Biochar stimulates tomato roots to recruit a bacterial assemblage contributing to disease resistance against Fusarium wilt

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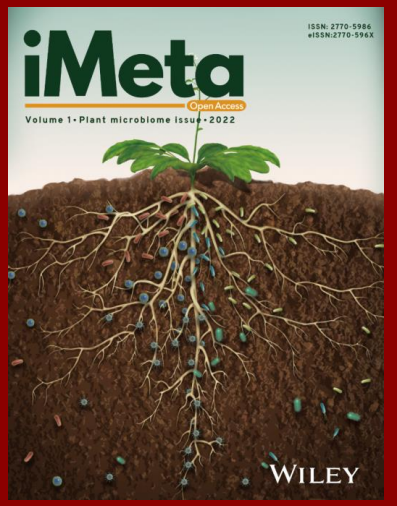

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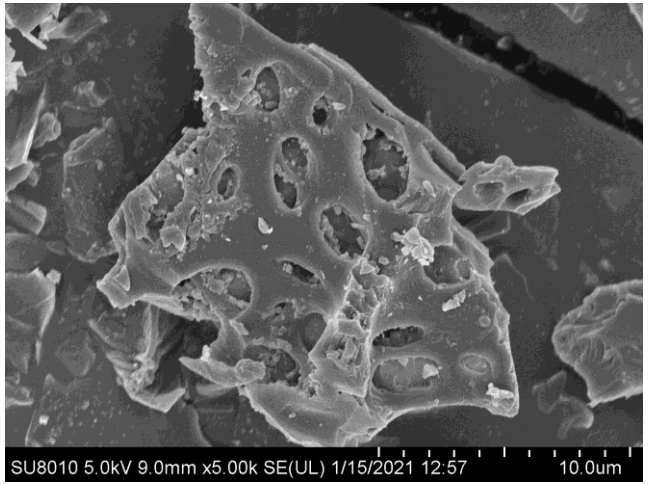
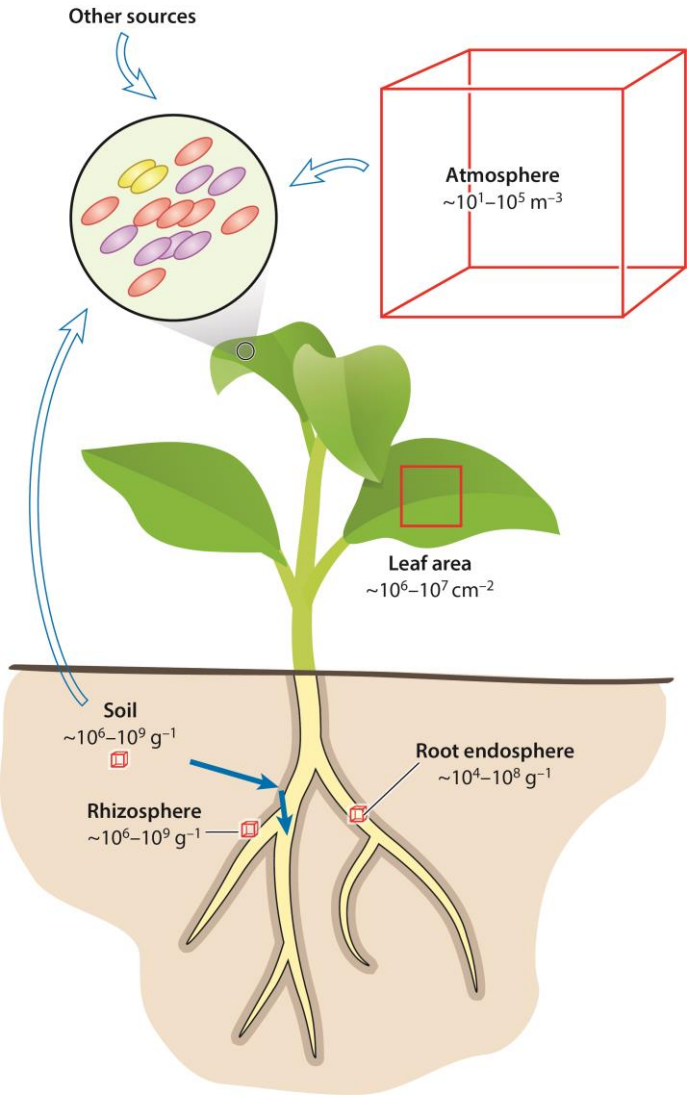
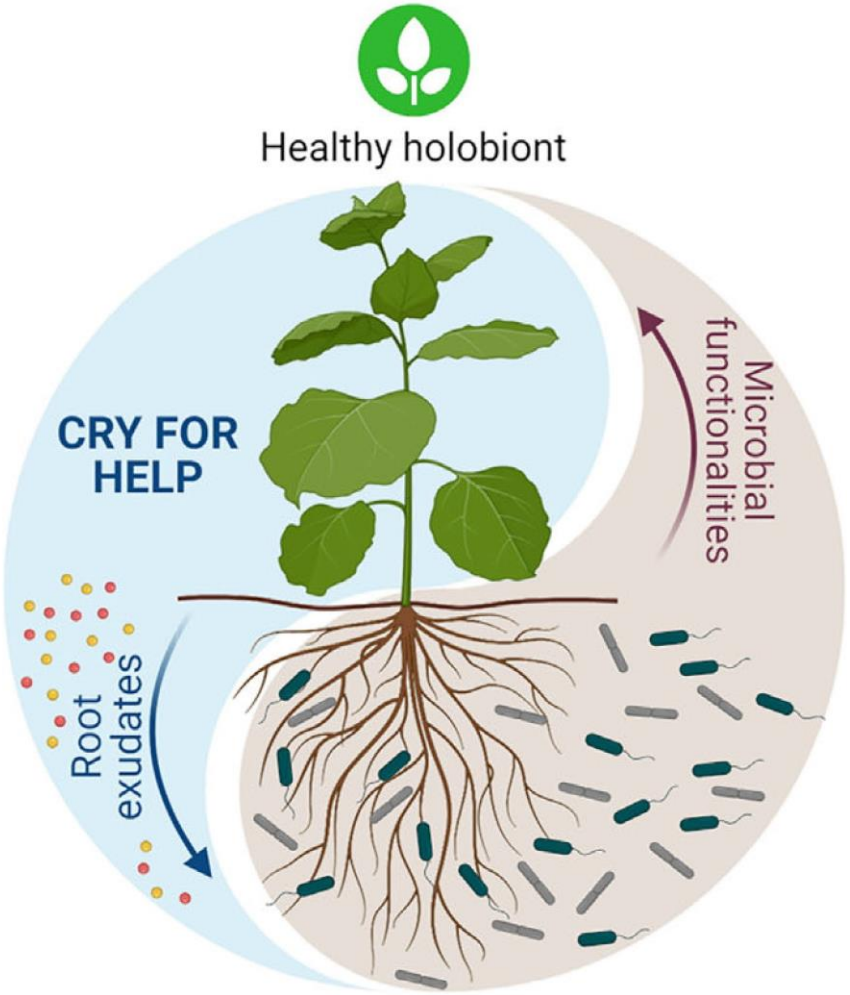
Introduction





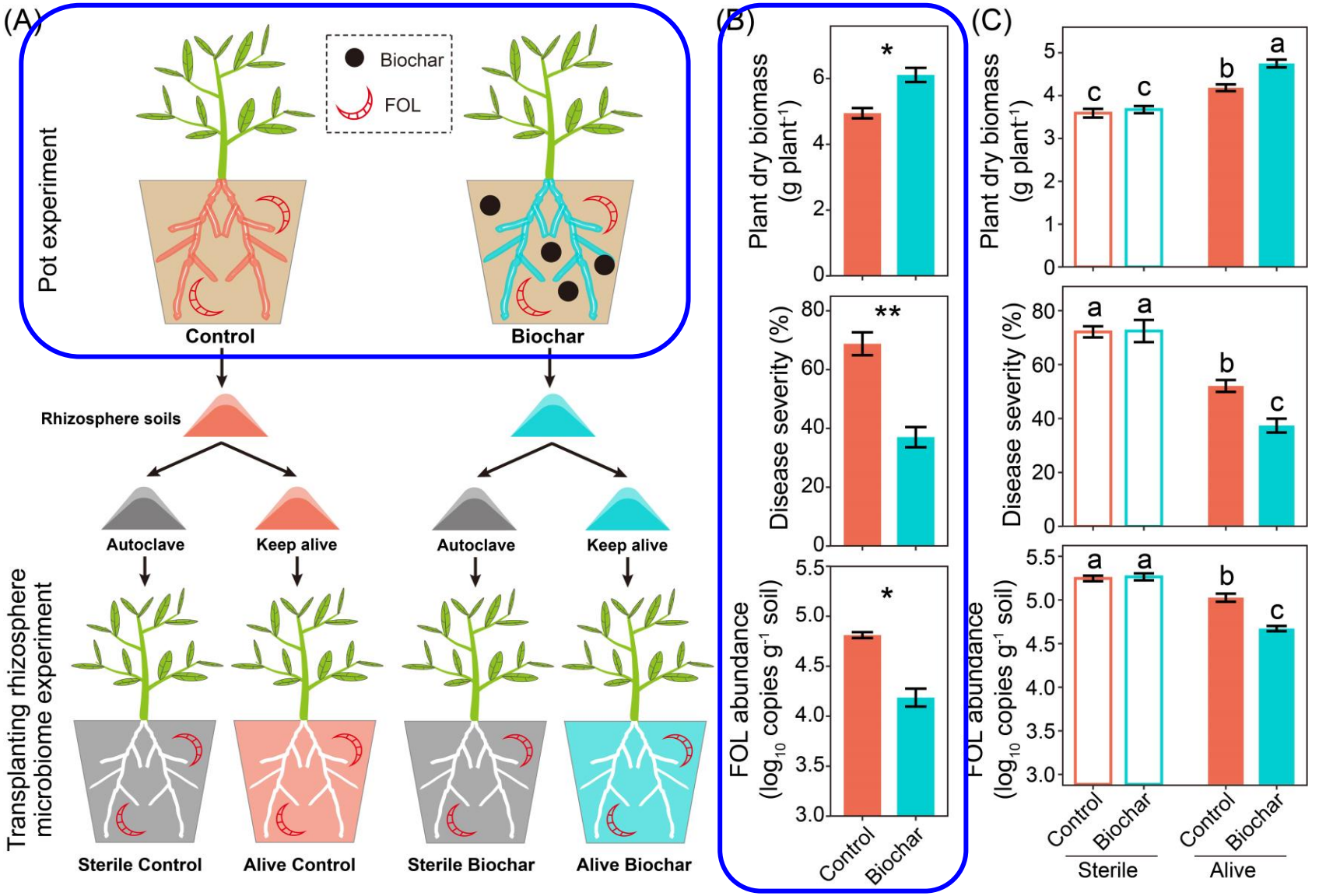
Bulgarelli et al, Annu. Rev. Plant Biol. 2013.



Rolli et al, Environ. Microbiol. 2021.

Results

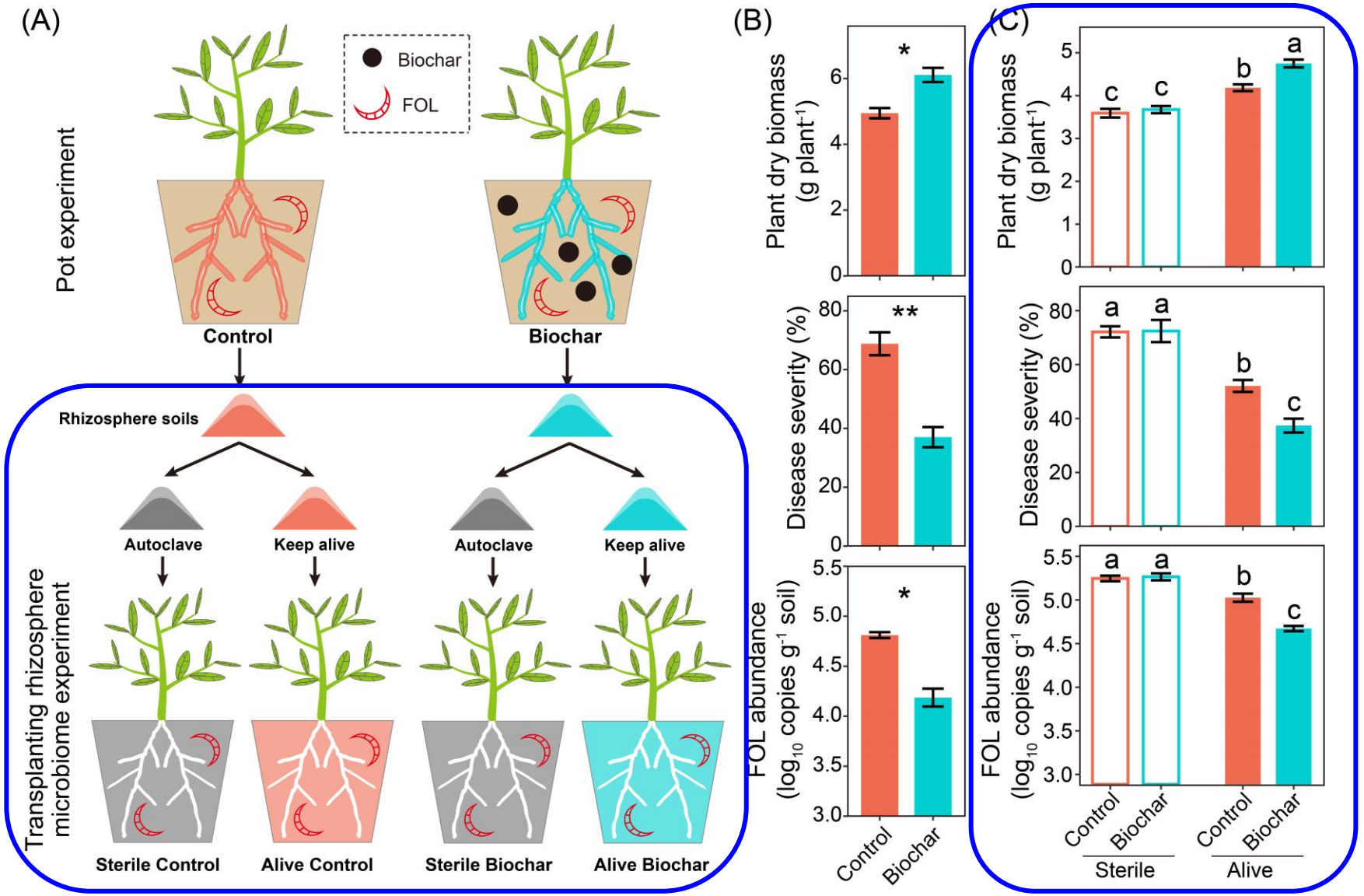
Biochar amendment enhanced tomato seedling performance



The biochar treatment decreased tomato Fusarium wilt disease index and FOL abundance in tomato rhizosphere as compared with the nonamended control.

Results

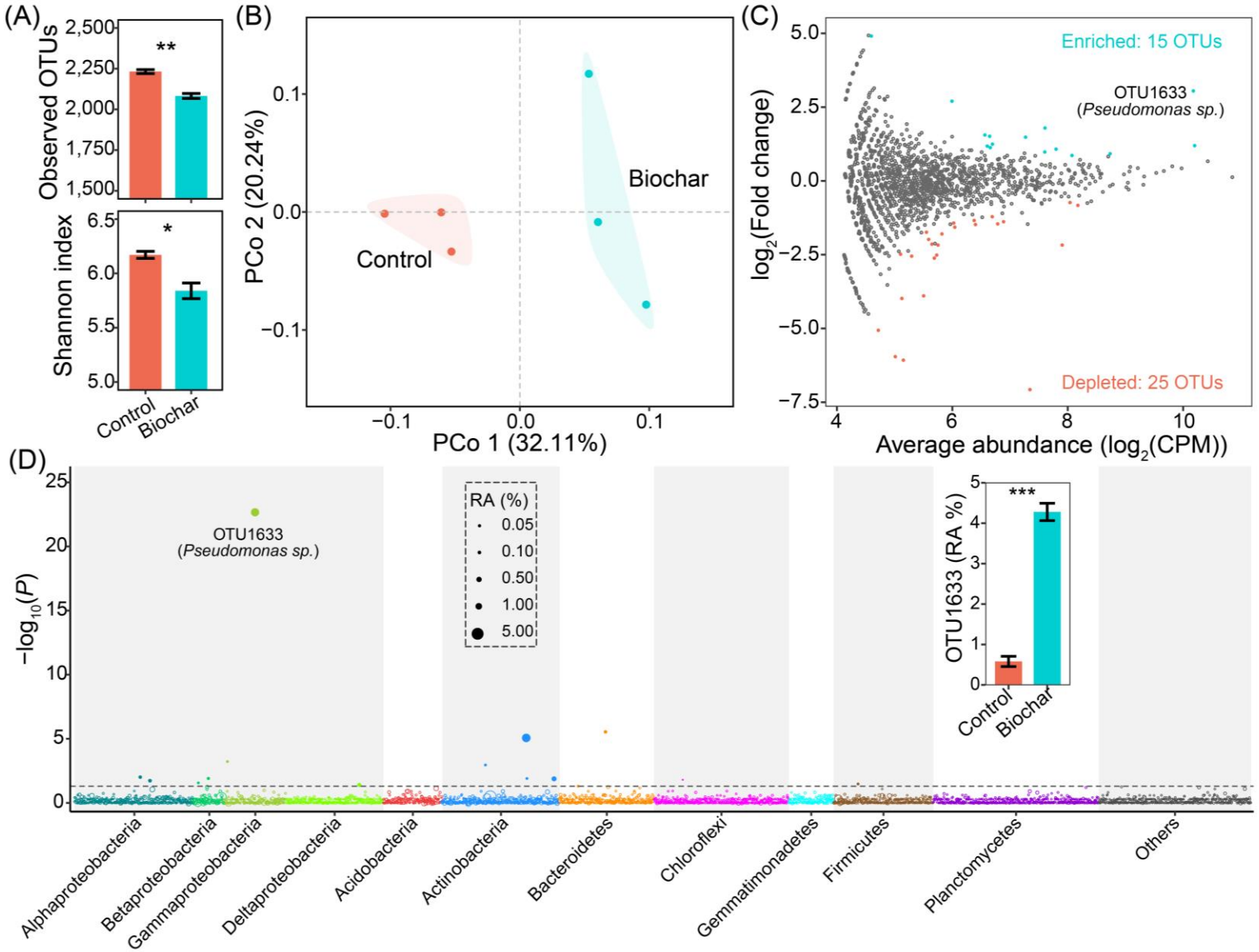
Rhizosphere microbiome contributed to the enhanced resistance against Fusarium wilt disease



Transplanting rhizosphere microbiome experiment

Results

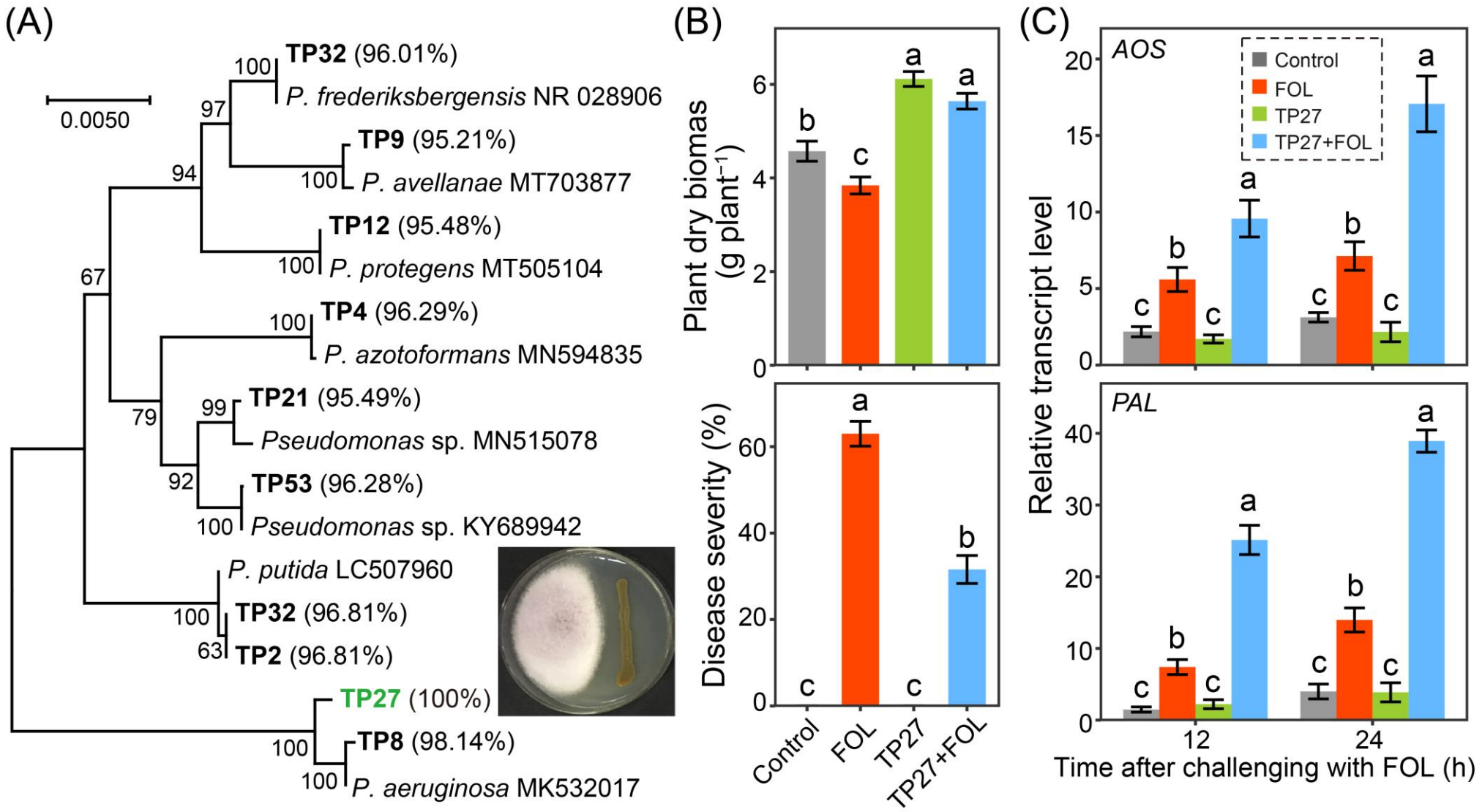
Biochar altered tomato rhizosphere bacterial diversity and community composition



Biochar amendment stimulated the OTU1633, belonging to *Pseudomonas* sp.

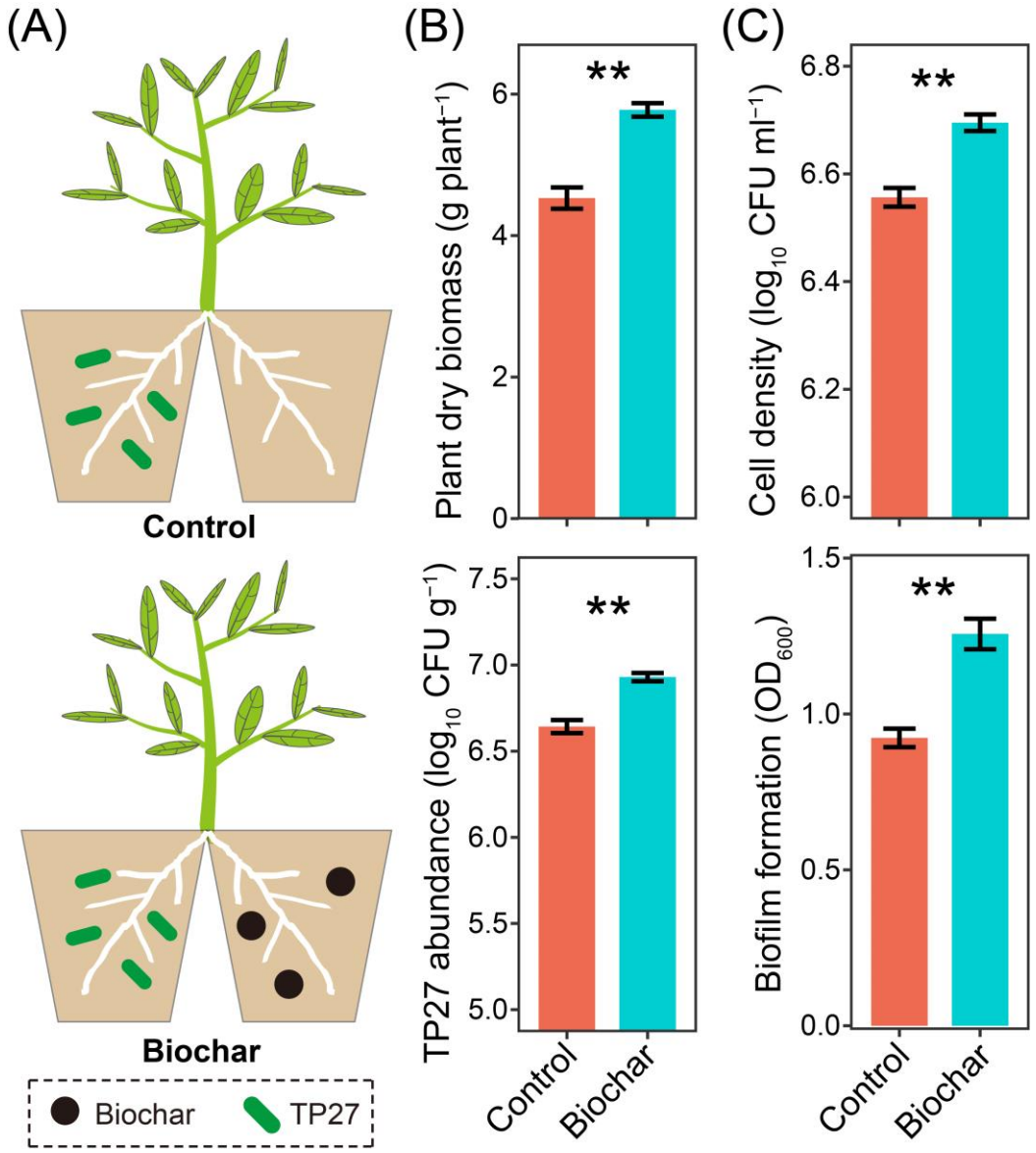
Results

Isolated *Pseudomonas* sp. suppressed tomato *Fusarium* wilt disease



Results

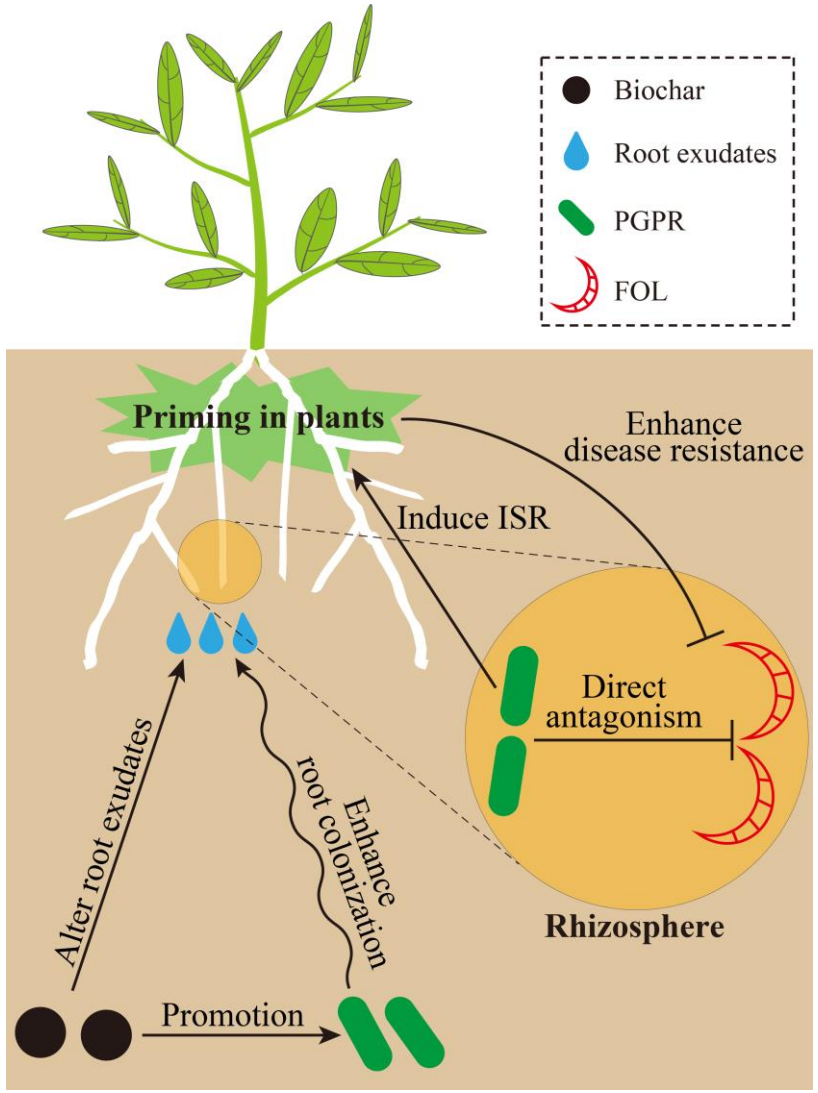
Biochar stimulated the colonization of *Pseudomonas* sp. TP27 on tomato root



Split-root system experiment found that biochar amendment stimulated PGPR in tomato rhizosphere via the host plant.

Changes in root exudates were involved in the biochar-stimulated recruitment of PGPR in tomato rhizosphere.

Summary



Biochar enhances the disease suppressiveness of tomato rhizosphere microbiome.

Biochar stimulates tomato to actively recruit plant-beneficial bacterial taxa.

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