

**New England Botanical Society
Graduate Student Research Award
2024 AWARD WINNER**

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“Metabolomics and comparative transcriptomics to understand the evolution of the nematode-paralyzing neurotoxin in the invasive fungus *Pleurotus citrinopileatus* Singer”

Invasive species are one of the major threats to the ecosystem as well as the global economy. So far, much attention has been given to invasive animals and plants. Fungal invasion biology is an emerging field, and the effect of invasive fungi on the ecosystem and economy is largely unknown. *Pleurotus citrinopileatus* Singer is a wood-decaying saprotroph that was introduced to North America from East Asia and has become invasive. It has the potential to out-compete native *Pleurotus* species and alter the nematode community present in wood. *Pleurotus citrinopileatus* and other members of the genus *Pleurotus* are known to trap and consume nematodes. The mycelium of *P. citrinopileatus* produces a toxin droplet, which paralyzes the nematode upon contact. The identity of metabolites in the toxin droplet and their genetic mechanism of biosynthesis remains questionable. I will use metabolomics and comparative transcriptomics to understand the chemical identity of the neurotoxin and its biosynthetic pathway. Understanding the chemical nature of the toxin, other metabolites, and the genetic mechanism that underly this process will help to complete the puzzle and could potentially provide the basis for the development of new anti-helminthic drugs for controlling plant and animal parasitic nematodes.

The New England Botanical Society offers awards of up to \$3,000 to graduate students to support botanical research. The awards encourage and support botanical research on the New England flora (plants, algae, and fungi), including support for field, lab, and herbarium work, as well as travel to and within New England by those who would not otherwise be able to work in the region. The awards are made to the graduate student(s) submitting the best research proposal dealing with systematic botany, plant ecology, genetics, plant conservation biology, or related fields pertaining to the New England flora.