

Cancer and Molecular Biology Laboratory

Cancer is a complex biological problems. After cardiovascular diseases, cancer is the second largest cause of death in India. In cancer, cells grow uncontrolled and even move from one location to other parts of the body, forging a new home in the state known as metastasis. These cancer cells not only grow abnormally but also change biochemistry of the body and weaken immune system. All together, rapidly alter body physiology leading to death. World-wide there are more than 200 different types of cancers, some are more common than the others and these are breast cancer, oral cancer, lung cancer, colorectal cancer, prostate cancer, cervical cancer and so on.

Clustered Regularly Interspaced Short Palindromic Repeat (CRISPR) and CRISPR associated (Cas) is an adaptive immune system of archaea and bacteria to protect cells from viral infection. Genome wide CRISPR/Cas9 based gRNA library is now a well established method to identify role of specific gene in biological process and disease progression. This technology has been modified for several use of genomic application including genome editing.

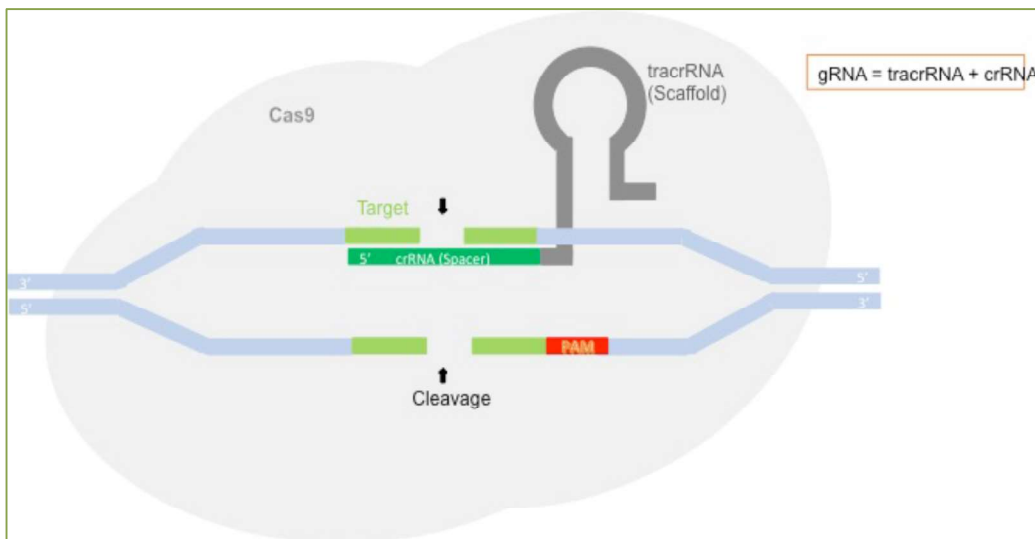


Fig: gRNA mediated double stranded break

Up to recent times, studies were mainly focussed on the coding genes and their effects in biological functions. Transcriptome analysis revealed that around 75% of the human genome is actively transcribing but only 2% of the genome is translated to the final product, proteins. These studies brought attention of many scientists to find out role of these non coding RNAs (ncRNAs) in biological process including disease progression.

We are interested in understanding molecular aspects of ncRNAs and coding genes in cancer progression and its therapeutic importance by utilizing genome wide gRNA library and CRISPR/Cas9 based genome editing system.

Note: Ph.D. candidates and Master students intereseted to work in this area are encouraged to contact directly at mmkhan@Jamiahamdard.ac.in