

Assay background

- Traditionally, genetic stability of pluripotent stem cells has been confirmed via g-banded karyotyping, a method performed by professional cytogeneticists. This method requires provision of log-phase cells by the researcher. Chromosomal spreads from 20 individual cells are stained and visually inspected for aberrations, and images captured under a microscope for subsequent reporting.
- Recently, researchers have adopted alternative methods employing molecular, array-based approaches to help reduce subjectivity and streamline sample submission. Conveniently, frozen cell pellets are collected instead of live cells. Resolution is often slightly higher (1Mb or less) with these assays than with traditional karyotyping (5-10 Mb). The limit of detection for percent of cells containing aberrations is lower, however, since it is a population-based assay rather than evaluating one cell at a time.
- KaryoStat+ Assay services represents one such alternative to g-banded karyotyping for **all non-transformed human cells**. This includes primary cells, stem cells, and *in vitro*-differentiated cells. The assay offers accurate genotyping (cell ID) plus whole-genome coverage for accurate detection of chromosomal abnormalities with a typical turnaround time of 3-4 weeks. This assay is **not recommended for transformed or immortalized cell lines** due to the large number of chromosomal rearrangements observed. These cell lines are unlikely to pass internal QC requirements and therefore provide inconclusive results.
- We welcome you to find out more about the services at the following site:
<https://www.thermofisher.com/us/en/home/life-science/stem-cell-research/stem-cell-services/karyostat-karyotyping-service.html>

KaryoStat+ Results: KS-19141

1. KaryoStat+ analysis of this sample revealed that it originated from a male individual.
2. No chromosomal aberrations were found when comparing against the reference dataset.

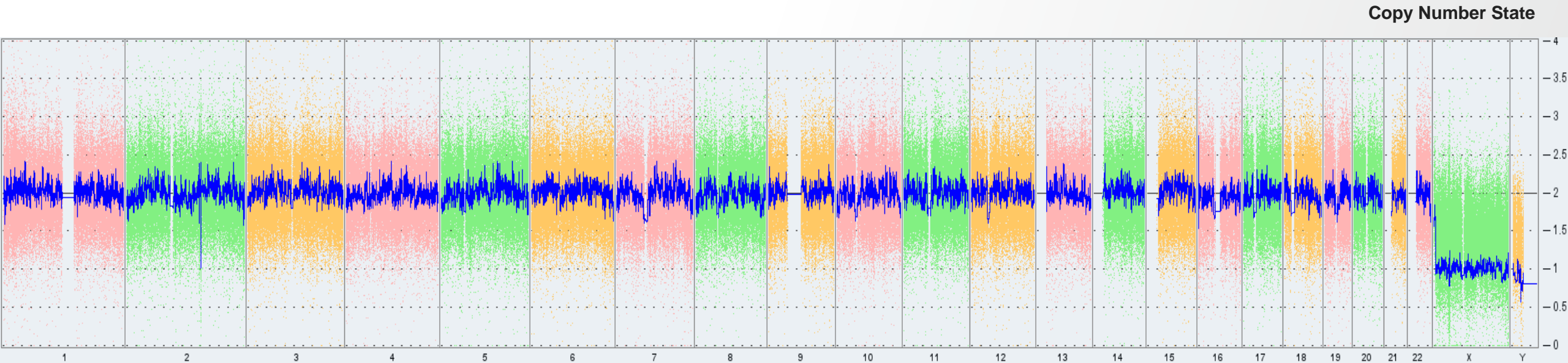


Figure 1: Whole genome view. The whole genome view displays all somatic and sex chromosomes in one frame with high level copy number. The smooth signal plot (right y-axis) is the smoothing of the log₂ ratios which depict the signal intensities of probes on the microarray. A value of 2 represents a normal copy number state (CN = 2). A value of 3 represents chromosomal gain (CN = 3). A value of 1 represents a chromosomal loss (CN = 1). The pink, green and yellow colors indicate the raw signal for each individual chromosome probe, while the blue signal represents the normalized probe signal which is used to identify copy number and aberrations (if any). Aberrations when present are indicated by red arrows.