**Post-doctoral Position in Plant Systems Biology**

**Project:** NSF - NutriNet: A network inspired approach to improving NUE in crops.

**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 NSF Plant Genome Grant entitled: NutriNet: A network inspired approach to improving Nutrient Use Efficiency (NUE) in crop plants.

The successful applicant will have skills and experience in Plant Biology and Genomics. The position will require experimental skills for the generation of –omics datasets such as DNA/RNA isolation, Next-gen sequencing library construction, plant growth (Arabidopsis and Maize) etc. Additionally, working knowledge of R, Python or other programming language is highly desirable. This position also includes Project Management duties, which involve coordinating scientific activities at two participating institutions; organizing group meetings, writing grant reports, paper writing and communicating our work in conferences and meetings.

This project involves the collaboration three institutions. PI: Gloria Coruzzi (PI), NYU, Center for Genomics & Systems Biology (plant genomics); Dennis Shasha (co-PI) NYU, Courant Institute of Mathematical Sciences (bioinformatics); & Stephen Moose (co-PI) U. Illinois, Urbana-Champaign (maize functional genomics).

**Overview:** Recent advances in genome sequencing, functional genomics, and computational tools enable a systems-level understanding of key physiological and developmental processes in the model plant Arabidopsis, but translating this knowledge to enhancing agriculturally important phenotypes in crop species remains challenging. The goal of our NutriNet project is to develop network-connected modules in crops - exploiting Arabidopsis network knowledge - that are predictive of phenotypic variation and enhance the efficiency of genetic gain in crop species, using nutrient use efficiency (NUE) of maize as the target trait. **Four aims are proposed to achieve these goals.** First, new and existing data for nutrient-responsive gene expression profiles will be integrated with phenotypic variation for NUE to develop a training set that exploits the power of genetic diversity from both Arabidopsis (Coruzzi, NYU) and maize (Moose, Illinois). Second, a split-root experimental design combined with RNASeq (Coruzzi) will identify Arabidopsis and maize genes that function in root-shoot N-signaling and that control root foraging for nutrients. The third aim is to construct the NutriNet for maize (Coruzzi/Shasha, NYU), which will be combined with Arabidopsis "network knowledge" to define network modules predictive of NUE traits. NutriNet modules will be validated using 'left-out data’ and tests of predictive ability in genotypes outside of the initial training set. Finally, information derived from NutriNet modules will be used to select individual genotypes that possess optimal NutriNet configurations from diverse germplasm pools, which will then be evaluated for improved NUE traits in the lab (Arabidopsis) and field (maize). A comparative analysis of lab-to-field results will directly assess the “translation” of knowledge from Arabidopsis to cereal crops.

**Application:** 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 e-mail: **NutriNet Post-doc**

Applications received by April 15, 2016 will receive full consideration for the position.
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

The Coruzzi lab 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 six kingdoms of life. For more information on our Genome Center, please go to: http://cgsb.as.nyu.edu

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