ACTA (Anybody Can Titrate Antibody) Report v3.6.11

2026-11-12

Contents

A. MiFlowCyt metadata **2**

1 Experiment Overview **2**

2 Flow Sample/Specimen Details **3**

2.4 Fluorescence Reagent Description 4

3 Instrument Details **5**

4 Data Analysis Details **6**

4.1 List-mode data files: downsampling 6

4.2 Compensation Description 7

4.3 Data Transformation Details 7

4.4 Gating Details 8

4.4.2 Gate Statistics 9

4.5 Analysis software 9

B. Titration results **10**

1 Plate map **11**

2 QC **12**

3 Resolution of populations **13**

4 Saturation of positive population proportion **15**

5 Layouts for each antibody **16**

5.1 CCR7 17

6 Info **22**

7 Session Information **24**

A. MiFlowCyt metadata

1 Experiment Overview

MiFlowCyt 1.0. Structured to MiFlowCyt but not self-contained: purpose, experiment variables, organization, conclusions, specimen source and collection, and instrument QC are recorded in the ELN and referenced here. Not a compliant submission document on its own.

Category	Value
Purpose	See ELN EXPOQ_Test3_new (ELN)
Keywords	(not supplied)
Experiment variables	Stain volume (uL) per antibody; see Reagents. See ELN EXPOQ_Test3_new (ELN)
Organization	See ELN EXPOQ_Test3_new (ELN)
Primary contact	JD
Acquisition date	2026-08-27
Conclusions	See ELN EXPOQ_Test3_new (ELN)
Quality control	6 automated check(s) per antibody group; see the QC section.

2 Flow Sample/Specimen Details

Category	Value
Test material	HD Human PBMC
Cells per well (e6)	0.75
Well volume (uL)	100
Source	See ELN EXPOQ_Test3_new (ELN)
Collection	See ELN EXPOQ_Test3_new (ELN)
SOP	(not supplied)
Fixed	TRUE
Permeabilised	TRUE
Protocol	See ELN EXPOQ_Test3_new (ELN)

2.4 Fluorescence Reagent Description

CCR7

Channel	Markername
SSC-H	—
SSC-A	—
FSC-H	—
FSC-A	—
SSC-B-H	—
SSC-B-A	—
FVD eFluor 780-A	Viability
BUV805-A	CD3
Alexa Fluor 532-A	CD8
BUV496-A	CD4
BUV615-A	CD14
PE-CF594-A	CCR7
PE-Cy5-A	PD1

Table 1: Costain panel 'Iteration1' from 'Master_Panel_Inventory.xlsx': 4 of 4 reagents matched.

Antigen	Fluorochrome	Matched to	Verdict	Catalogue	Vendor	Clone	Type
CD3	BUV805	CD3	matched	612893	BD	SK7	Base
CD4	BUV496	CD4	matched	612936	BD	SK3	Base
CD8	Alexa Fluor 532	CD8	matched	58-0088-42	Thermo	RPA-T8	Base
Live Dead eFluor 780 (LD) (Viability)	efluor780	Viability	matched	65-0865-14	TS	NA	Base

3 Instrument Details

Category	Value
Manufacturer and model	Aurora
Detectors with a recorded gain	6
Instrument QC	See ELN EXPOQ_Test3_new (ELN)

Detector voltages ($PnV)

detector	marker	voltage
SSC-H	NA	123
SSC-A	NA	123
FSC-H	NA	125
FSC-A	NA	125
SSC-B-H	NA	127
SSC-B-A	NA	127

4 Data Analysis Details

Everything below is MiFlowCyt part 4 – what was done to the events between acquisition and the numbers in this report, in the order it happened: events read, compensation, transformation, gating, and the software that did it.

4.1 List-mode data files: downsampling

Info!Downsample_to: *(blank)*

No downsampling performed.

Events read: 674,069 across 7 file(s) (smallest 96,193, largest 96,411).

4.2 Compensation Description

Info!compensation: *(blank)*

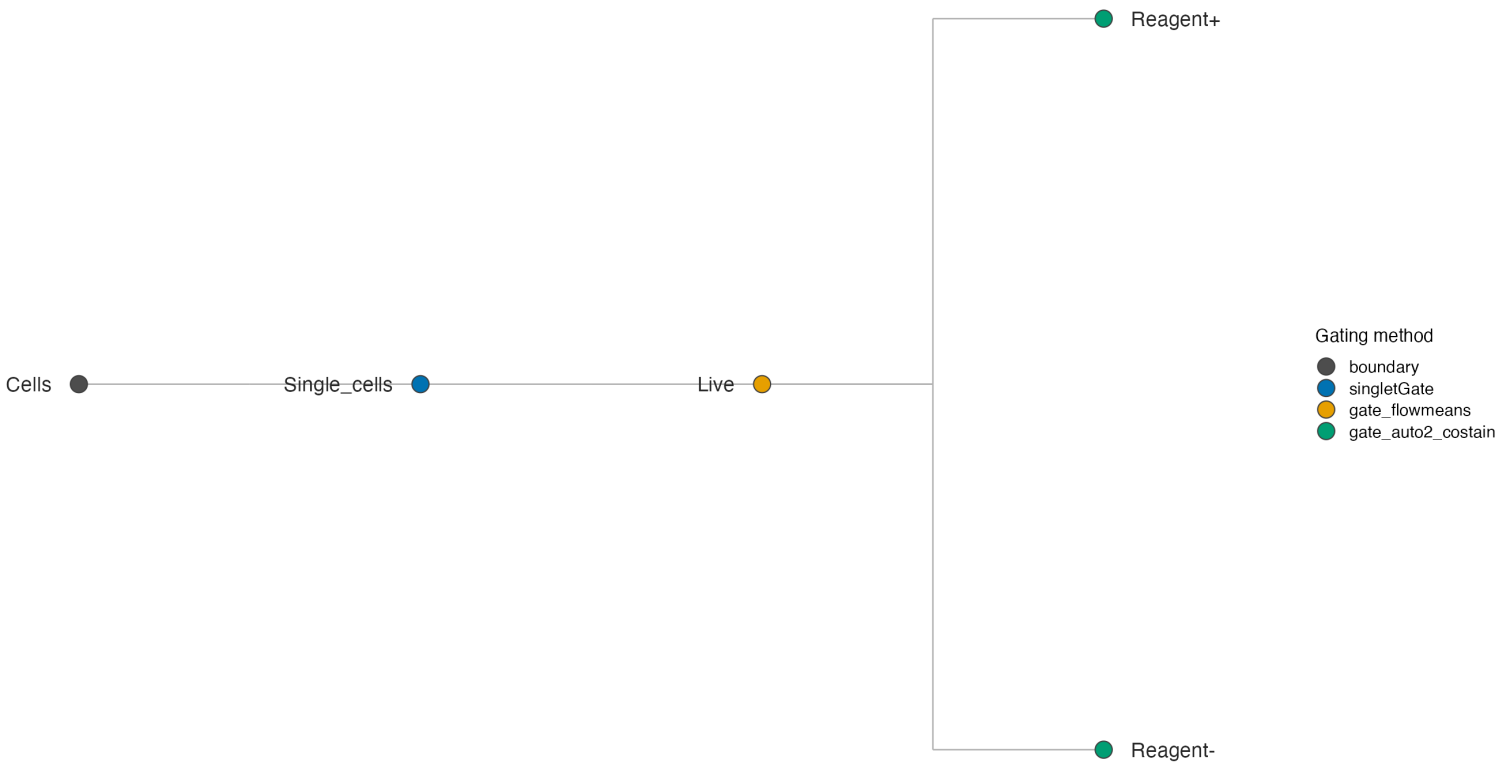
Identity matrix was applied – the data were not compensated.

4.3 Data Transformation Details

Argument	CCR7
maxValue (from $PnR)	4194304
channelRange	9000
pos	4.5
neg	0
widthBasis	-10

4.4 Gating Details

Gating scheme



4.4.2 Gate Statistics

Count, percent of parent, median fluorescence intensity and robust SD were collected for 21 population/well combinations and written to the **Pop_stats** sheet of the titration export beside this report.

In `gating_template`, mark `stats_export` as TRUE to make sure that population's stats are exported.

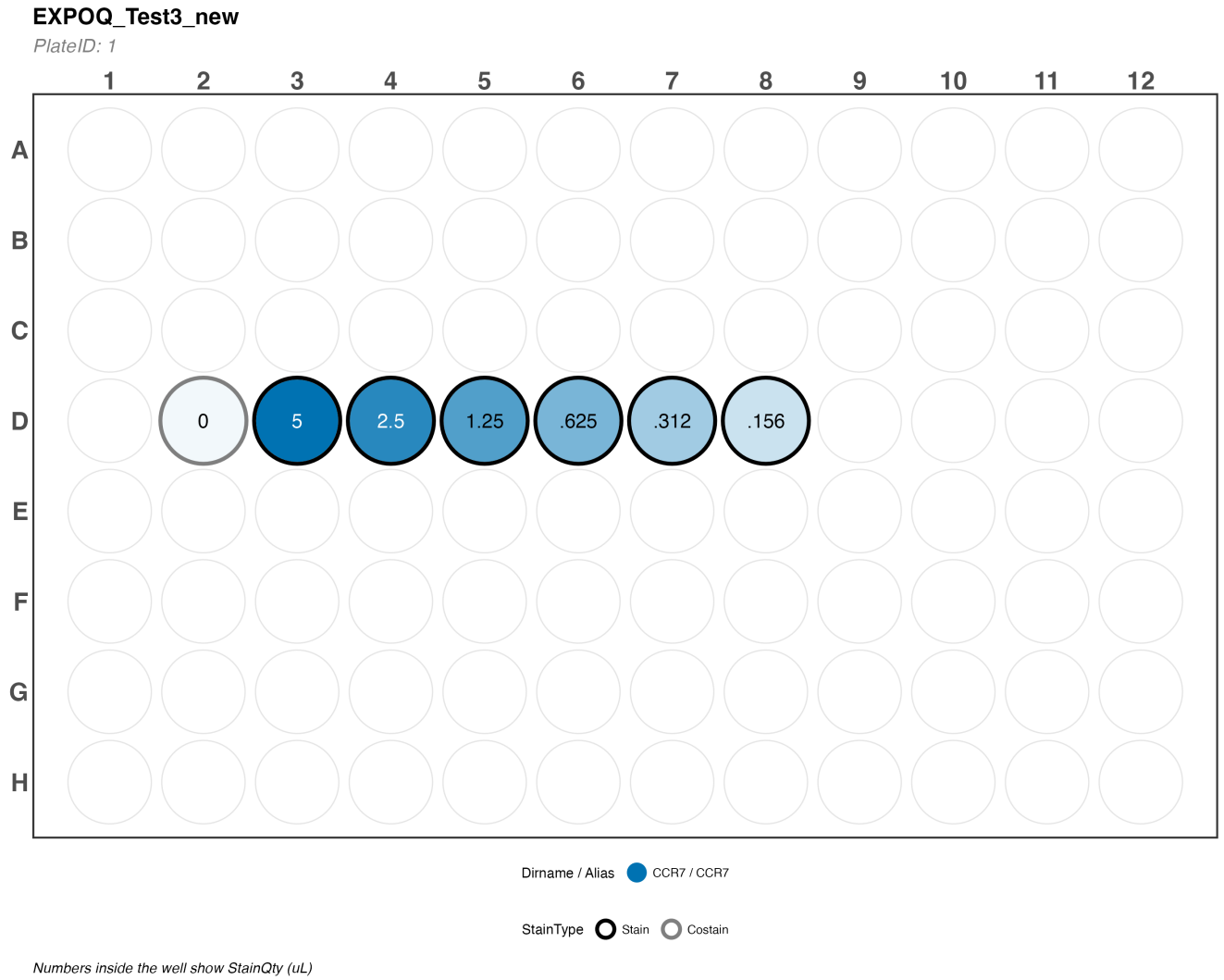
4.5 Analysis software

Category	Value
ACTA version	3.6.11
R version	R version 4.5.1 (2025-06-13)

This pipeline can be driven from R without the app: see **Automating ACTA** in `README.md` in the script folder.

B. Titration results

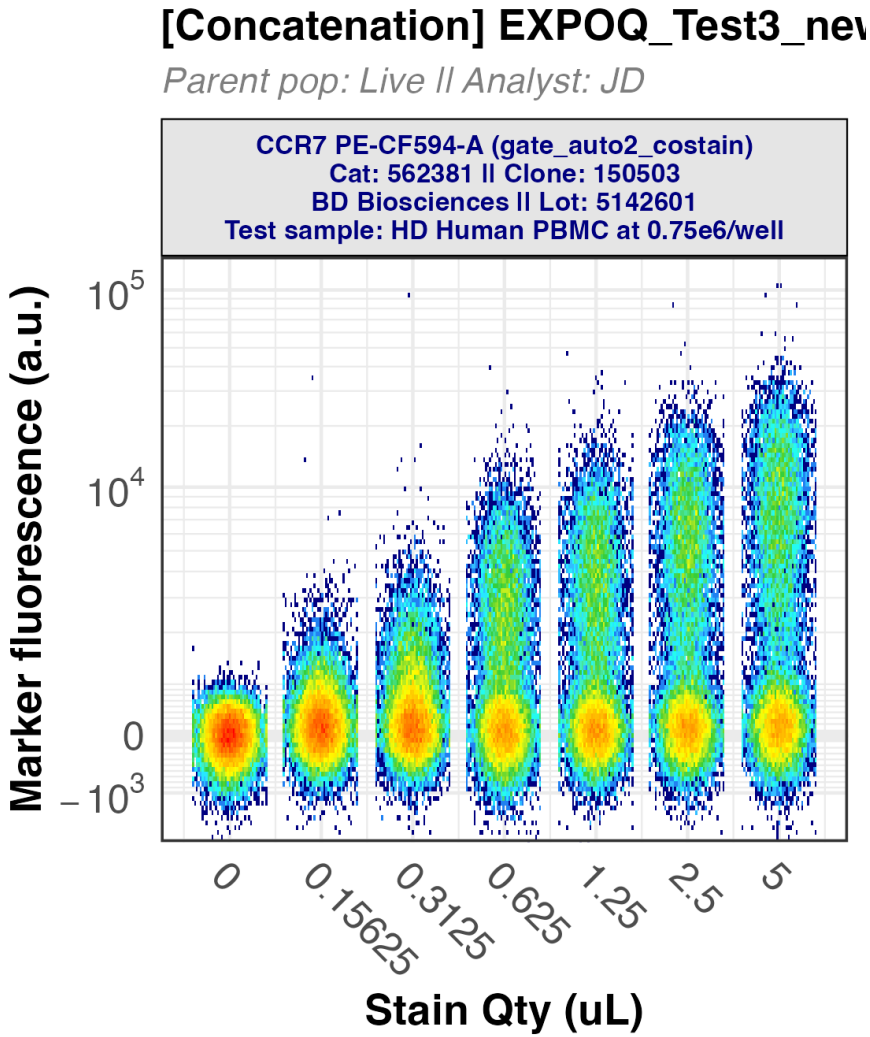
1 Plate map



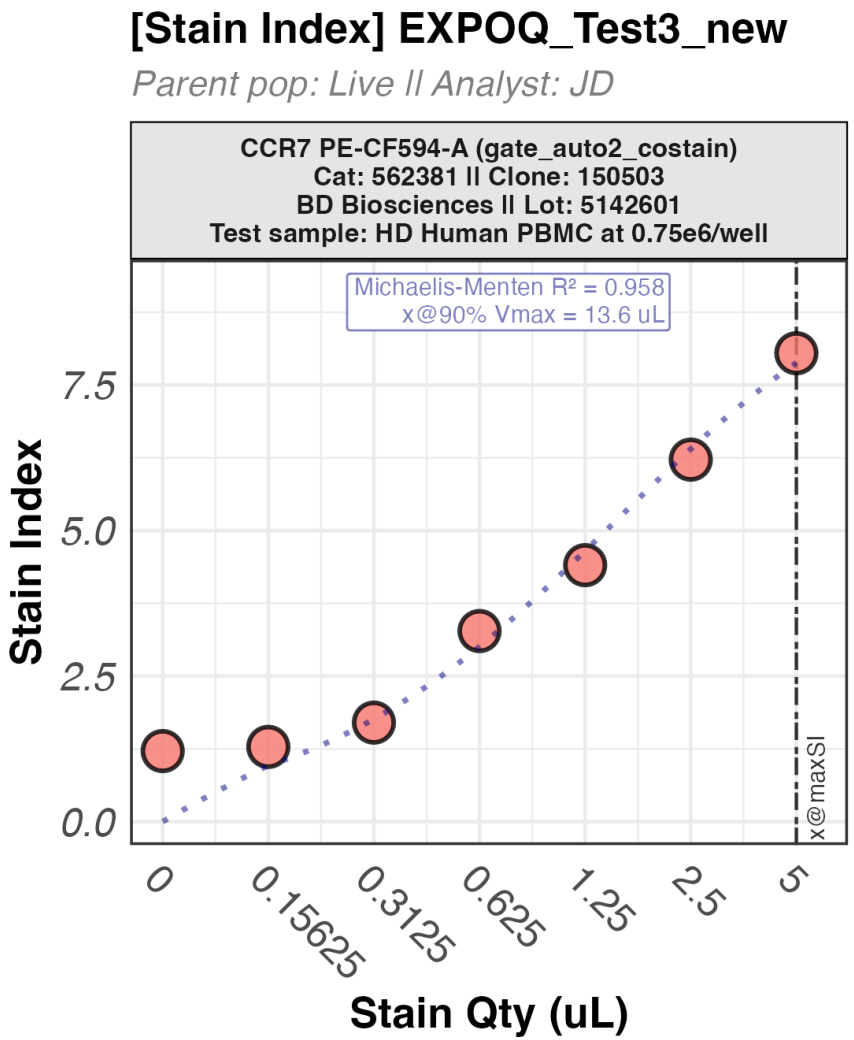
2 QC

Check	CCR7
Median FSC-A of Cells is at least 50% of the median of all events	**PASS**
More than 50% Live cells	**PASS**
More than 80% single cells	**PASS**
Costain SI is the lowest in the group	**PASS**
Co-stain is less than 5% positive	**PASS**
Every population has at least 100 events in every well (except costain)	**PASS**
Overall	**PASS**

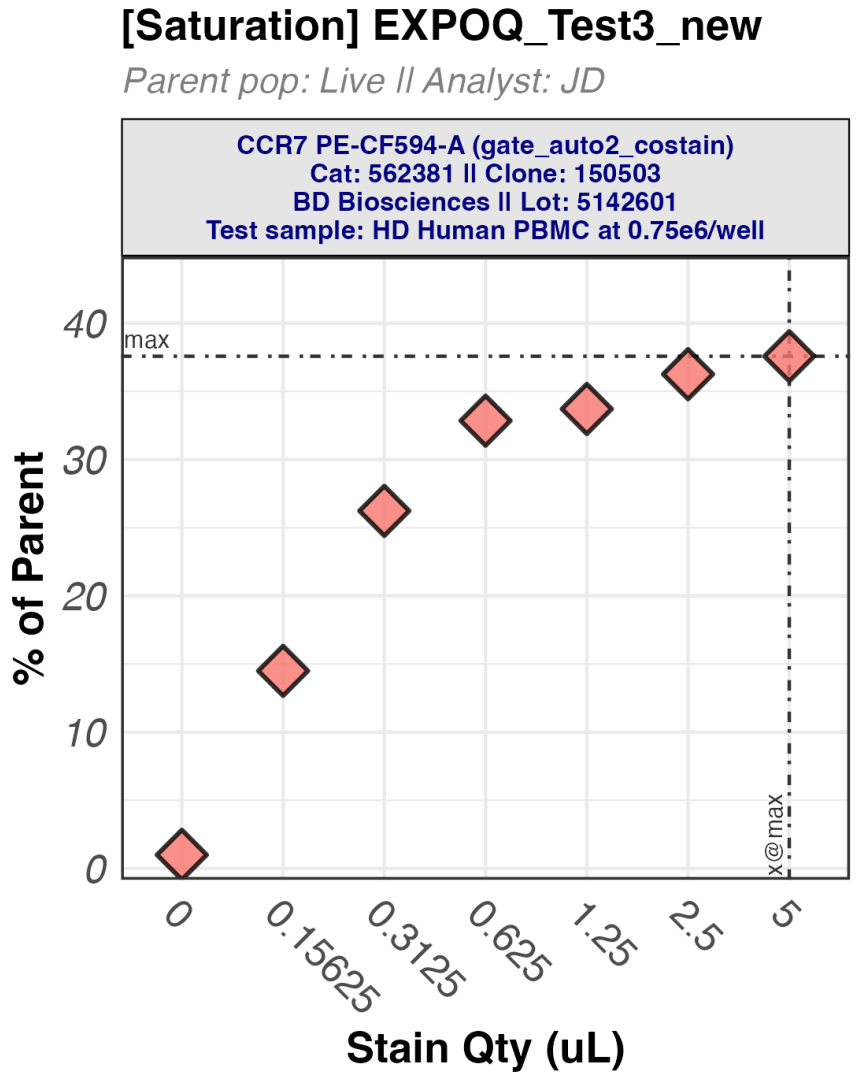
3 Resolution of populations



Concatenated events, up to 20,000 per FCS.

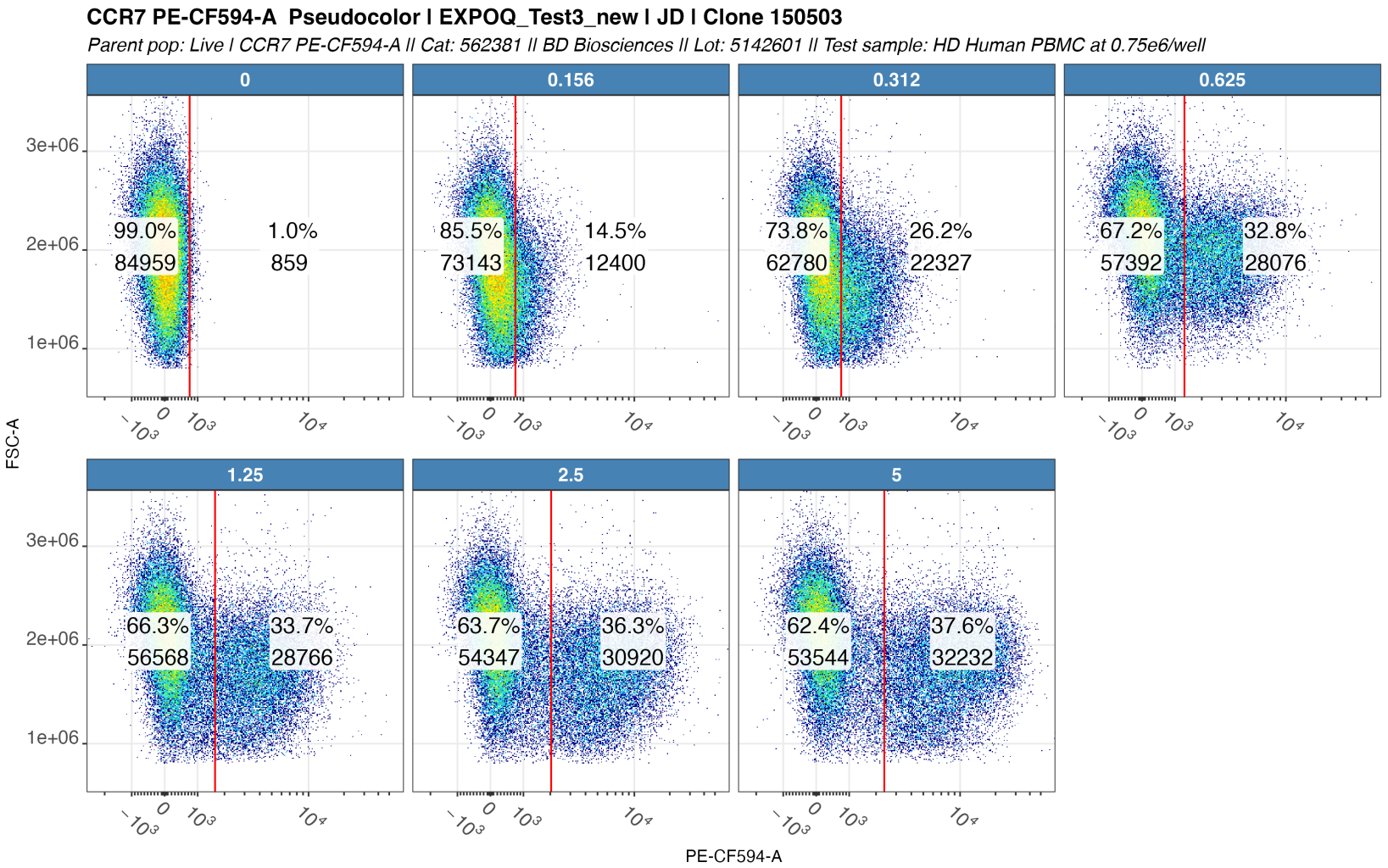

[Stain Index] EXPOQ_Test3_new
Parent pop: Live || Analyst: JD
CCR7 PE-CF594-A (gate_auto2_costain)
Cat: 562381 || Clone: 150503
BD Biosciences || Lot: 5142601
Test sample: HD Human PBMC at 0.75e6/well
Michaelis-Menten R² = 0.958
x@90% Vmax = 13.6 uL
Stain Index
7.5
5.0
2.5
0.0
x@maxSI
0
0.15625
0.3125
0.625
1.25
2.5
5
Stain Qty (uL)
MFI calculated on untransformed (linear) values. || Compensation: —

4 Saturation of positive population proportion



5 Layouts for each antibody

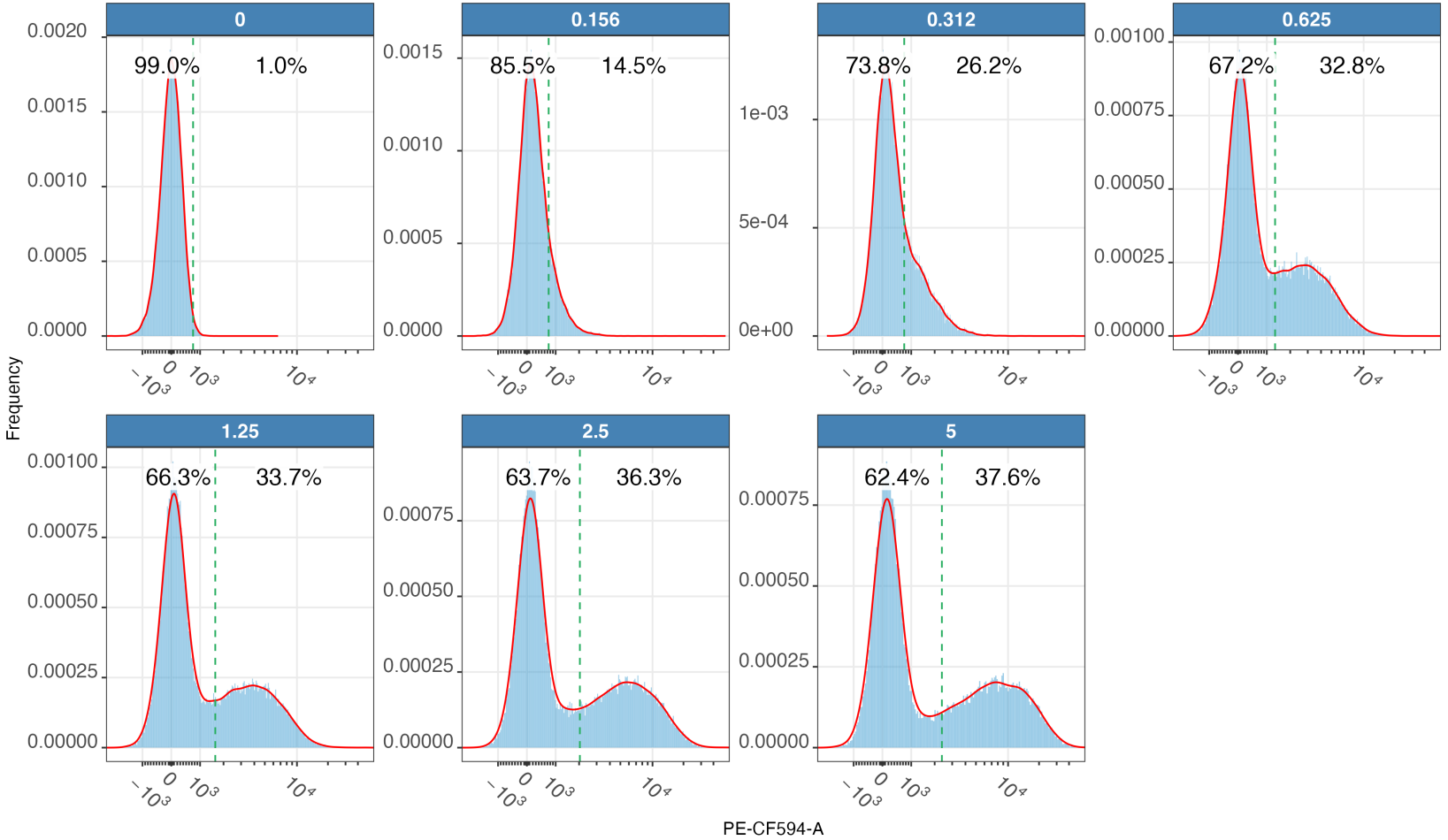
5.1 CCR7



Gating method: gate_auto2_costain || args: cluster='neg', quantile=0.99, K=2 || collapse: FALSE || groupBy: Dirname || pp: pp_auto2_costain || pp args: costain_quantile=0.99, sat_threshold=0.90, dip_pval=0.05
Compensation: —

CCR7 PE-CF594-A Histogram | EXPOQ_Test3_new | JD | Clone 150503

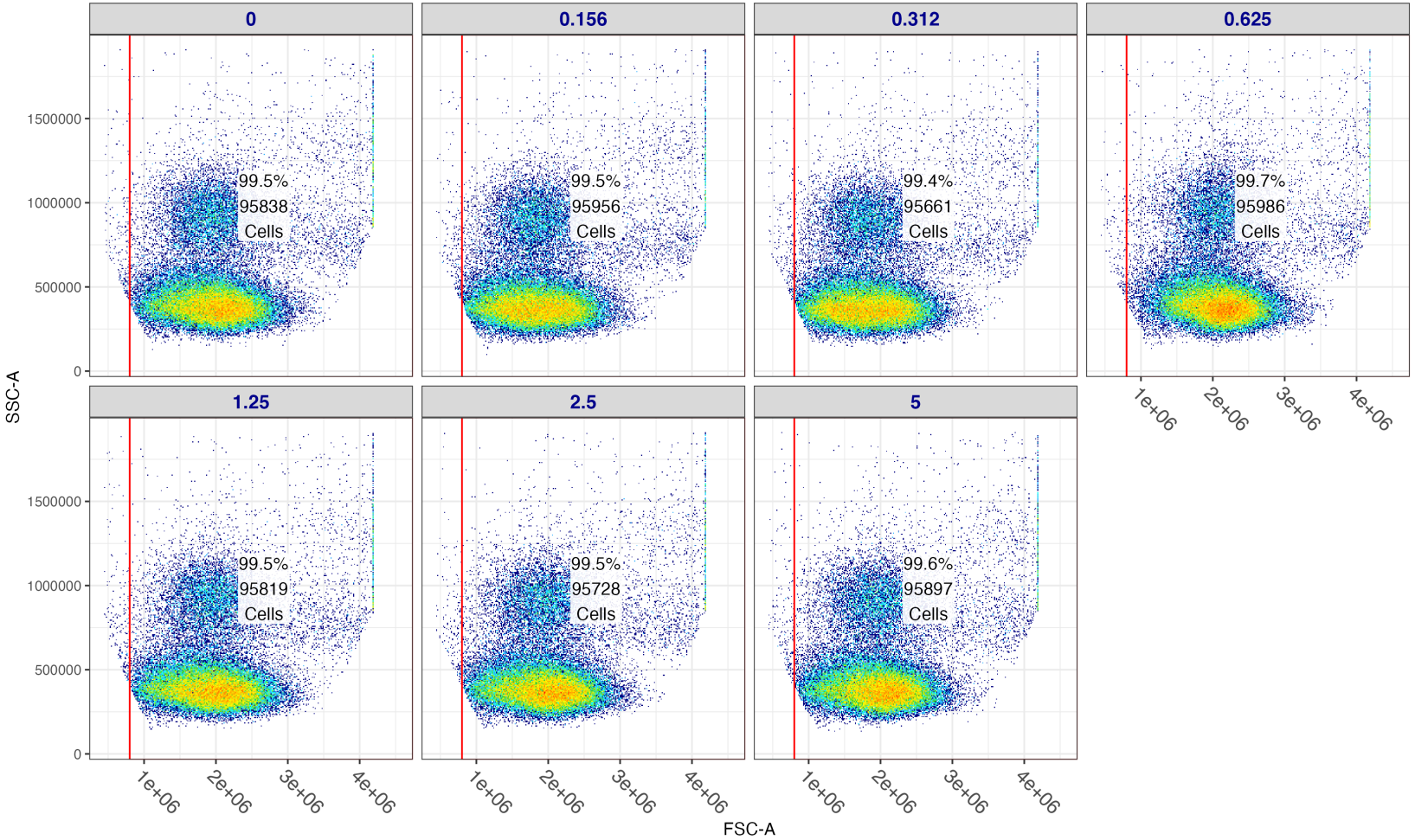
Parent pop: Live || CCR7 PE-CF594-A || Cat: 562381 || BD Biosciences || Lot: 5142601 || Test sample: HD Human PBMC at 0.75e6/well



Gating method: gate_auto2_costain || args: cluster='neg', quantile=0.99, K=2 || collapse: FALSE || groupBy: Dirname || pp: pp_auto2_costain || pp args: costain_quantile=0.99, sat_threshold=0.90, dip_pval=0.05
Compensation: —

CCR7 PE-CF594-A : Cells | EXPOQ_Test3_new | JD | Clone 150503

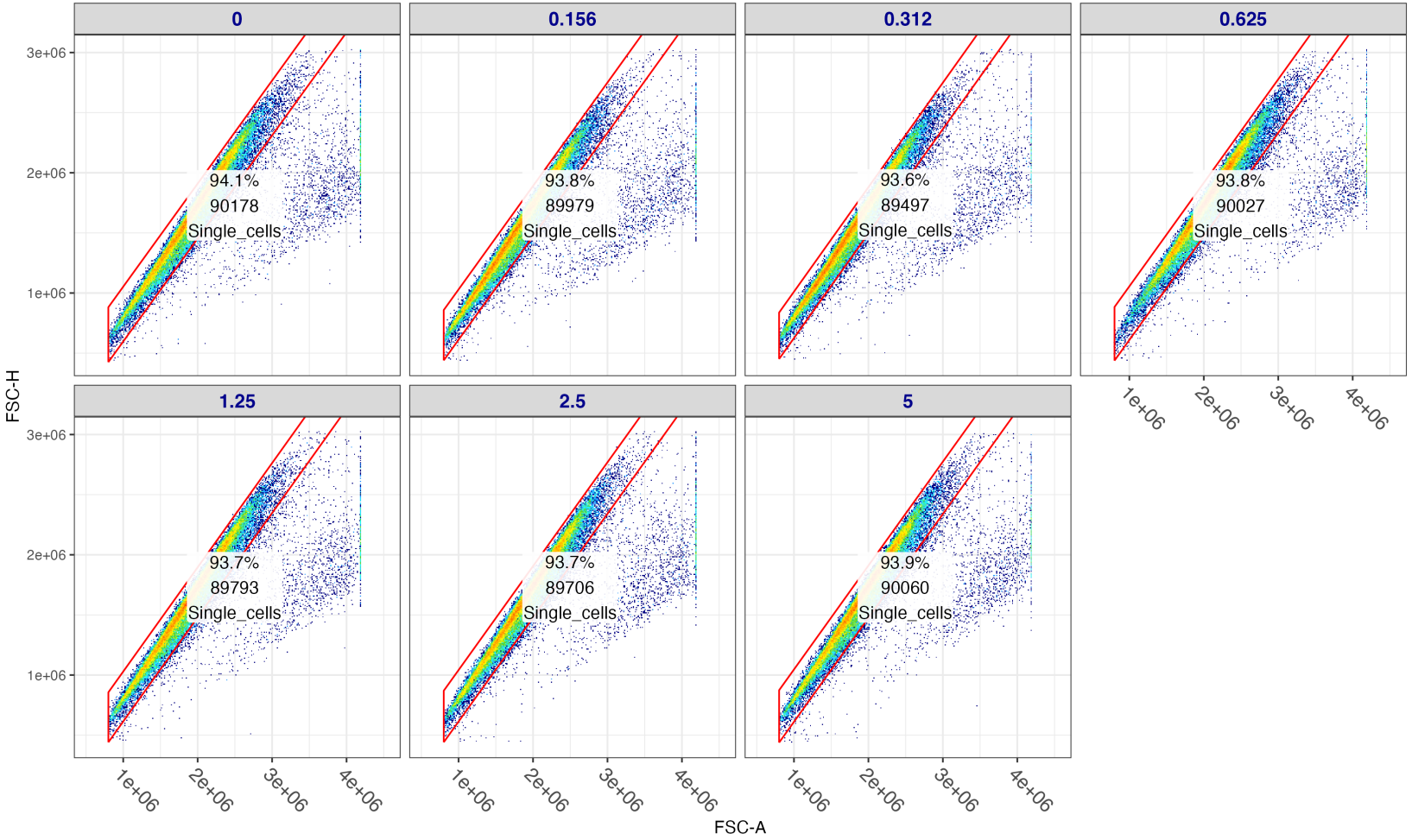
Parent pop: root | CCR7 PE-CF594-A || Cat: 562381 || BD Biosciences || Lot: 5142601 || Test sample: HD Human PBMC at 0.75e6/well



Gating method: boundary || args: min=c(0.8e6,-Inf), max=c(Inf,Inf) || collapse: TRUE || groupBy: Dirname || pp: — || pp args: — Compensation: —

CCR7 PE-CF594-A : Single_cells | EXPOQ_Test3_new | JD | Clone 150503

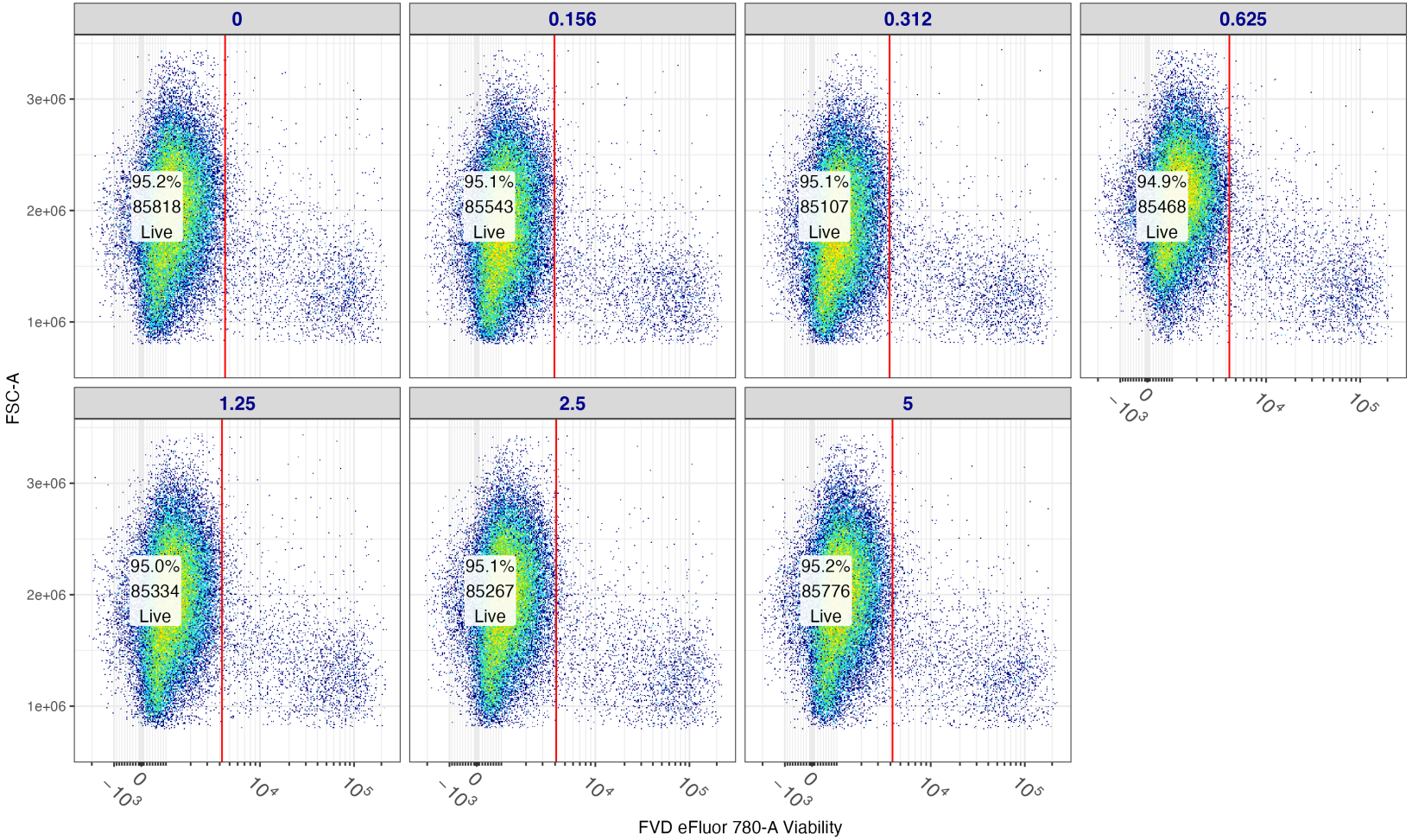
Parent pop: Cells | CCR7 PE-CF594-A || Cat: 562381 || BD Biosciences || Lot: 5142601 || Test sample: HD Human PBMC at 0.75e6/well



Gating method: singletGate || args: prediction_level=0.99, wider_gate=FALSE || collapse: FALSE || groupBy: Dirname || pp: — || pp args: — Compensation: —

CCR7 PE-CF594-A : Live | EXPOQ_Test3_new | JD | Clone 150503

Parent pop: Single_cells | CCR7 PE-CF594-A || Cat: 562381 || BD Biosciences || Lot: 5142601 || Test sample: HD Human PBMC at 0.75e6/well



Gating method: gate_flowmeans || args: K=2, cluster='neg', quantile=0.99 || collapse: FALSE || groupBy: Dirname || pp: — || pp args: — Compensation: —

6 Info

Table 3: Info sheet: script-level settings of this run

Variable	Value	Source
General		
Template_Version	3.6.8	Info sheet
working_directory	(not set)	not set
compensation	(not set)	not set
miflowcyt_export (L)	TRUE	Info sheet
dashboard_dir	(not set)	not set
titration_export_dir	(not set)	not set
dashboard_tabbed_by	ACTA_version	Info sheet
MM_R2_threshold	0.9	Info sheet
Downsample_to (N)	(not set)	not set
flowjo_transformation_arg	channelRange=9000, pos=4.5, neg=0, widthBasis=-10	Info sheet
keywords	(not set)	not set
TiterPubs		
titerpubs_export	TRUE	Info sheet
scrub_confidential	TRUE	Info sheet
Organization/Affiliation	(not set)	not set
Submitter_Name	(not set)	not set
Submitter_ORCID	(not set)	not set
Submitter_Email	<redacted-email>	Info sheet
Quality_Control_Measures	(not set)	not set
Collection_Software	(not set)	not set
Target_Species	Human	Info sheet
Cell_Type_Fallback	(not set)	not set
Sample_Details	(not set)	not set
Tissue_Fallback	(not set)	not set
References	https://doi.org/10.5281/zenodo.24181307	Info sheet
Protocol		
Incubation_Time	30	Info sheet
Incubation_Temperature_C	4	Info sheet
Equipment		
Equipment_Make	(not set)	not set
Equipment_Model	(not set)	not set
Provenance		
master_panel_inventory_path	Master_Panel_Inventory.xlsx	run folder
Protocol		
Preparation_Protocol	(not set)	not set
Protocol_reference	https://www.biolegend.com/en-us/protocols/intracellular-flow-cytometry-staining-protocol	Info sheet

Table 3: Info sheet: script-level settings of this run *(continued)*

Variable	Value	Source
TiterPubs		
scrub_eln_placeholder	EXPOQ_Test3_new	Info sheet

7 Session Information

Script version: ACTA v3.6.11

Render timestamp: 2026-11-12 20:39:00 PST

Operator: JD

Layout workbook: OQ_Test3_new_Ab_Titration_Instructions.xlsx

```
- Session info -------------------------------------------------------------
 setting  value
 version  R version 4.5.1 (2025-06-13)
 os       macOS Tahoe 26.7.2
 system   aarch64, darwin20
 ui       X11
 language (EN)
 collate  C.UTF-8
 ctype    C.UTF-8
 tz       America/Los_Angeles
 date     2026-11-12
 pandoc   3.9.0.2 @ /opt/homebrew/bin/ (via rmarkdown)
 quarto   NA

- Packages -----------------------------------------------------------------
 package       * version   date (UTC) lib source
 ACTA          * 3.6.11    2026-11-13 [1] Bioconductor
 askpass         1.2.1     2024-10-04 [2] CRAN (R 4.5.0)
 BH            * 1.90.0-1  2025-12-14 [2] CRAN (R 4.5.2)
 Biobase         2.70.0    2025-10-29 [2] Bioconductor 3.22 (R 4.5.1)
 BiocGenerics    0.56.0    2025-10-29 [2] Bioconductor 3.22 (R 4.5.1)
 BiocManager   * 1.30.27   2025-11-14 [2] CRAN (R 4.5.2)
 bslib           0.11.0    2026-05-16 [2] CRAN (R 4.5.2)
 cachem          1.1.0     2024-05-16 [2] CRAN (R 4.5.0)
 cellranger      1.1.0     2016-07-27 [2] CRAN (R 4.5.0)
 cli             3.6.6     2026-04-09 [2] CRAN (R 4.5.2)
 cytolib         2.22.0    2025-10-29 [2] Bioconductor 3.22 (R 4.5.1)
 data.table      1.18.4    2026-05-06 [2] CRAN (R 4.5.2)
 DEoptimR        1.2-0     2026-06-07 [2] CRAN (R 4.5.2)
 digest          0.6.39    2025-11-19 [2] CRAN (R 4.5.2)
```

```
diptest       * 0.77-2    2025-08-20 [2] CRAN (R 4.5.0)
dplyr         * 1.2.1     2026-04-03 [2] CRAN (R 4.5.2)
evaluate        1.0.5     2025-08-27 [2] CRAN (R 4.5.0)
farver          2.1.2     2024-05-13 [2] CRAN (R 4.5.0)
fastmap         1.2.0     2024-05-15 [2] CRAN (R 4.5.0)
feature         1.2.16    2026-05-11 [2] CRAN (R 4.5.2)
flowClust       3.48.0    2025-10-29 [2] Bioconductor 3.22 (R 4.5.1)
flowCore      * 2.22.1    2026-01-01 [2] https://bioc-release.r-universe.dev (R 4.5.2)
flowMeans     * 1.70.0    2025-10-29 [2] Bioconductor 3.22 (R 4.5.1)
flowWorkspace * 4.22.1    2026-01-01 [2] https://bioc-release.r-universe.dev (R 4.5.2)
generics        0.1.4     2025-05-09 [2] CRAN (R 4.5.0)
ggcyto        * 1.39.1    2026-02-25 [2] Github (RGLab/ggcyto@e5ed286)
ggplate       * 0.4.0     2026-09-01 [2] CRAN (R 4.5.2)
ggplot2       * 4.0.3     2026-04-22 [2] CRAN (R 4.5.2)
glue            1.8.1     2026-04-17 [2] CRAN (R 4.5.2)
graph           1.88.1    2025-12-08 [2] Bioconductor 3.22 (R 4.5.2)
gridExtra       2.3       2017-09-09 [2] CRAN (R 4.5.0)
gtable          0.3.6     2024-10-25 [2] CRAN (R 4.5.0)
hexbin          1.28.5    2024-11-13 [2] CRAN (R 4.5.0)
htmltools       0.5.9     2025-12-04 [2] CRAN (R 4.5.2)
jquerylib       0.1.4     2021-04-26 [2] CRAN (R 4.5.0)
jsonlite        2.0.0     2025-03-27 [2] CRAN (R 4.5.0)
kableExtra    * 1.4.0     2024-01-24 [2] CRAN (R 4.5.0)
KernSmooth      2.23-26   2025-01-01 [2] CRAN (R 4.5.1)
knitr         * 1.51      2025-12-20 [2] CRAN (R 4.5.2)
ks              1.15.2    2026-05-09 [2] CRAN (R 4.5.2)
labeling        0.4.3     2023-08-29 [2] CRAN (R 4.5.0)
lattice         0.22-9    2026-02-09 [2] CRAN (R 4.5.2)
lifecycle       1.0.5     2026-01-08 [2] CRAN (R 4.5.2)
lubridate     * 1.9.5     2026-02-04 [2] CRAN (R 4.5.2)
magrittr        2.0.5     2026-04-04 [2] CRAN (R 4.5.2)
Matrix          1.7-5     2026-03-21 [2] CRAN (R 4.5.2)
matrixStats     1.5.0     2025-01-07 [2] CRAN (R 4.5.0)
mclust        * 6.1.2     2025-10-31 [2] CRAN (R 4.5.0)
mvtnorm         1.4-1     2026-06-06 [2] CRAN (R 4.5.2)
ncdfFlow      * 2.56.0    2025-10-29 [2] Bioconductor 3.22 (R 4.5.1)
openCyto      * 2.22.0    2025-10-29 [2] Bioconductor 3.22 (R 4.5.1)
openxlsx      * 4.2.8.1   2025-10-31 [2] CRAN (R 4.5.0)
otel            0.2.0     2025-08-29 [2] CRAN (R 4.5.0)
```

```
pcaPP           2.0-5     2024-08-19 [2] CRAN (R 4.5.0)
pdftools        3.9.0     2026-05-14 [2] CRAN (R 4.5.2)
pillar          1.11.1    2025-09-17 [2] CRAN (R 4.5.0)
pkgconfig       2.0.3     2019-09-22 [2] CRAN (R 4.5.0)
plyr            1.8.9     2023-10-02 [2] CRAN (R 4.5.0)
pracma          2.4.6     2025-10-22 [2] CRAN (R 4.5.0)
purrr           1.2.2     2026-04-10 [2] CRAN (R 4.5.2)
qpdf            1.4.1     2025-07-02 [2] CRAN (R 4.5.0)
R6              2.6.1     2025-02-15 [2] CRAN (R 4.5.0)
ragg          * 1.5.2     2026-03-23 [2] CRAN (R 4.5.2)
RBGL            1.86.0    2025-10-29 [2] Bioconductor 3.22 (R 4.5.1)
RColorBrewer    1.1-3     2022-04-03 [2] CRAN (R 4.5.0)
Rcpp            1.1.1-1.1 2026-04-24 [2] CRAN (R 4.5.2)
readxl        * 1.5.0     2026-05-16 [2] CRAN (R 4.5.2)
Rgraphviz       2.54.0    2025-10-29 [2] Bioconductor 3.22 (R 4.5.1)
rlang           1.2.0     2026-04-06 [2] CRAN (R 4.5.2)
rmarkdown       2.31      2026-03-26 [2] CRAN (R 4.5.2)
robustbase      0.99-7    2026-02-05 [2] CRAN (R 4.5.2)
RProtoBufLib    2.22.0    2025-10-29 [2] Bioconductor 3.22 (R 4.5.1)
rrcov           1.7-7     2025-04-21 [2] CRAN (R 4.5.0)
rstudioapi    * 0.19.0    2026-06-11 [2] CRAN (R 4.5.2)
S4Vectors       0.48.1    2026-04-04 [2] https://bioc-release.r-universe.dev (R 4.5.3)
S7              0.2.2     2026-04-22 [2] CRAN (R 4.5.2)
sass            0.4.10    2025-04-11 [2] CRAN (R 4.5.0)
scales          1.4.0     2025-04-24 [2] CRAN (R 4.5.0)
sessioninfo   * 1.2.4     2026-06-04 [2] CRAN (R 4.5.2)
stringi         1.8.7     2025-03-27 [2] CRAN (R 4.5.0)
stringr       * 1.6.0     2025-11-04 [2] CRAN (R 4.5.0)
svglite         2.2.2     2025-10-21 [2] CRAN (R 4.5.0)
systemfonts     1.3.2     2026-03-05 [2] CRAN (R 4.5.2)
textshaping     1.0.5     2026-03-06 [2] CRAN (R 4.5.2)
this.path     * 2.8.0     2026-04-10 [2] CRAN (R 4.5.2)
tibble          3.3.1     2026-01-11 [2] CRAN (R 4.5.2)
tidyr         * 1.3.2     2025-12-19 [2] CRAN (R 4.5.2)
tidyselect      1.2.1     2024-03-11 [2] CRAN (R 4.5.0)
timechange      0.4.0     2026-01-29 [2] CRAN (R 4.5.2)
vctrs           0.7.3     2026-04-11 [2] CRAN (R 4.5.2)
viridisLite     0.4.3     2026-02-04 [2] CRAN (R 4.5.2)
withr           3.0.2     2024-10-28 [2] CRAN (R 4.5.0)
```

```
 xfun            0.58      2026-06-01 [2] CRAN (R 4.5.2)
 XML             3.99-0.23 2026-03-20 [2] CRAN (R 4.5.2)
 xml2            1.5.2     2026-01-17 [2] CRAN (R 4.5.2)
 yaml            2.3.12    2025-12-10 [2] CRAN (R 4.5.2)
 zip             3.0.0     2026-06-10 [2] CRAN (R 4.5.2)

 [1] ~/ACTA_release/lib3611
 [2] /Library/Frameworks/R.framework/Versions/4.5-arm64/Resources/library
 * -- Packages attached to the search path.

------------------------------------------------------------------------------
```