



Technical Workshops Series – 2019

## 3 Days Hands on Workshop on Flow Cytometry Basics, Multicolor Flow Cytometry, Data Analysis and Presentation

- Organized by Venture Center, BRBC & Flowcytometry Solutions Pvt. Ltd -

<b>Learn</b>	<ul style="list-style-type: none"> <li>• Fundamental concepts of flow cytometry and its applications</li> <li>• Instrument startup and demonstration of instrument setup, Template preparation for data acquisition, PMT Voltage setting, Threshold, Antibody Titration, Stain Index etc.</li> <li>• Concepts of Multicolor Flow Cytometry: Fluorochromes, Stain Index, Spectral Overlap, Compensation Controls Standards, Phenotyping and Cell Surface Staining</li> <li>• How to set up and Design a Multicolor Flow Cytometry Experiment</li> <li>• Concepts of Compensation for Multicolor Flow Cytometry</li> <li>• Immunophenotyping: Staining of cells (Whole Blood profiling) for multicolor flow cytometry and preparation of Compensation controls. Sample acquisition and data analysis</li> <li>• Flow cytometry data analysis on a software</li> </ul>															
<b>Organized by</b>	<ul style="list-style-type: none"> <li>• Venture Center, BIRAC Regional BioInnovation Center @ Venture Center (BRBC) Bioincubator and Cell studio @ Venture Center &amp; Flowcytometry Solutions Pvt. Ltd.</li> </ul>															
<b>For whom</b>	<ul style="list-style-type: none"> <li>• Industry professionals</li> <li>• Researchers, Students</li> </ul>															
<b>When</b>	<b>Monday-Wednesday   4-6 February 2019   Time 0900-1800 hrs</b>															
<b>Where</b>	E-classroom, Venture Center, 100 NCL Innovation Park, Dr. Homi Bhabha Road, Pune-8															
<b>Contact</b>	<p><i>Registration related queries:</i> Lipika Biswas   Phone: +91-20-2586-5877/76   Email: <a href="mailto:eventsdesk@venturecenter.co.in">eventsdesk@venturecenter.co.in</a></p> <p><i>Technical queries:</i> Sujaya Ingale   Phone: 9172232214   Email: <a href="mailto:lab@venturecenter.co.in">lab@venturecenter.co.in</a></p>															
<b>Cost</b>	<p><b>Limited seats: 15 ; First-come-first-serve</b></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">Category</th> <th style="text-align: left;">Fees</th> <th style="text-align: left;">Discounted fees</th> </tr> </thead> <tbody> <tr> <td>All BIRAC grantees*</td> <td>Rs 4000/-</td> <td>Rs 2000/-</td> </tr> <tr> <td>Students with valid ID card / VC resident companies*</td> <td>Rs 7000/-</td> <td>Rs 4000/-</td> </tr> <tr> <td>Micro, small and medium enterprises/ individuals</td> <td>Rs 9000/-</td> <td>NA</td> </tr> <tr> <td>Large companies</td> <td>Rs 12,000/-</td> <td>NA</td> </tr> </tbody> </table> <p>*Courtesy of BRBC, discounted prices available for Category 1 and 2</p> <p><b>Register online:</b> <a href="http://bit.ly/fc-feb2019">http://bit.ly/fc-feb2019</a>  <b>More details on:</b> <a href="http://www.venturecenter.co.in/workshops/">http://www.venturecenter.co.in/workshops/</a></p> <p>NOTE</p> <ul style="list-style-type: none"> <li>• Definitions of Micro Small and Medium Enterprise: <a href="http://dcmsme.gov.in/ssiindia/defination_msme.htm">http://dcmsme.gov.in/ssiindia/defination_msme.htm</a></li> <li>• <b>Fees paid is not refundable and non transferable under any circumstances</b></li> </ul>	Category	Fees	Discounted fees	All BIRAC grantees*	Rs 4000/-	Rs 2000/-	Students with valid ID card / VC resident companies*	Rs 7000/-	Rs 4000/-	Micro, small and medium enterprises/ individuals	Rs 9000/-	NA	Large companies	Rs 12,000/-	NA
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## Introduction

Flow cytometry is a technology that is used to analyse the physical and chemical characteristics of particles in a fluid as it passes through at least one laser. Flow cytometry has numerous applications in science, including those relevant to healthcare. The technology has been widely used in the diagnosis of health conditions, particularly diseases of the blood such as leukemia, although it is also commonly used in the various different fields of clinical practice as well as in basic research and clinical trials.

This workshop aims to give an introduction to the principles and practice of flow cytometry for industry professionals and students. The workshop will be conducted by an expert, having vast experience in flow data acquisition and analysis. The workshop includes specialized talks, hands-on lab sessions, demonstrations and data analysis exercises. The workshop shall also discuss some recent trends and new developments in research and industry relating to flow cytometry.

## Course Outline

The workshop will include theory as well as practical sessions. Workshop format will include:

### Talks

- Principles and applications of flow cytometry
- Instrumentation
- Multicolour flow cytometry
- Concepts and Basics of Flow Data Analysis
- Analysis of Flow Data and Reporting Results

### Demonstrations

Instrument startup, Instrument setup, Template preparation for data acquisition, PMT Voltage setting, Threshold etc.

### Hands on lab sessions

- Immunophenotyping: Staining of cells (Whole Blood profiling) for multicolor flow cytometry and preparation of Compensation controls.
- Flow cytometry data analysis on a software, troubleshooting, discussion and Q&A

## Course includes

- Theory and practical sessions
- One-on-one interaction with the expert
- Access to restricted website with online compilation of resources for flow cytometry
- Certificate of Participation issued by Venture Center
- Membership in events mailing list of Venture Center
- Tea and lunch at Venture Center cafeteria

**\*Please note, the participants will have to arrange for their own travel/local transport and accommodation and dinners.**

- For accommodation (standard and budgeted hotels) please visit: [www.venturecenter.co.in/puneguide/standard.php](http://www.venturecenter.co.in/puneguide/standard.php)
- For accommodation (deluxe and luxury hotels) please visit: [www.venturecenter.co.in/puneguide/deluxe.php](http://www.venturecenter.co.in/puneguide/deluxe.php)
- For local transport details visit: [www.venturecenter.co.in/puneguide/taxi.php](http://www.venturecenter.co.in/puneguide/taxi.php)



Schedule			
Time	Session title	Lead	Venue
<b>Day 1</b>			
0830 – 0900	Registration		Foyer, Learning Center
0900 – 0915	Introduction to the course and faculty	Manisha P.	Training Room
0915 – 1100	Lecture 1- Introduction to Flow Cytometry and its Applications	Hemant A.	Training Room
1100 – 1115	Tea / Snacks break		Foyer, Learning Center
1115 – 1230	Lecture 2 – KYC: Know Your Cytometer– Decoding the Black Box	Hemant A.	Training Room
1230 – 1315	Lecture 3 – Concepts of Multicolor Flow Cytometry: Fluorochromes, Stain Index, Spectral Overlap, Compensation Controls Standards, Phenotyping and Cell Surface Staining	Hemant A.	Training Room
1300 – 1400	Lunch break		Cafeteria
1400 – 1500	Lab 1 – Instrument startup and demonstration of instrument setup, Template preparation for data acquisition, PMT Voltage setting, Threshold, Antibody Titration, Stain Index etc.	Hemant A.	Bio Lab-4
1500 – 1530	Tea break		Cafeteria
1530 – 1800	Lab 1 – Continue....	Hemant A.	Bio Lab-4
<b>Day 2</b>			
0900 – 0930	Review of Day 1 and queries	Hemant A.	Bio Lab-4
0930 – 1100	Lecture 4 – How to set up and Design a Multicolor Flow Cytometry Experiment?	Hemant A.	Training Room
1100 – 1115	Tea / Snacks break		Foyer, Learning Center
1115 – 1300	Lecture 5 – Concepts of Compensation for Multicolor Flow Cytometry	Hemant A.	Bio Lab-4
1300 – 1400	Lunch break		Cafeteria
1400 – 1730	Lab 2 – Immunophenotyping: Staining of cells (Whole Blood profiling) for multicolor flow cytometry and preparation of Compensation controls. Sample acquisition, data analysis and discussion	Hemant A.	Bio Lab-4
1600 – 1630	Tea break		Cafeteria
1615 – 1800	Lab 2 - Continue....	Hemant A.	Bio Lab-4
<b>Day 3</b>			
0900 – 0930	Review of Day 2 and queries	Hemant A.	Training Room
0930 – 1100	Lecture 5 –Flow Data Analysis – What to do and what not to do?	Hemant A.	Training Room
1100 – 1115	Tea / Snacks break		Foyer, Learning Center
1115 – 1200	Lecture 6 – Analysis of Flow Data and Reporting Results – Discussion about Fundamental Statistics and introduction to MiFlowCyte: Data Presentation Guidelines	Hemant A.	Training Room
1200 – 1300	Lab 3 – Flow Cytometry Data Analysis on Software		
1300 – 1400	Lunch break		Cafeteria
1400 – 1600	Lab 4 – Flow data analysis continue....	Hemant A.	Bio Lab-4
1600 – 1630	Tea break		Cafeteria
1630 – 1700	Troubleshooting, Discussion and Q&A		
1700 – 1730	Concluding session – Test, Feedback, Certificate distribution	Premnath V.	Training Room





**Anchor faculty**

	<p>Hemant Agrawal, Ph.D.  <a href="mailto:flowsols@gmail.com">flowsols@gmail.com</a>          Director—Flowcytometry Solutions Pvt. Ltd.          Member—Organizing committee for the Indo-US Cytometry Workshops</p> <p>Hemant Agrawal obtained PhD in Immunology from the University Hospital Essen, Germany (2006). He joined Oklahoma Medical Research Foundation, Oklahoma City, USA as an Associate Research Scientist in the Immunology and Arthritis Program (2006-2009). There he performed extensive studies on dendritic cells and macrophages using multicolor flow cytometry. He subsequently joined the Rheumatology Department at Northwestern Memorial Hospital, Chicago from 2009 to 2011 as a Research Associate Scientist and continued studies in autoimmunity using flow cytometry. From 2011 to 2013, he worked as an Application and Product Manager with FlowJo, TreeStar Inc, USA for the Indian subcontinent and Middle East. He is experienced in flow cytometry experimental design, data acquisition, data analysis and presentation of immune-phenotyping, intracellular staining, cell proliferation, cell cycle, apoptosis, cytometric bead array etc. At present, he is based in Jaipur and running a flow cytometry consultancy company, “Flowcytometry Solutions (P) Ltd”, which imparts training and consultancy in the field of flow cytometry in India and neighboring countries. He is also a consultant to De Novo Software (FCS Express software), Venture Centre (CSIR-Bioincubator) and Quantum Technology Group, USA.          Email: <a href="mailto:flowsols@gmail.com">flowsols@gmail.com</a></p>
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**About the organizers**

	<p><b>About Venture Center</b></p> <p>Entrepreneurship Development Center (Venture Center) – a CSIR initiative – is a Section 25 company hosted by the National Chemical Laboratory, Pune. Venture Center strives to nucleate and nurture technology and knowledge-based enterprises by leveraging the scientific and engineering competencies of the institutions in the Pune region in India. The Venture Center is a technology business incubator supported by DST-NSTEDB. Venture Center focuses on technology enterprises offering products and services exploiting scientific expertise in the areas of materials, chemicals and biological sciences &amp; engineering. For more information, visit <a href="http://www.venturecenter.co.in/">http://www.venturecenter.co.in/</a></p>
	<p><b>About BIRAC Regional Bio-Innovation Center, Venture Center</b></p> <p>BIRAC Regional Bioinnovation Centre (BRBC) is the third regional centre of BIRAC and is located in Venture Center. BRBC aims to fill up key innovation ecosystem gaps for bio-based industry sectors and thus significantly impact the translation of high quality innovative ideas into viable and sustainable business enterprises. Some key BRBC initiatives are Venture Mentoring Service; Venture Base Camps; Regulatory Information and Facilitation Centre; Bio Incubation Practice School          For more information, visit: <a href="http://www.brbc.venturecenter.co.in/">http://www.brbc.venturecenter.co.in/</a></p>
	<p><b>About Bioincubator</b></p> <p>The BioIncubator at Venture Center aims to nucleate and nurture technology and knowledge-based enterprises leveraging knowledge in the areas of biotechnology (biopharma, agrobiotech, industrial biotech, clean technology), biomedical</p>



	<p>engineering/devices/ diagnostics, biomass value addition/ renewable fuels/chemicals/materials, bioinformatics, bio/medical services and related disciplines. Created with support from DBT-BIRAC under the Bioincubator Support Scheme. For more information, visit <a href="http://www.bioincubator.venturecenter.co.in/">http://www.bioincubator.venturecenter.co.in/</a></p>
	<p><b>About Cell Studio</b></p> <p>Cell Studio is a facility of the BIRAC supported BioIncubator at Venture Center, NCL Innovation Park, Pune, India. The Cell Studio is home to advanced scientific facilities for microscopy and imaging, flow cytometry, cell growth studies and tissue engineering. The Cell Studio aims to support selected areas of technology development and science entrepreneurship while also nurturing collaborations between researchers and industry/startup companies.</p> <p>For more information, visit <a href="http://www.venturecenter.co.in/cellstudio/">http://www.venturecenter.co.in/cellstudio/</a></p>
	<p><b>About Flowcytometry Solutions Pvt. Ltd.</b></p> <p>Flowcytometry Solutions (FlowSols) is an organization, which aims at providing complete solution to the researchers and clinicians on flow cytometry. It offer to provide support to the students and researchers engrossed to flow cytometry pitch, towards addressing problems pertaining to instrument handling, experiment design and applications, sample preparation, acquisition, data investigation and presentation. The mission of Flowcytometry Solutions Pvt. Ltd. is to provide a complete flow cytometry expertise, which can help researchers to innovate, lead and excel. For more information, visit <a href="http://www.flowsols.com">http://www.flowsols.com</a></p>