Post-doctoral Position in Plant Systems Biology & Evolutionary Genomics
New York University Center for Genomics and Systems Biology

A post-doctoral position at NYU’s Center for Genomics and Systems Biology – in the laboratory of Dr. Gloria Coruzzi - is available as part of our newly awarded 5 year DOE Grant entitled: EvoNet: A phylogenomic and systems biology approach to identify genes underlying plant survival in marginal, low-N soils.

The successful applicant will have skills and experience in Genomics, Bioinformatics and Phylogenetics. The position will include experimental/informatic analysis on NextGen datasets (e.g. overseeing laboratory work, planning, leading and conducting analyses on RNASeq data). Skills in R, Perl, Python or other programming language are strongly preferred. This position also includes Project Management duties, which involve coordinating scientific activities at six participating institutions, organizing group meetings, writing grant reports, paper writing and communicating our work in conferences and meetings.

This project involves the collaboration of plant systematists, molecular biologists, genome scientists and bioinformaticians. PI: Gloria Coruzzi (NYU Center for Genomics and Systems Biology); Co-PI(s): Rodrigo Gutierrez (Chile); Robert DeSalle (AMNH); Dennis W Stevenson (NYBG); W. Richard McCombie (CSHL); and Jean-Michel Ane & Heidi Kaeppler (UW-Madison).

**Project description:** This collaborative project exploits the genomes of “extreme survivor” plants adapted to thrive in marginal, extremely nitrogen (N) poor soils in the arid Chilean Andes. It uses a previously validated phylogenomic pipeline we previously developed (Lee et al 2011) and a “paired species” sampling strategy, to identify the genes that distinguish these “extreme survivors” in Chile from their related species adapted to similarly dry regions in California (CA) that are not constrained by N. These “extreme survivor” species cover the main branches in flowering plants. To maximize our ability to separate the trait-relevant signature from overall speciation events, the “paired species” sampling will cover multiple independent origins of the low-N adaptive trait. Our project aims are:

**Aim 1. Paired-species collection and sequencing:** Use a “paired-species” sampling strategy to capture genes involved in adaptations of “extreme survivors” which grow on dry, N-poor soils (Chile) compared to their “paired species” from California adapted only to drought.

**Aim 2. Phylogenomic and Network Analysis:** (A) Perform phylogenomic analysis of the “extreme survivors” in a “paired-sampling” strategy to identify genes supporting evolution of adaptations to marginal, low-N soils. (B) Perform gene network analysis based on gene expression and interactions.

**Aim 3. Integrate Phylogenomic and Network signatures:** Combine phylogenomic signals and gene networks to prioritize candidate genes associated with adaptations to marginal, low-N soils.

**Aim 4. Functional validation of candidate genes:** Functionally validate top-ranked candidate genes for low-N adaptations in the model plants Arabidopsis and Brachypodium.

This project presents an excellent opportunity to work with scientists from a broad range of expertise. It also includes opportunities to develop new methods and algorithms for integrating phylogenetics with systems biology approaches. Therefore, the ideal candidate would have excellent communication skills and would be motivated in developing novel analyses methods.

**The Coruzzi lab**
Coruzzi lab web page: http://coruzzilab.bio.nyu.edu/
Coruzzi Biology Faculty web page: http://biology.as.nyu.edu/object/GloriaCoruzzi.html

is located in the historic and vibrant Greenwich village in downtown Manhattan in New York City. NYU is one of the world’s leading research universities and its Center for Genomics and Systems Biology is housed in a new, state-of-the-art facility with 14 faculty members who study Genomics and Systems
Biology across all kingdoms of life. For more information on the Center, please go to [http://cgsb.as.nyu.edu](http://cgsb.as.nyu.edu)

Please send cover letter, resume and 3 letters of reference by email to: coruzzi.lab.nyu@gmail.com

Please mark the subject line of your email: DOE Post-doc

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