Flow CytoMEtRy AnD MAss CytoMEtRy CoRE (CVD)

CiBR: Center for innovative Biomedical Resources

CoRE instRUMEntAtion

BD LSR II Flow Cytometer

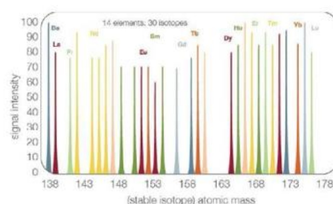
- **4 lasers**: 407, 488, 552, and 641 nm
- **16 parameters** (14 colors plus forward and side scatter)

Beckman Coulter MoFlo Astrios Cell Sorter

- **4 lasers**: 355, 407, 488, and 641 nm
- **21 parameters** (19 colors plus forward and side scatter)
- **Up to 6-way high speed sorting**
- **CyCLONE single cell sorting**

Fluidigm CyTOF Mass Cytometer

- **>35 parameters** based on mass spectrometry detection of metal isotope-labeled antibody staining
- No need for single color controls or fluorescence compensation



Fluidigm Helios Mass Cytometer

- **>60 parameters** based on mass spectrometry detection of metal isotope-labeled antibody staining
- No need for single color controls or fluorescence compensation

Mission

To ensure that University of Maryland investigators have access to flow cytometry and mass cytometry services for their research. A facility with dedicated operators ensures well-performing instruments and optimal results with a minimal outlay of expenses. Established in 1991, this facility has state-of-the art equipment and a highly-trained and experienced staff.

CoRE sERViCEs

- **Multichromatic flow cytometry**

  Including markers for:
  - Lineage
  - Maturation
  - Activation
  - Homing
  - Intracellular cytokines

- **Cell sorting (up to 6-way)** based on GFP and/or multichromatic staining
- **Mass Cytometry (>60 parameters)**
- Serum/supernatant cytokine levels using bead kits (e.g. BD Pharmingen CBA kit)
- Cell cycle analysis (PI, DAPI)
- Cell proliferation (CFSE, PCNA, BrdU and Ki67)
- Apoptosis (Annexin V vs. PI; TUNEL; sub G0/G1 peak analysis)
- Green fluorescence protein (GFP) (eukaryotic and prokaryotic)
- **Advice with experimental design and data analysis**

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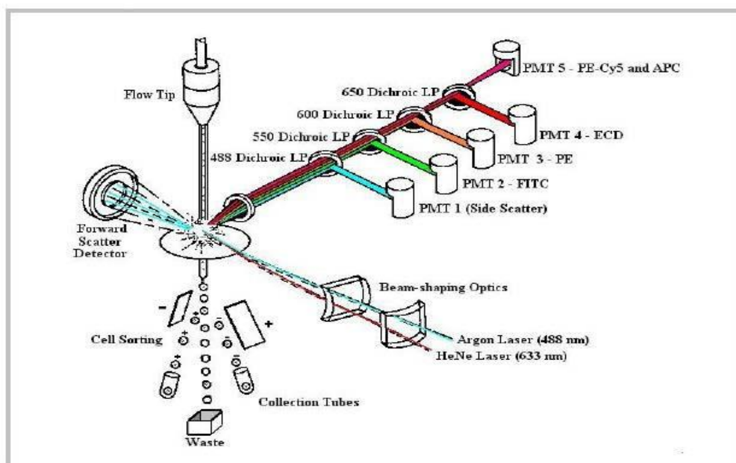
Principles of Flow Cytometry

Fluidics
- Cells in a single-cell suspension
- Flow in a single file through

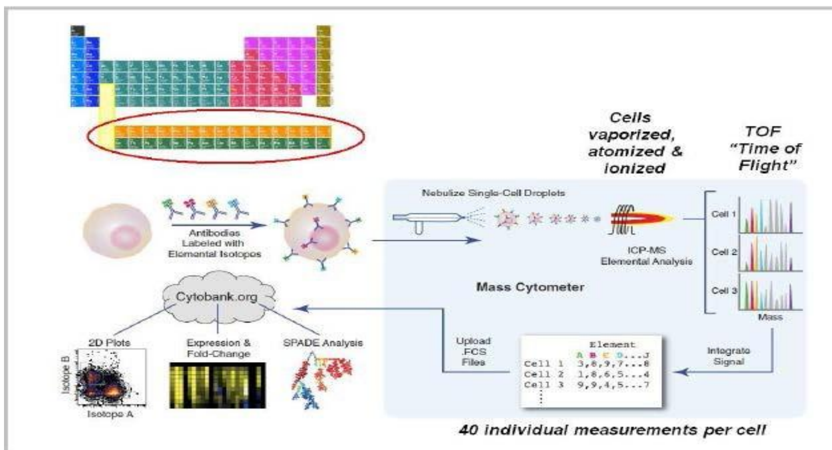
Optics
- An illuminated volume where they
- Scatter light and emit fluorescence
- That is filtered, collected and

Electronics
- Converted to digital values
- That are stored on a computer
- And put through software for analysis

Revised from Dr. Robert Murphy, Carnegie Mellon University, Pittsburgh, PA



Principles of Mass Cytometry



Bendall & Simonds *et al.*, *Science* **332**, 687 (2011) www.cytobank.org/nolanlab

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Marcelo Sztein, MD
Laboratory Director
msztein@medicine.umaryland.edu
410-706-2345

Regina Harley, MS
Laboratory Supervisor

l o CAt io n

Room 456, Health Sciences Facility I
685 West Baltimore Street
Baltimore, MD 21201
410-706-0095
Fax: 410-706-6205

Core Email
cvdflowcore@medicine.umaryland.edu

w eb Address
http://medschool.umaryland.edu/orags/flowlab.asp

l aboratory Policies

Experiments should preferably be scheduled one to two weeks in advance.

All sample analysis and cell sorting is done by Core Laboratory personnel.

The "Rules and Regulations" form (Revision March 10, 2015) is available at the CVD Flow Cytometry Core Laboratory.