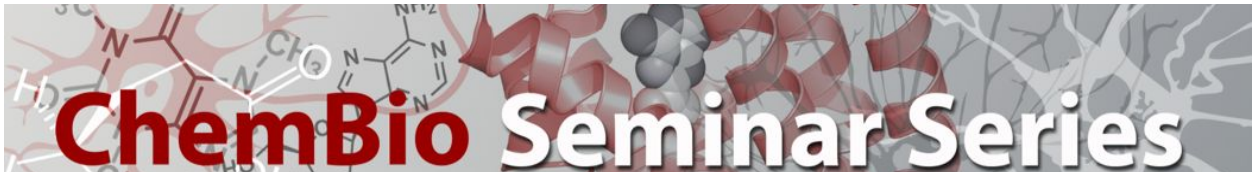

Thursday, March 28, 2019, 12:30 pm
Seaver Science Auditorium, Room 150
SSC Auditorium next to the library

Professor Rakhi Rajan

Department of Chemistry and Biochemistry
University of Oklahoma

Mechanisms of CRISPR-Cas Systems

CRISPR-Cas systems are RNA-guided nucleases that provide adaptive immune protection against intruding genomic materials in bacteria and archaea. The complementarity of CRISPR RNA (crRNA) guides Cas protein to a target DNA and/or RNA, which then initiates strand cleavage by a specific Cas protein. Cas9, a type II CRISPR effector protein, is widely used for gene editing applications since a single guide RNA (sgRNA) can direct Cas9 to cleave DNA targets of interest. In addition to this complementarity, a region termed protospacer adjacent motif (PAM) is essential to Cas9 function. The relationship between RNA-mediated conformational changes in Cas9 and DNA targeting is being pursued to develop Cas9 variants with high specificity for gene editing. Cas9 offers great promises for gene therapy application. Our lab has focused on identifying how an arginine-rich bridge helix (BH) in Cas9 contributes conformational checkpoints essential for stringent DNA cleavage. Our studies develop mechanistic insights into CRISPR-Cas systems that are valuable in developing Cas9 as an error-proof gene editing system as well as to create novel CRISPR-Cas tools for other biotech applications such as gene tagging.

Hosted by Professor Peter Qin

The scientific community is invited

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