REPORT

EDU/IUIS-BIS WORKSHOP 2022
Flow cytometry: from basic principles to research applications

01 – 02 September 2022
University of Abomey-Calavi (UAC) and Institut de Recherche Clinique du Benin (IRCB), Abomey-Calavi, Benin

Organizers:
- Fabien Prodjinotho (TUM, Germany & FAST, UAC, Benin)
- Léonce Kouakanou (City of Hope Research Center, USA & FAST, UAC, Benin)
- Darius Sossou (Institut de Recherche pour le Développement (IRD), France/Benin)
- Robertson Klaingar (ROK Diagnostics, Benin)
- Déo-Gracias Berry (Technical University of Munich (TUM), Germany & FAST, UAC, Benin)
- Tomabu Adjobimey (Faculty of Science and Technology (FAST), University of Abomey-Calavi (UAC), Benin, President of the BIS)
- Célia Dechavanne (IRD, France/Benin)
- Dieter Kabelitz (University of Kiel, Germany, Chair of the IUIS-Education (EDU) Committee)
- Clive Gray (University of Cape Town, IUIS-EDU Committee Vice-Chair)

Introduction

The present workshop organized by the Benin Immunology Society (BIS) and sponsored by the Education (EDU) committee of the International Union of Immunological Societies (IUIS) was an in-depth two-day event held on 01 – 02 September 2022 at the University of Abomey-Calavi (Benin). This workshop is part of the capacity building program of the EDU committee dedicated in empowering young scientists from developing countries. The topic of the workshop was *Flow cytometry: from basic principles to research applications*. The workshop has covered several aspects spanning from fundamental principles of flow cytometry to assay running. The course brought together 15 participants from five west African countries and an international faculty from Benin, France, Germany and USA.

Participants

The faculty was composed of an international panel of experts in flow cytometry coming from France, Germany, USA, and the majority from Benin:

- Dr. Tomabu Adjobimey (University of Abomey Calavi, Benin)
- Dr. Léonce Kouakanou (City of Hope Research Center, USA & FAST, UAC, Benin)
- Dr. Claude Lambert (CHU St Etienne, France)
- Dr. Fabien Prodjinotho (TUM, Germany & FAST, UAC, Benin)
- Mr. Darius Sossou (Institut de Recherche pour le Développement (IRD), France/Benin)

15 graduate and post-doctoral students from five west African countries: Benin, Togo, Ghana, Côte d´Ivoire and Burkina Faso participated in the course. The majority of the participants (10) were Beninese, and the rest was from other west African countries.

The format of the workshop was hybrid with a virtual initial theory sessions and in-person hands-on training with the selected participants.

Inauguration and welcome address by the organizers

The inauguration started with a welcome address by Prof. Dieter Kabelitz (Chair of the EDU committee of the IUIS) and Dr. Tomabu Adjobimey (President of BIS). followed by a presentation from all participants and facilitators. Subsequent sessions then started.

Prof. Dieter Kabelitz giving the opening words

Day 1 (September 01)

Session 1: Basics and principles of flow cytometry

This introductory session was given by Dr. Claude Lambert and covered fundamentals of flow cytometry with emphasis on the four components of flow cytometer (fluidics, lasers, optical filters and electronics) and how does it work as well as the diverse applications.

Session 2: Principles and guidelines for experimental panel design and compensation control

In this session, Dr. Léonce Kouakanou reviewed different staining protocols and went over the practical steps on how to design antibody panel and set compensation controls for flow cytometry experiment. The session was very interactive with a series of Q&A to test participants knowledge and understanding of the notions learned.

Session 3: Introduction to flow cytometer, sample staining and acquisition

This session was practical and typically gave the opportunity to the participants to be in contact with the flow cytometer. Led by Dr. Fabien Prodjinotho and Mr. Darius Sossou, this session allowed participants to review the notions acquired during the theory sessions 1 and 2. Participants were taught on how to utilize the flow cytometer. In addition, participants organized in small groups were able to design multicolor flow panel, to perform sample acquisition and learned how to compensate flow data on the cytometer.

This day-1 sessions were wrapped up by round-table discussions where participants met the day´s speakers.

Participants and faculty during hands-on session

Day 2 (September 02)

Session 4: Introduction to FlowJo analytic software

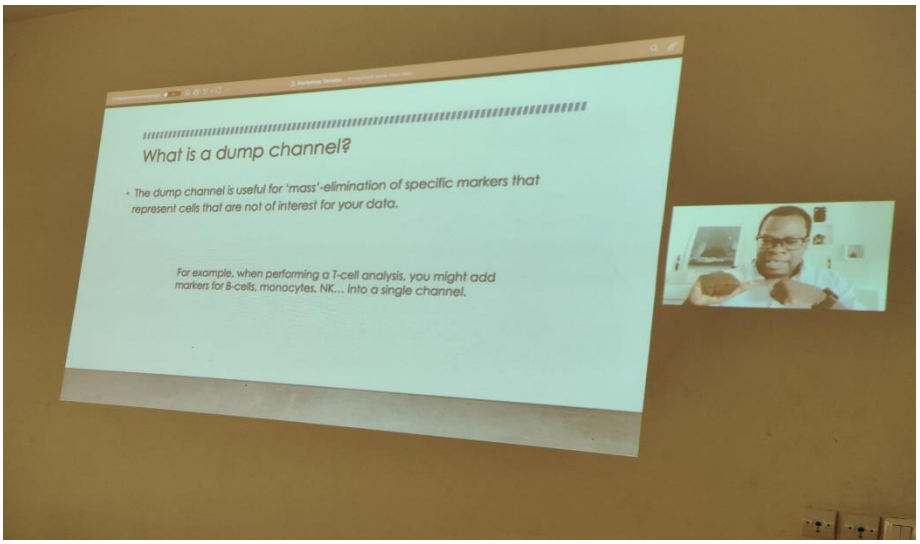
Dr. Léonce Kouakanou introduced participants with FlowJo, one of the widely used analytic tool for flow data analysis. He showed the participants how to navigate through the sessions within the software and taught them important features one should be acquainted with in order to comfortably use the software. Participants were also instructed on how to bring their samples in the software and perform data quality control, how to generate traditional and automatic compensation matrices. Finally, participants learned how to create logical hierarchical gates.

Session 5: Flow data analysis strategies using FlowJo

With the notion learned from the session 4, in this practical session, participants brought their sample acquired on the day 1 and with the guidance of Dr. Fabien Prodjinotho, they were able to analyze their data on their own.

Session 6: Guidelines to prepare flow data for publication

In this last session of the day, Dr. Tomabu Adjobimey taught participants on some important considerations for flow data preparation for publication.



Dr. Tomabu Adjobimey giving lecture on flow data preparation for publication

Appendix

Appendix 1

Overview of participants during lectures

Appendix 2

Group photo by participants and faculty