



Technical Workshops Series – 2019

## 3-Day Hands on Workshop on Flow Cytometry Basics, Cell Health, Multicolor Immunophenotyping, Data Analysis & Presentation - Wave 2

<b>Learn</b>	<p>Principles and applications of Flow Cytometry, Concepts of Multicolor Flow Cytometry, Spectral Overlap &amp; Compensation, Experimental &amp; Gating Controls, Cell Surface &amp; Intracellular Staining, Data Analysis and Presentation, MIFlowCyte Guidelines</p> <p>Hands-on sessions: Instrument startup, Template preparation, PMTV settings (Voltration), Threshold Settings, Sample Acquisition, Antibody Titration, Multicolor Immunophenotyping Cell Health Assays - Cell cycle, Viability, Apoptosis, ROS detection Data Analysis with offline Software (Basic &amp; Advanced)</p>								
<b>Organized by</b>	Bioincubator and Cell studio at Venture Center Flowcytometry Solutions Pvt. Ltd.								
<b>Supported by</b>	NIDHI-Centre of Excellence (CoE) at Venture Center supported by Department of Science and Technology, Government of India ( <a href="http://nidhicoe.venturecenter.co.in/">http://nidhicoe.venturecenter.co.in/</a> )								
<b>For whom</b>	<b>BIRAC grantees   Researchers and students   Industry professionals</b>								
<b>When</b>	<b>Tuesday-Thursday   19- 21 November 2019   9 am – 6 pm</b>								
<b>Where</b>	Training room, Venture Center, 100 NCL Innovation Park, Dr. Homi Bhabha (Pashan) Road, Pune-411008								
<b>Contact</b>	<p><b>Technical queries:</b> Ms Sujaya Ingale   9172232214 <a href="mailto:lab@venturecenter.co.in">lab@venturecenter.co.in</a></p> <p><b>Logistical queries:</b> Ms Lipika   020-2586 5877/76 <a href="mailto:eventsdesk@venturecenter.co.in">eventsdesk@venturecenter.co.in</a></p>								
<b>Cost</b>	<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> </tr> </thead> <tbody> <tr> <td>Students with valid ID card</td> <td>Rs. 6000/-</td> </tr> <tr> <td>Micro and Small Enterprises/Individuals</td> <td>Rs. 8000/-</td> </tr> <tr> <td>Medium and large companies</td> <td>Rs. 11000/-</td> </tr> </tbody> </table> <p>Limited seats: 20 ; First-come-first-serve</p> <p><b>Register here:</b> <a href="http://bit.ly/fc-nov19">http://bit.ly/fc-nov19</a></p> <p style="color: red;">Registration closes once 20 seats are full or 12 November 2019 (whichever comes sooner)</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>Fees paid is not refundable and non transferable under any circumstances</li> </ul>	Category	Fees	Students with valid ID card	Rs. 6000/-	Micro and Small Enterprises/Individuals	Rs. 8000/-	Medium and large companies	Rs. 11000/-
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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 researchers. The workshop will be conducted by an expert, having vast experience in flow data acquisition and data 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

**Theory:** Principles and applications of Flow Cytometry, Concepts of Multicolor Flow Cytometry, Spectral Overlap & Compensation, Experimental & Gating Controls, Cell Surface & Intracellular Staining, Data Analysis and Presentation, MIFlowCytometer Guidelines

**Hands-on lab sessions:** Instrument startup, Template preparation, PMTV settings (Voltration), Threshold Settings, Sample Acquisition, Antibody Titration, Multicolor Immunophenotyping  
Cell Health Assays - Cell cycle, Viability, Apoptosis, ROS detection  
Data Analysis with offline Software (Basic & Advanced)

## Course includes

- Course notes including slides, case studies, application notes
- Lab demo and hands on session
- Access to restricted website with online compilation of resources for flow cytometry
- One-on-one feedback on data analysis exercise
- Certificate of Participation issued by Venture Center
- Course includes 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	Venue
<b>Day 1, 19<sup>th</sup> Nov 2019</b>		
0830-0900	Registration, Tea & snacks	Foyer, VC
0900-0915	Introduction to the course and faculty	Training room, VC
0915-1100	Introduction of Flow Cytometry and its applications	Training room, VC
1100-1115	Tea break	Foyer, VC
1115-1300	KYC: Know Your Cytometer -Decoding the Black box	Training room, VC
1300-1400	Lunch	Cafeteria, VC
1400-1600	Lab 1: Instrument startup and demonstration of instrument setup; Template preparation for data acquisition, PMT Voltage setting, Threshold, Antibodies Titration, Stain index etc.	Bio Lab-4, VC
1600-1615	Tea break	Foyer, VC
1615-1800	Lab 2: Cell Health Assays – Cell cycle and Viability	Bio Lab-4, VC
<b>Day 2, 20<sup>th</sup> Nov 2019</b>		
0830-0900	Tea & snacks	Foyer, VC
0900-0930	Review of Day 1 and queries	Training room, VC
0930-1100	How to set up and design a Multicolor Flow Cytometry experiment? Concepts of Multicolor Flow Cytometry: Fluorochromes, Stain Index, Spectral Overlap, Compensation Controls, Experimental Controls, Cell Surface and Intracellular staining etc.	Training room, VC
1100-1115	Tea break	Foyer, VC
1115-1300	Concepts of Compensation for Multicolor Flow Cytometry	Training room, VC
1300-1400	Lunch	Cafeteria, VC
1400-1600	Lab 3: Cell Health Assays – Apoptosis and ROS detection	Bio Lab-4, VC
1600-1615	Tea break	Foyer, VC
1615-1800	Lab 4: Immunophenotyping – Staining of cells (Whole blood profiling) for multicolor flow cytometry and preparation of compensation and Experimental controls. Sample acquisition and Data analysis	Bio Lab-4, VC
<b>Day 3, 21<sup>st</sup> Nov 2019</b>		
0830-0900	Tea & snacks	Foyer, VC
0900-0930	Review of Day 2 and queries	Training room, VC
0930-1100	Flow Data Analysis - What to do and what not to do?	Training room, VC
1100-1115	Tea break	Foyer, VC
1115-1200	Analysis of Flow Data and Reporting Results—Discussion about Fundamental Statistics and introduction to MiFlowCyte: Data Presentation Guidelines.	Training room, VC
1200-1300	Lab 5: Flow Cytometry data analysis on software (Basic and Advanced)	Training room, VC
1300-1400	Lunch	Cafeteria, VC
1400-1600	Lab 6: Flow Cytometry data analysis on software continues	Training room, VC
1600-1615	Tea break	Foyer, VC
1615-1700	Troubleshooting, Discussion and Q&A	Training room, VC
1700-1730	Test, evaluation and feedback	Training room, VC
1730-1800	Closure - Certificate distribution	Training room, VC



## Course Faculty



**Hemant Agrawal, Ph.D.**

**Director—Flowcytometry Solutions Pvt. Ltd.**

**Member—Organizing committee for the Indo-US Cytometry Workshops**

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), Bio-Rad, Venture Centre (CSIR-Bioincubator) and Zydus-Cadila (VTC).

Email: [flowsols@gmail.com](mailto:flowsols@gmail.com)

## Venture Center team



**Sujaya Ingale**

**Senior Manager – Scientific Initiatives**

Sujaya manages scientific facilities and services at Venture Center which includes flow cytometry and confocal imaging facility. She has done M.Sc. in Microbiology from University of Pune. She has several years of research experience in biotechnology projects, experience in setting up and oversight of Venture Center’s lab facilities, running and assisting in proof-of-concept projects and in creating, planning and organizing technical and scientific workshops for life sciences students and scientists.

Email: [lab@venturecenter.co.in](mailto:lab@venturecenter.co.in)



**Tejasvi Tajane**

**Lab Associate**

Tejasvi is M.Sc in Analytical Chemistry from Modern College, Pune. She has worked as Teaching Assistant at IISER Pune for 9 years. Her responsibilities at Venture Center include smooth operations of the shared lab equipment, support incubatees and budding entrepreneurs by offering hot lab services.


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### About the organizers

	<p><b>About Venture Center</b>          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 the Department of Science &amp; Technology’s National Science &amp; Technology Entrepreneurship Development Board (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 BioIncubator</b>          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 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>          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. 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>          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>

### Supported by

	<p>The National Science and Technology Entrepreneurship Development Board (NSTEDB), Department of Science and Technology, Government of India has awarded Venture Center with the status of a NIDHI-CoE (National Initiative for Developing and Harnessing Innovations – Center of Excellence an umbrella programme conceived by DST). This award is accompanied by a grant of Rs. 50 Cr for 5 year duration to help Venture Center scale-up its activities and demonstrate greater success to accommodate more than 100 startups at any time and to upgrade and add new facilities for supporting science and technology based startups. <b>NIDHI-COE is catalyzed and supported by NSTEDB Division, Department of Science and Technology, New Delhi.</b> For more information, visit: <a href="http://nidhicoe.venturecenter.co.in/">http://nidhicoe.venturecenter.co.in/</a></p>
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