The accuracy of drop deposition into wells is critical to single cell experimental success. The automated cell deposition unit (ACDU) of the BD FACSymphony S6 moves plates and microscope slides beneath the sort stream, providing accurate targeting of the drops to the wells. In addition, the BD FACS™ Accudrop system and patented Sweet Spot technology ensure an accurate drop delay and stable drop break off, which are critical components of a successful sort.

An easy colorimetric technique has been described using horseradish peroxidase (HRP) and 3,3’5,5’-teramethylbenzidine (TMB), to detect single droplets sorted into microtiter plate wells. HRP uses hydrogen peroxide (H₂O₂) to oxidize both organic and inorganic compounds. HRP catalyzes electron transfer reactions; it can reduce H₂O₂ to O₂ and H₂O by using TMB as the donor molecule. TMB in its reduced substrate form is colorless, when it is oxidized it turns blue. Two sizes of microtiter plates containing TMB were prepared. The 384-well plate contained 30µL of TMB substrate and the 96-well plates contained 100µL. HRP was suspended in DPBS at a concentration of 1mg/mL and one drop of Polybead Carboxylate 4.5 micron microspheres were added to the solution for sorting on forward and side scatter parameters. The particles suspended in an HRP buffer were sorted into wells according to various plate layouts, defined in BD FACSDiva™ software. Results were confirmed by visual inspection and are shown in Figure 1.
All requested wells contained sorted events, as shown by their blue color, varying in intensity according to the number of events assigned, and therefore drops deposited, to each well. In addition, there were no events deposited into wells outside the expected sort layout.

As demonstrated, the BD FACSymphony S6 Cell Sorter accurately deposited the required events in the expected locations of both the 96-well and the 384-well microtiter plates and is therefore well enabled to meet the research needs of the scientist who requires single cell sorting to drive their research forward.

References