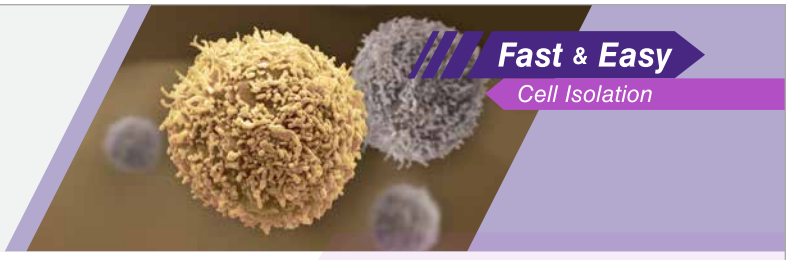
Isolation of Circulating Tumor Cells



Isolate circulating tumor cells (CTCs) with our innovative cell separation platforms, EasySep™ and RosetteSep™, which provide an easy, fast and effective method for isolating rare cells. By reducing the number of processing steps, both isolation platforms result in better yields and high recovery compared to other cell isolation alternatives. Enriched CTCs are untouched and immediately ready for cell culture, DNA/RNA isolation for genetic analyses, further purification using microfluidics and other downstream assays.

EasySep™

Fast and Easy Immunomagnetic Cell Isolation

EasySep™ is an immunomagnetic cell isolation platform suitable for the enrichment of CTCs from whole blood, bone marrow and fresh or previously frozen human mononuclear cells. Unwanted cells are targeted for depletion using antibody complexes linked to magnetic particles. Unwanted cells are pulled to the sides of the tube when the sample is placed in an EasySep™ magnet. The enriched cells are then simply poured or pipetted off into a new tube. EasySep™ kits can be completely automated using **RoboSep™**, the fully automated cell isolation platform. Learn more at **www.EasySep.com** and **www.RoboSep.com**.

RosetteSep™

Unique Immunodensity Cell Isolation

RosetteSep™ kits offer one-step enrichment of cells directly from human whole blood. By crosslinking unwanted cells to red blood cells (RBCs) present in the sample, CTCs are enriched during standard density gradient centrifugation. RosetteSep™ is easy to use, does not require additional equipment, reduces sample handling time and maximizes convenience. RosetteSep™ can be easily combined with **SepMate™**, a specialized isolation tube that standardizes and minimizes variability when isolating cells using density gradient centrifugation. Learn more at **www.RosetteSep.com** and **www.SepMate.com**.

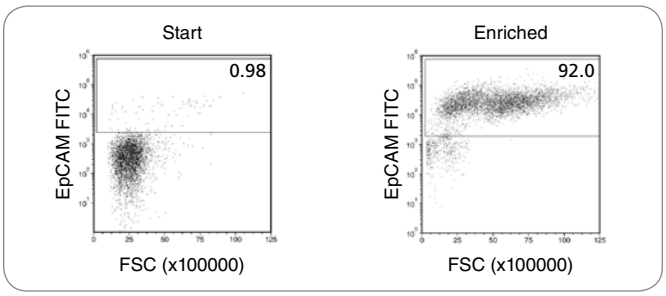


Figure 1. Typical EasySep™ Direct Human CTC Enrichment Kit Profile (Catalog #19657)

Starting with human whole blood from healthy donors, spiked with approximately 1% of CAMA cells (epithelial tumor cell line), the CTC (EpCAM$^+$) content of non-lysed final enriched fraction is 79 ± 16 % (gated on DRAQ5$^+$). Typically the log depletion of targeted CD45$^+$ cells ranges from 2.8 to 3.2.

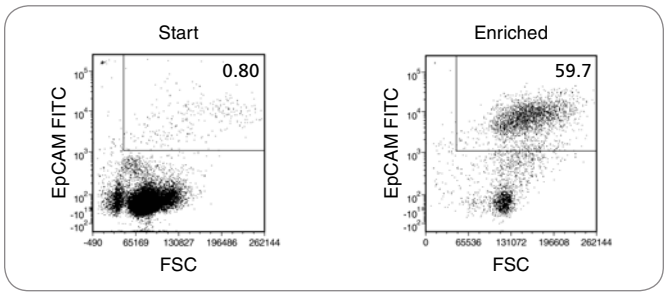


Figure 2. Typical RosetteSep™ CTC Enrichment Profile (Catalog #15177)

Starting with human whole blood from healthy donors, spiked with approximately 0.8% of CAMA cells (epithelial tumor cell line), the CTC (EpCAM$^+$) content of non-lysed final enriched fraction, in the example above, is 59.7%.(gated on DRAQ5$^+$). Typically the log depletion of targeted CD45$^+$ cells ranges from 3.2 to 4.2.

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Isolation of Circulating Tumor Cells

Products for Circulating Tumor Cell Enrichment

EasySep™: Immunomagnetic enrichment from a variety of samples.

PRODUCT NAME	SAMPLE SOURCE	CD45+ DEPLETION	NOTES	CAPACITY	CATALOG #
EasySep™ Direct Human CTC Enrichment Kit	Whole Blood	2.8 - 3.2 log depletion	Recommended for fast enrichment of CTCs directly from whole blood without the need for pre-processing steps such as density gradient centrifugation, sedimentation or lysis. This kit enriches for CTCs by depleting cells expressing CD45 and other leukocyte markers.	100 mL	19657
EasySep™ Human Whole Blood CD45 Depletion Kit	Whole Blood	2.0 - 4.0 log depletion	Recommended for the enrichment of CTCs by depleting $CD45^+$ cells. The protocol for this kit includes a RBC sedimentation step.	100 mL	18289
EasySep™ Human CD45 Depletion Kit	Mononuclear cells from whole blood or bone marrow	4.0 log depletion	Recommended for the enrichment of CTCs by depleting $CD45^+$ cell from fresh or previously frozen human mononuclear cells.	2×10^9 cells	18259

RosetteSep™: One-step cell enrichment directly from whole blood.

PRODUCT NAME	SAMPLE SOURCE	CD45+ DEPLETION	NOTES	CAPACITY	CATALOG #
RosetteSep™ Human CD45 Depletion Cocktail	Whole Blood, Buffy Coat	3.6 log depletion	Recommended for the enrichment of CTCs by depleting $CD45^+$ cells.	40 mL	15122
				200 mL	15162
RosetteSep™ CTC Enrichment Cocktail Containing Anti-CD36	Whole Blood, Buffy Coat	2.9 log depletion	Recommended for the enrichment of CTCs by depleting hematopoietic cells. CD36 has been shown to be expressed on a small subset of breast cancer samples.[1,2] For enrichment of CTCs from breast cancer samples we recommend using #15122 or #15137.	40 mL	15127
				200 mL	15167
RosetteSep™ CTC Enrichment Cocktail Containing Anti-CD56	Whole Blood, Buffy Coat.	3.2 - 4.4 log depletion	Recommended for the enrichment of CTCs by depleting hematopoietic cells. CD56 has been shown to be expressed on small cell lung cancer (SCLC) and pancreatic carcinoma samples.[3,4,5] For enrichment of CTCs from SCLC and pancreatic carcinoma samples we recommend using #15122 or #15127.	40 mL	15137
				200 mL	15177

References

1. Clezardin P et al. (1993) Expression of thrombospondin (TSP1) and its receptors (CD36 and CD51) in normal, hyperplastic, and neoplastic human breast. Cancer Res 53(6): 1421–30.
2. Kuemmerle NB et al. (2011) Lipoprotein lipase links dietary fat to solid tumor cell proliferation. Mol Cancer Ther 10(3): 427–36.
3. Kontogianni K et al. (2005) CD56: a useful tool for the diagnosis of small cell lung carcinomas on biopsies with extensive crush artefact. J Clin Pathol 58(9): 978–80.
4. Naito Y et al. (2006) CD56 (NCAM) expression in pancreatic carcinoma and the surrounding pancreatic tissue. Kurume Med J 53(3–4): 59–62.
5. Tiemann K et al. (2006) Solid pseudopapillary neoplasms of the pancreas are associated with FLI-1 expression, but not with EWS/FLI-1 translocation. Mod Pathol 19(11): 1409–13.