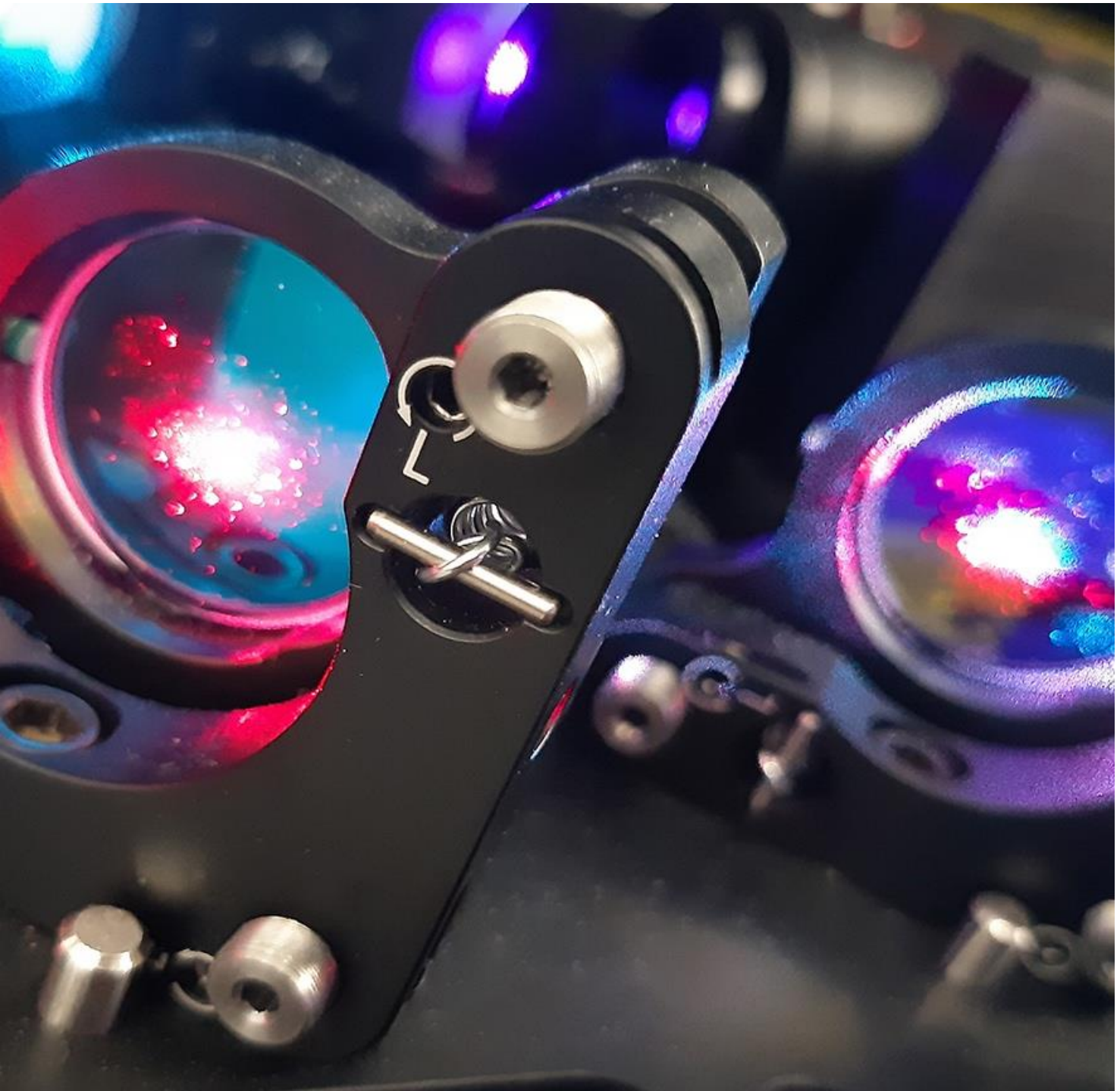


Where to look for valuable Flow Cytometry information? Tips & Tricks

Swiss Lunch Cytometry Program 2025/26

By Sarah Cattin and Florian Mair

08 December 2025

UNI FR

ETH zürich

Swiss Cytometry

Online resources for Flow Cytometry

Why do we need reliable Flow related information?

Flow Cytometry is a complex technology, with numerous applications, and the need to understand technology and biology.
It's also an evolving field and technology that is changing with time.

- Efficient training (faster, more effective, will give you confidence in experimental results)
- Avoid technical errors (using validated protocols)
- Stay updated on new techniques (foster innovation, cutting-edge insights, keep you curious)

In short: *knowing where to find trusted, peer-reviewed, and authoritative information about flow cytometry is essential for accuracy, reproducibility, ethics, innovation, training, and collaboration.*

Professional Societies & networks

ISAC

International Society for Advancement of Cytometry (ISAC)

The leading global flow cytometry organization, offering conferences, training, and standards for cytometry research.

https://isac-net.org

- Need to be a member (min. 45 $ per year) to access the content.
- Many webinars + e-learning modules (not all free): https://learning.isac-net.org
- Organize CYTO annual international conference (you can find some of the recordings)
- Provide links to the OMIPs and FlowRepository.

ISAC

Optimized Multicolor Immunofluorescence Panel (OMIP)

Special peer-reviewed Cytometry Part A publication type that reports on newly designed and optimized multicolor panels for flow cytometry, fluorescence microscopy, image cytometry, and other polychromatic fluorescence-based methods

OMIPs are aimed:

- to alleviate the development time for researchers in need of the same or highly similar panels,.
- to provide a starting point for the creation of novel OMIPs.
- to give the developers of the panels credit via citation or the publication.

ISAC
INTERNATIONAL SOCIETY FOR ADVANCEMENT OF CYTOMETRY

1/OMIP

2/Reagents table

3/Sample Type

https://onlinelibrary.wiley.com/doi/toc/10.1002/(ISSN)1552-4930.OMIPscollection

https://public.tableau.com/app/profile/fanny2212/viz/OMIP_ISAC/Menu

MIFlowCyt

International Society for Advancement of Cytometry (ISAC)

FlowRepository & MIFlowCyt

http://flowrepository.org

FlowRepository is a database of flow cytometry experiments where you can query and download data collected and annotated according to the MIFlowCyt standard.

Cytometry PART A
Journal of the International Society for Advancement of Cytometry

MIFlowCyt: The Minimum Information About a Flow Cytometry Experiment

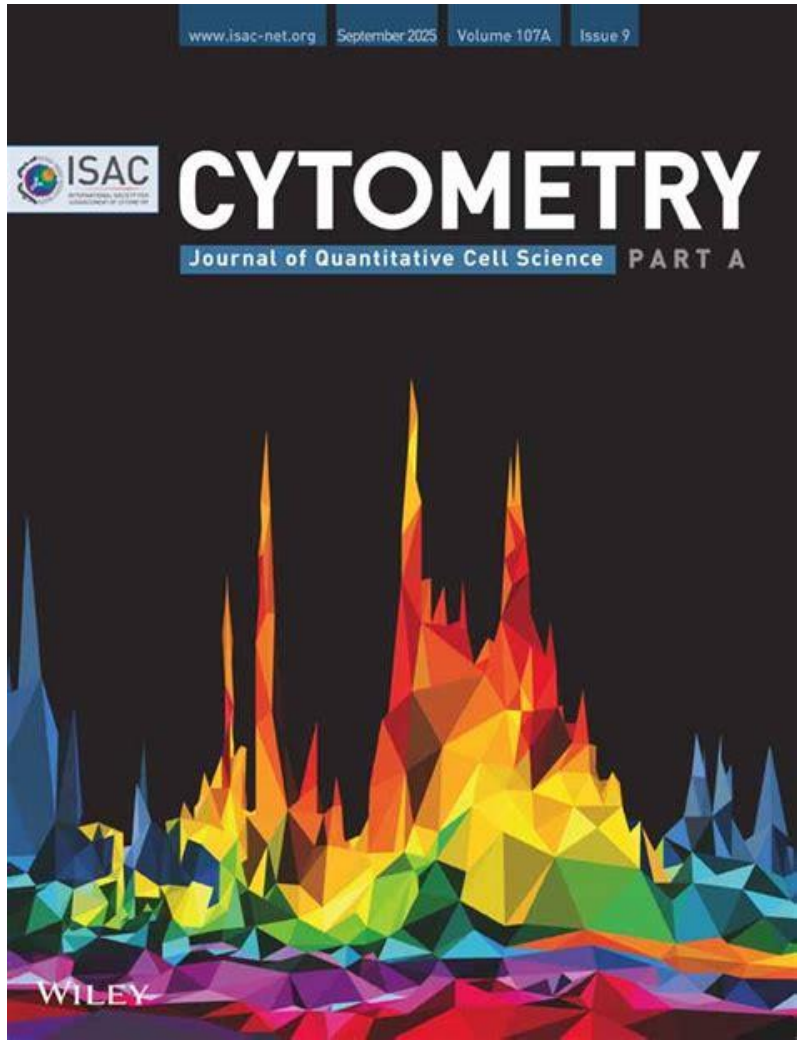
Jamie A. Lee,[1†] Josef Spidlen,[2†] Keith Boyce,[3] Jennifer Cai,[1] Nicholas Crosbie,[4] Mark Dalphin,[5] Jeff Furlong,[6] Maura Gasparetto,[2] Michael Goldberg,[7] Elizabeth M. Goralczyk,[8] Bill Hyun,[9] Kirstin Jansen,[6] Tobias Kollmann,[10] Megan Kong,[1] Robert Leif,[11] Shannon McWeeney,[12,13,14] Thomas D. Moloshok,[8] Wayne Moore,[15] Garry Nolan,[16] John Nolan,[17] Janko Nikolich-Zugich,[18] David Parrish,[3] Barclay Purcell,[19] Yu Qian,[1] Biruntha Selvaraj,[19] Clayton Smith,[2] Olga Tchuvatkina,[7] Anne Wertheimer,[20] Peter Wilkinson,[21] Christopher Wilson,[6] James Wood,[22] Robert Zigon,[23] The International Society for Advancement of Cytometry Data Standards Task Force, Richard H. Scheuermann,[1,24] Ryan R. Brinkman[2*]

List of the minimum information about a flow cytometry experiment that should be included in all publication of flow data.

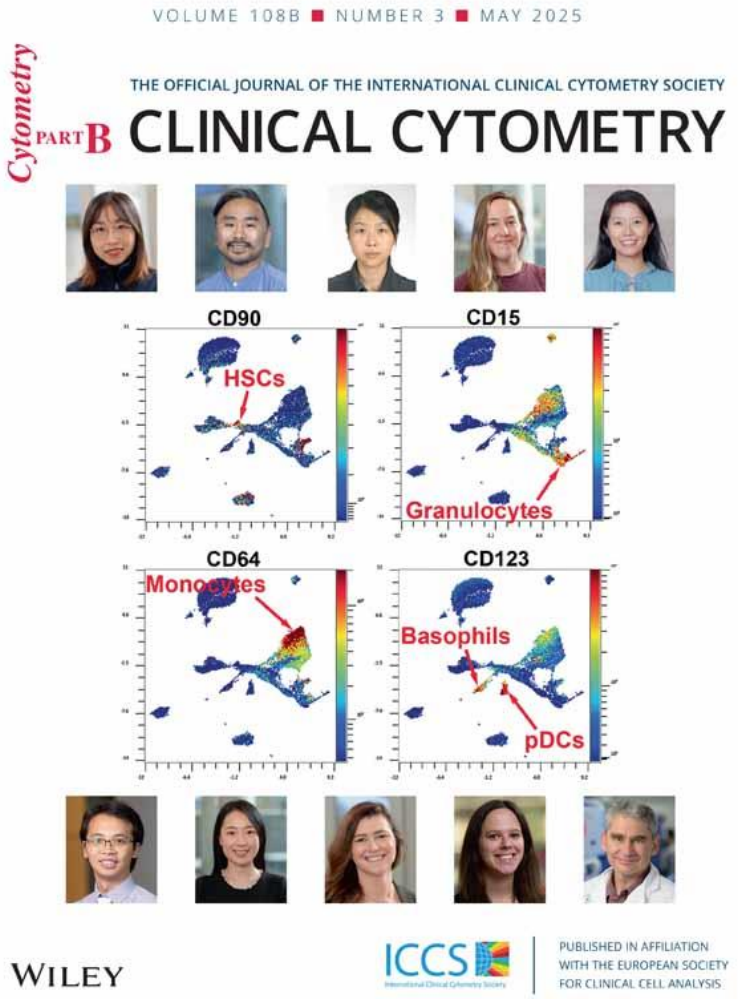
DOI: 10.1002/cyto.a.20623

ISAC

Peer-Reviewed Journals.



Covers fundamental and applied aspects of flow and image cytometry.



Focuses on diagnostic and clinical applications

Commercial resources & protocols

Commercial resources

Flow Instrument vendors

Vendors of instrumentation are a great source of valuable knowledge about Flow Cytometry, in the form of e-learning and webinars.

CYTEK® TRANSCEND THE CONVENTIONAL

https://cytekbio.com/blogs/webinars-videos

https://cytekbio.com/blogs/spectrolearn

ThermoFisher SCIENTIFIC

https://www.thermofisher.com/ch/en/home/c/a/lets-talk-flow-webinar-series.html

SONY

https://www.sonybiotechnology.com/webinars

BD

BECKMAN COULTER

BD Bioscience & Beckman Coulter offer also e-learning, but with a fee, except for some webinars…

Protocols - vendors

https://www.thermofisher.com/ch/en/home/references/protocols/cell-and-tissue-analysis/flow-cytometry-protocol.html

Preparing for your flow cytometry experiment

- Human CD & Other Cellular Antigens
- Mouse CD & Other Cellular Antigens
- Antibody Fixation Considerations
- Flow Cytometry Staining Index
- Phospho Flow Cytometry Antibody Clone Buffer Selection Guide
- Intracellular Staining Quick Guides
- Intracellular Staining Buffer Selection Guide

General protocols for flow cytometry

- Super Bright Staining Buffer protocol
- Cell Preparation for Flow Cytometry Protocols (Invitrogen eBioscience reagents)
- Red Blood Cell Lysis Protocols Using eBioscience Lysis Buffers (Invitrogen eBioscience reagents)
- Staining Cell Surface Targets for Flow Cytometry (Invitrogen eBioscience reagents)
- Staining Intracellular Antigens for Flow Cytometry (Invitrogen eBioscience reagents)
- OneComp and UltraComp Compensation Beads Protocols for Flow Cytometry (Invitrogen eBioscience reagents)

Cell preparation protocols for single cell suspensions

- Isolation of human peripheral blood mononuclear cells from whole blood
- Monocyte isolation from peripheral blood mononuclear cells
- NK cell isolation from peripheral blood mononuclear cells
- T cell isolation from peripheral blood mononuclear cells
- $CD4^+$ T cell isolation from peripheral blood mononuclear cells
- $CD8^+$ T cell isolation from peripheral blood mononuclear cells
- Regulatory T cell isolation from peripheral blood mononuclear cells
- T cell isolation from secondary lymphoid organs

Protocols - vendors

https://www.bdbiosciences.com/en-dk/resources/protocols/flow-cytometry

Choosing the Right Fix Perm Kits

Choosing the Right Fix Perm Kits Cell Fixation/Permeabilization Kits for Intracellular Cytokine Analysis

Explore three cell fixation/permeabilization kits to simplify the preparation of cells for intracellular staining of cytokines.

Reducing non-specific staining with Fc Block

Uses of Fc Block

Learn how antibody binding to Fc receptor can cause background staining and how to use the BD Fc Block™ Reagents in immunophenotyping of mouse or rat leucocytes..

Protocol for Direct Immunofluorescence Staining of Mononuclear Cells

Find the procedure for specimen collection, preparation and direct immunofluorescence staining of mononuclear cells..

Cell Surface Staining of Human PBMCs and Suspension Cell Lines

Find a step-by-step procedure for cell surface staining of human peripheral blood mononuclear cells and cell lines.

Phosflow Protocol for Adherent Cells

Find the optimal protocol for detecting intracellular signaling molecules from adherent cells using BD Phosflow™ Reagents.

Intracellular Flow and Phosflow FAQ

Find answers to most commonly asked questions on intracellular flow cytometry and use of BD Phosflow™ Reagents..

Indirect Staining Mononuclear Cells

Indirect Immunofluorescence Staining of Mononuclear Cells

The indirect method is used to enhance the fluorescence signal and also to facilitate multicolor staining of human cells when direct conjugated reagents are not available. Find the procedure for specimen collection, preparation and staining of mononuclear cells.

BD™ Phosflow Protocols for Human PBMCs

Explore four protocols using different methods (detergent method, mild or harsh alcohol method or harsh detergent method) for the activation of cell signaling molecules in human peripheral blood mononuclear cells.

BD™ Phosflow Protocols for Human Whole Blood Samples

Explore four protocols using different methods (detergent method, mild or harsh alcohol method or harsh detergent method) for the activation of cell signaling molecules in human whole blood samples.

Protocols - vendors

BioLegend®

Enabling Legendary Discovery™

https://www.biolegend.com/fr-lu/flow-cytometry-tools

Fluorophore Families

Diverse families of fluorophores allow us to continue to expand the limits of flow cytometry. Learn more about our fluors and the unique advantages offered by each, including Spark Dyes, Fire Dyes, KIRAVIA multimers, and Brilliant Violet™ polymers.

Learn about fluorophores >

Brightness Index

This convenient Fluorophore Brightness Index lists the relative brightness of dyes offered by BioLegend. This is particularly helpful for the balancing of brightness with antigen expression levels in a panel.

View the Brightness Index >

Fluorophore Equivalents

With companies each having their own naming system for their fluorophores, it can be difficult to keep track of them all. This tool will help you find BioLegend's equivalent fluorophores compared to other commercially available fluorophores for flow cytometry.

View fluorophore equivalents >

Tandem Dyes

Our tandem dye page provides useful information on the background of tandem dyes, important notes, and how best to use them in flow cytometry applications. We also provide data on lot-to-lot consistency and links to products and resources.

Learn about tandem dyes >

Spectral Cytometry

Spectral cytometry is quickly allowing researchers to create larger multicolor panels with its unique technology. Learn the basics of spectral flow cytometry and how BioLegend is providing unique fluorophores to fill spectral gaps previously unused in conventional flow.

Learn about spectral cytometry >

Cell Surface Protocols

- Veri-Cells™ Protocol
- Anti-Neu5Gc Antibody Kit Protocol: Flow Cytometry
- Precision Count Beads™ Protocol and Applications
- Cell Surface Flow Cytometry Staining Protocol
- Cell Surface Flow Cytometry Staining of Whole Blood
- Flex-T™ Tetramer Preparation and Flow Cytometry Staining Protocol
- Flex-T™ Fixed Peptide Tetramer Preparation and Flow Cytometry Staining Protocol

Intracellular Protocols

- Veri-Cells™ Phospho PBMC (MAPK/ERK Pathway) and Activated (Cytokine) PBMC Kit Protocols
- Stimulation Guide for Intracellular Staining of Cytokines/Chemokines
- True-Nuclear™ Transcription Factor Staining Protocol for 96-Well U Bottom Plate
- True-Nuclear™ Transcription Factor Staining Protocol for 5mL Tubes
- Propidium Iodide Cell Cycle Staining Protocol

Protocols - journals

CURRENT PROTOCOLS
A Wiley Brand
in Cytometry

https://currentprotocols.onlinelibrary.wiley.com/journal/19349300

The **Cytometry** section of *Current Protocols* is a comprehensive source for step-by-step protocols and reviews related to the quantitative analysis of cells and cell systems. The section covers the detection and analysis of various cellular populations, including instrumentation, data processing and analysis, cell and molecular imaging, and more.

Articles

Most Recent | Most Cited

Isolation and Flow Cytometric Analysis of Natural Killer Cells from Human Glioblastoma Multiforme (GBM) Tissues

Soumyajit Das, Kyle B. Lupo, Veronika Slivova, Aaron A. Cohen-Gadol, Sandro Matosevic

Current Protocols | First Published: 25 November 2025

Abstract | Full text | PDF | References | Request permissions

Open Access

Optimization of the Blocking and Signal Preservation Protocol in High-Parameter Flow Cytometry

Oliver T. Burton, James Dooley, Adrian Liston

Current Protocols | First Published: 25 September 2025

Abstract | Full text | PDF | References | Request permissions

Open Access

Introducing the Dish Soap Protocol: A Unified Approach for Multi-Modal Intracellular Staining

Get Access

Submit a Proposal

Editor's Choice

Flow Cytometry Method Validation Protocols

Preparing a Minimum Information about a Flow Cytometry Experiment (MIFlowCyt) Compliant Manuscript Using the International Society for Advancement of Cytometry (ISAC) FCS File Repository (FlowRepository.org)

Flow Cytometry Instrumentation – An Overview

Cell Cycle Analysis of Hematopoietic Stem and Progenitor Cells by Multicolor Flow Cytometry

Modern Laser Scanning Confocal Microscopy

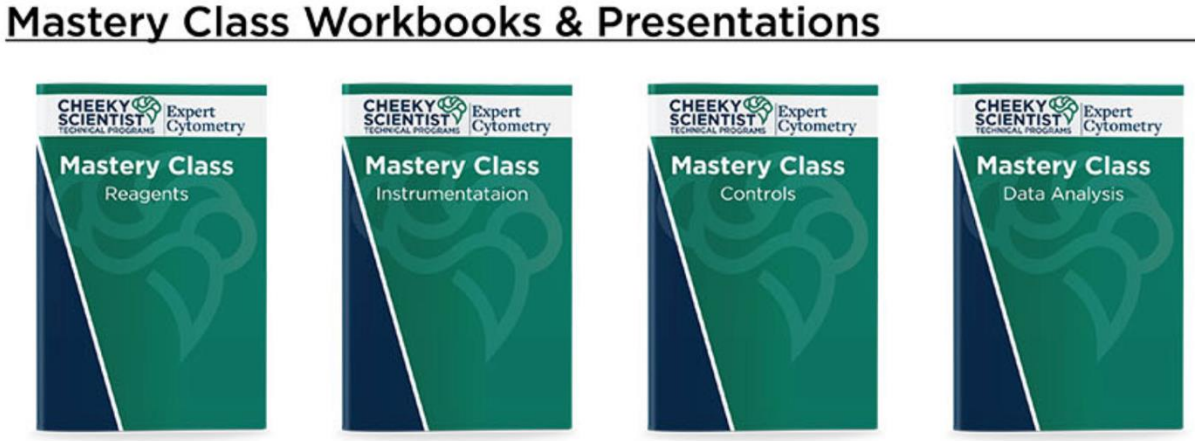
Non - Commercial resources

Online sources: Non-commercial sources

A learning program:

https://expertcytometry.com/technical-programs/expert-cytometry/

By Tim Bushnell, University of Rochester (NY)



Online sources: Non-commercial sources

Valuable blogs:

https://expertcytometry.com/blog/

https://bitesizebio.com/technical-channels/flow-cytometry/

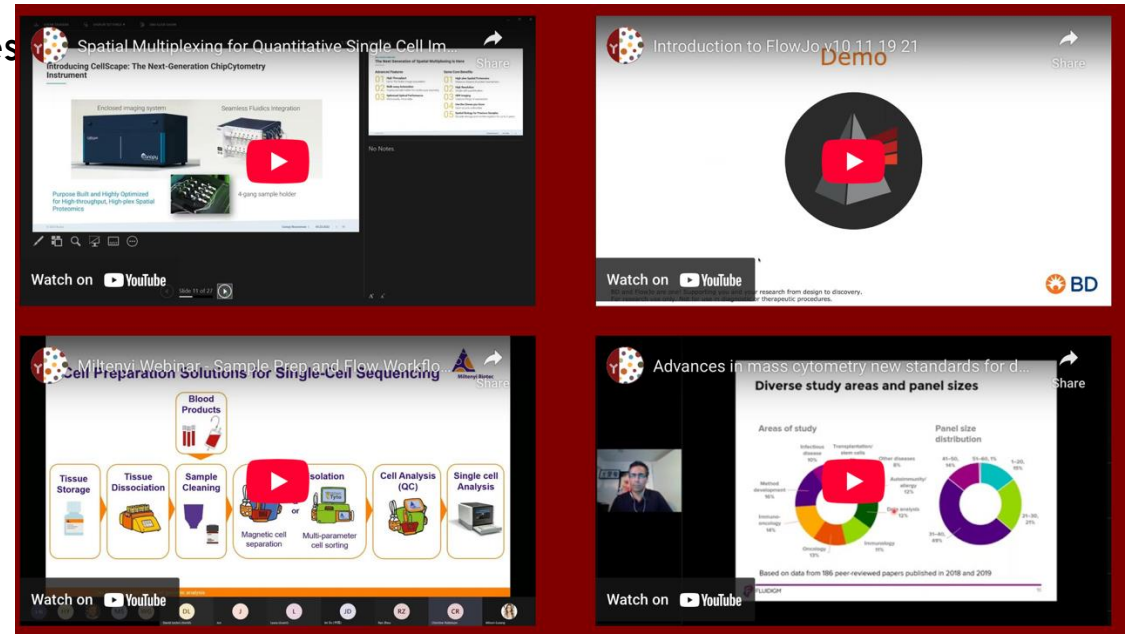
Online sources: Non-commercial sources

Valuable blogs:

https://voices.uchicago.edu/ucflow

THE UNIVERSITY OF CHICAGO

By the facility of the University of Chicago
Plenty of diverse information, webinars, list of resources



Experiment Design
Attune NxT, Basics of Flow, Bigfoot, CytoFLEX LX, Experimental Design, FACSAria, Fortessa/LSRII, Penteon, Quanteon

Spectral Experiment Design
Aurora, Bigfoot, Experimental Design

Flow Basics 2.0
Basics of Flow, Training Courses

Setting Voltages
Attune NxT, Basics of Flow, CytoFLEX LX, Fortessa/LSRII

Compensation
Attune NxT, Basics of Flow, CytoFLEX LX, Fortessa/LSRII, Penteon, Quanteon

Sample Preparation
Attune NxT, Aurora, Basics of Flow, CytoFLEX LX, FACSAria, Fortessa/LSRII, Penteon, Quanteon

Online sources: Non-commercial sources

Valuable blogs:

https://www.colibri-cytometry.com

By Dr. Oliver Burton from the University of Cambridge

Cytometry Blog

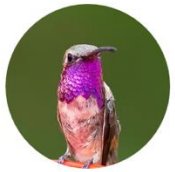
Tips, tricks and technical advice for flow cytometry.

Useful Papers

References and literature for anything flow related. Suggestions welcome.

Protocols

Flow techniques. Links to relevant technical papers plus tips and improvements.



Data Analysis

Code and instructions for performing high dimensional flow analysis.

Antibody info

Information on how to use various antibodies with overnight staining

Links

A collection of sites that may be useful for flow cytometry. This does not constitute an endorsement of these services.

Online sources: Non-commercial sources

Other sources:

http://www.cyto.purdue.edu/hmarchiv

It's an electronic list maintained by Dr. Paul Robinson at Purdue University and has a 20+ year archive that can be searched

https://www.reddit.com/r/flowcytometry//

https://discord.gg/ZmyPYUQr9Q

Discord is an instant chat platform like Slack, Microsoft Teams, WhatsApp, or AOL Instant Messenger. Discord allows you to throw a question out to the community and get an instant response.

https://learncytometry.com

R course, free, for flow cytometrist + mass analysis using AI.

https://www.youtube.com/@RAIFCA3284/videos

Small videos and podcasts on Flow Cytometry.

https://flowstars.bitesizebio.com/

Podcasts with personalities from the Flow Cytometry world.

Examples for how to use resources (FM)

Developing a new panel – how to leverage OMIPs (1)

Optimized Multicolor Immunofluorescence Panel (OMIP)

Need to include titration data in their online material section

→ Can get an idea about expresion patterns of targets of interest

→ Performance of different clones

OMIP_ISAC by FanFlow

Menu | 1/ OMIP | 1/CDMapsMarkerexpression | 2/ Reagent Table | 3/ Sample Type | 3/ Search Sample Type Result | 4/ Search Text | 4/ Search Text Result OMIP | 4/CDMapsMarkerexpression | 5/ Protocol | 6/ Population

2/ Reagent Table

Search by Antigen / Clone / Fluorochrom in this dynamic table

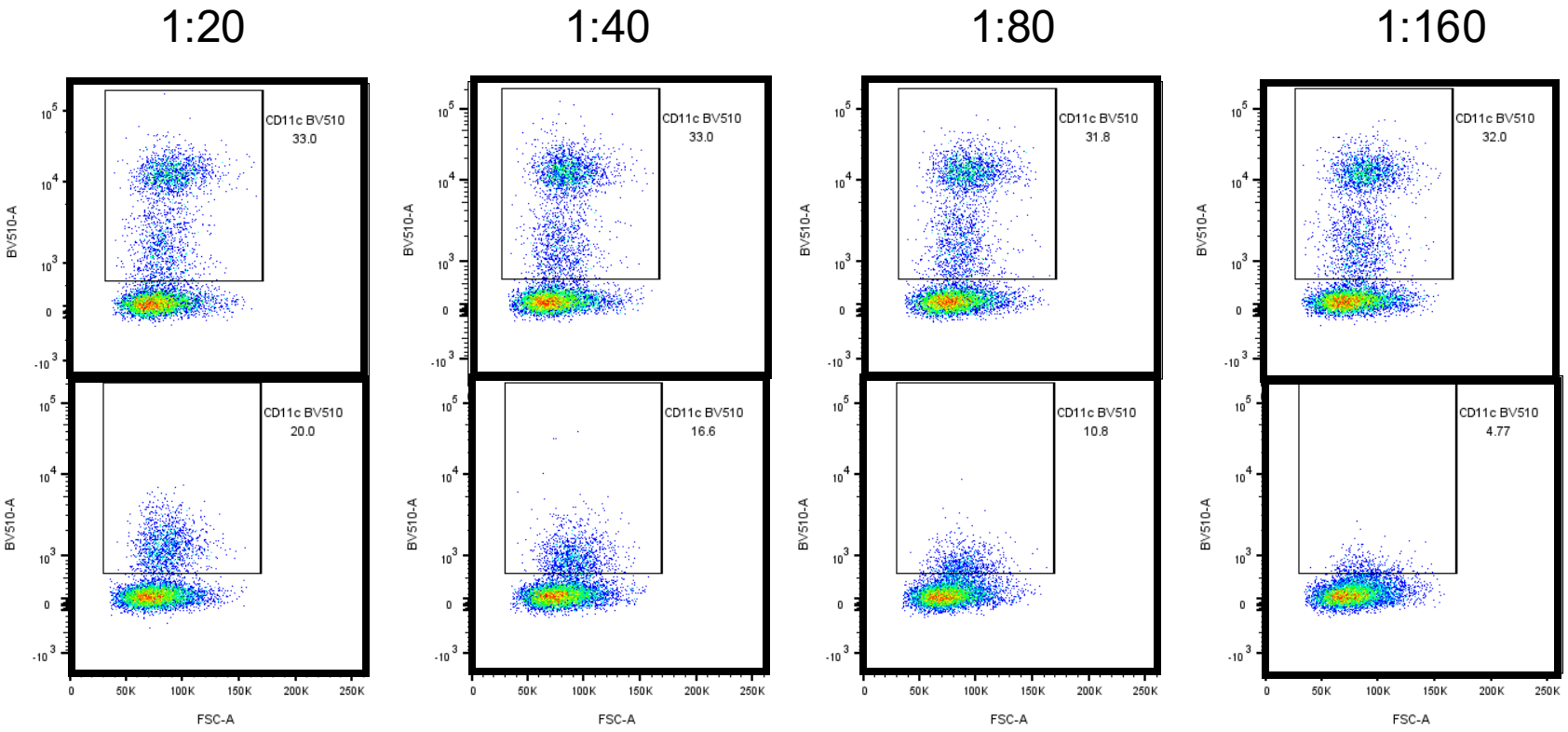
Antigen	Fluorochrome	Clone	Catalog Num	Vendor	Dilution	Volume	Species	Post-Fix/ Perm	Pre-Fix/ Perm	
CD11c	146Nd	3.9	3146014B	Fluidigm	1:100	100 µL	Homo sapiens (Human)	N/A	N/A	OMIP_087
	160Gd	MJ427G12	custom	Miltenyi Biotec	1:50	100 µL	Homo sapiens (Human)	N/A	N/A	OMIP_034
	167Er	2F1C10	60258-1-Ig	Proteintech	4 µg/mL	N/A	Homo sapiens (Human)	yes	no	OMIP_103
	209Bi	N418	3209005B	Fluidigm	2.5 µg/mL	100 µL	Mus musculus (Mouse)	N/A	N/A	OMIP_054
	AF700	B-ly6	561352	Becton Dickinson	1:320	100 µL	Homo sapiens (Human)	N/A	N/A	OMIP_044
	APC	HL3	550261	Becton Dickinson	1:50	50 µL	Mus musculus (Mouse)	N/A	N/A	OMIP_032
		S-HCL-3	340544	Becton Dickinson	1:50	100 µL	Homo sapiens (Human)	Yes	No	OMIP_038
	BB630	BU15	custom	Becton Dickinson	1:320	50 µL	Homo sapiens (Human)	N/A	N/A	OMIP_068
	BUV496	HL3	750483	Becton Dickinson	1:200	50 µL	Mus musculus (Mouse)	yes	no	OMIP_104
	BUV661	B-ly6	612967	Becton Dickinson	0.15 µL per ..	100 µL	Homo sapiens (Human)	yes	No	OMIP_101
	BV421	N418	117343	Biolegend	1:800	100 µL	Mus musculus (Mouse)	N/A	N/A	OMIP_061
	BV510	S-HCL-3	371513	Biolegend	1:320	50 µL	Homo sapiens (Human)	no	yes	OMIP_102
	eF506	N418	69-0114-82	ThermoFisher Sci..	50 (ng/test)	50 µL	Mus musculus (Mouse)	No	Yes	OMIP_095
	eFluor 450	3.9	48-0116-41	ThermoFisher Sci..	1000 ng/25..	250 µL	Homo sapiens (Human)	no	yes	OMIP_109

Developing a new panel – how to leverage OMIPs (2)

Optimized Multicolor Immunofluorescence Panel (OMIP)

Need to include titration data in their online material section

→ Example different CD11c clones (ETH Zurich, unpublished, but similar to public OMIP data)



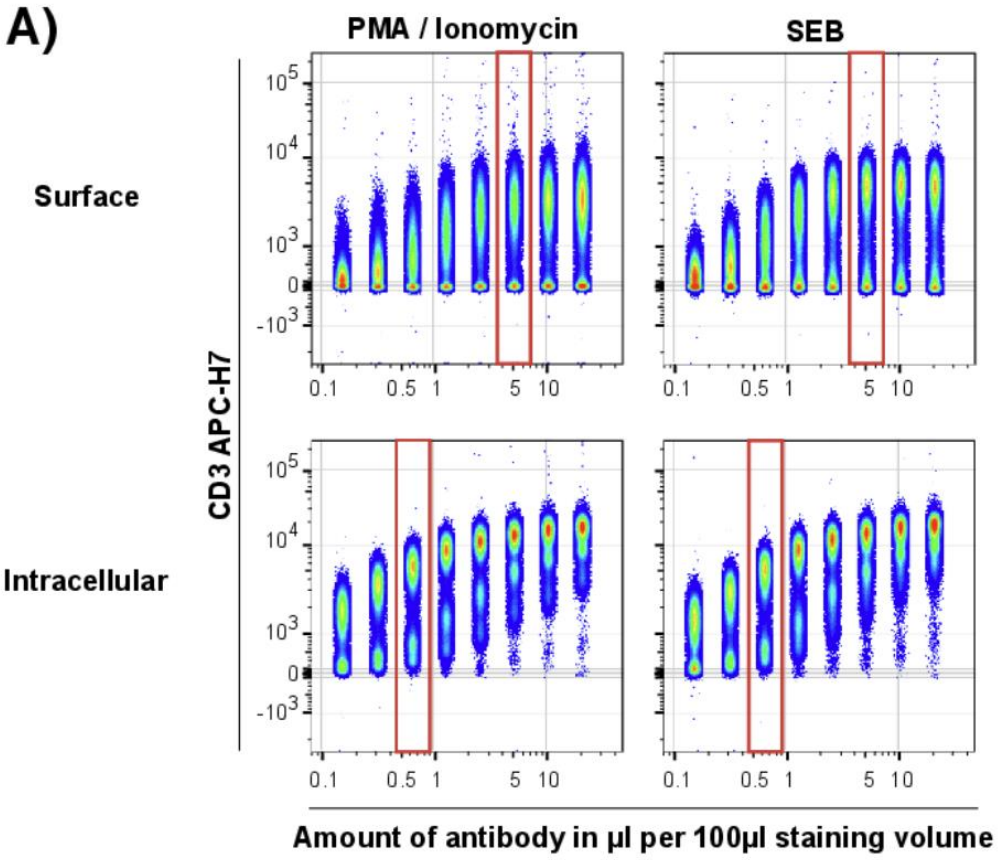
Christoph Capelle and
FCCF ETH Zurich

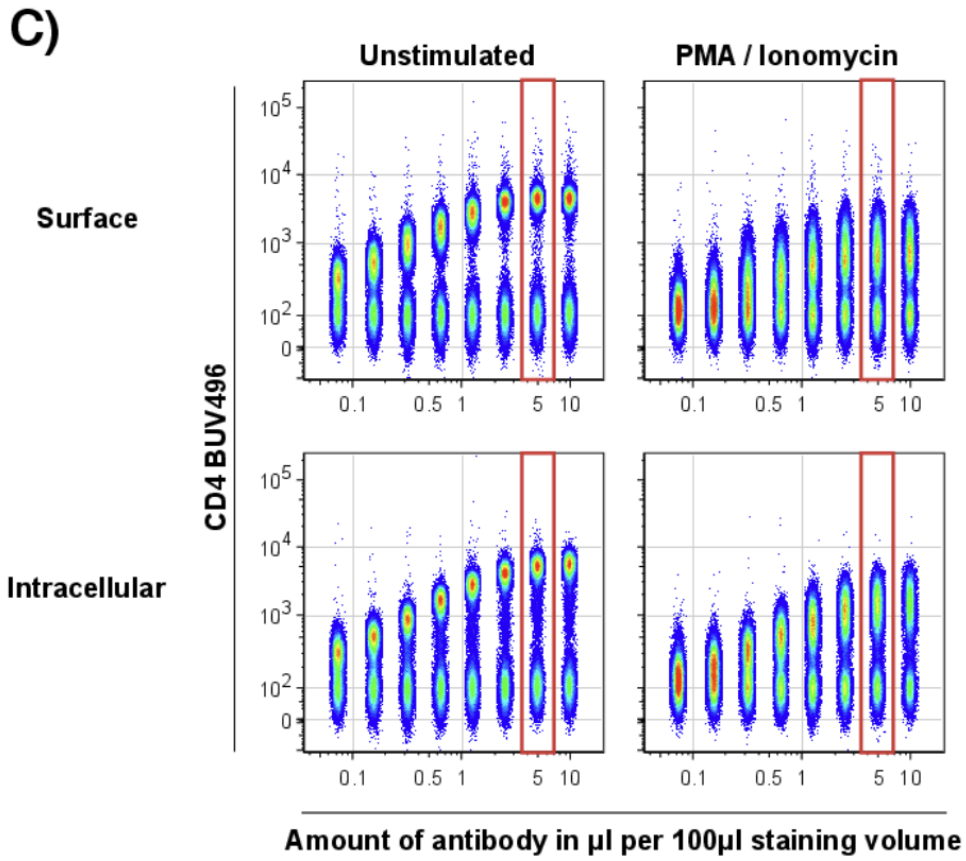
Developing a new panel – how to leverage OMIPs (3)

Optimized Multicolor Immunofluorescence Panel (OMIP)

Need to include titration data in their online material section

→ Example for different staining conditions after T cell restimulation with PMA/Iono: OMIP-060 (Liechti and Roederer, CytoA 2019)





Data from OMIP-060

Working with a new technique – leveraging blogs

Colibry-cytometry.com

Very broad and up-to-date discussions of current problems in the field of spectral flow

→ Let's say you want to understand more thoroughly what a spectral unmixing matrix really is: the blog features descriptions, references, and **step-by-step screenshots**

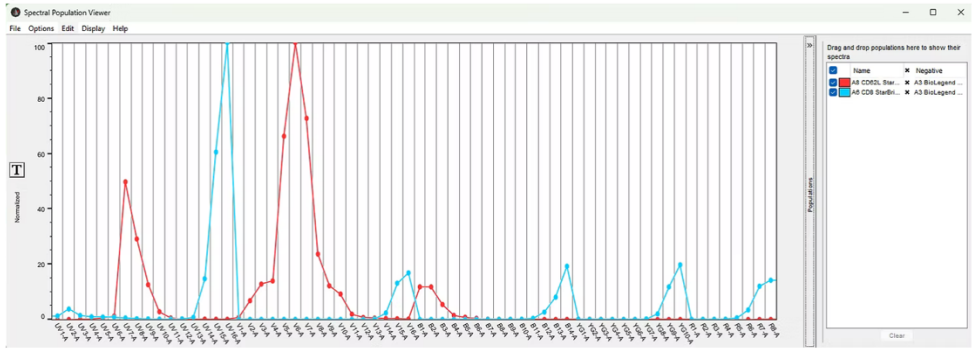
olivertburton · Aug 11 · 7 min read

What's in a spectral matrix?

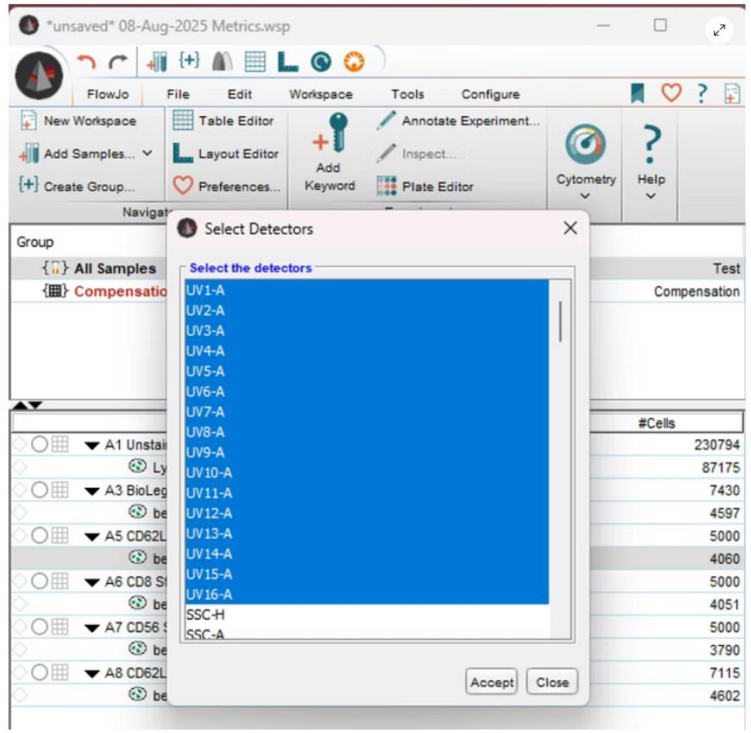
Updated: Aug 14

In this series of posts, I'm going to discuss a bit about the mathematics and metrics we use in spectral flow cytometry. Now, since I am not a mathematician by training, I'm probably going to get some of this wrong, so please chime in when you spot errors or misconceptions. My hope is that this lack of a mathematical background is going to force me to explain things in a relatively simple way.

In contrast, by gating on the positive beads and subtracting the negative bead signal, we get this:



SBUV795 in blue, SBV515 in red



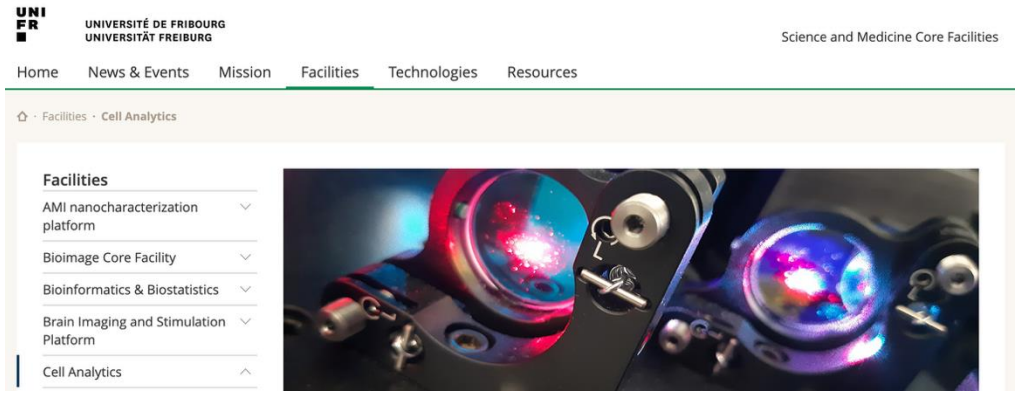
FlowJo will prompt you to pick the detectors you want to look at. It's actually pretty good at detecting these, so hit "Accept".

Saving time – ask your local technology experts

Leverage the knowledge of the experts in your Flow Cytometry Core!

→ They have been exposed to lots and lots of different problems

→ **Even if they do not know the solution, they might be able to point you to another person**



Fribourg, ETH Zurich, and many more…

Welcome to the Flow Cytometry Core Facility at the ETH Zurich


Questions ??

See you next year
Enjoy the end of the year

Swiss Lunch Cytometry Program

Seminar list for 2025_26

Online at **12h00** via Microsoft Teams

Take the opportunity to learn more about flow cytometry and related technologies.

A good way to refresh or gain knowledge and perform your experiment in a more efficient way!

2025

Oct. 6

Cytolution : a new tool to help with your flow analysis
Can Pinar from Cytolytics

Nov. 3

S8 Technology - Sorting beyond the dots
Jean-François Mayol (UNIL), Claudia Dumrese (UNIZH) and Stefan Müller (UNIBE)



Dec. 8

Where to look for good Flow Cytometry information- Tips and Tricks
Sarah Cattin (UNIFR) and Florian Mair (ETHZ)


2026

Feb. 9

Using Machine Learning with ImageStream for bacterial quantification – a practical case
Mara Esposito, University of Basel

March 23

How to get the best from your compensation and spectral unmixing
Gabriele De Simone, EPFL

May 4

Considerations for cell sorting for genomics, proteomics and metabolomics
Cécile Gameiro (UNIGE) and Malgorzata Kisielow (ETHZ)


No need to register, just click on the title of the seminar and you will be redirected to the Teams meeting directly.

Don't hesitate to advertise these dates around you! Everybody is welcome.

For any question: Sarah Cattin (sarah.cattin@unifr.ch)

UNI FR · Université de Genève · Unil Université de Lausanne · EPFL · ETH zürich · Universität Zürich