

# New device creates lipid spheres that mimic cell membranes

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A new way of manipulating fluids on microscopic levels brings us one step closer to "bottom-up" artificial cell constructs.

Opening up a new door in synthetic biology, a team of researchers has developed a microfluidic device that produces a continuous supply of tiny [lipid](#) spheres that are similar in many ways to a cell's [outer membrane](#).

"Cells are essentially small, complex bioreactors enclosed by phospholipid membranes," said Abraham Lee from the University of California, Irvine. "Effectively producing vesicles with lipid membranes that mimic those of natural cells is a [valuable tool](#) for fundamental biology research, and it's also an important first step in the hoped-for production of an artificial cell."

The researchers have taken an important step in advancing this field by developing a single system that quickly and efficiently performs all the necessary steps to create stable lipid vesicles. Current multistep production methods create vesicles that have inconsistent sizes and layers and short usable lifespans, and they are often contaminated with solvents used in their production.

A paper accepted for publication in the AIP's journal.

*Biomicrofluidics* reports that the new microfluidic design overcomes these previous hurdles by generating and manipulating precisely sized

droplets of water in an oil environment. This produces an oil-and-water membrane that serves as a scaffold around which lipids molecules assemble. As the membrane dissolves over time, the accumulated lipids form a stable, uniform vesicle that shares many of a natural cell membrane's chemical and [physical attributes](#).

**More information:** "Stable, Biocompatible Lipid Vesicle Generation by Solvent Extraction-based Droplet Microfluidics" is accepted for publication in the journal *Biomicrofluidics*.

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