

## **Archive Graduate Students Mini Symposia (2007-2014)**

### **06.10.2014 – Graduate Students Mini-Symposium VI/2014**

Kristof Brenzinger (MPI / Dept. of Biogeochemistry)  
Effect of eCO<sub>2</sub> on microbial communities involved in N cycling in soils

Franziska Brandt (MPI / Dept. of Biogeochemistry)  
Drying effects on the microbial community in methane emitting tank bromeliads

Björn Breidenbach (MPI / Dept. of Biogeochemistry)  
Seasonal dynamics of methanogenic microbial community under flooded rice and upland maize crop rotation

### **01.09.2014 – Graduate Students Mini-Symposium V/2014**

Susanne Brenzinger (JLU Gießen / Dept. of Microbiology and Molecularbiology)  
Upgrade in bacterial flagellar systems

Lena Schilling (MPI / Dept. of Organismic Interactions / Dept. of Microbiology and Molecularbiology)  
Identification of organ-specific *Ustilago maydis* effectors

Sandra Przybilla (Universität / FB Biologie - Genetik / Dept. of Microbiology and Molecularbiology)  
Alternative pathway for itaconic acid biosynthesis in the basidiomycetous fungus *Ustilago maydis*

Sabrina Eisheuer (MPI / RG Prokaryotic Cell Biology / Dept. of Microbiology and Molecularbiology)  
Cell division in the budding alpha-proteobacterium *Hyphomonas neptunium*

### **31.03.2014 – Graduate Students Mini-Symposium IV/2014**

Franziska Rabe (MPI / Dept. of Organismic Interactions)  
*Ustilago bromivora*- *Brachypodium distachyon*: exploring a novel pathosystem

Esmeralda Reyes-Fernandez (Universität / FB Biologie - Genetik)  
Genome wide-analysis of secondary metabolism in *U. maydis*

Tomasz Neiner (MPI / RG Molecular Biology of Archaea)  
Deciphering the subunit interactions in the archaellum

Dominik Schumacher (MPI / Dept. of Ecophysiology)

Cell division site placement in bacteria, mediated by self-organized non-specific DNA binding.

Stephanie Hainbuch (MPI / Dept. of Biogeochemistry)

An unexpected diversity of Cu-containing membrane-bound monooxygenases: new isoenzymes and their putative substrate

### **24.03.2014 – Graduate Students Mini-Symposium III/2014**

Emöke Cserti (MPI / RG Prokaryotic Cell Biology)

Control of morphogenesis in *Hyphomonas neptunium*

Anna-Lena Henche (MPI / RG Molecular Biology of Archaea)

Functional and structural analysis of the archaeal adhesive pilus in *Sulfolobus acidocaldarius*

Katja Siewering (MPI / Dept. of Ecophysiology)

The peptidoglycan-binding protein Tsap functions in surface assembly of type IV pili

Carl-Eric Wegner (MPI / Dept. of Biogeochemistry)

Metatranscriptomics of the early stages of plant polymer breakdown in paddy soil

### **17.03.2014– Graduate Students Mini-Symposium II/2014**

Gabriel Schweizer (MPI / Dept. of Organismic Interactions)

Virulence of smut fungi: Insights from evolutionary comparative genomics

Amey Redkar (MPI / Dept. of Organismic Interactions)

Functional characterization of an organ specific effector "See1" in *Ustilago maydis*-maize interaction

Srivatsa Dwarakanath (MPI / RG Prokaryotic Small RNA Biology)

Characterization of a minimal CRISPR-Cas (Type-I) system, a prokaryotic immune system found in *Shewanella putrefaciens* CN-32

Stephan Poppe (MPI / MPRG Fungal Biodiversity)

Deciphering the molecular basis of host specificity in the ascomycete grass pathogen *Zymoseptoria tritici*: Localization, function and targets of candidate effector proteins

Judith Zöphel (MPI / RG Prokaryotic Small RNA Biology)

Characterization of the type I-B CRISPR-Cas system in *Clostridium thermocellum*

Aleksandra Zielinska (MPI / RG Prokaryotic Cell Biology)

Comprehensive analysis of peptidoglycan hydrolases in *Caulobacter crescentus*

### **03.03.2014 – Graduate Students Mini-Symposium I/2014**

Kristina Lang (MPI / Dept. of Biogeochemistry)

"Methanoplasmatales" diversity, ultrastructure, and comparative genomics of the 7th order of methanogens

Andreas Su (MPI / RG Prokaryotic Small RNA Biology)

Structure and RNA binding properties of the CRISPR-associated protein Csm3

Nillanjan Pal Chodhury (Universität / FB Biologie - Mikrobiologie)

Studies on the Mechanism of Electron Bifurcation Catalyzed by Electron Transferring Flavoprotein (Etf) and Butyryl-CoA Dehydrogenase (Bcd) of *Acidaminococcus fermentans*

Lucas Binnenkade (Justus-Liebig Universität Gießen)

λSo prophage induction and eDNA release in *Shewanella oneidensis* MR-1 biofilms

Carsten Dietrich (MPI / Dept. of Biogeochemistry)

Host phylogeny and microenvironment are major drivers of the microbial community structure in termite guts

### **09.09.2013 – Graduate Students Mini-Symposium IV/2013**

Klaas Schotanus (MPI / MPRG Fungal Biodiversity)

Characterization of centromeres and the chromatin organization of core and dispensable chromosomes in the plant pathogenic fungus *Zymoseptoria tritici* (syn *Mycosphaerella graminicola*)

### **22.04.2013 – Graduate Students Mini-Symposium III/2013**

Vikram Naik (MPI / Dept. of Organismic Interactions)

The *Ustilago maydis* MAP Kinase signaling pathway: Identification of direct MAP kinase targets by phospho-peptide enrichment.

Huan Li (Universität / FB Biologie - Mikrobiologie)

Mechanism of the reduction of tryptophan to indolepropionate in *Clostridium sporogenes*

Yi Ding (MPI / Dept. of Organismic Interactions)

Characterization of ammonium transporter PiAMT1 in *Piriformospora indica*

### **04.03.2013 - Graduate Students Mini-Symposium II/2013**

Hagen Richter (MPI / RG Prokaryotic Small RNA Biology)

Characterization of the CRISPR/Cas subtype I-B endoribonuclease Cas6b

Carina Holkenbrink (MPI / Dept. of Ecophysiology)

Molecular insights into spore coat production of the Gram-negative *Myxococcus xanthus*

14:40 - Aram Mikaelyan (MPI / Dept. of Biogeochemistry)

Microhabitat specificity of the hindgut microbiota in higher termites

### **25.02.2013 – Graduate Students Mini-Symposium I/2013**

Carmen Friedrich (MPI / Dept. of Ecophysiology)

Assembly and regulation of type IV pili in *Myxococcus xanthus*

Urs Lahrmann (MPI / Dept. of Organismic Interactions)

Genomics and transcriptomics of *Piriformospora indica* and *Sebacina vermifera*

Beata Jakobczak (MPI / Dept. of Ecophysiology)

Identification of a novel cell-envelope subcomplex involved in gliding motility in *Myxococcus xanthus*

Adrienne Zaprasis (Universität / FB Biologie - Mikrobiologie)

Suppressors that bypass the ProA-bottleneck in proline biosynthesis of *Bacillus subtilis*

Binbin He (MPI / RG Prokaryotic Cell Biology)

Mapping the MipZ interaction regions in *Caulobacter crescentus*

André Müller (MPI / Dept. of Organismic Interactions)

The *Ustilago maydis* effector Pit2 inhibits maize cysteine proteases to suppress host defense

### **08.10.2012 – Graduate Students Mini-Symposium V/2012**

Edina Hot (MPI / Dept. of Ecophysiology)

The small G protein MglA connects the gliding machinery to the MreB cytoskeleton

Alexander Hof (MPI / Dept. of Organismic Interactions)

Cell death suppression during the interaction of *Ustilago* and barley

Haiyan Huang (MPI / EG Biochemistry of Methanogens)

Electron bifurcation involved in the energy metabolism of the acetogenic bacterium *Moorella thermoacetica*

### **24.09.2012 – Graduate Students Mini-Symposium IV/2012**

Marleen van Wolferen (MPI / RG Molecular Biology of Archaea)  
UV-induced pili from *Sulfolobus acidocaldarius*.

Magdalena Hilbert (MPI / Dept. of Organismic Interactions)  
Biochemical and molecular analyses of the biosynthesis pathway of indole derivatives in *Piriformospora indica*

#### **02.04.2012 – Graduate Students Mini-Symposium III/2012**

Vidhi Grover (MPI / Dept. of Ecophysiology)  
Characterisation of regulation of MrpC – a developmental regulator in *Myxococcus xanthus*

Daniel Moog (Universität / FB Biologie - Zellbiologie)  
In silico and in vivo investigations of proteins of a minimized eukaryotic cytoplasm

Julia Reimann (MPI / RG Molecular Biology of Archaea)  
First insights into protein phosphorylation and its role in flagella expression in *Sulfolobus acidocaldarius*

Pinki Rani (MPI / Dept. of Biogeochemistry)  
Phylogeny of Endomicrobia and origin of flagellate symbionts

Dheeraj Kanaparthi (MPI / Dept. of Biogeochemistry)  
Autotrophic Fe(II)-oxidizing bacteria in the acidic bog Lake Große Fuchskuhle

James Nonoh (MPI / Dept. of Biogeochemistry)  
Diversity and distribution of methanogens in higher termites

#### **26.03.2012– Graduate Student Mini-Symposium II/2012**

Daniela Keilberg (MPI / Dept. of Ecophysiology)  
Unravelling the function of the response regulator RomR in motility

Nina Neidig (MPI / Dept. of Organismic Interactions)  
Functional analysis of *Ustilago maydis* effector Tin3 of Cluster 19A

Thomas Pohlmann (MPI / Dept. of Organismic Interactions)  
Cellular components of the transport machinery mediating microtubule-dependent mRNA transport in *Ustilago maydis*

Nancy Stolle (MPI / Dept. of Organismic Interactions)  
The role of secreted LysM domain proteins during the biotrophic development of *Ustilago maydis*

Kerstin Lassak (MPI / RG Molecular Biology of Archaea)

Full speed ahead: Analysis of the crenarchaeal flagellum and of two flagellar transcriptional regulators in *S. acidocaldarius*

Andreas Reim (MPI / Dept. of Biogeochemistry)

Methane oxidizing bacteria at the oxic-anoxic interface: taxon-specific activity, resistance and resilience

### **30.01.2012– Graduate Student Mini-Symposium I/2012**

Benjamin Meyer (MPI / RG Molecular Biology of Archaea)

Elucidating the N-glycosylation pathway in *Sulfolobus acidocaldarius*

Daniel Knack (Universität / FB Biologie - Mikrobiologie)

Biochemistry of ethylbenzene dehydrogenase, the key enzyme of the anaerobic metabolism of ethylbenzene in the denitrifier *Aromatoleum aromaticum* strain EbN1

Carlotta Debnar-Daumler (Universität / FB Biologie - Mikrobiologie)

Anaerobic metabolism of phenylalanine in *Aromatoleum aromaticum* - Oxidation of phenylacetaldehyde to phenylacetate

Kathleen Fischer (Universität / FB Biologie - Mikrobiologie)

A new facet in the adaptation of *Bacillus subtilis* to high salinity: The cell wall hydrolase Yqil

Andreas Schramm (MPI / Dept. of Ecophysiology)

The Esp signalosome, a complex signaling module regulating developmental progression in *Myxococcus xanthus*

Stella Vitt (MPI / EG Biochemistry of Methanogens)

Structure and function of the F420-reducing [NiFe]-hydrogenase from *Methanothermobacter marburgensis*

### **15.08.2011 – Graduate Student Mini-Symposium V/2011**

Eva-Maria Heller (MPI / Dept. of Ecophysiology)

Characterization of the relaxase Tral and the DNA processing protein Yaf of the type IV secretion system of *Neisseria gonorrhoeae*

Judith Pump (MPI / Dept. of Biogeochemistry)

Rhizospheric methane emission in standardized rice microcosms

Jörn Penger (MPI / Dept. of Biogeochemistry)

Temperature dependence of carbon isotope fractionation in methanogenic cultures

Fredrick Lyatuu (Universität / FB Biologie - Mikrobiologie)

Is cob(II)alamin a spectator or conductor in coenzyme B12-dependent carbon skeleton rearrangements?

#### **09.05.2011 – Graduate Student Mini-Symposium IV/2011**

Yongkyu Kim (MPI / Dept. of Biogeochemistry)

The metatranscriptome of a grassland soil microbial community

Liang Liang (MPI / Dept. of Organismic Interactions)

The function of Stp1, a secreted effector, in the biotrophic interaction of *Ustilago maydis* and its host plant maize

Britta Tillmann (Universität / FB Biologie - Genetik)

Specificity determinants of GTPase recognition by RhoGEFs in *Ustilago maydis*

#### **11.04.2011 – Graduate Student Mini-Symposium III/2011**

Xiaowei Mei (MPI / Dept. of Ecophysiology)

Identification of an interaction partner for a single domain response regulator controlling the *Myxococcus xanthus* developmental program

Carsten Mettel (MPI / Dept. of Biogeochemistry)

Soil metatranscriptomics

Maria Zweig (MPI / Dept. of Ecophysiology)

Single-stranded DNA-binding proteins (SSBs) – biochemical characterization of NgSsbB and applications in biofilms

Tim Köhler (MPI / Dept. of Biogeochemistry)

The symbiotic gut microbiota of termites and cockroaches: Are there evolutionary patterns in the dictyopteran lineage?

#### **28.03.2011 – Graduate Student Mini-Symposium II/2011**

Michael Schick (MPI / Biochemistry)

Biosynthesis of the [Fe]-hydrogenase cofactor

Mattia Bosello (Universität / FB Chemie - Biochemie)

Biosynthesis of the siderophore Rhodochelin requires coordinated gene clusters expression in *Rhodococcus jostii* RHA1

Tobias Petters (MPI / Dept. of Ecophysiology)

Wiring of two-component signal transduction systems in *Myxococcus xanthus*

Sarah Schladebeck (Universität / FB Biologie - Genetik)

The RNA-binding protein Whi3, a putative key regulator of posttranscriptional control for yeast adhesion and development

### **10.01.2011 – Graduate Student Mini-Symposium I/2011**

Anja Paulick (MPI/Dept. of Ecophysiology)

Flagellar motor tuning – a novel "hybrid motor" in *Shewanella oneidensis* MR-1

Christian Herrberger (MPI/Dept. of Organismic Interactions)

Functional characterization of Pep1, a secreted pathogenicity factor of *Ustilago maydis*

Marie Kim (Universität/FB Biologie - Mikrobiologie)

Biosynthesis of glutamate in and benzoate in *Syntrophus aciditrophicus*

Sebastian Baumann (MPI/Dept. of Organismic Interactions)

Microtubule-dependent mRNA transport in *Ustilago maydis*

Maik Veelders (Universität/FB Biologie - Parasitologie)

Structure and function of yeast adhesins

Andrea Kordt (MPI/Molecular Biology of Archaea)

Biofilm formation of Sulfolobales

### **27.09.2010 - Graduate Students Mini-Symposium IV/2010**

Susan Schlimpert (MPI/Prokaryotic Cell Biology)

Stalk compartmentalization in *Caulobacter crescentus*

Karina van der Linde (MPI/Dept. of Organismic Interactions)

VIGS in maize and its application to characterize maize genes involved in the *Ustilago maydis*/*Zea mays* interaction

Christine Schauer (MPI/Dept. of Biogeochemistry)

Gut bacterial diversity in the omnivorous cockroach *Shelfordella lateralis*

Andrea Moell (MPI/Prokaryotic Cell Biology)

The late stage of cell division in *Caulobacter crescentus*



### **10.05.2010 - Graduate Students Mini-Symposium III/2010**

Daniel Lanver (MPI/Dept. of Organismic Interactions)

A Sho1 and a Msb2-related protein function in signalling and surface sensing in the smut fungus *Ustilago maydis*

Daniela Kiekebusch (MPI/Prokaryotic Cell Biology)

How to generate a protein gradient within a bacterial cell: dynamic localization cycle of the cell division regulator MipZ

Anna Konovalova (MPI/Dept. of Ecophysiology)

Regulation of secretion of the PopC protease

Jürgen Lassak (MPI/Dept. of Ecophysiology)

ArcS is a cognate sensor kinase in an atypical Arc system of *Shewanella oneidensis* MR-1

Angela Cabezas (MPI/Dept. of Biogeochemistry)

Microbial diversity and function in sediment microbial fuel cells fuelled by rice root exudation

### **12.04.2010 - Graduate Students Mini-Symposium II/2010**

Lei Wang (MPI/Dept. of Organismic Interactions)

Rak1, a seven-WD40 repeat protein involved in mating and pathogenicity of *Ustilago maydis*

Roey Angel (MPI/Dept. of Biogeochemistry)

Methane turnover in upland soils - the rare biosphere in action

Anne-Kristin Kaster (MPI/Biochemistry)

Cytoplasmic hydrogenase/heterodisulfide reductase complex (MvhADG/HdrABC) in methanogenic archaea without cytochromes: a site of energy conservation

Jenny Pratscher (MPI/Dept. of Biogeochemistry)

Activity of ammonia-oxidizing archaea and bacteria in an agricultural soil

### **08.03.2010 - Graduate Students Mini-Symposium I/2010**

Juliane Kühn (MPI Marburg)

Bactofilins, a ubiquitous class of cytoskeletal proteins mediating polar localization of a cell wall synthase in *Caulobacter*

Julia Gödeke (MPI Marburg)

Investigations on the transition from planktonic to attached life style in *Shewanella oneidensis* MR-1

Adrian Ho (MPI Marburg)  
Living in a changing environment: A story of methanotrophs

Hassan Ghareeb (MPI Marburg)  
Molecular Dissection of Sporisorium reilianum-maize interactions

### **09.11.2009 - Graduate Students Mini-Symposium III/2009**

Sascha Krause (MPI/Department of Biogeochemistry)  
Microbial ecology of methanotrophs -insights into this environmentally important group

Meike Ammon (MPI/Department of Ecophysiology)  
Identification of the PopC cleavage site in the C-signal precursor p25 in *Myxococcus xanthus*

### **25.05.2009 - Graduate Students Mini-Symposium II/2009**

Ivana Djurdjevic (Universität/FB Biologie - Mikrobiologie)  
Production of glutaric acid in a recombinant *Escherichia coli* strain

Janine Koepke (MPI/Department of Organismic Interactions)  
The role of the RNA-binding protein Rrm4 during pathogenic development in *Ustilago maydis*

Claudia Lüke (MPI/Department of Biogeochemistry)  
Molecular ecology of root-associated methanotrophic bacteria in rice paddies

Steffi Treitschke (MPI/Department of Organismic Interactions)  
Functional characterisation of the myosin-motor domain of Mcs1, a myosin-chitin synthase fusion protein of *Ustilago maydis*

Alexander Zahiri (MPI/Department of Organismic Interactions)  
The Forkhead transcription factor Fkh1 is essential for pathogenic development of *Ustilago maydis*

### **20.04.2009 - Graduate Students Mini-Symposium I/2009**

Iryna Bulyha (MPI/Department of Ecophysiology)  
Dynamic disassembly and reassembly of the type IV pili molecular machine

Yuliya Khrunyk (MPI/Department of Organismic Interactions)  
Establishing FLP-mediated marker recycling in *Ustilago maydis* and its use for the functional analysis of gene families

Bongsoo Lee (MPI/Department of Ecophysiology)  
Comparative analysis of several histidine kinases that modulate development progression in *Myxococcus xanthus*

Sonja Frieser (Universität/FB Biologie - Genetik)

Rac1 GDP/GTP cycling induces degradation of the Rho-GEF Cdc24 during polarized growth of *Ustilago maydis*

### **08.12.2008 - Graduate Students Mini-Symposium V/2008**

Patrick Berndt (MPI Marburg/Department of Organismic Interactions)

Physical-chemical plant-derived signals induce differentiation in *Ustilago maydis*

Daniel Herlemann (MPI Marburg/Department of Biogeochemistry)

Genome analysis of *Elusimicrobium minutum*, the first cultivated representative of the bacterial candidate phylum TG1

Katja Zuther (MPI Marburg/Department of Organismic Interactions)

Characterization of the tryptophan-dependent pigment synthesis that might be associated with the human skin disease pityriasis versicolor

### **09.06.2008 - Graduate Students Mini-Symposium IV/2008**

Kryssia Aguiluz (MPI Marburg/Department of Ecophysiology)

Regulation of cell division by the ParA-like protein AgmE in *Myxococcus xanthus*

Kai Heimel (MPI Marburg/Department of Organismic Interactions)

The role of Clp1 in the regulation of pathogenic development

Evelyn Vollmeister (MPI Marburg/Department of Organismic Interactions)

The role of the multi-KH domain protein Khd4 during regulation of cell morphology in *Ustilago maydis*

Ramon Wahl (MPI Marburg/Department of Organismic Interactions)

Carbon acquisition in the *Ustilago*/maize pathosystem

### **21.04.2008 - Graduate Students Mini-Symposium III/2008**

Mahesh Desai (MPI Marburg/Department of Biogeochemistry)

Bacterial symbionts of termite gut flagellates: co-speciation and nitrogen fixation

Maurizio Di Stasio (MPI Marburg/Department of Organismic Interactions)

Regulation of conjugation tube formation in *Ustilago maydis*

Sakthimala Jagadeesan (MPI Marburg/Department of Ecophysiology)

Signaling twists in *Myxococcus xanthus*: a Four Component signal transduction system regulates developmental progression

Alexandra Müller (MPI Marburg/Molecular Geobiology Group)

Characterization of the dissimilatory iron-reducing community in rice field soil

### **31.03.2008 - Graduate Students Mini-Symposium II/2008**

Simone Leonardy (MPI Marburg/Department of Ecophysiology)  
Dynamic protein localization and morphogenetic cell movements in *Myxococcus xanthus*

Trang Chu (Universität Marburg/Department of Biology)  
Elucidating the function of *Plasmodium falciparum* vacuolar proteins

Anutthaman Parthasarathy (Universität Marburg/Department of Biology)  
Probing the mechanism of 2-hydroxyglutaryl-CoA dehydratase from *Clostridium symbiosum*

Kerstin Schipper (MPI Marburg/Department of Organismic Interactions)  
Towards understanding the role of the secreted effector Stp1 during biotrophic growth of *Ustilago maydis*

### **18.02.2008 - Graduate Students Mini-Symposium I/2008**

Kathrin Botsch (MPI Marburg/Department of Biogeochemistry)  
Carbon isotope fractionation during the anaerobic degradation of propionate

Jana Glöckner (MPI Marburg/Department of Biogeochemistry)  
Metagenomic analysis of environmental bacteria in rice paddy soil

Britta Winterberg (MPI Marburg/Department of Organismic Interactions)  
High-affinity iron uptake systems in *Ustilago maydis*

### **12.11.07 - Graduate Students Mini-Symposium III/2007**

Xingqi Shi (MPI Marburg/Department of Ecophysiology)  
An analysis of two-component regulatory systems in *Myxococcus xanthus* - in search of the FruA kinase(s)

Silke Falk (MPI Marburg/Department of Biogeochemistry)  
Cultivation of denitrifiers with a novel nitrite reductase genotype

David Kamanda Ngugi (MPI Marburg/Department of Biogeochemistry)  
Transformation and mineralization of nitrogenous soil components in the intestinal tract of soil-feeding termites

Frank-Dietrich Müller (MPI Marburg)  
Analysis of the unique spore formation process in *Myxococcus xanthus*

### **08.10.07 - Graduate Students Mini-Symposium II/2007**

Dennis Gövert (MPI Marburg/Department of Biogeochemistry)

Carbon isotope fractionation during consumption of acetate by acetoclastic methanogens and sulfate-reducing bacteria

Julia Hinderberger (MPI Marburg/Department of Biochemistry)  
How is ferredoxin reduced in *Clostridia*?

Kay Schink (Universität Marburg/Department of Genetics)  
Turning on molecular switches - the Cdc42-specific GEF Don1 as a key regulator of cytokinesis in *Ustilago maydis*

Minita Shrestha (MPI Marburg/Department of Biogeochemistry)  
Dynamics of methane oxidation and methanotrophic bacterial populations in the rice rhizosphere

#### **16.04.07 - Graduate Students Mini-Symposium I/2007**

Julian König (MPI Marburg/Department of Organismic Interactions)  
Evidence for RNA localisation in *Ustilago maydis*

Sonja Vogt (MPI Marburg/Department of Biochemistry)  
Coordination of the active site iron in [Fe]-hydrogenase (Hmd) as determined by X-ray absorption spectroscopy

Sebastian Weis (MPI Marburg/Department of Organismic Interactions)  
novel Ser/Thr protein kinases essential for development in *Ustilago maydis*

Elamparithi Jayamani (Universität Marburg/Department of Microbiology)  
Dynamics of methane oxidation and methanotrophic bacterial populations in the rice rhizosphere