

A guest lecture by **Dr. Viplendra P.S Shakya and Dr. Surbhi Verma** was organised in School of Biotechnology, DAVV Indore on 13th Nov. 2019, 11.30 AM.

They are alumni of our university and they did their post doc research work from University of Utah, Salt Lake City, Utah, USA. The lectures were on recent and emerging topics of **On Mitochondrial Protein Quality control and function of CRISPR/Cas9**.

Dr. Anjana Jajoo welcomed and introduced the speakers.

Dr. Viplendra worked on mitochondrial protein quality control pathway. He told that mitochondria is a central hub of cellular metabolism and majority of proteins are imported into mitochondria post and co-translationally. These proteins require the mitochondrial membrane potential for import. Under conditions of mitochondrial impairment, hundreds of mitochondrial precursor proteins fail to import and get accumulated that leads to proteotoxic stress known as mitochondrial precursor overaccumulation stress (mPOS). For degradation process, these proteins have multiple fates. He further explained us about the group of his experiments and how E3 ligases is important for proteosomal degradation. If mitochondrial targeting sequence is absent on protein then it is non-toxic. Therefore, MTS is required for protein for being toxic.

Dr. Surbhi worked on how do targetable nuclease Cas9 function in presence of chromatin. CRISPR/Cas 9 works with guide RNA. She mainly worked with double stranded DNA. DNA has certain PAM sites which are recognized by cas 9 and DNA is chopped off from these sites. When nucleosome is also present then Cas9 couldn't recognize PAM site on DNA and it cannot cut it. She explained that how she worked on *S. cerevisiae* HO promoter as it had well characterised nucleosome location. Here we should remember that guide RNA is working fine. Therefore, nucleosome impedes Cas9 binding and Cas9 dependent cleavage.

These lectures enhanced our knowledge and helped us to understand more about proteotoxicity and protein quality control. We can study its role in certain diseases like Alzheimer's and Parkinson's. Also, Cas9 can be used as gene editing tool or for targeted sequence replacement.

The lectures were attended by faculty, Research scholars, and M.Sc students of SBT and School of Life Sciences.

The programme ended with a vote of thanks by Dr Hamendra Singh Parmar.

Report prepared by Ms. Anjali Chittorra, M.Sc. I semester 2019