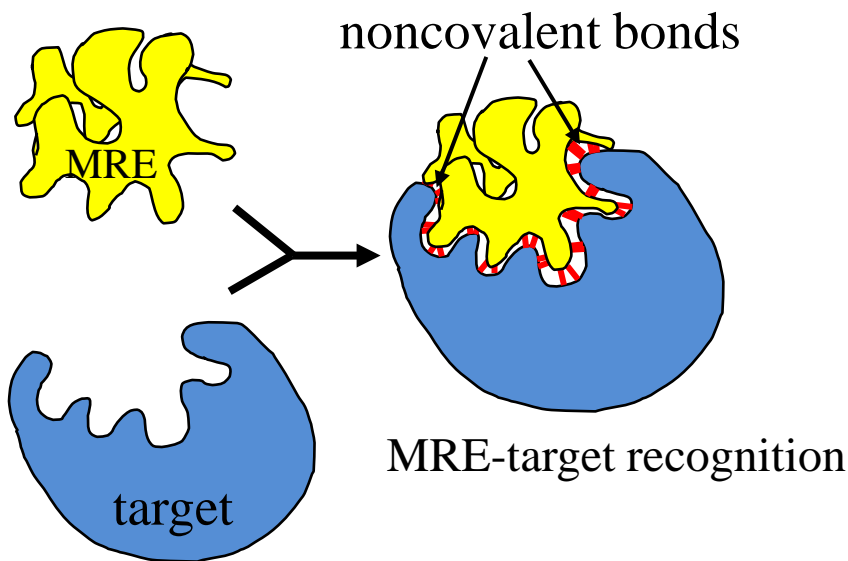


Molecular Recognition Elements and Sensors

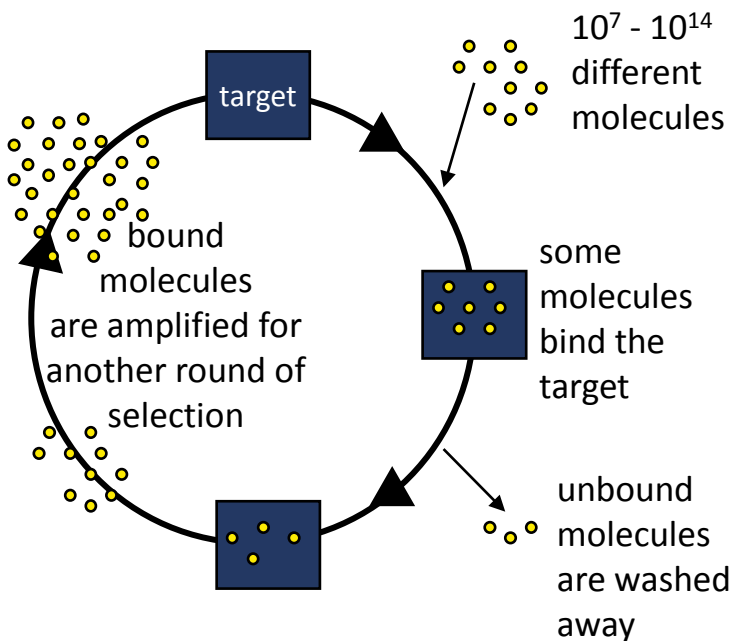
SPRING 2009 BIOL 493M / 593F For Health Sciences, Science & Engineering

What is a Molecular Recognition Element (MRE)?



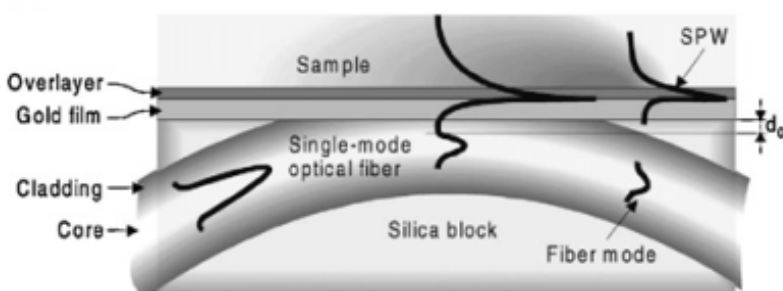
MRE's can be made of DNA, RNA, peptides, antibodies, and many other molecules. They bind their target with high affinity and specificity.

How do you create MRE's? ... *in vitro* selections



A selection begins with a library of $10^7 - 10^{14}$ different molecules. Through a series of isolation and amplification steps, 1 - 5 molecules which exhibit the desired characteristic (such as target binding) are identified.

How are MRE's useful? ... sensors



Simple conjugation chemistries or state of the art nanomaterials, microfluidics, optics, and electronics transform the biomolecular MRE's into powerful sensing devices. Applications range from battlefield biowarfare sensors to cancer detection.

