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### Louis Tisa, Professor of Microbiology and Genetics, College of Life Sciences and Agriculture, travels to Argentina

Louis S. Tisa

University of New Hampshire, [louis.tisa@unh.edu](mailto:louis.tisa@unh.edu)

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## Louis Tisa

### Professor of Microbiology and Genetics - College of Life Sciences and Agriculture

Professor Louis Tisa traveled to Argentina in October 2008 to present research at the 15th International Conference on 'Frankia' and Actinorhizal Plants.



Tisa, left, with the co-host of this conference, Luis Wall (Universidad Nacional de Quilmes) and Eugenia Chaia (Centro Regional Universitario Bariloche)

With the assistance of a travel grant from the Center for International Education at UNH, I was able to attend and present our research at the 15th International Conference on Frankia and Actinorhizal Plants. The conference focused on the nitrogen-fixing symbiosis between the soil actinomycete Frankia and its root-nodulated, angiospermous host plants. Actinorhizal plants (Frankia-nodulated) plants are almost exclusively woody plants that play a significant role economically and ecologically in agriculture and in the environment. The actinorhizal symbiosis is strong contributor to global biological nitrogen fixation process. You would find these actinorhizal plants in New Hampshire located in nutrient-poor soils including the coastal sand dunes and gravel pits. The meeting attracted scientists from 18 countries from five continents. The depth of the different research areas ranged from the molecular biology and phylogeny of the bacterium or host plant to their cellular biology and to field studies on the symbiosis. The strength of the conference is its integration of studies on the basic and applied aspect of the symbiosis. My research group is studying functional genomic approaches toward the bacterial partner and its relationship with its plant host.

There were several important highlights on this trip. First, my lecture on combining in silico approaches with wet-laboratory studies was enthusiastically received. The identification of unique Frankia natural products will affect future studies and was a logical extension from our ground-breaking collaborative work elucidation of three complete Frankia genome sequences. Second, I am leading another Frankia sequencing project that is sequencing the five different genomes from unique habitats worldwide. Almost all of the research groups involved in that collaboration project attended this meeting and helped solidify this international collaboration. Lastly, this direct face-to-face interaction provided an opportunity to develop further the existing collaborations and establish new collaborations. From March to June, 2008, I had a short sabbatical stay in Didier Bosgusz's laboratory at the Institut de Recherche pour le Développement (IRD) in Montpellier, France, and initiated a collaborative research project on plant-microbe interaction. At this meeting, Didier and I began to outline and develop two research proposals that we hope to submit to NSF and other funding agencies. Claudio Valverde and Luis Wall (Universidad Nacional de Quilmes, Argentina) initiated two new collaborative projects. Several European and Asian laboratories also want to establish an exchange program that will cross-train our students with our genetic and genomic techniques and their ecological or field studies. One of my career goals is to continue these international research collaborations which provide unique training and educational opportunities for UNH students. I hope to further these efforts in December 2008 in Tunisia, and will be the opening plenary speaker for the 13th Congress of the African Association for Biological Nitrogen Fixation.



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Hood House • 89 Main Street • Durham, NH 03824 • Ph 603-862-2398 • Fax 603-862-0169  
Thompson Hall • 105 Main Street • Durham, NH 03824 • Ph 603-862-1288 • Fax 603-862-0844

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