

Supplementary Table 1: Summary of defined metrics in Spiking Experiment following Parsortix-based DTC isolation. Cell enumeration was performed via immunofluorescence imaging and cytopsin analysis.

Metric	Value (%)	Calculation Basis*
Capture Rate	82.76	96/116 (fluorescence microscopy/Spiking)
Harvest Rate	50.00	48/96 (cytopsin/fluorescence microscopy)
Recovery Rate	41.38	48/116 (cytopsin/Spiking)

*Spiked cells n=116, captured cells n=96, harvested cells n= 48.

Supplementary Table 2: Estimated numbers of DTCs after Parsortix Enrichment in BM samples from PIK3CA positive patients

Sample ID	PIK3CA mutation in PT	DTCs detected in BM (standard method, $n/3.0 \times 10^6$)	Total Sample Volume (mL)	Expected cells after Parsortix	Estimated DTCs after Cryopreservation*
41	Yes	1-3	5	265	159
15	Yes	1-3	5	190	114

* Estimated DTCs= DTCs detected by standard method \times total sample volume \times harvest rate in spiking experiment (0.6)

Supplementary Figure 1: Flowchart of patient and sample selection

