



Paola Barbieri

 UNIVERSITY OF INSUBRIA



[Printable Version](#)

Contact data

Associate Professor in General Microbiology

Department of Structural and Functional Biology

Via J.H. Dunant 3, 21100 Varese (Italy)

Tel: (+39) 0332 421420

Fax: (+39) 0332 421330

E-mail: paola.barbieri@uninsubria.it

Biography

1980: Degree in Biological Science at the University of Milan, Institute of Genetics.

1979-1983: Fellowship at the Institute of Agrarian and Technical Microbiology, University of Milan.

1983-2000: Research Associate of General Microbiology, Dept. of Genetics and Biology of Microorganisms, University of Milan.

1992: Visiting scientist at the Dept. of Microbiology and Immunology, University of Illinois, Chicago.

2000-present: Associate Professor of General Microbiology, School of Science, University of Insubria.

Qualifications and awards

Member of the American Society for Microbiology (ASM)

Member of the Italian Society for General Microbiology and Microbial Biotechnology (SIMGBM)

Research interests

Research programs concern essentially metabolic, genetic, and regulative aspects of microbial degradation or detoxification of environmental pollutants. In particular, the research focuses on the cloning and characterisation of genes involved in mercury resistance and in methylbenzene catabolism in *Pseudomonas* strains, on the comprehension of the regulatory circuits and on the detection of metabolic "bottlenecks" that limit the degradation of related compounds. Genetic studies regard the evolution and diffusion of both catabolic and heavy metal resistance genes, and are essentially aimed at obtaining, through natural recombination or genetic engineering, strains more efficient in environmental decontamination. Recently, also involved in studies on microbial degradation of chloroaromatic and chloroaliphatic compounds.

Teaching experience and appointments

Courses (lectures and practical lessons) of: General Microbiology, Environmental Microbiology, Microbial Ecology, Molecular Microbiology, Biodegradation and Bioremediation, Applied Microbiology for the degrees in Biological Science, Biotechnology, Natural Science, Environmental Engineering.

Also Assistant Professor for: PhD school in Analysis, Protection and Management of Biodiversity (University of Insubria), PhD school in Biotechnology (University of Parma and of Insubria), Master in Safety Management in Industrial Environment.

Representative publications

- SOLERA D., ARENGHI F.L.G., WOELK T., GALLI E., BARBIERI P. 2004. TouR-mediated effector-independent growth-phase-dependent activation of the s54 P_{to} promoter of *Pseudomonas stutzeri* OX1. *J. Bacteriol.* 186:7353-7363.
- VARDAR G., BARBIERI P., WOOD T.K. 2004. Chemotaxis of *Pseudomonas stutzeri* OX1 and *Burkholderia cepacia* G4 toward chlorinated ethenes. *Appl. Microbiol. Biotechnol.* 66:696-701.
- ZUCCHI M., ANGIOLINI L., BRUSETTI L., DIETRICH N., GIGLIOTTI C., BARBIERI P., SORLINI C., DAFFONCHIO D. 2003. Response of bacterial community during bioremediation of an oil-polluted soil. *J. Appl. Microbiol.* 94:248-257.
- SCONAMIGLIO R., NOTOMISTA E., BARBIERI P., PUCCI P., DAL PIAZ F., TRAMONTANO A., DI DONATO A. 2001. Conformational analysis of putative regulatory subunit D of the toluene-o-xylene monooxygenase complex from *Pseudomonas stutzeri* OX1. *Protein Science* 10, 482-490.
- ARENGHI F.L.G., BARBIERI P., BERTONI G., DE LORENZO V. 2001. New insights into the activation of o-xylene biodegradation in *Pseudomonas stutzeri* OX1 by pathway substrates. *EMBO Reports* 2, 409-414.
- SHIM H., RYOO D., BARBIERI P., WOOD T.K. 2001. Aerobic Degradation of Mixtures of Tetrachloroethylene, Trichloroethylene, Dichloroethylenes, and Vinyl Chloride by Toluene-o-Xylene Monooxygenase of *Pseudomonas stutzeri* OX1. *Appl. Microbiol. Biotechnol.* 56:265-269.
- RYOO D., SHIM H., ARENGHI F.L.G., BARBIERI P., WOOD T.K. 2001. Tetrachloroethylene, Trichloroethylene, and Chlorinated Phenols Induce Toluene-o-Xylene Monooxygenase Activity in *Pseudomonas stutzeri* OX1. *Appl. Microbiol. Biotechnol.* 56:545-549.
- BARBIERI P., ARENGHI F. L.G., BERTONI G., BOLOGNESE F., GALLI E. 2001. Evolution of catabolic pathways and metabolic versatility in *Pseudomonas stutzeri* OX1. *Antonie van Leeuwenhoek.* 79:135-140.
- ARENGHI F.L.G., BERLANDA D., GALLI E., SELLO G., BARBIERI P. 2001. Organization and regulation of meta cleavage pathway genes for toluene and o-xylene derivative degradation in *Pseudomonas stutzeri* OX1. *Appl. Environ. Microbiol.* 67: 3304-3308.
- RYOO D., SHIM H., CANADA K., BARBIERI P., WOOD T.K. 2000. Aerobic degradation of tetrachloroethylene by toluene-o-xylene monooxygenase of *Pseudomonas stutzeri* OX1. *Nature Biotech.* 18, 775-778.
- BOLOGNESE F., DI LECCE C., GALLI E., BARBIERI P. 1999. Activation and inactivation of *Pseudomonas stutzeri* methylbenzene catabolism pathways mediated by a transposable element. *Appl. Environ. Microbiol.* 65, 1876-1882.

- ARENCHI F.L.G., PINTI M., GALLI E., BARBIERI P. 1999. Identification of the *Pseudomonas stutzeri* OX1 toluene/o-xylene monooxygenase regulatory gene (*toxR*) and of its cognate promoter. *Appl. Environ. Microbiol.* 65, 4057-4063.
- RENIERO D., MOZZON E., GALLI E., BARBIERI P. 1998. Two aberrant mercury resistance transposons in the *Pseudomonas stutzeri* plasmid pPB. *Gene* 208, .37-42.
- CHAUHAN S., BARBIERI P., WOOD T.K. 1998. Oxidation of trichloroethylene, 1,1-dichloroethylene, and chloroform by toluene/o-xylene monooxygenase from *Pseudomonas stutzeri* OX1. *Appl. Environ. Microbiol.* 64, 3023-3024.
- BERTONI G., MARTINO M., GALLI E., BARBIERI P. 1998. Analysis of the gene cluster encoding toluene/o-xylene monooxygenase from *Pseudomonas stutzeri* OX1. *Appl. Environ. Microbiol.* 64, 3626-3632.
- DI LECCE C., ACCARINO M., BOLOGNESE F., GALLI E., BARBIERI P. 1997. Isolation and metabolic characterization of a *Pseudomonas stutzeri* mutant able to grow on the three isomers of xylene. *Appl. Environ. Microbiol.* 63, 3279-3281.
- BARBIERI P., BESTETTI G., RENIERO D., GALLI E. 1996. Mercury resistance in aromatic compound degrading *Pseudomonas* strains. *FEMS Microbiol. Ecol.* 20, 185-194.
- BERTONI G., BOLOGNESE F., GALLI E., BARBIERI P. 1996. Cloning of the genes for and characterization of the early stages of toluene and o-xylene catabolism in *Pseudomonas stutzeri* OX1. *Appl. Environ. Microbiol.* 62, 3704-3711.
- RENIERO D., GALLI E., BARBIERI P. 1995. Cloning and comparison of mercury- and organomercurial-resistance determinants from a *Pseudomonas stutzeri* plasmid. *Gene* 166, 77-82.