



# A standardized comet test by image cytometry

Detection and quantification of comet test events using an innovative image cytometry platform

## A sensitive, validated test for the detection of nuclear DNA

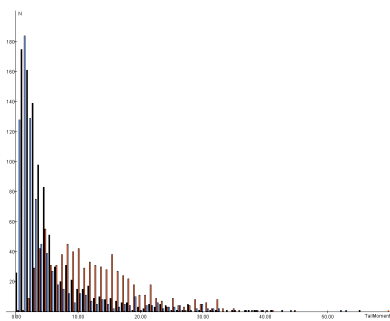
The comet test is known for its sensitivity (detection limit: 50 nuclear DNA strand breaks) and increasingly stands out as an essential test in the field of genotoxicity.

In the past, however, the recording and scoring of comet test data was cumbersome and operator-dependent, even with computer assistance.

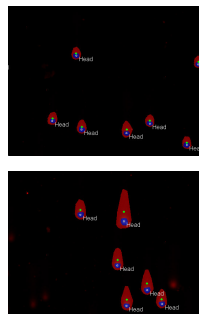
In order to address this issue, VigiCell uses image cytometry to perform a standardized, automated comet test.

### VigiCell provides scoring which is:

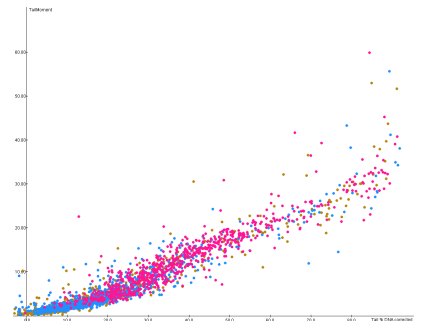
<p><b>1</b> Reproducible</p> <p><i>Operator-independent scoring :</i></p> <ul style="list-style-type: none"> <li>Standardized recognition and measurement</li> <li>Within-sample and between-sample reproducibility</li> </ul>	<p><b>2</b> Informative</p> <p><i>Direct access to all the measurable parameters:</i></p> <ul style="list-style-type: none"> <li>"extent tail moment" and "olive tail moment",</li> <li>% DNA in the tail, tail length</li> <li>Corrected for passive diffusion</li> </ul>	<p><b>3</b> Closely monitored</p> <p><i>Sub-micron precision, reliable data storage:</i></p> <ul style="list-style-type: none"> <li>Traceability of each event for the whole sample library.</li> <li>Visual scoring always available.</li> </ul>
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Histogram of the extent tail moment (blue control, black 10µM, orange 100µM)



HepG2 / Camptothecin Automated detection and scoring



Plot tail DNA% corr vs. Tail moment (ochre control, blue 10µM, fuchsia 100µM)

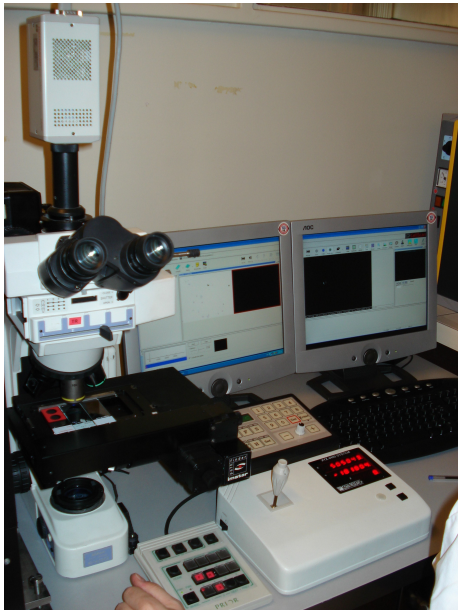
An innovative and automated method for reproducibility and optimal standardization

## Image cytometry for the comet test

The Pathfinder™ platform is totally automated in terms of both imaging and subsequent data processing & result extraction. Its specific hardware and software features make it ideally suited to performing comet tests.

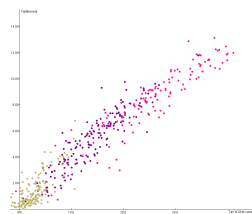
The specific scoring protocols meet morphological and fluorescence distribution criteria for multiple, precise events, guaranteeing totally reproducibility for recognition and within-sample & between-sample measurements.

The sub-micron precision of the hardware and software components enables event-by-event traceability for the whole slide/sample library, built up over the course of the experiments. The possibility of standard visual scoring is thus always available.

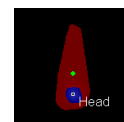


### The Pathfinder™ platform combines:

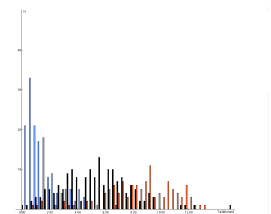
- ▶ a bright field/fluorescence microscopy imaging module with an entirely automated, motorized stage.
- ▶ an automated slide/microplate handling and management system.
- ▶ a dedicated software suite enabling the definition and monitoring of each parameter.



Plot tail DNA% corr vs Tailmoment  
(beige ctrl, violet 200µM, fuschia 400µM)



CHO / H<sub>2</sub>O<sub>2</sub>



Histogramme Tailmoment  
(bleu ctrl, noir 200µM, orange 400µM)

## Custom comet tests

The experimental conditions (reference substances, cell models (see the "models" sheet), etc.) can be chosen according to your objectives.

**vigi cell**  
santé & environnement

As well as designing and performing toxicology studies, VigiCell also...

#### *in vitro* cellular type : ref. « model » sheet

- **in vivo expériences** (in Human) : ref. « in vivo » sheet
- **Cellular health** : apoptosis/necrosis , mitochondrial activity , morphology , proliferation and cell cycle , oxidative stress , cellular stress , membrane integrity ... (ref. « screening », « biomonitoring » sheet, « REACH »)
- **Genotoxicity** : micronucleus assay , Comet assay , (ref. f « comet » and « micronucleus »), p21, p53, mdm2, gadd45
- **Blood-Brain-Barrier** : kinetic and toxicity (ref. « BBB » sheet)
- **Inflammation** : transendothelial lymphocyte passage ; adhesion molecules expression ; ... (ref. « inflammation » sheet)
- **Angiogenesis** : « Wound repair » on cellular monolayers, invasion and/or migration through boyden chambers, endothelial tubes formation

#### And PARTNERSHIP :

- **Transmembrane/organ passage** Skin, Intestine, Cornea, mucosa
- **Endocrine disruptors** (interactions with enzyme receptors ) and **Thyroidian disruptors** (activity modulation of D2 and D3 enzymes )
- **Metabolisation** : expression (inhibition/induction) of cytochromes , metabolic stability , Characterisation of metabolites
- **Reprotoxicity** : follicle bioassay, in vitro maturation assay, In vitro fertilization assay, mouse embryo assay, embryonic stem cell test, uterine contractivity, sperm analysis

Screening – biomonitoring – REACH – Case studies – Contract R&D

Contact us to learn about the full range of our activities and services