

Drug-DNA Interaction on Combed DNA Fibres

Hemendra Yadav

Department of Botany, University of Rajasthan, India

DNA combing is a technique by which single DNA molecules are combed over coated glass surfaces. Combed DNA fibres can be used for studying drug-DNA interaction but no study has taken place where drug-DNA interactions were observed by fluorescent microscope rather than atomic force microscope. We optimized several combing solutions over different coating surfaces for its use in several different applications. Platinum cancer drugs form adducts with DNA molecules, such interactions can be studied by using cancer drug in solution form on combed DNA fibers. Combing solution optimized by us was having high retention, higher fluorescent intensity and lower background on coated glass surfaces. While optimizing the combing solution it was taken into consideration that the combing solution constituents don't hinder adduct formation by anticancerous drugs to bound combed DNA fibres. Observing adducts of DNA on combed DNA fibres is easier as compared to previous studies where such studies were performed on DNA combed over mica surfaces. In this study DNA adducts with anticancerous drugs such as Cisplatin was observed by fluorescent microscope and is the first report where adducts were visible without the help of atomic force microscope. We can thus use DNA combing technology to study effect of anti-cancerous drugs on DNA, also effect of different drugs on DNA can be studied by using our combing solution optimized especially for such purposes.

Biography:

Dr Hemendra Yadav is a Post Doctoral Fellow. He has also been awarded with SERB-National Post Doctoral Fellowship. He has been awarded PhD from University of Rajasthan, Jaipur. He has worked at Birla Institute of Scientific Research as a Research Associate for seven years in multiple projects related with DNA combing, bioactivation of rock phosphate. He has got diverse multidisciplinary research experience in bioinformatics, DNA combing technology and microbiology.