Macrophage-derived reactive oxygen species promote *Salmonella* aggresome formation contributing to bacterial antibiotic persistence

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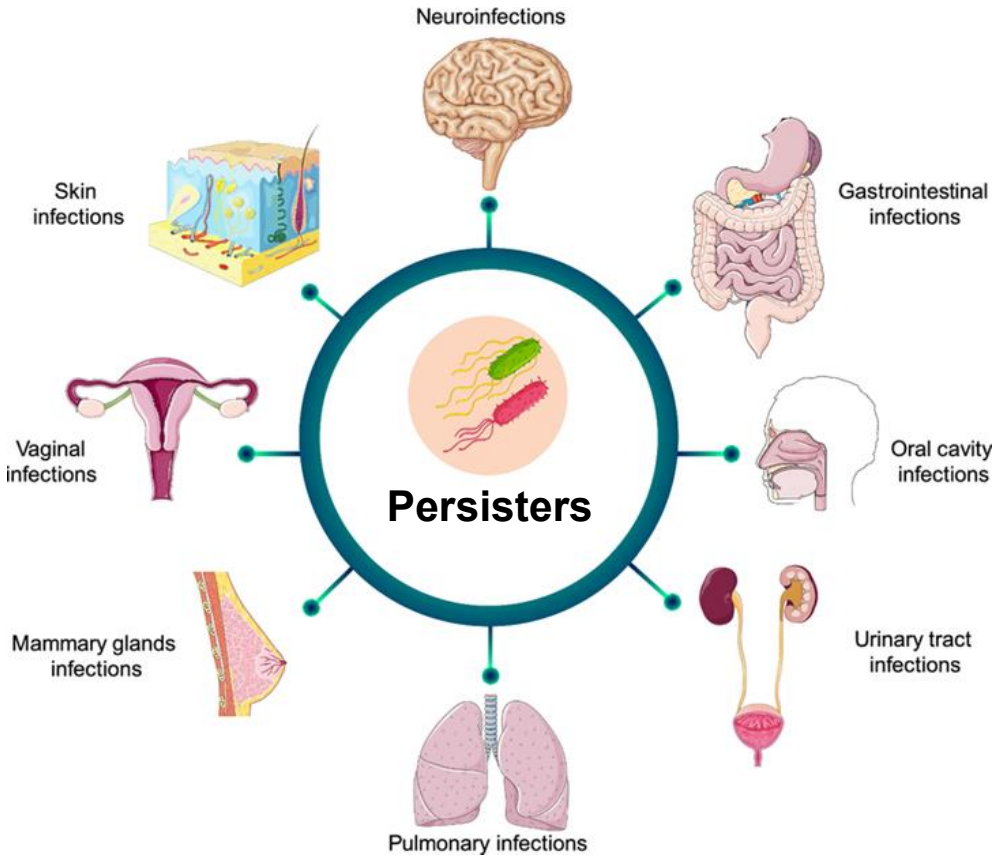
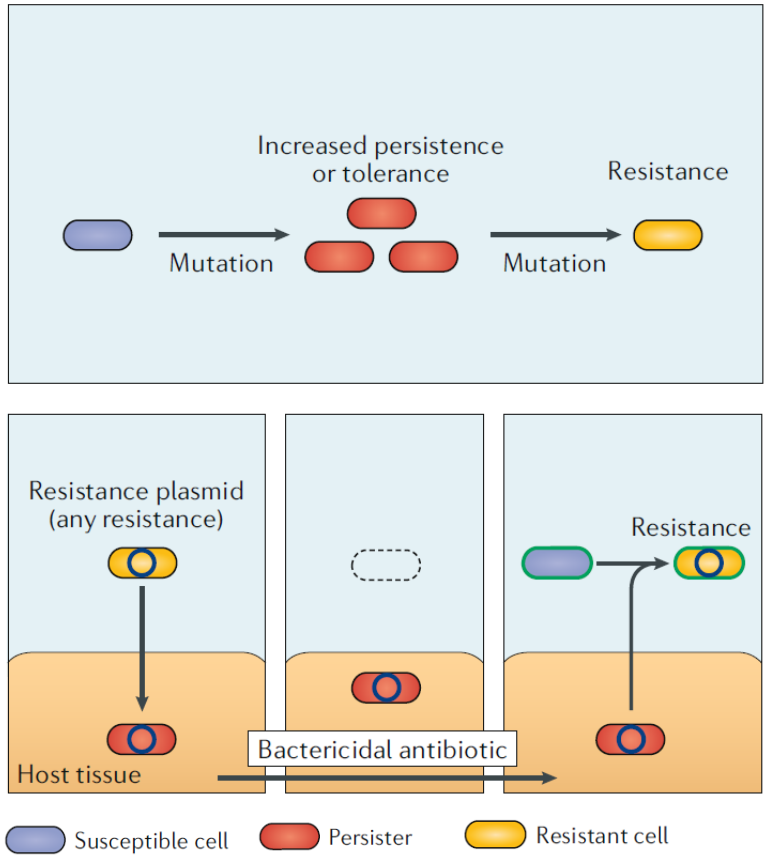
Introduction

The clinical impact of bacterial persisters



Causing chronic and recurrent infections across multiple organs

Accelerating the evolution of antibiotic resistance



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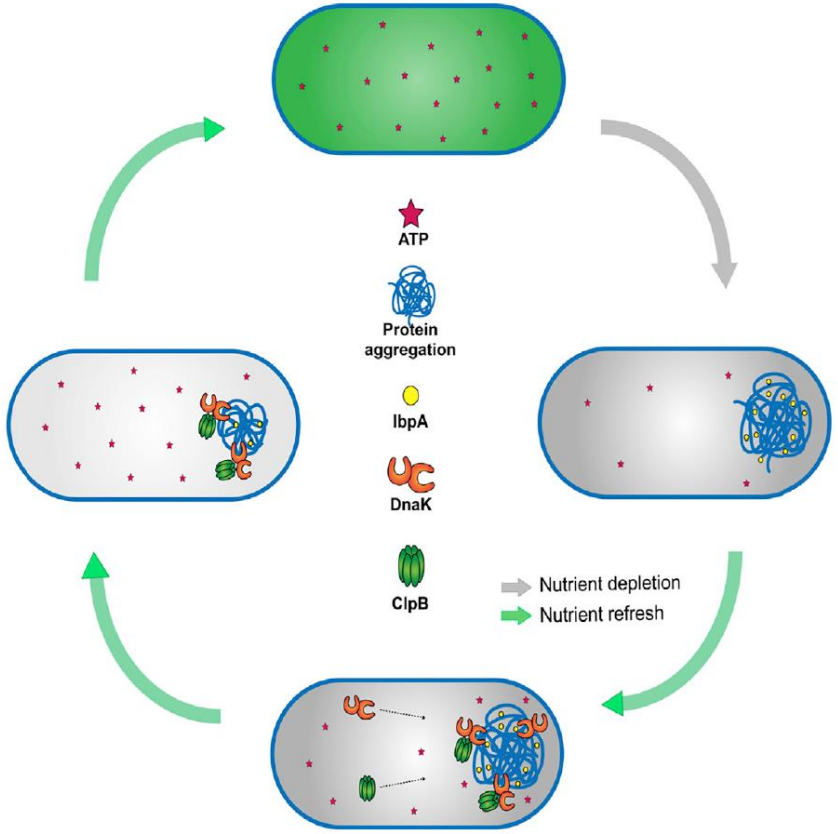
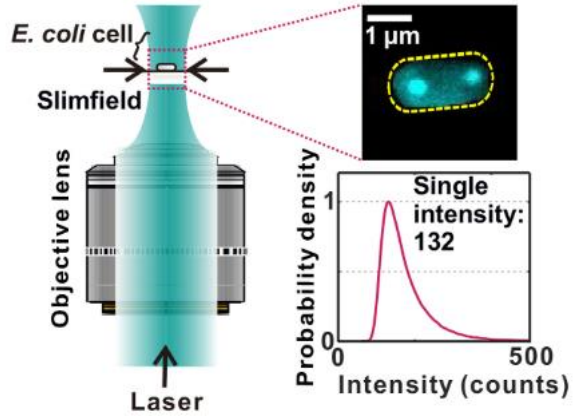
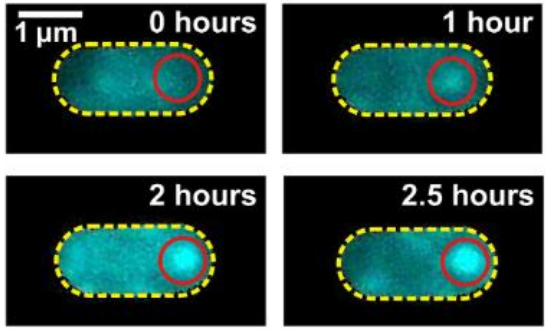
Introduction

Bacterial Aggresomes and persisters



- ATP depletion promotes the formation of bacterial aggresomes.
- Bacterial aggresomes indicate dormant depth.
- Bacteria forming aggresomes become persisters.
- The disaggregation of aggresomes triggers bacterial resuscitation.





- The formation of bacterial aggresomes is driven by liquid-liquid phase separation.

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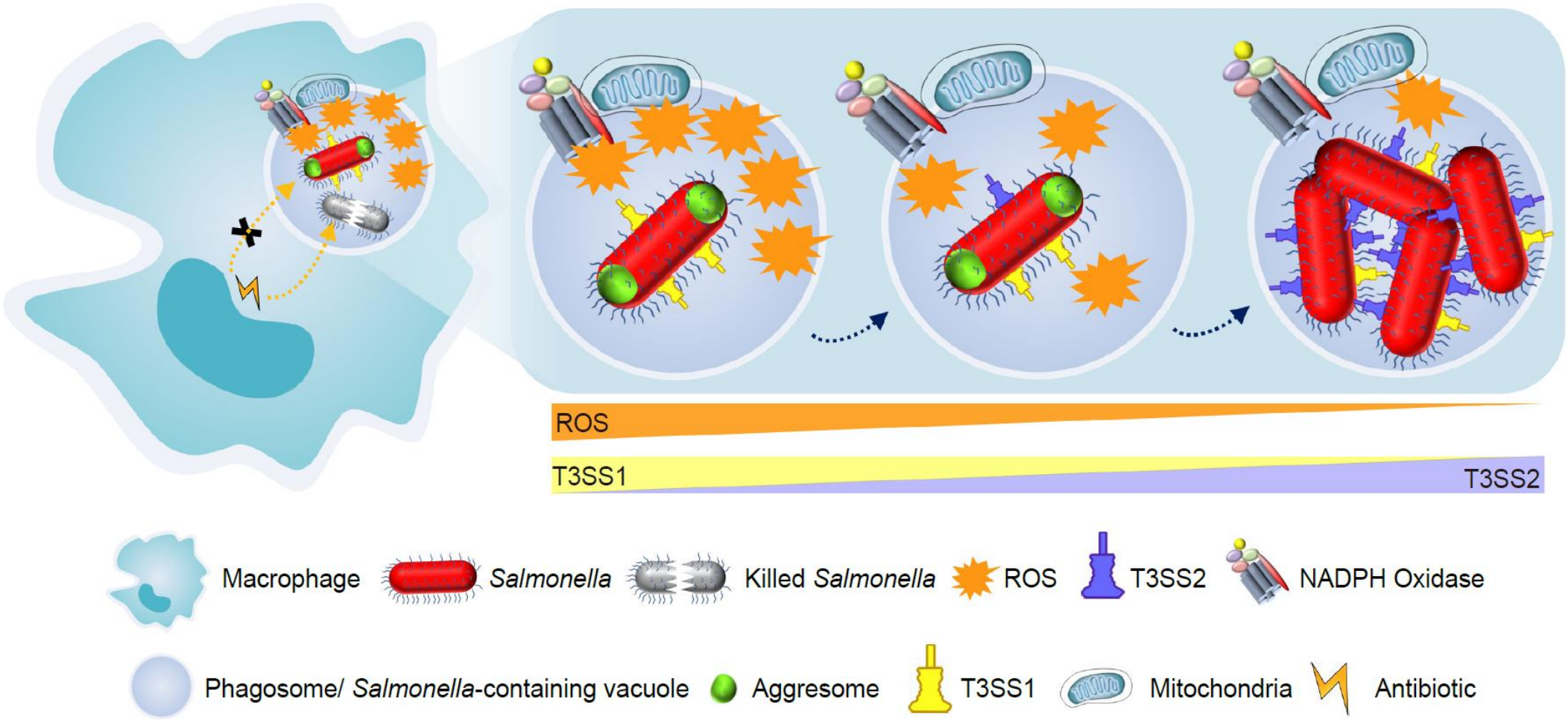
Highlights



- *Salmonella* aggresomes form rapidly following phagocytosis by macrophages.
- *Salmonella* aggresomes contribute to bacterial antibiotic persistence.
- ROS decrease facilitates SPI-2 T3SS expression and bacterial resuscitation.

Salmonella aggresomes form rapidly following phagocytosis by macrophages

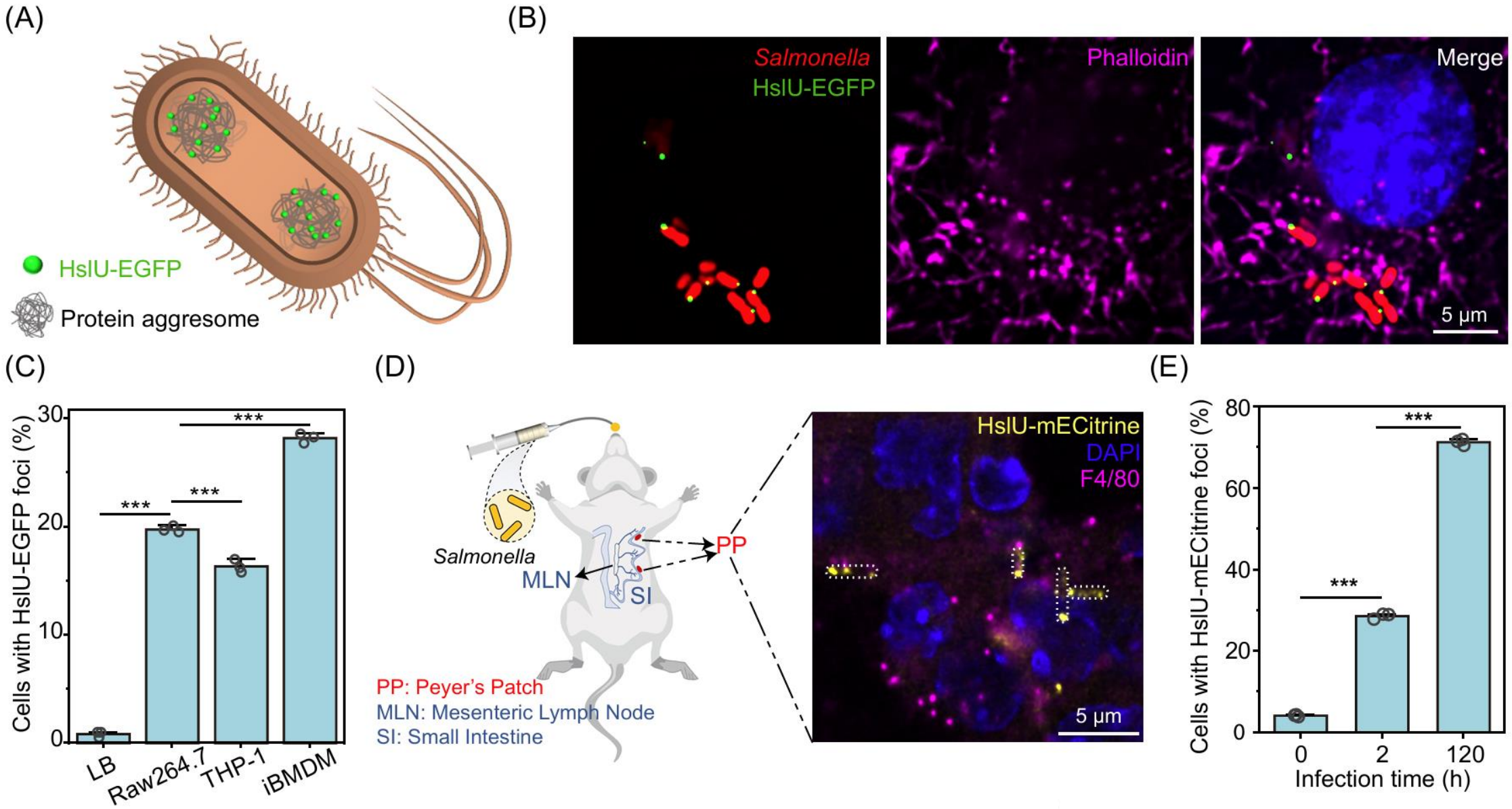


Fig. 1 The presence of *Salmonella* aggresomes within macrophages

Macrophage-derived ROS induces the formation of *Salmonella* aggresomes

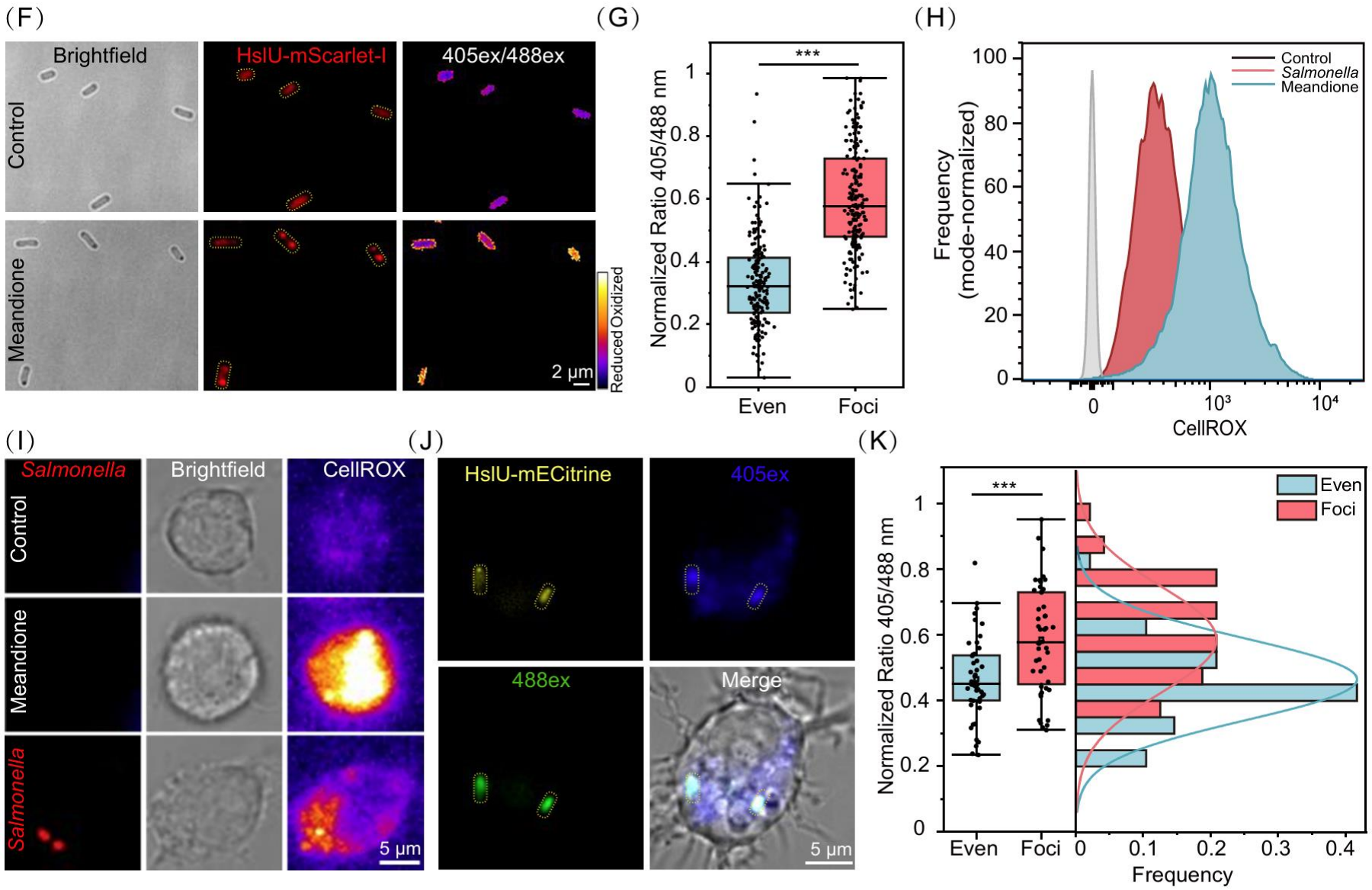


Fig. 1 The presence of *Salmonella* aggresomes within macrophages

Salmonella aggresomes contribute to macrophage-induced bacterial antibiotic persistence

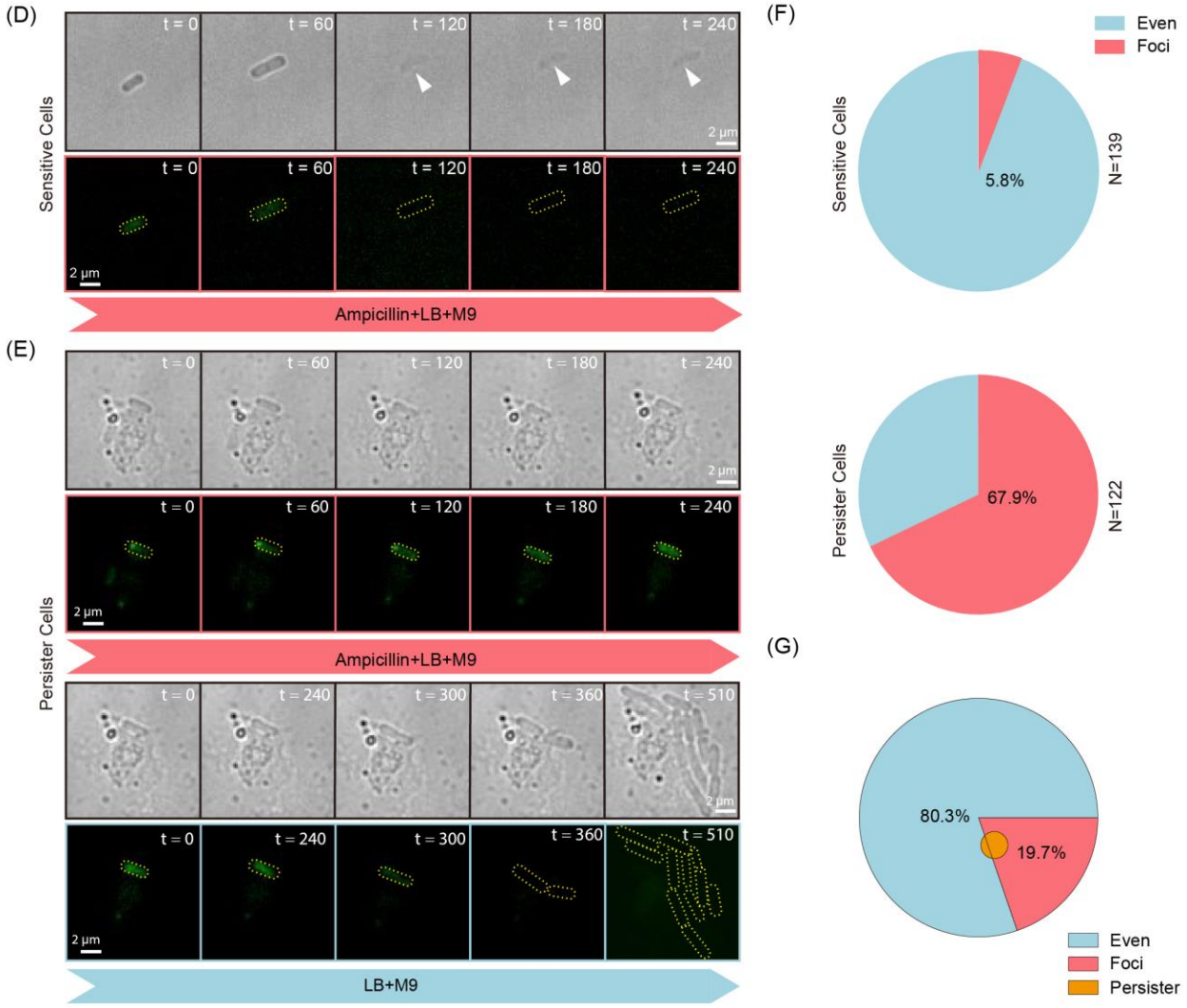


Fig. 2 Protein aggresomes within *Salmonella* contribute to macrophage-induced bacterial antibiotic persistence

Aggresomes induced by macrophage phagocytosis facilitate bacterial cell dormancy

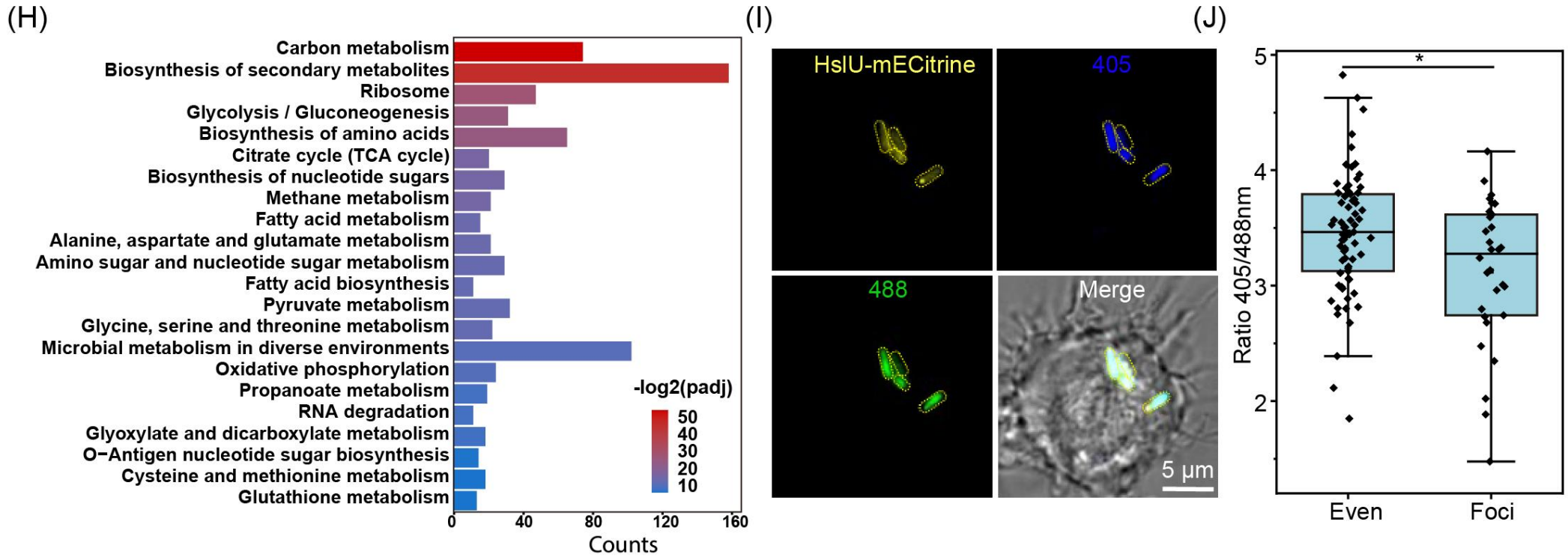


Fig. 2 Protein aggresomes within *Salmonella* contribute to macrophage-induced bacterial antibiotic persistence

Decreased ROS production by macrophages facilitates the expression of *Salmonella* SPI-2 effectors and regrowth

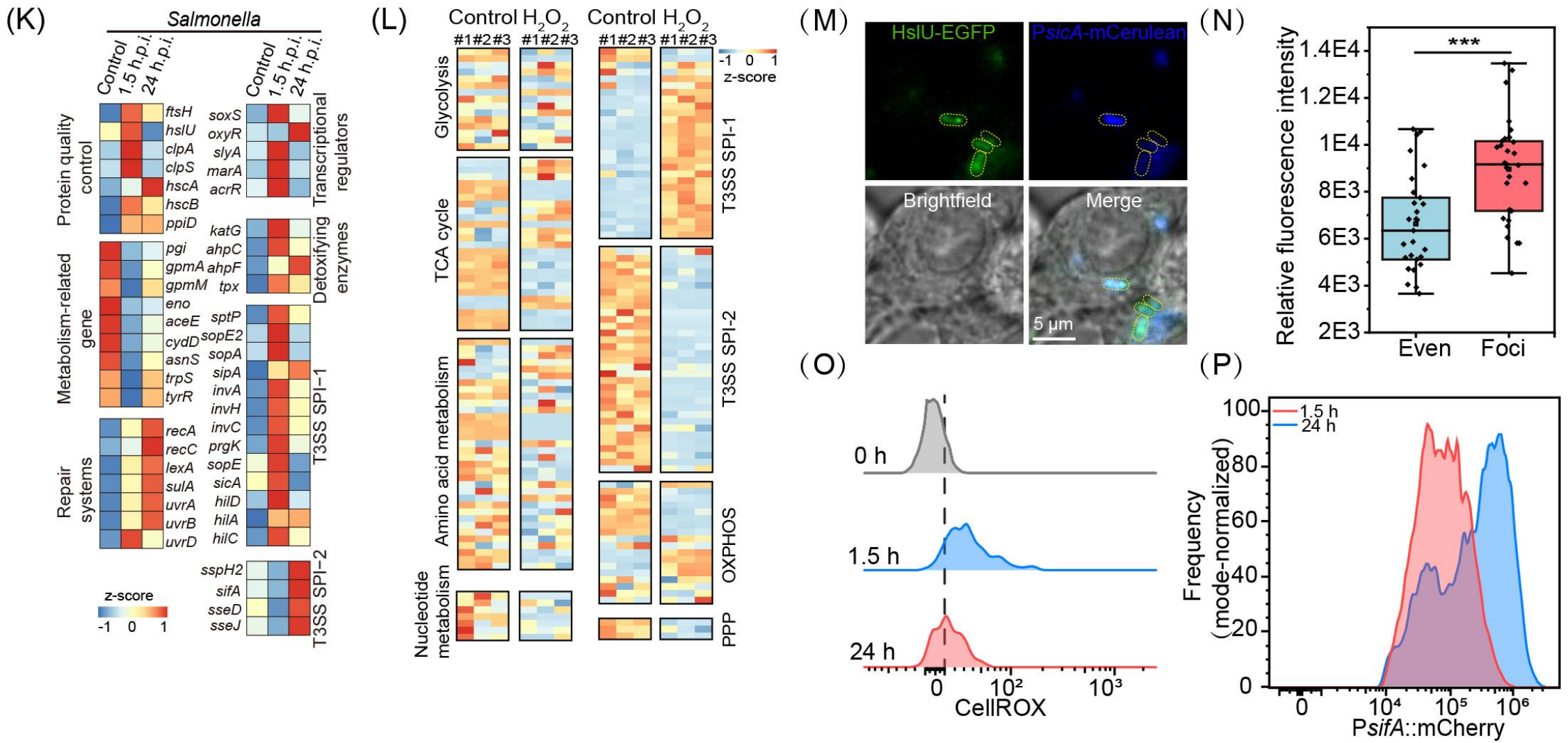


Fig. 2 Protein aggresomes within *Salmonella* contribute to macrophage-induced bacterial antibiotic persistence

Summary

- *Salmonella* aggresomes form rapidly following phagocytosis by macrophages.
- Macrophage-derived ROS induces the formation of *Salmonella* aggresomes.
- *Salmonella* aggresomes contribute to macrophage-induced bacterial antibiotic persistence.
- Aggresomes induced by macrophage phagocytosis facilitate bacterial cell dormancy.
- Intracellular *Salmonella* containing aggresomes exhibit a dormant but SPI-1 T3SS highly expressing phenotype.
- Decreased ROS production by macrophages facilitates the expression of *Salmonella* SPI-2 effectors and regrowth.

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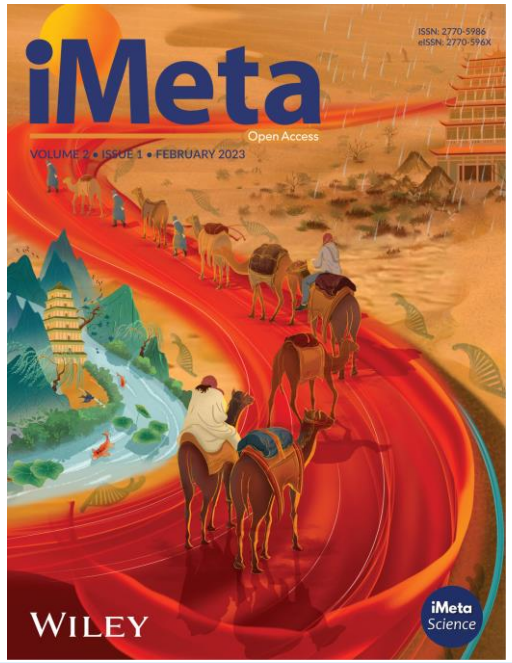

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