



Apr 12th, 2:35 PM - 3:35 PM

Diversity of Archaeal Ammonia Oxidizers in Freshwater Wetland and Terrestrial Environments

Kristiyana Kaneva
Illinois Wesleyan University

John J. Kelley, Faculty Advisor
Illinois Wesleyan University and Loyola University Chicago

Follow this and additional works at: <https://digitalcommons.iwu.edu/jwprc>

Kaneva, Kristiyana and Kelley, Faculty Advisor, John J., "Diversity of Archaeal Ammonia Oxidizers in Freshwater Wetland and Terrestrial Environments" (2008). *John Wesley Powell Student Research Conference*. 10.

<https://digitalcommons.iwu.edu/jwprc/2008/posters2/10>

This is protected by copyright and/or related rights. It has been brought to you by Digital Commons @ IWU with permission from the rights-holder(s). You are free to use this material in any way that is permitted by the copyright and related rights legislation that applies to your use. For other uses you need to obtain permission from the rights-holder(s) directly, unless additional rights are indicated by a Creative Commons license in the record and/ or on the work itself. This material has been accepted for inclusion by faculty at Illinois Wesleyan University. For more information, please contact digitalcommons@iwu.edu.

©Copyright is owned by the author of this document.

Poster Presentation P22

**DIVERSITY OF ARCHAEAL AMMONIA OXIDIZERS IN FRESHWATER
WETLAND AND TERRESTRIAL ENVIRONMENTS**

Kristiyana Kaneva and John J. Kelley*
Biology Department, Illinois Wesleyan University
Loyola University Chicago

Nitrification, the oxidation of ammonia to nitrite and nitrate, is a key step of the nitrogen cycle that is catalyzed only by microorganisms. The first step in nitrification, the oxidation of ammonia, is catalyzed by the enzyme ammonia monooxygenase, which is encoded by the gene *amoA*. Previously ammonia oxidation was thought to be restricted to certain groups of Proteobacteria. However, recent studies have shown that some nonextremophilic Archaea are capable of catalyzing nitrification and contain *amoA*, but very little is known about the diversity and distribution of Archaeal ammonia oxidizers. In this study molecular techniques were used to detect Archaeal ammonia oxidizers in freshwater wetland sediments and terrestrial soils. PCR primers designed to specifically target Archaeal *amoA* were used to amplify Archaeal *amoA* genes from these environmental samples, and the genes recovered were cloned and sequenced. The sequences we collected were then compared to Archaeal *amoA* sequences downloaded from Genbank. Phylogenetic analysis showed that our sequences were most closely related to sequences from terrestrial and freshwater habitats and were distinct from sequences obtained from marine habitats. In addition, our terrestrial and wetland sequences formed several distinct clusters in the phylogenetic tree.