

Abstract Submitted  
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**Dehydration resistance of liposomes containing trehalose glycolipids** KENDRA NYBERG, MORGAN GOULDING, RAGHUVEER PARTHASARATHY, University of Oregon — The pathogen, *Mycobacterium tuberculosis*, has an unusual outer membrane containing trehalose glycolipids that may contribute to its ability to survive freezing and dehydration. Based on our recent discovery that trehalose glycolipids confer dehydration resistance to supported lipid monolayers (*Biophys. J.* **94**: 4718-4724 (2008); *Langmuir* **25**: 5193-5198, (2009)), we hypothesized that liposomes containing synthetic trehalose glycolipids may be dehydration-resistant as well. To test this, we measured the leakage of encapsulated fluorophores and larger macromolecular cargo from such liposomes subject to freeze drying. Both leakage assays and size measurements show that the liposomes are dehydration-resistant. In addition to demonstrating a possibly technologically useful encapsulation platform, our results corroborate the view that encapsulation in a trehalose-glycolipid-rich membrane is a biophysically viable route to protection of mycobacteria from environmental stresses.

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