



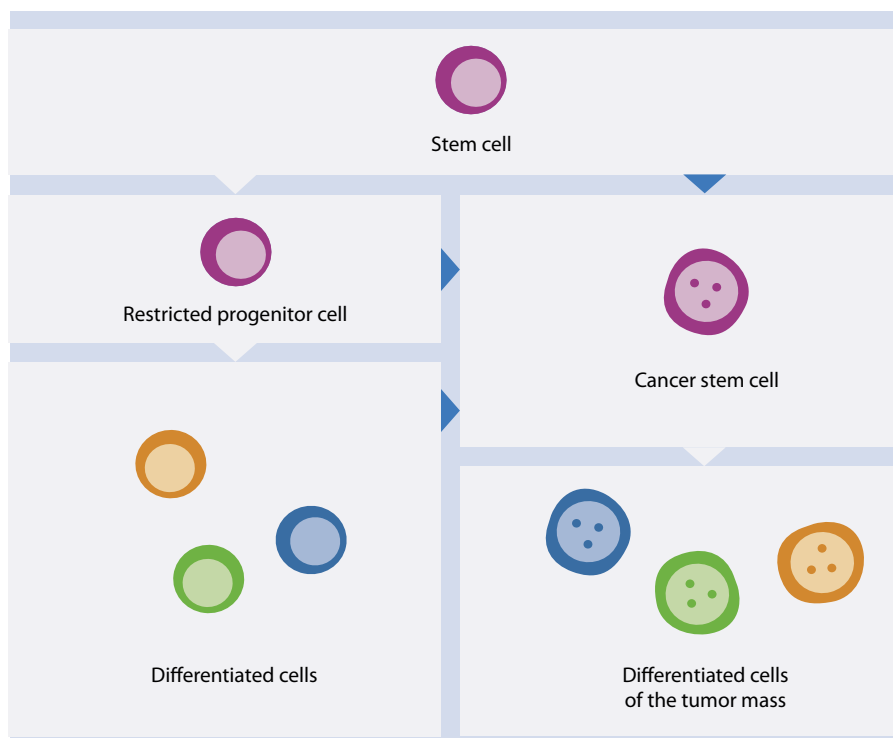
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## Cancer stem cells

Within a tumor, the majority of tumor cells have limited ability to proliferate and rather differentiate into cells that constitute the bulk of the tumor mass. Recent theories suggest that a small population of cells within some tumors possess the ability to self-renew and proliferate and are thus able to maintain the tumor. These cells, which are called cancer stem cells (CSCs) or tumor-initiating cells (TICs), have been observed to share certain characteristics with normal stem cells, including a stem cell-like phenotype and function.

Certain surface markers that are associated with stem cells are also found on cancer stem cells. Human and mouse stem cell markers such as CD34, CD133, CD117, Sca-1,

and other markers, such as CD44, CD24, CD20 CD105, and CD326 (EpCAM) have been found on cancer stem cells. This particular type of cell seems to be able to initiate and drive tumor growth in different hematological and solid tumors. It is critical to identify and isolate these cells from tumor tissues in order to provide a clearer picture of the mechanisms governing the establishment of CSCs, their maintenance, and the molecular alteration in comparison to normal cells. An enrichment of CSCs has been observed in cell populations selected for CD133 expression from brain tumor<sup>1-4</sup>, prostate cancer<sup>5</sup>, renal tumors<sup>6</sup>, and also recently from colon cancer<sup>7,8</sup>, and hepatocellular carcinoma<sup>9</sup>.



Hypothetical differentiation model for the development of cancer stem cells.<sup>10-16</sup> Red arrows indicate potential point of genomic aberration.

## Cell surface markers associated with tumor initiating cells.<sup>23</sup>

Tumor type	Cell surface markers	References
Acute myeloid leukemia	CD34 <sup>+</sup> , CD38 <sup>-</sup>	(22)
Breast Tumor	CD44 <sup>+</sup> , CD24 <sup>+</sup> , CD326 (EpCAM) <sup>+</sup>	(16)
Brain tumor	CD133 <sup>+</sup>	(1)–(4)
Colon cancer	CD133 <sup>+</sup>	(7)
Colorectal cancer	CD326 (EpCAM) <sup>high</sup> , CD44 <sup>+</sup> , CD166 <sup>+</sup>	(17)
Head and neck cancer	CD44 <sup>+</sup>	(19)
Hepatocellular carcinoma cells	CD133 <sup>+</sup>	(9)
Lung adenocarcinoma	Sca-1 <sup>+</sup> , CD45 <sup>-</sup> , CD31 <sup>+</sup> , CD34 <sup>+</sup>	(20)
Metastatic melanoma	CD20 <sup>+</sup>	(21)
Pancreatic cancer	CD24 <sup>+</sup> , CD44 <sup>+</sup> , CD326 (EpCAM) <sup>+</sup>	(18)
Prostate cancer	CD133 <sup>+</sup>	(5)
Renal cancer	CD133 <sup>+</sup>	(6)

## Products:

Cell isolation	Capacity	Order no.
CD133 MicroBead Kit, human	2×10 <sup>9</sup> total cells	130-050-801
CD34 MicroBead Kit, human	2×10 <sup>9</sup> total cells	130-046-702
	1×10 <sup>10</sup> total cells	130-046-703
CD34 MultiSort Kit, human	2×10 <sup>9</sup> total cells	130-056-701
CD105 MicroBeads, human	2×10 <sup>9</sup> total cells	130-051-201
CD117 MicroBead Kit, human	2×10 <sup>9</sup> total cells	130-091-332
CD326 (EpCAM) MicroBeads, human	1×10 <sup>9</sup> total cells	130-061-101
CD20 MicroBeads, human	1×10 <sup>9</sup> total cells	130-091-104
Anti-Sca-1 MicroBead Kit (FITC), mouse	1×10 <sup>9</sup> total cells	130-092-529
CD38 MicroBead Kit	1×10 <sup>9</sup> total cells	130-092-263
MACS <sup>®</sup> molecular		Order no.
miRXplore™ Microarray Kit, 4		130-093-254
miRXplore™ Microarray Kit, 8		130-093-272
miRXplore™ Microarray Service		160-001-143
miRXplore™ Microarray Universal Reference Service		160-001-161

Cell analysis	Conjugate
CD133/1 (AC133), human	-PE, -APC, -Biotin, pure
CD133/1 (W6B3C1) – for Western blotting, human	pure
CD133/2 (293C3), human	-PE, -APC, -Biotin, pure
CD34, human	-FITC, -PE, -APC
CD117 (A3C6E2), human	-PE, -APC
CD117 (AC126), human	-PE
CD326 (EpCAM), human	-FITC, -PE, -APC
CD20, human	-FITC, -PE
Anti-Sca-1, mouse	-FITC, -PE, -APC
CD38, human	-FITC, -PE, -APC, -Biotin



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