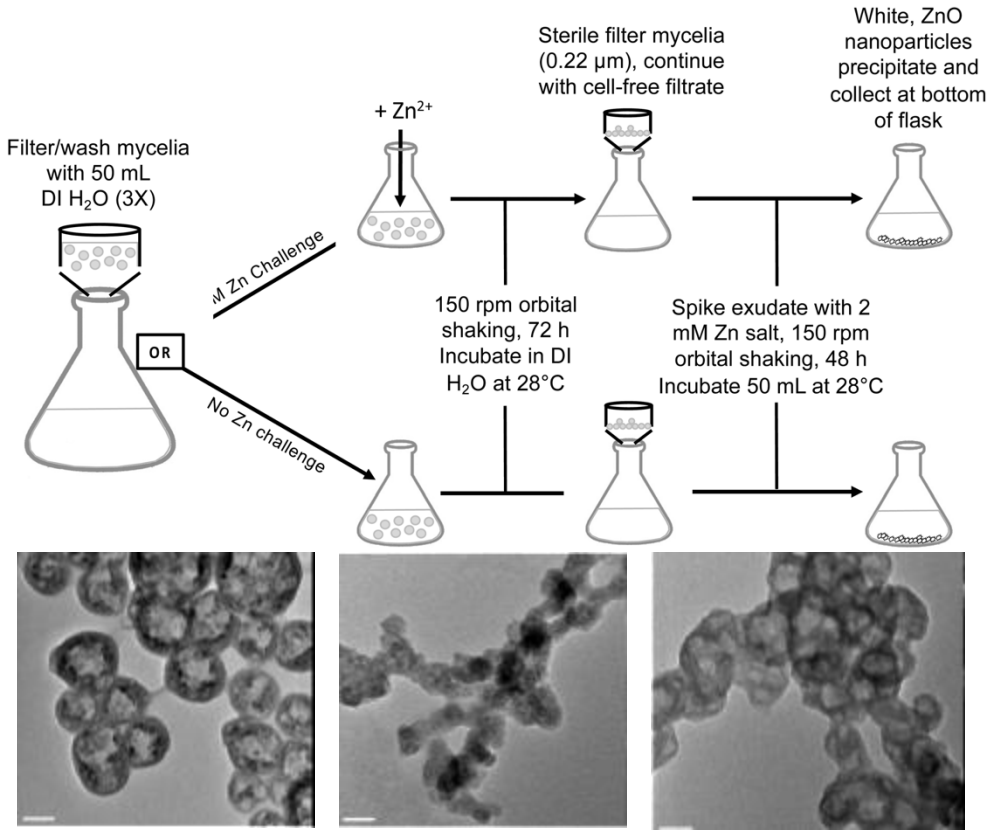
Metabolites Excreted by Fungi Enable Nanoparticle Synthesis



Process flow (*top*) and resulting zinc oxide nanoparticles (*bottom*) formed by biosynthesis using fungal extracts.

Scientific Achievement

Demonstrated that small molecule metabolites excreted by filamentous fungi, (hexamethylenetetramine , e.g.) regulate the synthesis of zinc oxide nanoparticles

Significance and Impact

This work identifies key biochemical details that may be used to controllably regulate nanoparticle synthesis.

Research Details

- Metabolomic analyses of fundal exudates identified small molecule biochemicals involved in nucleation & growth of nanoparticles.
- Protein expression and proteomic analysis suggest that protein form a corona that reduce coagulation.

Brady, N. G.; O'Leary, S. L.; Kuo, W.; Blackwell, B. R.; Mach, P. M.; Watt, J.; Bachand, G. D. Identifying Biochemical Constituents Involved in the Mycosynthesis of Zinc Oxide Nanoparticles. *Nanoscale* **2024**, *16* (18), 9036–9046.