

S 1-4

**Transmembrane Signaling Model of a Serine Chemotaxis Receptor**

Kyeong Kyu Kim\*, Hisao Yokota, and Sung-Hou Kim

Department of Chemistry, UC Berkeley, CA 94720, USA.

\*Department of Molecular Biology, Gyeongsang National University.

Bacterial chemotaxis receptors are some of the simplest and most studied transmembrane receptors. Their simple signaling pathway has elements relevant for understanding the mechanisms for signal recognition, transduction through the membrane, relays among the molecules in the pathway, and adaptation to a persistent signal. Bacterial chemotaxis receptors are composed of a ligand-binding domain, a transmembrane domain consisting of the two helices TM1 and TM2, and a cytoplasmic domain. All known bacterial chemotaxis receptors have a highly conserved cytoplasmic domain, which unifies signals from different ligand domains into a single signaling pathway to flagella motors. The crystal structure of the cytoplasmic domain of a serine chemotaxis receptors of *E. coli* reveals a 200 Å long coiled-coil of two antiparallel helices connected by a "U-turn", and the two such domains form a long supercoiled four-helical bundle.