Developing new plasmid for studying histone PTM during DNA repair

Diána Szűcs, Tibor Pankotai, PhD

University of Szeged
Genome integrity and DNA repair Group

Cells are threatened by different damaging effects, which cause many errors, so the cell has to defend itself. Repair pathways are responsible for defence and they also keep the cells in „healthy“ state. In order to study the DNA repair mechanism, we developed new plasmid based method, which could help us.

Our cells are constantly attacked by diversity of DNA damaging agents, which are able to induce different structural changes in the DNA. For protecting genome integrity, the cell must eliminate the damage and restore the original sequence of DNA. Most of the cases, accumulation of mutations lead to the formation of cancer. During the DNA repair numerous repair factors are responsible for the integrity of the genetic information. On the other side for DNA repair many histone post-translational modification are also requires. The histone PTMs are indispensable, because they ensure the accessibility of DNA and help the communication between DNA repair factors and enzymes. The center of our research is double strand DNA breaks and their repair pathways: Non-homologous End Joining and Homologous Recombination Repair. For the better overview the histone PTMs during the repair we have developed histone cloning vectors (donor and acceptor vectors). With these vectors we could create transgenic animals, and using of an inducible system we can examine the orchestrated protein recruitment at the repair foci around the DNA breaks.