5412 S California Ave., Chicago, Illinois 60632 • (773) 680-4960 • mrojas@luc.edu

Miguel Rojas

Experience

November 2006-Present | Rachel Carson Elementary School | Chicago, Illinois

College Tutor

- Tutor students in kindergarten to 8th grade struggling in the areas of math, science, reading, and vocabulary
- Helped group of students 6th-8th grade with science fair projects (2005): held afterschool meetings where we tried to best apply the scientific method to questions they were trying to answer, also tried to make them understand various topics relating to project

June 2008-June 2009 | Chicago Initiative for Research and Recruitment in Undergraduate Science | Chicago, Illinois

CIRRUS Intern

- Learned basic research methods gained from conducting an individual research project
- Objective:
  1. **To look at the effect that the type and concentration of metals used as dopants in a titanium dioxide semiconductor had on the efficiency of the solar cells**
- Presented weekly reports on progress
- Participated in a poster session at the end of the year for all interns in the program
- During the school year did science outreach and offered tutoring to middle school students in San Miguel School in the Austin neighborhood

June 2009-August 2010 | The Field Museum | Chicago, Illinois

Botany Intern/Collections Assistant

- Contributed to the Biological Research Collections (BRC) Project, aimed at improving the current bryophyte and lichen collection through an online database and making it more accessible to other researchers
- Contributed to current online species information web page that connects to specimens in database
- Served as a supervisor and mentor to new high school and college student interns during my second summer
- Participated the collection and counting of macro fungi in previously set up experimental plots with increased nitrogen and control plots with nitrogen levels similar to the surrounding forest for an ongoing project studying the impacts of atmospheric nitrogen deposition on soil fungal communities

Sept. 2009-Aug. 2010 | DePaul University, Aguirre Lab | Chicago, Illinois

Undergraduate Research Assistant/Lab Manager

- Maintained and updated Dr. Aguirre's collection of freshwater fish from Ecuador and Alaskan three spine stickleback
- Performed DNA extractions of Alaskan threespine stickleback, *Gasterosteus aculeatus*, using a Phenol-Chloroform based method
- Started molecular work on two projects:

1. **Microgeographical distribution of divergent mtDNA haplotypes in threespine stickleback, *Gasterosteus aculeatus***
   - Goal was to observe how traits seen in anadromous ocean type stickleback change as they adapt to selection pressures in different stream and lakes as populations become established
   - Ran PCR on a DNA from collected specimens that would be sent out for sequencing to begin to look at these differences at the molecular level, ran 1% Agarose Gels to confirm PCR.
2. **Phylogenetic relationships of freshwater fishes in western Ecuador inferred from mtDNA sequence data**
   - Conducted a number of PCR reactions on specimens from the collection with various primers to determine which set of general primers would be useful to obtain sequences the various species (Ecuador Fish), confirmed with 1% Agarose Gel

August 2010-Present | Loyola University Chicago, Kelly Lab | Chicago, IL

Biology M.S. Student—Microbial Ecology

- Thesis project: **Influence of Algal the Bacterial Interactions on Denitrification in Stream Biofilms**

  Testing two hypothesis:
  1. **Algal species identity will influence species composition and activity of denitrifying bacteria within periphytic biofilms.**
  2. **Algal and bacterial linkages within periphytic biofilms can be decoupled in ecosystems with high anthropogenic inputs.**
- TA for Bio 101**:** Led two Bio 101 lecture sessions. Helped students during lecture and office hours with problems they have understanding material.
- DNA isolations on samples using soil and biofilm kits (MoBio). Ran PCR with primers specific for 16S and denitrification genes. Confirmation was done with 1% Agarose Gel. Conducted Q-PCR on samples for quantification of denitrifying bacteria with *nir*S primers, used T-RFLP and 454-Pyrosequencing analyses to look at bacterial community structure. Epiflourescence bacterial counts and plate counts from water and sediment samples for normalizing bacterial numbers and obtaining relative numbers of bacteria.

Education

Sept. 2002-June 2006 | Hubbard High School | Chicago, IL

- Graduated with an International Baccalaureate (IB) Diploma.

Sept. 2006-June 2010 | DePaul University | Chicago, IL

- Bachelor's of Science in Biological Sciences
- Cum Laude
- Honors Program Graduate
- Dean's List for College of Liberal Arts and Sciences (7 quarters)

Aug. 2010-Present | Loyola University Chicago | Chicago, IL

- Seeking to earn a M.S. in Biology
- (2011)-Honorable Mention from the National Science Foundation (NSF) for proposal

submitted to the Graduate Research Fellowship Program

- (2012)- Received Graduate Research Fellowship (GRFP) awarded by the National Science Foundations (NSF)

Presentations/Publications

May 2011 ASM-General Meeting of the American Society for Microbiology
Poster: *Development of associations between microalgae and denitrifying bacteria in streams of contrasting anthropogenic influence*

June 2012 ASM-General Meeting of the American Society for Microbiology
Poster: *Algal Species Identity Influences the Development of Denitrifying Bacterial Communities in Periphytic Biofilms*

Peterson, C.G., A.D. Daley, S.M. Pechauer, K.N. Kalscheur, M.J. Sullivan, S.L. Kufta, **M. Rojas**, K.A. Gray3 & J.J. Kelly. (2011). *FEMS Microbial Ecol* **77**:477-492.

Kalscheur, K.N., **M. Rojas**, C.G. Peterson, J.J. Kelly, & K.A. Gray. (2012) *Microbial Ecology* 64:881-892

Rosi-Marshall, E.J., D. Kincaid, H. Bechtold, T.V. Royer, **M. Rojas**, & J.J. Kelly. 2013. In situ exposure to pharmaceutical compounds suppresses algal growth, microbial respiration and bacterial communities in streams. Ecol. Appl. In Press.

References

Loyola University Chicago
John Kelly, Ph.D. (Associate Professor, Microbial Ecology; M.S. Advisor): *jkelly7@luc.edu*

Field Museum of Natural History
Matt von Konrat, Ph.D. (Bryphytes and Pteridophytes Collection Manager & Adjunct Curator): *mkonrat@fieldmuseum.org*

DePaul University
Windsor Aguirre, Ph.D. (Assistant Professor, Evolutionary Biology): *waguirre@depaul.edu*