

# Plant Pathology Seminar Series

## “Switches between parasitic and endophytic lifestyles in fungi and bacteria: causes and effects”

By: Qing Bai



The lifestyles of fungi and bacteria can be mutualistic, commensal, parasitic, and endophytic<sup>1</sup>. The endophytic lifestyle may not be stable due to possible switches among mutualism, commensalism, and parasitism<sup>2,3</sup>. A switch represents a balanced or unbalanced stage of interaction between a plant and a microbe. The balanced status of the interaction will result in commensal or mutualistic lifestyle<sup>2</sup>. However, when the balance is interrupted by the imbalance in nutrient exchange, various chemical and physical stresses from the environment, and host-specificity, there may be a lifestyle shift between mutualism, commensalism and parasitism<sup>2,3,4</sup>.

What factors affect switches between parasitic and endophytic lifestyles? Several studies have described that host range, host specificity, tissue specificity, nutrient imbalance, host and invader genotypes, age of the foliage, and mode of transmission are all possible causes triggering fungi or bacteria to change lifestyles<sup>1,5,6</sup>. Furthermore, the mechanisms behind this phenomenon have been intensively studied, such as the imbalance in nutrient exchange, effects from hyperparasitic organisms, genetic control by specific loci, and genome changes<sup>4,6,7,8</sup>.

As examples, I will present two recent studies on switches between parasitic and endophytic lifestyles. The first study was about a mycovirus converting a parasitic fungus to endophytic, which could be used as a biocontrol strategy<sup>8</sup>. The second study was on the molecular causes for an evolutionary shift of a bacterium from a mutualist to a parasite<sup>4</sup>. By understanding the causes and outcomes of lifestyle switches in fungi and bacteria, better management strategies could be developed to reduce damages by certain plant pathogens, such as inducing a parasite to switch to an endophyte.

4:10 pm | November 2<sup>nd</sup>, 2020 | Plant Pathology 515, Fall 2020

Zoom Link and ID: <https://wsu.zoom.us/j/91621814000?pwd=MDVOY1prSOQybDRaMXNvTVNxTS82UT09>

Meeting ID: 916 2181 4000 Passcode: 5353 Call in number: 1 253 215 8782



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