuber**, and J Pröter. **2014**. Effects of the reduction of the hydraulic retention time to 1.5 days at constant organic loading in CSTR, ASBR, and fixed-bed reactors – Performance and methanogenic community composition. *Biomass Bioenergy* 69:241-248
- Poser A, C Vogt, K Knöller, J Ahlheim, H Weiss, **S Kleinsteuber**, and H-H Richnow. **2014**. Stable sulfur and oxygen isotope fractionation of anoxic sulfide oxidation by two different enzymatic pathways. *Environ Sci Technol* 48:9094-9102
- Dorer C, C Vogt, **S Kleinsteuber**, AJ Stams, and H-H Richnow. **2014**. Compound-specific isotope analysis as a tool to characterize biodegradation of ethylbenzene. *Environ Sci Technol* 48:9122-9132
- Kuppardt A, **S Kleinsteuber**, C Vogt, T Lüders, H Harms, and A Chatzinotas. **2014**. Phylogenetic and functional diversity within toluene-degrading, sulphate-reducing consortia enriched from a contaminated aquifer. *Microb Ecol* 68:222-234
- Tischer K, **S Kleinsteuber**, KM Schleinitz, I Fetzer, O Spott, F Stange, U Lohse, J Franz, F Neumann, S Gerling, C Schmidt, E Hasselwander, H Harms, and A Wendeberg. **2013**. Microbial communities along biogeochemical gradients in a hydrocarbon-contaminated aquifer. *Environ Microbiol* 15:2603-2615
- Ziganshin AM, J Liebetrau, J Pröter, and **S Kleinsteuber**. **2013**. Microbial community structure and dynamics during anaerobic digestion of various agricultural waste materials. *Appl Microbiol Biotechnol* 97:5161-5174

- Wagner A, L Segler, **S Kleinsteuber**, G Sawers, H Smidt, and U Lechner. **2013**. Regulation of reductive dehalogenase gene transcription in *Dehalococcoides mccartyi*. *Phil Trans R Soc B* 368 1616 20120317:1471-2970
- Nikolausz M, RFH Walter, H Sträuber, J Liebetrau, T Schmidt, **S Kleinsteuber**, F Bratfisch, U Günther, and HH Richnow. **2013**. Evaluation of stable isotope fingerprinting techniques for the assessment of the predominant methanogenic pathways in anaerobic digesters. *Appl Microbiol Biotechnol* 97:2251-2262
- Leibeling S, MB Maeß, F Centler, **S Kleinsteuber**, M von Bergen, M Thullner, H Harms, and RH Müller. **2013**. Posttranslational oxidative modification of (R)-2-(2,4-dichlorophenoxy)propionate/ α -ketoglutarate-dependent dioxygenases (RdpA) leads to improved degradation of 2,4-dichlorophenoxyacetate (2,4-D). *Eng Life Sci* 13:278-291
- Ziganshin AM, EE Ziganshina, **S Kleinsteuber**, J Pröter, and ON Ilinskaya. **2012**. Methanogenic community dynamics during anaerobic utilization of agricultural wastes. *Acta Naturae* 4:91-97
- Sträuber H, M Schröder, and **S Kleinsteuber**. **2012**. Metabolic and microbial community dynamics during the hydrolytic and acidogenic fermentation in a leach-bed process. *Energy, Sustainability and Society* 2:13
- Taubert M, C Vogt, T Wubet, **S Kleinsteuber**, MT Tarkka, H Harms, F Buscot, H-H Richnow, M von Bergen, and J Seifert. **2012**. Protein-SIP enables time-resolved analysis of the carbon flux in a sulfate-reducing, benzene-degrading microbial consortium. *ISME J* 6:2291-2301
- Müller S, T Hübschmann, **S Kleinsteuber**, and C Vogt. **2012**. High resolution single cell analytics to follow microbial community dynamics in anaerobic ecosystems. *Methods* 57:338-349
- Kleinsteuber S**, KM Schleinitz, and C Vogt. **2012**. Key players and team play: anaerobic microbial communities in hydrocarbon-contaminated aquifers. *Appl Microbiol Biotechnol* 94:851-873
- Vogt C, **S Kleinsteuber**, and H-H Richnow. **2011**. Anaerobic benzene degradation by bacteria. *Microb Biotechnol* 4:710-724
- Ziganshin, AM, T Schmidt, F Scholwin, ON Ilinskaya, H Harms, and **S Kleinsteuber**. **2011**. Bacteria and archaea involved in anaerobic digestion of distillers grains with solubles. *Appl Microbiol Biotechnol* 89:2039-2052
- Bombach P, T Hübschmann, I Fetzer, **S Kleinsteuber**, R Geyer, H Harms, and S Müller. **2011**. Resolution of natural microbial community dynamics by community fingerprinting, flow cytometry and trend interpretation analysis. *Adv Biochem Eng Biotechnol* 124:151-81
- Witzig M, J Boguhn, **S Kleinsteuber**, I Fetzer, and M Rodehutschord. **2010**. Influence of the maize silage to grass silage ratio and feed particle size of rations for ruminants on the community structure of ruminal *Firmicutes in vitro*. *J Appl Microbiol* 109:1998-2010
- Schleinitz KM, T Vallaey, and **S Kleinsteuber**. **2010**. Structural characterisation of ISCR8, ISCR2 and ISCR23, subgroups of IS91-like insertion elements. *Antimicrob Agents Chemother* 54:4321-4328
- Jehmlich N, **S Kleinsteuber**, C Vogt, D Benndorf, H Harms, F Schmidt, M von Bergen, and J Seifert. **2010**. Phylogenetic and proteomic analysis of an anaerobic toluene degrading community. *J Appl Microbiol* 109:1937-1945
- Wick LY, F Buchholz, I Fetzer, **S Kleinsteuber**, C Härtig, L Shi, A Miltner, H Harms, and GN Pucci. **2010**. Responses of soil microbial communities to weak electric fields. *Sci Total Environ* 408:4886-4893
- Witzig M, J Boguhn, **S Kleinsteuber**, I Fetzer, and M Rodehutschord. **2010**. Effect of the corn silage to grass silage ratio and feed particle size of rations for ruminants on the ruminal *Bacteroides-Prevotella* community *in vitro*. *Anaerobe* 16:412-419
- Koschorreck M, W Geller, T Neu, **S Kleinsteuber**, T Kunze, A Trosiener, and K Wendt-Potthoff. **2010**. Structure and function of the microbial community in an *in situ* reactor to treat an acidic mine pit lake. *FEMS Microbiol Ecol* 73:385-395
- Herrmann S, **S Kleinsteuber**, A Chatzinotas, S Kuppardt, T Lueders, H-H Richnow, and C Vogt. **2010**. Functional characterization of an anaerobic benzene-degrading enrichment culture by DNA stable isotope probing. *Environ Microbiol* 12:4012-411
- Müller S, C Vogt, M Laube, H Harms, and **S Kleinsteuber**. **2009**. Community dynamics within a bacterial consortium during growth on toluene under sulfate-reducing conditions. *FEMS Microbiol Ecol* 70:586-596

- Schleinitz, KM, S Schmeling, N Jehmlich, M von Bergen, H Harms, **S Kleinsteuber**, C Vogt, and G Fuchs. **2009**. Phenol degradation in the strictly anaerobic iron reducing bacterium *Geobacter metallireducens* GS15. *Appl Environ Microbiol* 75:3912-3919
- Porsch K, J Meier, **S Kleinsteuber**, and K Wendt-Potthoff. **2009**. Importance of different physiological groups of iron reducing microorganisms in an acidic mining lake remediation experiment. *Microb Ecol* 57:701-717
- Wagner A, L Adrian, **S Kleinsteuber**, JJ Andreesen, and U Lechner. **2009**. Transcription analysis of genes encoding homologues of reductive dehalogenases in "*Dehalococcoides*" sp. strain CBDB1 using terminal restriction fragment length polymorphism and quantitative PCR. *Appl Environ Microbiol* 75:1876-1884
- Günther S, M Trutnau, **S Kleinsteuber**, G Hause, T Bley, I Röske, H Harms, and S Müller. **2009**. Dynamics of polyphosphate accumulating bacteria in waste water treatment plant communities detected via DAPI and tetracycline labeling. *Appl Environ Microbiol* 75:2111-2121
- Kleinsteuber S**, KM Schleinitz, J Breitefeld, H Harms, H-H Richnow, and C Vogt. **2008**. Molecular characterization of bacterial communities mineralizing benzene under sulfate-reducing conditions. *FEMS Microbiol Ecol* 66:143-157
- Herrmann S, **S Kleinsteuber**, T Neu, H-H Richnow, and C Vogt. **2008**. Enrichment of anaerobic benzene degrading microorganisms by *in situ* microcosms. *FEMS Microbiol Ecol* 63:94-106
- Kleinsteuber S**, F-D Müller, A Chatzinotas, K Wendt-Potthoff, and H Harms. **2008**. Diversity and *in situ* quantification of *Acidobacteria* subdivision 1 in an acidic mining lake. *FEMS Microbiol. Ecol.* 63:107-117
- Kiesel B, RH Müller, and **S Kleinsteuber**. **2007**. Adaptive potential of alkaliphilic bacteria towards chloroaromatic substrates assessed by a *gfp*-tagged 2,4-D degradation plasmid. *Eng Life Sci* 7:361-372
- Kleinsteuber S**, V Riis, I Fetzter, H Harms, and S Müller. **2006**. Population dynamics within a microbial consortium during growth on diesel fuel in saline environments. *Appl Environ Microbiol* 72:3531-3542
- Vogt C, A Lösche, **S Kleinsteuber**, and S Müller. **2005**. Population profiles of a stable, commensalistic bacterial culture grown with toluene under sulphate-reducing conditions. *Cytometry Part A* 66A:91-102
- Schleinitz KM, **S Kleinsteuber**, T Vallaey, and W Babel. **2004**. Localization and characterization of two novel genes encoding stereospecific 2(2,4-dichlorophenoxy)propionate cleavage in *Delftia acidovorans* MC1. *Appl Environ Microbiol* 70:5357-5365
- Maskow T and **S Kleinsteuber**. **2004**. Carbon and energy fluxes during haloadaptation of *Halomonas* sp. EF11 growing on phenol. *Extremophiles* 8:133-141
- Riis V, **S Kleinsteuber**, and W Babel. **2003**. Influence of high salinities on the degradation of diesel fuel by bacterial consortia. *Can. J Microbiol* 49:713-721
- Hoffmann D, **S Kleinsteuber**, RH Müller, and W Babel. **2003**. A transposon encoding the complete 2,4-dichlorophenoxyacetic acid degradation pathway in the alkalitolerant strain *Delftia acidovorans* P4a. *Microbiology* 149:2545-2556
- Müller, RH, **S Kleinsteuber**, and W Babel. **2001**. Physiological and genetic characteristics of two bacterial strains utilizing phenoxypropionate- and phenoxyacetate herbicides. *Microbiol Res* 156:121-131
- Kleinsteuber S**, RH Müller, and W Babel. **2001**. Expression of the 2,4-D degradative pathway of pJP4 in an alkaliphilic, moderately halophilic soda lake isolate, *Halomonas* sp. EF43. *Extremophiles* 5:375-384
- Hoffmann D, **S Kleinsteuber**, RH Müller, and W Babel. **2001**. Development and application of PCR primers for the detection of the *tfd* genes in *Delftia acidovorans* P4a involved in the degradation of 2,4-D. *Acta Biotechnol* 21:321-331
- Müller RH, S Jorks, **S Kleinsteuber**, and W Babel. **1999**. *Comamonas acidovorans* strain MC1: a new isolate capable of degrading the chiral herbicides dichlorprop and mecoprop and the herbicides 2,4-D and MCPA. *Microbiol Res* 154:241-246
- Müller RH, S Jorks, **S Kleinsteuber**, and W Babel. **1998**. Degradation of various chlorophenols under alkaline conditions by Gram-negative bacteria closely related to *Ochrobactrum anthropi*. *J Basic Microbiol* 38:269-281
- Kleinsteuber S**, D Hoffmann, RH Müller, and W Babel. **1998**. Detection of chlorocatechol 1,2-dioxygenase genes in proteobacteria by PCR and gene probes. *Acta Biotechnol* 18:231-240

Quiñones A, G Wandt, **S Kleinsteuber**, and W Messer. **1997**. DnaA protein stimulates *polA* gene expression in *Escherichia coli*. *Mol Microbiol* 23:1193-1202

Kleinsteuber S and A Quiñones. **1995**. Expression of the *dnaB* gene of *Escherichia coli* is inducible by replication-blocking DNA damage in a *recA*-independent manner. *Mol Gen Genet* 248:695-702

Book chapters

Kleinsteuber S. 2018. Metagenomics of methanogenic communities in anaerobic digesters. In: AJM Stams, DZ Sousa (eds.), Biogenesis of Hydrocarbons, *Handbook of Hydrocarbon and Lipid Microbiology*, Springer Nature. https://doi.org/10.1007/978-3-319-53114-4_16-1

Robles C, RB Nair, **S Kleinsteuber**, M Nikolausz, and I Sárvári Horváth. **2018**. Biogas production: microbiological aspects. In: M Tabatabaei, H Ghanavati (eds.) *Biogas, Biofuel and Biorefinery Technologies Vol. 6*. Springer Nature, p. 163 – 198. https://doi.org/10.1007/978-3-319-77335-3_7