

Supplementary information

Film synthesis

5 Stock solutions of either *di*C₁₀PC or egg PC (Avanti) as well
as NaTDC (sodium taurodeoxycholate, Aldrich) were made by
dissolving 50 mg of the lipid in 2.5mL ethanol. Varied
amounts of each stock were added together, along with excess
ethanol if necessary, to total 0.5 mL with the desired
10 NaTDC/PC as well as total lipid/silica ratio. 0.053mL 0.05M
HCl and 0.040 mL TEOS (tetraethylorthosilicate) were added
to the lipid solutions, aged for 10 minutes at room
temperature, and spin coated at 2000 rpm at 15-20% humidity.

15 Cell-directed assembly (CDA)

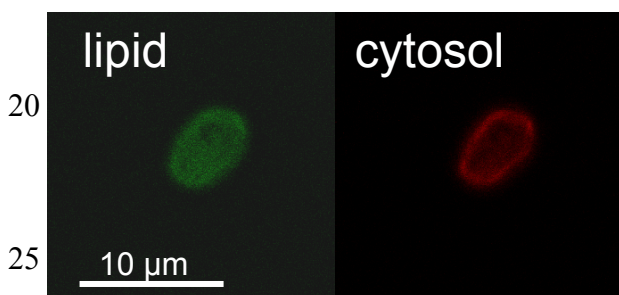


Figure S1. Confocal images of a yeast cell encapsulated
within a silica/lipid (egg PC/NaTDC) nanocomposite film
30 using CDA. Films were prepared according to published
procedures for CDA (H. K. Baca, C. Ashley, E. Carnes, D.
Lopez, J. Flemming, D. Dunphy, S. Singh, Z. Chen, N. Liu,
H. Fan, G. P. Lopez, S. M. Brozik, M. Werner-Washburne and
C. J. Brinker, *Science*, 2006, **313**), using a 50/50 mass ratio of
35 egg pc to NaTDC. Yeast cell cytosol was labeled with
CellTracker Red CMTPX; 1-palmitoyl-2-{6-[(7-nitro-2-1,3-
benzoxadiazol-4-yl)amino]hexanoyl}-sn-glycero-3-
phosphocholine (NBD-DPPC) was added to the sol in an NB-
DPPC/egg PC mass ratio of 1:1250 to fluorescently label the
40 lipid phase.