Flow cytometry is a useful technique for the analysis and sorting of individual objects of various sizes. However, standard flow cytometers are limited by their small flow cells for analyzing and sorting large objects. Manual microscopic manipulation of these objects is tedious, subjective, and limits the size and scope of experiments. The use of large particle flow cytometry for large particles (20-1,500 micron) may overcome the limitations. Analysis and sorting is fast in comparison to manual manipulation, and multi-parametric sorting with criteria including object size, optical density, and fluorescent intensity for up to three markers can be achieved. This technology is ideal for use with live biological materials and sensitive chemistries due to its non-destructive pneumatic sorting mechanism and greatly reduced pressures (resulting in lower shear forces) that ensure minimal effect on the integrity and viability of the objects. Advanced sorting technique based on spatial localization of fluorescence in the object (Profiling) will also be discussed. Examples of applications will include: large cells /cell clusters (embryonic stem cells, pancreatic islets, adipocytes, hepatocytes); bead-based libraries; and model organisms (C.elegans, Drosophila, zebrafish).