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Where data means more

CASE STUDY

Identification of genomic biomarkers for cell line differentiation

Client

Industry
Food and Beverage

Location
US

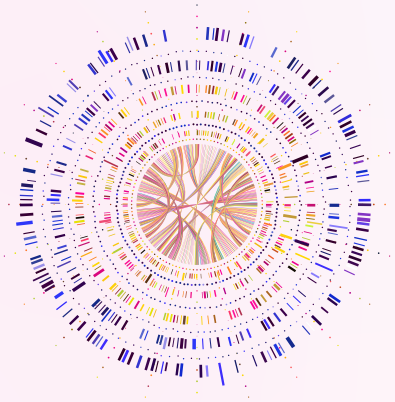
Therapeutic Area
Veterinary

Specification

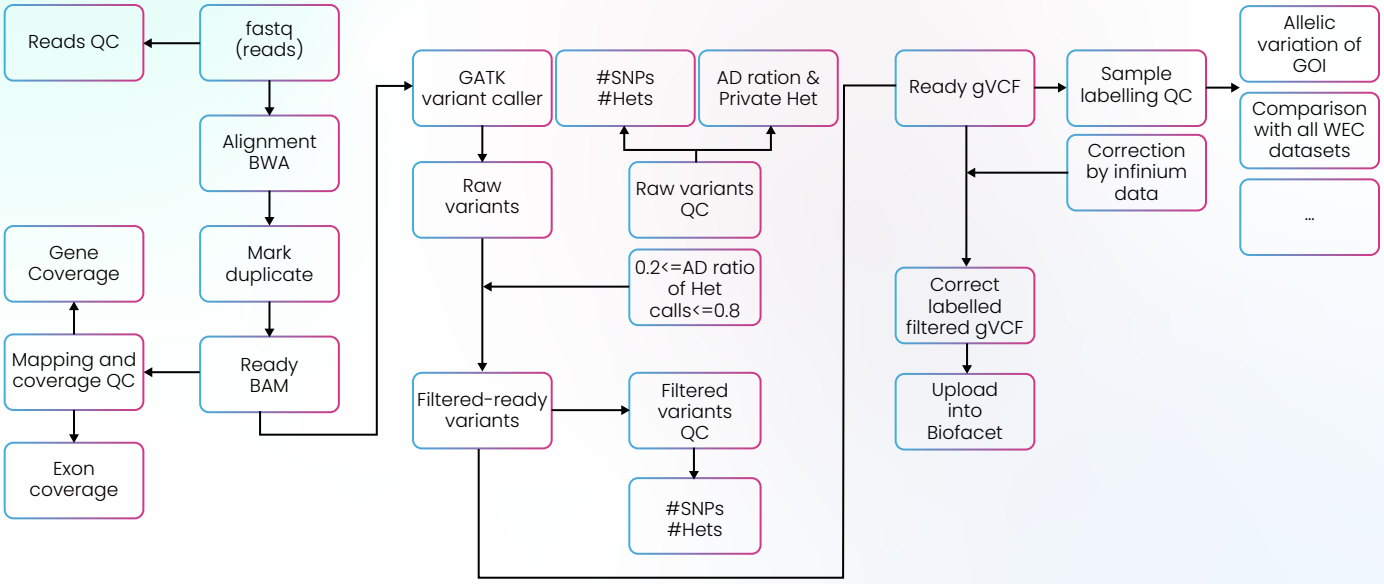
- Identification of genomic biomarkers (SNPs/SNVs/indels) to differentiate between chicken (Gallus gallus) cell lines.
- Matching of the cell lines to the embryo of origin.

Key activities

- Selection of the genomic regions for those best covered, with highest quality scores and located within exons to ensure high confidence in difference between the cell lines.
- Variant discovery across the different cell lines of interest and original embryonic samples.
- Cell line differentiation
  - Cell line clustering
  - PCR primer development for the regions of interest
- Matching analysis
  - Comparison of the cell lines SNP profiles to the embryonic DNA sample profiles
  - Selection of key identification SNPs, quantification, and statistical testing



Our Approach



Deliverables

- Developed multiple unique PCR primer pairs (5 per cell line) to unambiguously identify various cell lines without the need for repeated full genomic sequencing.
- Reported the outcome of matching analysis of the cell lines to the embryo of origin.

Results

- Cell lines were distinguished from each other by identification of a line-specific unique set of genomic markers. High-quality variants were rapidly identified using our methodology.
- Cell lines were matched with embryos to determine common and unique variants. Lists describing the chromosome, position, quality score, read depth, reference, and alternate alleles for these variants were provided to the client.
- Saved customer time and resources by identifying cell lines using PCR methodology rather than WGS.