

-continued

<400> SEQUENCE: 8

Ala Asn Thr Thr Gly Ser Thr Asp Tyr Lys Ile His Asp Pro Ser
 1 5 10 15

What is claimed is:

1. A fluidic sorting device comprising:
 - (a) at least one inlet channel configured to provide separate, substantially parallel streams of
 - (i) a sample comprising a target species, non target species, and magnetic particles having an affinity for the target species in the sample, and
 - (ii) a buffer that is substantially free of the sample;
 - (b) a sorting station fluidly coupled to said at least one inlet and located in a path of the sample stream, the sorting station comprising a first wall and a second wall opposing said first wall;
 - (c) a magnetic field gradient generator for interacting with an external magnetic field provided by one or more magnets, when the one or more magnets are positioned outside the sorting station and proximate the first wall and/or the second wall, to produce a magnetic field gradient in the sorting station; said magnetic field gradient generator comprising one or more magnetizable elements on and/or in the first wall and arranged to guide the magnetic particles from the sample stream into the buffer stream along a path produced at least in part by a resulting force vector that is substantially parallel to the one or more magnetizable elements, wherein said resulting force vector is neither parallel nor perpendicular to the direction of the sample stream flow, and said path approximates the shape and orientation of the one or more magnetizable elements; and
 - (d) at least one outlet channel configured to receive the buffer stream with the magnetic particles and a waste stream containing said sample at least partially depleted of the target species.
2. The fluidic sorting device of claim 1, wherein the at least one inlet channel comprises a first inlet channel for providing at least a portion of the buffer stream and a second inlet channel for providing at least a portion of the sample stream.
3. The fluidic sorting device of claim 1, wherein the at least one inlet channel comprises (i) a first inlet channel for providing the buffer stream and (ii) a second inlet channel and a third inlet channel for providing separate streams of the sample.
4. The fluidic sorting device of claim 1, wherein the one or more magnetizable elements are disposed within a fluid pathway of the sorting station to allow fluid contact between the one or more magnetizable elements and the sample stream.
5. The fluidic sorting device of claim 1, wherein the one or more magnetizable elements are patterned nickel elements.
6. The fluidic sorting device of claim 1, wherein the one or more magnetizable elements comprises one or more ferromagnetic strips.
7. The fluidic sorting device of claim 1, wherein the one or more magnetizable elements comprises one or more pins or pegs.
8. The fluidic sorting device of claim 1, wherein the sorting device comprises at least two magnetic field gradient generators.
9. The fluidic sorting device of claim 1, further comprising a permanent magnet proximate the one or more magnetizable elements.
10. The fluidic sorting device of claim 1, wherein the at least one outlet channel comprises: (i) a first outlet channel for collecting at least a portion of the buffer stream comprising purified target species; and (ii) a second outlet channel for collecting at least a portion of the sample stream.
11. The fluidic sorting device of claim 1, wherein the at least one outlet channel comprises: (i) a first outlet channel for collecting at least a portion of the buffer stream comprising purified target species; and (ii) a second outlet channel and a third outlet channel for collecting separate streams of the sample.
12. The fluidic sorting device of claim 1, wherein the magnetic field gradient generator is configured to capture the magnetic particles and then release said magnetic particles to the at least one outlet channel.
13. The fluidic sorting device of claim 1, further comprising a cell lysis module.
14. The fluidic sorting device of claim 1, comprising a first magnetizable element positioned in mirrored opposition to a second magnetizable element.
15. The fluidic sorting device of claim 1, further comprising:
 - (e) an amplification station for amplifying nucleic acid of a target species associated with the magnetic particles in the collection channel; and
 - (f) a detection station for detecting amplified nucleic acid.
16. The fluidic sorting device of claim 1, further comprising a labeling station for labeling the target species with the magnetic particles, wherein labeling station is located upstream from the magnetic field gradient generator.
17. The fluidic sorting device of claim 16, further comprising a second labeling station for labeling diverted target species with a fluorophore having an affinity for the target species or for the magnetic particles.
18. The fluidic sorting device of claim 1, further comprising a detection station for detecting the target species.
19. The fluidic sorting device of claim 1, wherein the magnetic field gradient generator is configured to impose an attractive magnetophoretic force on the magnetic particles.
20. The fluidic sorting device of claim 1, wherein the magnetic field gradient generator is configured to deflect the magnetic particles.

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