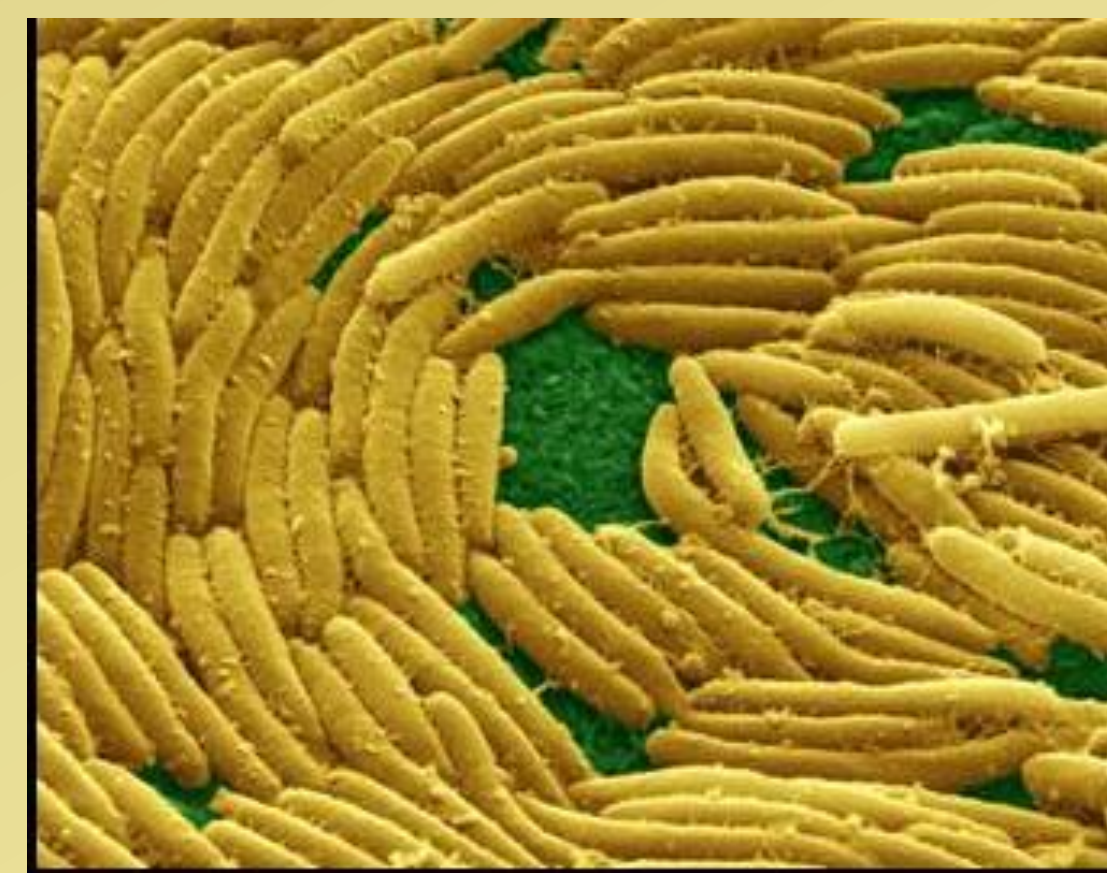
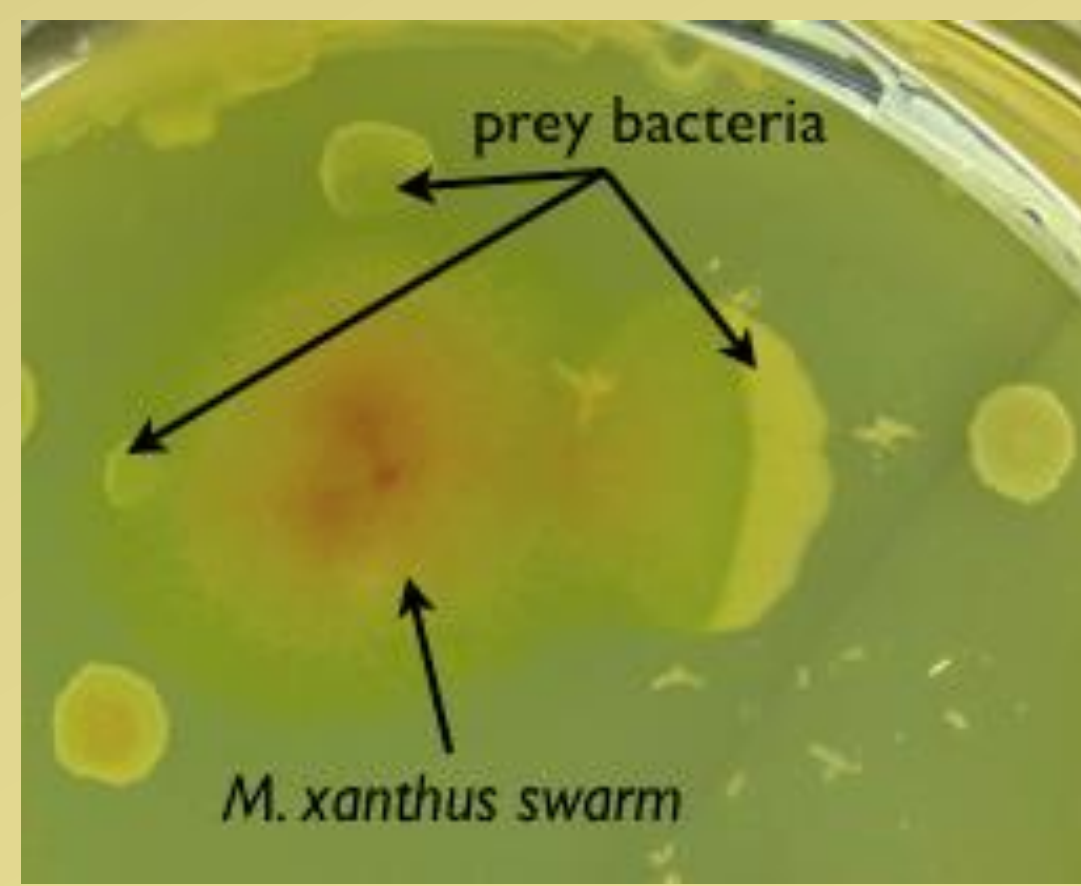


Abstract

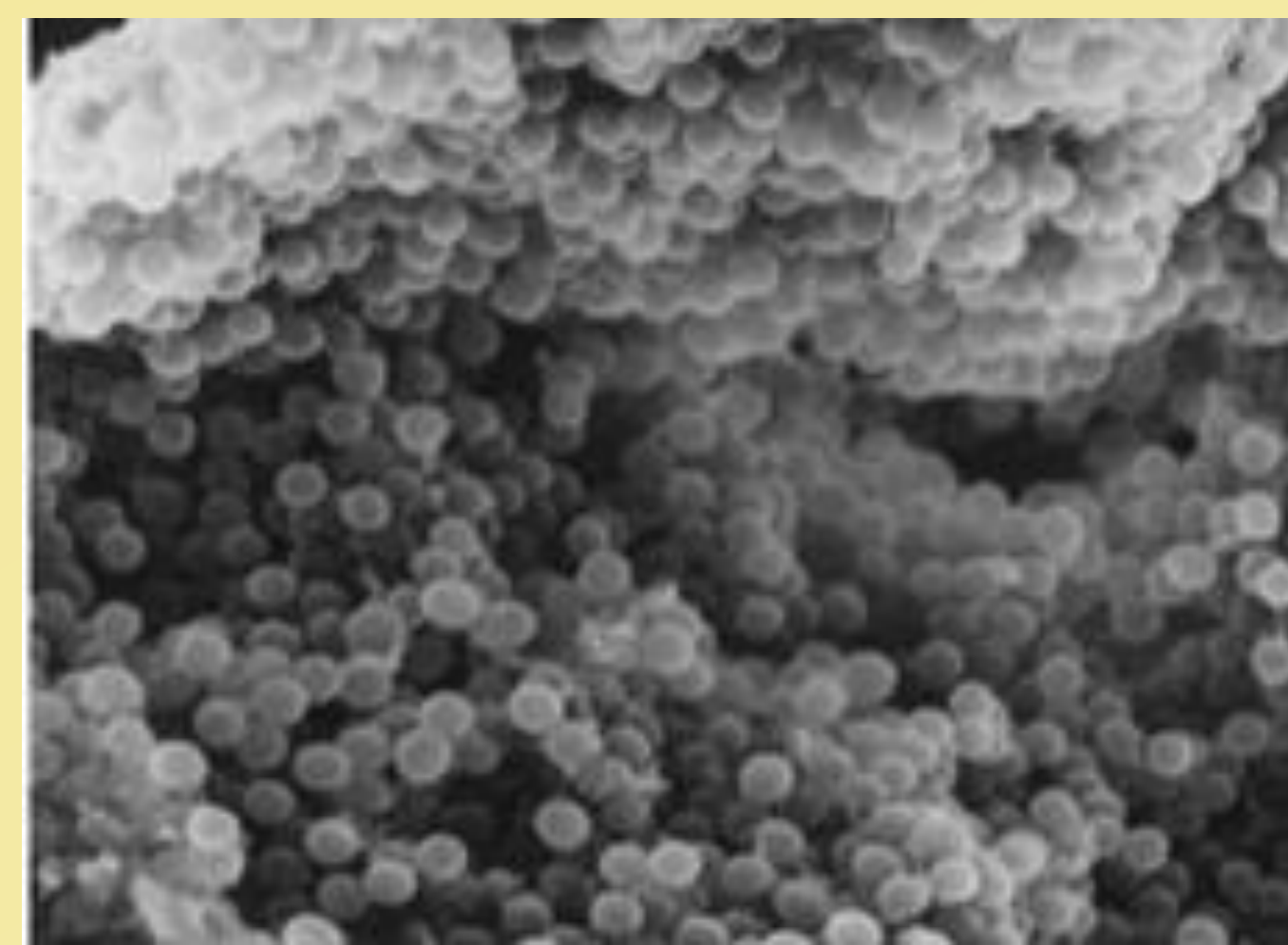
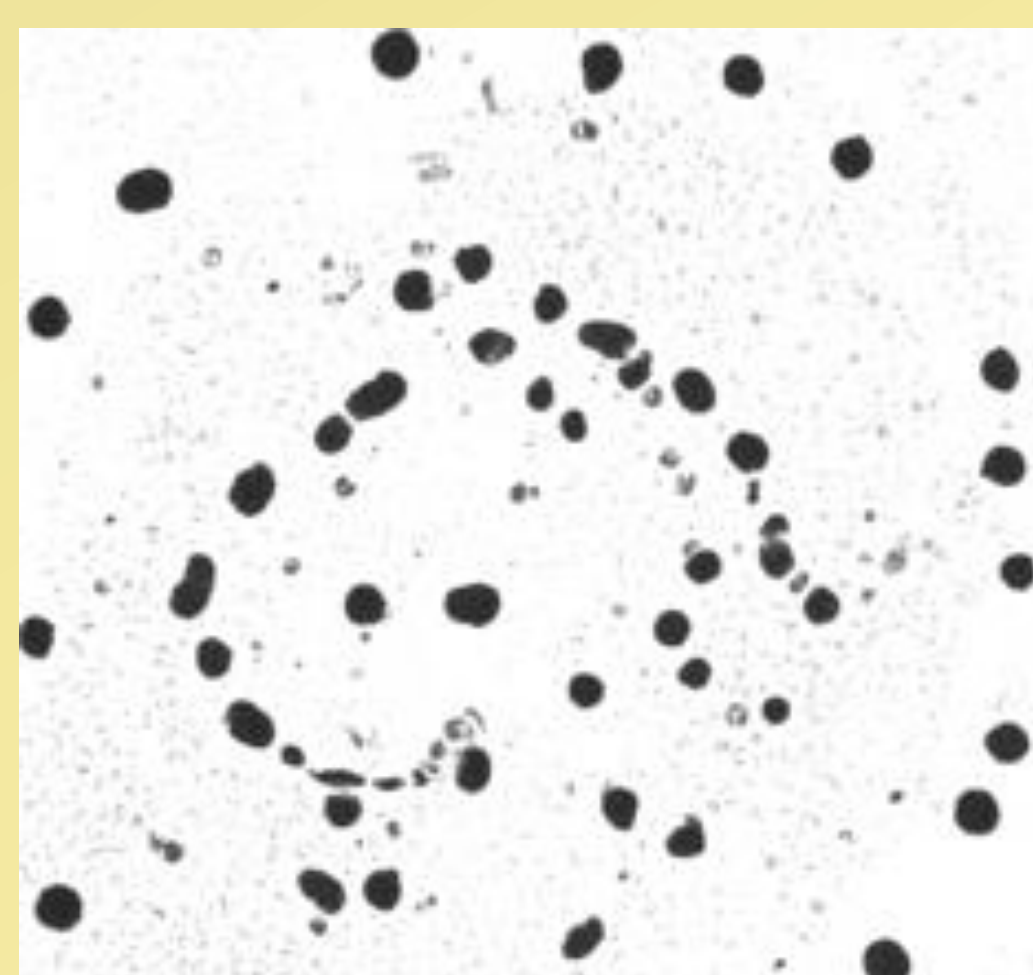
Fungicides are chemicals which exterminate fungi that are harmful to plants. At MNU, a fungus grows in the grass on the campus mall and is treated with fungicides to control its growth. These chemicals are potentially harmful to humans. A natural approach to reach this goal would be beneficial to the community because it would remove exposure to odorous, expensive, and possibly dangerous chemicals.

Research Questions: Can quiescent myxosporangia be produced on a large scale in order to be used as a natural, safe, and cost-effective fungicide?

Introduction

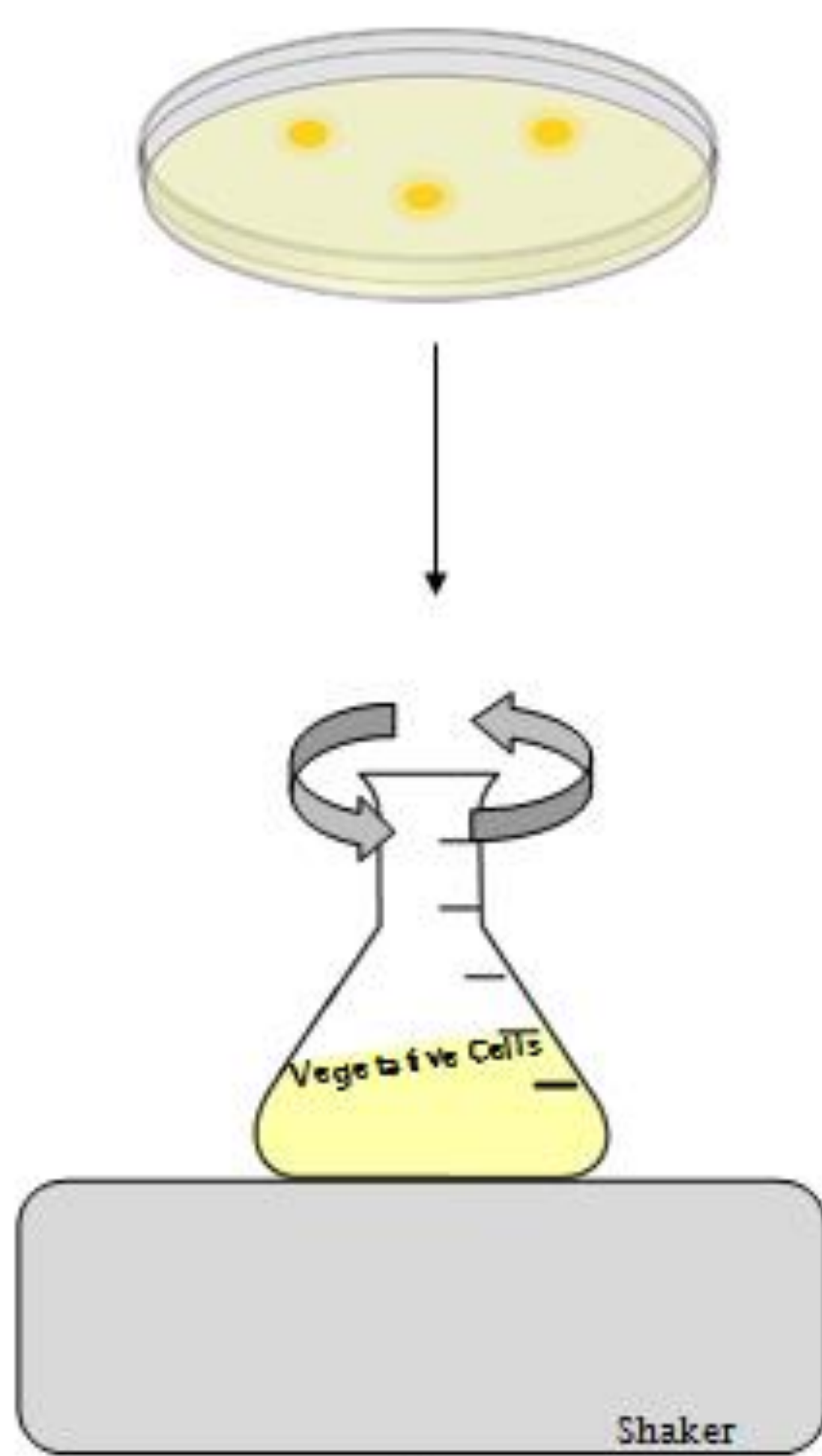


Vegetative, or actively growing, *Myxococcus xanthus* are harmless, naturally growing soil bacterium. They are predatory, meaning they consume other microorganisms for nutrients. They work as a team by hunting like a pack of wolves. Since *M. xanthus* ingest microorganisms, we hypothesize that *M. xanthus* colonies could naturally control the growth of fungi. These vegetative cells are always either growing or dying, which makes them unstable for storage and delivery onto the campus mall. The ability of *M. xanthus* to form metabolically inactive spores makes it possible to prepare and deliver a stable product.

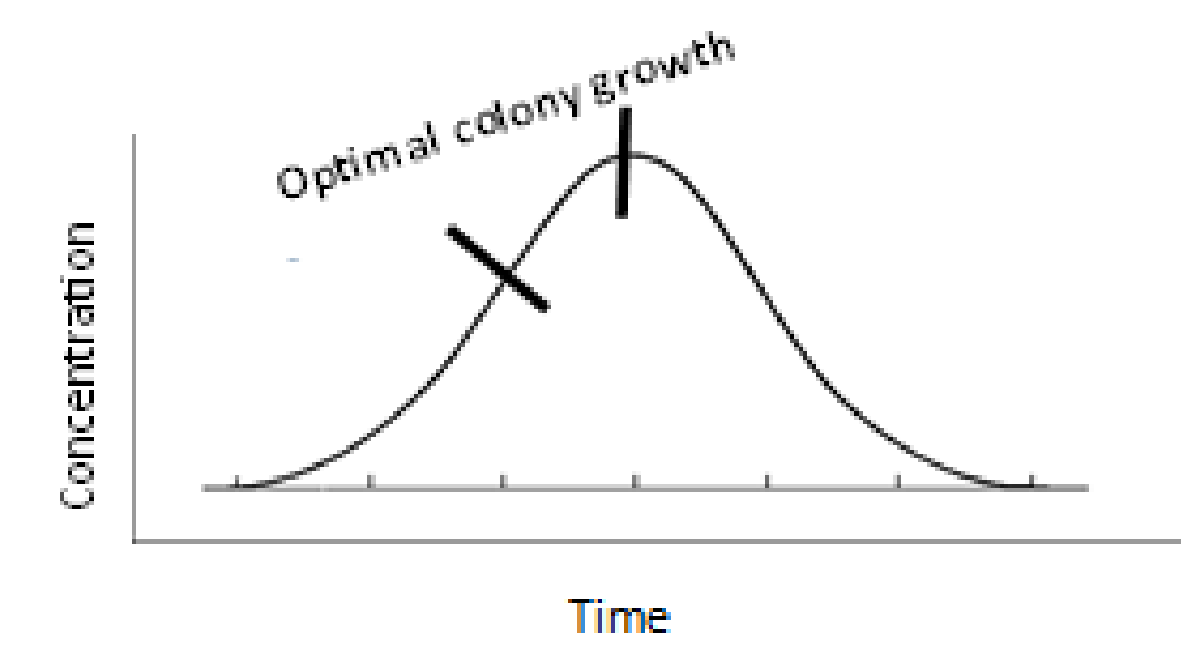


When starved, *M. xanthus* sporulates – transitions to a quiescent dormant state similar to hibernation. Sporulated *Myxococcus xanthus* can remain metabolically inactive indefinitely. The spores are located in groups of thousands called fruiting bodies.

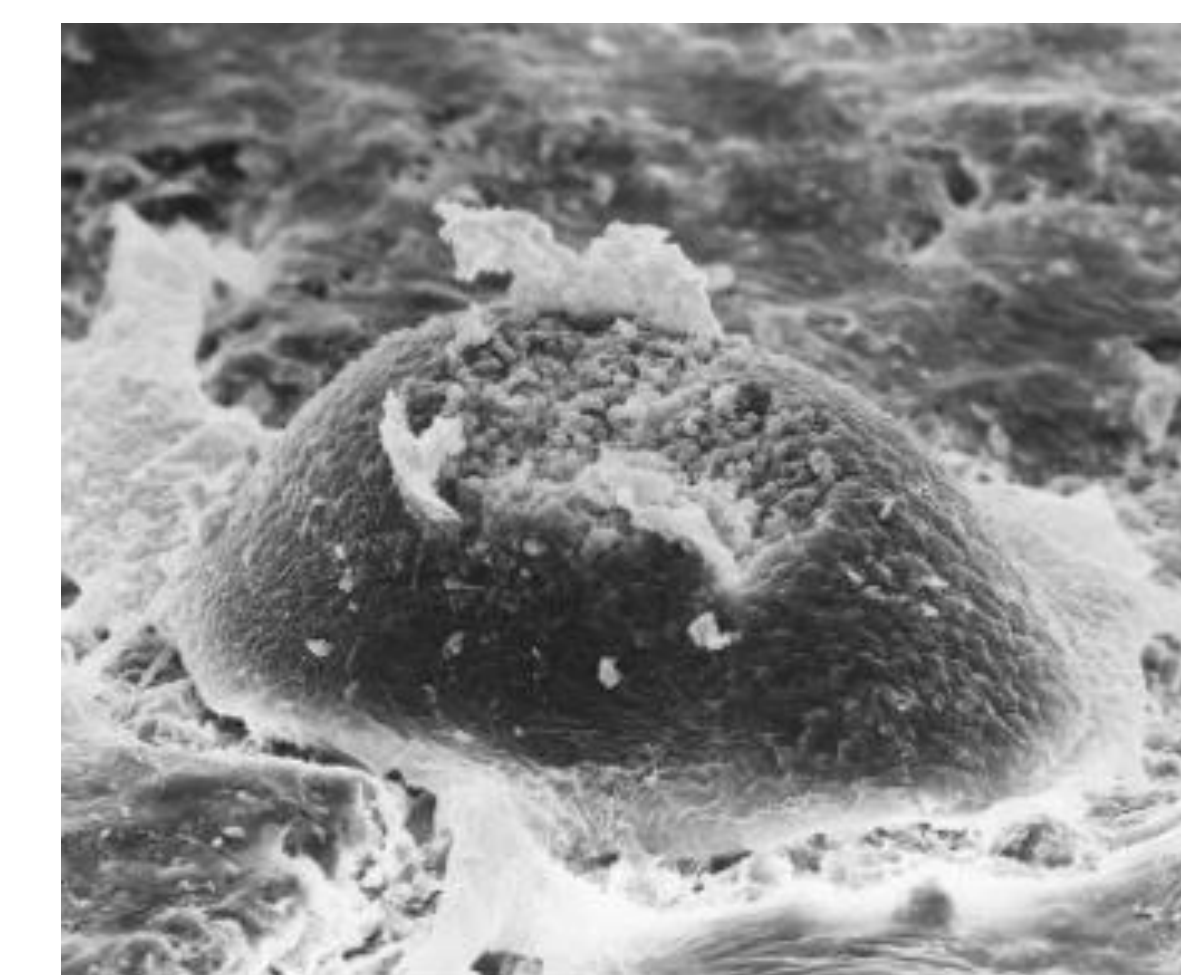
Protocols



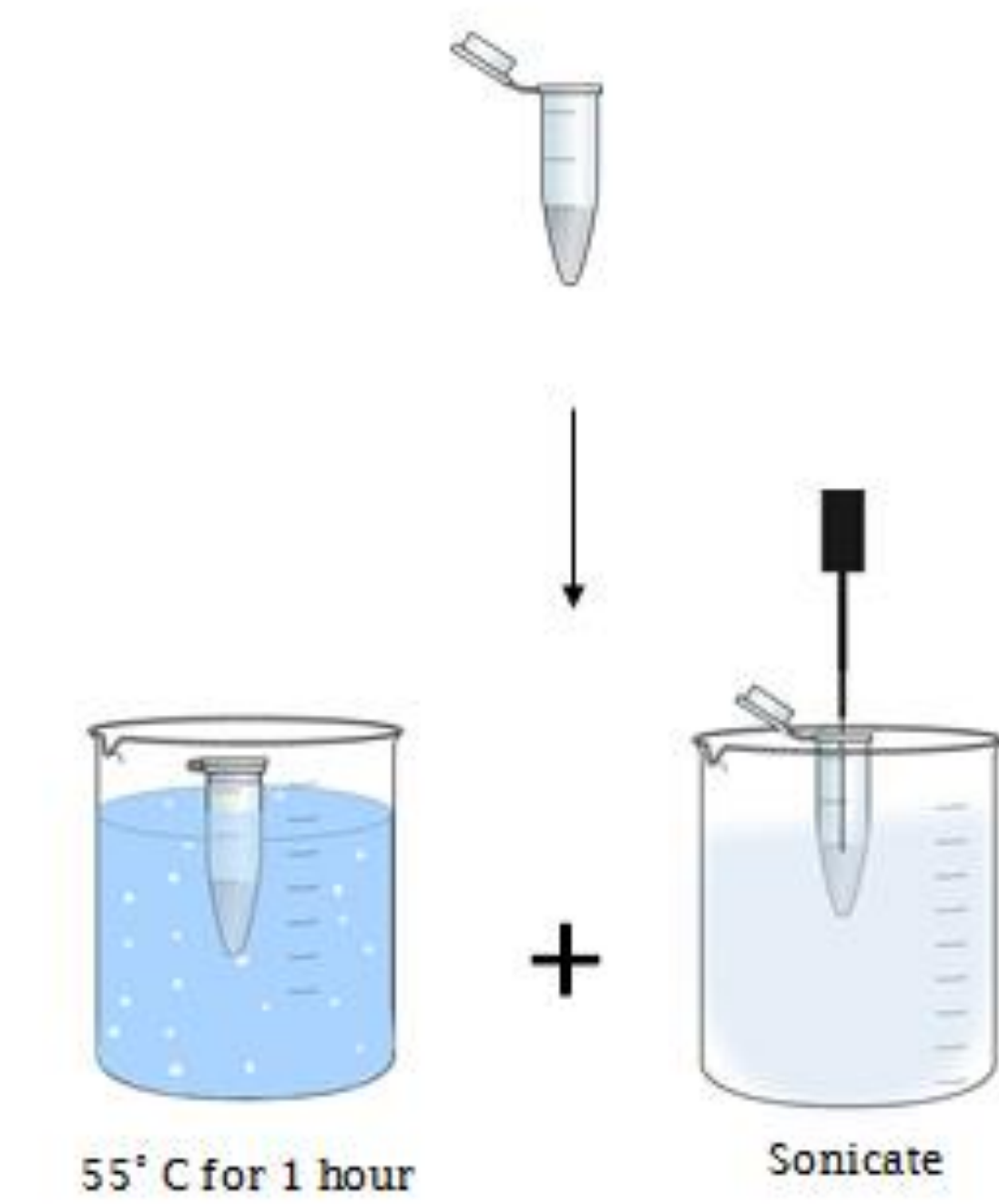
Vegetative colonies were inoculated into nutrient broth.



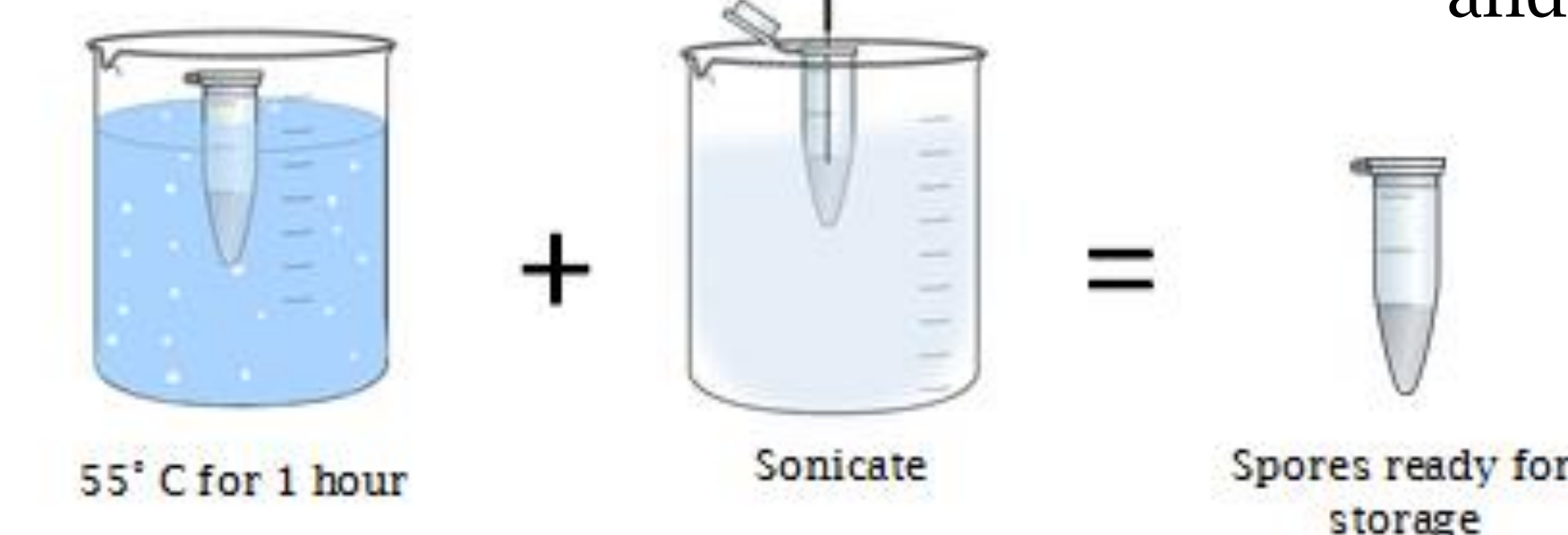
Optimally growing cells were inoculated onto plates lacking nutrients to force sporulation.



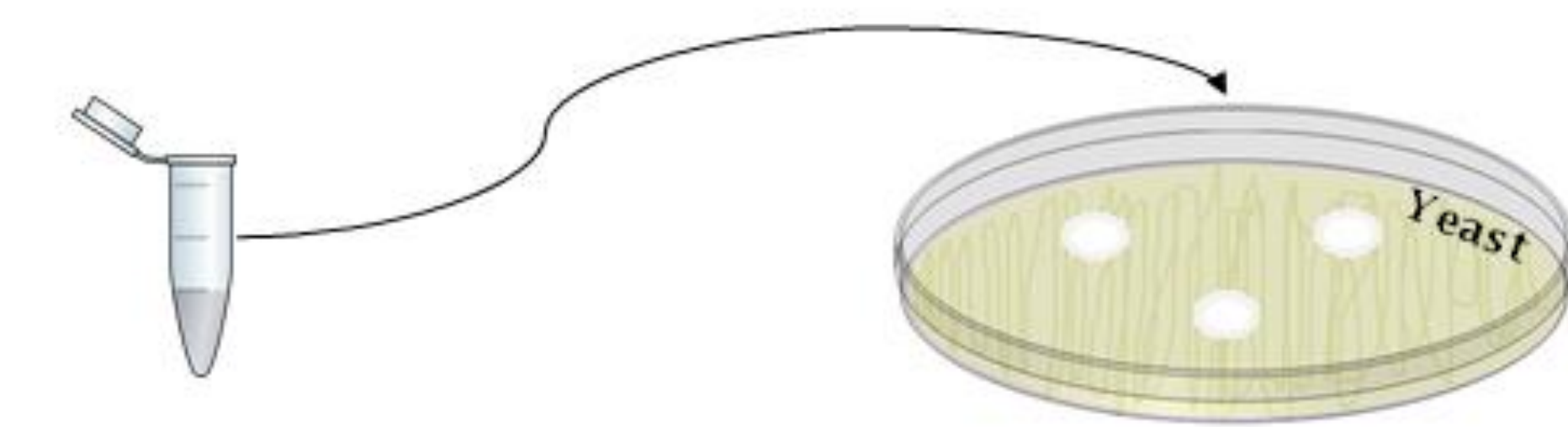
Fruiting body containing spores.



Harvested spores were stored in broth lacking nutrients. They were purified using heat and sonic vibration.

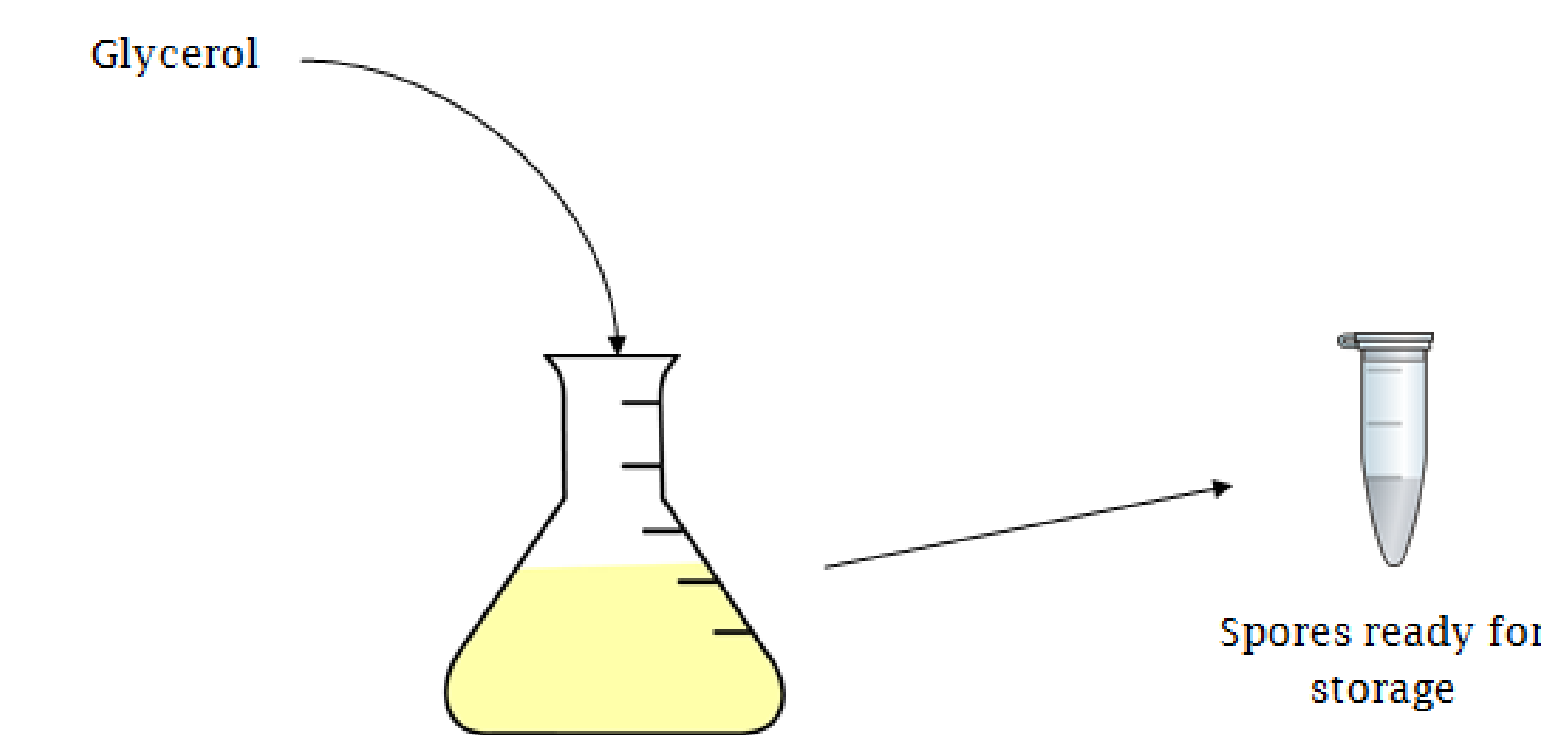


Next Step

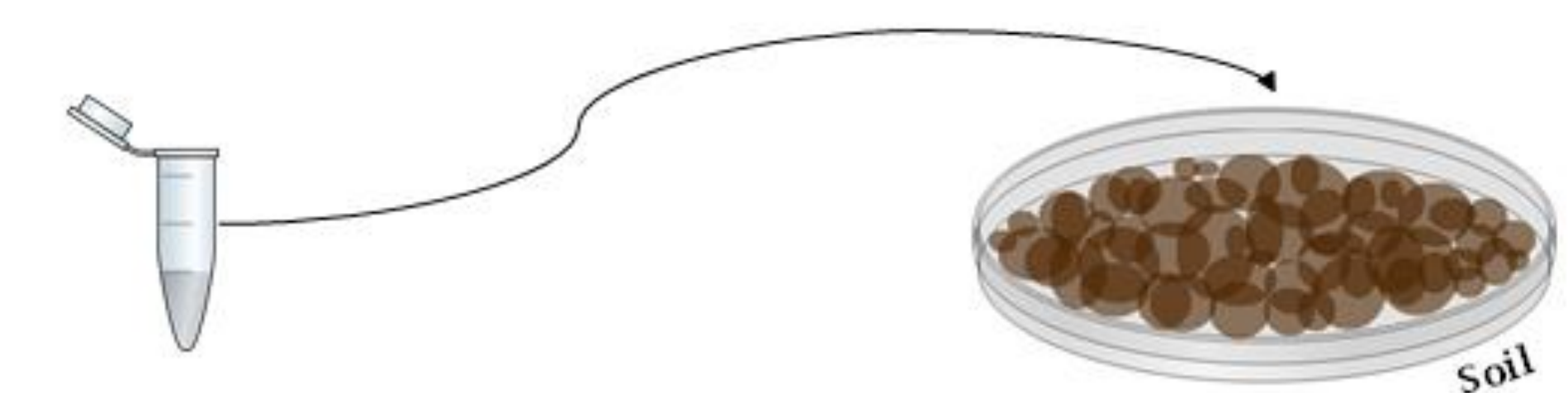


M. xanthus spores will be tested using yeast, a model fungus.

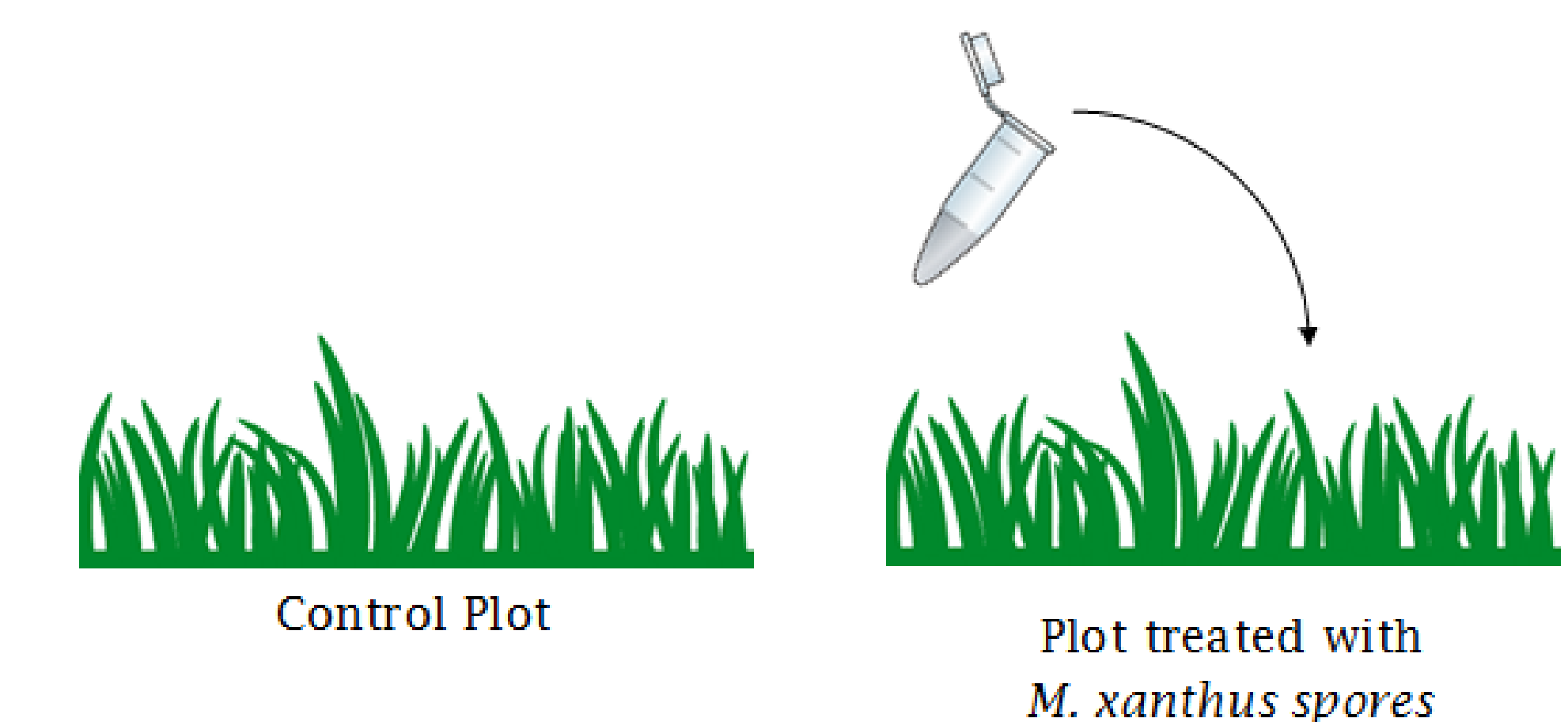
Future Directions



Vegetative cells can also be sporulated by adding glycerol. A protocol will be developed and compared to the starvation method.



M. xanthus spores will be tested for proper growth on sterile soil.



M. xanthus spores will be delivered to a test plot and fungi growth will be compared to a control plot.

Conclusion

This is a glimpse at the beginning stages of a long-term project. Every protocol must be tested and perfected to ensure accurate results.

Acknowledgements & References

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