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(71) Applicant (for all designated States except US): **THE CHINESE UNIVERSITY OF HONG KONG** [CN/CN];
Shatin, New Territories, Hong Kong (CN).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **LO, Yuk Ming Dennis** [GB/CN]; 4th Floor, 7 King Tak Street, Homantin, Kowloon, Hong Kong (CN). **CHAN, Kwan Chee** [CN/CN]; Flat A, 13/F, Block 34, Broadway Street, Mei

Foo Sun Chuen, Kowloon, Hong Kong (CN). **CHIU, Wai Kwun Rossa** [AU/CN]; House 31, Double Haven 52 Ma Lok Path, Shatin, New Territories, Hong Kong (CN). **JIAN-ANG, Peiyong** [CN/CN]; Flat 1106 Block A, Staff Quarters, Prince of Wales Hospital 30-32 Ngan Shing Street, Shatin, New Territories, Hong Kong (CN).

(74) Agent: **GRIFFITH HACK**; Level 3, 509 St Kilda Road, Melbourne, Victoria 3004 (AU).

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(54) Title: DETECTION OF GENETIC OR MOLECULAR ABERRATIONS ASSOCIATED WITH CANCER

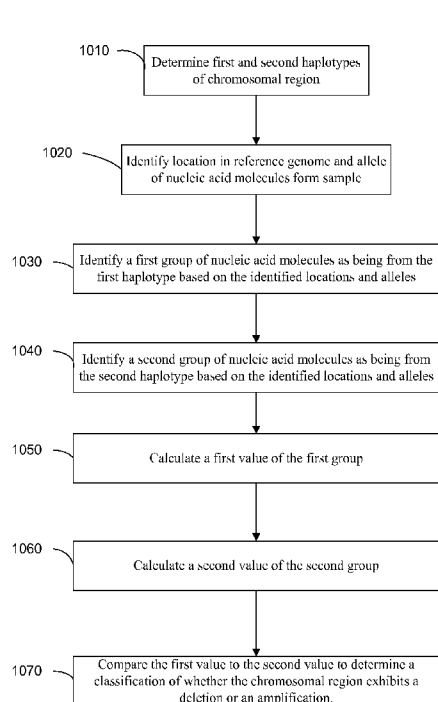


FIG. 10

(57) Abstract: Systems, apparatus, and methods are provided for determining genetic or molecular aberrations in a biological sample from an organism. Biological samples including cell-free DNA fragments are analyzed to identify imbalances in chromosomal regions, e.g., due to deletions and/or amplifications in a tumor. Multiple loci are used for each chromosomal region. Such imbalances can then be used to diagnose (screen) a patient for cancer, as well as prognosticate a patient with cancer, or to detect the presence or to monitor the progress of a premalignant condition in a patient. The severity of an imbalance as well as the number of regions exhibiting an imbalance can be used. A systematic analysis of non-overlapping segments of a genome can provide a general screening tool for a sample. Additionally, a patient can be tested over time to track severity of each of one or more chromosomal regions and a number of chromosomal regions to enable screening and prognosticating, as well as monitoring of progress (e.g. after treatment)



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