

CHRISTIAN HALLMANN, PH.D.

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RESEARCH INTERESTS

Hallmann's research focus lies on applying techniques of molecular and isotopic organic geochemistry to questions of Earth system evolution in order to improve our understanding of the reciprocal interaction between a co-evolving biosphere, environmental conditions, and biogeochemical cycles. A large emphasis is placed on the Precambrian and Paleozoic sedimentary record, where the questions of increasingly complex life are tied to the gradual establishment of a quasi-modern Earth system at the turn of the Phanerozoic. In this context, the timing and conditions of the emergence and subsequent radiation of early eukaryotes and the first metazoa represents an important focus. Supportive research lines cover the evolution of lipid biosynthetic pathways, organic matter preservation and taphonomic effects on a molecular scale, petroleum system geochemistry (both on reservoir and basin-wide scales), method development (preparative analytical chemistry) and Cenozoic climate perturbation events. Hallmann combines state-of-the-art molecular geochemical techniques with detailed field work, isotope-chemostratigraphy and palynology in order to obtain a holistic view of studied intervals and topics.

PERSONAL DATA

DOB	July 30 th 1981 in Aachen, Germany
Citizenship	Netherlands and Germany (dual)
Languages	Dutch, German (native); English (fluent); French, Polish (moderate)

EDUCATION

2009	PhD in Applied Chemistry	Curtin University, Perth, Australia
2004	Diplom in Geology–Paleontology <i>with highest distinction</i>	University of Cologne, Germany
1999	Abitur / Gymnasium	Bernardinus College, Heerlen, the Netherlands

POSITIONS AND EXPERIENCE

Max Planck Institute for Biogeochemistry

2012–2021 Free-floating research group leader; head of Organic-Paleobiogeochemistry group

MARUM, University of Bremen

2012–2021 Staff scientist & Lecturer

Massachusetts Institute of Technology

2010–2012 Postdoctoral Associate (Advisor: Prof. Roger Summons)

2008–2010 Agouron Institute Postdoctoral Fellow in Geobiology (Advisor: Prof. Roger Summons)

Woodside Energy, Exploration & New Ventures

2006–2007 Exploration geochemist; part-time (Team lead: Dr. Andrew Murray)

Curtin University

2005–2008 Doctoral candidate (Advisor: Prof. Kliti Grice)

University of Newcastle upon Tyne

2005 Pre-doctoral fellow (Advisor: Prof. Ian Head)

University of Cologne

1999–2004 Diplom studies and thesis (Advisors: Profs. Lorenz Schwark and Detlev Leythaeuser)

HONOURS, AWARDS, FELLOWSHIPS

2018 AAAS Top-10 scientific breakthroughs of the year (Bobrovskiy et al., Science 361).
 2018 Geochemical Society 'Best 2015 paper in organic geochemistry award' (French, Hallmann et al., PNAS 112: 5915–20).
 2011 Election as an independent 'free-floating' Max Planck Group leader.
 2009 Election as an Agouron Institute Geobiology Fellow.
 2008 Invitation to 'Fresh Science': competition identifying new & exciting early-career science.
 2008 TIGeR research grant for fieldwork.
 2008 Best student poster award. Australian Organic Geochemistry Conference, Adelaide.
 2007 Geoservices award. European Association of Organic Geochemists travel scholarship.
 2007 AAPG Grant-in-Aid.
 2007 Petroleum Exploration Society of Australia 'Highly Commended' Scholarship.
 2006 Petroleum Exploration Society of Australia Federal Postgraduate Scholarship.
 2005 DFG Bernd Rendel Award for young investigators with great scientific potential.
 2005 AAPG Horst and Jessie von Bandat Memorial Grant.
 2005 Curtin University International Research Tuition Scholarship & Stipend Award
 2005 Marie Curie pre-doctoral fellowship. European Commission.
 1999–2003 IB-Groep Study performance grant.

SYNERGISTIC ACTIVITIES

Reviewed manuscripts for:

Nature, PNAS, Nature Ecology & Evolution, Geology, Nature Communications, Precambrian Research, Earth and Planetary Science Letters, ISME Journal, Chemical Geology, Microbial Ecology, Organic Geochemistry, G-cubed, Space Science Reviews, Geochimica et Cosmochimica Acta, Geobiology, Anthropocene, Biogeosciences, PLOS One.

Reviewed proposals for:

NSF, NASA, NERC, Deutsche Forschungsgemeinschaft, Alexander von Humboldt Stiftung (Feodor Lynen, Georg Foster & CAPES-Humboldt programs), Indo-US Science & Technology Forum, American Chemical Society (PRF).

2020	Invited co-organizer: SINOGEOS 2020 symposium (Humboldt Foundation)
2017	Invited plenary session chair: 28 th International Meeting on Organic Geochemistry.
2017	Session convener (Session 6.4): GeoBremen conference.
2012	Session leader: Gordon Research Seminar on Organic Geochemistry (Invited).
2011	Session chair: AGU Fall meeting. Four billion years of marine nitrogen cycling.
2011	Session chair: AGU Fall meeting. Understanding early Neoproterozoic transitions.
2009	Topical consultant: 'Welt der Wunder' German popular science magazine.
2007	Election panel for Curtin University Postdoctoral Fellowship (Invited).
2007	Assistant examiner of MSc candidates, University of Cologne.
2006	Session judge (Geochemistry). AAPG International Conference, Perth (Invited).

PUBLIC OUTREACH

2017	Contribution to 'Blaues Telefon' (popular science magazine: <i>Mare</i>), answering readers questions.
2015	Popular article: 'Drilling deep into Earth's history': https://www.mpg.de/9788987/W005_environment-climate-070-077.pdf
2011	Video interview on gas chromatography and mass spectrometry. MIT Museum, Cambridge, MA.
2011	'Tell your story' workshop to connect teachers and scientists.
2011	MIT +150 open house. Geological time-walk tours.
2011	'Mars weekend' at the Museum of Science, Boston: public lecture and info booth.

ADDITIONAL TRAINING RECEIVED

2012	Management development program 1. Leadership, communication, impact (Cevey Consulting)
2012	Management development program 2. Personalities, potentials, performance (Cevey Consulting)
2008	Microbial physiology course (MIT: Magasanik, Newman, Walker)
2007	Introduction to Project Management course (Australian Technology Network)
2006	Leadership and Communication course (Australian Technology Network)
2006	Fault seal analysis short course (Badley Geoscience)
2003	Basin modeling course (University of Bonn / IES)

TEACHING

University of Bremen

- 2017– **Applied Geochemistry in Petroleum exploration (05-MAR-2-C10-1)**
Shared course with Dr. Florence Schubotz. Covering the petroleum system concept, petroleum geochemistry and exploration approaches by theory and in two exhaustive case studies.
- 2013– **Molecular Geobiology (05-GEO-2-K8-1)**
Shared course with Profs. Antje Boetius, Simone Kasemann, Dr. Florence Schubotz. Covering the evolution of life and biogeochemical cycles, life in extreme environments and associated molecular approaches.

NASA / UIMP Santander

- 2013 **Biosignatures: NASA summer school on Astrobiology**
Week-long program with Profs. Victor Parro, Robert Blankenship, and Dawn Sumner.
<https://nai.nasa.gov/funding-and-careers/conferences-and-schools/international-summer-school/2013-santander-summer-school-biosignatures-fingerprints-life/>

Massachusetts Institute of Technology

- 2009–2011 **Molecular Biogeochemistry (12.158 / 12.458)**
Shared course with Prof. Roger Summons and Dr. Julio Sepulveda.
<http://dspace.mit.edu/handle/1721.1/75792>

SUPERVISION OF STUDENTS AND RESEARCHERS

B.Sc. Students

* denotes still active

Jana Meixnerova (2015–2016)

M.Sc. Students

Aaron Lier* (2018–2019) | Florian Krauss* (2018–2019) | Lara Meyer (2018; co-advised with Dr. Florence Schubotz) | Christina Nawrat* (2018) | Naomi Halbach (2017–2018) | Alua Suleimenova (2016–2017) | Mareike Neumann (2015–2016) | Nadine Smit (2015–2016; co-advised with Dr. Flo Schubotz) | Helena Dannert (2013; co-advised with Prof. Georg Pohnert) | Jessica Holterhof (2015–2016; co-advised with Prof. Kai-Uwe Hinrichs)

Ph.D. Students

Lennart van Maldegem (2013–2017) | Mareike Neumann* (2017–) | Ming Wu (2018; visiting EAOG stipendiat)

Postdoctoral researchers

Benjamin Nettersheim* (2015–; Agouron Institute Fellow '15/'16) | Raul Martinez* (2017–2018) | Rafael Taroza* (2017–20169) | Yosuke Hoshino (2015–2016) | Aleksandra Poshibaeva (2016; visiting DAAD stipendiat) | Vladimir Poshibaev (2016; visiting DAAD stipendiat) | Yosuke Hoshino (2015–2016) | Sebastian Näher (2016) | Arne Leider* (2012–2019)

Students mentored before 2012

Christian Illing (MIT: visiting PhD student), Katherine French (MIT: PhD student), Emily Matys (MIT: PhD student), Katherine Thomas (MIT, MSc student), Laurie Hakes (MIT, BSc student), John Hall (MIT: BSc student), Matthieu Gauthier (MIT: BSc student)

RESEARCH FUNDING**Grants received as principal investigator**

- 2018–2021 The rise and fall of Archean atmospheric oxygen — Did temporally carbon burial as Fe(ox)-DOM complexes play a modulating role?
German Research Foundation (DFG: SPP 1833) #HA 7218/4-1 | EUR 313 k
- 2017–2019 Extension of Max-Planck-Research-Group (Organic Paleobiogeochemistry)
Max Planck Society | EUR 654 k
- 2016–2017 Travel supplement to ‘Proposal to drill...South Africa’
Agouron Institute | USD 10 k
- 2015–2018 Re-evaluating the earliest traces of life on Earth
German Research Foundation (DFG) #HA 7218/2-1 | EUR 294 k
- 2016 Neoproterozoic nitrogen cycling — travel fund
LabExMer (Uni Brest, via Prof. Sansjofre) | EUR 4 k
- 2013–2014 Incentive fund for fieldwork in the Urals, Russia
MARUM, University of Bremen | EUR 15 k
- 2012–2017 Neoproterozoic transition to a modern world (free-floating Max Planck Research Group)
Max Planck Society | EUR 2 M

Grants received as co-PI or co-I

- 2016–2018 Proposal to drill the GOE in the Duitschland/Rooihogte Formation and biomarkers in the 2.53 Ga Gamohaam-Lime Acres carbonates of the Transvaal Supergroup
Agouron Institute | USD 348 k
Co-PI with Profs. N. Beukes (Uni Johannesburg), D. Sumner (UC Davis), W. Fischer (CalTech)
- 2016–2017 Unraveling the record of Proterozoic eukaryotic evolution in the Canadian arctic
Agouron Institute | USD 494 k
Co-I with PI Prof. G. Halverson (McGill) and 6 other Co-I's.
- 2011–2014 Benchmarking desorption and pyrolysis of organic matter on the SAM instrument suite
NASA, MSL participating scientist program | USD 564 k
PI Prof. Roger Summons (MIT).
- 2010–2013 Coordinated micro-analytical approaches for in-situ analysis of Paleoproterozoic biological carbonaceous particles
NASA Astrobiology Institute (NAI) Director's discretionary fund | USD 154 k
PI Prof. Dominic Papineau (Boston College).

FIELD WORK & SAMPLING PARTIES

(Co-)Organizer / Leader	Milos Island, Greece — Recent BIF analog environments (2017, 3 days) Griqualand, South Africa — Science sampling lead during Agouron Archean drilling campaign (2016, 21 days) McArthur Basin, NT, Australia — Paleoproterozoic depositional sequences (2015, 5 days) NTGS core library, Darwin, Australia — Five Mesoproterozoic cores (2015, 5 days) GSWA core library, Perth, Australia — One Neoproterozoic core (2015, 5 days) Petershill Fm, Bathgate, UK — Carboniferous (2015, 3 days) Gornostakh anticline, Yakutia, Russia — Meso-Neoproterozoic (2014, 20 days) Chuar Group, Arizona, USA — Neoproterozoic depositional sequences (2014, 10 days) Jammu/Kashmir and Lesser Himalaya, India — Late Neoproterozoic depositional sequences (2013, 21 days) Pilbara Craton, Australia — Science sampling lead for Agouron ultra-clean drilling campaign AIDP 1–3 (2012, ca. 40 days) Belcher Islands, Nunavut, Canada — Paleoproterozoic carbonate sequences (2011, 14 days)
Participant	Neoproterozoic geology of Oman — Huqf and Jebel Akhdar (2018, 7 days) Archean Moodies Group ICDP workshop, South Africa (2017, 4 days) Tonian Liulaobei Fm and P/T sections, Anhui Province, China (2017, 4 days) Lake Vättern area, Sweden — Early Neoproterozoic (2017, 3 days) Lake Vättern area, Sweden — Early Neoproterozoic (2016, 4 days) Southern Ural Mountains, Russia — Meso- and Neoproterozoic (2013, 10 days) Cordoba region and Rio Tinto, Spain — Agouron led field excursion; Cambrian and recent Mars analogs (2010, 14 days) Three Gorges area, China — Neoproterozoic strata and P/T boundary (2009, 7 days) Newfoundland, Canada — Ediacara biota (2009, 3 days) Pilbara Craton, Australia Archean BIF and stromatolites (2008, 18 days) Dharwar Craton, India — Archean metamorphic terranes (2003, 14 days) Allgäu Alps, Germany — Mesozoic, Geological mapping exercise (2003, 14 days) Menorca Island, Spain — Phanerozoic geological framework (2001, 7 days) Dolomite Mountains, Italy — Permo-Triassic; Geological mapping exercise (2000, 7 days)
	Several 1- and 2-day excursions within Germany are not individually listed (1999–’05)

PUBLICATIONS

Corresponding author*, [Hallmann-Lab member](#)

In prep

Schmidt C*, Nikeleit V, Schaedler F, [Leider A](#), Lueder U, Bryce C, [Hallmann C](#), Kappler A (...) Metabolic flexibility in a phototrophic co-culture isolated from a freshwater sediment and its relevance for biogeochemical iron cycling. *Applied and Environmental Microbiology*

2019

33. [Nettersheim B](#), Brocks JJ, Schwelm A, Hope JM, Not F, Lomas M, Schmidt C, Schiebel R, Nowack ECM, De Deckker P, Pawlowski J, Bowser SS, Zonneveld K, Kucera M, Stuhr M, [Hallmann C*](#) (2019) Putative sponge biomarkers in unicellular Rhizaria question an early rise of animals. *Nature Ecology & Evolution* 3: 577–581.

32. [Leider A*](#), Richter-Brockman S, [Nettersheim BJ](#), Achten C, [Hallmann C](#) (2019) Low femtogram sensitivity analysis of polycyclic aromatic hydrocarbons using GC-APLI-TOF mass spectrometry: extending the target window for aromatic steroids in early Proterozoic rocks. *Organic Geochemistry* 129: 77–87.
31. [Van Maldegem L](#), Sansjofre P, Weijers J, Wolkenstein K, Strother P, Wörmer L, Hefter J, [Nettersheim B](#), [Hoshino Y](#), Schouten S, Sinninghe-Damsté JS, Nath N, Griesinger C, Kuznetsov NB, Elie M, Elvert M, Tegelaar E, Gleixner G, [Hallmann C*](#) (2019) Bisanthracene traces predatory pressure and the persistent rise of algal ecosystems after Snowball Earth. *Nature Communications* 10: 476.
30. Illing CJ, [Hallmann C*](#), Scott AC, Collinson M, Pancost RD, Briggs DEG, Strauss H, Summons RE (2019) Heterogeneity of free and occluded bitumen in a natural maturity sequence from Oligocene Lake Enspel. *Geochimica et Cosmochimica Acta* 245: 240–265.

2018

29. Bobrovkiy I*, Hope J, Ivantsov A, [Nettersheim BJ](#), [Hallmann C](#), Brocks JJ (2018) Ancient steroids establish the Ediacaran fossil *Dickinsonia* as one of the earliest animals. *Science* 361: 1246–1249. [AAAS: Top-10 scientific breakthroughs 2018](#).
28. Peters CA, [Hallmann C](#), George SC* (2018) Phenolic compounds in oil-bearing fluid inclusions: implications for water-washing and oil migration. *Organic Geochemistry* 118: 36–46.
27. Luo G, Yang H, Algeo TJ, [Hallmann C](#), Xie S* (2019) Lipid biomarkers for the reconstruction of deep-time environmental conditions. *Earth Science Reviews* 189: 99–124.
26. Muller E*, Thomazo C, Stüeken, E, [Hallmann C](#), [Leider A](#), Chaduteau C, Buick R, Baton F, Ader M (2018) Bias in carbon concentration and $\delta^{13}\text{C}$ measurements of organic matter due to cleaning treatments with organic solvents. *Chemical Geology* 493: 405–412.

2017

25. [Hoshino Y](#), Poshibaeva A, Meredith W, Snape C, Poshibaev V, Versteegh G, Kuznetsov N, [Leider A](#), [van Maldegem L](#), [Neumann M](#), Naeher S, Modczydlowska M, Tang Q, Xiao S, McKirdy D, Das S, Alvaro J, [Hallmann C*](#) (2017) Cryogenian evolution of stigmastereoid biosynthesis. *Science Advances* 3: e1700887.
24. Brocks JJ*, Jarrett A, Sirantoine E, [Hallmann C](#), [Hoshino Y](#), Liyanage T (2017) The rise of algae in Cryogenian oceans and the emergence of animals. *Nature* 548: 578–581.

2016

23. Ferralis N, Matys E, Knoll AH, [Hallmann C](#), Summons RE* (2016) Rapid, direct and non-destructive assessment of fossil organic matter via microRaman spectroscopy. *Carbon* 108: 440–449.
22. [Leider A](#), Schumacher TC, [Hallmann C*](#) (2016) Enhanced procedural blank control for organic geochemical studies of critical sample material. *Geobiology* 14:469–482.

2015

21. Feulner G*, [Hallmann C*](#), Kienert H (2015) Snowball cooling from algal rise. *Nature Geoscience* 8: 659–662.
20. Williford KH*, Ushikubo T, Lepot K, Kitajima K, [Hallmann C](#), Spicuzza MJ, Kozdon R, Eigenbrode JL, Summons RE, Valley JW (2015) Carbon and sulfur isotopic signatures of ancient life and environment at the microbial scale: Neoproterozoic shales and carbonates. *Geobiology* 14: 105–128.
19. Huang Y*, Aponte JC, Zhao J, Tarozo R, [Hallmann C](#) (2015) Hydrogen and carbon isotopic ratios of polycyclic aromatic compounds in two CM2 carbonaceous chondrites and implications for prebiotic organic synthesis. *Earth and Planetary Science Letters* 426: 101–108.
18. [Hallmann C*](#) (2015) Von Bakterien zum Menschen: Die Rekonstruktion der frühen Evolution mit fossilen Biomarkern [From bacteria to humans: reconstructing early evolution with fossil biomarkers]. In: *Max Planck Jahrbuch 2014 / 2015*.

17. French K*, [Hallmann C](#), Hope J, Hoshino Y, Peters C, George S, Buick R, Brocks JJ, Summons RE (2015) Reappraisal of hydrocarbon biomarkers in Archean rocks. *Proceedings of the National Academy of Sciences USA* 112: 5915–5920. **Geochemical Society: Best organic geochemistry paper award 2015.**
16. Luo G*, [Hallmann C](#), Xie S, Ruan X, Summons RE (2015) Comparative microbial diversity and redox environments of black shale and stromatolite facies in the Mesoproterozoic Xiamaling Formation. *Geochimica et Cosmochimica Acta* 151: 150–167.

2014

15. Illing CJ, [Hallmann C](#), Strauss H, Summons RE* (2014) Air-borne hydrocarbon contamination from laboratory atmospheres. *Organic Geochemistry* 76: 26–38.
14. Aponte J, Tarozo R, Alexander M, Alexander C, [Hallmann C](#), Summons R, Huang Y* (2014) Chirality of meteoritic free and IOM-derived monocarboxylic acids and implications for prebiotic organic synthesis. *Geochimica et Cosmochimica Acta* 131: 1–12.
13. Rooney AD*, Macdonald FA, Dudas FÖ, Strauss JV, [Hallmann C](#), Selby D (2014) Re-Os geochronology and coupled Os-Sr isotope constraints on the Sturtian snowball Earth. *Proceedings of the National Academy of Sciences USA* 111: 51–56.
12. [Hallmann C](#)*, Summons RE (2014) Paleobiological clues to early atmospheric evolution. In: Canfield D, Kasting J, Farquhar J (Eds) *Treatise on geochemistry, 2nd Ed, Vol. 6: The atmosphere – history*. Elsevier. pp 139–155.
11. Summons RE*, [Hallmann C](#) (2014) Organic geochemical signatures of early life on earth. In: Falkowski P, Freeman K (Eds) *Treatise on geochemistry, 2nd Ed, Vol. 12: Organic Geochemistry*. Elsevier. pp. 33–46

2013

10. Creveling JC*, Knoll AH, Fernandez-Remolar D, Bergmann KD, Gill BC, Garcia-Bellido DC, Menendez S, Rodriguez M, Ehlmann BL, Stack KM, [Hallmann C](#), Amils R, Grotzinger JP, Abelson J (2013) Geobiology of a lower Cambrian carbonate platform, Pedroche Formation, Spain. *Paleogeography, Paleoclimatology, Paleoecology* 386: 459–478.
9. Sherry A*, Gray ND, Rowan AK, Aitken CM, Jones DM, Röling W, [Hallmann C](#), Larter SR, Bowler B, Head I (2013) Biodegradation of crude oil under sulfate-reducing conditions leads to only modest enrichment of recognized sulfate-reducing taxa. *International Biodeterioration and Biodegradation* 81: 105–113.

-2012

8. [Hallmann C](#)*, Kelly AE, Gupta SN, Summons, RE (2011) Reconstructing deep-time biology with molecular fossils. In: Laflamme M, Schiffbauer JD, Dornbos SQ (Eds) *Topics in Geobiology, Vol 36: Quantifying the evolution of early life*. Springer. pp 355–401.
7. [Hallmann C](#)*, Grey K, Webster LJ, McKirdy DM, Grice K (2010) Molecular signature of the Neoproterozoic Acraman impact event. *Organic Geochemistry* 41: 111–115.
6. Grice K*, Lu H, Atahan P, Asif M, [Hallmann C](#), Greenwood P, Maslen E, Tulipani S, Williford K, Dodson J (2009) New insights into the origin of perylene in geological samples. *Geochimica et Cosmochimica Acta* 73: 6531–6543.
5. Maslen E*, Grice K, Gale JD, [Hallmann C](#), Horsfield B (2009) Crocetane: a potential marker of photic zone euxinia in thermally mature sediments and crude oils of Devonian age. *Organic Geochemistry* 40, 1–11
4. [Hallmann C](#)*, Schwark L, Grice K (2008) Community dynamics of anaerobic bacteria in deep petroleum reservoirs. *Nature Geoscience* 1: 588–591.

3. [Hallmann C*](#), van Aarssen BGK, Grice K (2008) Relative efficiency of free fatty acid butyl esterification. Choice of catalyst and derivatization procedure. *Journal of Chromatography A* 1198–1199: 14–20.
2. [Hallmann C*](#), Arouri KR, McKirdy DM, Schwark L (2007) Temporal resolution of an oil charging history —A case study of residual oil benzocarbazoles from the Gidgealpa Field. *Organic Geochemistry* 38: 1516–1536.
1. [Hallmann C*](#), Arouri KR, McKirdy DM, Schwark L (2006) A new perspective on exploring the Cooper/Eromanga petroleum province—Evidence of oil charging from the Warburton basin. *APPEA Journal* 46: 261–282.

INVITED AND KEYNOTE PRESENTATIONS

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| 2018 | <ol style="list-style-type: none"> 47. <i>Snowballs, algae and the rise of complex life</i>. Invited speaker at RWTH-GeoTag. Aachen, Germany, July 2018. 46. <i>TBA</i> Invited speaker at GeoBonn conference. Bonn, Germany, September 2018. 45. <i>Biomarker indicators for the evolutionary and ecological rise of complex life</i>. Invited speaker at the Institute for Geoscience, Goethe University. Frankfurt, Germany, April 2018. 44. <i>Are we heading towards a mass extinction event?</i> Invited session introduction talk at British-German Frontiers of Science (BriGFoS) meeting (Royal Society & Humboldt foundation). Dorking, UK, 22 March 2018. |
| 2017 | <ol style="list-style-type: none"> 43. <i>Biomarker and isotopic clues towards the co-evolution of life and environmental conditions on the early Earth</i>. Invited talk at Deutsches Geoforschungszentrum. Potsdam, 13 November 2017. 42. <i>Recent advances in the search for new biomarker hydrocarbons</i>. Invited speaker at Goldschmidt Conference (15f, abs:2017005547). Paris, 14–18 August 2017. 41. <i>Neoproterozoic evolution of eukaryotes and steroid biosynthesis</i>. Invited keynote speaker at 4th International Geobiology Conference. Wuhan, China, 24–26 June 2017. 40. <i>Will the first eukaryote please stand up....</i> Invited talk at the Geobiology Colloquium. University of Göttingen, 3 May 2017. 39. <i>Biomarker hydrocarbons in Precambrian rocks yield new insights to the evolution of eukaryotic algae</i>. Invited talk at the Friedrich Schiller University. Jena, 4 April 2017. 38. <i>Cyanobacteria and eukaryotes across the Great Oxidation Event: How microbes changed the Earth system</i>. Invited speaker at the Annual Meeting of the Dutch Society for Microbiology. Arnhem, 10–12 April 2017. 37. <i>Biomarker hydrocarbon clues towards the early evolution of life on Earth</i>. Invited talk at the University of Münster. Münster, 9 February 2017. |
| 2016 | <ol style="list-style-type: none"> 36. <i>Biomarker hydrocarbon indicators for the early evolution of life on Earth</i>. Invited talk at Heidelberg Initiative for the Origins of Life. Heidelberg, 30 November 2016. 35. <i>Biomarker clues to the early evolution of eukaryotes</i>. Geochemistry Seminar at the Max-Planck-Institute for Marine Microbiology. Bremen, 5 July 2016. 34. <i>Biogeochemistry and paleoclimatology in deep time</i>. Invited talk at Earth System Research Partnership (ESRP) meeting. Mainz, Germany, 1–2 June 2016. |

- 2016
36. *Biomarker hydrocarbon indicators for the early evolution of life on Earth*. Invited talk at Heidelberg Initiative for the Origins of Life. Heidelberg, 30 November 2016.
 35. *Biomarker clues to the early evolution of eukaryotes*. Geochemistry Seminar at the Max-Planck-Institute for Marine Microbiology. Bremen, 5 July 2016.
 34. *Biogeochemistry and paleoclimatology in deep time*. Invited talk at Earth System Research Partnership (ESRP) meeting. Mainz, Germany, 1–2 June 2016.
 33. *Rewriting the early record of life*. Invited plenary talk at LeadNet-meeting. Berlin, Germany, 30–31 May 2016.
 32. *Reconstructing the evolution of life and environments on the early Earth with biomarker hydrocarbons*. Sino-German Frontiers of Science (SinoGFOS) symposium organized by the Chinese Academy of Sciences and the Humboldt Foundation. Shenzhen, China, 7–10 April 2016.
- 2015
31. *A molecular biomarker perspective on eukaryotic evolution*” Invited seminar: Russian Academy of Sciences and Gubkin University. Moscow, Russia, 9 February 2015.
 30. *Environmental consequences of early eukaryotic evolution*. Invited seminar: XX, University of Brest. Brest, France, 20 November 2015.
 29. TBA Science Advisory Board meeting, Max-Planck-Institute for Biogeochemistry. Jena, Germany, 14 January 2015.
 28. *Clean core drilling for Archean hydrocarbon geochemistry: Lessons from*” Agouron Institute, AIDP drilling project review meeting. Pasadena, USA, 30–31 March 2015.
- 2014
27. “Steroid biomarkers throughout the Precambrian yield a fresh look on eukaryotic evolution” Origin of life symposium. University of Göttingen and Göttingen Academy of Sciences. Göttingen, Germany, 16–19 October 2014.
 26. “The early evolution of life on Earth. Biomarkers and isotopes as a tool to study the rise of oxygenic photosynthesis. Invited seminar: University of Hannover (Prof. Heimhofer). Hannover, Germany, 23 June 2014.
 25. “A molecular view on the early evolution of eukaryotes” Invited talk at Institutskolloquium (Prof. Rethemeyer). Cologne, Germany, 9 December 2014.
 24. “The early evolution of life on Earth. Biomarkers and isotopes as a tool to study the rise of organismic complexity” Invited colloquium, University of Bremen. Bremen, Germany, 15 May 2014.
 23. “The precambrian biomarker record of emerging eukaryotes: A shift from the Archean to the Neoproterozoic”. BGC seminar, Max Planck Institute for Biogeochemistry. Jena, Germany, 16 October 2014.
- 2013
22. “Hopane, where art thou? The search for Earth’s oldest biomarker hydrocarbons” Invited seminar: University of Tübingen (Prof. Andreas Kappler). Tübingen, Germany, 23 January 2013.
 21. “Fossil sedimentary lipids and the early evolution of life on Earth” Symposium: Origins of life – At the crossroads between biochemistry and astrophysics. Max-Planck-Institute for molecular cell biology and genetics. Dresden, Germany, 10–12 July 2014.
 20. “The great oxidation event and emerging aerobiosis – what can molecular fossils tell us?” Invited seminar: Presidency University (Prof. Das). Kolkata, India, 9 May 2013.

19. “Lipid biomarkers—indicators for biological diversity, depositional environments and past climates”. Invited talk at Astrobiology Summer School (NASA Astrobiology Institute). Santander, Spain, 23–28 June 2013.
 18. “Fossil biomarker hydrocarbons—Transformation during catagenesis and the record of early life on Earth” Invited talk at Astrobiology Summer School (NASA Astrobiology Institute). Santander, Spain, 23–28 June 2013.
- 2012
17. “Syngenetic and contaminant lipids in sediments of the Hamersley Group (core ABDP-9)” Agouron Institute biomarker meeting (preparation for ultra clean core drilling). Riverside, USA, 11–14 March 2012.
 16. “Fossil lipids as a key to the early evolution of life”. Evolution of systems workshop at LeadNet meeting. Berlin, Germany, 8–9 May 2012.
 15. “Precambrian lipidomics” Invited talk at Schierwater Lab-meeting, University of veterinary medicine, Hannover. Hannover, Germany, 20 November 2012.
 14. “Precambrian lipidomics” Invited talk at MARUM Retreat. Farge, Germany, 15–16 May 2012.
- 2011
13. “Archean fossil lipids. Sequential extraction reveals evidence for eukaryotes and oxygen fluxes”. Invited seminar: Rutgers University (Prof. Falkowski). New Brunswick, USA, September or October 2011.
 12. “The search for (ancient) life on Earth and Mars” Invited public lecture during “Mars weekend” at the Museum of Science, Boston. Boston, USA, 4–5 June 2011.
 11. “Fossil sedimentary lipids. Archiving the dawn of life” Invited speech at Max Planck Society CPT Section meeting general assembly. Berlin, Germany, July 2011.
 10. “Precambrian lipidomics and the early evolution of life” MPRG selection symposium at the Max Planck Institute for Iron Research. Düsseldorf, Germany, February 2011.
 9. “Biogeochemistry of the Cryogenian Coppercap Formation” Invited talk at the NASA Astrobiology Institute CAN-4 team meeting, Harvard University. Cambridge, USA, March 2011.
- 2010
8. “Biomarker evidence for Archean oxygen fluxes” Invited lecture at AGU fall meeting, session B52B. San Francisco, USA, 13–17 December 2010.
 7. “Ice ages, impacts and the rise of complexity” Invited talk at Harvard Geobiology Symposium: Advent of complex life and the Neoproterozoic-Cambrian transition. Cambridge, USA, 1st May 2010.
 6. “Oxygen and early life: eukaryotes and euxinia before the great oxidation event” MIT chemical oceanography seminar. Cambridge, USA, October 2009.
 5. “Early life on Earth—Archean molecular fossils tell an oxygen story”. Invited seminar at Brown University (Dr J. Tierney). Providence, USA, September 2008.
 4. “Bacterial community dynamics in the deep subsurface. Insights from microbial membrane lipids” Gordon Research Conference on Organic Geochemistry. Holderness, NH, USA, 3–8 August 2008.
 3. “Microbial population dynamics in deep oil reservoirs: Insights from bacterial membrane lipids” Invited talk at Curtin University Chemistry departmental seminar. Perth, Australia, June 2007.
 2. “Phospholipid indicators for dynamics of petroleum-reservoir microbial communities: Petroleum reservoirs as natural bioreactors” Invited talk at 17th Goldschmidt conference, session S50. Cologne, Germany, 19–24 August 2007.
 1. “Polar petroleum compounds: Application and concepts”. Invited talk at PESA Technical Luncheon. Perth, Australia, 2006.