

SANDRA HEINZELMANN - CURRICULUM VITAE

PERSONAL DETAILS

Name: Sandra Mariam Heinzelmann
Nationality: German
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Phone: +27730067688
Languages: German (native), English (fluent), Dutch (intermediate)

Research Interests

geobiology, biogeochemistry, stable isotope ecology, marine microbiology, microbial ecology, microbial metabolism and diversity, elemental cycles, environmental microbiology, molecular biology and analysis, interdisciplinary research

RESEARCH EXPERIENCE

Research projects

PostDoc Project (Apr. 2018 – present)

University of Pretoria, Forestry and Agriculture Biotechnology Institute. **Topic:** nitrogen acquisition and secondary metabolism in *Sirex noctilio*. Supervisor: Prof. Bernard Slippers

PostDoc Project (Apr. 2016 - Mar. 2018)

University of Pretoria, Centre of Microbial Ecology and Genomics. **Topic:** Investigation of microbial communities and nitrogen cycling in the Namib Desert. Supervisors: Prof. Don Cowan, Dr. Jean-Baptiste Ramond

PhD thesis (Feb. 2011 - Dec. 2015)

Royal Netherlands Institute for Sea Research, Department of Marine Organic Biogeochemistry. **Title:** Metabolism of microbial communities in the environment: A compound-specific hydrogen isotope approach. Supervisors: Dr. Marcel T.J. van der Meer, Prof. Dr. Stefan Schouten, Prof. Dr. Jaap Sinninghe Damsté

Diploma research (Jan. 2010 - Nov. 2010)

Georg-August-University of Göttingen, Faculty of Biology and Psychology, Institute of Microbiology and Genetics, Group for Structural and functional analysis of microbial consortia. **Title:** Screening for enzymatic proteins and enzymatic activity in microbial communities in methane-seep habitats. Supervisor: PD Dr. Michael Hoppert

Research internships

Bacterial Adhesion Program, Division of General Microbiology, Department of Bioscience, University of Helsinki. Supervisor: Dr. Benita Westerlund-Wikström (Mar. 2009 - Apr. 2009)

Group for Nitrogen processes in aquatic ecosystems, Department of Environmental Sciences, Faculty of Biological and Environmental Sciences, University of Helsinki. Supervisor: Dr. Susanna Hietanen (Nov. 2008 - Dec. 2008)

Department of Human Genetics, Georg-August-University of Göttingen. Supervisor: Dr. Athanasios. Zovoilis (Mar. 2008 - Apr. 2008)

Department of Biochemistry 1, Georg-August-University of Göttingen. Supervisor: Dr. Andreas Werner (Aug. 2007 - Sep. 2007)

Group for Molecular Neurogenetics, European Neuroscience Institute, Göttingen. Supervisor: Dr. Stefan Eimer (Mar. 2007 - Apr. 2007)

Field Experience

Namib Desert field campaign 2017, Gobabeb Research and Training Centre, Namibia (April 2017)

Namib Desert field campaign 2016, Gobabeb Research and Training Centre, Namibia (April 2016)

Darwin Campaign Lake Grevelingen 2012 in R/V Luctor, Netherlands (March and August 2012)

Nicycle/Fokuz III cruise, R/V Pelagia, Netherlands (May 2011)

Sampling campaign Tvärminne Zoological Station, Finland (December 2008)

Technical Experience

Molecular biology methods:

DNA and RNA extraction, PCR, qPCR, next generation sequencing, DGGE, clone libraries, gel electrophoreses, DNA sequencing, protein extraction, SDS PAGE, Western Blot

Microbiological methods:

Isolation, enrichment and cultivation of eukaryotic algae, phototrophic, chemolithoautotrophic and heterotrophic microorganisms, flow cytometry

Microscopy:

light microscopy, fluorescence microscopy, electron microscopy

Analytical chemistry:

total lipid and intact polar lipid extraction, column chromatography, GC analysis, GC/MS analysis, HPLC/ESI-MS² analysis, compound specific hydrogen isotope analysis, GC/iRMS analysis, bulk carbon and nitrogen stable isotope analysis

Software and bioinformatics skills:

Microsoft office, Adobe Illustrator, SigmaPlot, CoralDraw, BioEdit, Mega, QIIME, ARB, R (in progress)

EDUCATION

PhD thesis (Feb. 2011 – Dec. 2015)

Royal Netherlands Institute for Sea Research, Department of Marine Organic Biogeochemistry; Thesis: Metabolism of microbial communities in the environment: A compound-specific hydrogen isotope approach

Diploma (Oct. 2004 -Nov. 2010)

General Biology, Georg-August-University of Göttingen (Germany); Thesis: Screening for enzymatic proteins and enzymatic activity in microbial communities in methane-seep habitats

Erasmus (Sep. 2008 - May 2009)

University of Helsinki (Finland)

OTHER ACADEMIC ACTIVITIES

Teaching

Supervision of basic practical training in Microbiology for Bachelor students, University of Göttingen (April 2010 - July 2010)

Supervision of basic practical training in Biochemistry for Bachelor students, University of Göttingen (January 2008)

Courses and Trainings

MaCuMBA summer school: Sampling, isolation and cultivation of marine microorganisms, Texel, Netherlands (July 2015)

International Course in Methods in Microbial Ecology, Naples, Italy (November 2012)

Summer school for Aquatic Microbial and Molecular Ecology, Odense, Denmark (August 2011)

MATLAB Fundamentals training, Texel, Netherlands (June 2011)

Ecolmas/Nebroc course: Molecular Organic Geochemistry, Texel, Netherlands (February 2011)

Others

Discussion leader in the Gordon Research Seminar Marine Microbes 2014, Bentley University (USA). June 2014.

Reviewer for Biogeosciences and Geochimica et Cosmochimica Acta

LIST OF PUBLICATIONS

Heinzelmann, S.M., Villanueva L., Lipsewers Y.A., Sinke-Schoen, D., Sinninghe Damsté, J.S.; Schouten, S.; van der Meer, M.T.J., Assessing the metabolism of sedimentary microbial communities using hydrogen isotopic compositions of fatty acids (submitted to *Organic Geochemistry*)

Heinzelmann, S.M., Villanueva L., Bale N.J., Sinke-Schoen, D., Philippart C.J.M., Sinninghe Damsté, J.S., Schouten, S., van der Meer, M.T.J., Seasonal changes in the D/H ratio of fatty acids of pelagic microorganisms in the coastal North Sea, *Biogeosciences*, 13, 5527-5539, doi: 10.5194/bg-2016-125

Heinzelmann, S.M., Chivall, D., M'Boule, D., Sinke-Schoen, D., Villanueva L., Sinninghe Damsté, J.S., Schouten, S., van der Meer, M.T.J., Comparison of the effect of salinity on the D/H ratio of fatty acids of heterotrophic and photoautotrophic microorganisms, *FEMS Microbiology Letters*, 362, doi: 10.1093/femsle/fnv065

Heinzelmann, S.M., Villanueva L., Sinke-Schoen, D., Sinninghe Damsté, J.S., Schouten, S., van der Meer, M.T.J., Impact of metabolism and growth phase on the hydrogen isotopic composition of microbial fatty acids, *Frontiers in Microbiology*, 6, doi: 10.3389/fmicb.2015.00408

Heinzelmann, S.M., Bale, N.J., Hopmans, E.C., Sinninghe Damsté, J.S., Schouten, S.; van der Meer, M.T.J. (2014), A critical assessment of glyco- and phospholipid separation using silica chromatography, *Applied and Environmental Microbiology*, 80(1), 360-365, doi: 10.1128/aem.02817-13

Wrede, C.; Brady, S.; Rockstroh, S.; Dreier, A.; Kokoschka, S.; **Heinzelmann, S.M.**; Heller, C.; Reitner, J.; Taviani, M.; Daniel, R.; Hoppert, M. (2011), Aerobic and anaerobic methane oxidation in terrestrial mud volcanoes in the Northern Apennines, *Sedimentary Geology*, 263-264, 210-219, doi: 10.1016/j.sedgeo.2011.06.004

In preparation

Heinzelmann, S.M., Ramond, J.-B., Diez, B., Cowan, D.A., Nitrogen cycling in hot and cold desert environments (in preparation for *AEM*)

Heinzelmann, S.M., Jordaan, K., Vikram, S., Ortiz, M., Ramond, J.B., Pelsler, K, Ronca, S., Seely, M., Cowan, D.A., Factors determining the microbial diversity in three Namib Desert transects (in preparation)

LIST OF INTERNATIONAL MEETING PRESENTATIONS

Gordon Research Conferences Marine Microbes 2014, Bentley University (USA). June 2014. June 2014. D/H Ratios of Fatty Acids as a Tool to Infer the Metabolism of Microbial Communities. *Poster presentation*

Goldschmidt 2014, Sacramento (USA). June 2014. D/H Ratios of Fatty Acids as a Tool to Infer the Metabolism of Microbial Communities. *Oral presentation*

Benelux Association of Stable Isotope Scientists BASIS 2014 Annual Meeting, Nijmegen (NL). March 2014. Compound specific hydrogen isotopes as a culture independent method to identify core metabolisms of microorganisms in situ. *Oral presentation*

International Meeting of Organic Geochemistry 2013, Tenerife (ES). September 2013. Compound-specific hydrogen isotopes as a culture independent method to identify core metabolisms of microorganisms in situ. *Poster presentation*

Aquatic Sciences Meeting 2013, New Orleans (USA). February 2013. Compound specific hydrogen isotopes as a culture independent method to identify core metabolisms of microorganisms in situ. *Oral presentation*

International Meeting of Organic Geochemistry 2011, Interlaken (CH). September 2011. Compound specific hydrogen isotopes as indicator of core metabolisms of microorganisms in the Wadden and North Sea: Testing the separation of intact polar lipids in 'Glycolipid' and 'Phospholipid' fractions. *Poster presentation*

Studium Conferences 2011 (Hydrogen isotopes as environmental recorders: from water to sedimentary), Orleans (F). September 2011. Compound specific hydrogen isotopes as indicator of core metabolisms of microorganisms in the Wadden and North Sea: Testing the separation of intact polar lipids in 'Glycolipid' and 'Phospholipid' fractions. *Poster presentation*

REFERENCES

PD Dr. Michael Hoppert

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