



# Publishing MIFlowCyt Compliant Data to ISAC's FlowRepository.org for Cytometry A and Other Journals

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June 27, 2012

Motivation Background

# Outline

## Introduction

- Motivation
- Background
- FlowRepository
  - Data review and download
  - Data upload and annotation
  - Data sharing
- Summary & Conclusions
  - Summary
  - Future Work
  - Acknowledgments



Motivation Background

# Why share your data?

- Promote open scientific inquiry and progress in the field
  - Allow for re-exploration of existing datasets to test new or alternative hypotheses and methods of analysis
  - Allow for independent validation and refutation of experimental findings
- Required or encouraged by many funding agencies and scientific journals

# What to share?

- A dump of FCS files is not enough
  - Data without context are not understandable to others
- Minimum Information about a Flow Cytometry Experiment
  - Outlines the minimum information required to report about flow cytometry experiments
  - Represents the community consensus
    - 33 coauthors from 19 institutions
    - ISAC Recommendation
  - Required/recommended by Cytometry A and Nature



Lee et al., MIFlowCyt: the Minimum Information about a Flow Cytometry Experiment. Cytometry A. 2008; 73(10): 926-930

Motivation Background

# MIFlowCyt components



Josef Špidlen, Ryan R. Brinkman FlowRepository.org – Resource of Flow Cytometry Data

# MIFlowCyt components

### Experiment overview

- Purpose
- Keywords
- Experiment variables
- Date(s)
- Organization(s)
- Primary contact
- Quality control measures

### Sample description

- Description
- Sample material
- Treatment
- Fluorescent reagents
- Source
- Biological samples: Organism with taxonomy, phenotype, genotype, age, gender, ...
- Location for environmental samples

### Data analysis

- FCS data files
- Compensation and other transformations
- Gating details including gate description, statistics and boundaries or images or gate membership details

### Instrumentation details

- Make
- Model
- User-adjustable components (e.g., detector voltages)
- Customized configurations

# How to share all these details?

- Manuscript, e.g., the methods section
- Manuscript's supplemental information
- Data repository



Data review and download Data upload and annotation Data sharing

# FlowRepository – What is it?

- A public online resource of annotated flow cytometry datasets
  - Primarily those associated with peer-reviewed publications
- Web-based application created by extending and adapting Cytobank
  - Mainly to incorporate MIFlowCyt
- Open source
  - Affero General Public License
- Supported by ISAC and generously hosted by Carnegie Mellon University

Data review and download Data upload and annotation Data sharing

# FlowRepository – What do you need to start?

- A computer with Internet connection
  - Fast connection is good, especially when uploading large datasets
- Web browser
  - Firefox or Chrome recommended
  - Safari or Internet Explorer also works but may not look great
- Ability to run Java Applets in the Web browser
  - Java version 1.5.1 or higher is required for data upload, download and online analysis
- A Google ID, Yahoo! ID, or another OpenID
  - Required for write access

Data review and download Data upload and annotation Data sharing

Accessing FlowRepository

- Navigate your Web browser to http://flowrepository.org
  - Or https://flowrepository.org if you prefer a secure protocol

Data review and download Data upload and annotation Data sharing

Accessing FlowRepository

- Navigate your Web browser to http://flowrepository.org
  - Or https://flowrepository.org if you prefer a secure protocol
- Demonstration (offline)
  - Access FlowRepository
  - Review a public dataset
  - Deposit, annotate and share a dataset

https://flowrepository.org

## **FL**WRepository

### 값 Login

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#### Did you know?

A guide to FlowRepository is available at the <u>documentation site for Cytobank and</u> <u>FlowRepository</u>.

We also have a Quick start guide.

You can contact us by filling out a support ticket.

#### Supporting journal



#### FlowRepository at <u>CYTO 2012</u>

» Sunday, June 24: State of the Art Lectures - Computational Analysis of High-Dimensional Data

» Tuesday, June 26: Parallel 8 - Cytometry Technology: Cytometry Software and Informatics

» Wednesday, June 27: Workshop 13 -Publishing MIFlowCyt Compliant Data to ISAC's FlowRepository.org for Cytometry A and Other Journals



#### FlowRepository

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

Query		0
Enter a term to search all publicly avail	able experiments:	
		Query
Hide guery fields		
Experiment Names	Repository Identifiers	Keywords
Researcher Names	Reagents and Manufac	turers 🗹 Instruments and Manufacturers
ECS Files (Headers)	Sample Annotations	✓ Pubmed IDs
Links		
Browse all public datasets	Quick start guide	Referencing Flow Repository and Cytobank
Browse community datasets	Submit data	FlowRepository Steering Committee & Advisory Board
Browse most popular datasets	Funding	

https://flowrepository.org

## **FL**WRepository

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

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out a <u>support</u>	Enter a term to search all publicly avail	lable experiments:		
	Identification of B cells		Query	
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	Researcher Names	Reagents and Manufacture	irers S Instruments and Manufacturers	
	ECS Files (Headers)	Sample Annotations	✓ Pubmed IDs	
	Links			
2012	Browse all public datasets	Quick start guide	Referencing Flow Repository and Cytobank	
the Art alysis of High-	Browse community datasets	Submit data	FlowRepository Steering Committee & Advisory Board	
8 - Cytometry	Browse most popular datasets	Funding		

## • Type *Identification of B cells* in the Query field

A guide to FlowRepository is available at the documentation site for Cytobank and FlowRepository.

We also have a Quick start guid

You can contact us by filling ou ticket.

Su	pport	ing	



» Sunday, June 24: State of th Lectures - Computational Anal Dimensional Data

» Tuesday, June 26: Parallel 8 Technology: Cytometry Software and Informatics

» Wednesday, June 27: Workshop 13 -Publishing MIFlowCyt Compliant Data to ISAC's FlowRepository.org for Cytometry A and Other Journals



FlowRepository

https://flowrepository.org/public experiment representations/run/query

### **WRepository**

« Back to Start Page 1 matching experiment found. Search: Browse All Public Experiments » Experiment Primary MIFlowCyt Repository Pubmed . Filos Researcher Project Updated Namo ID(s) Illustrations Score Identification of B A guide to FlowRepository is available at FR-FCM-[20131398] 284 Karin Breuer 12:19 PM the documentation site for Cytobank and cells through negative gating We also have a Ouick start guide. Showing 1 to 1 of 1 entries

You can contact us by filling out a support ticket.



Did you know?

FlowRepository.

#### FlowRepository at CYTO 2012

» Sunday, June 24: State of the Art Lectures - Computational Analysis of High-Dimensional Data

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- FR-FCM-ZZZ3 is the dataset repository identifier
- Each identifier is in the form of FR-FCM-xxxx
- A public view of an experiment can be accessed directly via

https://flowrepository.org/id/FR-FCM-xxxx



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A https://flowrepository.org/id/FR-FCM-ZZZ3

### FL WRepository

Experiment: Identification of B cells through ne	egative gating	ID: FR-FCM-ZZZ3 Prim	ary Researcher: Karin Breuer		MIFlowCyt Score	: 89.83%		
« Back to All Public Experiments	👻 Experime	nt Overview				G		
« Back to Start Page	Repository ID:	FR-FCM-ZZZ3	Experiment name:	Identification of B cells through negative gating	MIFlowCyt score:	89.83%		
Did you know?	Primary researcher:	Karin Breuer	Pl/manager:	Karin Breuer	Uploaded by:	Karin Breuer		
A guide to FlowRepository is available at the <u>documentation site for Cytobank and</u> <u>FlowRepository</u> .	Experiment dates:	2007-05-30 - 2007-08-21	Dataset uploaded:	Apr 2011	Last updated:	12:19 PM		
We also have a <u>Quick start guide</u> . You can contact us by filling out a <u>support</u>	Keywords:	[Innate Immune Response cells] [MIFlowCyt]	e] [Toll-like receptors] [Activation markers] [B	Pubmed IDs:	[20131398]			
ticket.	Organizations:	Organizations: Child & Family Research Institute, Department of Pediatrics, Vancouver, BC (Canada) University of Washington Medical Center, Department of Immunology, Seattle, Washington (USA)						
Supporting journal	Purpose:	The purpose of the experi	ment presented here was to test whether hum	an B cells can be identified through a r	egative-gating stra	ategy.		
Cytometry	Conclusion:	CD123neg cells. Only on all/most B cells respond b	rough a negative-gating strategy. Specifically the extreme ends of a response spectrum (i.e ut not monocyte, mDC or pDC) would this B c gy would potentially be difficult to interpret if b	, either none of the B cells respond to a ell negative-gating strategy supply acce	given innate stim ptable data. In oth	ulation or er words,		
	Comments:	cell surface marker, CD19 following TLR ligands: PA	egative-gating strategy to identify B cells with . We also wanted to assess the functional res M3CSK4, LPS, and CpG-A ODN 2336. The bi ne 2007. The flow cytometry analyses were p	ponse of these B cells to Toll-like recep lood draws, PBMC isolation, and TLR s	tor stimulation usin timulations were p	ng the		
FlowRepository at CYTO 2012	Quality control:		ttings across samples acquired on different da ensity was identical for each antibody, regard		ed. Voltages were	adjusted		
» Sunday, June 24: State of the Art Lectures - Computational Analysis of High-	Experiment va	riables						
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» Tuesday, June 26: Parallel 8 - Cytometry Technology: Cytometry Software and Informatics		a2006 O1T2pb05i A5 A05	fcs · a2006_O1T2pb05i_A2_A02.fcs · a2006 i.fcs · a2006_O1T2pb05i_A6_A06.fcs · a2006 .fcs · a2006_O1T2pb05i_B2_B02.fcs · a2006	O1T2pb05i A7 A07.fcs · a2006 O1T	2pb05i A8 A08.fc	s ·		
- Wednesday, June 27: Workshop 13 - Publishing MirlowCyt Compliant Data to ISAC's FlowRepository.org for Cytometry A and Other Journals		a2006_01T2pb05i_B5_B05 a2006_01T2pb05i_C1_C0 a2006_01T2pb05i_C5_C0 a2006_01T2pb05i_D1_D0 a2006_01T2pb05i_D5_D0 a2006_01T2pb05i_E1_E0 a2006_01T2pb05i_E5_E05 a2006_01T2pb05i_E1_F01	LIS a2006 OLT2PUDG B2 B02 LIS a2006 LIS a2006 OLT2PUDG B2 B06 Ks a2006 LIS a2006 OLT2PUDG C2 C02.ts a2000 LIS a2006 OLT2PUDG C6 C6.ts a2000 LIS a2006 OLT2PUDG D2 D02.ts a2000 LIS a2006 OLT2PUDG D6 D06.ts a2000 LIS a2006 OLT2PUDG E6 D6.ts a2006 LIS a2006 OLT2PUDG E6 E6 LIS a2006 LIS a2006 OLT2PUDG F2 F0.ts a2006 LIS a2006 OLT2PUDG F2 F0.ts a2006	Olt2ph05: B7 B07.tcs a2006 Olt Olt2ph05: C3 C03.tcs a2006 Olt Olt2ph05: C7 C07.tcs a2006 Olt Olt2ph05: D3 D03.tcs a2006 Olt Olt2ph05: D7 D07.tcs a2006 Olt Olt2ph05: D7 D07.tcs a2006 Olt Olt2ph05: E7 E03.tcs a2006 Olt Olt2ph05: F3 F03.tcs a2006 Olt Olt2ph05: F3 F03.tcs a2006 Olt	2pb05i_B8_B08.ft T2pb05i_C4_C04 T2pb05i_C8_C08 T2pb05i_D4_D04 T2pb05i_D8_D08 2pb05i_E4_E04.ft 2pb05i_E8_E08.ft 2pb05i_E8_E08.ft	rs - .fcs - .fcs - .fcs - .fcs - .fcs - .s -		

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Login

Repository ID:	FR-FCM-ZZZ3 Experiment name:		Identification of B cells through negative gating	MIFlowCyt score:	89.83%		
Primary researcher:	Karin Breuer	PI/manager:	Karin Breuer	Uploaded by:	Karin Breuer		
Experiment dates:	2007-05-30 - 2007-08-21	Dataset uploaded:	Apr 2011	Last updated:	12:19 PM		
Keywords:	[Innate Immune Response] [Toll-like recep [MIFlowCyt]	tors] [Activation markers] [B cells]	Pubmed IDs:	[20131398]			
Organizations:	Child & Family Research Institute, Department of Pediatrics, Vancouver, BC (Canada) University of Washington Medical Center, Department of Immunology, Seattle, Washington (USA)						
Purpose:	The purpose of the experiment presented I	The purpose of the experiment presented here was to test whether human B cells can be identified through a negative-gating strategy.					
Conclusion:	B cells can be identified through a negative-gating strategy. Specifically, B lymphocytes are the MHC II+, CD14neg, CD11cneg, and CD123neg cells. Only on the extreme ends of a response spectrum (i.e., either none of the B cells respond to a given innate stimulation or all/most B cells respond but not monocyte, mDC or pDC) would this B cell negative-gating strategy supply acceptable data. In other words, our negative-gating strategy would potentially be difficult to interpret if both B cell and non-B cell populations responded in low frequency.						
Comments:	We set out to compare a negative-gating strategy to identify B cells with the usual positive identification of these cells using the canonical B cell surface marker, CD19. We also wanted to assess the functional response of these B cells to Toll-like receptor stimulation using the following TLR ligands: PAMSCSK4, LPS, and CpG-A ODD 2336. The blood draws, PBMC isolation, and TLR stimulations were performed between 30 May and 5 June 2007. The flow cytometry analyses were performed between 8 June and 21 August 2007.						
Quality control:	To standardize voltage settings across sar fluorescence intensity was identical for ea		ngle stained controls were included. Voltage cquisition.	es were adjusted s	uch that		

#### **Experiment variables**

#### Individuals

a2006\_O1T2pb05i\_A1\_A01.fcs · a2006\_O1T2pb05i\_A2\_A02.fcs · a2006\_O1T2pb05i\_A3\_A03.fcs · a2006\_O1T2pb05i\_A4\_A04.fcs · a2006\_O1T2pb05i\_A5\_A05.fcs · a2006\_O1T2pb05i\_A5\_A05.fcs · a2006\_O1T2pb05i\_A5\_A05.fcs · a2006\_O1T2pb05i\_B4\_B04.fcs · a2006\_O1T2pb05i\_

 Experiment description is organized into 4 boxes corresponding to the 4 sections of MIFlowCyt

#### Experiment Overview

Bonositon/ ID	: FR-FCM-ZZZ3	MIFlowCyt - Publicly available experiment - Overview	(*
Primary researcher:	Karin Breuer	The Experiment Overview displays basic information about the experiment including details required by MIFlowCyt, section 1. Specifically, these details are displayed:	
Experiment dates:	2007-05-30 - 2007-08-21	Repository ID - Each experiment (dataset) is assigned a unique repository identifier. The	
Keywords:	[Innate Immune Response] [Toll-like rec [MIFlowCyt]	identifier is typically the form of FR-FCM-xxxx where xxxx is a sequence of four alphanumeric characters (case sensitive). Knowing the repository identifier, a public view o a public experiment can be accessed directly by a URL in the form of	of
Organizations	Child & Family Research Institute, Depa University of Washington Medical Cente	https://flowrepository.org/id/FR-FCM-xxxx, e.g., https://flowrepository.org/id/FR-FCM-ZZZ3	-
Purpose:	The purpose of the experiment presente	Experiment name - The name of the experiment as provided by the data uploader.	
Conclusion:	B cells can be identified through a negat Only on the extreme ends of a response not monocyte, mDC or pDC) would this	annotation with MIFlowCyt.	d
	potentially be difficult to interpret if both		
Comments:	We set out to compare a negative-gating marker, CD19. We also wanted to asses	Finanager - The person responsible for the project.	
	PAM3CSK4, LPS, and CpG-A ODN 233 The flow cytometry analyses were performed		
Quality control:	To standardize voltage settings across s fluorescence intensity was identical for e		
		Dataset uploaded - When was the dataset originally uploaded.	
Experiment v	ariables	Last updated - When was the annotation last updated.	
Individuals		Keywords - Key terms characterizing the experiment.	
	a2006_O1T2pb05i_A1_A01.fcs · a2006_O a2006_O1T2pb05i_A5_A05.fcs · a2006_O a2006_O1T2pb05i_B1_B01.fcs · a2006_O	Pubmed IDs - Pubmed identifiers of any publications associated with this dataset.	
	a2006_O1T2pb05i_B5_B05.fcs · a2006_O	Organizations - Organizations involved in this experiment.	

- Mousing over an "i" will display a related help topic
- The "x" closes the pop-up window
- Arrows on the left in title bars collapse and restore panels

Data review and download Data upload and annotation Data sharing

# Reviewing flow sample details

### • Scroll down to see additional information

Choose an FCS fi	e to display details for: - all 284 FCS files -							
a2006_O1T2pb05i_A1_A01.fcs :								
Description	Blood was drawn via sterile venipuncture into vacutaliners containing 143 USP units of sodium-heparin (Becton Dickinson (BD): catalog no. 8019839). Peripheral blood mononuclear cells (PBMC) were isolated by density gradient centrifugation as described in Jansen et al., J Immunol Methods 2008; 336(2): 183-192.							
Sample source:	[biological ] Human peripheral blood $\cdot$ Homo sapiens $\cdot$ 22 $\cdot$ years $\cdot$ unknown $\cdot$ healthy $\cdot$ None							
Sample characteristic:	Expected/analyzed types of cells: monocytes, myeloid dendritic cells, plasmacytoid dendritic cells, B lymphocytes. T lymphocytes will also be present but not analyzed. Red blood cells are not present as they are lysed when samples are frozen in FACSLyse solution.							
Sample treatment:	see attached file 'plate map'							
Staining:	Cell surface protein, CD11c, APC (BD Biosciences BD#340714) Intracellular Protein, TNFa, Alexa 700 (BD Biosciences BD#557996) Cell Surface Protein, CD14, PE-Cy7 (eBioscience selio#25-0149) Cell Surface Protein, MHCII, PerCPCy55 (BD Biosciences BD#custom) Intracellular Protein, IIFA, FITC/OG (Antigenix Antigenix#MC100133) Intracellular Protein, IL6, APC-Cy7 (BD Biosciences BD#custom) Cell Surface Protein, CD123, AmCyan (BD Biosciences BD#custom) Intracellular Protein, IL12, AMCYan (BD Biosciences BD#custom) Intracellular Protein, IL12, PA070, Pacific Blue (eBioscience eBio#577129)							

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# Instrumentation details and data analysis

#### BD FACSAria II, Becton Dickinson (BD Biosciences) used for: A02 details · 2nd Settings details · A04 details · A06 details · A07 details · A08 details · A09 details · B01 details · B02 details · B03 details · B04 details · B06 details · B07 details · B08 details · B09 details · B10 details · B11 details · C01 details · C02 details · C03 details · C04 details · C06 details · C06 details · C09 de D04 details · D06 details · D07 details · D08 d ils · E04 details · E06 details · E07 details · E08 details · 6 details -F07 details · F08 details · F09 details · F10 det s · G07 Instrument model: BD FACSAria II details · G08 details · G09 details · H01 details 108 Manufacturer: Becton Dickinson (BD Biosciences) details · H09 details · H10 details · A01 details Flow Cell Type: Ouartz cuvette Other flow fluidics details: 160-um x 250-um, 15-mm long Optical Paths: [FSC-H - FSC-Height] [SSC-H - SSC-Height ] [ FL1-H - CD45RA FITC ] [ FL2-H - CD45RO PE Choose which illustration to display: Panel ] [ FL2-A - FL2-A ] [ FL3-H - CD3 PerCP ] [ FL4-H - CD8 APC 1 Installation dates of filters in Optical Paths: When the instrument was bought in May 2007.

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# Download

- Panels on the left allow you to download
  - Data
  - Attachments
  - Saved illustrations
  - Gates (in Gating-ML)
  - MIFlowCyt reports

- Download 👔
FCS files Download FCS Files
Public illustrations
Case 1 APC vs. PerCP 🔽 <u>PDF</u>
Case 1 PE vs. PerCP <mark>D</mark> PDF
Case 1 FITC vs. PerCP 🚺 <u>PDF</u>
Attachments <u>CSI-</u> Portland_Tembhare_Case_1_Analysis.pdf <u>Tembhare_Case_1_History.doc</u>
Gating Export Gating-ML
➡ MIFlowCyt Report
Print view DPDF

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# Download FCS files - make sure Java is allowed to run

FlowRepository - Identifi × FlowRepository - Test 01 ×	
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Experiment: Identification of B cells through negative gating ID: <u>FR-FCM-ZZZ3</u> Primary Researcher: Karin Breuer MIFlowCyt Score: 88.83	*
Back to Experiment Public View     Instructions	
Download Experiment Files	
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# Download FCS files - select download destination

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Protocols in Cytometry We also have a Quick start guide,		stimulation using the PAM3CSK4, LPS, an					strategy. Specifically, B lymphocytes are the MHC II+, CD14neg, CD11cneg, and CD123neg cells. Only on		
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a2006_O1T2pb05i_D3_D03.fcs details	show sample description	D3	a2006, D, 3, a2006 O1T2pb05i	Panel 1	150000	12.6 MB
a2006_O1T2pb05i_D4_D04.fcs details	show sample description	D4	a2006, D, 4, a2006 O1T2pb05i	Panel 1	150000	12.6 MB

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FlowRepository - Identifi ×



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## Show sample description

#### FCS Files (284)

#### Download Files Upload More Files De-identify FCS Files Review Keywords in FCS files

File Name	Sample
a2006_O1T2pb05i_A1_A01.fcs details	show sample de
a2006_O1T2pb05i_A2_A02.fcs details	show sample de
a2006_O1T2pb05i_A3_A03.fcs details	show sample de
a2006_O1T2pb05i_A4_A04.fcs details	show sample de
a2006_O1T2pb05i_A5_A05.fcs details	show sample de
a2006_O1T2pb05i_A6_A06.fcs details	show sample de
a2006_O1T2pb05i_A7_A07.fcs details	show sample de
a2006_O1T2pb05i_A8_A08.fcs details	show sample de
a2006_O1T2pb05i_B1_B01.fcs details	show sample de
a2006_O1T2pb05i_B2_B02.fcs details	show sample de
a2006_O1T2pb05i_B3_B03.fcs details	show sample de
a2006_O1T2pb05i_B4_B04.fcs details	show sample de
a2006_O1T2pb05i_B5_B05.fcs details	show sample de
a2006_O1T2pb05i_B6_B06.fcs details	show sample de
a2006_O1T2pb05i_B7_B07.fcs details	show sample de
a2006_O1T2pb05i_B8_B08.fcs details	show sample de
a2006_O1T2pb05i_C1_C01.fcs details	show sample de
a2006_O1T2pb05i_C2_C02.fcs details	show sample de
a2006_O1T2pb05i_C3_C03.fcs details	show sample de
a2006_O1T2pb05i_C4_C04.fcs details	show sample de
a2006_O1T2pb05i_C5_C05.fcs details	show sample de

mple		Tube Name	Experiment Va	riables	Panel	Events	Size	
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ow sample de				×	Panel 1	150000	12.6 MB	
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ow sample de	heparin	(Becton Dickin	son (BD); catalog nonuclear cells (P	no. 8019839).	Panel 1	150000	12.6 MB	
ow sample de	isc	lated by densit	y gradient centrifu	gation as	Panel 1	150000	12.6 MB	
ow sample de	descri		t al., J Immunol M 2): 183-192.	ethods 2008;	Panel 1	150000	12.6 MB	
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ow sample de			nocytes. T lympho alyzed. Red blood		Panel 1	150000	12.6 MB	
ow sample de	presen		sed when samples Lyse solution.	are frozen in	Panel 1	150000	12.6 MB	
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# Review MIFlowCyt compliance details

#### Approximated by MIFlowCyt score

• Automatically calculated value between 0% and 100%

MIFlowCyt score contribution
30%
30%
20%
20%

• Click on the MIFlowCyt Score bar to review the details



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< 🗼 😅 🔒 https://flowrepository.org/exp	periments/3/miflowcyt						\$
<b>FL</b> WRepository	Inbox Profile	Annotation Data	Invite a User	Support	Public View	Welcome, 🕑 Josef	Logout
Experiment: Identification of B cells through	negative gating ID: <u>FR-FC</u>	M-ZZZ3 Labels: Non	e Primary Researche	r: <u>Karin Breuer</u>	Public: Yes	MIFlowCyt Score	e: 89.83%
	MIFlowCyt Comp Repository ID: FF Total MIFlowCyt compliance score	R-FCM-ZZZ3	or Experiment:	Identifica	ation of B cells	through negative g	ating -
Print View DPDE	▼ 1 - Experiment Ove	erview - 92.50% pr	ovided				0
→ Did you know?	Items considered relatively ba	ased on importance, 30% o	contribution to total score.				
You can request a one-on-one session to get started with your data by filling out a support ticket.	Item Purpose	Compliance [+-]					
A guide to Cytobank is available at <u>Current</u> Protocols in Cytometry	Keywords	0					
We also have a <u>Quick start guide</u> . You can print/save your Illustrations to PDF	Experiment variables	0					
from the Illustration view's left menu. You can export your data to Excel from the	Organization	0					
Experiment Summary page.	Contact	0					
experiments through the "Sharing Permissions" box.	Date	0					
Use the "Download Files" button to save copies of the original FCS Files to your	Conclusions	0					
computer.	Quality control measures	0					
	▼ 2 - Flow Sample/Sp						(i)
	Items considered relatively ba	ased on Importance, 30% o	contribution to total score.				

FCS file	Compliance [ + - ]
a2006_O1T2pb05i_A1_A01.fcs	0
a2006_O1T2pb05i_A2_A02.fcs	0
a2006_O1T2pb05i_A3_A03.fcs	0
a2006_O1T2pb05i_A4_A04.fcs	0
a2006_O1T2pb05i_A5_A05.fcs	0
	-

# Upload and annotation of your own dataset

#### Typical steps

- Create a new experiment
- Opload data (FCS files)
- O Prepare annotation templates
  - Or prepare spreadsheets with annotations
- Annotate the experiment
  - Describe samples and sample sources
  - Provide experimental variables
  - Describe instrumentation settings
- Provide analysis details
  - Either analyze data online and create illustrations
  - Or upload third party analysis files (e.g., Flow Jo<sup>TM</sup> workspaces, FCS Express<sup>TM</sup> project files, FACS Diva<sup>TM</sup> files, etc.)
- Review (and improve) your MIFlowCyt compliance

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Data review and download Data upload and annotation Data sharing

#### Create a new experiment

- Bank New Experime	ent
* Experiment Name	IDCRP's HIV Natural History Study
Project	None •
* Primary Researcher	Nima Aghaeepour
* PI/Manager	Mario Roederer Invite a new user
	Allow PI/Manager to have full access to experiment <i>⊌</i>
* Starting Date	2007-07-01 (Vyyy-mm-dd)
End Date	2007-10-31 📰 (yyyy-mm-dd)
(optional)	
* Purpose	Identification of immunophenotypes correlated with AIDS free survival of HIV infected patients based on polychromatic flow cytometry analysis of 466 subjects enrolled in Infectious Disease Clinical Research Program's Natural History Study.

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## Create a new experiment (continued)

Conclusion (optional)	Several immunophenotypes correlated with the survival times were identified. Details about this would typically be listed here but I am not at liberty to share this information during this talk.
Comments (optional)	For reagent and instrument details as well as the original manual gating strategy please see: Ganesan and Chattopadhyay et al., Immunologic and virologic events in early HIV infection predict subsequent rate of progression. Journal of Infectious Diseases, 2010:201:272–284.
Quality Control Measures (optional)	Per-channel empirical distribution comparison
Quality Control Experiment	None •

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## Create a new experiment (continued)

Keywords (optional)	HIV, AIDS Free Survival, Bioinformatics
Organizations	None
(optional)	BC Cancer Agency, Terry Fox Laboratory University of British Columbia, Faculty of Medica
	Add new organization
Pubmed IDs (optional)	20001854, 18667932
	* required field
	Create Experiment

Data review and download Data upload and annotation Data sharing

## Adding new organization

New organization details		
Name *	University of Toronto	
Department	Department of Cell & Systems Biology	
Zip (postal code)	M5S 3G5	
Address line #1		
Address line #2		
Address line #3		
City *		
State (province)		
Country*		
	Powered by Geonames	
	Cancel	Save

- Auto-complete based on ZIP supported for 60 countries
- Country is assumed based on your location unless specified in the Country field

Data review and download Data upload and annotation Data sharing

## Adding new organization

New organization details		
Name *	University of Toronto	
Department	Department of Cell & Systems Biology	
Zip (postal code)	M5S 3G5	
Address line #1		
Address line #2		
Address line #3		
City *	Toronto	
State (province)	Ontario	
Country*	Canada	
	Powered by Geonames	
	Cancel	Save

- Auto-complete based on ZIP supported for 60 countries
- Country is assumed based on your location unless specified in the Country field

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  - Provide experimental variables
  - Describe instrumentation settings
- Provide analysis details
  - Either analyze data online and create illustrations
  - Or upload third party analysis files (e.g., Flow Jo<sup>TM</sup> workspaces, FCS Express<sup>TM</sup> project files, FACS Diva<sup>TM</sup> files, etc.)
- Review (and improve) your MIFlowCyt compliance

## Data upload

Experiment: IDCRP's HIV Natural History Study	ID: FR-FCM-ZZZB Labels: None Primary Researcher: <u>Nima Aghaeepour</u> Public: No MIFlowCyt Score: 0.00%
« Back to Experiment	This experiment does not have any FCS files uploaded yet.
- Actions	
Delete Experiment	> Getting Started! *
→ Did you know?	Upload Experiment Files
You can request a one-on-one session to get started with your data by filling out a support ticket.	Browse For Folder Upload Selected Files
A guide to Cytobank is available at <u>Current</u> <u>Protocols in Cytometry</u>	Select All Deselect All Select Flow Files Deselect Flow Files
We also have a <u>Quick start quide</u> . You can print/save your Illustrations to PDF from the Illustration view's left menu.	De-identify all FCS files before uploading
You can export your data to Excel from the Experiment Summary page.	No folder selected. Click on "Browse for Folder" to select a folder. Filename FCS Version Upload?
Give other users full control to modify your experiments through the "Sharing Permissions" box.	
Use the "Download Files" button to save copies of the original FCS Files to your computer.	
)	
	Upload Progress: 0%
	Terms of Service Privacy Policy Support Feedback

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## Data upload

« Back to Experiment	This experiment does not have an	v FCS files unloaded vet.			
- Actions		, ·p ,			
Delete Experiment	→ Getting Started!				
+ Did you know?	Upload Experiment Files				
You can request a one-on-one session to get started with your data by filling out a support ticket.		or Folder Upload Se	elected Files		
A guide to Cytobank is available at <u>Current</u> Protocols in Cytometry	Select <u>All</u> D <u>e</u> sele	ct All Select Flow Files	Deselect	Flow Files	1
We also have a Quick start guide.					
You can print/save your Illustrations to PDF from the Illustration view's left menu.		dentify all FCS files before	uploading		
You can export your data to Excel from the	Files:	0000	ECS Version	Upload?	
periment Summary page.	203037.fcs - 203037.fcs		ECS2.0	Ploadr	
Give other users full control to modify your experiments through the "Sharing	797946.fcs - 797946.fcs		ECS2.0	r 1	
Permissions" box.	922911.fcs - 922911.fcs		FCS2.0	r	
Use the "Download Files" button to save	802565.fcs - 802565.fcs		FCS2.0	V	
copies of the original FCS Files to your	643079.fcs - 643079.fcs		ECS2.0	V	
computer.	351452.fcs - 351452.fcs		FCS2.0	¥	
)	334791.fcs - 334791.fcs		FCS2.0	2	
	294897.fcs - 294897.fcs	F	FCS2.0	V	
	319267.fcs - 319267.fcs	F	FCS2.0	2	
	251284.fcs - 251284.fcs	F	FCS2.0	<b>1</b>	
	997430.fcs - 997430.fcs	F	FCS2.0	2	
	122405.fcs - 122405.fcs	F	FCS2.0	2	
	846228.fcs - 846228.fcs	F	FCS2.0	2	
	130119.fcs - 130119.fcs	F	FCS2.0	2	
	306870.fcs - 306870.fcs		FCS2.0	×.	
	978630.fcs - 978630.fcs	F	FCS2.0	2	-
	Uplo	ad Progress: 0%			

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Data review and download Data upload and annotation Data sharing

# Data upload - de-identification

☑ De-identify all FCS files before uploading

#### **De-identification**

- Remove identifiers that could be used to identify an individual
- Generally, privacy rules do not apply on de-identified data
  - $\rightarrow~$  Allows for sharing
    - Check with your regulatory authority as applicable, e.g., Health Insurance Portability and Accountability Act (HIPAA)

#### Implementation in FlowRepository

- Automated removal of all keyword values unless in our safe list
  - Safe list: Over 220 keywords identified from a few hundred FCS data files produced by dozens of instruments from several vendors
- Integrated in the upload process
  - $\bullet~$  Performed locally  $\rightarrow~$  no sensitive information leaves your computer

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## Data upload (large dataset)

## Batched Upload Due to the size of your upload, your files will be uploaded in 6 batches. The progress bar will reflect the progress of each batch. Please do not be alarmed if the progress bar restarts. At any point during the upload, please do not click away from this page. You will automatically be redirected to the next page when the upload is complete.

- In our example, we are uploading 11 GB of data
- This message is only shown for uploads larger than 2 GB

## Data upload

« Back to Experiment	This experiment does not have any FCS files uploaded yet.			
- Actions	This experiment does not have any PCS lies uploaded yet.			
Delete Experiment	→ Getting Started!			
+ Did you know?	Upload Experiment Files			
You can request a one-on-one session to get started with your data by filling out a support ticket.	Browse For Folder	pload Selected Files	]	
A guide to Cytobank is available at <u>Current</u> Protocols in Cytometry	Select All Deselect All Select Fl	ow Files Deselec	t Fl <u>o</u> w Files	
We also have a Quick start guide.				
You can print/save your Illustrations to PDF from the Illustration view's left menu.	De-identify all FCS files	before uploading		
You can export your data to Excel from the Experiment Summary page.	Filename	FCS Version	Upload?	
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Give other users full control to modify your experiments through the "Sharing Permissions" box.	797946.fcs - 797946.fcs	ECS2.0	v =	
	922911.fcs - 922911.fcs	ECS2.0	V	
Use the "Download Files" button to save	802565.fcs - 802565.fcs	FCS2.0	V	
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computer.	351452.fcs - 351452.fcs	FCS2.0	2	
	334791.fcs - 334791.fcs	FCS2.0	2	
	294897.fcs - 294897.fcs	FCS2.0	V	
	319267.fcs - 319267.fcs	FCS2.0	V	
	251284.fcs - 251284.fcs	FCS2.0	V	
	997430.fcs - 997430.fcs	FCS2.0	2	
	122405.fcs - 122405.fcs	FCS2.0	V	
	846228.fcs - 846228.fcs	FCS2.0	V	
	130119.fcs - 130119.fcs	FCS2.0	V	
	306870.fcs - 306870.fcs	FCS2.0	2	
	978630.fcs - 978630.fcs	FCS2.0	¥ +	
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## Data upload

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Profectoria in Cytometry We also have a <u>Quick start quide</u> . You can print/seve your Illustrations to PDF from the Illustration view's left menu. You can export your data to Excel from the U permient Stummary page. We other users full control to modify your Vermients through the "Sharing 7	De-identify Jpload complete. Ellename 203037.fcs - 203037.fcs 797946.fcs - 797946.fcs	y all FCS files before up	loading CS Version	Upload?	
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Permissions" box. 9			2.0	~	
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	351452.fcs - 351452.fcs		2.0	2	
	334791.fcs - 334791.fcs		2.0	×.	
	294897.fcs - 294897.fcs		2.0	2	
	319267.fcs - 319267.fcs		2.0	2	
	251284.fcs - 251284.fcs		2.0	2	
	997430.fcs - 997430.fcs		2.0	2	
	122405.fcs - 122405.fcs		2.0	×.	
	846228.fcs - 846228.fcs		2.0	2	
	130119.fcs - 130119.fcs		2.0	2	
3	306870.fcs - 306870.fcs	FCS	2.0	2	
9	978630.fcs - 978630.fcs	FCS	2.0	×	•
here	Upload Pro	gress: 100%			

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Data review and download Data upload and annotation Data sharing

## Data upload

					Welcome, 🕱 Josef	Logout
- Did you know?						
You can request a one-on-one session to get started with your data by filling out a support ticket.	<b>•</b>		nent IDCRP's HI	V Natural History Study!		
A guide to Cytobank is available at Current Protocols in Cytometry	Processing Uploaded	Files				
We also have a <u>Quick start guide</u> .						
You can print/save your Illustrations to PDF from the Illustration view's left menu.	Current Task: Categorizing	FCS Files				
You can export your data to Excel from the Experiment Summary page.						
Give other users full control to modify your experiments through the "Sharing Permissions" box.						
Use the "Download Files" button to save copies of the original FCS Files to your computer.						
	Terms of Service	Privacy Policy	Support	Feedback		

• Data files will be automatically categorized and assigned to staining panels after the upload

## Data upload



FlowRepository - IDCRP': ×

🖕 🎃 😨 🔇 https://flowrepository.org/experiments/20



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Data review and download Data upload and annotation Data sharing

### Prepare annotation data



- Follow the Annotation Data link
  - Set of *concepts* applicable to samples even from different datasets

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#### Prepare annotation data – reagents

→ Ac Add n Add n Add n Add n Add n Add o Add n Add n You c get st suppo A guid Proto We al You c from t You c Exper Give exper Permi Use th copies comp

tions 👔	▶ Getting Starte	d with MIFlow	Cyt Annotatior	is!				
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iew instrument irganism iew template for samples iew template for sample sources	New reagent Search: CD14							
l you know?	Analyte	Analyte detector	Analyte reporter	Clone 🔶	Catalog nr \$	Manufacturer 🔶	\$	\$
an request a one-on-one session to arted with your data by filling out a ort ticket.	CD14	anti-CD14	Alexa 700	M5E2	BD#557923	BD Biosciences [website]	Edit	Remove
de to Cytobank is available at <u>Current</u> cols in Cytometry	CD14	anti-CD14	PE-Cy7	M5E2	eBio#25- 0149	eBioscience [website]	Edit	Remove
lso have a <u>Quick start guide</u> . an print/save your Illustrations to PDF	CD14	-	FITC	RMO52	IM0645	Beckman Coulter [website]	<u>Edit</u>	Remove
the Illustration view's left menu. an export your data to Excel from the iment Summary page.	CD14	-	PE-Cy7	M5E2	557742 1:50	BD Biosciences [website]	Edit	Remove
other users full control to modify your iments through the "Sharing	CD3/CD14	Anti- CD3/CD14	PECy7		-	Unknown	Edit	Remove
issions" box. ne "Download Files" button to save s of the original FCS Files to your uter.	VIVID/CD14 Showing 1 to 6 of 6	N/A entries (filtered fro	V450 m 110 total entries)		N/A	Custom	<u>Edit</u>	Remove

• Define reagents used in the dataset

Data review and download Data upload and annotation Data sharing

### Prepare annotation data – add reagents

▼ New Reagent	
Analyte *	CD4
Analyte detector *	Anti-CD4
Analyte reporter *	PE
Clone	13B8.2
Catalog nr *	IM0449
Manufacturer *	Beckman Coulter • New
	Create

Provide details as required by MIFlowCyt

### Prepare annotation data – instruments

• Your instrument is most likely in the system already

Keywords Organ	izations Manufacturers Reagents	Instruments Orga	nisms	Templates
New instrument Search:				
Model 🔺	Manufacturer 🔶	Other 🍦	\$	\$
A10-Bryte	Apogee Flow Systems http://www.apogeeflow.com		Edit	Remove
A40-Military	Apogee Flow Systems http://www.apogeeflow.com		<u>Edit</u>	Remove
A50-Micro	Apogee Flow Systems http://www.apogeeflow.com		<u>Edit</u>	<u>Remove</u>
A50- Universal	Apogee Flow Systems http://www.apogeeflow.com		<u>Edit</u>	Remove
Accuri C6	Becton Dickinson (BD Biosciences) http://www.bdbiosciences.com		<u>Edit</u>	Remove
Attune	Applied Biosystems http://www.appliedbiosystems.com		<u>Edit</u>	Remove
Auto-A40	Apogee Flow Systems http://www.apogeeflow.com		<u>Edit</u>	Remove

Josef Špidlen, Ryan R. Brinkman

FlowRepository.org - Resource of Flow Cytometry Data

### Prepare annotation data – organisms

- The NCBI Taxonomy contains hundreds of thousands of organisms
- FlowRepository contains 20,000 of these
  - Selected based on either having a common English name or appearance in GeneBank
- But this is still a long list (for drop down selections)
  - ightarrow We only show what has been used or explicitly requested

Keywords Organizations Manufac	cturers Reagents Instrume	nts Organisms Templates
Add organism		
Search:		
NCBI Taxonomy ID 💧 💧	Scientific name 🛛 🌲	Genbank common name 🛛 🍦
9606	Homo sapiens	human
10090	Mus musculus	house mouse
10116	Rattus norvegicus	Norway rat

Data review and download Data upload and annotation Data sharing

## Prepare annotation data – add organism

- Follow the Add organism link
- Start typing either the Latin or the English name
- Auto-complete will show suggestions after the first 3 characters

#### Add organism from NCBI Taxonomy



Data review and download Data upload and annotation Data sharing

### Prepare annotation data – templates

#### • Start with sample sources

eywords Organizati	ons Manufacturers	Reagents	Instruments	Or	ganisms T	emplates	
lew annotation template lew annotation template Search:							
Annotation Annotation	Template N	ame	User	-	Public 🔷	\$	\$
Sample	Sample template Kollmann #1		Karin Breuer		yes	<u>Show</u>	<u>Remove</u>
Sample	JS Sample 1		Josef Spidlen		no	<u>Show</u>	<u>Remove</u>
Sample source	sample source temp Kollmann #1	sample source template Kollmann #1			yes	<u>Show</u>	<u>Remove</u>
Sample source	12w MOLD/RkJ M mouse		Josef Spidlen		no	<u>Show</u>	Remove

Josef Špidlen, Ryan R. Brinkman FlowRepository.org - Resource of Flow Cytometry Data

## Prepare annotation data – create sample source templates

- Different items required based on the sample source type
- Form changes accordingly
- Use ? for variable fields

Details for	sample source template		×
Sa	mple source type *	environmental •	
	Description *		
	Location *		
	Other		
		Cancel Sav	/e
		Calcel Sa	

## Prepare annotation data – create sample source templates

- Different items required based on the sample source type
- Form changes accordingly
- Use ? for variable fields

Details for s	sample source template		×
San	nple source type *	other •	
-	Description *		
_	Other		
-			
			Cancel Save

#### Prepare annotation data – create sample source templates

- Different items required based on the sample source type
- Form changes accordingly
- Use ? for variable fields

Details for sample source template	
Sample source type * Description * HIV+ subject	biological •
Organism *	Homo sapiens (9606) [human]
Age *	?
Age unit *	years
Gender *	?
Phenotype *	N/A
Genotype *	N/A
Treatment *	
?	
	Cancel Save

Data review and download Data upload and annotation Data sharing

## Prepare annotation data – create sample source templates

• Finally, name and save your Sample source template

<ul> <li>New Annotation Ter</li> </ul>	nplate
Template type	Sample Source
Template	HIV+ subject (ID 220)
Template name	HIV+ subject template
Public	no •
	Create

## Prepare annotation data – create sample templates

Details for sample template	
Description * PBMC from HIV+ Sub	ect
Sample characteristic	HIV+ • New
Sample treatment	New
Staining	None B cells, MHCII, PerCPCy5.5 (BD Biosciences BD#custom) T cells, CD40, FITC/OG (eBioscience eBio#11-0409) CD14 positive cells, CD14, Alexa 700 (BD Biosciences BD#557923) CD86, CD86, PE (eBioscience eBio#12-0869)
Staining cocktail(s)	- None - Cocktail no. 1
	Cancel

Data review and download Data upload and annotation Data sharing

### Prepare annotation data – create sample templates

#### • Describe sample treatment



#### Prepare annotation data – create sample templates

- Define reagents including what characteristics they are measuring, especially if there may be ambiguity, e.g.,
  - Propidium lodide (PI) with permeabilized cells  $\rightarrow$  DNA content (cell cycle)
  - $\bullet\,$  PI with non-permeabilized cells  $\rightarrow$  cell viability

New reage	ent details		×
Charac	teristic measured *	Monocytes idenitfication	]
	Other		
	Used reagent *	CD14, PE-Cy7 (eBioscience eBio#25-0149)	۲
			Cancel Save
Introduction Data r FlowRepository Data u Summary & Conclusions Data s

Data review and download Data upload and annotation Data sharing

#### Prepare annotation data – create sample templates

Double-click on a reagent to see details



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#### Prepare annotation data – create sample templates

- Select reagents (and/or cocktails) used
- Hold Ctrl (or Shift) to select multiple items

Details for sample template	
Description * PBMC from HIV+ Sub	ject
Sample characteristic	HIV+ New
Sample treatment	PBMCs were thawed in warm • New
Staining	B cells, MHCII, PerCPCy5.5 (BD Biosciences BD#custom) T cells, CD40, FITC/OG (eBioscience eBio#11-0409) CD14 positive cells, CD14, Alexa 700 (BD Biosciences BD#557923) CD86, CD86, PE (eBioscience eBio#12-0869) Monocytes idenitification, CD14, PE-Cy7 (eBioscience eBio#25-0149) New
Staining cocktail(s)	None Cocktail no. 1
	Cancel Save

#### Prepare annotation data – create sample templates

• Finally, name and save your Sample template

<ul> <li>New Annotation Template</li> </ul>				
Template type	Sample			
Template	PBMC from HIV+ Subject (ID 3581)			
Template name	PBMC from HIV+ Subject Template			
Public	πο •			
	Create			
·	no •			

## Upload and annotation of your own dataset

#### Typical steps

- Create a new experiment
- Opload data (FCS files)
- Prepare annotation templates
  - Or prepare spreadsheets with annotations
- Annotate the experiment
  - Describe samples and sample sources
  - Provide experimental variables
  - Describe instrumentation settings
- Provide analysis details
  - Either analyze data online and create illustrations
  - Or upload third party analysis files (e.g., Flow Jo<sup>TM</sup> workspaces, FCS Express<sup>TM</sup> project files, FACS Diva<sup>TM</sup> files, etc.)
- Review (and improve) your MIFlowCyt compliance

### Prepare spreadsheets with annotations

- Use your favorite spreadsheet editor
  - MS Excel, GoogleDoc Spreadsheet, OpenOffice Calc, etc.
- Name one column as **FCS File**; values should correspond to file names in your dataset
- Other "understandable" columns:
  - Samples: Sample Description, Sample Characteristic, Sample Treatment, Sample Source Description, Sample Source Treatment, Age, Age unit, Gender, Phenotype, Genotype, Location, Other Sample Source Information
  - Experiment Variables: Condition, Dose, Timepoint, Individual, Experimental variable sample type
  - Instrumentation Details: Instrument, Default Instrument Settings, Optical Filters Installation Dates, Other Flow Fluidics Information, Other Instrument Settings Information, Flow Cell Type

Data review and download Data upload and annotation Data sharing

### Use your favorite spreadsheet editor

÷ (	HIV Ann	otat	ions		rsuqdetwedzjyzzveHiMae5 ta Tools Help		ed	Josef Spidlen	☆ →
		<b>-</b>	<b>*</b> \$	% 123 - 1	LOpt 0 B Abc A	· · · · · ·	· 33 · 🚍 Σ · []	II Y	
F×	158483.fcs							Show all formulas	×
	А	в	С	D	E	F	G	н	
1	FCS File	Aae	Gender	Condition					
2	100715.fcs	51	F	HIV Stage 1					
3	105696.fcs	25	F	HIV Stage 4					
4	108701.fcs	21	м	HIV Stage 3					
5	109025.fcs	20	м	HIV Stage 4					
6	109567.fcs	36	F	HIV Stage 2					
7	110539.fcs	43	м	HIV Stage 1					
8	113548.fcs	38	F	HIV Stage 2					
9	121069.fcs	33	м	HIV Stage 3					
10	122405.fcs	43	м	HIV Stage 2					
11	127225.fcs	21	F	HIV Stage 1					
12	129599.fcs	40	м	HIV Stage 1					
13	129730.fcs	20	F	HIV Stage 2					
	129869.fcs	21	м	HIV Stage 3					
14			м	HIV Stage 1					

Data review and download Data upload and annotation Data sharing

### Use your favorite spreadsheet editor

ele Eile	le Dét View Inset Farmat Tools Data Window Help & ★ ×							
	- 🖻 • 🛎 🗄 🕑 🔽 📇 🛎 🦷 👹 💃 🔍 🗋 • 🛓 🔞 • 🖗 • 📓 🖕 🐝 💣 🖉 🔶 📾 🔯							
-	Liberation Sans	10 1		E 📰 🖿 📖 🥠	% 🗔 🖑 💽 📄	• 🖭 • 🏡 • 🕎		
P1	$e_1 \qquad \qquad$							
1	FCS File	Age	Gender	Condition	E	F	G	
		-						Ū
2	100715.fcs	51	F	HIV Stage 1				
3	105696.fcs	25	F	HIV Stage 4				
4	108701.fcs	21	M	HIV Stage 3				
5	109025.fcs	20	М	HIV Stage 4				
6	109567.fcs	36	F	HIV Stage 2				
7	110539.fcs	43	М	HIV Stage 1				
8	113548.fcs	38	F	HIV Stage 2				
9	121069.fcs	33	М	HIV Stage 3				
10	122405.fcs	43	М	HIV Stage 2				
11	127225.fcs	21	F	HIV Stage 1				
12	129599.fcs	40	М	HIV Stage 1				
13	129730.fcs	20	F	HIV Stage 2				
14	129869.fcs	21	М	HIV Stage 3				
15	130119.fcs	44	М	HIV Stage 1				*
	Sheet1	14	Default			Sum=0	0	<ul> <li>▶</li> <li>●</li> <li>●</li></ul>

Data review and download Data upload and annotation Data sharing

### Save as CSV (Comma Separated Values)

• Look in the File menu for Save As, Download, or Export



## Upload and annotation of your own dataset

#### Typical steps

- Create a new experiment
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- Review (and improve) your MIFlowCyt compliance



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« Back to Inbox	- Getting Start	ed: Experiment Details					×	L
My Working Illustration »	This Experime	ent Details Page contain	s information	about the experiment	listed a	bove.		
MIFlowCyt Annotation »		ribing samples						
- Actions		<u>sytometer information</u> speriment variables						
Experiment		our data on-line						
Edit Experiment Details		IFlowCyt annotation						
Delete Experiment	<ul> <li>Download</li> </ul>							
FCS Files								
Download FCS Files	For more tips	and guides please see:						
Upload More FCS Files		sitory Quick start guide						
De-identify FCS Files Review Keywords in FCS files	<ul> <li>Document</li> </ul>	ation site for Cytobank a	ind FlowRep	ository				
Review Reywords III PC3 liles								<u> </u>
- Sharing Permissions	Experiment D	Details					i)	,
Full Access Users	→ Illustrations						i	
Nima Aghaeepour [PR]	→ Attachments						i	
Josef Spidlen [x]	→ FCS Files (46	6)					i	
O Ryan Brinkman [x]	Download Files Upload	More Files De-identify FCS Files Re	eview Keywords in	FCS files				
Invite a new user	File Name	Sample	Tube Name	Experiment Variables	Panel	Events	Size	
Share with a User (Full Access)	100715.fcs details	100715.fc describe sample	Tube_025		Panel 1	65016	4 MB	
	105696.fcs details	105696.fcs describe sample	Tube_009		Panel 1	455184	27.8 MB	
This experiment is currently private.	108701.fcs details	108701.fcs describe sample	Tube_001		Panel 1	1000000	61 MB	
Share with Everyone	109025.fcs details	109025.fcs describe sample	Tube 009		Panel 1	210186	12.8 MB	
You can also create a secret access code to share with reviewers.	109567.fcs details	109567.fcs describe sample	- Tube 017		Panel 1	160074	9.8 MB	
	110539.fcs details	110539.fcs describe sample	Tube_022		Panel 1	364212	22.2 MB	
Share with Reviewers	113548.fcs details	113548.fcs describe sample	Tube_022 Tube_003		Panel 1	177102	10.8 MB	
- Did you know?			-					
You can request a one-on-one session to	121069.fcs details	121069.fcs describe sample	Tube_001		Panel 1		33.1 MB	
get started with your data by filling out a	122405.fcs details	122405.fcs describe sample	Tube_010		Panel 1	476208	29.1 MB	

Data review and download Data upload and annotation Data sharing

### Describing samples

Apply template:	Create templates
Description *	
Sample source	New
Sample characteristic	New
Sample treatment	New
Staining	None B cells, MHCII, PerCPCy5.5 (BD Biosciences BD#custo T cells, CD40, FITC/OG (eBioscience eBio#11-0409) CD14 positive cells, CD14, Alexa 700 (BB Biosciences L CD86, CD86, PE (eBioscience eBio#12-0869)
Staining cocktail(s)	None Cocktail no
	Save and proceed to next FCS file Apply to all undescribed FCS files Apply to undescribed FCS files in Panel 1

Data review and download Data upload and annotation Data sharing

### Describing samples – apply a template

▼ 100715.fcs Sample	
Apply template:	PBMC from HIV+ Subject Template   Create templates
Description *	PBMC from HIV+ Subject
Sample source	• New
Sample characteristic	HIV+ • New
Sample treatment	PBMCs were thawed in warm • New
Staining	None B cells, MHCII, PerCPCy5.5 (BD Biosciences BD#custo
	T cells, CD40, FITC/OG (eBioscience eBio#11-0409)
	CD14 positive cells, CD14, Alexa 700 (BD Biosciences L CD86, CD86, PE (eBioscience eBio#12-0869)
Staining cocktail(s)	None Cocktail no
	. New
	Save and proceed to next FCS file Apply to all undescribed FCS files Apply to undescribed FCS files in Panel 1

Data review and download Data upload and annotation Data sharing

#### Describing samples – create a sample source

- Use templates again
- Adjust accordingly for each sample
- Or just leave it (we can fix it later using spreadsheets)

New sample source details		
Create from template:	Create new template(s)	
Sample source type *	•	
Description *		1
Organism *	•	
Age *		
Age unit *		
Gender*		
Phenotype *		
Genotype *		
Treatment *		,
	Cance	el Save

Data review and download Data upload and annotation Data sharing

#### Describing samples – create a sample source

Ne

- Use templates again
- Adjust accordingly for each sample
- Or just leave it (we can fix it later using spreadsheets)

sample source details		
sample source details		
Create from template: HI	V+ subject template	
Sample source type *	biological ·	
	bibliogen	
Description *		-
HIV+ subject		
		9
Organism *	Homo sapiens (9606) [human] .	
Age *	0	
Age unit *	years	
	years	
Gender *	?	
Phenotype *		
Phenotype -	N/A	
Genotype *	N/A	
Treatment *		-
None		
1		1
	Canc	el Save
	Canc	Save

Data review and download Data upload and annotation Data sharing

### Describing samples – 3 options to save

▼ 100715.fcs Sample	Information
Apply template:	PBMC from HIV+ Subject Template  Create templates
Description *	PBMC from HIV+ Subject
Sample source	HIV+ subject   New
Sample characteristic	HIV+ • New
Sample treatment	PBMCs were thawed in warm • New
Staining	None B cells, MHCII, PerCPCy5.5 (BD Biosciences BD#custo
	T cells, CD40, FITC/OG (eBioscience eBio#11-0409)
	CD86, CD86, PE (eBioscience eBio#12-0869)
Staining cocktail(s)	None A Cocktail no
C	
C	Save and proceed to next FCS file Apply to all undescribed FCS files Apply to undescribed FCS files in Panel 1

Data review and download Data upload and annotation Data sharing

### Describing samples – 3 options to save

	Information
Apply template:	PBMC from HIV+ Subject Template   Create templates
Description *	PBMC from HIV+ Subject
Sample source	HIV+ subject v New
Sample characteristic	HIV+ • New
Sample treatment	PBMCs were thawed in warm • New
Staining	None B cells, MHCII, PerCPCy5.5 (BD Biosciences BD#custo T cells, CD40, FITC/OG (eBioscience eBio#11-0409) CD14 positive cells, CD14, Alexa 700 (BD Biosciences CD86, CD86, PE (eBioscience eBio#12-0869)
Staining cocktail(s)	- None - Cocktail no
	Save and proceed to next FCS file Apply to all undescribed FCS files pply to undescribed FCS files in Panel 1

Data review and download Data upload and annotation Data sharing

### Describing samples – 3 options to save

	Information
Apply template:	PBMC from HIV+ Subject Template  Create templates
Description *	PBMC from HIV+ Subject
Sample source	HIV+ subject • New
	HIV+ Subject
Sample characteristic	HIV+ • New
Sample treatment	PBMCs were thawed in warm • New
Staining	None
	B cells, MHCII, PerCPCy5.5 (BD Biosciences BD#custo T cells, CD40, FITC/OG (eBioscience eBio#11-0409)
	CD14 positive cells, CD14, Alexa 700 (BD Biosciences L CD86, CD86, PE (eBioscience eBio#12-0869) • New
Staining cocktail(s)	None 🔼
	Cocktail no
	- New
	Save and proceed to next FCS file Apply to all undescribed FCS file Apply to undescribed FCS files in Panel 1

Data review and download Data upload and annotation Data sharing

#### Samples and sample sources are now described

Q https://flowrepository.org/experiments/11							
Experiment: IDCRP's HIV Natural History St	udy ID: FR-FCM-ZZZE	3 Labels: None Prima	ry Researcher: <u>Nir</u>	na Aghaeepour Public: No	MIE	lowCyt Scor	e: 61.50%
« Back to Inbox	→ Getting Starte	d: Experiment Details					×
My Working Illustration »	Experiment De	etails					G
MIFlowCyt Annotation »	→ Illustrations						G
- Actions	→ Attachments						6
Experiment	➡ FCS Files (466)						6
Edit Experiment Details Delete Experiment FCS Files	Download Files Upload File Name	More Files De-identify FCS File Sample	Review Keywords in Tube Name	FCS files Experiment Variables	Panel	Events	Size
Download FCS Files	100715.fcs details	show sample description	Tube_025		Panel 1	65016	4 MB
Jpload More FCS Files	105696.fcs details	show sample description	Tube_009		Panel 1	455184	27.8 MB
De-identify FCS Files Review Keywords in FCS files	108701.fcs details	show sample description	Tube_001		Panel 1	1000000	61 MB
	109025.fcs details	show sample description	Tube_009		Panel 1	210186	12.8 MB
- Sharing Permissions 👔	109567.fcs details	show sample description	Tube_017		Panel 1	160074	9.8 MB
ull Access Users	110539.fcs details	show sample description	Tube_022		Panel 1	364212	22.2 MB
O Nima Aghaeepour (PR)	113548.fcs details	show sample description	Tube_003		Panel 1	177102	10.8 MB
Josef Spidlen [x]	121069.fcs details	show sample description	Tube_001		Panel 1	542538	33.1 MB
O Ryan Brinkman [x]	122405.fcs details	show sample description	Tube_010		Panel 1	476208	29.1 MB
n <u>vite a new user</u> Share with a User (Full Access)	127225.fcs details	show sample description	Tube_021		Panel 1	257058	15.7 MB
,	129599.fcs details	show sample description	Tube_007		Panel 1	352314	21.5 MB

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#### But not everything is correct!

- Our Sample source organisms vary in age and gender
- We left this out from our template
- Time to fix this
  - We can now use the spreadsheet created earlier

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### Upload the spreadsheet as attachment

C O https://flowrepository.org/experiments/11							
Experiment: IDCRP's HIV Natural History S		B Labels: None Prim	ary Researcher: <u>Nir</u>	na Aghaeepour Public: No	MIE	lowCyt Scor	: 61.50%
« Back to Inbox	→ Getting Starte	ed: Experiment Details	3				×
My Working Illustration »	▶ Experiment D	etails					6
MIFlowCyt Annotation »	→ Illustrations						G
- Actions i	✓ Attachments						6
Experiment Edit Experiment Details Delete Experiment FCS Files Download FCS Files	File Name Attach a file Choose File No f Upload	Date file chosen	Uploaded By	Size	mo	15sum	
Jpload More FCS Files De-identify FCS Files		6)					6
Review Keywords in FCS files	Download Files Upload	More Files De-identify FCS File Sample	<u>es Review Keywords ir</u> Tube Name	Experiment Variables	Panel	Events	Size
+ Sharing Permissions 👔 👔	100715.fcs details	show sample description	Tube_025		Panel 1	65016	4 MB
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O Nima Aghaeepour (PR)	108701.fcs details	show sample description	Tube_001		Panel 1	1000000	61 MB
	109025.fcs details	show sample description	Tube_009		Panel 1	210186	12.8 MB
Josef Spidlen [x]			Tube 017		Panel 1	160074	9.8 MB
Josef Spidlen [x]	109567.fcs details	show sample description	Tube_017				
(D)	109567.fcs details 110539.fcs details 113548.fcs details	show sample description show sample description show sample description	Tube_017 Tube_022 Tube_003		Panel 1 Panel 1	364212 177102	22.2 MB 10.8 MB

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### Upload the spreadsheet as attachment

🔶 🧉 🔘 https://flowrepository.org/experiments/11							
Experiment: IDCRP's HIV Natural History S		B Labels: None Prir	nary Researcher: <u>Nir</u>	na Aghaeepour Public: No	MIE	lowCyt Scor	: 61.50%
« Back to Inbox	→ Getting Starte	ed: Experiment Detai	s				\$
My Working Illustration »	▶ Experiment D	etails					6
MIFlowCyt Annotation »	→ Illustrations						6
- Actions	- Attachments						6
Experiment Edit Experiment Details Delete Experiment FCS Files Download FCS Files	File Name Attach a file Choose File anne Upload	Date otations.csv	Uploaded By	Size	mo	d5sum	
Jpload More FCS Files De-identify FCS Files	➡ FCS Files (46)	6)					6
Review Keywords in FCS files	Download Files Upload File Name	More Files De-identify FCS F Sample	les Review Keywords in Tube Name	Experiment Variables	Panel	Events	Size
- Sharing Permissions 👔	100715.fcs details	show sample description	Tube_025		Panel 1	65016	4 MB
ull Access Users	105696.fcs details	show sample description	Tube_009		Panel 1	455184	27.8 MB
O Nima Aghaeepour (PR)	108701.fcs details	show sample description	Tube_001		Panel 1	1000000	61 MB
Josef Spidlen [x]	109025.fcs details	show sample description	Tube_009		Panel 1	210186	12.8 MB
O Ryan Brinkman [x]	109567.fcs details	show sample description	Tube_017		Panel 1	160074	9.8 MB
	110539.fcs details	show sample description	Tube_022		Panel 1	364212	22.2 MB
nvite a new user Share with a User (Full Access)	113548.fcs details	show sample description	Tube 003		Panel 1	177102	10.8 MB

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Data review and download Data upload and annotation Data sharing

### Upload the spreadsheet as attachment

FlowRepository - IDCRP: ×     Section 2.1000000000000000000000000000000000000										
Experiment: IDCRP's HIV Natural History Stud	ly ID: FR-FCM-ZZZE	B Labels: None	Primary Researche	r: Nima Aghaeepour	Public: No 🗾	MIFlowCyt Score	,			
« Back to Inbox	Attachment w	as added to experi	nent.							
MIFlowCyt Annotation »	→ Getting Started	d: Experiment D	etails				×			
- Actions	→ Experiment De	etails					0			
Experiment	► Illustrations						0			
Edit Experiment Details Delete Experiment	→ Attachments	Attachments 0								
FCS Files	File Name		Date	Uploaded By	Size	md5su	ım			
Download ECS Files Upload More ECS Files De-identify ECS Files Review Keywords in ECS files	annotations.csv 🛇 🤅 Click to add a descrip Attach a file Choose File No fil	tion	12:03 PM	Josef Spidlen	15.5 KB	1de7e1	5			
🗕 Sharing Permissions 🔋 🚯	Upload									
Full Access Users	FCS Files (466     Download Files Upload I	/	CS Files Review Keywo	rds in FCS files			6			
Josef Spidlen [x]	File Name	Sample	Tube Na	me Experiment	Variables Panel	Events	Size			
O Ryan Brinkman (x)	100715.fcs details	show sample descr	iption Tube_025		Panel	1 65016	4 MB			
Invite a new user Share with a User (Full Access)	105696.fcs details 108701.fcs details	show sample descr show sample descr	-		Panel		27.8 MB 61 MB			
This experiment is currently private.	109025.fcs details 109567.fcs details	show sample descr	-		Panel		12.8 MB 9.8 MB			

Data review and download Data upload and annotation Data sharing

### Describe the attachment (optional)

FlowRepository - IDCRP: ×     Section 2010 (CRP: ×     Section 2010) (CRP: ×									
Experiment: IDCRP's HIV Natural History Stu	dy ID: FR-FCM-ZZZI	3 Labels: None	Primary Researcher: <u>Nim</u>	a Aghaeepour Public: No	MIF	lowCyt Score			
« Back to Inbox	Attachment v	vas added to experime	ent.						
MIFlowCyt Annotation »		d: Experiment De	tails				×		
✓ Actions	Experiment D						0		
Experiment	→ Illustrations						i		
Edit Experiment Details Delete Experiment	<ul> <li>Attachments</li> </ul>	Attachments 0							
FCS Files	File Name		Date	Uploaded By	Size	md5	sum		
Download FCS Files Upload More FCS Files De-identify FCS Files Review Keywords in FCS files	annotations.csv 😵 🕼 File specific sample s Attach a file Choose File No fi	ource details	12:03 PM	Josef Spidlen	15.5 KB	1de7	215		
- Sharing Permissions 👔	Upload								
Full Access Users	→ FCS Files (466 Download Files Upload	,	S Files Review Keywords in	FCS files			6		
Josef Spidlen [x]	File Name	Sample	Tube Name	Experiment Variables	Panel	Events	Size		
O Ryan Brinkman [X]	100715.fcs details	show sample descrip	tion Tube_025		Panel 1	65016	4 MB		
Invite a new user Share with a User (Full Access)	105696.fcs details 108701.fcs details	show sample descrip show sample descrip	-		Panel 1 Panel 1	455184 1000000	27.8 MB 61 MB		
This experiment is currently private.	109025.fcs details 109567.fcs details	show sample descrip show sample descrip	-		Panel 1 Panel 1	210186 160074	12.8 MB 9.8 MB		

Data review and download Data upload and annotation Data sharing

#### Parse the attachment – click on (P)

FlowRepository - IDCRP: ×							3	
Experiment: IDCRP's HIV Natural History Stur	dy ID: FR-FCM-ZZZI	3 Labels: None Pri	mary Researcher: <u>Nim</u>	a Aghaeepour Public: No	MIE	lowCyt Score	_	
« Back to Inbox My Working Illustration »	Attachment v	vas added to experiment	L					
MIFlowCyt Annotation »		d: Experiment Detai	ils				×	
- Actions	Experiment D	etails					0	
Experiment	► Illustrations						0	
Edit Experiment Details Delete Experiment		r Attachments 0						
FCS Files	File Name		Date	Uploaded By	Size	md5	sum	
Download FCS Files Upload More FCS Files De-identify FCS Files Review Keywords in FCS files	Annotations.csv 😂 🛛 File specific sample s Attach a file Choose File No fi	Parse the attachment to extract	12:03 PM and update annotations.	Josef Spidlen	15.5 KB	1de7	15	
- Sharing Permissions	Upload							
Full Access Users	→ FCS Files (466 Download Files Upload	) More Files De-identify FCS F	iles Review Keywards in	FCS files			Û	
Josef Spidlen [x]	File Name	Sample	Tube Name	Experiment Variables	Panel	Events	Size	
O Ryan Brinkman [x]	100715.fcs details	show sample description	Tube_025		Panel 1	65016	4 MB	
Invite a new user	105696.fcs details	show sample description	Tube_009		Panel 1	455184	27.8 MB	
Share with a User (Full Access)	108701.fcs details	show sample description	Tube_001		Panel 1	1000000	61 MB	
	109025.fcs details	show sample description	Tube_009		Panel 1	210186	12.8 MB	
This experiment is currently private. calhost:8080/experiments/11/attachments/51/parse	109567.fcs details	show sample description	Tube 017		Panel 1	160074	9.8 MB	

Data review and download Data upload and annotation Data sharing

#### Information extracted from attachment

#### • Review the result

Note: We also provided one experimental variable (the condition)

# The following information extracted from attachment annotations.csv

FCS file	age	gender	condition
100715.fcs	51	F	HIV Stage 1
105696.fcs	25	F	HIV Stage 4
108701.fcs	21	М	HIV Stage 3
109025.fcs	20	М	HIV Stage 4
109567.fcs	36	F	HIV Stage 2
110539.fcs	43	М	HIV Stage 1
113548.fcs	38	F	HIV Stage 2
121069.fcs	33	М	HIV Stage 3
122405.fcs	43	Μ	HIV Stage 2
127225.fcs	21	F	HIV Stage 1
129599.fcs	40	М	HIV Stage 1
129730.fcs	20	F	HIV Stage 2
129869.fcs	21	М	HIV Stage 3
130119.fcs	44	М	HIV Stage 1
132447.fcs	17	F	HIV Stage 1

## Upload and annotation of your own dataset

#### Typical steps

- Create a new experiment
- Opload data (FCS files)
- O Prepare annotation templates
  - Or prepare spreadsheets with annotations
- Annotate the experiment
  - Describe samples and sample sources
  - Provide experimental variables
  - Describe instrumentation settings
- Provide analysis details
  - Either analyze data online and create illustrations
  - Or upload third party analysis files (e.g., Flow Jo<sup>TM</sup> workspaces, FCS Express<sup>TM</sup> project files, FACS Diva<sup>TM</sup> files, etc.)
- Review (and improve) your MIFlowCyt compliance

#### Provide experimental variables

- Follow Review experiment variables in the Getting Started panel
- Or navigate to your Working Illustration



Reset Working Illustration

Josef Špidlen, Ryan R. Brinkman

Data review and download Data upload and annotation Data sharing

### Provide experimental variables

▼ Figure Dimensions (Experimentation)				i
Available Dimensions - Click to toggle	on/off			
Channels Populations Dosages	Timepoints Conditions Indiv	vidual	IS Sample Types Fcs Files Plate Column Plate Row	Plate
Arrange Dimensions - Drag to prioritize	dimensions, click Choose to change s	selec	ctions and ordering, click Setup/Gate to configure	
Channels 📃	Populations 📰		Conditions	
32 channels Choose   Setup	1 of 1 selected Choose   Gate		4 of 4 selected Choose   Setup	
Unselected Channels: - Panel 1 - Panel 2 - Panel 2 - Panel 1 - Panel 2 - Panel 2 - Panel 2 (107 - Panel 2 CD3 - Panel 2 CD28 - Panel 2 CD45RO - Panel 2 - CD45RO - Panel 2 -	Ungated	1)	HIV Stage 1 HIV Stage 4 HIV Stage 3 HIV Stage 2	
Columns	Rows		Table 1	

• Example: patients treated by various dosages of Lexiva<sup>TM</sup>

Data review and download Data upload and annotation Data sharing

### Provide experimental variables

ailable Dimens					j. Channel	IS AFT OF	ulations 🕀 Conditio	115			
Channels	oulations	Dosa	ages	Timepoints	Conditions	Individu	als Sample Types		_		late
hannels	<u>Choose</u>	Setup		Populations	Choose	Gate	Conditions 4 of 4 selected	Choose   Setup		Dosages	Sett
Unselected Chan Panel 1 Panel 2 Panel 2 Panel 1 Panel 2 Panel 2 Panel 2 CD3 - Panel 1 CD3 - Panel 2 CD3 - Panel 2 CD3 - Panel 1 CD28 - Panel 1 CD28 - Panel 2 CD45RO - Panel 2 CD45RO - Panel 2		=	4	Ungated		1	HIV Stage 1 HIV Stage 4 HIV Stage 3 HIV Stage 2		••	Click To Setup)	
	nns			Roy	ve		Table	1		Table 2	

- Example: patients treated by various dosages of Lexiva<sup>TM</sup>
- Click on Dosages, than Setup

Data review and download Data upload and annotation Data sharing

### List doses

#### • Provide a comma-separated list of all doses

		0
Enter a comma separated list of Doses to add:		
Lexiva 1400 bid, Lexiva 1400 qd+Norvir 200 qd, Lexiva 700 bid+Norvir 100 bid	Add Doses	

### Assign FCS files to the right doses

- Drag & Drop files into the appropriate boxes
- Or use the *Filter* with *Move to*

All Doses	Lexiva 1400 bid	Lexiva 1400 qd	+Norvir 200 qd	Lexiva 700 bid+Norv	vir 100 bid				
All Dos Drag files fr		the "Dose" boxes	s below to associa	ate them with that tag. L	Jse the "Fi	Iter" and "Move File" controls to move	groups	s of fil	les.
Untage			Lexiva 1400	bid Tagged Files Fube_025)	×	Lexiva 1400 qd+Norvir 200 qd Tagged Files	×		Le: Taj
M	love to ove file(s)	•	105696.fcs (T 108701.fcs (T			109025.fcs (Tube_009) 110539.fcs (Tube_022)			1
14080	2.fcs (Tube_021) 11.fcs (Tube_022) .8.fcs (Tube_011)		127225.fcs (T 130119.fcs (T	Tube_001)		121069.fcs (Tube_001) 122405.fcs (Tube_010)			1
15832	22.fcs (Tube_001)		132447.fcs (T		i9.fcs (Tub	0.000			1
15966	5.fcs (Tube_004) 3.fcs (Tube_005)			13276	9.105 (1 ub	e_002)			
	0.fcs (Tube_017)								

## Upload and annotation of your own dataset

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- Review (and improve) your MIFlowCyt compliance

#### Instrumentation description

#### • Navigate to the details of an FCS file

tudy ID: FR-FCM-ZZ2	ZB Labels: None P	rimary Researc	cher: <u>Nima Aghaeepour</u> Public: No	MIFlow	Cyt Score:	56.00%
▶ Getting Starte	ed: Experiment Deta	ails				×
▶ Experiment D	Petails					0
→ Illustrations						0
▶ Attachments						i
- FCS Files (46	6)					0
Download Files Uploar File Name	1 More Files De-identify FCS Sample	Files Review Ke Tube Name	words in FCS files Experiment Variables	Panel	Events	Size
100715.fc details	show sample description	Tube_025	HIV Stage 1, Lexiva 1400 bid	Panel 1	65016	4 MB
105696.fcs details	show sample description	Tube_009	HIV Stage 4, Lexiva 1400 bid	Panel 1	455184	27.8 MB
		-	HIV Stage 3, Lexiva 1400 bid			
		-	HIV Stage 4, Lexiva 1400 qd+Norvir 200 qd HIV Stage 2, Lexiva 700 bid+Norvir 100 bid			12.8 MB 9.8 MB
110539.fcs details	show sample description	Tube_022	HIV Stage 1, Lexiva 1400 qd+Norvir 200 qd	Panel 1	364212	22.2 MB
113548.fcs details	show sample description	Tube_003	HIV Stage 2, Lexiva 700 bid+Norvir 100 bid	Panel 1	177102	10.8 MB
121069.fcs details	show sample description	Tube_001	HIV Stage 3, Lexiva 1400 qd+Norvir 200 qd	Panel 1	542538	33.1 MB
122405.fcs details	show sample description	Tube_010	HIV Stage 2, Lexiva 1400 qd+Norvir 200 qd	Panel 1	476208	29.1 MB
		-	HIV Stage 1, Lexiva 1400 bid	Panel 1	257058	15.7 MB
		-	HIV Stage 1, Lexiva 700 bid+Norvir 100 bid	Panel 1	352314	21.5 MB
129730.fcs details	show sample description	Tube_017	HIV Stage 2, Lexiva 700 bid+Norvir 100 bid	Panel 1	390528	23.8 MB
	Setting Startt     Experiment E     Illustrations     Attachments     Attachments     Ges Files (46     Download Elles Uploa     Fics Files (46     Download Elles Uploa     Fics Files (46     Download Elles Uploa     Files Acadeals     109025.kcs details     109525.kcs details     10535.kcs details     10535.kcs details     10535.kcs details     122655.kcs details     122655.kcs details     122525.kcs details     122595.kcs details     122559.kcs details     125599.kcs details     125599.kcs details     125599.kcs details     125599.kcs details     125599.kcs     125598.kcs     125599.kcs     125599.kcs     125598.kcs     125599.kcs     125599.kcs     125598.kcs     125599.kcs     125599.kcs     125599.kcs     125598.kcs     125598.kcs     125599.kcs     125598.kcs     125599.kcs     125599.kcs     125598.kcs     125599.kcs     125599.kcs     125599.kcs     125599.kcs     125599.kcs     125599.kcs     125599.kcs     125599.kcs     125599.kcs     125598.kcs     125599.kcs     125599.kcs     125598.kcs     125598.kcs	A Getting Started: Experiment Details     Experiment Details     Illustrations     Attachments     CS Fries (466)     Dominad-lies Upland More-Files Desidenty ECS     File Name     Sample     100715 k2 (estails) show sample description     109505 k5 details show sample description     109525 k5 details show sample description     109567 k5 details show sample description     10538 k5 details show sample description     12569 k5 details show sample description     12368 k5 k5 details show sample description     127255 k5 details show sample description     12725 k5 details show sample description	A Getting Started: Experiment Details     Experiment Details     Hiustrations     Hiustrations     Hiustrations     Attachments     GetS Files (466) Download Elles Upload More Eles Deidently ECS Elles Review Ke File Name Sample description Tube_005 106961/cs details show sample description Tube_011 100025/cs details show sample description Tube_012 110539./cs details show sample description Tube_012 110539./cs details show sample description Tube_013 12069/cs details show sample description Tube_003 122406/ss details show sample description Tube_013 122406/ss details show sample description Tube_010 127225./cs details show sample description Tube_021	Setting Started: Experiment Details     S	Setting Started: Experiment Details     Superiment Details	Setting Started: Experiment Details     S

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#### Instrumentation description

#### • Press the Describe instrument settings button

FlowRepository - IDCRP: ×		Þ									
Experiment: IDCRP's HIV Natural History St		R-FCM-Z	ZZB	Labels: None	Primary	Resea	ircher: <u>1</u>	lima Aghaee	pour Pu	ıblic: No	MIFlowCyt Score: 66.00%
« Back to Experiment Summary	▶ 1007	15.fcs	- FCS	File Informatic	n						
→ Actions	<b>~ 1007</b>	15.fcs ·	- FCS	File Instrumen	t Setti						
Download Tab-Separated Events File Show Sample Details De-identify the ECS file Review Keywords in the ECS file	Describe	instrumer	nt settinç	9							
→ Did you know?	<b>-</b> 1007	15.tcs ·	- FCS	File Laser Info	rmatio	on					
You can request a one-on-one session to get started with your data by filling out a support ticket.	ASF		Delay 0.00	_							
A guide to Cytobank is available at <u>Current</u> Protocols in Cytometry	Red	0.55	-59.80								
We also have a <u>Quick start guide</u> . You can print/save your Illustrations to PDF	Violet		-24.40	-							
from the Illustration view's left menu. You can export your data to Excel from the Experiment Summary page.	Green 0.53 +82.60										
Give other users full control to modify your experiments through the "Sharing Permissions" box.	Chann	Channel Short Name		Channel Name	Gain	Bits	Amp	Range	Voltage	Amp Value	
Use the "Download Files" button to save copies of the original FCS Files to your computer.	FSC-A				1	32		262207.0		0.0	
	FSC-H	FSC-H			1	32		262207.0		0.0	
	SSC-A B515-A R780-A			1	32		261588.0		0.0		
			KI67	1	32		261588.0		0.0		
				CD3	1	32		261588.0		0.0	
	0710			0000				001500.0		0.0	

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#### Instrumentation description

#### • Select the make and model of the instrument used

FlowRepository - IDCRP: ×									
🛊 🔶 🔮 🔇 https://flowrepository.org/experiments/11/fcs_file	5/3043								
Experiment: IDCRP's HIV Natural History Stud	y ID: FR-FCM-ZZZB	Labels: None	Primary	Resea	ircher: <u>I</u>	lima Aghaee	pour Pu	ıblic: No	MIFlowCyt Score: 66.00%
« Back to Experiment Summary									
→ Actions									
Download Tab-Separated Events File	File-specific instrument set	ttings have not beer	n provide	ed!					
Show Sample Details De-identify the FCS file Review Keywords in the FCS file	Describe instrument setting	3							
→ Did you know?									
You can request a one-on-one sest get started with your data by filling of support ticket-	instrument settings Instrument *							*	
A guide to Cytobank is available at Protocols in Cytometry							•		
We also have a <u>Quick start guide</u> .									
You can print/save your Illustrations from the Illustration view's left menu									
You can export your data to Excel f Experiment Summary page.	* 100/10.ICS - FCO						Cancel	Save	
Give other users full control to modify your experiments through the "Sharing Permissions" box.	Channel Short Name				Amp	Range	Voltage	Amp Value	
Use the "Download Files" button to save copies of the original FCS Files to your computer.	FSC-A		1	32 32		262207.0 262207.0		0.0	
	FSC-H							0.0	
	SSC-A		1	32		261588.0		0.0	
	B515-A	KI67	1	32		261588.0		0.0	
	R780-A	CD3	1	32		261588.0		0.0	

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### Instrumentation description

### • New instruments may be added in the annotation data section

C C https://flowrepository.org/experiments/11/fcs_1	1les/3043							
						iblic: No	MIFlowCyt Score: 66.00%	٦
« Back to Experiment Summary								
← Actions								
Download Tab-Separated Events File	File-specific instrument se	ettings have not been pr	ovided!					
Show Sample Details De-identify the FCS file Review Keywords in the FCS file	Describe instrument settin	gs						
- Did you know?								
	e instrument settings							
get started with your data by filling c support ticket.	Instrument *							
A guide to Cytobank is available at Protocols in Cytometry	BactoCount IBC, Bentle BactoCount IBCm, Bent				-			
We also have a <u>Quick start guide</u> .	BD FACSAria, Becton D BD FACSAria II, Becton	lickinson (BD Bioscience						
You can print/save your Illustrations from the Illustration view's left menu	BD FACSAria III, Bector	Dickinson (BD Bioscier	nces)			_		
ou can export your data to Excel f	BD FACSArray, Becton BD FACSCalibur, Becto	n Dickinson (BD Bioscie	nces)		el	Save		
Experiment Summary page.	BD FACSCanto, Becton BD FACSCanto II, Becto							
Sive other users full control to modify your experiments through the "Sharing	BD FACSCount, Becton	Dickinson (BD Bioscien	ices)		age	Amp Value		
Permissions" box.	BD FACSScan, Becton BD Influx, Becton Dickin	son (BD Biosciences)	ces)		sge		-	
Jse the "Download Files" button to save opies of the original FCS Files to your	BD LSR, Becton Dickins	ion (BD Biosciences)				0.0		
omputer.	- BD LSR II, Becton Dickinson (BD Biosciences) BD LSRFortessa, Becton Dickinson (BD Biosciences)					0.0		
	<ul> <li>Bentley 150, Bentley Ins Bentley Combi 150; Be</li> </ul>					0.0	-	
	<ul> <li>Bentley FTS, Bentley In Bentley FTS/FCM, Bentley</li> </ul>					0.0	-	
	Cell Lab Quanta MPL, D	ako Cytomation				0.0		
	R780-A	CD3 1	32	261588.0		0.0		

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FlowRepository.org - Resource of Flow Cytometry Data

### Instrumentation description

### • Simple case: Same instrument with default settings for all FCS files

Describe instrument settings	
Instrument * BD LSR II, Becton Dickinson (BD Biosciences)	¥
Use default instrument ≤ settings	
Installation dates for filters in optical paths	
The instrument has been purchased new on July 1, 2011; all optical filters are original came with the instrument.	and
Other	
PMT voltages specified within the FCS data files.	
$\ensuremath{\mathscr{U}}$ Use these settings for all FCS files in this experiment	
С	ancel Save

### Instrumentation description

### • Advanced case: Describe all details

• Required by MIFlowCyt for customized instruments only

Describe instrur	nent settings		
	Instrument *		-
BD L	SR II, Becton Dickinson (BD	Biosciences)	
Use defai	ult instrument settings		
I	Flow cell type	Quartz cuvette • Add new flow cell type	
Othe	r flow fluidics		
	Optical paths	None - Add new optical path	

Data review and download Data upload and annotation Data sharing

### Instrumentation description



Data review and download Data upload and annotation Data sharing

### Instrumentation description

- Double click on each of component
- Either select an existing component or create a new description with all the details as required by MIFlowCyt

Light Source component X
Select existing light source: Laser - 488nm - 13mW •
Create new light source
Cancel Add component

### Instrumentation description

• New light source description:

Light Source component	×
Select	t existing light source
Light source type *	Y
Excitatory wavelength [nm] *	
Power*	
Polarization	
Beam	
Other	
	Cancel Add component

### Instrumentation description

### • New optical filter description:

Optical Filter component	*
	Select existing filter
Filter type *	Y
Transmitted wavelengths *	
Model	
Manufacturer	• New
Other	
	Cancel Add component

Data review and download Data upload and annotation Data sharing

### Instrumentation description

### New optical detector description:

Optical Detector component	
	Select existing detector
Optical detector type *	۲
Name *	
Amplification type	
Other	
	Cancel Add component

### Instrumentation description

• The MIFlowCyt score finally reached the "green area" once the instrumentation description is provided

FlowRepository - IDCRP : ×								
🔶 🗼 📽 🔕 https://flowrepository.org/experiments/11/fcs_fl	les/3043							2
Experiment: IDCRP's HIV Natural History Stu	dy ID: FR-FC	M-ZZZB	Labels: None	Primary Researcher: <u>Nima</u> ,	Aghaeepour	Public: No	MIFlowCyt Score: 86.00%	
« Back to Experiment Summary	▶ 100715.f	cs - FCS	File Informa	ion				
- Actions								
Download Tab-Separated Events File Show Sample Details De-identify the FCS file Review Keywords in the FCS file	Flow Cell Type: Optical Paths: U	Becton Dicki Using defau Jsing defaul	nson (BD Bioscienc ult settings for BD L t settings for BD LS	SR II R II				
→ Did you know?	Installation date	es of filters in	Optical Paths: The	instrument has been purchased	new on July 1, 2	011; all optical fi	Iters are original and came with the	3
You can request a one-on-one session to get started with your data by filling out a support ticket.	Other: PIAT voltages specified within the FCS data files.							
A guide to Cytobank is available at <u>Current</u> Protocols in Cytometry		ics - FCS	File Laser In	formation				Ē.
We also have a <u>Quick start guide</u> . You can print/save your Illustrations to PDF	ASF Nar	me Delay	/					
from the Illustration view's left menu. You can export your data to Excel from the	Blue 0.6	6 0.00	_					
Experiment Summary page.	Red 0.5	5 -59.8	0					
Give other users full control to modify your experiments through the "Sharing Permissions" box.	Violet 0.4	8 -24.4	0					
Use the "Download Files" button to save copies of the original FCS Files to your	Green 0.5	3 -82.6	0					
computer.	→ 100715.f	ics - FCS	File Channe	Information				

## Upload and annotation of your own dataset

### Typical steps

- Create a new experiment
- Opload data (FCS files)
- O Prepare annotation templates
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- Review (and improve) your MIFlowCyt compliance

Data review and download Data upload and annotation Data sharing

### Analyze data online

- Navigate to your *Working illustration*
- Click on Gate in the Populations panel

Available Dimensions - Click to to	ggle (	on/off						
Channels Populations Dosa	iges	Timepoints	Conditions	Indi	vidual	s Sample Type	Fcs Files	
Plate Column Plate Row Plate	ate							
Arrange Dimensions - Drag to prio	ritize	dimensions, clic	k Choose to c	hange	selec	tions and ordering,	click Setup/Gate t	o configure
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		HIV Stage 3				Lexiva 700 bid+No	orvir 100 bid	
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Data review and download Data upload and annotation Data sharing

## Analyze data online

### • Draw your gates

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## Analyze data online

### • Select what to include and organize figure dimensions

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Data review and download Data upload and annotation Data sharing

### Analyze data online

### • Configure plot and stats settings

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Data review and download Data upload and annotation Data sharing

### Analyze data online

- Review the illustration
- Name it and save it

🗕 Josef's Working Illustrati	on	0
Save Illustration as:		
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Print View DPDF		
Export Table of Statistics		
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Export Table of Scaled Events		
Export Gated FCS Files		
Export Gates in Gating-ML		



## Analyze data online

More on analyzing data online in Cytobank or FlowRepository:

## UNIT 10.17 Web-Based Analysis and Publication of Flow Cytometry Experiments

Nikesh Kotecha $^{1,2,3},$  Peter O. Krutzik $^{1,2},$  Jonathan M. Irish $^1$ 

Published Online: 1 JUL 2010

DOI: 10.1002/0471142956.cy1017s53

Copyright  $\ensuremath{\mathbb{C}}$  2010 by John Wiley & Sons, Inc.

Lab Protocol Title



Current Protocols in Cytometry

## Upload and annotation of your own dataset

### Typical steps

- Create a new experiment
- Opload data (FCS files)
- O Prepare annotation templates
  - Or prepare spreadsheets with annotations
- Annotate the experiment
  - Describe samples and sample sources
  - Provide experimental variables
  - Describe instrumentation settings
- Provide analysis details
  - Either analyze data online and create illustrations
  - Or upload third party analysis files (e.g., Flow Jo<sup>TM</sup> workspaces, FCS Express<sup>TM</sup> project files, FACS Diva<sup>TM</sup> files, etc.)
- Seview (and improve) your MIFlowCyt compliance

Data review and download Data upload and annotation Data sharing

### Provide third party analysis files, figures, tables, etc.

### • Upload these as attachments

				i
File Name	Date	Uploaded By	Size	md5sum
annotations.csv 😒 🕑 File specific sample source details	Jun 07	Josef Spidlen	15.5 KB	1de7e15
HIV_Analysis.jo Complete analysis in FlowJo	11:57 AM	Josef Spidlen	14.4 MB	d8a8ab5
HIV_Analysis_Overview.png 🚱 Overview figure	12:06 PM	Josef Spidlen	169.3 KB	4958a88
HIV_Analysis_Class_Comparison.jpg 😂 HIV class comparison figure	12:06 PM	Josef Spidlen	201.9 KB	5795d5e
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## Upload and annotation of your own dataset

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- O Review (and improve) your MIFlowCyt compliance

👍 🗅 🦉 🔇 https://flowrepository.org/expe									
The state of the s	riments/11								ع <mark>،</mark>
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We also have a <u>Quick start guide</u> . You can print/save your Illustrations to PDF	105696.fcs details 108701.fcs details	show sample description show sample description	Tube_009 Tube 001		e 4, Lexiva 1400 bid e 3, Lexiva 1400 bid	Panel 1 Panel 1	455184	27.8 MB 61 MB	
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#### FlowRepository - IDCRP': ×

C https://flowrepository.org/experiments/11/miflowcyt

#### Experiment: IDCRP's HIV Natural History Study

#### « Back to Experiment Summary

#### - MIFlowCyt

Show MIFlowCyt score details Report Suspicious Score...

Print View DPDE

#### Did you know?

You can request a one-on-one session to get started with your data by filling out a support ticket.

A guide to Cytobank is available at <u>Current</u> <u>Protocols in Cytometry</u>

We also have a Quick start guide.

You can print/save your Illustrations to PDF from the Illustration view's left menu.

You can export your data to Excel from the Experiment Summary page.

Give other users full control to modify your experiments through the "Sharing Permissions" box.

Use the "Download Files" button to save copies of the original FCS Files to your computer.

#### MIFlowCyt Compliance Score for Experiment: IDCRP's HIV Natural History Study - Repository ID: FR-FCM-ZZZB

Public: No

Primary Researcher: Nima Aghaeepour

Total MIFlowCyt compliance score: 100.00%

#### - 1 - Experiment Overview - 100.00% provide

Labels: None

Items considered relatively based on importance, 30% contribution to total score.

ltem	Compliance [ + - ]	Improve
Purpose	Provided purpose	Fully provided
Keywords	Provided keywords	Fully provided
Experiment variables	Provided experiment variables	Fully provided
Organization	Provided organization name Provided organization address	Fully provided
Contact	First name of primary researcher provided Last name of primary researcher provided Email of primary researcher provided	Fully provided
Date	Provided experiment starting date Provided experiment end date	Fully provided
Conclusions	Provided conclusions	Fully provided
Quality control measures	Provided quality control description	Fully provided

 The "Improve" column will show direct links to pages/forms in case some information is still missing

#### 2 - Flow Sample/Specimen Details - 100.00% provided

Items considered relatively based on importance, 30% contribution to total score.

FCS file	Compliance [+•]	Improve
	0	
	Provided sample description	
	Provided sample source description	

MIFlowCyt Score: 100.00%

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Data review and download Data upload and annotation Data sharing

## Data sharing

- You can share with other FlowRepository users
  - This will grant full access
- You can make your experiment public
  - This will grant read access to everyone, including anonymous visitors
- You can share with reviewers

Sharing Permissions
Full Access Users
Nima Aghaeepour [PR]
Josef Spidlen [x]
O Ryan Brinkman [x]
Invite a new user
Share with a User (Full Access)
This experiment is currently private.
Share with Everyone
You can also <b>create a secret access code</b> to share with reviewers.
Share with Reviewers

Data review and download Data upload and annotation Data sharing

## Data sharing

- You can share with other FlowRepository users
  - This will grant full access
- You can make your experiment public
  - This will grant read access to everyone, including anonymous visitors
- You can share with reviewers
  - This will lock your experiment and create a secret access code

🗸 Sharing Permissions 🛛 👔
Full Access Users
Nima Aghaeepour [PR]
Josef Spidlen [x]
O Ryan Brinkman [x]
Invite a new user
Share with a User (Full Access)
This experiment is currently private
This experiment is currently <b>private</b> .
Share with Everyone
You can also <b>create a secret access code</b> to share with reviewers.
Share with Reviewers

Data review and download Data upload and annotation Data sharing

### Data sharing



Data review and download Data upload and annotation Data sharing

### Data sharing



Experiment was successfully updated. This experiment has been locked for reviewers' access and may be accessed via the following URL: https://flowrepository.org/id/RvFrEI5USYaDgWZoVC6bxPrNUjMMcjlgxYxyXW5jXy62tFXyij1uHrxHvllL9nLL. Please share this URL with your reviewers.

#### - Sharing Permissions

Full Access Users This experiment is currently locked! No users have edit access to this experiment. This experiment is shared with reviewers via a secret code.

A state

## What to do with the secret code?

- Share the "secret code" with the editor in your cover letter
- The editor will pass it to reviewers
- Reviewers will use it to obtain read-only access to your dataset
  - By navigating directly to https://flowrepository.org/id/RvFrFI5UsYaDgWZ....
  - Or entering RvFrFI5UsYaDgWZ.... in the "Query" field



## What to do if editor/reviewer requires changes?

- Depending on the journal,
  - The editor may contact FlowRepository administrators and arrange for the dataset to be unlocked
  - Or, you may have to fill out a FlowRepository support ticket and ask for the dataset to be unlocked

is of Service Privacy Policy Support Feedback
---

Summary Future Work Acknowledgments

## Summary

### FlowRepository can be used to

- Access
- Review
- Download
- Deposit
- Annotate
- Share
- Analyze

flow cytometry datasets.

### All you need is

- A computer
  - With Internet connection
- A web browser
  - With Java support
- An OpenID (e.g., Google Account)
  - Required for write access only

Summary Future Work Acknowledgments

### Site visits in the last 3 months



609 people visited this site

Wisits: 991

Summary Future Work Acknowledgments

### FlowRepository Visits by Country, March – June 2012



Summary Future Work Acknowledgments

### FlowRepository Visits by Country, March – June 2012



Summary Future Work Acknowledgments

## Some more stats... (as of June 13, 2012)

### But "only"

- 52 Registered users
- 31 Datasets
  - Only 8 of these public
- 4,850 FCS files (28 GB)

Summary Future Work Acknowledgments

## Some more stats... (as of June 13, 2012)

### But "only"

- 52 Registered users
- 31 Datasets
  - Only 8 of these public
- 4,850 FCS files (28 GB)

 $\rightarrow$  Please share your data.

Summary Future Work Acknowledgments

## Additional resources

- Spidlen J, Breuer K and Brinkman RR. 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). *Curr Protoc Cytom*. 2012 Jul; Chapter 10: Unit 10.18.
- Kotecha N, Krutzik PO and Irish JM. Web-based analysis and publication of flow cytometry experiments. *Curr Protoc Cytom.* 2010 Jul; Chapter 10: Unit 10.17.
- Spidlen J, Breuer K, Rosenberg C, Kotecha N and Brinkman RR. FlowRepository – A Resource of Annotated Flow Cytometry Datasets Associated with Peer-reviewed Publications. (submitted)
- FlowRepository quick start guide: https://flowrepository.org/quick\_start\_guide
- Cytobank documentation site: http://docs.cytobank.org

## What new features to expect... (development in progress)

- FlowRepository Application Programming Interface
- ightarrow Third party software will be able to
  - Directly work with datasets saved in FlowRepository
  - Deposit data to FlowRepository on your behalf
  - In fact, initial implementation already exists in FlowJo<sup>TM</sup> (for now, only read access to FlowRepository is provided and only basic data and annotations shared)
  - If you are a Flow Cytometry Software vendor, please talk to us!

Summary Future Work Acknowledgments

What new features to expect... (development in progress)

### MIFlowCyt Reports



< i> 🕲 🕼 localhost:8080/public\_experiment\_representations/1/print\_cyt\_a

#### Cytometry Part A Author Checklist - MIFlowCyt-Compliant Items for Experiment Test 01 (Repository ID: FR-FCM-ZZZY)

Requirement	Requested Information
1.1. Purpose	Test, new clean install
1.2. Keywords	test
1.3. Experiment variables	Dotes         -         00.407         A03. A07. B03. B08. B09. B10. B11. D01. D03           - 200. gor /A         A03. A07. B03. B09. B09. B10. B11. D01. D03         -           - 200 gor /A         A03. A07. B09. E00. B04. B06. C01. C04. D06. D05         -           - 200 gor /A         A03. A07. B09. E00. C01. C04. D06. D07. D08         -           Baddwiluls         -         -         -           - Mourse 2         B03. B09. B03. B09. B01. D01. D03. C09. D08. D04. B06. B07. E09. F02         -           - Mourse 2         B09. B09. B00. D02. D03. D09. E01         -           Canditions         -         -         -           - PMA-shommycin for 8 hours         A07. A08. B04. B02. B08. B04. B01. C04. C07. D01         -           - PMA-shommycin for 8 hours         A07. A09. B01. B02. B03. B04. B01. C04. C07. D01         -
1.4. Organization name and address	None
1.5. Primary contact name and email address	Josef Spidlen, jspidlen@gmail.com
1.6. Date or time period of experiment	2011-01-01
1.7. Conclusions	None
1.8. Quality control measures	None
2.1.1.1. (2.1.2.1., 2.1.3.1.) Sample description	All FCS files: Sample template 1
2.1.1.2. (2.1.2.1, 2.1.3.1) Sample source description	Description         Applicable to           constraints         Services         Services
2.1.1.3.1 Source organism taxonomy	Taxonomy         Applicable 10         Constraint           Masmurulus         200         D01         D02         D03         D04         D06         D04         D06         D07         D08         D00         B11         C01         C02         C03         C04         C06         C07         C08         E004         D06         D07         D08         D00         D01         D12         D02         D03         D04         D06         D07         D08         D00         D01         D12         D02         D03         D04         D06         D07         D08         D00         D01         D12         D02         D03         D04         D06         D07         D08         D00         D01         D01         D02         D03         D04         D06         D07         D08         D00         D01         D02         D03         D04         D06         D07         D08         D04         D06         D07         D04
	Age Applicable to 21 weeks 2nd Settings

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## What new features and changes to expect...

- Relaxing some of the required annotations
- Annotation export in spreadsheet form
- User configurable inbox view
- Complete one click dataset download (with all attachments, illustrations, etc.)
- Better instrumentation support based on defaults obtained from manufactures
- Better performance for datasets with thousands of FCS files
- Better support for experiment variables (including continuous variables)
- Additional sanity checks, e.g., annotations vs. contents of the data files, possibly with the use of ontologies

## What new features and changes to expect...

- Better import, export and merging
- Improved interface (e.g., more "smart" auto-complete)
- Better support for CyTOF
- Support for the Human Immunology Project Consortium (HIPC) Lyoplates
- Continuous improvements and fixes

## What new features and changes to expect...

- Better import, export and merging
- Improved interface (e.g., more "smart" auto-complete)
- Better support for CyTOF
- Support for the Human Immunology Project Consortium (HIPC) Lyoplates
- Continuous improvements and fixes
- Also, whatever the users ask for
  - As long as it is feasible to implement within our budget
  - This may be a good time to suggest additional features and improvements

### Acknowledgments

BC Cancer Agency	Ryan Brinkman, Karin Breuer, Patrick Tan, Nima Aghaeepour, Mehrnoush Malekesmaeili
Cytobank, Inc.	Nikesh Kotecha, Chad Rosenberg, Jennifer Davis, Chris Coveney, Christina Dong, Robin Powell, Jonathan Irish, Amy Lee
Carnegie Mellon University	Bob Murphy, Thom Gulish, Mark Held, Kimble Marshall, William Love
NIH NIAID VRC	Mario Roederer
Cytometry A	Attila Tarnok
ISAC	Todd Philbrick

ISAC Terry Fox Foundation Terry Fox Research Institute Wallace H. Coulter Foundation Michael Smith Foundation for Health Research

Summary Future Work Acknowledgments

## The End

# *Thank you! Questions and Comments?*



Josef Špidlen, Ryan R. Brinkman

FlowRepository.org - Resource of Flow Cytometry Data