

Abstract

Systems and methods for enriching target cells in a sample

A system for enriching target cells in a sample is disclosed. The system comprises a microfluidic chip comprising a sample inlet, a sample outlet, a waste outlet and a microfluidic channel, the sample inlet being coupled to an upstream end of the microfluidic channel and the sample outlet and the waste outlet being coupled to a downstream end of the microfluidic channel, the microfluidic chip being configured such that target cells are directed to the sample outlet and non-target cells are directed to the waste outlet; a sample input pump configured to introduce the sample into the sample inlet of the microfluidic chip; an output flow rate detector configured to measure a flow rate at the sample outlet and / or the waste outlet of the microfluidic chip; a sample collection switching valve having a configuration switchable between a first configuration in which the sample output of the microfluidic chip is coupled to a sample output container and a second configuration in which the sample output of the microfluidic chip is coupled to a waste output container; and a controller configured to control the configuration of the sample collection switching valve using the flow rate measured by the output flow rate detector.

Figure 3