

PERSONAL INFORMATION

Florin Musat



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Sex M | **Date of birth** 14/07/1975 | **Nationality** Romanian

POSITION

Senior research scientist

WORK EXPERIENCE

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- 2015 – present **Senior research scientist**
Dept. of Isotope Biogeochemistry, Helmholtz Centre for Environmental Research – UFZ, Leipzig, Germany
[Research](#)
- 2013 – 2015 **Research assistant**
Dept. of Isotope Biogeochemistry, Helmholtz Centre for Environmental Research – UFZ, Leipzig, Germany
[Research](#)
- 2007 – 2013 **Scientist**
Dept. of Microbiology, Max Planck Institute for Marine Microbiology, Bremen, Germany
[Research](#)
- 2005 – 2007 **Postdoctoral fellow**
Dept. of Microbiology, Max Planck Institute for Marine Microbiology, Bremen, Germany
[Research](#)
- 2001 – 2005 **Doctoral candidate**
Dept. of Microbiology, Max Planck Institute for Marine Microbiology, Bremen, Germany
[Research](#)
- 2000 – 2001 **Assistant lecturer**
Department of Genetics, Faculty of Biology, University of Bucharest, Romania
[Education and Research](#)
- 1997 – 2000 **Research assistant**
Department of Genetics, Faculty of Biology, University of Bucharest, Romania
[Education and Research](#)

EDUCATION AND TRAINING

- 2001 – 2005 **PhD (Dr. rer. Nat.)**
Department of Microbiology, Max Planck Institute for Marine Microbiology, Bremen, Germany
- Marine Microbiology, Microbial Physiology, Microbial Metabolism
- 1997 – 1999 **Master of Science**
Faculty of Biology, University of Bucharest, Romania
- Genetics, Human Genetics, Plant Genetics, Microbial Genetics
- 1993 – 1997 **Bachelor of Science**
Faculty of Biology, University of Bucharest, Romania
- Biology, Microbiology, Genetics

PERSONAL SKILLS

Mother tongue(s) Romanian

Other language(s)

	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken interaction	Spoken production	
English	C2	C2	C2	C2	C2
German	C1	C1	B2	B2	B1
French	B1	B1	A2	A2	A2

Levels: A1/2: Basic user - B1/2: Independent user - C1/2 Proficient user
Common European Framework of Reference for Languages

ADDITIONAL INFORMATION

- Publications**
- Rotaru, A.-E., M.O. Yee, and **F. Musat**, *Microbes trading electricity in consortia of environmental and biotechnological significance*. Current Opinion in Biotechnology, 2021. **67**: p. 119-129.
 - Chen, S.-C., G.-X. Sun, Y. Yan, K.T. Konstantinidis, S.-Y. Zhang, Y. Deng, X.-M. Li, H.-L. Cui, **F. Musat**, D. Popp, B.P. Rosen, and Y.-G. Zhu, *The Great Oxidation Event expanded the genetic repertoire of arsenic metabolism and cycling*. Proceedings of the National Academy of Sciences, 2020. **117**(19): p. 10414-10421.
 - Chen, G., F. Widdel, and **F. Musat**, *Effect of energy deprivation on metabolite release by anaerobic marine naphthalene-degrading sulfate-reducing bacteria*. Environ Microbiol, 2020. **22**(9): p. 4057-4066.
 - Gilbert, A., B. Sherwood Lollar, **F. Musat**, T. Giunta, S. Chen, Y. Kajimoto, K. Yamada, C.J. Boreham, N. Yoshida, and Y. Ueno, *Intramolecular isotopic evidence for bacterial oxidation of propane in subsurface natural gas reservoirs*. Proc Natl Acad Sci U S A, 2019. **116**(14): p. 6653-6658.
 - Chen, S.C., N. Musat, O.J. Lechtenfeld, H. Paschke, M. Schmidt, N. Said, D. Popp, F. Calabrese, H. Stryhanyuk, U. Jaekel, Y.G. Zhu, S.B. Joye, H.H. Richnow, F. Widdel, and **F. Musat**, *Anaerobic oxidation of ethane by archaea from a marine hydrocarbon seep*. Nature, 2019. **568**(7750): p. 108-111.
 - Calabrese, F., I. Voloshynovska, **F. Musat**, M. Thullner, M. Schlömann, H.H. Richnow, J. Lambrecht, S. Müller, L.Y. Wick, N. Musat, and H. Stryhanyuk, *Quantitation and Comparison of Phenotypic Heterogeneity Among Single Cells of Monoclonal Microbial Populations*. Frontiers in Microbiology, 2019. **10**.
 - Vogt, C., **F. Musat**, and H.-H. Richnow, *Compound-Specific Isotope Analysis for Studying the Biological Degradation of Hydrocarbons, in Anaerobic Utilization of Hydrocarbons, Oils, and Lipids*, M. Boll, Editor. 2018, Springer International Publishing: Cham. p. 1-38.
 - Stryhanyuk, H., F. Calabrese, S. Kümmel, **F. Musat**, H.H. Richnow, and N. Musat, *Calculation of Single Cell Assimilation Rates From SIP-NanoSIMS-Derived Isotope Ratios: A Comprehensive Approach*. Frontiers in Microbiology, 2018. **9**(2342).
 - Rotaru, A.E., F. Calabrese, H. Stryhanyuk, **F. Musat**, P.M. Shrestha, H.S. Weber, O.L.O. Snoeyenbos-West, P.O.J. Hall, H.H. Richnow, N. Musat, and B. Thamdrup, *Conductive particles enable syntrophic acetate oxidation between Geobacter and methanosarcina from coastal sediments*.

- mBio, 2018. **9**(3).
- 10. Laso-Pérez, R., V. Krukenberg, **F. Musat**, and G. Wegener, *Establishing anaerobic hydrocarbon-degrading enrichment cultures of microorganisms under strictly anoxic conditions*. Nature Protocols, 2018. **13**(6): p. 1310-1330.
 - 11. **Musat, F.** and N. Musat, *Measuring the Impact of Hydrocarbons on Rates of Nitrogen Fixation*, in *Hydrocarbon and Lipid Microbiology Protocols; Activities and Phenotypes*, T.J. McGenity, K.N. Timmis, and B.N. Fernandez, Editors. 2017, Springer-Verlag Berlin Heidelberg. p. 81-97.
 - 12. **Musat, F.**, *Introduction to Activities and Phenotypes*, in *Hydrocarbon and Lipid Microbiology Protocols; Activities and Phenotypes*, T.J. McGenity, K.N. Timmis, and B.N. Fernandez, Editors. 2017, Springer-Verlag Berlin Heidelberg. p. 1-6.
 - 13. Vogt, C., C. Dorer, **F. Musat**, and H.H. Richnow, *Multi-element isotope fractionation concepts to characterize the biodegradation of hydrocarbons - from enzymes to the environment*. Current Opinion in Biotechnology, 2016. **41**: p. 90-98.
 - 14. Rabus, R., M. Boll, J. Heider, R.U. Meckenstock, W. Buckel, O. Einsle, U. Ermler, B.T. Golding, R.P. Gunsalus, P.M.H. Kroneck, M. Krüger, T. Lueders, B.M. Martins, **F. Musat**, H.H. Richnow, B. Schink, J. Seifert, M. Szalaniec, T. Treude, G.M. Ullmann, C. Vogt, M. Von Bergen, and H. Wilkes, *Anaerobic microbial degradation of hydrocarbons: From enzymatic reactions to the environment*. Journal of Molecular Microbiology and Biotechnology, 2016. **26**(1-3): p. 5-28.
 - 15. Musat, N., **F. Musat**, P.K. Weber, and J. Pett-Ridge, *Tracking microbial interactions with NanoSIMS*. Current Opinion in Biotechnology, 2016. **41**: p. 114-121.
 - 16. **Musat, F.**, C. Vogt, and H.H. Richnow, *Carbon and hydrogen stable isotope fractionation associated with the aerobic and anaerobic degradation of saturated and alkylated aromatic hydrocarbons*. Journal of Molecular Microbiology and Biotechnology, 2016. **26**(1-3): p. 211-226.
 - 17. Laso-Pérez, R., G. Wegener, K. Knittel, F. Widdel, K.J. Harding, V. Krukenberg, D.V. Meier, M. Richter, H.E. Tegetmeyer, D. Riedel, H.-H. Richnow, L. Adrian, T. Reemtsma, O.J. Lechtenfeld, and **F. Musat**, *Thermophilic archaea activate butane via alkyl-coenzyme M formation*. Nature, 2016. **539**(7629): p. 396-401.
 - 18. Kümmel, S., R. Starke, G. Chen, **F. Musat**, H.H. Richnow, and C. Vogt, *Hydrogen Isotope Fractionation As a Tool to Identify Aerobic and Anaerobic PAH Biodegradation*. Environmental Science and Technology, 2016. **50**(6): p. 3091-3100.
 - 19. **Musat, F.**, *The anaerobic degradation of gaseous, nonmethane alkanes - From in situ processes to microorganisms*. Computational and Structural Biotechnology Journal, 2015. **13**: p. 222-228.
 - 20. Jaekel, U., J. Zedelius, H. Wilkes, and **F. Musat**, *Anaerobic degradation of cyclohexane by sulfate-reducing bacteria from hydrocarbon-contaminated marine sediments*. Frontiers in Microbiology, 2015. **6**:116: p. 1-11.
 - 21. Kleindienst, S., F.-A. Herbst, M. Stagars, F. von Netzer, M. von Bergen, J. Seifert, J. Peplies, R. Amann, **F. Musat**, T. Lueders, and K. Knittel, *Diverse sulfate-reducing bacteria of the Desulfosarcina/Desulfococcus clade are the key alkane degraders at marine seeps*. ISME J, 2014. **8**(10): p. 2029-2044.
 - 22. Jaekel, U., C. Vogt, A. Fischer, H.-H. Richnow, and **F. Musat**, *Carbon and hydrogen stable isotope fractionation associated with the anaerobic degradation of propane and butane by marine sulfate-reducing bacteria*. Environmental Microbiology, 2014. **16**(1): p. 130-140.
 - 23. Jaekel, U., N. Musat, B. Adam, M. Kuypers, O. Grundmann, and **F. Musat**, *Anaerobic degradation of propane and butane by sulfate-reducing bacteria enriched from marine hydrocarbon cold seeps*. ISME J, 2013. **7**(5): p. 885-95.
 - 24. Abed, R.M.M., N. Musat, **F. Musat**, and M. Mußmann, *Structure of microbial communities and hydrocarbon-dependent sulfate reduction in the anoxic layer of a polluted microbial mat*. Marine Pollution Bulletin, 2011. **62**(3): p. 539-546.
 - 25. Widdel, F. and **F. Musat**, *Diversity and common principles in enzymatic activation of hydrocarbons*, in *Handbook of Hydrocarbon and Lipid Microbiology*, K.N. Timmis, Editor. 2010, Springer Berlin Heidelberg. p. 983-1009.
 - 26. Widdel, F. and **F. Musat**, *Energetic and other quantitative aspects of microbial hydrocarbon utilization*, in *Handbook of Hydrocarbon and Lipid Microbiology*, K.N. Timmis, Editor. 2010, Springer Berlin Heidelberg: Berlin, Heidelberg. p. 729-763.
 - 27. **Musat, F.**, H. Wilkes, A. Behrends, D. Woebken, and F. Widdel, *Microbial nitrate-dependent cyclohexane degradation coupled with anaerobic ammonium oxidation*. ISME J, 2010. **4**(10): p. 1290-301.
 - 28. **Musat, F.**, A. Galushko, J. Jacob, F. Widdel, M. Kube, R. Reinhardt, H. Wilkes, B. Schink, and R. Rabus, *Anaerobic degradation of naphthalene and 2-methylnaphthalene by strains of marine sulfate-reducing bacteria*. Environmental Microbiology, 2009. **11**(1): p. 209-219.
 - 29. Halm, H., N. Musat, P. Lam, R. Langlois, **F. Musat**, S. Peduzzi, G. Lavik, C.J. Schubert, B. Singha, J. Laroche, and M.M.M. Kuypers, *Co-occurrence of denitrification and nitrogen fixation in a*

meromictic lake, Lake Cadagno (Switzerland). Environmental Microbiology, 2009. **11**(8): p. 1945-1958.

- 30. **Musat, F.** and F. Widdel, *Anaerobic degradation of benzene by a marine sulfate-reducing enrichment culture, and cell hybridization of the dominant phylotype*. Environmental Microbiology, 2008. **10**(1): p. 10-19.
- 31. Widdel, F., **F. Musat**, K. Knittel, and A. Galushko, *Anaerobic degradation of hydrocarbons with sulphate as electron acceptor*, in *Sulphate-reducing Bacteria: Environmental and Engineered Systems*. 2007, Cambridge University Press: Cambridge, UK. p. 265-303.
- 32. Kniemeyer, O., **F. Musat**, S.M. Sievert, K. Knittel, H. Wilkes, M. Blumenberg, W. Michaelis, A. Classen, C. Bolm, S.B. Joye, and F. Widdel, *Anaerobic oxidation of short-chain hydrocarbons by marine sulphate-reducing bacteria*. Nature, 2007. **449**(7164): p. 898-901.
- 33. **Musat, F.**, J. Harder, and F. Widdel, *Study of nitrogen fixation in microbial communities of oil-contaminated marine sediment microcosms*. Environmental Microbiology, 2006. **8**(10): p. 1834-1843.
- 34. Alain, K., T. Holler, **F. Musat**, M. Elvert, T. Treude, and M. Krüger, *Microbiological investigation of methane- and hydrocarbon-discharging mud volcanoes in the Carpathian Mountains, Romania*. Environmental Microbiology, 2006. **8**(4): p. 574-590.
- 35. **Musat, F.**, F. Widdel, A. Wieland, and F. Widdel, *Marine sediment with surface contamination by oil in microcosms for microbiological studies*. Ophelia, 2004. **58**(3): p. 217-222.
- 36. Vassu, T., D. Smarandache, I. Stoica, E. Sasarman, D. Fologea, **F. Musat**, O. Csutak, A.-M. Nohit, O. Iftime, and R. Gherasim, *Biochemical and genetic characterization of Lactobacillus plantarum cmgb-1 strain used as probiotic*. Romanian Biotechnological Letters, 2002. **7**: p. 585-598.
- 37. Vassu, T., I. Stoica, O. Csutak, and **F. Musat**, *Genetics of Microorganisms and Microbial Genetic Engineering. Course notes and laboratory techniques (in Romanian)*. Vol. 1. 2001, Bucharest: Petron.
- 38. Stoica, I., **F. Musat**, T. Vassu, I. Lazar, E. Sasarman, and O. Csutak, *Preliminary Studies on a Quinoline-Degrading Bacterial Consortium using a new Screening Technique*. Romanian Biotechnological Letters, 1999. **4**: p. 235-246.

Research projects	2019 – 2020 Federal Institute for Geosciences and Natural Resources, Research Grant (PI), 223,488 EUR 2018 – 2020 Helmholtz Association of German Research Centres Award (PI), 200,000 EUR 2008 – 2011 German Research Foundation (DFG), Research Grant (PI), 105,600 EUR 2005 – 2007 Max Planck Society Postdoctoral scholarship (PI), 45,000 EUR
Field work and research expeditions	2018 Research Expedition in the Arctic (Greenland Sea, Wandel Sea, Arctic Ocean) on the RV Polarstern (Expedition PS115.1, duration 6 weeks). Part of the <i>Sediment Microbiology Team</i> , responsible of sediment sampling for cultivation work, nucleic acids analyses and dissolved gas analyses. Sampling gear used: multicorer, gravity corer and box corer. 2004 Organized and participated to a field campaign at the Paclele Mici mud volcanoes, Romania. In situ measurements of physical-chemical parameters, sediment sampling for cultivation work and nucleic acids analyses. 2002 Field sampling of marine, intertidal sediments of the Mediterranean Sea and North Sea for cultivation work, and for setting up of microcosm experimental systems.
Supervision of doctoral students and postdoctoral fellows	2015 – present Four doctoral students, two postdoctoral fellows Helmholtz Centre for Environmental Research, Leipzig, Germany 2006 – 2013 Two doctoral students, five master students Dept. of Microbiology, Max Planck Institute for Marine Microbiology, Bremen, Germany 2000 – 2001 Two master students Dept. of Genetics, Division of Biology, University of Bucharest, Romania

Teaching activities	<p>2006 – 2013 Lectures and practical courses. Topic: introduction in marine microbiology at the Master of International Studies in Aquatic Tropical Ecology (ISATEC) University of Bremen, Germany. Teaching hours: 5 h/year lecturing, 8 h/year lab training</p> <p>2007 Practical course. Topic: basic microbiology for undergraduate students University of Bremen, Germany. Teaching hours: 4h/year lab training</p> <p>1997 – 2001 Lectures and practical courses. Main topics: general genetics, microbial genetics, genetic engineering and molecular methods for undergraduate students and graduate students at the Master in Microbial Genetics & Biotechnology and the Master in Molecular Biology Division of Biology, University of Bucharest, Romania Teaching hours: 80 h/year lecturing, 160 h/year lab training</p>
Organisation of scientific meetings	<p>2015 Session organizer and convener. Topic: isotopes in geochemistry, ecology and microbiology. Goldschmidt, Prague, Czech Republic</p>
Reviewing and Editorial responsibilities	<p>2019 Member of PhD committee panel, University of Southern Denmark, Odense, Denmark</p> <p>2011 – 2015 Member of PhD committee panel, Max Planck Institute for Marine Microbiology and University of Bremen, Bremen, Germany</p> <p>2019 – present Associate Editor, Microbiological Chemistry and Geomicrobiology, <i>Frontiers in Microbiology</i></p> <p>2016 – 2019 Review Editor for <i>Extreme Microbiology</i>, <i>Frontiers in Microbiology</i></p> <p>2014 – 2015 Guest Associate Editor for <i>Microbial Physiology and Metabolism</i>, <i>Frontiers in Microbiology</i>; Editor of the research topic <i>Living on gas</i></p> <p>Ad hoc reviewer for <i>Nature Microbiology</i>, <i>Nature Communications</i>, <i>Environmental Microbiology</i>, <i>Frontiers in Microbiology</i>, and other journals specialized in microbiology or environmental microbiology topics.</p>
Memberships	<p>2015 – present European Association of Geochemistry</p> <p>2004, 2010 European Geosciences Union</p> <p>2003 – 2014 National Geographic Society</p>
Invited Presentations	<p>2019 Gordon Research Conference – Archaea: Ecology, Metabolism, and Molecular Biology. Les Diablerets, Switzerland</p> <p>2017 Gordon Research Conference – Archaea: Ecology, Metabolism, and Molecular Biology. Waterville Valley, USA</p> <p>2016 Microbiological colloquium, University of Oldenburg and the Institute for Chemistry and Biology of the Marine Environment, Oldenburg, Germany</p> <p>2016 China-Germany Symposium – Microbial chemotaxis and bioremediation of environmental pollutants. Beijing, China</p> <p>2015 EuCheMS International Conference on Chemistry and the Environment – ICCE, Leipzig, Germany</p> <p>2015 International Symposium on Applied Microbiology and Molecular Biology in Oil Systems – ISMOS, Stavanger, Norway (applied presentation)</p> <p>2012 Microbiological colloquium, University of Oldenburg and the Institute for Chemistry and Biology of the Marine Environment, Oldenburg, Germany</p> <p>2011 Institute of Biology 51st Annual Scientific Session, Bucharest, Romania</p> <p>2011 International Society for Subsurface Microbiology Symposium, Garmisch-Partenkirchen,</p>

Germany

- 2011 Reservoir Microbiology Forum, London, UK (applied presentation)
- 2006 Association for General and Applied Microbiology (VAAM), Jena, Germany (applied presentation)