



Technical Workshops Series – 2018

## Three-Day Hands on Workshop on Flow Cytometry : Basics, Apoptosis, Cell Cycle, Cell Viability and Data Analysis

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

<b>Learn</b>	<ul style="list-style-type: none"> <li>Principles and applications of flow cytometry, Instrumentation,</li> <li>Flow cytometry experiment design, Spectral overlap, Compensation, Controls, Concepts and Basics of Flow Data Analysis and Presentation, Quick update on latest techniques/developments; Best practices</li> <li>Demonstrations: Instrument startup, Instrument setup, Template preparation for data acquisition, PMT Voltage setting, Threshold, Antibodies Titration, Compensation etc.</li> <li>Hand-on Cell cycle analysis, cell viability and Apoptosis analysis. Flow Data analysis.</li> </ul> <p>The workshop is intended to be basic</p>								
<b>Organized by</b>	<ul style="list-style-type: none"> <li>Bioincubator and Cell studio at Venture Center</li> <li>Flowcytometry Solutions Pvt. Ltd.</li> </ul>								
<b>For whom</b>	<ul style="list-style-type: none"> <li>Industry professionals</li> <li>Researchers and students</li> </ul>								
<b>When</b>	<b>Monday-Wednesday   16- 18 April 2018   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   <a href="tel:020-25865877">020-25865877/75/76</a>   <a href="mailto:lab@venturecenter.co.in">lab@venturecenter.co.in</a></p> <p><b>Logistical queries:</b> Ms Lipika   <a href="tel:020-25865877">020-25865877/75/76</a>   <a href="mailto:eventsdesk@venturecenter.co.in">eventsdesk@venturecenter.co.in</a></p>								
<b>Cost</b>	<p><b>Limited seats: 20 ; First-come-first-serve</b></p> <table border="1" style="width: 100%;"> <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>NOTE</p> <ul style="list-style-type: none"> <li>Definitions of Micro Small and Medium Enterprise: <a href="http://dcmsme.gov.in/ssiindia/definaiton_msme.htm">http://dcmsme.gov.in/ssiindia/definaiton_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

**Talks:** Principles and applications of flow cytometry, Instrumentation, Flow cytometry experiment design, Concepts and Basics of Flow Data Analysis and Presentation

**Demonstrations:** Instrument startup, Instrument setup, Template preparation for data acquisition, PMT Voltage setting, Threshold, Antibodies Titration, Compensation etc.

### Hands-on lab sessions:

- Cell cycle analysis using propidium iodide - sample preparation, acquisition and data analysis.
- Apoptosis analysis using Annexin V and propidium iodide - sample preparation, acquisition and data analysis.
- Cell viability assay – Live/Dead assay - sample preparation, acquisition and data analysis.

## 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, 16<sup>th</sup> April 2018</b>		
0830-0900	Registration	Foyer, VC
0900-0915	Introduction to the course and faculty	Training room, VC
0915-0930	Tea & snacks	Foyer, VC
0930-1100	Introduction of Flow Cytometry and its applications	Training room, VC
1100-1200	KYC: Know Your Cytometer -Decoding the Black box	Training room, VC
1200-1330	How to set up and Design a Flow Cytometry Experiment? Fluorochromes, Spectral overlap and Compensation, Controls, Antibodies selection and their Titration	Training room, VC
1330-1430	Lunch	Cafeteria, VC
1430-1730	Lab 1: Instrument startup and demonstration of instrument setup; Template preparation for data acquisition, PMT Voltage setting, Threshold, Antibodies Titration, Compensation	Bio Lab-4, VC
1500-1515	Tea break in between the session	Foyer, VC
<b>Day 2, 17<sup>th</sup> April 2018</b>		
0900-0915	Review of Day 1 and queries	Training room, VC
0915-0930	Tea & snacks	Foyer, VC
0930-1100	Lab 2: Cell cycle analysis using propidium iodide	Bio Lab-4, VC
1100-1230	Lab 3: Cell Viability Assay – Live/Dead assay iodide	Bio Lab-4, VC
1230-1300	What is apoptosis and how to study apoptosis using flow cytometry?	Training room, VC
1300-1400	Lunch	Cafeteria, VC
1400-1730	Lab 4: Apoptosis analysis using Annexin V and propidium iodide (sample preparation and acquisition).	Bio Lab-4, VC
	Tea break in between the session	Foyer, VC
<b>Day 3, 18<sup>th</sup> April 2018</b>		
0900-0930	Review of Day 2 and queries	Training room, VC
0930-1100	Concepts and Basics of Flow Data Analysis and Presentation—What to do and what not to do?	Training room, VC
1100-1115	Tea	Foyer, VC
1115-1300	Analysis of Flow Data and Reporting Results—Discussion about Fundamental Statistics and introduction to MiFlowCyte: Data Presentation Guidelines.	Training room, VC
1300-1400	Lunch	Cafeteria, VC
1400-1630	Lab 5: Hands on flow data analysis on software, troubleshooting, discussion and Q&A	Training room, VC
1645-1700	Tea	Foyer, VC
1700-1730	Test, evaluation and feedback	Training room, VC
1730-1800	Closure - Certificate distribution	Training room, VC



## 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).

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### **Sujaya Ingale**

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)



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 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.</p> <p>For more information, visit <a href="http://www.venturecenter.co.in/">http://www.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 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>