Analyzing the Degradation of Fipronil Insecticide via *Trametes versicolor*

**Research Team Members**

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**Research Question**

Can the degrading properties of white rot fungi be used to treat urban stormwater contaminants?

**Summer Objectives**

- Understand which enzyme systems in *T. versicolor* are utilized for fipronil degradation.
- Determine the ability of *T. versicolor* mycelium to grow and thrive in different controlled environments (e.g. sterile woodchips, non-sterile woodchips, synthetic stormwater).
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**Major Outcomes**

- The solubility of fipronil in water and aqueous solutions is lower than originally anticipated; concentrations need to be reduced in future studies to create less variable results and to better replicate real environmental conditions.
- P450 enzyme complexes (intracellular) may be vital in oxidizing fipronil into fipronil-sulfone.
- *T. versicolor* thrives best in sterile environments with substantial nutrients available.
- Fipronil sorption onto biomass and other organic media should be studied and well-characterized before transitioning to large-scale studies and field applications.

**Conclusions**

- Fipronil Degradation in Enzyme Study
- Fipronil-Sulfone Formed by Uninhibited *T. versicolor* After Three Days of Incubation with Fipronil

*T. versicolor* incubated in sterile woodchip-stormwater matrix after seven days. Familiar fungi spheres have formed onto woodchips, in addition to long, wormlike structures indicating healthy growth.