



**RUTGERS**

UNIVERSITY | NEW BRUNSWICK

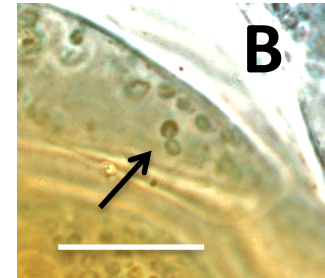
James White Laboratory

## Plant Cell Entry Zone

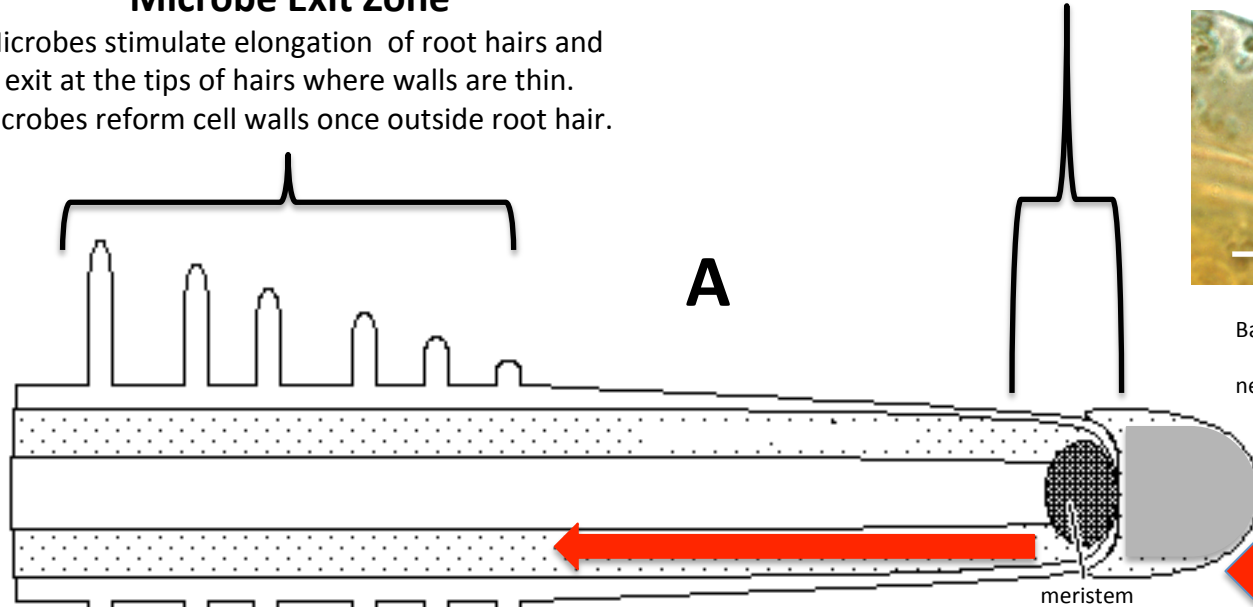
Microbes become intracellular in meristem cells as wall-less protoplasts.

## Microbe Exit Zone

Microbes stimulate elongation of root hairs and exit at the tips of hairs where walls are thin. Microbes reform cell walls once outside root hair.



Bacteria (arrow) in root parenchyma cell near root tip meristem.



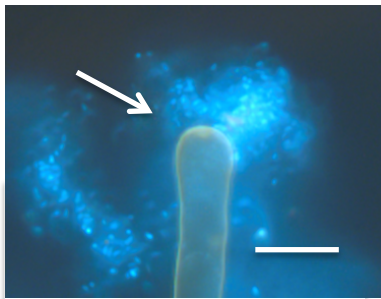
Nutrients Extracted from Microbes  
By Reactive Oxygen Produced by  
NOX on Root Cell Plasma  
Membranes

## RHIZOPHAGY CYCLE

Microbes Enter Root  
Cell Periplasmic  
Spaces Carrying  
Nutrients  
From Soil

Microbes Recharge with Nutrients  
in the Rhizosphere

Microbes Exit Root  
Hairs Exhausted of  
Nutrients



Bacteria (arrow) emerging from root hair tip of millet seedling.