

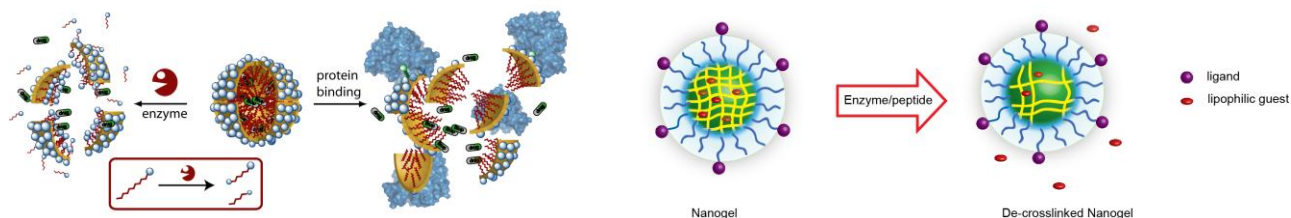
# Designing Drug Delivery Systems - Upstream and Downstream Examples

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Specificity and sensitivity are the two aspects associated with biological systems for their superlative functions. Drug delivery systems which could emulate these properties will result in reduced side effects and efficient therapy. Researchers embed these properties into the drug delivery systems by incorporating a targeting (specificity) as well as stimuli sensitive sensitivity) properties into the molecular design.

In this talk we will focus on two different molecular designs, designed to be sensitive to biologically relevant stimuli. While systems that respond to changes in factors such as pH, temperature, and light intensity are known, there are very few, if any, systems that respond to proteins. Aberration in protein activity is the primary imbalance in biology and therefore designing systems that respond to these variations are of great interest. These systems are conceptually novel and interesting, but will require quite a bit of development before they are practical (therefore, upstream). Concurrently, we have also developed a more practical polymeric nanogel platform that exhibits all the ideal characteristics desired in a delivery vehicle. We will outline the criteria of an “ideal” delivery vehicle and show how our system satisfies each of those.



**Figure.** Schematic representation of stimulus-induced disassembly of amphiphilic assemblies (left) and polymeric nanogels (right).