

CBIMMS Invited Seminar
Co-Sponsored by the Chemistry Department

“Biomembranes on a Chip”

Paul Cremer

Dept. of Chemistry, Texas A&M University
College Station, TX 77843
cremer@mail.chem.tamu.edu

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203 Teer Building

ABSTRACT

A large number of biological interactions require multiple binding between ligands and receptors on cell membrane surfaces. Multivalent binding at cellular interfaces is distinct from other environments because the cell membrane is two-dimensionally fluid thus allowing surface bound ligands to laterally rearrange to accommodate several sequential binding events. Examples include viral entry, immune response, and cell signaling. Inhibiting such events is critical to the strategy of many drug molecules. The work described in this presentation focuses on the use of microfluidic platforms and devices that allow high throughput and combinatorial measurements of ligand-receptor interactions. These chips enable temperature, concentration, buffer conditions, and surface chemistry to be varied simultaneously to determine their importance in the binding process. Binding curves can be obtained from single-shot assays using only nanoliter quantities of material. Results will be discussed for antibody binding studies as a function of surface ligand density and membrane cholesterol content.