

Scientific Program
8th Plant Growth-Promoting Rhizobacteria (PGPR) Workshop
May 17-May 22, 2009

Sunday, May 17

4:00-8:00 pm

Registration

7:00 pm

Social: Welcome to the Pacific Northwest

Monday, May 18

8:30 am-12:30 pm

Current Concepts in Rhizosphere Microbial Ecology (D. M. Weller, chair)

8:30-9:10

A. Hartmann (Germany)

Molecular interactions between rhizosphere bacteria and plants mediated by autoinducer signaling compounds

9:10-9:50

Ph. Lemanceau (France)

Iron dynamics in the rhizosphere: a case study for understanding interactions among soils, plants and microbes

9:50-10:10

R. Doornbos (The Netherlands)

Effects of *Arabidopsis thaliana* defenses on non-pathogenic rhizosphere bacteria

10:10-10:30

J. Meyer (Switzerland)

Impact of genetically modified wheat on the frequency and genetic diversity of root-colonizing pseudomonads associated with soil fertility

10:30-11:00

Break

11:00-11:30

T. Paulitz (USA)

(Pyrosequencing-A powerful tool for analysis of bacterial communities and the effect of cropping practices)

11:30-12:00

B. Glick (Canada)

Using proteomic tools to characterize PGPB and rhizosphere

12:00-12:30

L. Newman (USA)

Synergistic interactions between poplar and bacteria to improve plant establishment, phytoremediation and sustainable feedstock production on marginal soils

12:30 PM

Lunch provided

2:00 pm -4:40 pm

Commercial Application of PGPR Products in North America (J. Kloepper, chair)

2:00-2:10

J. Kloepper (USA) Introduction

2:10-2:40

J. Riggs (USA)

Examples of products with PGPR strains registered as biofungicides; Issues related to developing PGPR products in an international chemical company

2:40-3:10

M. Banerjee, L. Yesmin (Canada)

Examples of products with S-oxidizing PGPR as crop inoculants alone and with rhizobia; Issues related to developing PGPR products in a seed company

3:10-3:40

P. Cargeeg (Canada)

Examples of products with a PGPR strain registered as biofungicide with and without rhizobia; Issues related to PGPR product development in an international rhizobia inoculant company

3:40-4:10

R. Ames (USA)

Examples of products containing fermentation extracts of microbes and their metabolites; Issues related to developing a "non-typical" PGPR product

4:10-4:40

Questions from the audience and organizers on product development. Panel discussion with the speakers

4:40-6:30

Refreshments and Poster session I

Tuesday, May 19

8:30 am to 12:30 pm *Functional genomics of PGPR* (Philippe Lemanceau, chair)

- 8:30-9:00 **H. Gross** (Germany)
Genomic mining for bioactive small molecules in the genomes of *Pseudomonas fluorescens* Pf-5 and *Pseudomonas syringae* pv. *syringae* B728A
- 9:00-9:30 **Y. C. Kim** (Korea)
Characterization of the *gacA* and *rpoS* proteome of *P. chlororaphis* O6
- 9:30-9:50 **Y. -S. Kwak** (USA)
A *Saccharomyces cerevisiae* genome-wide mutant screen for sensitivity to 2,4-diacetylphloroglucinol, a biocontrol antibiotic produced by *Pseudomonas fluorescens*
- 9:50-10:10 **A. Sarniguet** (France)
Hyphosphere and pathorhizosphere effects of the plant pathogenic fungus *Gaeumannomyces graminis* var. *tritici* on growth and gene expression of the biocontrol strain *Pseudomonas fluorescens* PF29ARP
- 10:10-10:30 **G. Lazarovits** (Canada)
Unravelling the rhizosphere using the *CPN60* genomic marker and a 454 sequencer
- 10:30-11:00 **Break**
- 11:00-11:30 **R. Jackson** (United Kingdom)
Characterization of a *Pseudomonas fluorescens* SBW25 *fleQ* mutant: influence on motility and gene and phenotype expression
- 11:30-11:50 **T. Kidarsa** (USA)
Microarray analysis of *Pseudomonas fluorescens* Pf-5 grown on seed surfaces
- 11:50-12:10 **J. van de Mortel** (The Netherlands)
Unraveling the molecular mechanisms underlying plant growth promotion by *Pseudomonas fluorescens* strain SS101
- 12:10-12:30 **M. Filion** (Canada)
Studying PGPR gene expression under soil conditions using TaqMan qRT-PCR assays: comparison of quantification and normalization approaches
- 12:30 pm
Lunch provided

2:00 pm -4:40 pm *Genomes and Genomics-enabled Biology of PGPR* (Joyce Loper, chair)

- 2:00-2:40 **R. Borriss** (Germany)
Genomic features of plant-associated *Bacillus amyloliquefaciens* linked with plant growth promotion and biocontrol
- 2:40-3:20 **M. Silby** (USA)
Genome organization, environmental success, and phylogeny: insights from comparative genomics of *Pseudomonas fluorescens*
- 3:20-3:50 **J. Morrissey** (Ireland)
Evolution aspects of 2,4 diacetylphloroglucinol synthesis in *Pseudomonas fluorescens*
- 3:50-4:20 **D. Mavrodi** (USA)
Evolution of the phenazine biosynthesis pathway and diversity of phenazine-producing *Pseudomonas* spp. in dryland wheat-producing areas of Washington State
- 4:20-4:40 **S. Hartney** (USA)
TonB-dependent receptors of *Pseudomonas fluorescens* Pf-5 and siderophore uptake
- 4:40-6:30 pm
Refreshments and Poster Session II

Wednesday, May 20**8:30 am-12:00 pm*****PGPR and Rhizosphere Community Responses*** (Linda Thomashow chair)

8:30-9:00

G. Berg (Austria)

Antagonist/PGPR interplay with rhizosphere communities

9:00-9:30

B. Landa (Spain)Host plant specificity in 2,4-diacetylphloroglucinol producing *Pseudomonas* spp.: who drives the partner selection?

9:30-9:50

N. Someya (Japan)

Effects of the metabolites produced by coexistent microorganisms on antibiotic production by fluorescent pseudomonads

9:50-10:10

N. Bajsa

Plant growth-promoting bacteria in soils under crop rotation or continuous cropping

10:10-10:30

J. KloepperDynamics of spore germination and colonization of germinating seeds with a *Bacillus pumilus* strain

10:30-11:00

Break

11:00-11:30

V. Venturi (Italy)Quorum sensing and interkingdom signaling in PGPR *Pseudomonas*

11:30-12:00

L. S. Pierson (U.S.A.)Quorum sensing and phenazine structure are important for biofilm formation by *Pseudomonas chlororaphis* 30-84

12:00

Lunch provided and Afternoon Excursions

Thursday, May 21**8:30 am -12:10 pm*****Mechanisms of Plant Growth Promotion and Biocontrol*** (Mark Mazzola, chair)

8:30-9:10

D. Haas (Switzerland)Krebs cycle intermediates and temperature regulate gac-dependent biocontrol factor expression in *Pseudomonas fluorescens* CHA0

9:10-9:40

J. Raaijmakers (The Netherlands)Global and specific regulation of cyclic lipopeptide biosynthesis in plant growth-promoting *Pseudomonas fluorescens*

9:40-10:10

C. -M. Ryu (Korea)

Rhizobacterial volatiles as elicitors of plant defense and growth promotion

10:10-10:30

P. Paré (USA)

Rhizobacterial volatiles: an entry into plant growth promotion

10:30-11:00

Break

11:00-11:30

J. Leveau (USA)

Bacterial turnover of auxin: its role in plant growth and health'

11:30-11:50

S. Spaepen (Belgium)Auxin signaling in *Azospirillum brasilense*: a holistic approach

11:50-12:10

L. Rochat (Switzerland)Characterization of indoleacetic acid-responsive mutants of the plant-beneficial bacterium *Pseudomonas fluorescens* CHA0

12:10-12:30

S. Schrey (Germany)

Locally and systemically increased resistance against phytopathogens in Norway spruce after root inoculation with a forest streptomycete

12:30

Lunch provided

2:00 pm -4:00 pm	<i>Plant Responses to PGPR</i> (Monica Hofte, chair)
2:00-2:30	S. Van der Ent (The Netherlands) Prime time: Beneficial rhizobacteria prime plant defense responses
2:30-3:00	M. Ongena (Belgium) Plant defense reactions stimulated following perception of <i>Bacillus</i> lipopeptides
3:00-3:20	D. De Vleeschauwer (Belgium) Bacterial determinants and host immune mechanisms underpinning <i>Pseudomonas fluorescens</i> -induced systemic resistance in rice
3:20-3:40	S. -D. Kim (Korea) Drought stress resistance induction and plant growth promotion by the multifunctional PGPR <i>Bacillus lichiniformis</i> K11 in pepper
3:40-4:00	Break
4:00 pm -5:30 pm	<i>Progress in the use of PGPR</i> (Peter Bakker, chair)
4:00-4:10	P. Bakker Introduction
4:10-4:30	L. Ran (China) Biological control of eucalypt bacterial wilt by combination of endophytic and rhizosphere bacteria
4:30-4:50	J. Worapong (Thailand) <i>Paenibacillus polymyxa</i> strain TL41, a bacterial endophyte of <i>Paederia foetida</i> and its potential use for control <i>Xanthomonas campestris</i> on lettuce
4:50-5:10	I. Garcia de Salamone (Argentina) Ecophysiology of the response to <i>Azospirillum</i> inoculation of cereal crops in Argentina
5:10-5:30	C.A. Ramírez (Colombia) Plant growth promotion by <i>Bacillus amyloliquefaciens</i> FZB45 depends on inoculum concentration and P-related soil properties
7:00 PM	PGPR Banquet

Friday, May 22

8:30 am -12:30 pm

Biotic Interactions in the Rhizosphere (Blanca Landa, chair)

8:30-9:10

D. Kobayashi (USA)

Lysobacter enzymogenes, a biocontrol agent that establishes pathogenic interactions with a broad range of lower eukaryotes

9:10-9:50

C. Keel and M. Maurhofer (Switzerland)

Insecticidal activity in biocontrol pseudomonads

9:50-10:10

A. Jousset (Germany)

Predator-prey chemical warfare determines the production of antifungal compounds by a root-associated pseudomonad

10:00-10:30

P. Frey-Klett (France)

Mycorrhiza helper bacteria: a particular PGPR group with multiple facets

10:30-11:00

Break

11:00-11:20

P. Okubara (USA)

PGPR-nematode interactions

11:20-11:50

David Weller (USA)

PGPR: A Historical Perspective and Future Prospects

11:50-12:00

L. Thomashow and David Weller (USA)

Concluding Remarks