Waipapa Taumata Rau University of Auckland

Becton Dickinson LSR II analyser



Introduction

Flow cytometry is a powerful analytical technique used to measure the physical and chemical characteristics of cells or particles as they pass individually through a focused laser beam. This process generates light signals that are captured by a series of detectors, which convert them into electronic data for detailed analysis.

Flow cytometry systems measure both light scatter and fluorescence—either naturally emitted by the cells or from fluorescent markers bound to specific cellular components. This enables detailed profiling of cellular characteristics, including:

- *Cell size and granularity*
- *Internal complexity*
- *Surface and intracellular markers*
- *DNA and RNA content*

Applications

- *Measurement of cell properties such as size, internal complexity, internal and external cell components*
- *Phenotypic analysis of intracellular or extracellular markers*
- *Cell cycle analysis*
- *Analysis and sorting of fluorescent protein expression (GFP, DsRed, mCherry, etc) in zebrafish and mammalian cells*
- *DNA content determination*
- *Cytokine detection*
- *Calcium flux*
- *Purification of cell populations for RNA extraction*
- *Purification of cell populations based on internal or external markers*

Software

- *FACSDiva version 6.1.3*

Specifications

Configuration

- *3 Laser 9 Colour 5-Blue 2-UV 2- Red (with PI and Indo-1)*

Lasers

- *Coherent Genesis 355nm 20mW*
- *Coherent Sapphire 488nm 20mW*
- *JDS Uniphase 633nm 17mW*

Detectors

- *Forward scatter detection - photodiode*
- *Side scatter and fluorescence - photomultiplier tubes*

Laser lines and fluorescence filters

Laser line	Detector	Mirror	Emission filter	Fluorophores
355 nm	*Trigon*		*450/50 BP*	*Indo-1 (Violet), Alexa Fluor 350, DAPI, Hoechst, DyeCycle Violet, Pacific Blue*
355 nm	*Trigon*	*505 LP*	*530/30 BP*	*Indo-1 (Blue), Pacific Orange*
488 nm	*Octagon*	*505 LP*	*530/30 BP*	*Alexa Fluor 488, FITC, GFP, Qdot 525, BODIPY, CFSE, CMFDA, DyeCycle Green, Eosin, FcOxyBURST Green, Fluo-3, Fluo-4, Live/Dead Fixable Green, SYBR Green, SYTOX Green, ZsGreen1*
488 nm	*Octagon*	*550 LP*	*575/26 BP*	*DsRed, PE, Qdot 565, Qdot 585, 575/26, Cy3, dTomato, DyeCycle Orange, PI*
488 nm	*Octagon*	*600 LP*	*610/20 BP*	*PE-Texas Red, Qdot 605, Nile Red, PE-Alexa Fluor 610, PI*
488 nm	*Octagon*	*685 LP*	*695/40 BP*	*PE-Cy5, PerCP, PerCP-Cy5-5, PI, 7-AAD, PE-Alexa Fluor 700, PE-Cy5-5, Qdot 705*
488 nm	*Octagon*	*735 LP*	*780/60 BP*	*PE-Cy7, PE-Alexa Fluor 750, Qdot 800*
633 nm	*Trigon*		*660/20 BP*	*APC, Alexa Fluor 633, Alexa Fluor 647, Alexa Fluor 660, Live/Dead Fixable Far Red, SYTOX Red, TO-PRO 3*
633 nm	*Trigon*	*735 LP*	*780/60 BP*	*Live/Dead Fixable Near-IR, APC-Cy7, APC-H7, Alexa Fluor 750, APC-Alexa Fluor 750, DRAQ5*

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