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2019

Imachi, H., Tasumi, E., Takaki, Y., Hoshino, T., **Schubotz, F., Gan, S.**, Tu, T.-H., Saito, Y., Yamanaka, Y., Ijiri, A., Matsui, Y., Miyazaki, M., Morono, Y., Takai, K., **Hinrichs, K.-U.**, and Inagaki, F. (2019) Cultivable microbial community in 2-km-deep, 20-million-year-old subseafloor coalbeds through ~1000 days anaerobic bioreactor cultivation. *Scientific Reports*, 9:2305. [doi:10.1038/s41598-019-38754-w](https://doi.org/10.1038/s41598-019-38754-w)

2018

Becker, K.W., Elling, F.J., Schröder, J.M., Lipp, J.S., Goldhammer, T., Zabel, M., **Elvert, M.**, Overmann, J., and **Hinrichs, K.-U.** (2018) Isoprenoid quinones resolve the stratification of microbial redox processes in a biogeochemical continuum from the photic zone to deep anoxic sediments of the Black Sea. *Applied and Environmental Microbiology*, 84: e02736-17. [doi:10.1128/AEM.02736-17](https://doi.org/10.1128/AEM.02736-17)

Evans, T.W., Könneke, M., Lipp, J.S., Adhikari, R.R., Taubner, H., Elvert, M., and Hinrichs, K.-U. (2018) Lipid biosynthesis of *Nitrosopumilus maritimus* dissected by lipid specific radioisotope probing (lipid-RIP) under contrasting ammonium supply. *Geochimica et Cosmochimica Acta*, 242, 51-63. [doi:10.1016/j.gca.2018.09.001](https://doi.org/10.1016/j.gca.2018.09.001)

Gruen, D.S., Wang, D.T., **Könneke, M.**, Topçuoğlu, B.D., Stewart, L.C., Goldhammer, T., Holden, J.F., **Hinrichs, K.-U.**, and Ono, S. (2018) Experimental investigation on the controls of clumped isotopologue and hydrogen isotope ratios in microbial methane. *Geochimica et Cosmochimica Acta*, 237, 339-356. [doi:10.1016/j.gca.2018.06.029](https://doi.org/10.1016/j.gca.2018.06.029)

Hurley, S.I., **Lipp, J.S.**, Close, H.G., **Hinrichs, K.-U.**, and Pearson, A. (2018) Distribution and export of isoprenoid tetraether lipids in suspended particulate matter from the water column of the Western Atlantic Ocean. *Organic Geochemistry*, 116, 90-102. [doi:10.1016/j.orggeochem.2017.11.010](https://doi.org/10.1016/j.orggeochem.2017.11.010)

Yu, T., **Wu, W.**, Liang, W., Lever, M.A., **Hinrichs, K.-U.**, and Wang, F. (2018) Growth of sedimentary *Bathyarchaeota* on lignin as an energy source. *Proceedings of the National Academy of Sciences*, 115, 6022-6027. [doi:10.1073/pnas.1718854115](https://doi.org/10.1073/pnas.1718854115)

2017

Elling, F., Könneke, M., Nicol, G.W., Stieglmeier, M., Bayer, B., Spieck, E., de la Torre, J.R., Becker, K.W., Thomm, M., Prosser, J.I., Herndl, G.J., Schleper, C., and Hinrichs, K.-U. (2017) Chemotaxonomic characterization of the thaumarchaeal lipidome. *Environmental Microbiology*, 19, 2681-2700. [doi:10.1111/1462-2920.13759](https://doi.org/10.1111/1462-2920.13759)

Evans, T.W., Wörmer, L., Lever, M.A., Lipp, J.S., Lagostina, L., Lin, Y.-S., Jørgensen, B.B., and Hinrichs, K.-U. (2017) Size and composition of subseafloor microbial community in the Benguela upwelling area examined from intact membrane lipid and DNA analysis. *Organic Geochemistry*, 111, 86-100. [doi:10.1016/j.orggeochem.2017.06.008](https://doi.org/10.1016/j.orggeochem.2017.06.008)

Huguet, A., **Meador, T.B.**, Laggoun-Défarge, F., **Könneke, M., Wu, W., Derenne, S., and Hinrichs, K.-U.** (2017) Production rates of bacterial tetraether lipids and fatty acids in peatland under varying oxygen concentrations. *Geochimica et Cosmochimica Acta*, 203, 103-116. [doi:10.1016/j.gca.2017.01.012](https://doi.org/10.1016/j.gca.2017.01.012)

Meador, T.B., Goldenstein, N.I., Gogou, A., Herut, B., Psarra, S., Tsagaraki, T.M., and Hinrichs, K.-U. (2017) Planktonic lipidome responses to aeolian dust input in low-biomass oligotrophic marine mesocosms. *Frontiers in Marine Science*, 4, 113. [doi:10.3389/fmars.2017.00113](https://doi.org/10.3389/fmars.2017.00113)

2016

Becker, K.W., Elling, F.J., Yoshinaga, M.Y., Söllinger, A., Urich, T., and Hinrichs, K.-U. (2016) Unusual butane- and pentanetriol-based tetraether lipids in *Methanomassiliicoccus luminyensis*, a representative of the seventh order of methanogens. *Applied and Environmental Microbiology*, 82, 4505-4516. [doi:10.1128/AEM.00772-16](https://doi.org/10.1128/AEM.00772-16)

Elling, F.J., Becker, K.W., Könneke, M., Schröder, J.M., Kellermann, M.Y., Thomm, M., and Hinrichs, K.-U. (2016) Respiratory quinones in *Archaea*: phylogenetic distribution and application as

biomarkers in the marine environment. *Environmental Microbiology*, 18, 692-707. [doi:10.1111/1462-2920.13086](https://doi.org/10.1111/1462-2920.13086)

Glombitza, C., **Adhikari, R.R.**, Riedinger, N., Gilhooly, W.P. III, **Hinrichs, K.-U.**, and Inagaki, F. (2016) Microbial sulfate reduction potential in coal-bearing sediments down to ~2.5 km below the seafloor off Shimokita peninsula, Japan. *Frontiers in Microbiology*, 7:1576. [doi:10.3389/fmicb.2016.01576](https://doi.org/10.3389/fmicb.2016.01576)

Golyshina, O.V., Lünsdorf, H., Kublanov, I.V., **Goldenstein, N.I.**, **Hinrichs, K.-U.**, and Golyshin, P.N. (2016) The novel, extremely acidophilic, cell wall-deficient archaeon *Cuniculiplasma divulgatum* gen. nov., sp. nov. represent a new family of Cuniculiplasmataceae fam. nov., order Thermoplasmatales. *International Journal of Systematic and Evolutionary Microbiology*, 66, 332-340. [doi:10.1099/ijsem.0.000725](https://doi.org/10.1099/ijsem.0.000725)

Hurley, S.J., **Elling, F.J.**, **Könneke, M.**, Buchwald, C., Wankel, S.D., Santoro, A.E., **Lipp, J.S.**, **Hinrichs, K.-U.**, and Pearson, A. (2016) Influence of ammonia oxidation rate on thaumarchaeal lipid composition and the TEX₈₆ temperature proxy. *Proceedings of the National Academy of Sciences*, 113 (28), 7762-7767. [doi:10.1073/pnas.1518534113](https://doi.org/10.1073/pnas.1518534113)

Liu, X.-L., Birgel, D., **Elling, F.J.**, Sutton, P.A., **Lipp, J.S.**, **Zhu, R.**, Zhang, C., **Könneke, M.**, Peckmann, J., Rowland, S.J., Summons, R.E., and **Hinrichs, K.-U.** (2016) From ether to acid: a plausible degradation pathway of glycerol dialkyl glycerol tetraethers. *Geochimica et Cosmochimica Acta*, 183, 138-152. [doi:10.1016/j.gca.2016.04.016](https://doi.org/10.1016/j.gca.2016.04.016)

Widderich, N., Czech, L., **Elling, F.J.**, **Könneke, M.**, Stöveken, N., Pittelkow, M., Riclea, R., Dickschat, J.S., Heider, J., and Bremer, E. (2016) Strangers in the archaeal world: osmopressure-responsive biosynthesis of ectoine and hydroxyectoine by the marine thaumarchaeon *Nitrosopumilus maritimus*. *Environmental Microbiology*, 18, 1227-1248. [doi:10.1111/1462-2920.13156](https://doi.org/10.1111/1462-2920.13156)

Yao, M., **Elling, F.J.**, Jones, C.A., Nomosatryo, S., Long, C.P., Crowe, S.A., Antoniewicz, M.R., **Hinrichs, K.-U.**, and Maresca, J.A. (2016) Heterotrophic bacteria from an extremely phosphate-poor lake have conditionally reduced phosphorus demand and utilize diverse sources of phosphorus. *Environmental Microbiology*, 18, 656-667. [doi:10.1111/1462-2920.13063](https://doi.org/10.1111/1462-2920.13063)

Zhu, C., Wakeham, S.G., **Elling, F.J.**, Basse, A., Mollenhauer, G., **Versteegh, G.J.M.**, **Könneke, M.**, and **Hinrichs, K.-U.** (2016) Stratification of archaeal membrane lipids in the ocean and implication for adaptation and chemotaxonomy of planktonic archaea. *Environmental Microbiology*, 18, 4324-4336. [doi:10.1111/1462-2920.13289](https://doi.org/10.1111/1462-2920.13289)

Zhu, R., Versteegh, G.J., and **Hinrichs, K.-U.** (2016) Detection of microbial biomass in subseafloor sediment by pyrolysis-GC/MS. *Journal of Analytical and Applied Pyrolysis*, 118, 175-180. [doi:10.1016/j.jaap.2016.02.002](https://doi.org/10.1016/j.jaap.2016.02.002)

2015

Beulig, F., **Heuer, V.B.**, Akob, D.M., **Viehweger, B.**, **Elvert, M.**, Herrmann, M., **Hinrichs, K.-U.**, and Küsel, K. (2015) Carbon flow from volcanic CO₂ into soil microbial communities of a wetland mofette. *The ISME Journal*, 9, 746-759. [doi:10.1038/ismej.2014.148](https://doi.org/10.1038/ismej.2014.148)

Elling, F.J., **Könneke, M.**, Mußmann, M., **Greve, A.**, and **Hinrichs, K.-U.** (2015) Influence of temperature, pH, and salinity on membrane lipid composition and TEX₈₆ of marine planktonic thaumarchaeal isolates. *Geochimica et Cosmochimica Acta*, 171, 238-255. [doi:10.1016/j.gca.2015.09.004](https://doi.org/10.1016/j.gca.2015.09.004)

Lü, X., **Liu, X.-L.**, **Elling, F.J.**, Yang, H., Xie, S., Song, J., Li, X., Yuan, H., Li, N., and **Hinrichs, K.-U.** (2015) Hydroxylated isoprenoid GDGTs in Chinese coastal seas and their potential as a paleotemperature proxy for mid-to-low latitude marginal seas. *Organic Geochemistry*, 89-90, 31-43. [doi:10.1016/j.orggeochem.2015.10.004](https://doi.org/10.1016/j.orggeochem.2015.10.004)

Meador, T.B., Bowles, M., **Lazar, C.**, **Zhu, C.**, Teske, A., and **Hinrichs, K.-U.** (2015) The archaeal lipidome in estuarine sediment dominated by members of the Miscellaneous Crenarchaeotal Group. *Environmental Microbiology*, 17, 2441-2458. [doi:10.1111/1462-2920.12716](https://doi.org/10.1111/1462-2920.12716)

Otte, J., Mall, A., Schubert, D.M., **Könneke, M.**, and Berg, I.A. (2015) Malonic semialdehyde reductase from the archaeon *Nitrosopumilus maritimus*, an enzyme involved in the autotrophic 3-hydroxypropionate/4-hydroxybutyrate cycle. *Applied and Environmental Microbiology*, 81, 1700-1707. [doi:10.1128/AEM.03390-14](https://doi.org/10.1128/AEM.03390-14)

Wang, D.T., Gruen, D.S., Sherwood Lollar, B., **Hinrichs, K.-U.**, Stewart, L.C., Holden, J.F., Hristov, A.N., Pohlman, J.W., Morrill, P.L., **Könneke, M.**, Delwiche, K.B., Reeves, E.P., Sutcliffe, C.N., Ritter,

D.J., Seewald, J.S., McIntosh, J.C., Hemond, H.F., Kubo, M.D., Cardace, D., Hoehler, T.M., and Ono, S. (2015) Nonequilibrium clumped isotope signals in microbial methane. *Science*, 348, 428-431. [doi:10.1126/science.aaa4326](https://doi.org/10.1126/science.aaa4326)

Yoshinaga, M.Y., Gagen, E.J., **Wörmer, L.**, **Broda, N.K.**, **Meador, T.B.**, **Wendt, J.**, Thomm, M. and **Hinrichs, K.-U.** (2015) *Methanothermobacter thermautotrophicus* modulates its membrane lipids in response to hydrogen and nutrient availability. *Frontiers in Microbiology*, 6, 5. [doi:10.3389/fmicb.2015.00005](https://doi.org/10.3389/fmicb.2015.00005)

2014

Elling, F.J., **Könneke, M.**, **Lipp, J.S.**, **Becker, K.W.**, Gagen, E.J., and **Hinrichs, K.-U.** (2014) Effects of growth phase on the membrane lipid composition of the thaumarchaeon *Nitrosopumilus maritimus* and their implications for archaeal lipid distributions in the marine environment. *Geochimica et Cosmochimica Acta*, 141, 579-597. [doi:10.1016/j.gca.2014.07.005](https://doi.org/10.1016/j.gca.2014.07.005)

Könneke, M., Schubert, D.M., Brown, P.C., Hügler, M., Standfest, S., Schwander, T., Schada von Borzyskowski, L., Erb, T.J., Stahl, D.A., and Berg, I.A. (2014) Ammonia-oxidizing archaea use the most energy-efficient aerobic pathway for CO₂ fixation. *Proceedings of the National Academy of Sciences*, 111, 8239-8244. [doi: 10.1073/pnas.1402028111](https://doi.org/10.1073/pnas.1402028111)

Meador, T.B., **Zhu, C.**, **Elling, F.J.**, **Könneke, M.**, and **Hinrichs, K.-U.** (2014). Identification of isoprenoidglycosidic glycerol dibiphytanoldiethers and indications for their biosynthetic origin. *Organic Geochemistry*, 69, 70-75. [doi:10.1016/j.orggeochem.2014.02.005](https://doi.org/10.1016/j.orggeochem.2014.02.005)

Probst, A.J., Weinmaier, T., Raymann, K., Perras, A., Emerson, J.B., Rattei, T., Wanner, G., Klingl, A., Berg, I.A., **Yoshinaga, M.**, **Viehweger, B.**, **Hinrichs, K.-U.**, Thomas, B.C., Meck, S., Auerbach, A.K., Heise, M., Schintlmeister, A., Schmid, M., Wagner, M., Gribaldo, S., Banfield, J.F., and Moissl-Eichinger, C. (2014) Biology of a widespread uncultivated archaeon that contributes to carbon fixation in the subsurface. *Nature Communications*, 5:5497. [doi:10.1038/ncomms6497](https://doi.org/10.1038/ncomms6497)

Zhu, R., Lin, Y.-S., **Lipp, J.S.**, **Meador, T.B.**, and **Hinrichs, K.-U.** (2014) Optimizing sample pretreatment for compound-specific stable carbon isotopic analysis of amino sugars in marine sediment. *Biogeosciences*, 11, 4869-4880. [doi:10.5194/bg-11-4869-2014](https://doi.org/10.5194/bg-11-4869-2014)

2013

Zhu, R., **Evans, T.W.**, **Wörmer, L.**, **Lin, Y.-S.**, **Zhu, C.**, and **Hinrichs, K.-U.** (2013) Improved sensitivity of sedimentary phospholipid analysis resulting from a novel extract cleanup strategy. *Organic Geochemistry*, 65, 46–52. [doi: 10.1016/j.orggeochem.2013.10.002](https://doi.org/10.1016/j.orggeochem.2013.10.002)