

# The development of a high-throughput and highly automated genotoxicity screening assay

## Background

- Genotoxicity (GTX) testing is an essential part of safety assessments for predicting carcinogenic potential of all drugs and chemicals.
- Need and goal: replace current Chromosomal Damage (CD) assays that are sensitive, but not specific, with a more accurate mechanism-based risk-assessment assay.

## Research Question

Can a transcriptional biomarker assay be developed in a high-throughput manner to alleviate cost, lengthy turnaround times, and assist regulatory agencies in making informed decisions and creating policies on chemical safety?

## Results & Conclusions

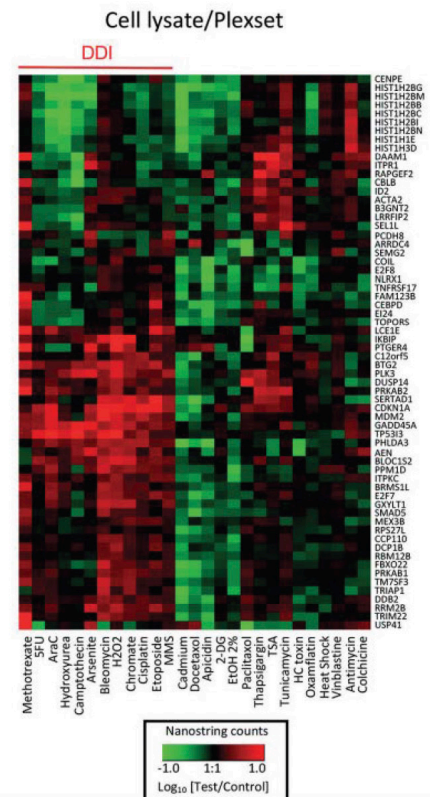
- Integration of NanoString nCounter<sup>®</sup> Plexset technology allows for the development of a genotoxicity assay that authors dubbed TGx-DDI.
- In previous studies, the authors identified biomarkers for mechanism-based risk-assessment replacing less specific and less accurate methods including Chromosomal Damage (CD) assays deemed by the industry as non reproducible in vivo. Authors subsequently utilized the NanoString platform to create a high-throughput assay using these biomarkers.
- The NanoString Plexset assay can assess genotoxicity in a simple and rapid way with high-throughput capacity.
- More robust, reproducible, and accurate versus traditional CD mammalian cell-based assays.
- 64 genes and 96 samples can be processed in 30 minutes.

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## Experimental Setup

Sample Type	TK6 cells; human lymphoblastoid cell line; drug treated samples; untreated samples
Tissue Type	Human lymphoblastoid, rat liver
Assay	PlexSet
Analyte	RNA
Instrument	nCounter <sup>®</sup> Analysis System

## Performance of TGx-DDI with the nCounter<sup>®</sup> Plexset Assay



**FIGURE 2(B)** Heatmap of TGx-DDI (DNA Damage Inducing) expression analysis using cell lysate and nCounter Plexset with genes on the Y axis and chemicals on the X axis.

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For more information, please visit [nanosttring.com/PlexSetReagents](https://nanosttring.com/PlexSetReagents)

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