

What is Claimed is:

1. A system, comprising:
 - a magnetic field generator configured to generate a magnetic field under magnetic field parameters;
 - a first holder configured to be removably coupled to the magnetic field generator, the first holder comprising a first passage configured to be positioned within the magnetic field at a first location when the first holder is coupled to the magnetic field generator; and
 - a second holder configured to be removably coupled to the magnetic field generator, the second holder comprising a second passage configured to be positioned within the magnetic field at a second location when the second holder is coupled to the magnetic field generator,wherein:
 - the first passage experiences a first magnetic field strength and a first magnetic field gradient, within the magnetic field generated under the magnetic field parameters at the first location; and
 - the second passage experiences a second magnetic field strength and a second magnetic field gradient, within the magnetic field under the magnetic field parameters at the second location,
 - and wherein the second magnetic field strength is different than the first magnetic field strength or the second magnetic field gradient is different than the first magnetic field gradient, or a combination thereof.
2. The system of claim 1, wherein the magnetic field generator is coupled to a frame, the frame conducting magnetic flux and forming a receiving area configured to receive the first holder or the second holder.
3. The system of claim 2, wherein the receiving area is sized to receive only one of the first holder or the second holder at a given time.
4. The system of claim 2, wherein the receiving area is configured to receive only a portion of the first holder or the second holder.

5. The system of claim 4, wherein the portion comprises the first passage of the first holder or the second passage of the second holder.
6. The system of claim 2, wherein the frame comprises a retractable portion that reduces the magnetic flux generated by the magnetic field generator from going beyond the receiving area while the first holder is uncoupled to the magnetic field generator.
7. The system of claim 6, wherein the retractable portion comprises a spring that compresses to allow the first holder to enter the receiving area of the frame.
8. The system of claim 1, wherein, when the first holder is not coupled to the magnetic field generator, the first passage does not experience the first magnetic field strength.
9. The system of claim 2, wherein the first holder comprises a first end surface configured to abut a stopping portion of the frame when the first holder is coupled to the magnetic field generator.
10. The system of claim 9, wherein the second holder comprises a second end surface configured to abut the stopping portion of the frame when the second holder is coupled to the magnetic field generator, and wherein a first distance between the first end surface and the first passage is different than a second distance between the second end surface and the second passage.
11. The system of claim 1, wherein a first passage and the second passage are different sizes.
12. The system of claim 1, wherein the first holder is configured to be fluidically coupled to a first source of a first size bead, and wherein the second holder is configured to be fluidically coupled to a second source of a second size bead.
13. The system of claim 12, wherein a diameter of the first size bead is less than 1 μm and a diameter of the second size bead greater than 2 μm .

14. The system of claim 12, wherein the first size bead is bound to a target cell within a first cell mixture and the second size bead is bound to a target cell within a second cell mixture.
15. The system of claim 1, wherein the first passage or the second passage comprises a magnetic intensifier such as multiple magnetizable sheres.