ARC Centre of Excellence for Integrative Legume Research

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Roots & their Microbial Colonisers

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Soil Micro-organisms

• Plant roots encounter hundreds of micro-organisms in the soil
  – Bacteria
  – Fungi
  – Nematodes
• These microbes colonise the outside of plant roots
• Can be pathogenic or symbiotic
• Plant roots provide food for microbes
  – Dead roots and cells
  – Mucliage (sugars)
  – Exudates (organic acids, sugars and amino acids)
Pathogenic Microbes

- Attack plants
- Cause disease

*Arabidopsis* infected with *Fusarium oxysporum*

*Phytophthora* sporangia emerging from soybean roots
Symbiotic Microbes

• Some microbes benefit plants by providing important nutrients
• These are called symbionts
• They in turn survive better

Mycorrhiza in soybean roots

Bacteria living in nodules on soybean roots
Rhizobia

- Symbiotic bacteria
- Can be free living in the soil or living in legume root nodules
- Those living in nodules receive sugar from the plant and in return ‘fix’ nitrogen for the plant
CILR

- University of Queensland
- Australian National University
- University of Melbourne
- University of Newcastle