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62/522,605 20 June 2017 (20.06.2017) US(71) Applicant: **ILLUMINA, INC.** [US/US]; 5200 Illumina Way, San Diego, California 92122 (US).(72) Inventors: **LI, Yong**; 5200 Illumina Way., San Diego, California 92122 (US). **BRUAND, Jocelyne**; 5200 Illumina Way, San Diego, California 92122 (US). **KELLEY, Ryan**; 5200 Illumina Way, San Diego, California 92122 (US). **LEE, Chih**; 5200 Illumina Way, San Diego, California 92122 (US). **SCHEFFLER, Konrad**; 5200 Illumina Way, San Diego, California 92122 (US).(74) Agent: **OSTLER, Trenton B.**; 5200 Illumina Way, San Diego, California 92122 (US).

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(54) Title: METHODS AND SYSTEMS FOR DECOMPOSITION AND QUANTIFICATION OF DNA MIXTURES FROM MULTIPLE CONTRIBUTORS OF KNOWN OR UNKNOWN GENOTYPES

(57) Abstract: Methods and systems are provided for quantifying and deconvolving nucleic acid mixture samples including nucleic acid of one or more contributors having known or unknown genomes. The methods and systems provided herein implement processes that use Bayesian probabilistic modeling techniques to determine the abundances and confidence intervals of genetically distinct contributors in a chimerism sample, thereby improving specificity, accuracy and sensitivity, and greatly expanded the application scope over conventional methods.

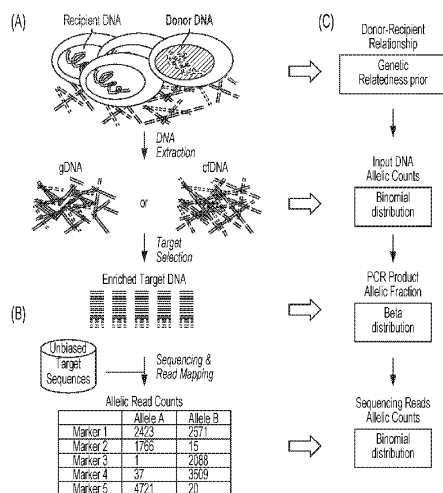


Figure 1

Declarations under Rule 4.17:

- *as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))*

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