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Comparing fungal communities in *Tsuga heterophylla* seedling roots across nurse log decay stages and the forest floor

Reisha Foertsch*, Ellie Olpin*, & Dr. Carrie Woods

**Introduction**

- **Nurse logs** (NLs): fallen decaying trees
- Seedlings succeed better on nurse logs than the forest floor (FF)
- Plant-fungi interactions could influence this pattern across NL decay
- **Mycorrhizal fungi** form a symbiotic relationship with roots and facilitate growth
- **Pathogenic fungi** negatively impact seedling health
- **Saprotrophic fungi** decay wood

**Research Questions**

How do fungal communities in seedling roots change between nurse logs and forest floor?

How do fungal communities in seedling roots change across different stages of nurse log decomposition?

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**Methods**

- Western hemlock (*Tsuga heterophylla*) seedlings (5-10 cm) collected from NLs of each decay stage and FF at three field sites: Upper Hoh, Lower Hoh, and Hot Springs (see map)
- Measured canopy cover, distance to and diameter of parent tree, and bryophyte substrate

**Results**

- Percent mycorrhizal (p = 0.39, n = 259) and pathogenic (p = 0.85, n = 45) OTUs did not significantly differ across substrates.

**Discussion and Future Directions**

- No significant trend emerged across substrates for mycorrhizal and pathogenic OTUs
  - Future analyses and further literature search may reveal a pattern
  - *T. heterophylla*-specific symbionts
  - Incorporate distance to parent tree data
- Staining procedure will be used to determine percent mycorrhizal colonization

Fungal communities change across nurse log decay and the forest floor, which could influence patterns of seedling abundance across these substrates

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