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### Chemical Research

#### **Data on chemical research published by researchers at Syracuse University**

2008 MAY 12 - (VerticalNews.com) -- "Protein-protein pore interaction is a fundamental and ubiquitous process in biology and medical biotechnology. Here, we employed high-resolution time-resolved single-channel electrical recording along with protein engineering to examine a protein-protein pore interaction at single-molecule resolution," scientists writing in the *Journal of the American Chemical Society* report.

"The pore was formed by *Staphylococcus aureus*  $\alpha$ -hemolysin ( $\alpha$ HL) protein and contained electrostatic traps formed by rings of seven aspartic acid residues placed at two different positions within the pore lumen. The protein analytes were positively charged presequences (pb(2)) of varying length fused to the small ribonuclease barnase (Ba). The presence of the electrostatic traps greatly enhanced the interaction of the pb(2)-Ba protein with the  $\alpha$ HL protein pore. This study demonstrates the high sensitivity of the nanopore technique to an array of factors that govern the protein-protein pore interaction, including the length of the pb(2) presequence, the position of the electrostatic traps within the pore lumen, the ionic strength of the aqueous phase, and the transmembrane potential," wrote M.M. Mohammad and colleagues, Syracuse University.

The researchers concluded: "Alterations in the functional properties of the pb(2)-Ba protein and the  $\alpha$ HL protein pore and systematic changes of the experimental parameters revealed the balance between forces driving the pb(2)-Ba protein into the pore and forces driving it out."

Mohammad and colleagues published their study in the *Journal of the American Chemical Society* (Controlling a single protein in a nanopore through electrostatic traps. *Journal of the American Chemical Society*, 2008;130(12):4081-4088).

Additional information can be obtained by contacting L. Movileanu, Syracuse University, Dept. of Physics, 201 Physics Bldg, Syracuse, NY 13244, USA. The publisher of the *Journal of the American Chemical Society* can be contacted at: American Chemical Society, 1155 16th St., NW, Washington, DC 20036, USA.

Keywords: Chemical Research, Chemicals, Chemistry, Electronics, Electrostatic, Emerging Technologies, Engineering, Nanopore, Nanotech, Nanotechnology, Single Molecule Resolution.

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