



Technical Workshops Series – 2018

## 5 Days Hands-on Workshop on Molecular Biology Techniques - Organized by Venture Center

<b>Learn</b>	<ul style="list-style-type: none"><li>Principles, techniques and applications of Molecular biology/ Genetic Engineering.</li><li>Applications in domains of Plant molecular biology, Human diagnostics, Bioinformatics in preventive therapeutics.</li><li>Hands on session: Genomic DNA and RNA isolation from Alphonso Mango, Gel electrophoresis, cDNA Synthesis, PCR, Cloning, Transformation, Plasmid DNA isolation, Restriction Digestion, Real time PCR, Sequencing.</li></ul>								
<b>Organized by</b>	<ul style="list-style-type: none"><li>Bioincubator at Venture Center</li></ul>								
<b>For whom</b>	<ul style="list-style-type: none"><li>Students &amp; Researchers</li><li>Entrepreneurs</li><li>Clinicians</li><li>Industry professionals</li></ul>								
<b>When</b>	<b>Tuesday-Saturday   22-26 May 2018   8.30 am – 6.00 pm</b>								
<b>Where</b>	Training room, Venture Center, 100 NCL Innovation Park, Dr. Homi Bhabha (Pashan) Road, Pune-411008								
<b>Contact</b>	<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> <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>								
<b>Cost</b>	<table border="1"><thead><tr><th>Category</th><th>Fees</th></tr></thead><tbody><tr><td>Students with valid ID card</td><td>Rs. 7000/-</td></tr><tr><td>Micro and Small Enterprises/ academic institutions/Individuals</td><td>Rs. 9000/-</td></tr><tr><td>Medium and large companies</td><td>Rs. 12000/-</td></tr></tbody></table> <p><b>Limited seats: 20 ; First-come-first-serve</b></p> <p><b>Register here:</b> <a href="https://bit.ly/2HIdjEb">https://bit.ly/2HIdjEb</a> <b>Registration closes once 20 seats are full or 19 May 2018 (whichever comes sooner)</b></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	Students with valid ID card	Rs. 7000/-	Micro and Small Enterprises/ academic institutions/Individuals	Rs. 9000/-	Medium and large companies	Rs. 12000/-
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## Introduction

Molecular biology is study of biology at the molecular level. The field overlaps with other areas of biology and chemistry, particularly genetics and biochemistry. Molecular biology revolves around the central dogma DNA → RNA → protein.

This workshop includes theory as well as hands on sessions on basic techniques used in molecular biology such as Genomic DNA isolation, RNA Isolation, plasmid DNA isolation, gel electrophoresis, cDNA synthesis, Restriction Digestion, Cloning, transformation and PCR. The workshop also includes demonstration of real time PCR and Capillary Sequencing.

Participants will be isolating DNA from Alphonso mango pulp. It will be then cloned into a vector and confirmed by transformation. cDNA of the same sequence will be synthesized from RNA and quantified by Real time PCR. The gene responsible for peculiar flavour of Alphonso mango will be sequenced and analyzed.

## Course Outline

The workshop will include theory as well as hands-on lab experiments

### **Theory sessions**

- Workshop overview in relation to flavor gene in Alphonso mango
- Basics of Molecular Biology
- Applications in Agro biotech – India's success story
- Applications in Medical diagnostics: Relevance of real-time PCR in cancer diagnostics
- Overview of Bioinformatics

### **Experimental sessions**

- Genomic DNA isolation from Alphonso mango
- Plasmid DNA isolation
- RNA Isolation
- Restriction Digestion of DNA
- Transformation
- cDNA Synthesis
- Cloning
- PCR

**Demonstrations:** Real time PCR and Capillary Sequencing

## Course includes

- Access to restricted website with online compilation of resources of archival value
- Certificate of Participation issued by Venture Center
- Breakfast, lunch and Tea 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)



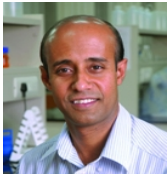
## Workshop Schedule

Time	Session title	Lead
<b>22 May 2018</b>		
0830 – 0900	Registration & snacks	
0900 – 0930	Introduction to the course and faculty	
0930 – 1030	Workshop overview	Dr. Vidya Gupta
1030-1100	Tea break	
1100 – 1300	Practical – Genomic DNA isolation (Part I)	
1300-1400	Lunch break	
1400-1600	Practical – RNA isolation (Part I)	
1600-1630	Tea break	
1630 – 1730	Practical – Competent cells preparation	
<b>23 May 2018</b>		
0830 – 0900	Registration & snacks	
0900 – 1030	Theory – Basics of Molecular Biology	Dr. Anjan Banerjee
1030 – 1045	Tea break	
1045 – 1230	Practical – DNA Isolation (Part II)	
1230 – 1330	Practical – RNA Isolation (Part II)	
1330 – 1430	Lunch Break	
1430 – 1530	Practical – DNA Isolation (Part III)	
1530– 1600	Practical – Gel loading (RNA)	
1600-1630	Tea Break	
1630 – 1730	Practical – PCR (cDNA synthesis)	
<b>24 May 2018</b>		
0830 – 0900	Registration & snacks	
0900 – 1000	Theory – Applications of Molecular Biology and genetic engineering in Agro biotech – India's success story	Dr. Vidya Gupta
1000 – 1030	Tea break	
1030 – 1130	Practical – DNA Isolation (Part IV)	
1130 – 1230	Practical – Quantification of DNA	
1230 – 1330	Practical – Amplification PCR set up	
1330 – 1430	Lunch Break	
1430 – 1530	Practical – Gel casting and loading of PCR products	
1530 – 1600	Tea Break	
1600 – 1700	Practical – Purification of DNA	
1700 – 1730	Practical – Ligation set up	
<b>25 May 2018</b>		
0830 – 0900	Registration & snacks	
0900 – 1000	Theory - Applications in Medical diagnostics: Relevance of real-time PCR in cancer diagnostics	Dr. Rupali Gadkari
1000 – 1030	Tea break	
1030 – 1130	Practical – Restriction Digestion	
1130 – 1230	Demonstration – Real time PCR	
1230 – 1330	Practical – Transformation	
1330 – 1430	Lunch Break	
1430 – 1630	Practical – Plasmid Isolation	
1630 – 1730	Practical – Plating of Transformed cells	



26 May 2018		
0830 – 0900	Registration & snacks	
0900 – 1000	Theory - Overview of Bioinformatics	Dr. Urmila Kulkarni-Kale
1000 – 1030	Tea break	
1030 – 1100	Practical – Gel loading (Plasmid)	
1100 – 1300	Result Analysis	
1300 – 1400	Lunch break	
1400 – 1600	Demonstration – Capillary Sequencer	
1600 – 1630	Tea break	
1630 – 1730	Concluding session	

### Speakers (in alphabetical order of last names)



#### **Dr. Anjan Banerjee**

Assoc. Professor and Co-Chair, Indian Institute of Science Education and Research (IISER Pune)

Dr. Anjan K. Banerjee is Assoc. Professor and Co-Chair in Biology Division, Indian Institute of Science Education and Research (IISER Pune), He has done his Ph.D. Biotechnology, 2001, SPPU (Formerly Univ. of Pune, Research work at NCL Pune) and his Postdoctoral Research in Interdepartmental Plant Biology and Center for Plant Transformation, Agronomy, Iowa State University (ISU), Ames, Iowa, USA.

He's honored with many Awards like, EMBO travel award to give invited talk in Intercellular communication in development and disease, Berlin; EMBO travel award to give talk in New Shores in land plant evolution scheduled in Lisbon, Portugal; Best scientist award By Rotary Club of Pune, Shivajinagar; Task Force Member for Frontiers in Plant Science Dept. of Biotechnology. Govt. of India; Elected executive board member, All Indian Cell Biology Association; Board member, Indian Society of developmental Biology (InSDB); Elected Treasurer, Plant Tissue Culture Association (PTCA), India from 2015; Member, IISER Pune internal leadership cell from April, 2015; Coordinator, DST INSPIRE Faculty monitoring cum interaction meet, IISER Pune; International Scientific Board Member, Plant Mol. Biol. congress, Brazil and many more.

He has 30 National and International publications, 4 Patents and 4 book chapters. Dr. Banerjee visited, Argentina, Brazil, China, Finland, Germany, USA, Portugal, as in independent faculty to attend international meetings/present invited talks/bilateral grants/cooperation etc.



#### **Dr. Rupali Gadkari**

Associate Director, Medical Genetics & Genomics

Dr. Rupali has about 15 years of experience post-Phd, working in academic research as well as genomics industry. She has done PhD from Indian Institute of Science, Bangalore studying protein-protein interactions using antibodies as tools. In, Post-doctoral research she has extended the study of protein-protein interactions using Computational biology and Bioinformatics tools. For past five years she has been working in the field of genomics in companies namely Strand Life sciences, Bangalore, GenePath Dx, Pune. She also has 2 years of experience working at a joint research center between DMC Children's Hospital of Michigan and Wayne State University, Michigan US. Her publications are in various international journals and conferences. Currently at GenePath Dx she's heading R&D pertaining to Genomics services and look after the contract research wing.



**Dr. Vidya Gupta**

Emeritus scientist at CSIR-NCL since 2016

Dr. Gupta has several years of research experience on various aspects of plant molecular biology including molecular markers assisted QTL analysis, analysis and engineering of secondary metabolites of plant origin and molecular and biochemical aspects of plant pathogen interaction. She has authored over 100 research papers and is recipient of several prestigious awards as well as research fellowships. She received the prestigious CSIR award for S and T innovations for rural development in 2007.



**Dr. Urmila Kulkarni-Kale**

Information Scientist, Bioinformatics Centre (Savitribai Phule Pune University Pune)

Dr. Urmila Kulkarni-Kale has obtained PhD in Bioinformatics from Savitribai Phule Pune University (formerly University of Pune) and hers is the second Ph.D. in Bioinformatics in India.

She is associated with the Bioinformatics Centre since its inception and has worked at various positions starting as a student to the Director (during 2008-2010) with the primary position of Information Scientist.

Her group is working in the areas of Bioinformatics, Immunoinformatics, Comparative genomics, Phyloinformatics, Molecular modeling & simulations with an objective to study viral evolution. She has designed and developed various databases, algorithms and servers for archival, analysis and interpretation of data, some of which are the firsts in the respective category. She has published 35 papers in the peer reviewed high impact factor international journals with average impact factor >3.2 and H-index of 13. She has also published 6 book-chapters and is an inventor on a joint international patent on development of peptide vaccine for Japanese encephalitis virus.

She is a recognized Ph.D. guide with >20 years of teaching experience. Currently, her group consists of 8 PhD students and 3 research assistants. Two students have been awarded PhD in India and Norway respectively. She has been faculty for > 80 national and >15 international workshops organized by WHO, TDR, ICGEB & NCBI. She has been instrumental for designing the syllabus of masters' and PhD course work in Bioinformatics for various institutes and universities. She has significantly contributed in design, coordination and implementation of the bioinformatics certification examination (BINC) on behalf of the DBT, Govt. of India.

She has national and international collaborations, which are funded by various agencies with a total outlay of ~117 lacs. She is a recipient of the PARAM AWARD instituted by C-DAC (1991), the Agharkar Gold medal (1999) and the Best Publication Award in InCoB 2016. Urmila is an elected fellow of the Maharashtra Academy of Sciences.



**Dr Manisha Premnath**

General Manager at Venture Center

Dr. Manisha is General Manager at Venture Center. Manisha holds a Ph.D in Biotechnology from University of Pune and Post-doctoral training from University of Cambridge, UK. She has been a Chevening Rolls Royce Science, Innovation, Policy and Leadership Programme (CRISP) Fellow at the Said Business School, University of Oxford, UK during 2015 where she had the opportunity to study technology innovation ecosystems. She has research experience in biotechnology, microbiology, fungal biotechnology, molecular biology and molecular virology. She has experience in planning and setting up of advanced scientific facilities and program management.



	<p><b>Dr. V Premnath</b>          Founding Director of Venture Center and Head, NCL Innovations</p> <p>Dr. Premnath is Founding Director of Venture Center and Head, NCL Innovations. He holds a B.Tech from the Indian Institute of Technology - Bombay and a Ph.D. from the Massachusetts Institute of Technology, USA. He has also been a Chevening Technology Enterprise Fellow with the Centre for Scientific Enterprises, London Business School and Cambridge University, UK. He brings with him considerable experience in technology development and commercialization, working with start-up companies (in Cambridge-UK and India) and engaging with large corporations on research and consulting projects as project leader.</p>
<b>Lab Faculty (in alphabetical order of last names)</b>	
	<p><b>Dr. Mahesh Dharne</b>          Senior Scientist, Head, National Collection of Industrial Microorganisms (NCIM), National Chemical Laboratory</p> <p>Dr. Dharne has done his PhD in Biotechnology (2003-2007), University of Pune. He also did Postdoc (2010-2011) from University of Maryland, UMB, Baltimore, USA. In 2011 he was Research Scientist in , ICMR-NIV, Pune</p> <p>He is now Senior Scientist (from 2012- ahead), CSIR-NCL, Pune. He also worked at US Federal Core Laboratory (USDA-ARS) in collaboration with US Army Research Institute (ARI).</p>
	<p><b>Ms. Pranjali Oak</b>          Senior Research Fellow, National Chemical Laboratory</p> <p>Pranjali has done M.Sc in Microbiology from Abasaheb Garware College, Pune. Working as a Ph.D. scholar in CSIR-National Chemical Laboratory, Pune under the guidance of Dr. Vidya Gupta on molecular, biochemical and metabolomic aspects of spongy tissue disorder in Mango.</p>
<b>Venture Center team (in alphabetical order of last names)</b>	
	<p><b>Ms. Mitali Ghare</b></p> <p>Mitali is currently an intern at Venture Center under Biotech Industrial Training Programme. She has done M.Sc. in Biotechnology from Fergusson College, Pune.</p>
	<p><b>Sujaya Ingale</b></p> <p>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.</p>
	<p><b>Dr. Mugdha Lele</b></p> <p>Dr. Lele is currently working as Manager - Social Innovations at Venture Center. She is Ph.D in Health Sciences from University of Pune. Her areas of interests include epidemiological profiling and molecular diagnostics for diseases of public health importance. She has been a Chevening Rolls Royce Science, Innovation, Policy and Leadership Programme (CRISP) Fellow at the Said Business School, University of Oxford, UK during 2016, where her focus was on Social Innovations and entrepreneurship.</p>



**Akansha Mishra**

Akansha is currently working as Lab Associate- Venture Center, She did her MSc in Biotechnology from Gurunanak Dev University and have total 5 years of experience from IIT, Kanpur

### About the organizers



#### About Venture Center

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 & Technology's National Science & 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 & engineering.

For more information, visit <http://www.venturecenter.co.in/>



#### About Bioincubator

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

<http://www.bioincubator.venturecenter.co.in/>