Rapid incorporation of bacterial mechanosensitive ion channel proteins MscL and MscS into liposomes using a modified sucrose method

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Bacterial mechanosensitive (MS) ion channels act as emergency relief valves in order to help bacterial cells to survive sudden changes in external osmolarity due to hypo-osmotic shock (Martinac, 2004; Perozo, 2006). Traditional methods of incorporating MS channels into liposomes have been successful for the MscL, the MS channel of large conductance, but not for MscS, the MS channel of small conductance. Here we present a novel time efficient procedure for the successful incorporation of either of these proteins into artificial liposomes. This method is based on preparing giant liposomes using sucrose (Di Maio *et al.*, 2006; Akashi *et al.*, 1996) and subsequently adding purified MscL or MscS protein to the liposomes suspended in the sucrose solution. Electrophysiological recordings of both liposome preparations reveal patches with multiple channels which are activated by increasing membrane tension.

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