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(54) Title: **ROBUST QUANTIFICATION OF CIRCULATING TUMOUR DNA THROUGH FRAGMENT LENGTH ANALYSIS**

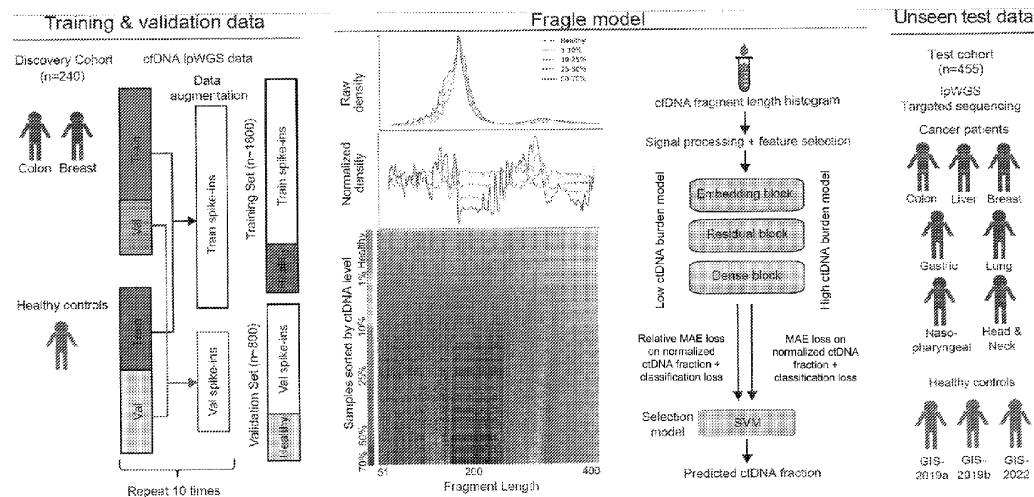


Figure 1

(57) Abstract: Systems and methods for quantifying circulating tumour DNA (ctDNA) in a plasma sample by performing fragment length analysis of the sequencing data using a ctDNA quantification model to estimate a ctDNA metric of the blood plasma sample. Wherein the ctDNA quantification model comprises a neural network based system trained using a training dataset generated using control cfDNA data augmented with ctDNA data obtained from known cancer samples to generate artificial training dataset records with a known ctDNA metric.

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