

A NEW MODEL OF GLYCINE RIBOSWITCH FOLDING. Eileen Sherman, Jing-Dong Ye, Department of chemistry, University of Central Florida, Orlando, Florida 32816.

Comprised of two aptamers connected by a short nucleotide linker, the glycine riboswitch was reported to bind two glycine molecules cooperatively. We will describe the discovery and characterization of the 5' extended glycine riboswitch containing a highly conserved leader-linker duplex involving leader nucleotides upstream of the previously reported consensus glycine riboswitch sequences. The leader-linker interaction improved the ligand binding affinities by 4.5 to 86 fold in three glycine riboswitches. In-line probing and native gel assays with two aptamers in *trans*, together with mutational analysis, support synergistic action between glycine binding and inter-aptamer interaction during global folding of the glycine riboswitch while the two glycine sites do not bind cooperatively. Progress on crystallization of single or full-length glycine riboswitches using Chaperone Assisted RNA Crystallography will also be presented.