

**DNA damage detection *in situ*, *ex vivo* and *in vivo*****Methods and protocols****Vladimir V. Didenko (ed.), 2011****Humana Press - Springer Protocols****Methods in molecular biology, vol. 682****ISBN: 978 -1- 60327- 408 - 1****314 pp – € 98,75**

The evaluation of DNA damage at the single cell as well as at the whole organism level is clearly a pivotal task in an increasingly polluted world and considering the fact that very often unrepaired single and double strand DNA breaks are the starting point for carcinogenesis. This volume is presenting the major essays used nowadays in cell and molecular biology laboratories to detect *in situ*, *ex vivo* and *in vivo* DNA damages. Enjoyable and interesting enough is the long explanation devoted by Prof. Didenko (Baylor College of Medicine, Dept. of Neurosurgery, Houston, Texas, USA) to the use of the terms *in vivo*, *ex vivo* and *in situ*: sometimes it is useful to repeat such scholastic explanations considering the not uncommon misuses of these terms in the scientific literature. Well done! The book is divided into three parts, so that the DNA damage detection is clearly explained in tissue sections (first part), in cell cultures (second) and in live tissues (blood, urine and sperm; third part). The classical TUNEL assay together with the *in situ* ligation techniques (classical and

using PCR fragments for detection) are illustrated in the first part; obviously enough, flow-cytometry play a great role for the DNA damage detection in cell cultures. However, not only flow-cytometry is well presented in the second part of the book but also image-cytometry, fluorochrome-labeled inhibitors as cytometric markers, combination of fluorescent *in situ* hybridization with the classical Comet assay, simultaneous labeling of single- and double-strand DNA breaks and co-localizations of DNA repair proteins are some of the step-by-step well described techniques that one can profitably use nowadays following the instructions here presented. The DNA damage detection in living tissues is something intriguing: here we have the assessment of the sperm DNA fragmentation and the non-invasive test of oxidative damaged DNA achieved analyzing some urinary metabolites thanks to the combined use of tandem mass spectrometry with liquid chromatography. Very interesting is the buccal micronucleus cytome assay, a novel method increasingly used to study the impact of nutrition, life-style factors, genotoxin exposure by the use of the buccal mucosa to detect aneuploidy, chromosome breaks, telome length and generally genomic stability. Those of us interested in whatsoever way to DNA damage studies will surely find this book very useful.

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