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## Directed assembly of yeast cells into living yeastosomes by microbubble templating

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### Abstract

We report the fabrication of yeastosomes - novel multicellular assemblies, which consist of a spherical monolayer of living yeast cells held together by colloid interactions. Our method is based on templating of microbubbles with cells coated with cationic polyelectrolyte and the layer-by-layer technique. We show the mechanism of formation of yeastosomes which involves a gradual dissolution of the air-cores and their infusion with water. We demonstrate that the cells remain viable in the yeastosome structures. Yeastosomes and similar structures may find applications in the development of novel symbiotic bio-structures, artificial multicellular organisms and in tissue engineering. The unusual structure of these multicellular assemblies resembles the primitive forms of multicellular species, like Volvox, and other algae and could be regarded as one possible stage of the evolutionary development of multicellularity. © 2010 The Royal Society of Chemistry.

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