

Recent patents in single-cell analysis and microfluidics

Patent number	Description	Assignee	Inventor	Date
US 9,541,480	A surface coating for capturing circulating rare cells, comprising a nonfouling composition to prevent the binding of non-specific cells and adsorption of serum components; a bioactive composition for binding the biological substance, such as circulating tumor cells; a surface coating for capture and purification of a biological substance; a bioactive composition for binding the biological substance, such as circulating tumor cells; and a novel microfluidic chip, with specific patterned microstructures to create a flow disturbance and increase the capture rate of the biological substance.	Academia Sinica (Taipei)	Chang Y-C, Wu H-C, Tseng P-Y, Wu J-C	1/10/2017
US 9,540,689	A novel method for analyzing nucleic acid sequences based on real-time detection of DNA polymerase-catalyzed incorporation of each of the four nucleotide bases, supplied individually and serially in a microfluidic system, to a reaction cell containing a template system comprising a DNA fragment of unknown sequence and an oligonucleotide primer.	Life Technologies (Carlsbad, CA, USA)	Williams P	1/10/2017
US 9,535,070	A method and related microfluidic chip and kit for high-throughput detection of proteins of interest contained in a sample. The method comprises specifically labeling fusion proteins in a complex sample with fusion-tag-specific fluorophores that specifically bind the fusion tags coupled to the proteins of interest, and subjecting the sample to automated capillary electrophoresis, wherein the presence of the proteins of interest in the sample is detected by fluorescence signals associated with the fusion-tag-specific fluorophores.	Arizona Board of Regents (Scottsdale, AZ, USA)	Saul J, Qiu J, LaBaer J, Magee M, Chaput J, Sau S	1/3/2017
US 9,535,059	A microfluidic device that may be utilized for cell sensing, counting, and/or sorting. Particular aspects relate to a microfabricated device capable of differentiating single-cell types from dense cell populations. One particular embodiment relates a device and methods of using the same for sensing, counting, and/or sorting leukocytes from whole, undiluted blood samples.	California Institute of Technology (Pasadena, CA, USA)	Tai Y-C, Zheng S, Lin JC-H, Kasdan HL	1/3/2017
US 9,535,056	Devices and methods for detecting an immune reaction to a test agent using an immune modeling system comprising a barrier component configured to culture a biological barrier, an immune component configured to culture immune cells, and one or more inter-component microfluidic connections between the barrier component and the immune component.	L'Oreal (Paris)	Yarmush ML, Freedman R, Del Bufalo A, Teissier S, Meunier J-R	1/3/2017
US 9,535,000	Systems, including apparatus and methods, for the microfluidic manipulation, dispensing, and/or sorting of particles, such as cells and/or beads.	Bio-Rad Laboratories (Hercules, CA, USA)	Guo K, Sadri AM, Chu DY, Kircanski N, Patt PJ, Rosenzweig T	1/3/2017
US 9,534,216	Novel microfluidic devices and methods useful for performing high-throughput screening assays and combinatorial chemistry. The invention provides for aqueous-based emulsions containing uniquely labeled cells, enzymes, nucleic acids, etc., wherein the emulsions further comprise primers, labels, probes, and other reactants.	Raindance Technologies (Billerica, MA, USA)	Link DR, Boitard L, Branciforte J, Charles Y, Feké G, Lu JQ, Marran D, Tabatabai A, Weiner M, Hinz W, Rothberg JM	1/3/2017
US 9,506,845	Methods, systems, and devices for multiple single-cell capturing and processing utilizing microfluidics. Tools and techniques are provided for capturing, partitioning, and/or manipulating individual cells from a larger population of cells along with generating genetic information and/or reactions related to each individual cell.	Fluidigm (S. San Francisco, CA, USA)	Fowler B, Kimball J, Maung MT, May A, Norris MC, Toppani DG, Unger MA, Wang J	11/29/2016
US 9,404,924	Methods for detecting virus production, determining frequency and identity of HIV reservoirs, or evaluating gene expression on a single-cell basis using microengraving and RT-PCR.	Massachusetts Institute of Technology (Cambridge, MA, USA)	Love JC, Gong Y	8/2/2016

Source: United States Patent and Trademark Office (<http://www.uspto.gov>).