### Supplemental Video 1. <<u>http://www.prism.gatech.edu/~j1308/v01\_pbent.mpg</u>>

Stability of the closed-angle conformation of P-selectin. Comparison of the simulated structure (cyan) with the crystal structures of the closed-angle (mauve, PDB code 1G1R) and open-angle (blue, PDB code 1G1S) P-selectin (20) after deleting the PSGL-1. The lectin domains (residues 1-120) of the crystal structures and of the simulated structure in each frame were aligned through the backbone atoms, while the EGF domains were unconstrained. Over the 5 ns free dynamics simulation time, the simulated structure fluctuated about its starting structure - the closed-angle crystal structure. The golden sphere depicts the Ca<sup>2+</sup> ion coordinated by the lectin domain. The movie was generated with VMD (25)

#### Supplemental Video 2. < http://www.prism.gatech.edu/~j1308/v02\_pstraight.mpg>

Same as Supplemental Video 1 except that the starting structure for simulation was the openangle crystal structure.

## Supplemental Video 3. <<u>http://www.prism.gatech.edu/~jl308/v03\_slex.mpg</u>>

SMD simulation of P-selectin lectin-EGF domain in complex with sLe<sup>x</sup>. The O1 atom of sLe<sup>x</sup> residue GlcNAc (ice-blue) was pulled through a spring (70 pN/Å) that moved at a constant speed (10 Å/ns) and the  $C_{\alpha}$  atom of EGF Gly147 (orange) was constrained.

## Supplemental Video 4. <<u>http://www.prism.gatech.edu/~jl308/v04\_LecEGF.mpg</u>>

SMD simulation of P-selectin lectin-EGF domain in complex with N-terminal segment of PSGL-1. The  $C_{\alpha}$  atom of PSGL-1 Pro18 (ice-blue) was pulled through a spring (70 pN/Å) that moved at a constant speed (10 Å/ns) and the  $C_{\alpha}$  atom of EGF Gly147 (orange) was constrained.

# Supplemental Video 5. <a href="http://www.prism.gatech.edu/~j1308/v05\_LecOnly.mpg">http://www.prism.gatech.edu/~j1308/v05\_LecOnly.mpg</a>

SMD simulation of P-selectin lectin domain in complex with N-terminal segment of PSGL-1. The  $C_{\alpha}$  atom of PSGL-1 Pro18 (ice-blue) was pulled through a spring (70 pN/Å) that moved at a constant speed (10 Å/ns) and the  $C_{\alpha}$  atom of lectin Ala120 (orange) was constrained.