

Dr Martin Mühling

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Education

- **2000: Doctor of Philosophy (PhD)**, University of Durham, UK
- **1996: Master of Science (MSc)**, University of Durham, UK
- **1990-1995: Undergraduate studies**, University of Bayreuth, Germany

Employment

- **From July 2009: Research Associate**, TU Bergakademie Freiberg
- **July 2005:** Promotion to *Senior Scientist*
- **November 2002 – June 2009: Marine Microbiologist**
Plymouth Marine Laboratory, Plymouth, UK
- **December 1999 – October 2002: Postdoctoral Research Fellow**
University of Warwick, UK
- **October 1996 – November 1999: PhD Research**, University of Durham, UK
“Characterization of *Arthrospira/Spirulina* strains” (Prof. Brian Whitton)
- **July – September 1996: Research Assistant**, University of Durham, UK
- **Juni 1995 – Mai 1996: Master student**, University of Durham, UK
“Molecular studies on seed proteins of mature seeds of *Phaseolus vulgaris*”

Professional experience and expertise

- **Scientific reviewer for –**
 - i) peer-reviewed journals (e.g. The ISME Journal, Environmental Microbiology, ES&T, Limnology & Oceanography, Aquatic Microbial Ecology, etc.)*
 - ii) the National Science Foundation (USA) and the Natural Environment Research Council (NERC, UK);*
- **Member of the Moderating Panel** for the Evaluation of grant applications to the *Joint UK–US Research Program: Environmental Behaviour, Bioavailability*

Successful grant applications

At the Institute of Biological Sciences, TU Bergakademie Freiberg (from July 2009)

1. **GETGEOWEB** – Genomic and Transcriptomic in Geobiotechnology and White Biotechnology (European Social Fund – ESF: 2012 – 2014)
2. **CO2BioPerm** – The influence of biogeochemical CO₂ transformation processes on the long-term permeability behaviour of reservoir and cap rocks as well as of wellbore cements. (Federal Ministry of Education and Research: 2011 – 2014)
3. **Solutions for Mine Water Treatment** (SIEMENS AG: 2009 – 2013)
4. **BRUNNTEC** – Entwicklung und Erprobung einer Technologie für die automatisierte Erkennung von Ablagerungsprozessen in Trinkwasserbrunnen und eine nachhaltige Brunnenbewirtschaftung (Federal Ministry of Education and Research: 2012 – 2014)

At Plymouth Marine Laboratory (2002 – 2009)

• *Principal Investigator:*

1. An investigation into the effects of nanoparticles on the bacterial diversity of freshwater and coastal marine sediments (2008-2009; NERC: £47,000)
2. Subproject within the EU-FP7 project *EPOCA – European Project on Ocean Acidification – The impact on the microbial diversity and function* (2008-2011; EU: €100,000)
3. Sequencing the microbial community at the western channel observatory: seasonal changes in diversity and function using metagenomic approaches (2008-2010; Natural Environmental Research Council (NERC): £78,000)
4. “Proof of process capability” study: Establishing a process pipeline at PML for natural Product screening of marine microbes. (2008-2009; iG Peninsula: *not disclosed*)
5. Genome sequence analysis of a novel marine isolate of *Stenotrophomonas maltophilia* with a novel type of Bayer-Villiger monooxygenase. (2008-2009; iG Peninsula: *not disclosed*)
6. Innovation Primer: Development and application of new rapid diagnostic methods for monitoring faecal contamination in coastal marine and freshwater environments (2007-2008; SEAFISH Industry Authority, UK: £5,000)

• *Co-Investigator:*

1. Topography of microbial assemblages (2008-2011; NERC: £190,000)
2. *SeaScreen*: Expanding a Bioprocess Repertoire by Smart Marine Microbe Screening (2006-2009; Department of Trade and Industry (Dti): £310,000)
3. Aquatic microbial metagenomics and biogeochemical cycles (2005-2008; NERC: £250,000)
4. Isolation of single microbial cells (2004-2008; NERC: £355,000)

Selected Publications

1. Willetts A, Joint I, Gilbert JA, Trimble W, **Mühling M** (2012) Isolation and initial characterization of a novel type of Baeyer-Villiger monooxygenase activity from a marine microorganism. *Microbial Biotechnology* 5: 549–559.
2. **Mühling M** (2012) On the culture-independent assessment of the diversity and distribution of *Prochlorococcus*. *Environmental Microbiology* 14: 567–579.
3. Handy RD, van den Brink N, Chappell M, **Mühling M**, Behra R, Dušinská M, Simpson P, Ahti-ainen J, Jha AN, Seiter J, Bednar A, Kennedy A, Fernandes TF, Riediker M (2012) Practical considerations for conducting ecotoxicity test methods with manufactured nanomaterials: what have we learnt so far? *Ecotoxicology* 21: 933–972.
4. Allen M, Tait K, **Mühling M**, Weynberg K, Bradley C, Trivedi U, Gharbi K, Nissimov J, Mavromatis K, Jensen C, Grogan G, Ali S (2012) Genome sequence of *Stenotrophomonas maltophilia* PML168, which displays Baeyer-Villiger monooxygenase activity. *Journal of Bacteriology (in press)*
5. Kaden R, Menger-Krug E, Emmerich K, Petrick K, **Mühling M**, Krolla-Sidenstein P (2011) The Dynamic Cultivation System (DCS): a new method to show temporal shifts in microbial community structure. (*accepted*)
6. Jameson E, Mann NH, Joint I, Sambles C, **Mühling M** 2011. The diversity of cyanomyovirus populations along a North-South Atlantic Ocean transect. *The ISME Journal* 5: 1713–1721.
7. Arnosti, C, Grossart, H-P, **Mühling, M**, Joint, I, Passow, U (2011) Dynamics of extracellular enzyme activities under changed atmospheric pCO₂: a mesocosm investigation. *Aquatic Microbial Ecology* 64: 285–298.
8. Gilbert JA, Laverock B, Temperton B, Thomas S, **Mühling M**, Hughes M (2011) Metagenomics. *In: Methods in Molecular Biology*, Vol 733: High-throughput Sequencing. Kwon, Y.M.; Ricke, S.C. (Eds.) Springer. pp. 173-183. (DOI: 10.1007/978-1-61779-089-8_12).
9. Gilbert JA, Field D, Swift P, Thomas S, Cummings D, Temperton B, Weynberg K, Huse S, Hughes M, Joint I, Somerfield PJ, **Mühling M** (2010) The taxonomic and functional diversity of microbes at a temperate coastal site: a ‘multi-omic’ study of seasonal and diel temporal variation. *PLoS ONE* 5: e15545.
10. Gilbert JA, Meyer F, Schriml L, Joint IR, **Mühling M**, Field D (2010) Metagenomes and metatranscriptomes from the L4 long-term coastal monitoring station in the Western English Channel. *Standards in Genomic Sciences* 3: 183–193.
11. Joint I, **Mühling M**, Querellou J (2010) Culturing marine bacteria – an essential prerequisite for biodiscovery. *Microbial Biotechnology* 3: 564–575.
12. Jameson E, Joint I, Mann NH, **Mühling M** (2010) Detailed analysis of the microdiversity of *Prochlorococcus* populations along a North-South Atlantic Ocean transect. *Environmental Microbiology* 12: 156–171.
13. **Mühling M**, Bradford A, Somerfield PJ, Readman J, Handy RD (2009) An investigation into the effect of silver nanoparticles on antibiotic resistance of naturally occurring bacteria in an estuarine sediment. *Marine Environmental Research* 68: 278–283.
14. Bradford A, Handy RD, Readman WJ, Atfield A, **Mühling M** (2009) Impact of silver nanoparticle contamination on the genetic diversity of natural bacterial assemblages in estuarine sediments. *Environ. Science & Technology* 43: 4530–4536.

15. Temperton B, Oliver A, Field D, Tiwari B, **Mühling M**, Joint I, Gilbert JA (2009) Bias in assessments of marine microbial biodiversity in fosmid libraries as evaluated by pyrosequencing. *The ISME Journal* 3: 792–796.
16. Ivars-Martínez E, D´Auria G, Rodríguez-Valera F, Sánchez-Porro C, Ventosa A, Joint I, **Mühling M** (2008) Biogeography of the ubiquitous marine bacterium *Alteromonas macleodii* determined by multilocus sequence analysis. *Molecular Ecology* 17: 4161–4175.
17. Gilbert J, **Mühling M**, Joint I (2008) A rare SAR11 fosmid clone confirming genetic variability in the ‘*Candidatus Pelagibacter ubique*’ genome. *The ISME Journal* 2: 790–793.
18. Jameson E, Joint I, Mann NH, **Mühling M** (2008) Application of a novel *rpoCI*-RFLP approach reveals that *Prochlorococcus* populations in the Atlantic gyres are composed of greater microdiversity than previously described. *Microbial Ecology* 55: 141–151.
19. **Mühling M**, Woolven-Allen JA, Murrell JC, Joint I (2008) Improved group-specific PCR primers for DGGE analysis of the genetic diversity of complex microbial communities. *The ISME Journal* 2: 379–392.
20. **Mühling M**, Fuller NJ, Somerfield PJ, Post AF, Wilson WH, Scanlan DJ, Joint I, Mann NH (2006) High resolution genetic diversity studies of marine *Synechococcus* isolates using *rpoCI*-based restriction fragment length polymorphism. *Aquat. Microb. Ecol.* 45: 263–275.
21. **Mühling M**, Somerfield, PJ, Harris, N, Belay, A, Whitton, BA (2006) Phenotypic analysis of *Arthrospira* (Spirulina) strains (cyanobacteria). *Phycologia* 45: 148–157.
22. **Mühling M**, Fuller NJ, Millard A, Somerfield PJ, Marie D, Wilson WH, Scanlan DJ, Post AF, Joint I, Mann NH (2005) Genetic diversity of marine picophytoplankton (*Synechococcus*) and associated virioplankton provides evidence for virus control of phytoplankton succession. *Environmental Microbiology* 7: 499–508.
(“**Top-25 Cited Paper**” in 2005 and 2006 in *Environmental Microbiology*)