A Robust Human Immune Profiling Assay Using CyTOF Technology and Automated Data Analysis Software: Maxpar Direct Immune Profiling Assay and Maxpar Pathsetter

Stephane H. Li, Daniel Majonis, C. Bruce Bagwell, Benjamin C. Hunsberger, Thirumalai Selvanantham, Greg Stolzer, Vladimir Baranov, Olga Ornatsky

Introduction

CyTOF technology, based on flow cytometry by time-of-flight, utilizes metal-tagged antibodies for single-cell analysis and immune cell subset enumeration. However, CyTOF technology requires a high-parameter technique to more fully and efficiently quantify these immune cell populations demands a high-parameter technique to more fully and efficiently quantify these immune cell populations. The ability to perform highly multiparametric analyses in a single panel analyzed on a Helios mass cytometer. The ability to perform highly multiparametric analyses demands a high-parameter technique to more fully and efficiently quantify these immune cell populations.

Maxpar Direct Immune Profiling Assay Workflow

1. Cells labeled with metal-tagged antibodies in solution are injected into the Helios instrument.
2. Inductively coupled plasma vaporizes cells and transfers the ions to the mass analyzer.
3. Paired-plot analysis is performed.
4. Summary report and associated graphics are generated.

Results: Accuracy of Liquid vs. Dry Panel Format

- Liquid panel, percent
- Dry panel, percent

Results: Automated vs. Manual Data Analysis

- Automatic analysis
- Manual analysis

Conclusions

- The Maxpar Direct Immune Profiling Assay shows a high level of intra-assay reproducibility in both whole blood and PBMC samples.
- The assay also shows a high degree of inter-assay reproducibility among different instruments and operators.
- The automated analysis software provides a convenient and easy-to-use tool for analyzing and interpreting immune cell subset information.

Acknowledgements

We thank the National Institutes of Health and the National Cancer Institute for financial support of this work. The authors also thank the Highland Peace Project for providing data for analysis.

References


Fluidigm Corporation

© 2019 Fluidigm Corporation. All rights reserved. Fluidigm, the Fluidigm logo, Cell-ID, CyTOF, Direct, EQ, Helios, Immune Profiling Assay, Maxpar and Pathsetter are trademarks and/or registered trademarks of Fluidigm Corporation in the United States and/or other countries. All other trademarks are the sole property of their respective owners. 03/2019 fluidigm.com