

UMR BSR

Soil and Rhizosphere Biogeochemistry
(Biogéochimie du Sol et de la Rhizosphère)

Director
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Research area

The RU Soil and Rhizosphere Biogeochemistry (BSR) focuses on the dynamics of nutrients, organic matter and metallic pollutants in terrestrial ecosystems (both natural and cultivated : agriculture and forestry). It addresses the functioning of the rhizosphere as defined as the soil volume which is influenced by root activities. The rhizosphere is to be considered as the site of intense matter and energy exchanges between soil and plant cover. This is a major hotspot of biological activity in soils and a crossroad of most biogeochemical cycles.

Website: <http://www.montpellier.inra.fr/RetS/personnel.htm>

Research highlights

- Organising/hosting RHIZOSPHERE 2 International Conference in August 2007 (579 participants)
- Coordinating Rhizosphere (UMPIRE) COST Action 631 of European Science Foundation (until 2006)
- Coordinating the FABAMED (Legumes-Fabaceae circum-Mediterranean) network
- Participating in 10+ European Projects (IP, STREP, INCO, Marie Curie)
- Gathering 3 scientists (P. Hinsinger ranking 14th, C. Plassard and J.J. Drevon) amongst the 45 scientists of the RTRA having published 13+ papers in 2000-2004, and 6 scientists with h-factor of 10-16.

Staff profile

	Total permanent staff	Total scientists*	Scientists with "HDR" ¹	Post-doct fellows	PhD
Staff	26	9	7	3	5

*Scientists per member institution: 8 INRA, 1 SupAgro

Research teams

- Bioavailability of mineral elements in the rhizosphere (led by P. Hinsinger).
- Fate of proteins in the environment (led by H. Quiquampoix).

Platforms and other tools

- Several plant growth equipments including a large growth chamber with high photon flux density
- Analytical chemistry laboratory and molecular biology laboratory
- Recombining protein biochemistry laboratory (L2)

International Partnerships

- RD Finlay (Univ. of Uppsala, Sweden)
- DL Jones and D Godbold (Univ. of Wales, Bangor, UK)
- H Lambers and Z Rengel (Univ. Western Australia, Australia)

¹ French university degree for confirmed thesis supervisor

- P Ryan and AE Richardson (CSIRO Plant Industry, Canberra, Australia)
- P Winter (Frankfurt Innovation Ctr. Biotechnology, GenXPro, Frankfurt, Germany)

Facts and figures

Publications in international ranking journals

❖	2007 :	19
❖	2006 :	12
❖	2005 :	10

Representative publications

Gobert A., Plassard C. 2007. [NO₃⁻]-dependant kinetics of NO₃⁻ net fluxes in Pinus pinaster, Rhizopogon roseolus and their ectomycorrhizal association, as affected by the presence of NO₃⁻ and NH₄⁺. **Plant Cell Environment** 30: 1309-1319.

Michaud A.M., Bravin M.N., Galleguillos M., Hinsinger P. 2007. Copper uptake and phytotoxicity as assessed in situ for durum wheat (Triticum turgidum durum L.) cultivated in Cu-contaminated, former vineyard soils. **Plant and Soil** 298: 99-111.

Raynaud X., Jaillard B., Leadley P.W. 2007. Can the change of nutrient bioavailability by plants in rhizosphere alter competition for resources ? A modeling approach. **American Naturalist** (in press).

Schulze J., Drevon J.J. 2005. P-deficiency increases the O₂ uptake per N₂ reduced in alfalfa. *Journal of Experimental Botany* 56: 1779-1784.

van Aarle I., Viennois G., Amenc L., Taty M-V., Luu D.T., Plassard C. 2007. Fluorescent in situ RT-PCR to localise gene expression in the ectomycorrhizal fungus Hebeloma cylindrosporum. **Mycorrhiza**, 17: 487-494.

Hinsinger P (2001) Bioavailability of soil inorganic P in the rhizosphere as affected by root-induced chemical changes: a review. **Plant and Soil** 237: 173-195.

Total annual budget

	2006	2007
Total annual budget (including salaries K €)	500	818
External contracts:		
ANR	57	140
EU	161	93
Private sector		
Others	42	367