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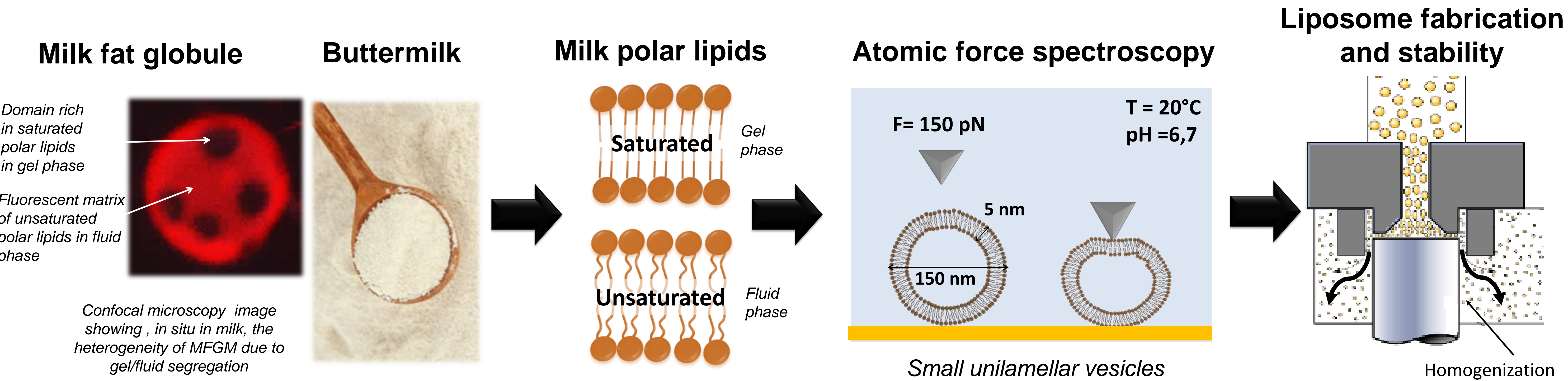
Mechanical properties of membranes composed of milk polar lipids in the gel or fluid phase probed by AFM on liposomes

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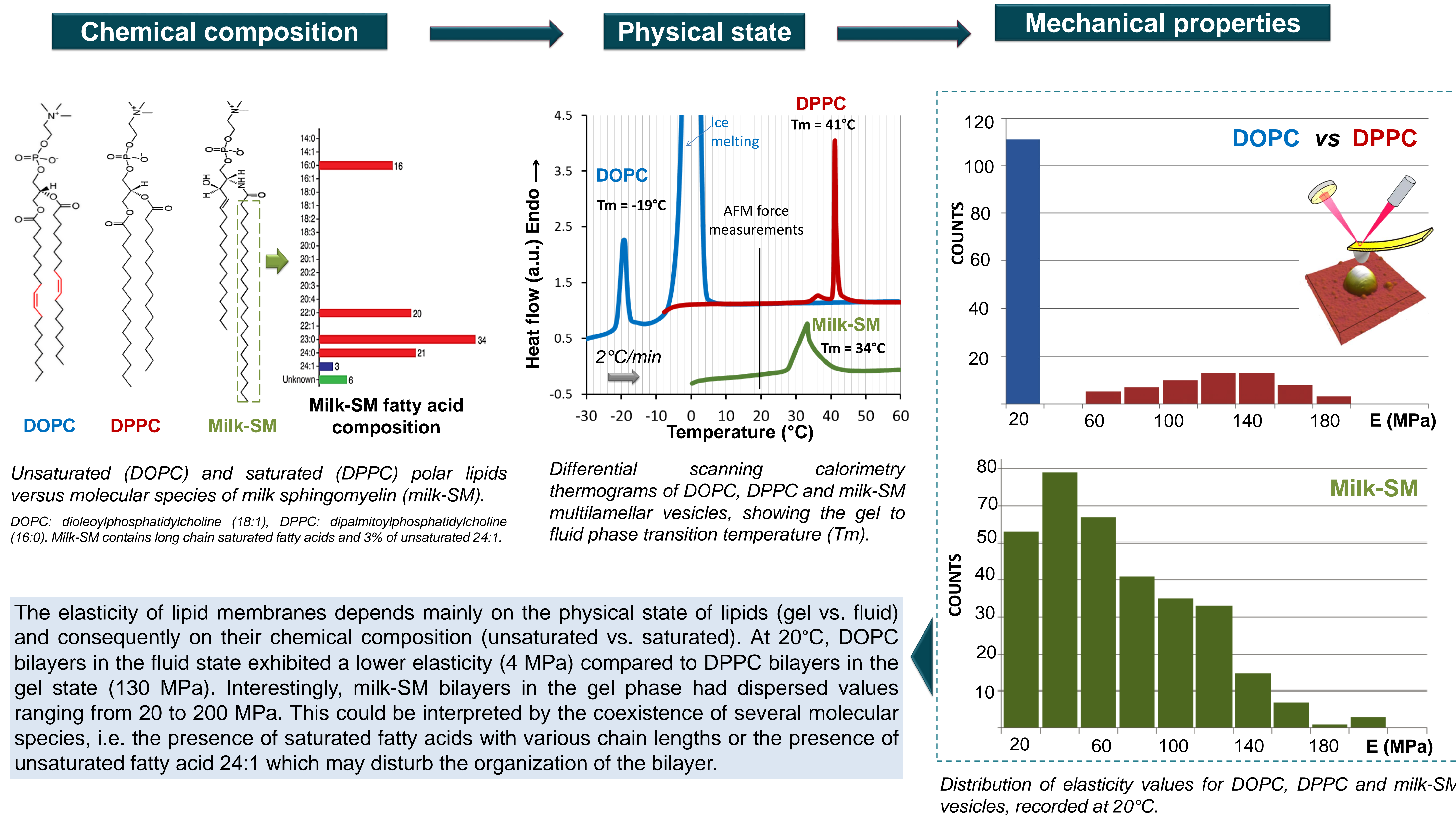
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Milk polar lipids for liposome applications :

The milk fat globule membrane (MFGM) has recently gained a lot of attention, due to the growing interest in its nutritional and technological properties. Its composition, rich in polar lipids, has great potential for new product applications with unique physical properties such as liposomes. Milk polar lipids might be advantageous for both the stability and the biological acceptance of the formulation. Milk polar lipids possess different structures of molecules: saturated with high melting temperatures (T_m), in particular the milk sphingomyelin (SM, T_m 35°C); or unsaturated with low T_m . Does this difference in the molecular structure affect the mechanical properties of the membranes?



Fatty acid composition of polar lipids affects the elasticity of membranes



Outlooks:

These results open perspectives for liposome applications where the mechanical properties of the membrane are essential to ensure stability such as encapsulation in drug delivery or cosmetics. This study will also serve as reference for future investigations on membrane models of the MFGM to increase our knowledge of the role of heterogeneity in the stability of milk fat globule during processing or digestion.

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