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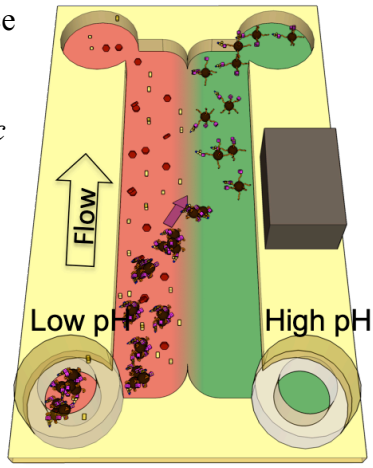
- **Current Position**—Research Associate Professor, Department of Bioengineering, University of Washington
- **Educations**—PhD in Chemical Engineering, NYU-Tandon, BS in Chemical Engineering, University of Minnesota

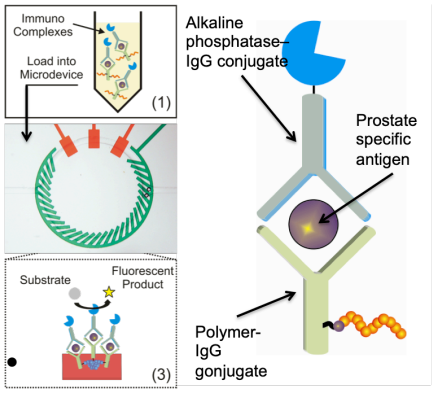
Research

- Material technologies drive the advances in healthcare by serving as an integral part of the foundation to interface with biology[1]
- Novel polymer technologies to enable clinical diagnostic assays, biologics manufacturing, and life science research[2-12]



A. *Stimuli-responsive ("smart") polymer-coated magnetic nanoparticles*[2, 3]

- Efficient biomarker recognition—rapid diffusion and high surface area of small nanoparticles
- Rapid magnetic separation—high magnetophoretic mobility of by undergoing switchable aggregation
- Capture diagnostic targets in a microfluidic device at a controlled time point and channel position
- Bioseparations under continuous flow processing in a microfluidic device



B. *Microfludic devices for diagnostics*[5, 7, 8]

- Simple fluidic systems, used in conjunction with smart polymer reagents for biomarker detection
- A microreactor—rapidly purifies and enriches a prostate cancer biomarker, from human plasma within 30 minutes
- Highly sensitive biomarker detection—the limit of detection is 100-fold lower than that of enzyme-linked immunosorbent assay.

C. *Smart polymer binary reagent system*[9-12]

- Decouple the antibody and the magnetic particle during the binding step and recombine reagents via the polymer aggregate formation for separations
- Rapid analyte recognition, improves biomarker detection, and processes higher sample volumes for biomarker enrichment
- Disease diagnostics, biologics manufacturing, and cancer profiling.