

Abstract

Cells organize many of their biochemical reactions by formation and dissolution of non-membrane-bound compartments. Recent experiments show that a common mechanism for such biochemical organization is phase separation of unstructured proteins to form liquid-like compartments. These compartments can subsequently harden to form compartments with new material properties such as gels and glasses. These compartments can be described by principles elucidated from condensed-matter physics and are therefore termed biomolecular condensates. I will discuss potential roles of phase separation in organization of cellular biochemistry and the role of aberrant phase separation in disease.