

**Novel vesicle-like features result
from ultrastructural infolding in
Thiomargarita spp.**

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The ultrastructures of bacteria are commonly regarded as relatively rigid and immobile, relative to those of eukaryote cells that, in some cases, can undergo phagocytosis or other types of dynamic deformation. While studying populations of giant sulfur bacteria, *Thiomargarita* sp., we observed the apparent invagination of the cell ultrastructure, creating what appear to be peptidoglycan-enclosed vesicular structures. These vesicles appear to start as invaginations of the cell wall that eventually form spherical structures that end up within the cell's large central vacuole. We first discovered these vesicles by incubating *Thiomargarita* cells with fluorescently-labeled D-amino acids that are used to label peptidoglycan synthesis. Additionally, transmission electron microscopy (TEM) also showed the infolding of the ultrastructure resulting in vesicle-like features. The potential ecological or physiological role of these features remains unclear, but some possibilities include compartmentalization of storage compounds, or transport of metabolites from the cell exterior, or ultrastructure, into the vacuole. These vesicle-like features add to a growing list of novel ultrastructural features recently discovered in bacteria.