

# Migun Shakya, PhD

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## EDUCATION

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- Ph.D** Genome Sciences ◇ University of Tennessee ◇ Knoxville, TN 2008 - 2013
- B.S** Biology ◇ Southwestern Oklahoma State University ◇ Weatherford, OK 2008

## RESEARCH EXPERIENCE

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**Postdoctoral Associate** 2013 - Present

- Department of Biology, Dartmouth College, Hanover, NH
- Evolution of Gene Transfer Agents across Alphaproteobacteria

**Graduate Research Assistant** August 2009 - August 2013

- Genome Science and Technology Program
- University of Tennessee and Oak Ridge National Lab, Oak Ridge, TN
- Dissertation: Validating Approaches for Studying Microbial Diversity to Characterize Communities from Roots of *Populus deltoides*

## PUBLICATIONS

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Hurt, R.A., Robeson II M.S., **Shakya M.**, Moberly, J.G., Vishnivetskaya, T.A., Gu B., and Elias, D.A. Improved Yield of High Molecular Weight DNA Coincides with Increased Microbial Diversity Access from Iron Oxide Cemented Sub-Surface Clay Environments. *Plos ONE* 2014.

**Shakya, M.**, Gottel N., Castro H., Yang Z.K., Gunter L., Labbe J., Muchero W., Bonito G., Vilgalys R., Tuskan G., Podar M., Schadt C.W. A Multifactor Analysis of Fungal and Bacterial Community Structure in the Root Microbiome of Mature *Populus deltoides* Trees. *Plos ONE* 2013. doi:10.1371/journal.pone.0076382

**Shakya, M.**, Quince, C., Campbell, J., Yang, Z., Schadt, C.W., Podar, M. Comparative metagenomic and rRNA microbial diversity characterization using Archaea and Bacteria synthetic communities *Environmental Microbiology* 2013.doi:10.1111/1462-2920.12086

Flores E.G.,**Shakya, M.**, Meneghin J.,Podar, M., Seewald., J.S., Reysenbach A-L. Inter-field Variability in the Microbial Communities of Hydrothermal Vent Deposits from a Back-Arc Basin.*Geobiology* 2012. doi:10.1111/j.1472-4669.2012.00325.x

## BOOK CHAPTERS

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Culley A.I., **Shakya M.**, Lang A.S. (2015) Viral evolution at the limits. In *Microbial Evolution under Extreme Conditions* (pp.209-222).Germany.degruyter.

## HONORS AND AWARDS

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**University of Tennessee, Knoxville**

2011 Genomic Sciences Meeting Student Travel Grant

**Southwestern Oklahoma State University,**

In-State Tuition Waiver 2003-2008

Ottis and Buena Ballard Memorial Scholarship 2007

Who is Who Among American Universities 2008

## SCIENTIFIC CONFERENCES

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**Shakya M.** and Zhaxybayeva O. Origin and Evolution of gene transfer agents in  $\alpha$ -proteobacteria. In: *The Burroughs Wellcome Big Data Symposium*, November 4, 2015. Poster

**Shakya M.** and Zhaxybayeva O. Origin and Evolution of gene transfer agents in  $\alpha$ -proteobacteria. In: *1st Annual Celebration of Biomedical Research at Dartmouth (C-BRaD)*, September 21, 2015. Poster

**Shakya M.** and Zhaxybayeva O. Origin and Evolution of gene transfer agents in  $\alpha$ -proteobacteria. In: *Mobile Genetic Elements: In Silico, In Vitro, In Vivo*, September 3-5, 2015. Selected talk

**Shakya M.** and Zhaxybayeva O. Origin and Evolution of gene transfer agents in  $\alpha$ -proteobacteria. In: *Gordon Research Conference: Microbial Population Biology*, July 19-24, 2015. Poster

**Shakya M.** and Zhaxybayeva O. Distinguishing Gene Transfer Agent genes from their phage homologs. In: *Boston Bacterial Meeting 2014, Boston, MA*, June 12-13, 2014. Poster

**Shakya M.**, Drivers of microbial community structure in rhizosphere and endosphere of *Populus deltoides*. In: *American Society for Microbiology KY-TN Branch Meeting*, October 26-27, 2012. Talk

**Shakya M.**, Gottel, N.R., Castro, H.F., Yang Z.K., Kerley M., Podar M., Doktycz, M.J., Schadt, C.W. Archaea associated with *Populus* and its surrounding soil and trees. In: *International Society of Microbial Ecology 14, Copenhagen, Denmark*, August 19-24, 2012. Poster.

Schadt, C.W., **Shakya M.**, Gottel, N.R., Castro, H.F., Yang Z.K., Kerley M., Bonito G., Labbe J., Muchero W., Vilgalys R., Tuskan G., Podar M., Doktycz, M.J. Roles of genotype-by-environment interactions in shaping the root-associated microbiome of *Populus*. In: *Ecological Society of America 97, Portland, Oregon* August 5-10, 2012.

**Shakya M.**, Gottel, N.R., Castro, H.F., Yang Z., Kerley M., Podar M., Doktycz, M.J., Schadt, C.W. Plant-Microbe Interface: Dynamics of Bacterial Microbiome of *Populus deltoides* In: *2012 Department of Energy Genomic Science Awardee Meeting X*, February 26-29, 2012. Poster

Graham, E.D., **Shakya M.**, Xu X., Phelps, T.J., Thornton, P.E., Elias D.A., Characterization and Modeling Of Microbial Carbon Metabolism In Thawing Permafrost. In: *American Society of Microbiology, San Francisco, CA*, June 16 - 19, 2012. Poster.

Bonito, G., Schadt, C., Hameed, K., **Shakya, M.**, Chen, K. H., Tuskan, G., Vilgalys, R. (2012). Rhizospheric mycobiota associated with *Populus deltoides*. In: *Mid-Atlantic States Mycological Conference, University of Tennessee, Knoxville* April 13-15, 2012.

**Shakya M.**, Gottel, N.R., Castro, H.F., Yang Z., Kerley M., Podar M., Doktycz, M.J., Schadt, C.W. Plant-Microbe Interface: Dynamics of Bacterial Microbiome of *Populus deltoides* In: *2012 Department of Energy Genomic Science Awardee Meeting X*, February 26-29, 2012. Poster.

**Shakya M.**, Campbell, J.C., Schadt, C.W., Podar M. Experimental and Computational Approaches for Microbial Diversity Characterization Using Artificial Communities. In: *2011 Genomic Science Awardee Meeting IX*, April 10-13, 2011. Poster and Talk.

**Shakya M.**, Campbell, J.C., Yang, Z.K., Podar M. Experimental and Computational Approaches for Microbial Diversity Characterization Using Artificial Communities In: *International Society of Microbial Ecology 13*, August 22-27, 2010. Poster.

## TEACHING EXPERIENCE

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### **University of Tennessee, Knoxville**

Teaching Assistant for BCMB 230 : Human Physiology Fall 2009 (2 sections)

Teaching Assistant for BIO 140 : Organization and Function of the Cell Spring 2010 (2 sections)

### **Southwestern Oklahoma State University**

Teaching Assistant for Biological Sciences Fall 2007-Spring 2008

Grader for College Algebra and Trigonometry Spring 2007-Spring 2008

## PEER REVIEW ACTIVITIES

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Reviewer for: FEMS Microbiology Ecology, Canadian Journal of Microbiology, Frontiers in Microbiology, Molecular Biology and Evolution, BMC Microbiology, MDPI - *Toxins*

## RELEVANT SKILLS

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**Programming/Scripting:** Python, Perl, R, bioconductor

**Bioinformatics:** Genome, Metagenome, Metagenetics, Methyome, SNP analysis, phylogenetics, etc.

**Other:** makefile, unix, shell scripting, high performance computing