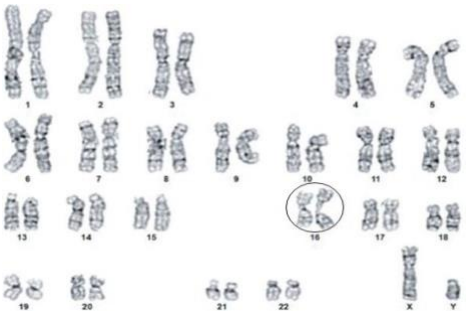
KromaTiD

DATA SHEET

G-Band Karyotyping QC Services

KromaTiD is a highly experienced service provider for the cell and gene therapy community, offering a variety of G-band karyotyping services to meet your research, IND filing and clinical trial needs. We provide standard G-band analysis using ISCN guidelines as well as our Genomic Integrity G-Band Karyotyping service, designed to meet the unique needs of cell and gene therapy developers. Both services are available under either RUO or GLP performance environments.



Left: G-band analysis performed on GM24385 "Genome in a Bottle" cell line. G-banding was used to confirm dGH SCREEN™ study results, which indicated genomic instability and gross rearrangements of chromosome 16 (circled).

Standard G-Band Karyotyping QC Service

- Karyotyping performed by our team of certified cytogeneticists using ISCN guidelines and scoring rules.
- Detection of aneuploidy, large inversions, translocations, duplications, deletions, and other defined structural variants.
- Includes a report on each submitted sample with counts and analysis of structural variants for all cells plus clonal event karyograms.
- Expert culture development for various cell types, including adherent, suspension, lymphocytes, NK, iPS, immune, and whole blood.

Genomic Integrity G-Banded Karyotyping Services

These services are designed to meet the unique needs of cell and gene therapy developers by providing detailed reporting on the low frequency variants that can impact the success of drug products.

- For the specified cell number for each sample, certified cytogenetic technologists analyze every cell and use customized analysis of the resulting sample data to support low-prevalence variant detection.
- Genomic Integrity Reports summarize key results into prevalence-based “% of Cells” tabulations, including:
    - Ploidy
    - Aneuploidy (whole chromosome gain and loss)
    - Enumeration of 28 different chromosomal rearrangement events (e.g., translocations, inversions, and deletions).
    - An enumerated breakout of each specific variant for each of the 28 categories.

- The Genomic Integrity Pair-Wise Comparison Report provides a side-by-side statistical comparison of structural variants by category and by specific karyotypic event for a wild type and its paired treated/edited sample using Fisher's exact test to determine significance.
- Partner with KromaTiD to qualify any of our karyotyping services against your drug product specifications and provide a customized release test to help accelerate your products to market.

Genomic Integrity Karyotyping Report Example

Gene-edited cell sample – 100 cells analyzed

Category	% of Cells
No Events	74
chromosome aneuploidy	20
acentric fragments	0
additional material of unknown origin	0
constitutional anomaly	0
chromosome breaks	0
chromatid breaks	0
chromothripsis	0
deletions	2
derivative chromosomes	0
dicentrics	0
double minutes	0
duplications	0
endoreduplications	0
fragile sites	0
heterochromatin, constitutive	0
homogeneously staining regions	0
isochromosomes	0
isodicentrics	0
insertions	0
inversions	1
marker chromosomes	2
losses	0
multiple copies of same abnormality	0
gains	0
quadriradials	0
ring chromosomes	0
translocations	2
triradials	0

Table 1: Summary of cells with chromosomal rearrangements

Category	Event	# of Cells	% of Cells
Chromosome Aneuploidy	−X	1	1
	−2	4	4
	−3	1	1
	−5	2	2
	−9	1	1
	−15	2	2
	−16	1	1
	−18	1	1
	−21	6	6
	+9	1	1
Marker Chromosomes	+M	2	2
Deletions	del(9)(q15)	1	1
	del(21)(q25)	1	1
Inversions	inv(7)(p13)	1	1
Translocation	t(2;9)(p15.3;q22)	1	1
	t(8;12)(q15;q12)	1	1

Table 2: Rearrangement event rates

S#######	# Events	# of Cells	% of Cells
Chr 9 Events	4	4	4
Chr 21 Events	7	7	7

Table 3: Event rates for edit target chromosomes

Genomic Integrity Pair-Wise Comparison Report Example

Project Overview

Company X is editing human cells and testing the resulting batches (referred to as Z) against unedited controls (referred to as WT) for chromosome ploidy and structural rearrangements. For this project, KromaTiD:

- Received two cryopreserved samples
- Recovered cells into culture and harvested the two samples
- Stained and imaged metaphase slides for each sample
- Analyzed 100 metaphase spreads from each sample and generated independent reports of genomic integrity
- Generated this summary report comparing the unedited to the edited sample; NOTE: % of Cells equals # of Cells since 100 cells were analyzed

Category	WT	Treated Z	Fisher's Exact*	*p*-value significant
	% of Cells	% of Cells	*p*-value	< .05
No Events	84	74	0.1175	No
Chromosome Aneuploidy	13	20	0.2528	No
Marker Chromosomes	1	2	1	No
Additional material of unknown origin	1	0	1	No
Deletions	1	2	1	No
Inversions	0	1	1	No
Translocations	0	2	0.4975	No

Table 4: Summary of events by category for WT and Treated Z

Sample Name	WT			Treated Z		
Sample ID	S######			S######		
Category	# Events	# of Cells	% of Cells	# Events	# of Cells	% of Cells
Chr 9 Events	0	0	0	4	4	4
Chr 21 Events	2	2	2	7	7	7

Table 5: Event rates for edit target chromosomes

Contact us to learn more: kromatid.com