

# The ToxTRACKER<sup>®</sup> assay

## BACKGROUND INFORMATION

### Highly sensitive and specific

A unique combination of fluorescent reporter genes in stem cells allows accurate identification of genotoxic carcinogens

### Rapid, easy and reliable

Easy and highly quantitative detection of GFP reporter induction by flow cytometry

### Mechanistic insight in toxicity

A panel of selected reporters unveil the cellular stress signalling pathways that are activated upon exposure

### Various toxic responses in a single assay

ToxTracker discriminates between direct DNA damage, oxidative stress and protein damage as primary toxic response



## PROTOCOL

### Dilutions

Typically 5-serial dilutions, 2-fold increased

### Reporter cell lines

Six reporter cell lines for DNA damage, oxidative stress and protein unfolding.

### Exposure to test compound

Typically 24 hours exposure, but other exposure times are possible.

### Quality controls

Standard test includes cisplatin (DNA damage), ditethyl mateate (oxidative stress), tunicamycin (protein unfolding) and aflatoxin B1 (metabolism)

### Compound requirements

<10 mg of compound is needed, provided as dry powder or in solution (typically DMSO, but other solvents are possible)

### Metabolising system

We can add S9 liver extract

### Analysis method

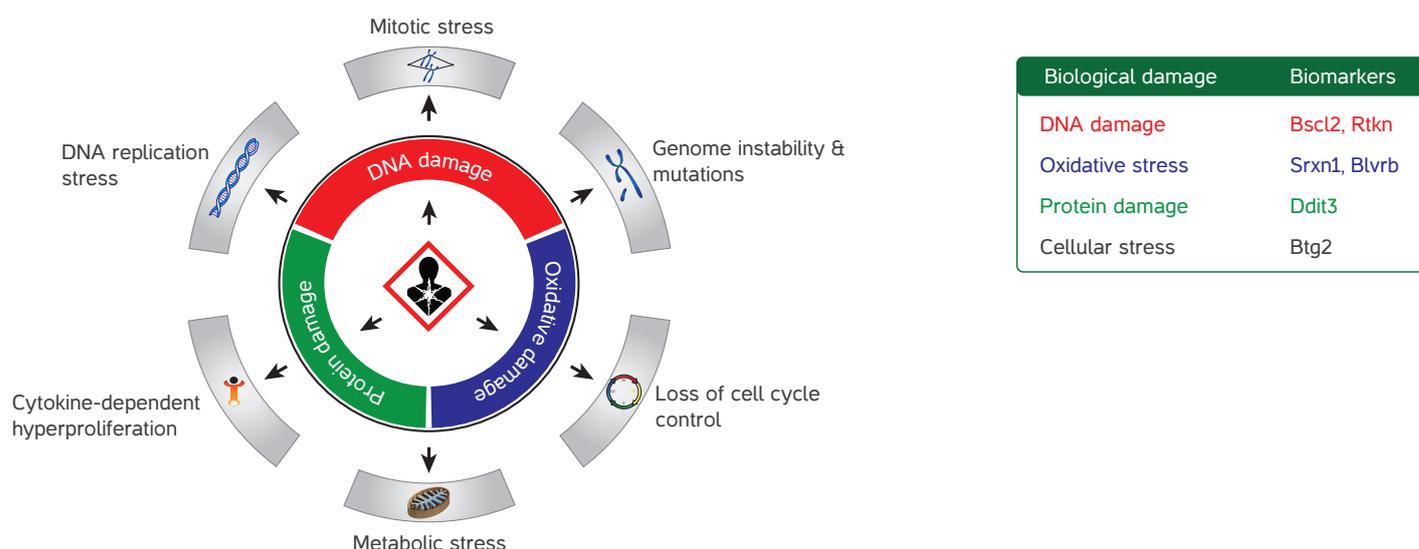
We will use flow cytometry to determine effects. We use the state-of-the-art Guava system.

### Data reporting

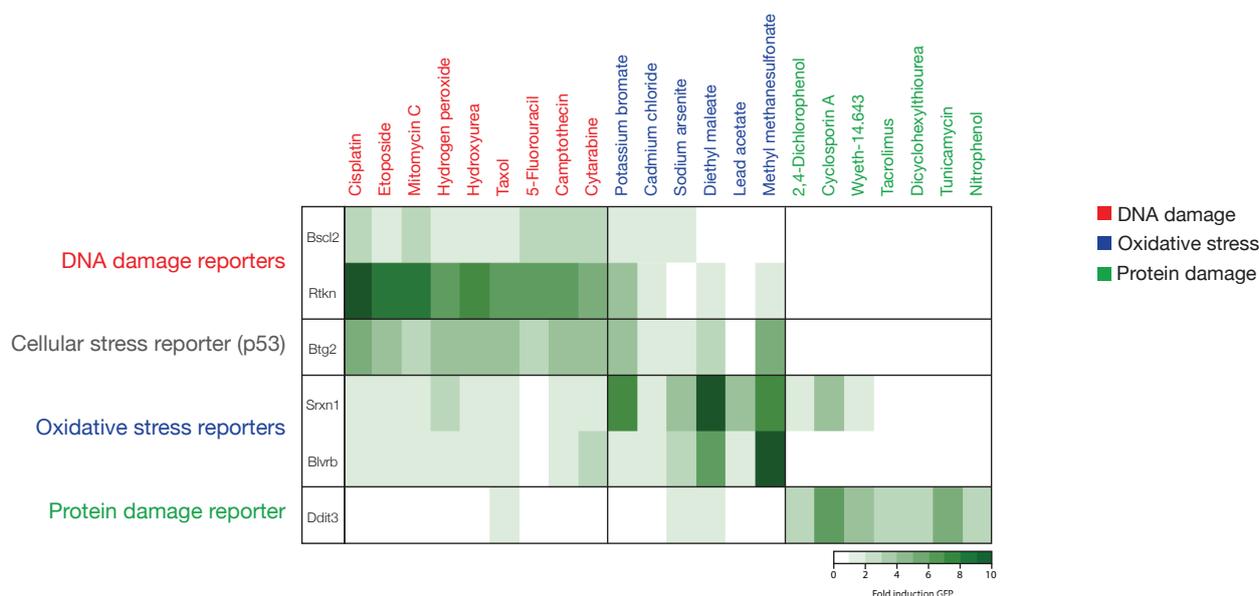
We use our ToxPlot software to analyse results and together with the expert interpretation from our scientist you will receive a full report within 2 weeks. Data which is included:

- Extensive cytotoxic profile
- Assessment of mechanism of genotoxicity
- EC 10/25/50 and LC 10/25/50 calculations
- Toxicity profile in absence or presence of metabolising system
- Comparison to ToxTracker profile to reference compounds

**Figure 1:** mechanisms of toxicity that are detected by the ToxTracker assay



**Figure 2:** the different toxic properties of compounds that are detected in the ToxTracker assay are presented in a easy-to-interpret heatmap.



**Table 1:** predictive capacity of ToxTracker and conventional genotoxicity assays.

Test name	Sensitivity (%)	Specificity (%)	MOA
<b>Regulatory</b>			
Bacterial reversion (Ames)	60	77	-
Chromosome aberrations	70	55	-
Mammalian mutation	81	48	-
<b>Screening</b>			
<b>ToxTracker</b>	<b>94</b>	<b>95</b>	<b>yes</b>
Bacterial SOS Umu C	62	72	-
Ames MPF	58	63	-
Radar Screen	39	82	-
GreenScreen HC	87	95	-

## REFERENCES

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