

Raymon Shirk Shange

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EDUCATION

Xavier University of La, B.S. 2004. Biology

Howard University, M.A. 2006. Philosophy (Natural Philosophy)

Tuskegee University, Ph.D. 2011 Integrative Biosciences (Agricultural/Ecological Complexity)

RELEVANT EXPERIENCE/EMPLOYMENT

Assistant Professor/Assistant to the Director of Carver Integrative Sustainability Center, Tuskegee University 2012-present

Postdoctoral Researcher in Microbial Ecology, College of Agriculture, Environment and Nutrition Sciences, Tuskegee University 2011-2012

Instructor, College of Arts and Sciences, Depts. of Biology & Chemistry, Tuskegee University Fall 2009-present

Teaching Assistant, College of Agriculture, Environment, and Nutrition Sciences, Tuskegee University, 2007-2011

AREAS OF INTEREST

My research and teaching interests encompass the areas of: Ecology (Agroecology, Microbial Ecology, Molecular Ecology, and Ecological Engineering), Sustainable Agriculture, Impact of Climate Change on Ecosystems, Rural Energy & Water, Natural Resource Management, Integration of Art, Science and Nature, and Environmental Ethics and Justice.

SELECTED PRESENTATIONS & PAPERS

Publications

Shange R., Ankumah R.O., Zabawa R., and L. Githinji. 2012. Spatial assessment of selected soil properties within an industrial poultry production site. *Air, Soil and Water Research* 2012:5 59-68. doi: [10.4137/ASWR.S9268](https://doi.org/10.4137/ASWR.S9268).

Shange R., Ankumah R.O., Ibekwe A.M., Zabawa R., and S.E. Dowd. 2012. Distinct Soil Bacterial Communities Revealed Under a Diversely Managed Agroecosystem. *PloS ONE* 7(7): e40338. doi:10.1371/journal.pone.0040338.

Shange R., Ankumah R.O., Zabawa R., and S.E. Dowd. 2012. Assessing the structure and membership of soil microbial communities cultivated under an industrial poultry production system. *In preparation*.

Shange R., Haugabrooks E.M., Ankumah R.O., and S.E. Dowd. 2011. Using high throughput sequencing to assess soil bacterial community composition and structure across wetland, transition zone, and upland ecosystem types in Macon County, Alabama. *In preparation*.

Presentations

Shange R. “Microbial Ecology: Using the biological –omics to assess the ecology of microbial communities.” Invited Lecture, 1st Annual 2iE-Tuskegee Summer School: Water, Energy, Environment and Food Security in a Changing Climate. Ouagadougou, Burkina Faso. June 2012.

Shange R. and R.O. Ankumah. 2012. Assessing the structure and membership of soil microbial communities cultivated under an industrial poultry production system. In: ASA Southern Regional Branch Meeting 2012. Birmingham, AL.

Jones S., **Shange R.**, and R.O. Ankumah. 2012. Assessing soil functional status across an agroecosystem using soil phosphatase enzymes. In: ASA Southern Regional Branch Meeting 2012. Birmingham, AL.

Keith J., Odom L.J., Ankumah R.O., and **R. Shange**. 2012. Influence of Transgenic (*D4E1*) and Non-Transgenic Cotton on Soil Phosphodiesterase Activity Over a Growing Period. In: ASA Southern Regional Branch Meeting 2012. Birmingham, AL. (*Award-winning presentation: Undergraduate division, 2nd place*)

Scott M., Odom L.J., Ankumah R.O., and **R. Shange**. 2012. Influences of Synthetic Peptide *D4E1* on Phosphomonoesterase Activity. In: ASA Southern Regional Branch Meeting 2012. Birmingham, AL.

Shange R., and R.O. Ankumah. 2011. Assessing soil bacterial community composition and structure across wetland, transition zone, and upland ecosystem types along a single transect in Macon County, Alabama. In: 96th Annual Ecological Society of America Meeting. Austin, TX.

Min B.R., Solaiman S., **Shange R.**, and R.O. Ankumah. 2011. Effect of feeding tannin-containing pine bark on fecal bacterial population and methane gas production in Kiko-cross goats. In: 2011 Annual Meeting for American Dairy Science Association and American Society of Animal Science, New Orleans, LA.

Shange R., Ankumah R.O., Zabawa R., and L. Githinji. 2010. Assessing the effects of land use on microbial diversity and phylogeny across a mixed culture agroecosystem. In: 2010 ASA-CSSA-SSSA International Annual Meeting. Long Beach, CA.

Shange R., Ankumah R.O., Zabawa R., and L. Githinji. (2009). Spatial variability of selected enzyme activities and soil properties across two agricultural landscapes. In: International Meeting of Agronomy Society of America-Crop Science Society of America-Soil Science Society of America. Pittsburgh, PA.

Shange R., Ankumah R.O., Bonsi E.A., Siaway A., Vaughan B., and R. Zabawa. (2008). Assessment of total systems sustainability using an agroecological model. In: Proceedings of the 66th Annual Professional Agricultural Workers Conference, USA.

Shange R., Ankumah R.O., and R. Zabawa. (2008). The Tuskegee Black Belt Project. In: 93rd Annual Meeting of the Ecological Society of America. Milwaukee, WI.

Thesis/Dissertations

Shange R. (2011) Assessing the impacts of agricultural land use on the structure and composition of soil microbial ecosystems: a multiple case study in coupled human-natural systems. Tuskegee University, Tuskegee, AL.

Shange (Shirk) R. (2006). The Political Reality of Modern Biology. Howard University, Washington, DC. (Unpublished Manuscript)

GRANTS & FUNDED PROJECTS

Co-PI (10%). Tuskegee University-Black Belt Photoirrigation Project (TU-2BP). Natural Resource Conservation Service-USDA Conservation Innovation Grant program. Total Direct Costs: \$1,868,523. **PI:** Walter Hill, Ph.D.

Participating Faculty (5%). *Decesion pending.* Tuskegee University Jobs Accelerator Project. Rural Development-USDA Rural Jobs Accelerator Challenge. **PI:** Walter Hill, Ph.D.

COURSES TAUGHT

Genetics
Cell and Genetic Biology
Math, Computers, and Bioscience
Introduction to Soil Science Lab
Molecular Cell and Genetic Biology Lab
Environmental Biology Lab (Team Taught)
Introduction to Human Biology (for non-majors)
General, Organic, and Biochemistry (for non-majors)

PROFESSIONAL ASSOCIATION MEMBERSHIPS

- Ecological Society of America
- Soil Science Society of America
- American Society for Microbiology
- Alabama Academy of Science

AWARDS/ACHIEVEMENTS

- U.S. Fish and Wildlife/Wildlife Society Faculty Fellow (Summer 2012)
- Tuskegee University/University of California at Davis CREATE-IGERT Trainee in biotechnology/environmental sustainability, October 2008
- 66th Profession Agriculture Workers Conference Graduate Student Oral Presentation Competition: Third Place, December 2008
- Ronald E. McNair Graduate Fellow (2004)

SOFTWARE/COMPUTING COMPENTENCIES

Bioinformatic software packages/algorithms:

- Related to microbial ecology:
 - MOTHUR, Ribosomal Database Project Pyrosequencing Pipeline, QIIME, FastUnifrac
- More generalized tools that can be used with many biological systems:
 - Geneious, JBrowse, Velvet Assembly, NCBI Databases, UCSC Genome Browser, and other on-line applications.

- I am also comfortable in working in Linux, Unix environments, as well as submitting jobs to supercomputing clusters and cloud computing

Spatial Analysis and Geostatistical Software

- ArcGIS 9.3
- GS+

Statistical Packages

- SPSS
- NCSS

SERVICE ACTIVITIES

Research Co-Mentor for AgriTrek/AgDiscovery, 2009 and 2011

Research Co-Mentor for REU summer program, 2010

Water and Soil Quality Volunteer, 21st Century Youth Leadership Summer Program, 2009 & 2011

STUDENTS MENTORED/Co-MENTORED:

Masters Students

Chaunte McCoy – anticipated graduation May 2013

Andria Howard – anticipated graduation May 2013

Maya Scott – anticipated graduation May 2014

Undergraduate Students

Matthew Robinson – anticipated graduation May 2014

Shanice Jones – anticipated graduation May 2013

Marylyn Creer – anticipated graduation May 2013 (Research Experience for Undergraduates; Summer 2010)

Maya Scott-May 2012 graduated

Jamie Keith-May-2012 graduated

High School Students (AgriTrek/AgDiscovery Summer Program)

Shamarcus Hargrove, Thomson High School, Thomson, GA (2011)

Marla Rojas, TERRA Research Institute, Miami, FL (2011)

Rohith Vadlamudi, Auburn High School, Auburn, AL (2009)