

NUCLEIC ACID AMPLIFICATION

BACKGROUND

[0001] Nucleic acid amplification is very useful in molecular biology and has wide applicability in practically every aspect of biology, therapeutics, diagnostics, forensics and research. Generally, amplicons are generated from a starting template using one or more primers, where the amplicons are homologous or complementary to the template from which they were generated. Multiplexed amplification can also streamline processes and reduce overheads. This application relates to methods and reagents for nucleic acid amplification and/or analysis.

SUMMARY

[0002] Methods, reagents and products of nucleic acid amplification and/or analysis are provided herein. Amplification can make use of immobilized and/or soluble primers. A single set of primers can be mixed with different templates, or a single template can be contacted with multiple different primers, or multiple different templates can be contacted with multiple different primers. Amplicons generated from methods provided herein are suitable substrates for further analysis, e.g., sequence determination.

[0003] In some embodiments, the present teachings provide compositions, systems, methods, apparatuses and kits for nucleic acid amplification.

[0003a] In one aspect of the disclosure, there is provided a method for nucleic acid amplification, comprising: (a) distributing at least two polynucleotides into an array of reaction chambers by introducing a single one of said polynucleotides into at least two of said reaction chambers; and (b) forming at least two substantially monoclonal nucleic acid populations by amplifying the polynucleotides within said at least two reaction chambers, wherein the said at least two reaction chambers are in fluid communication with each other during the amplifying.

DETAILED DESCRIPTION OF THE DRAWINGS

[0004] **Figure 1** provides a schematic showing an embodiment of template walking. In an alternative embodiment, the immobilized primer comprises an adenosine-rich sequence designated as (A)_n, e.g., (A)₃₀, and the primer binding site for the immobilized primer on the template comprises a complementary T-rich sequence, e.g., (T)₃₀.

[0005] **Figure 2** depicts an overview of amplification on beads by template walking and deposition of beads onto a planar array for sequencing.

[0006] **Figure 3** depicts some alternative embodiments using semiconductor-based detection of sequencing by synthesis. Template walking can be used to generate a population of clonal amplicons on a bead or on the base or bottom of a reaction chamber. In an alternative embodiment, the immobilized primer comprises an adenosine-rich sequence designated as $(A)_n$.