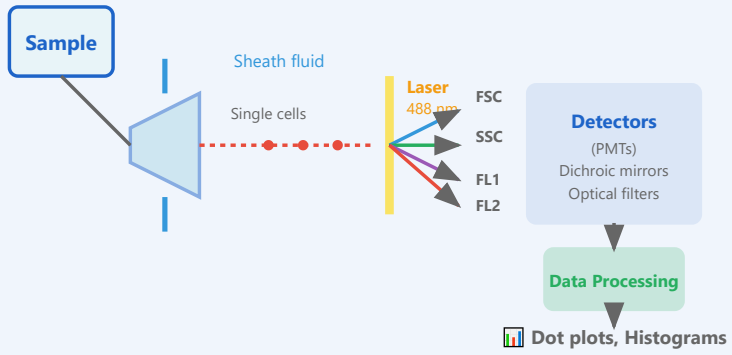
Flow Cytometry Principles

Flow Cytometer System



Analysis Speed

10,000/s

Typical Lasers

405, 488, 561, 640 nm

Parameters/Cell

20-50+

Fluidics System

Hydrodynamic focusing creates single-cell stream
Sheath fluid (PBS) surrounds sample
Laminar flow for precise alignment

Laser Excitation

Multiple lasers for multicolor detection
Common: 405, 488, 561, 640 nm
Each excites different fluorophores

Detection Channels

FSC: Forward scatter (cell size)
SSC: Side scatter (granularity)
FL1-FLn: Fluorescence PMTs

Compensation

Corrects spectral overlap between fluorophores
Single-color controls essential
Software or hardware compensation

🔬 **Applications:**

Immunophenotyping • Cell cycle analysis • Apoptosis detection • Rare cell identification • Biomarker expression