

Fungal Communities and Systems
Spring Term 2015
University of Tennessee, Knoxville
MICRO606 / EEB607
Tuesdays – 335 to 435PM
UTK, Hesler Hall, 427

Instructors:

Christopher W. Schadt – Dept. of Microbiology, Univ. of Tennessee & Biosciences
Division, ORNL

P. Brandon Matheny – Dept. of Ecology and Evolutionary Biology, Univ. of Tennessee

Course Summary and Structure:

It has long been known that fungal communities and the ecological systems they support are highly complex. However, we as microbiologists and ecologists, have often not had adequate tools to catalog let alone understand the functions of such complexity satisfactorily. Some would argue that the intersections of modern ecological methods, systems biology approaches, and DNA sequencing technological advances are rapidly changing this reality. In this course we will explore recent literature in this area attempting to exemplify this inherently interdisciplinary approach. Weekly papers will usually consist of a short review/concept paper, and one or two supporting and/or contrasting research papers.

Week 1 Readings (Schadt will lead discussion):

Biogeography of Soil Fungi

Bahram, Mohammad et al. "Local-scale biogeography and spatiotemporal variability in communities of mycorrhizal fungi" *New Phytologist* (2014) DOI: 10.1111/nph.13206

Talbot, Jennifer M., et al. "Endemism and functional convergence across the North American soil mycobiome." *Proceedings of the National Academy of Sciences* 111.17 (2014): 6341-6346.

Tedersoo, Leho, et al. "Global diversity and geography of soil fungi." *Science* 346.6213 (2014): 1256688.

Week 2 Readings (Matheny will lead discussion):

The Brown Rot/White Rot Dichotomy

Peay, Kabir. "Back to the future: natural history and the way forward in modern fungal ecology." *Fungal Ecology* 12: 4-9 (2014).

Riley, Robert, et al. "Extensive sampling of basidiomycete genomes demonstrates inadequacy of the white-rot/brown-rot paradigm for wood decay fungi." *Proceedings of the National Academy of Sciences* 111.27 (2014): 9923-9928.

Floudas, Dimitrios, et al. "The Paleozoic origin of enzymatic lignin decomposition reconstructed from 31 fungal genomes." *Science* 336: 1715-1719 (2012)

Weeks 3 through end of term: Students choose topics and papers with approval of instructors and lead discussions on those papers. A possible topic/paper list as suggestions will be provided if necessary.