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(54) Title: DNA METHYLATION MARKERS FOR NONINVASIVE DETECTION OF CANCER AND USES THEREOF

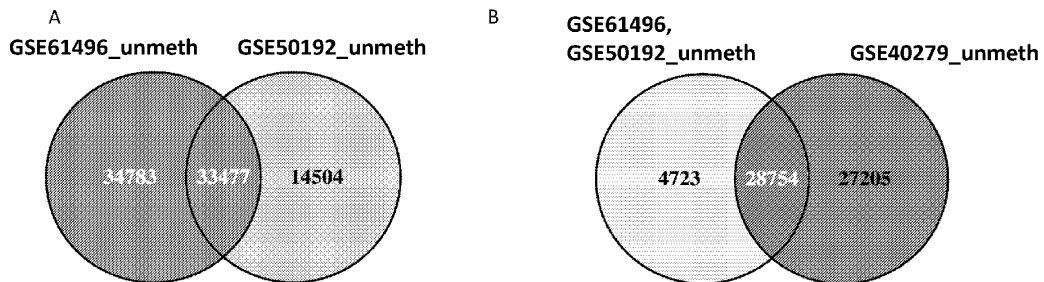


Figure 1.

(57) Abstract: A "binary-categorical differentiation" method for finding a combination of a small number of exquisite DNA methylation positions in the human genome (CG IDs) for detecting cancer in DNA in biological material derived from a patient and distinguish it from other tissue cell free DNA and blood cells DNA. Another method for detecting tissue of origin of tumor DNA uses a combination of unique DNA methylation positions in the human genome (CG IDs). Combinations of CG IDs derived from tumor DNA are disclosed for accurately detecting with cancers by measuring the DNA methylation of a combination of specific CG IDs and deriving a "methylation score". Kits for predicting cancer using CG IDs using multiplexed next generation sequencing methylation assays, pyrosequencing assays and methylation specific PCR from a small volume of plasma. Various methods using biological material help lead to prediction of cancer in persons with no other clinical evidence for cancer.

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