

Gel-assisted formation of giant unilamellar vesicles

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Abstract

Giant unilamellar vesicles or GUVs are systems of choice as biomimetic models of the cell membranes. While a variety of procedures exist for making single walled vesicles of tens of microns, not only is the range of lipids and lipid compositions that can be used to grow GUVs by the conventional methods quite limited, but many of the available methods actually involve energy input that can damage the lipids or other molecules also present in the growing solution for embedment or encapsulation purposes. Here we show that a wide variety of lipids or lipid mixtures can grow into giant vesicles when they are spread on a dry PVA-gel surface and then simply exposed to a swelling buffer that can contain also other bio-relevant molecules. Furthermore, we also show that the range of encapsulating molecules can be extended by combining PVA growth with the inverse-phase method.