

gTOXXS

AUTOMATED
GENOTOX
SOLUTION

AUTOMATED
DETERMINATION
OF THE GENOTOXIC
POTENTIAL

EXTRA
INFORMATION
ABOUT
DNA REPAIR
ACTIVITY

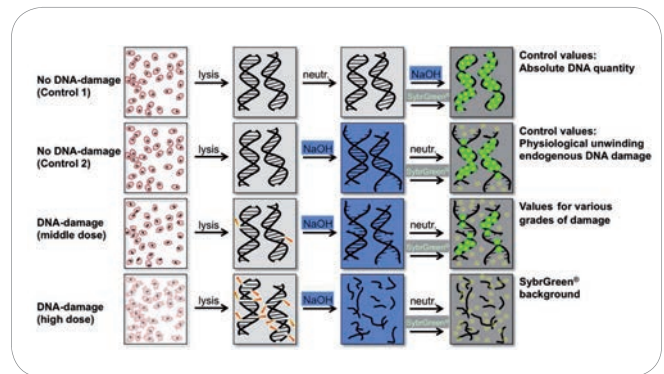
TIME
SAVING
SCREENING
AT PRODUCT
DEVELOPMENT



THE FUTURE OF GENOTOX

The principle of the AUREA gTOXXs

The AUREA gTOXXs determines DNA strand break frequency by fluorimetric detection of alkaline DNA unwinding (FADU). The detection of DNA strand breaks and repair is based on progressive DNA unwinding under highly controlled conditions of alkaline pH, time and temperature. DNA "open sites" are the starting points for the unwinding process. They occur naturally during cell cycle processes at replication forks or the ends of chromosomes. As yet, they may additionally be induced by reactive oxygen species, irradiation or genotoxic chemicals. The assay is based on a sensitive fluorescent probe which serves as marker for the loss of intact double stranded DNA. The decrease in the fluorescence intensity indicates an increase in DNA unwinding and consequently a greater number of DNA strand breaks.



Advantages of AUREA gTOXXs

The AUREA gTOXXs solution speeds up your risk assessment of test substances as well as the DNA repair capacity in various human cells lines. The automated solution of DNA strand break detection enables reliable determination of the genotoxic potential of chemicals, nanoparticles and biological substances. The gTOXXs operation time, reproducibility and workflow routine is clearly superior to other established genotoxicity assays, like the COMET assay. At low costs, robustness, sensitivity and precision are unsurpassed.

The AUREA gTOXXs solution features DNA strand break detection after short cell exposure (≥ 10 min) to well-known genotoxic compounds at low concentrations (Moreno-Villanueva et al, 2011). It provides unique information on the DNA repair mechanism through time resolved DNA strand break analysis. AUREA gTOXXs Genotox screening has been approved on major human cell lines, e.g. HepaRG, and 3D tissue models, e.g. reconstructed skin models. It's a package optimally adapted to the requirements of test laboratories as well as R&D departments.

Applications of the AUREA gTOXXs

- DNA damage detection
- Dose-response relationship
- Detection of DNA repair capacity/cell viability
- DNA interstrand crosslinks
- Oxidative stress provoked by e.g. competitive sport
- Post-traumatic stress disorder (PTSD)
- Individualized cancer therapy
e.g. chemo- and radiation therapy
- Cellular aging

The AUREA gTOXXs solution saves time and costs and supports the 3R principle to avoid animal experiments.

COMET assay		AUREA assay	
STEPS	TIME (min)	TIME (min)	STEPS
Buffer preparation: aliquots possible	5	5	Buffer preparation: aliquots
Agarose preparation: Distribution in Eppendorf tubes	20	2	Equipment: Switch on the robot
Equipment: assemble gel electrophoresis device	15		
Eppendorf tubes with agarose at 37 °C	15		
DNA damage infection	30		
Embedding cells in agarose on the slides	60	120	Automatic steps: Addition of suspension buffer, transfer of samples to the 96-well plate, lysis buffer, alkaline buffer, neutralization buffer, Fluorescent Dye
Cool down agarose	10		
Lysis buffer	30		
Alkaline buffer	60		
Electrophoresis	30		
70% Ethanol	5		
Drying of the slides	60		
SybGreen	15		
SybGreen incubation	>240		
Microscopy	>60	2	Fluorescence reader
Data analysis	>60	10	Data analysis
TOTAL TIME	>715	ONLY 169 MINUTES	TOTAL TIME

**RAPID
RELIABLE
ROBUST**

