

# C-CAMP INDIGENISATION OF DIAGNOSTICS PROGRAM

# 2022

Enabling one million indigenous tests per day  
for COVID-19 in India

A step towards Atmanirbhar Bharat for Molecular Diagnostics

GUIDED BY



Office of the Principal Scientific Adviser  
to the Government of India

SUPPORTED BY



FUNDED BY



# COVID-19 PANDEMIC AND INDIGENISATION OF DIAGNOSTICS

In March 2020, as the world was beginning to battle COVID-19, India grappled with its preparedness to manage the pandemic. There was 80% dependence on global markets for diagnostic kits, their components, and reagents. It was imperative that the country's molecular diagnostics community step up to manufacture affordable, accessible, and high-quality indigenous diagnostic kits. In the early days of the pandemic, the cost of each RT-PCR test was about INR 5000. This was not affordable, hence not accessible to a majority of population in a scenario where controlling the pandemic was highly dependent on test-track-isolate approach.

As the virus continued to mutate and spread across the country, more than 30 million cases were reported in India alone till June 2021. In this context, building a support system for indigenous diagnostic manufacturers became a vital step towards developing self-reliance in a range of diagnostic kits. This would facilitate identification and testing of new variants, assuring safety in workplaces.

The CCAMP-InDx programme was conceptualised as a response to the need to support Indian diagnostic manufacturers. The programme was flagged off to establish a strong supply chain network of Indian Micro, Small and Medium Enterprises (MSMEs) and work side by side with them to ensure that international standards of quality were met and capacities scaled up. The goal was to reach a stage where these manufacturers would be able to produce, supply, and execute one million indigenous diagnostic kits per day.

This programme is funded by The Rockefeller Foundation and executed by the Centre for Cellular and Molecular Platforms (C-CAMP), Bangalore, India, and constitutes a governance team offering strategic directions, a programme management unit with a functional team with operational responsibilities, and the Centres of Excellence (CoEs) for scientific and technical support.

With the onset of the pandemic in India, the first phase was dominated by multiple challenges responsible for falling short of meeting the demands for COVID testing across the country. The four dimensions of the key challenges outlined below were the primary focus areas for the programme.



## Cost

Diagnostic kits for SARS CoV2 detection were exorbitant, making them unaffordable for general public. This was largely due to high dependency on global imports as indigenous manufacturers did not have the requisite capacities.



## Access

India, with its vast hinterland and population, had severe challenges in offering access to COVID testing. RT-PCR machines and laboratory infrastructure were in short supply when the pandemic started. Increasing capacities for RT-PCR-based tests and creating access was paramount, but alternate point-of-care (POC) testing was also the need of the hour.



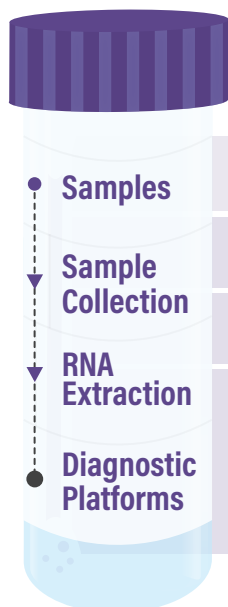
## Quality

High demand in the country led to an onslaught of imported kits from multiple countries offering competitive pricing. Meeting the testing needs came with major quality issues. As unbroken cold chains were far and few in between, temperature surges would impact the quality of the testing kits, increasing the risk of false negatives.



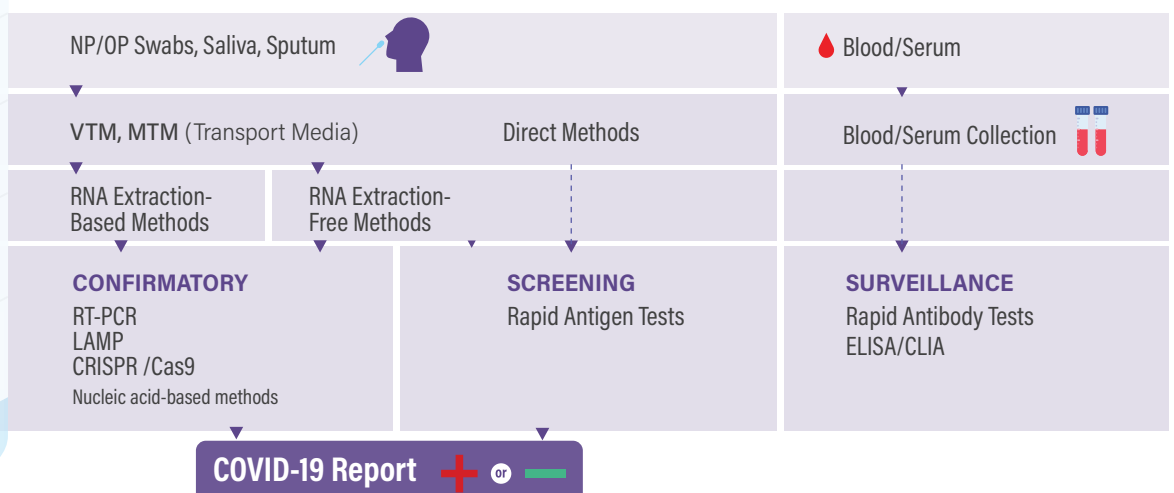
## Availability

Diagnostic kits were in high demand due to the pandemic. Supply chain issues arose due to an erratic supply of imported kits, compounded by quality challenges. Hence, the unequivocal call for the programme was to support indigenous manufacturers to build their capacities to quality to meet the countrywide demands.



## TEST, TRACK, ISOLATE. BUT HOW?

The current cohort of COVID-19 tests include:





# GAPS IDENTIFIED AND ADDRESSED BY CCAMP-InDx

High-quality components and reagents for molecular diagnostic kits that Indian manufacturers depend on the global markets for:

**RT-PCR, LAMP** - Master mixes, dNTPs, Primers/Probes, Amidites

**CRISPR/Cas9** - Paper strips, Enzymes

**Rapid Antigen/Antibody Test** - LFA strips, Antigens/Antibodies

**Additional focus areas** - Sample collection devices, RNA Extraction-free methods, alternate sample formats like saliva

**CCAMP-InDx is helping fill these gaps through:**

1) Indigenisation

2) Optimisation

3) Commercialisation

4) Scale-up

## CCAMP-InDx: VOCAL FOR LOCAL

In building the country's self-reliance in molecular diagnostics, CCAMP-InDx is at the forefront uniting local manufacturers, service providers, regulators, government agencies, and, most importantly, research institutions to leverage knowledge and expertise in building quality and capacity for molecular diagnostics.

Impediments to indigenous manufacturing are being removed. Collaborations across the country are being nurtured and Indian companies are beginning to make a global impact.

## BOTTLENECKS



### Marketplace

Lack of a consortium to bring together all stakeholders in Indian diagnostic space to interact, collaborate, and innovate



### Supply chain

Gaps in supply chain for reagents and components, scale-up, and partnering options



### Service providers

Absence of an independent agency to provide technical support for quality testing and process development

CCAMP-InDx is addressing these needs and problems with a rigorously formulated three-pronged approach to further the mission of manufacturing globally competitive products.

## THREE-PRONGED CCAMP-InDx APPROACH

1

### DIGITAL MARKETPLACE

- Establishing supply chain network of indigenous diagnostic ecosystem
- Facilitating negotiation, buying, and selling of products and services



2

### OUTREACH

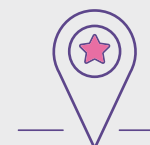
- Reaching out to and onboarding diagnostics manufacturers and service providers into the programme
- Facilitating networking through discussions and round table meetings



3

### CENTRES OF EXCELLENCE

- Bringing together subject matter expertise, academic excellence, and state-of-the-art cutting-edge technologies
- Offering scientific and technical support to enhance quality, manufacturing capacities, and clinical validations



### GOAL

Enable Indian manufacturers to develop diagnostic kits that would be used in executing 1 million COVID-19 tests per day

# CCAMP-InDx DIGITAL PLATFORM

## Connecting everyone within the diagnostic ecosystem

### What is CCAMP-InDx Digital Platform?

CCAMP-InDx Digital Platform is an online marketplace for indigenous diagnostic kits, reagents, ancillary products, and supporting services needed by indigenous companies. Tata Consultancy Services (TCS) has developed this platform pro bono.

### WHAT CAN IT DO?



Create an integrated supply chain



Identify needs and challenges



Present options for indigenous ingredients

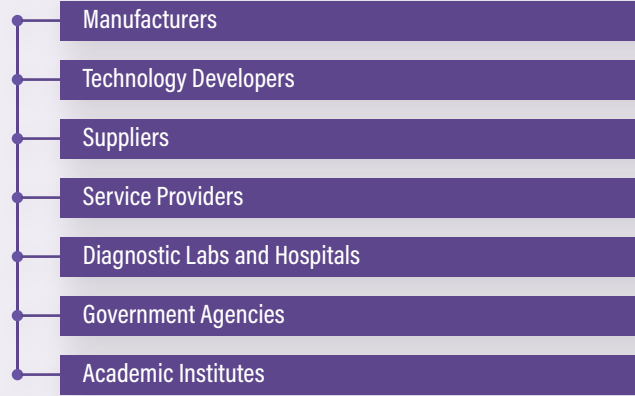


Provide visibility to capacities



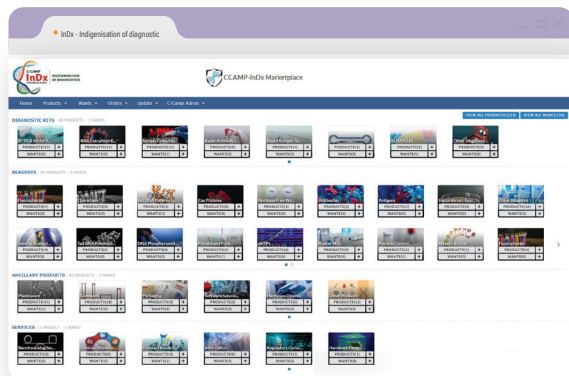
Access to new technologies

## CCAMP-InDx Ecosystem



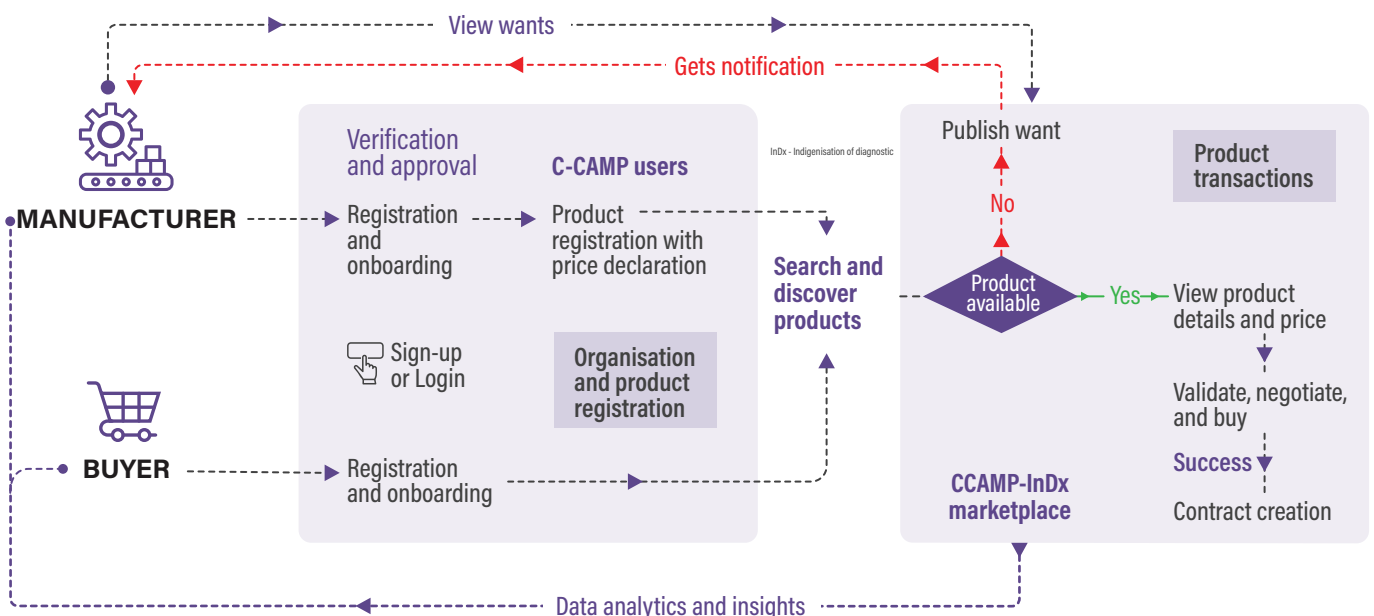
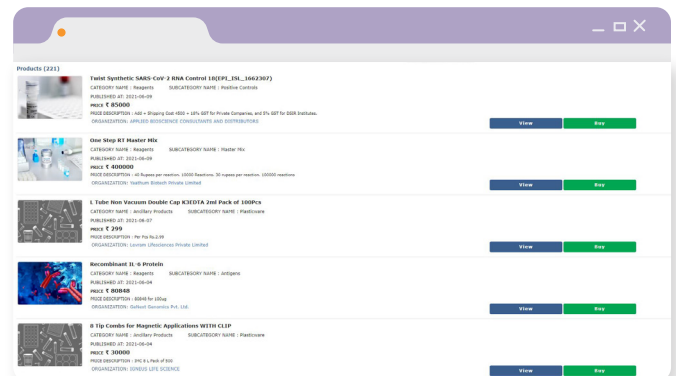
## HOW DOES IT WORK?

### View of the Homepage



### Product/Service Listing

Powered by  
**tcs** TATA  
CONSULTANCY  
SERVICES





## UNITED WE STAND, STRIVE, AND SUCCEED

Bringing institutional expertise, world-class infrastructure, and regulatory rigour to every single indigenous manufacturer to drive affordability, accessibility, and global-quality diagnostics in India.

### HOW?

CCAMP-InDx assembled a stellar team of subject matter experts from various areas of science and technology. These teams, spread across eight Centres of Excellence, offer their expertise and laboratory capabilities to support manufacturers in ensuring high-quality materials to produce diagnostic kits.

## CAPABILITIES OF THE CCAMP-InDx CENTRES OF EXCELLENCE (CoEs)



Enhance the **quality** of indigenously manufactured reagents and components



Support with **clinical** development of diagnostic kits



Offer **scale-up** process technologies for enzymes of diagnostic importance



Evaluate **interchangeability** of reagents and components from indigenous sources



Adopt **best practices** in quality and manufacturing to meet global standards

## CCAMP-InDx CoEs



- 1 CoE for Chemistry**  
**CoE Lead: Prof Seergazhi G. Srivatsan**  
Performs chemical characterisation and qualification of reagents for development and commercialisation of diagnostic kits



- 2 CoE for Clinical Studies**  
**CoE Lead: Prof Colin Jamora**  
Conducts clinical studies for the development and commercialisation of diagnostic kits



- 3 CoE for Antigen/Antibody**  
**CoE Leads: Dr Nalam Madhusudhana Rao, Dr Feroz Musthafa**  
Design and development of high-quality antigen- and antibody-based diagnostics



- 4 CoE for Biologics**  
**CoE Lead: Dr Saravanan Palani**  
Process development for high-quality enzymes and biologics for molecular diagnostics



- 5 CoE for Business Analytics**  
**CoE Lead: Rashmi (Rohini) Pimpale**  
Provides business plans for molecular diagnostics enterprises, formulates pricing strategy, and builds economic cases to attract funds



- 6 CoE for Quality**  
**CoE Lead: Dr Mitali Samaddar**  
Designs quality control strategy and offers quality testing, interchangeability, analytical validation, and benchmarking studies

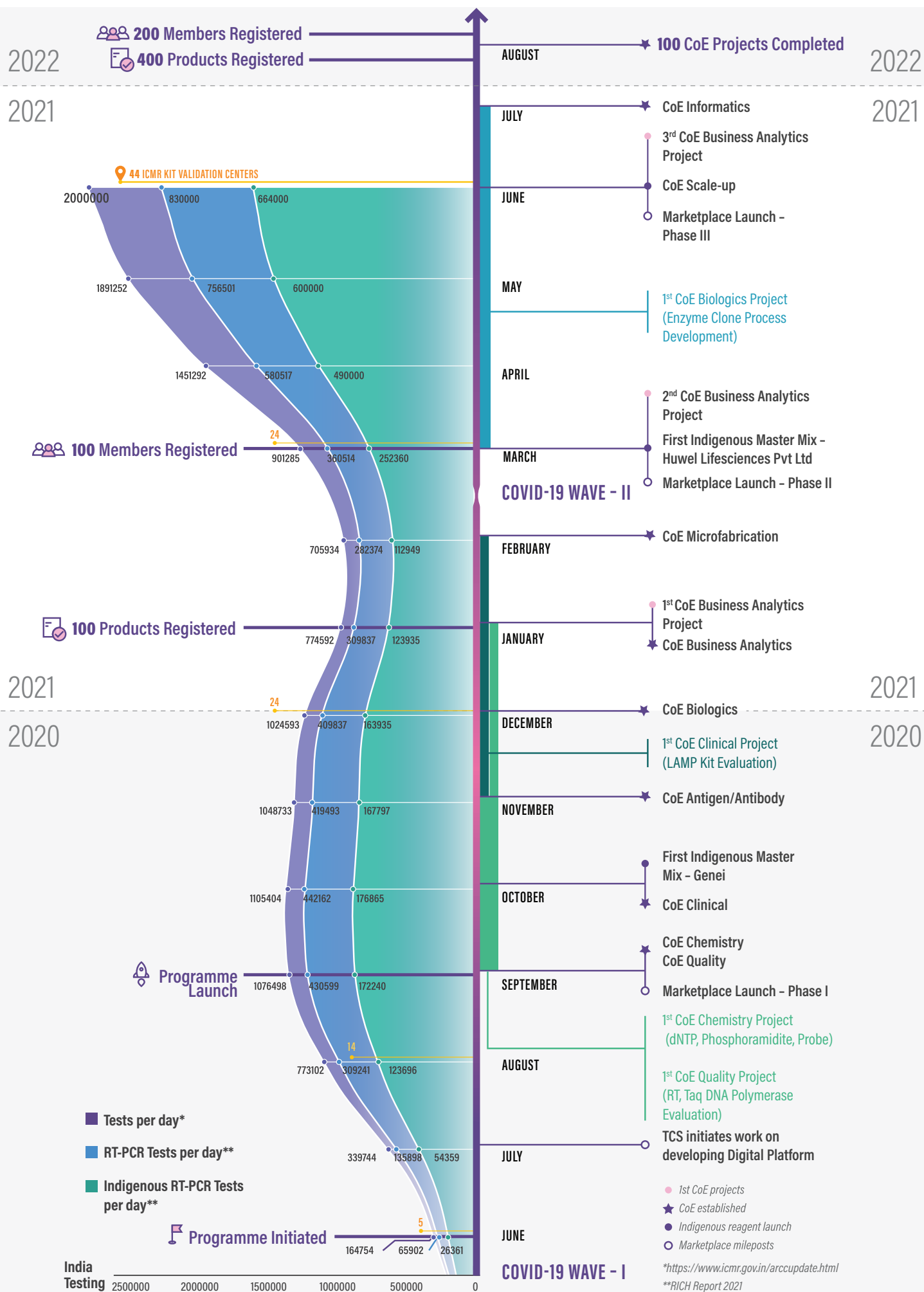


- 7 CoE for Scale-up**  
**CoE Lead: Dr Vinothkumar Kutti Ragnunath**  
Scale-up process development for enzymes, antibodies, antigens, and other proteins



- 8 CoE for Informatics**  
Strengthens, validates, and integrates informatics solution components developed by InDx stakeholders

## THE JOURNEY SO FAR





# SMALL CHANGE, BIG IMPACT

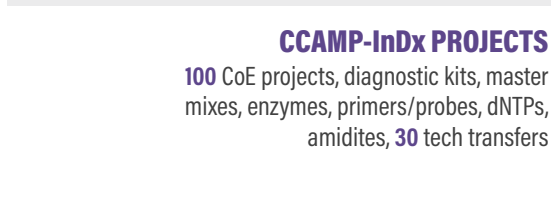
## CCAMP-InDx PARTNERS

90+ diagnostic kit manufacturers  
8+ academic technology developers  
35+ reagent manufacturers  
55+ service providers  
35+ ancillary products



## CCAMP-InDx PROJECTS

100 CoE projects, diagnostic kits, master mixes, enzymes, primers/probes, dNTPs, amidites, 30 tech transfers



CCAMP-InDx has created history as an enabler of change by providing a platform for suppliers, MSMEs, and developers to avail local, indigenous products for the manufacture of RT-PCR and other molecular diagnostic kits. This, in turn, has increased the capacity for daily testing.

## CCAMP-InDx PORTFOLIO

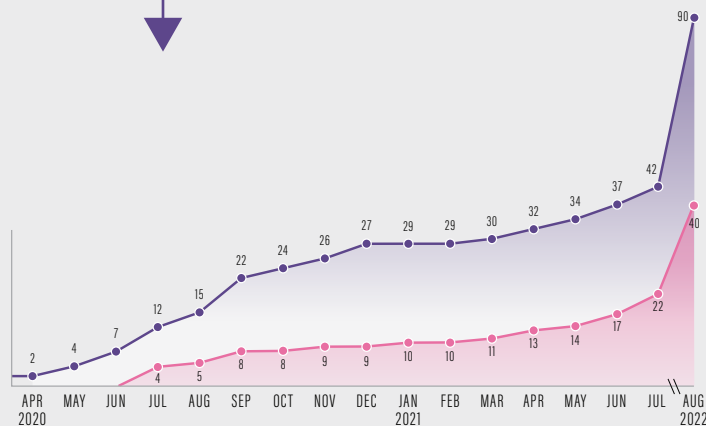
100+ diagnostic kits  
100+ reagents  
150+ ancillary products  
50+ services



## THE ECOSYSTEM IS GROWING

90 indigenous RT-PCR Kit manufacturers are associated with CCAMP-InDx programme from around 100 diagnostic kit manufacturers in the country.

- Indigenous RT-PCR kit manufacturers
- No of indigenous RT-PCR kit manufacturers partnering with CCAMP-InDx



₹1800  
June 2020

₹50  
June 2021

₹20  
August 2022  
Kits price/test \*\*

₹72  
June 2020

₹10  
June 2021

Primers & Probes cost/test

PRICE REDUCED

₹125  
June 2020

₹15  
June 2021

₹10  
August 2022  
Master Mixes cost/test

₹700  
June 2020

₹400  
June 2021

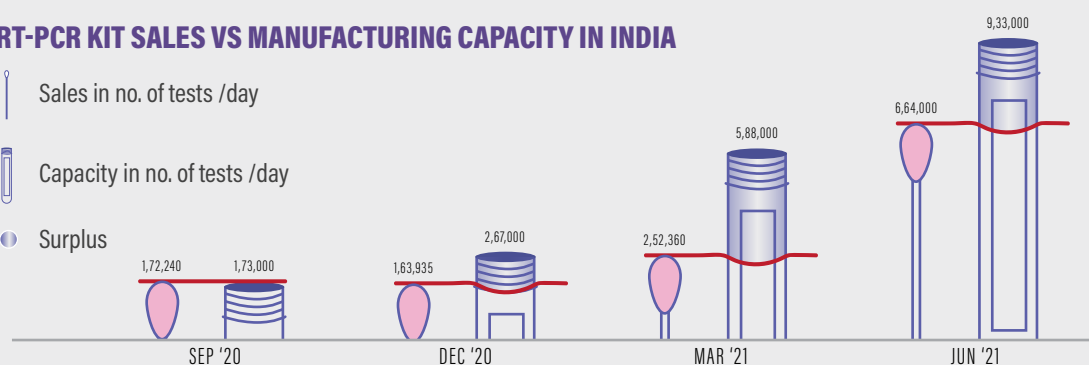
Amidite cost/gm

## RT-PCR KIT SALES VS MANUFACTURING CAPACITY IN INDIA

Sales in no. of tests /day

Capacity in no. of tests /day

Surplus



\*\*Avg government procurement price.

# THE WAY FORWARD

## Catalysing sustainable growth for future preparedness

India, with a high prevalence of infectious and chronic diseases, needs to build a strong ecosystem of indigenous diagnostics with a sustainable balance of quality, affordability, and access. Combining the country's prowess in creating scalable, large informatics and digital solutions with the foundation of predictive and preventive diagnostics companies can usher in an era of democratisation of healthcare.

Indigenous molecular diagnostics, an emerging industry in the country, requires sustained scientific and technical support across the product development value chain to catalyze growth and global competitiveness. The CCAMP-InDx programme will continue to play a significant role as outlined here.

- 1** Supporting exploratory research, development, analytical/clinical validations, and commercialization of:
  1. Next generation of COVID-19 diagnostics
  2. SARS CoV2 variant specific tests
  3. Biomarkers in COVID-19 disease management
- 2** Fostering innovative technologies and point-of-care devices to the market
- 3** Evolving assurance testing methods for resuming schools, physical workplaces, and travel
- 4** Envisaging to build a quality framework to ensure harmonisation and consistency of diagnostic kit performance

## ENGAGE

Interactive Digital Platform



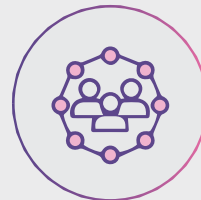
## EXCEL

Global Standards



## EXPAND

COVID and Beyond



## ENDURE

Global Market Reach



CCAMP-InDx is by far the largest effort ever undertaken for advancing the molecular diagnostics industry in India. It has brought about a paradigm shift in this industry by building autonomy in terms of capability and capacity for not only COVID-19 diagnostics but also for mitigating future pandemics.

CCAMP-InDx programme is a firm foundation built to bring affordable and accessible diagnostics across many disease areas. CCAMP-InDx will herald a self-reliant, innovative molecular diagnostic industry in India.

# BUILDING A SELF-RELIANT DIAGNOSTICS ECOSYSTEM



**Mr Hasmukh Rawal**  
Managing Director  
Mylab Discovery Solutions Pvt Ltd



"CCAMP-InDx is a brilliant example of the platform, infrastructure, and network needed to build large-scale, global diagnostics companies from India. The centers of excellence, the digital marketplace, and the network of suppliers and service providers will go a long way in establishing solid foundations for molecular diagnostics in India. We are truly proud to be associated with the effort. More power to C-CAMP"



**Dr Rachana**  
**Dr Shesheer**  
Directors  
Huwel Lifesciences Pvt Ltd



"CCAMP-InDx is an excellent idea; this idea needs to be extended to all molecular diagnostics platforms. It will help in making India a global hub for diagnostics."



**Dr Prabhakar Kulkarni**  
Co-Founder, Director  
NeoDx Biotech Labs Pvt Ltd



"CCAMP-InDx has been a hub for indigenisation and clinical testing for us. We finally have a diagnostics platform in India that will catapult us to global markets."



**Mr Harkaran Dhingra**  
Director  
DSS TAKARA Bio India Pvt Ltd



"A truly remarkable effort that brings together so many companies actively working in the diagnostics area. The weekly round table meets are a great opportunity to network, learn, and find partners."



**Dr Sudeshna Adak**  
CEO & Founder  
OmiX Research and Diagnostics Laboratories Pvt Ltd



"We developed a novel LAMP-based detection platform for COVID-19 that combines easy-to-use kits with a colorimetric detection device. This reduces both the requirement for skilled manpower and cost."

CCAMP-InDx's support has been essential in the development of our novel LAMP platform and we look forward to their support in ensuring the kits can be manufactured at low cost with indigenisation of its components."



**Dr S Chandrashekar**  
Managing Director  
GeNei Laboratories Pvt Ltd



"Genei is working with CCAMP-InDx on the characterisation of enzymes – Taq DNA Polymerase, Reverse Transcriptase, and Bst. We have successfully launched an indigenous master mix with support from CCAMP-InDx and are looking forward to launching a 100% indigenous RT-PCR Kit. The process and performance at InDx are truly of global standards. This is the kind of effort that will help indigenise and globalise Indian diagnostics."



**Dr Paidi Yella Reddy**  
President, CEO  
Sapala



"It is our pleasure to be part of Atmanirbhar Bharat. The CCAMP-InDx programme is a great initiative by C-CAMP for promoting indigenous sourcing of materials for diagnostic purposes and we are proud to be a part of it."

The CCAMP-InDx programme has helped in disseminating our capabilities and strengths to the Indian scientific community. It has helped us in supplying key nucleic acid reagents to promote the global cause for indigenous diagnostic kits to meet our country's needs."

## DIAGNOSTIC KIT MANUFACTURERS



30m Genomics



Aakaar Biotechnologies



AbGenics Life Sciences



Accurex Biomedical



Acrannolife Genomics



Aditum LifeSciences



Advanced Microdevices



Advy Chemical



Affigenix Biosolutions



Agappe Diagnostics



AMMAGEN



Aps Lifetech



Aura Biotechnologies



Azooka Labs



Bhat Biotech



BioBharati LifeScience



BioGenomics



Biosensika



Bogar Bio Bee Stores



Chimera Translational Research Fraternity



Chromous Biotech



CLAMBio



Cosara Diagnostics



DNA xperts



D-NOME



DSS Takara Bio India



Enhanced Innovations



Epygen Biotech



Equine Biotech



GCC Biotech



geneOmbio Technologies



GenePath Diagnostics



Genes2me



Genetix Biotech Asia



Genexis Biotech



Genotypic Technology



Grace Lifetech



Gunasutraa Healthcare



HELINI Biomolecules



HiMedia Laboratories



Huwel Lifesciences



Igneus Life Science



InnoDx Solutions



Iota Design & Innovations



J. Mitra & Co.



Karwa Enterprises



Krishgen Biosystems



Kriya Medical Technologies











































Lab-Care Diagnostics



Levram Lifesciences



				
Livgen Biotechnologies	Lorven Biologics	Medsourc Ozone	Mylab Discovery Solutions	NeoDx Biotech Labs
				
Neuome Technologies	NextGen Invitro Diagnostics	OmicsGen LifeSciences	OmIX Research and Diagnostics Laboratories	Oncosimim Biotech
				
Papyrus Diagnostics	Pathkits Healthcare	Prantae Solutions	Premier Medical Corporation	Primordia Lifesciences
				
Promea Therapeutics	Q-Line Biotech	Saffron Naturele Products	SciGenom Labs	Shankaranarayana LifeSciences
				
Shrimpex Biotech	Siemens Healthineers	SpotSense	Stellar Diagnostics India	Strumed Solutions
				
Svashmi Genotech	Swagene	Swemed Diagnostics	Syntenyl Lifesciences	Tata Medical and Diagnostics
				
Theranos Life Sciences	TranScience	Trivitron Healthcare	UBIO Biotechnology	Unigene
				
Vanguard Diagnostics	Vitane Biologics	Voxtur Bio	Yaathum Biotech	Yaazh Xenomics

## DIAGNOSTIC TECHNOLOGIES FROM ACADEMIA

				
Arati Ramesh Lab, NCBS, Bangalore	Centre For Human Genetics, Bangalore	CHIPS Lab, EE , IITH	CSIR - National Environmental Engineering Research Institute	Indian Institute of Technology, Kharagpur

## REAGENT MANUFACTURERS



Accumax Lab Devices



Applied Bioscience



BioArtis Life Sciences



Bioserve Biotechnologies



CisGen Biotech Discoveries



Cytiva



Edna Biolabs



GeNei Laboratories



GenetoProtein Pvt Ltd



GeNext Genomics



HELINI Biomolecules



IMGENEX India Pvt Ltd



Indigenese Biotechnologies



Innovassynth Technologies



Premas Biotech



ProCyto Labs



Protein Design



Recdesprot



Rubizon Pvt Ltd - (Dxbidt)



Saavika Pharma



Sapala Organics



Sisco Research Laboratories



Tardigrade



VNIR Biotechnologies

## ANCILLARY PRODUCT MANUFACTURERS



Accumax Lab Devices



ADIUVO Diagnostics



Biomoneta Research



Bionaltek Enterprises



Cambrian Bioworks



Chart Techno solutions



CosTheta Technologies



Docturnal



Enhanced Innovations



Genaxy Scientific



iHeal Innovations



Incumed



Inventigen Technologies



Invitreo Healthtech Ventures



Ishield



Livgen Biotechnologies



MagGenome Technologies



Route Biosciences



Scribetechnology Healthcare



ShanMukha Innovations



Shiv Dial Sud & Sons



Tapestry Labs



Tarsons Products Limited



TestRight Nanosystems



Valetude Primus Healthcare

## SERVICE PROVIDERS



Achira Labs



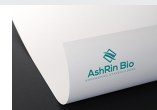
Aequitas Consulting



Ameliorate Biotech



AmpliGene India Biotech



AshRin Bio LLP



BananaIP Counsels



Biogenuix Medsystems



Bionivid Technology



Biosolutions India



Biotech Desk Pvt Ltd



Bird Electronics



Crisprbits



Denovo Biolabs



Dhiti Omics Technologies



Diponed biointelligence



EMPE Diagnostics



Gemni Electro Corporation



Genenest Biotech



Genworks Health



IIQ System



IMGENEX India Pvt Ltd



India Health Fund



Indra Chemical Manufacturing



Inte-e-Labs



Jaldhara and Company



Jehangir Clinical Development Centre



Karkhana.io



Link Biotech



Linq Therapeutics



Module Innovations



Movin Labs



OC India



Octosquare Business



Oneomics Pvt Ltd



Premas Life Sciences



Promiso Health



QTLomics Technologies



QA and Regulatory services consultant

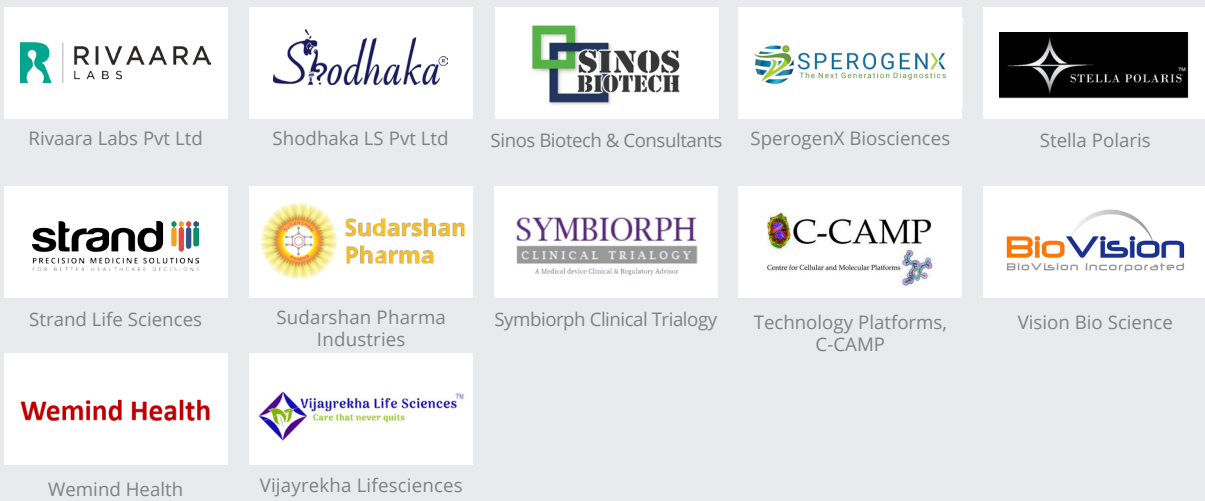


Referral labs



regulatory1









## CCAMP-InDx PROGRAM

# CCAMP-InDx cohort's Regulatory approved Kits and Reagents

Inviting Govt./Private hospitals and Testing agencies  
to leverage the capabilities and  
capacities of this cohort

## ICMR-CDSCO Approved RT PCR Kits



## Reagents

### Master Mix and Enzymes



### Primers and Probes



### dNTPs



### Phosphoramidites



For inquiries, write to [indx-support@ccamp.res.in](mailto:indx-support@ccamp.res.in)  
CCAMP-InDx Marketplace - <https://indx.ccamp.res.in>  
Website - <https://www.ccamp.res.in/indx-indigenous-diagnostics>



## CCAMP-InDx PROGRAM

# CCAMP-InDx cohort's Regulatory Approved Kits

Inviting Govt./Private hospitals and Testing agencies to leverage the capabilities and capacities of this cohort

## ICMR-CDSCO Approved Rapid Antigen Kits



**AGAPPE**  
YOUR BEST PARTNER IN DIAGNOSTICS



**PATHKITS**



**Premier Medical Corporation Private Limited**



## ICMR-CDSCO Approved Rapid Antibody Kits



**Premier Medical Corporation Private Limited**



## ICMR-CDSCO Approved ELISA Kits



**J. Mitra & Co. Pvt. Ltd.**  
.....a vision to serve mankind®



## Reagents & Ancillary products

**SARS CoV2 Antigens**



**Antibodies**

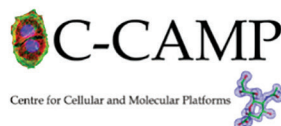


**Nitrocellulose Paper**



**BioBharati LifeScience Pvt. Ltd.**  
Developing Best Products for Quality Research of Significance

For inquiries, write to [indx-support@ccamp.res.in](mailto:indx-support@ccamp.res.in)  
CCAMP-InDx Marketplace - <https://indx.ccamp.res.in>  
Website - <https://www.ccamp.res.in/indx-indigenous-diagnostics>



## REGULATORY APPROVED RT PCR KITS FOR SARS COV2 INCLUDING RECENT SUBVARIANTS (BF.7, XBB) FROM C-CAMP InDx COHORT

Inviting Government/Private Hospitals and Testing agencies to leverage  
the capabilities and capacities of this cohort



For inquiries, write to [indx-support@ccamp.res.in](mailto:indx-support@ccamp.res.in)  
CCAMP-InDx Marketplace - <https://indx.ccamp.res.in>  
Website - <https://www.ccamp.res.in/indx-indigenous-diagnostics>





Host organization  
**C-CAMP**  
Centre for Cellular and Molecular Platforms

Funded by  
**The Rockefeller Foundation**

CoE  
**ISER PUNE**

## Indigenization of Diagnostics for SARS CoV 2

### Centre of Excellence – Chemistry

CoE Lead – Prof S G Srivatsan | [svivatsan@iiserpune.ac.in](mailto:svivatsan@iiserpune.ac.in)

Are you looking to perform chemical characterization and qualification of reagents for development and commercialization of your diagnostic kits?

#### C-CAMP InDx CoE – Chemistry is your partner for:

- › Characterization and quality testing of dNTPs, DNA phosphoramidites, primers and probes
- › Small-scale synthesis and purification of primers and probes
- › Benchmarking studies

#### C-CAMP InDx CoE – Chemistry offers:

- › Expertise in chemical synthesis, characterization and quality testing
- › State-of-the-art laboratory infrastructure
- › Consulting services on synthesis and characterization of primers, probes and reagents

To make informed decisions with appropriate & adequate characterization and qualification studies:



<https://www.ccamp.res.in/indx-indigenous-diagnostics>



<https://indx.ccamp.res.in>  
<https://www.ccamp.res.in/tps/>



[indx-support@ccamp.res.in](mailto:indx-support@ccamp.res.in)



Host organization  
**C-CAMP**  
Centre for Cellular and Molecular Platforms

Funded by  
**The Rockefeller Foundation**

CoE  
**INSERM**  
INSERM U1153

## Indigenization of Diagnostics for SARS CoV 2

### Centre of Excellence – Biologics

CoE Lead – Dr Saravanan Palani | [spalani@iisc.ac.in](mailto:spalani@iisc.ac.in)

Are you looking to develop high quality enzymes for molecular diagnostics?

#### C-CAMP InDx CoE – Biologics is your partner for:

- › Clone development and purification - Taq/Bst DNA Polymerase and Reverse Transcriptase
- › Characterization and quality testing
- › Development of formulations for optimal performance
- › Benchmarking studies

#### C-CAMP InDx CoE – Biologics offers:

- › Expertise in protein expression and analysis
- › State-of-the-art laboratory infrastructure
- › Consulting services on process development

To make informed decisions with appropriate & adequate quality control studies:



<https://www.ccamp.res.in/indx-indigenous-diagnostics>



<https://indx.ccamp.res.in>  
<https://www.ccamp.res.in/tps/>



[indx-support@ccamp.res.in](mailto:indx-support@ccamp.res.in)



Host organization & CoE  
**C-CAMP**  
Centre for Cellular and Molecular Platforms

Funded by  
**The Rockefeller Foundation**

## Indigenization of Diagnostics for SARS CoV 2

### Centre of Excellence – Quality

CoE Lead – Dr Mitali Samaddar | [mitalis@ccamp.res.in](mailto:mitalis@ccamp.res.in)

Are you looking to assess quality for your reagents, components and diagnostic kits?

#### C-CAMP InDx CoE – Quality is your partner for:

- › Quality testing of indigenous reagents, components and diagnostic kits
- › Interchangeability studies for equivalency
- › Benchmarking studies for comparability
- › Analytical validation

#### C-CAMP InDx CoE – Quality offers:

- › Expertise in functional testing and molecular characterization
- › State-of-the-art laboratory infrastructure
- › Consultancy on quality

To make informed decisions with appropriate & adequate quality evaluations:



<https://www.ccamp.res.in/indx-indigenous-diagnostics>



<https://indx.ccamp.res.in>  
<https://www.ccamp.res.in/tps/>



[indx-support@ccamp.res.in](mailto:indx-support@ccamp.res.in)



Host organization  
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Centre for Cellular and Molecular Platforms

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**The Rockefeller Foundation**

CoE  
**INSERM**  
INSERM U1153

## Indigenization of Diagnostics for SARS CoV 2

### Centre of Excellence – Clinical Studies

CoE Lead – Prof Colin Jamora | [colinj@instem.res.in](mailto:colinj@instem.res.in)

Are you looking to perform clinical studies for development and commercialization of your diagnostic kits?

#### C-CAMP InDx CoE – Clinical Studies is your partner for:

- › Indigenization of reagents, raw materials and diagnostic kits
- › Evaluating readiness for regulatory approvals
- › Conducting concordance and equivalence studies
- › Evaluating novel technologies such as:
  - › LAMP, LAMPore and CRISPR
  - › RNA extraction free protocols
  - › Other enhancements

#### C-CAMP InDx CoE – Clinical Studies offers:

- › Expertise – clinical evaluations for sensitivity, specificity and precision studies
- › BSL2 and BSL3 laboratory
- › Access to clinical samples

To make informed decisions with appropriate and adequate clinical studies:



<https://www.ccamp.res.in/indx-indigenous-diagnostics>







<https://indx.ccamp.res.in>  
<https://www.ccamp.res.in/tps/>



[indx-support@ccamp.res.in](mailto:indx-support@ccamp.res.in)



## Indigenization of Diagnostics for SARS CoV 2

**Centre of Excellence – Antigen/Antibody**  
CoE Lead – Dr Nalam Madhusudhana Rao | ✉ [madhu@ccmb.res.in](mailto:madhu@ccmb.res.in)

Are you looking to manufacture high end antigen and antibody based diagnostics?




**C-CAMP InDx CoE – Antigen/Antibody is your partner for:**




- › Indigenization of reagents for Antigen and Antibody based diagnostic kits
- › Development of robust, consistent and scalable manufacturing process
- › Quality testing of in-process, bulk and final product
- › Validation studies

**C-CAMP InDx CoE – Antigen/Antibody offers:**

- › Expertise in process development
- › State-of-the-art laboratory infrastructure
- › Consultancy on readiness for regulatory approvals

*To make informed decisions with appropriate & adequate quality testing and validation studies:*

 <https://www.ccamp.res.in/indx-indigenous-diagnostics>
 <https://indx.ccamp.res.in>  
<https://www.ccamp.res.in/tps/>
 [indx-support@ccamp.res.in](mailto:indx-support@ccamp.res.in)

## Indigenization of Diagnostics for SARS CoV 2

**Centre of Excellence – Microfabrication & Pilot Scale**  
CoE Lead – Dr Feroz M H Musthafa | ✉ [ferozm@ccamp.res.in](mailto:ferozm@ccamp.res.in)

Are you looking for pilot scale manufacturing of lateral flow assay or microfluidic device based diagnostics?



**C-CAMP InDx CoE – Microfabrication & Pilot Scale is your partner for:**

- › Development of lateral flow assay product
- › Design and development of plastic microfluidic diagnostic devices
- › Proof of concept to pilot scale fabrication
- › Quality testing of the manufactured product

**C-CAMP InDx CoE – Microfabrication & Pilot Scale offers:**

- › Expertise in microfluidics and design
- › State-of-the-art infrastructure
- › Consultancy on design and fabrication

*Speed up time to market with design to pilot scale and testing for microfluidics and LFA:*

 <https://www.ccamp.res.in/medtech>
 <https://indx.ccamp.res.in>  
<https://www.ccamp.res.in/tps/>
 [indx-support@ccamp.res.in](mailto:indx-support@ccamp.res.in)






## Indigenization of Diagnostics for SARS CoV 2

**Centre of Excellence – Scale-Up**  
CoE Lead – Dr Vinothkumar Kutti Ragunath | ✉ [vkumar@ncbs.res.in](mailto:vkumar@ncbs.res.in)

Are you looking to manufacture and scale-up high grade enzymes for molecular diagnostics?

**C-CAMP InDx CoE – Scale-Up is your partner for:**


- › Method development for Up-stream and Down-stream processing
- › Pilot scale production, analytical and prep-scale purifications
- › Development of GMP methods
- › Quality testing of in-process, bulk and final product

**C-CAMP InDx CoE – Scale-Up offers:**

- › Expertise in process development
- › State-of-the-art laboratory infrastructure
- › Consultancy on GMP manufacturing

*To make informed decisions with appropriate & adequate process development studies:*

 <https://www.ccamp.res.in/indx-indigenous-diagnostics>
 <https://indx.ccamp.res.in>  
<https://www.ccamp.res.in/tps/>
 [indx-support@ccamp.res.in](mailto:indx-support@ccamp.res.in)






## Indigenization of Diagnostics for SARS CoV 2

**Centre of Excellence – Business Analytics**  
CoE Lead – Ms Rashmi (Rohini) Pimpale | ✉ [dir-ls-rich@telangana.gov.in](mailto:dir-ls-rich@telangana.gov.in)

Are you seeking the correct business plan for your molecular diagnostics enterprise?

**C-CAMP InDx CoE – Business Analytics is your partner for:**

- › Estimation of national demand for diagnostic kits and components
- › Development of robust business plan for manufacturing
- › Formulation of pricing strategy focusing on affordability
- › Building economic case to attract funds

**C-CAMP InDx CoE – Business Analytics offers:**

- › Expertise in 'Research to Market' translation
- › Consultancy on readiness for market, demand estimation

*To make informed decisions with appropriate & adequate data and studies:*

 <https://www.ccamp.res.in/indx-indigenous-diagnostics>
 <https://indx.ccamp.res.in>  
<https://www.ccamp.res.in/tps/>
 [indx-support@ccamp.res.in](mailto:indx-support@ccamp.res.in)



## ABOUT C-CAMP

C-CAMP – conceptualised by the Department of Biotechnology, Government of India in 2009 – is a catalyst of cutting-edge research and innovation in life sciences. We're an integral part of the Bangalore Life Sciences Cluster (BLISC). Along with NCBS and inStem, we've been working towards enabling BLISC to emerge as a centre of excellence.

We encourage researchers and entrepreneurs to develop homegrown scientific tools and solutions; our CCAMP-InDx programme is a major step in that direction.

## THE MINDS BEHIND THE GROUND-BREAKING CCAMP-InDx INITIATIVE

### GOVERNANCE TEAM



**Dr Taslimarif Saiyed**  
Principal Investigator,  
CCAMP-InDx, Bangalore



**Prof Satyajit Mayor**  
Director NCBS,  
Bangalore



**Prof L S Sashidhara**  
Professor,  
IISER, Pune

### FUNCTIONAL TEAM



**Lalith Kishore**  
COO-InDx



**Dr Mitali Samaddar**  
Lead, Science  
and Technology



**Nimisha Gupta**  
Lead, Informatics



**Richa Bohra**  
Lead, Outreach



**Dr Rituparna Tewari**  
Lab Scientist and  
Coordinator



**Gopal Das**  
Application  
Scientist



**G Puvaneswari**  
Application  
Scientist



**Dr Mayur  
Rajankar**  
Application  
Scientist



**Dr Suman  
Bhattacharya**  
Application  
Scientist



**Dr Manali  
Motghare**  
Application  
Scientist



**A N Shadakshari**  
Procurement

## CONTACT US

### Centre for Cellular and Molecular Platforms (C-CAMP)

UAS-GKVK Campus, Bellary Road,  
Bangalore 560 065, Karnataka, India

 **Telephone No:** +91 80 67185100

 **Fax No:** +91 80 2363 6662

 **Email:** [ccamp@ccamp.res.in](mailto:ccamp@ccamp.res.in)

### CCAMP-InDx Program

 **Engage with us:** [indx-support@ccamp.res.in](mailto:indx-support@ccamp.res.in)

 **Register:** <https://indx.ccamp.res.in>

 **Submit test request:** <https://www.ccamp.res.in/tps/>

 **Highlight regulatory issues:** [indx-regulatory@ccamp.res.in](mailto:indx-regulatory@ccamp.res.in)