

Elastin-like polypeptides – a model of intrinsically disordered proteins toward assembly into organelle architectures

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Inside cells, cellular materials are compartmentalized into organelles, that are either membrane-bound vesicles or membraneless structures, providing an organization of bioactivity. Membraneless organelles have aroused enormous interest for their important role in many cellular processes, and significant efforts have been provided to identify the molecular principles underlying their formation. Elastin-like polypeptides (ELPs) have been proposed as a simple model of intrinsically disordered proteins (IDPs) which can form membraneless organelles by liquid–liquid phase separation (LLPS) in cells. In this talk, I will discuss thermally-induced phase separation behaviors of ELPs and ELP-polymer conjugates in macromolecularly crowded protocells (Figure 1).

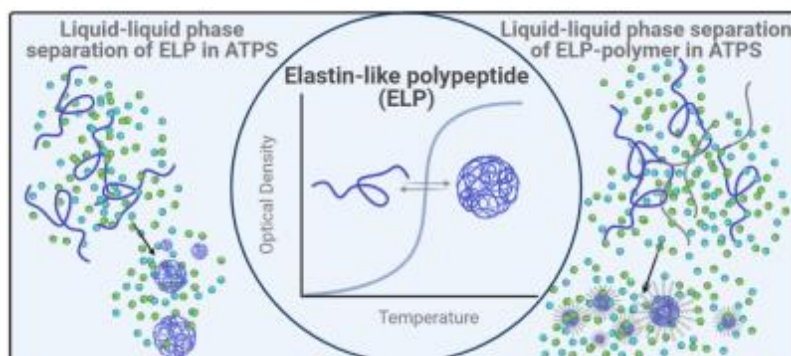


Figure 1. Thermo-responsive ELPs and ELP-polymer conjugates in an aqueous two phase system.