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- (71) **Applicant: THE CHINESE UNIVERSITY OF HONG KONG** [CN/CN]; Shatin, New Territories, Hong Kong 999077 (CN).
- (72) **Inventors: DONG, Zirui**; Shatin, New Territories, Hong Kong 999077 (CN). **CHOY, Kwong Wai**; Shatin, New Territories, Hong Kong 999077 (CN). **LI, Keying**; Shatin, New Territories, Hong Kong 999077 (CN). **CHAU, Matthew Hoi Kin**; Shatin, New Territories, Hong Kong 999077 (CN).
- (74) **Agent: CHENGDU XINGZHI PATENT AGENCY LTD.**; Suite 1002, Building B, 88 Jiaozi Avenue, High-Tech Zone, Chengdu, Sichuan 610095 (CN).
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(54) **Title:** METHODS TO DETERMINE MATERNITY, PATERNITY, OR PARENTAGE AND COMPUTER SYSTEMS FOR IMPLEMENTATION THEREOF

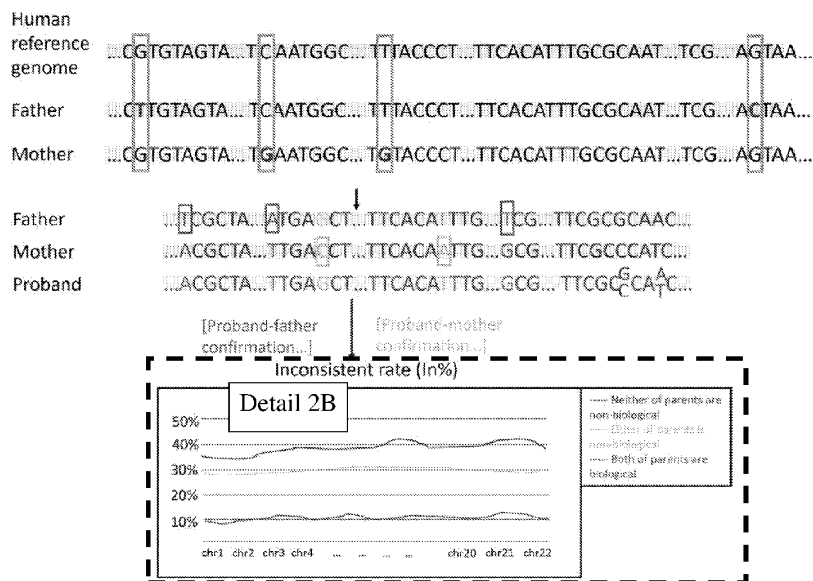


FIG. 2A

(57) **Abstract:** Provided pertains to the field of healthcare informalities and provides information and communication (ICT) technology useful for methods and tools for paternity and/or maternity testing. An analytical pipeline based on low-pass GS (e.g., 1-fold read depth), referred to herein as LpPat, is provided for paternity and/or maternity testing (e.g., with trio-based and duo-based analytical modes). By down-sampling the read-depth from 10 trios with confirmed paternity and maternity, an optimal read depth of 1-fold is demonstrated across other sequencing parameters with a turnaround time for the analysis of less than one hour. The robust performance has been validated by another 170 trios sequenced from different library construction methods and platforms. The algorithmic analysis provides a rapid, cost effective, and sequencing-platform-neutral paternity and/or maternity test, based on low-pass genetic sequencing.

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