

1 μ L末梢血からのリンパ球の分画および計測



○益田泰輔¹, AM Noor¹, W Lei¹, 堀尾浩司¹, 齋藤俊樹², 宮田泰彦², 新井史人¹

1. 名古屋大学大学院工学研究科, 2. 名古屋医療センター



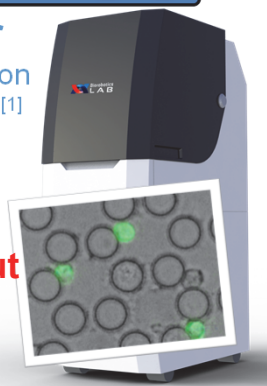
血液1滴から行う白血球の全数検査！

Cell Sorter & Cell Imaging

Rare Cell Sorter

Single Rare Cell Isolation and Collection System [1]

- ✓ Rapid
- ✓ High Throughput
- ✓ Damage Less
- ✓ Cell Imaging



Immune System

Leukocytes

Lymphocytes : 20-25% Monocytes : 3-8% Basophils : 0.5-1% Neutrophils : 60-70% Eosinophils : 2-4%

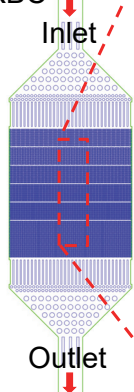


- Cell-mediated immunity: **T-cell**
- Humoral immunity: **B-cell**

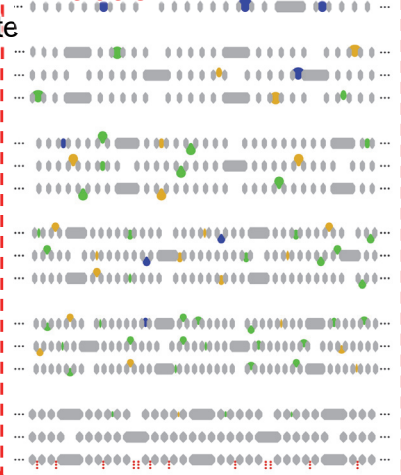
Characterization:
Immunodeficiency and Autoimmune diseases, Cancer, HIV, leukemia and so on...

Whole Blood Cell Separation & Detection

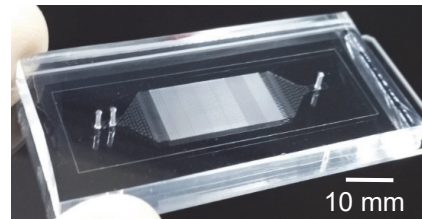
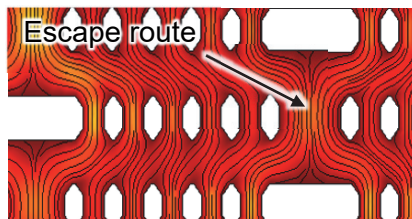
- T-cell
- B-cell
- Other Leucocyte
- RBC



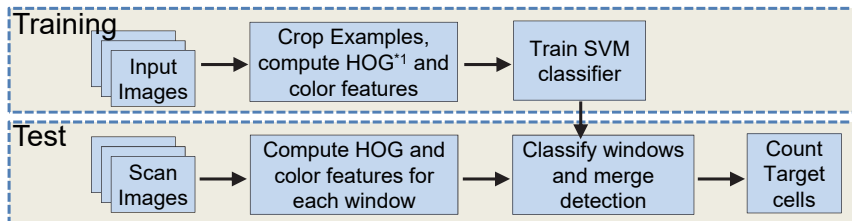
Gradual size-based filtration



Clogging-free microfluidic device

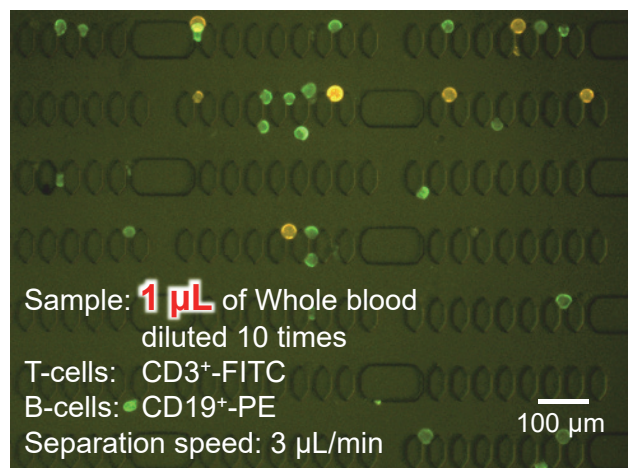


Cell identification



*1 HOG: Histogram of Oriented Gradients

Microfluidic Device vs. Flow Cytometry^{*2}



Sample: **1 μ L** of Whole blood diluted 10 times

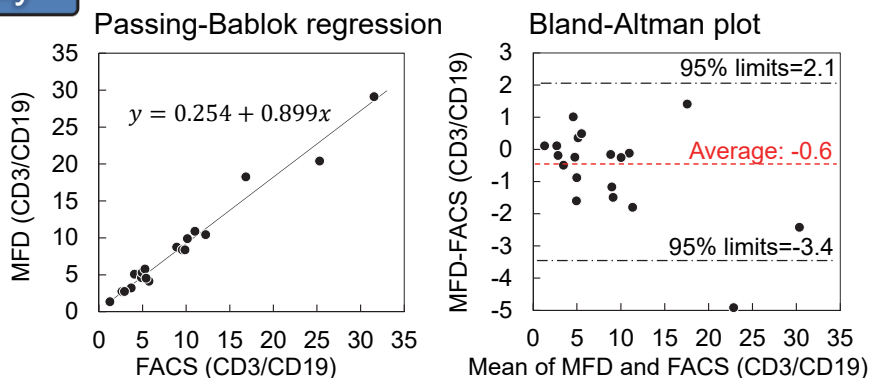
T-cells: CD3⁺-FITC

B-cells: CD19⁺-PE

Separation speed: 3 μ L/min

100 μ m

*2 Flow cytometry used FACS Cant II (BD)



Cell capture rate: 99.8%
Coefficient of variation: 2.77%
Pearson correlation coefficient (vs FACS): 0.987