

POST-DOCTORAL POSITION

Relationship between microbial diversity and soil organic matter composition and turnover

A post-doctoral position is available for 24 months (possibly starting in February 2010) at the Laboratory of Biogeochemistry and Ecology of Continental Environments (Bioemco), Thiverval-Grignon, France.

Dynamics and stabilization of soil organic matter is driven by the soil microbial biomass. However the importance of microbial diversity on C storage and decomposition in soils is poorly understood. The aim of the post-doctorate is to establish the link between microbial diversity and the fate of specific organic structures in soils. This work is part of an interdisciplinary project financed by the French National Research Agency (ANR). The post-doc will analyze soil organic matter composition in samples which have been incubated with microbial communities showing a gradient in complexity and with ¹³C-labelled plant material. Several organic families will be followed with compound specific isotopic (¹³C) analysis: lignins, sugars, lipids including PLFA.

The candidates will have a soil science and soil chemistry background. Skills and interest in analytical chemistry are required. He/she will be trained on gas chromatograph and isotopic mass spectrometers to work independently on this project.

The post-doc will integrate the Soil Organic Matter team of Bioemco (www.biologie.ens.fr/bioemco/), located in Thiverval-Grignon, 30 km of Paris, France. Bioemco gathers soil scientists, chemists, ecologists, plant physiologists and specialists of isotopes and experimental ecology. This consortium aims at understanding the dynamics of ecosystems and agrosystems, to promote innovation in environmental sciences and management and ecological engineering.

This is a fixed term appointment for 2 years (about 2200 € per month).

Interested candidates should send before 22nd of January the following materials via email to:

Marie-France Dignac : dignac@grignon.inra.fr

Cornelia Rumpel (rumpel@grignon.inra.fr)

- **Curriculum vitae** with contact information for 3 references
- **A brief letter** discussing interest in the position and past research experiences
- **A list of publications**

Recent publications of the host laboratory

- Dignac M.-F., Bahri H., Rumpel C., Rasse D.P., Bardoux G., Balesdent J., Girardin C., Chenu C., Mariotti A. 2005. Carbon-13 natural abundance as a tool to study the dynamics of lignin monomers in soil: an appraisal at the Closeaux experimental field (France). *Geoderma*, 128, 3-17
- Rasse D.P., Rumpel C., Dignac M.-F. 2005. Is soil carbon mostly root carbon? Mechanisms for a specific stabilisation. *Plant and soil*, 269, 341-356
- Bahri H., Dignac M.-F., Rumpel C., Rasse D.P., Chenu C., Mariotti A. 2006. Lignin turnover kinetics in an agricultural soil is monomer specific. *Soil Biology & Biochemistry*, 38, 1977-1988
- Rumpel C., Dignac M.-F. 2006. Chromatographic analysis of monosaccharides in a forest soil profile: Analysis by gas chromatography after trifluoroacetic acid hydrolysis and reduction-acetylation. *Soil Biology & Biochemistry*, 38, 1478-1481
- Lerch T.Z., Dignac M.-F., Barriuso E., Bardoux G., Mariotti A. 2007. Tracing 2,4-D metabolism in *Cupriavidus necator* JMP134 with ¹³C-labelling technique and fatty acid profiling. *Journal of Microbiological Methods* 71, 162-174
- Mendez-Millan M., Dignac M.-F., Rumpel C., Rasse D.P., Derenne S. 2009. Molecular dynamics of cutins and suberins in an agricultural soil estimated by natural abundance ¹³C labelling in a wheat/maize succession. *Soil Biology & Biochemistry*, doi: 10.1016/j.soilbio.2009.10.010