

**DEPARTMENT OF BIOTECHNOLOGY
MINISTRY OF SCIENCE & TECHNOLOGY**

Annexure -I

**Biomedical interventions and Services / Facilities offered by
DBT Autonomous Institutions**

Since the beginning of the pandemic, the Autonomous Institutes (AIs) of the Department of Biotechnology have been engaged in performing cutting-edge research for development of effective interventions for COVID-19, along with provision of facilities and services to external biomedical researchers from industry and academia.

06 AIs of DBT, viz., Translational Health Science and Technology Institute (THSTI), Rajiv Gandhi Centre for Biotechnology (RGCB), Institute of Life Sciences (ILS), Regional Centre for Biotechnology (RCB), Institute for Bioresource and Sustainable Development (IBSD), International Centre for Genetic Engineering and Biotechnology (ICGEB) have been notified for evaluation of novel investigational products against COVID-19.

Additionally, 05 Autonomous Institutes (AIs) of DBT, viz., RGCB, ILS, THSTI, inStem and ICGEB have been identified to provide support as COVID-19 diagnostic kit validation centres. 04 AIs have been notified as COVID-19 biorepositories.

An overview of the development of other biomedical interventions for combating COVID-19 by DBT AIs and the facilities or services provided by DBT AIs is summarized below.

a) Other biomedical interventions

Institute	Efforts
International Centre for Genetic Engineering and Biotechnology (ICGEB), New Delhi	<ul style="list-style-type: none">• Artificial-Intelligence Based Classification of Chest X-ray Images into COVID-19 and Other Infectious Disease
Translational Health Science and Technology Institute (THSTI), Faridabad	<ul style="list-style-type: none">• MoU with IISER, Pune for the project entitled “Epidemiological and Serological Surveillance of COVID-19 in Pune”.• Collaborated with Maulana Azad Medical College, LokNayak Hospital, New-Delhi for the project entitled “Understanding human Covid-19 infections: a DBT India Consortium”.• Developed standardized serological assays for immune profiling of clinical human samples

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	<ul style="list-style-type: none"> • THSTI entered into a Material Transfer Agreement to provide services to companies/institutes (Bharat serums and Vaccines Limited, M/s VINS Bioproducts Ltd., M/s Syngene International Limited, M/s JSS Medical research India Pvt. Ltd., M/s SamarthaKrupa Life Sciences Pvt. Ltd., IIT Delhi) • Supporting population survey for COVID-19 IgG positivity in districts of Haryana
Institute for Stem Cell Science and Regenerative Medicine (InStem), Bangalore	<ul style="list-style-type: none"> • A software pipeline named CoVa, to streamline sequencing was developed in partnership with NCBS and tested with data generated at inStem. • Technology that binds a germicidal chemical to fabric (mask), developed
Institute for Bioresource and Sustainable Development (IBSD), Manipur	<ul style="list-style-type: none"> • Distributed masks, sanitizers and disinfectants to different sections of society
National Institute of Immunology (NII), New Delhi	<ul style="list-style-type: none"> • Efforts underway to study the response of SARS-COV-2 infection on Indian population and establishing the COVID-19-specific T cells as correlates-of-protection by using deep immunophenotyping and functional immunoprofiling of T cells. • Initiated setting up BSL3 facility for Non-human primates, construction of facility is underway. • Breeding of mice expressing ACE2 receptor is underway to get stable lines for vaccine evaluation. NII has ACE2 receptor expressing mouse ready to carry out research work.

b) Immunoassay laboratories at DBT AIs

Institute	Tests Offered							
	<i>Total IgG</i>	<i>Multiplexed Immunoassay</i>	<i>WV PRN T</i>	<i>Micro neutralization</i>	<i>Pseudovirus Neutralization</i>	<i>Cell free surrogate</i>	<i>ELISPOT</i>	<i>CM I</i>
THSTI, Faridabad*	✓		✓		✓		✓	✓

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* Provided services to nearly 6 manufacturers

c) Animal Challenge facilities

S.No.	Institute	Animal models available			Current Status
		Generation of Indigenous Transgenic mice	Breeding of Imported transgenic Mice	Hamsters	
1.	inStem& NCBS, Bengaluru	✓			Breeder pairs available for re-distribution
2.	Institute of Life Science, Bhubaneswar		✓	✓	Colonies of transgenic mouse and hamster models established
3.	National Institute of Immunology (NII), New Delhi		✓		Mouse infection models being established
4.	Translational Health Science and Technology Institute (THSTI), Faridabad		✓	✓	Hamster challenge studies offered as service to vaccine manufacturers

d) Diagnostic kit validation services

S.No.	Institute	Type of kits validated	Number of kits validated
1.	Translational Health Science and Technology Institute (THSTI), Faridabad	RT-PCR and RT LAMP TrueNAT CRISPR Antigen Antibody RNA Cartridge	10 1 1 4 5 1

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		VTM	3
2.	Rajiv Gandhi Centre for Biotechnology (RGCB), Trivandrum	Antigen ELISA Extraction kit LAMP assay RT-PCR	8 2 4 2 5

e) Anti-viral testing services

S.No.	Institute	Type of Testing		
		Cytotoxicity testing	Antiviral testing	IC50 determination
1.	Regional Centre for Biotechnology (RCB), Faridabad	1567	650	25
2.	International Centre for Genetic Engineering and Biotechnology (ICGEB), New Delhi	89	71	22
3.	Rajiv Gandhi Centre for Biotechnology (RGCB), Trivandrum	--	47	--

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f) COVID-19 Biorepositories

S.No.	Institute	Disease Status / Phenotype	No. of Samples Archived	Type of Samples	No. of samples Shared	Shared with
1	THSTI, Faridabad and RCB, Faridabad	RT-PCR confirmed COVID-19 positive	12581	Serum, NP/OP swab, Plasma, PBMCs	~ 11302 (Academia)	Academia & Industry
		RT-PCR confirmed COVID-19 negative	3367	Serum, NP/OP swab	~ 4354 (Industry)	
		RT-PCR confirmed COVID-19 positive- Virus Isolates	3	Virus Isolates	3 (Academia)	
		Post Vaccination Cohort	144	Plasma, PBMCs	144 (Academia)	
2.	ILS, Bhubaneswar	RT-PCR confirmed COVID-19 positive patients (202) Symptomatic (91)	RT-PCR confirmed positive patients = 202	Serum (202 individual patients) Plasma (150 individual patients)	Serum (150 individual patient specimen) Plasma (150 individual patient specimen)	ILS scientists Imgenex, Bhubaneswar

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		Asymptomatic (111)	RT-PCR negative persons = 50 Convalescent patients (after 1- 2 months of recovery) = 35	PBMC (50 individual patients) Oropharyngeal swab (150 individual patients) Urine (120 individual patients) Stool (110 individual patients)	PBMC (20 individual patient specimen) Oropharyngeal swab (150 individual patient specimen) Urine (none) Stool (100 individual patient specimen)	Prantae solutions, Bhubaneswar
3.	ILBS, New Delhi	Covid positive	411	Serum		Academia
			12000	Nasopharyngeal swab	51+ 25	
			7240	Plasma	128	

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			2031	Buffy coat	50	
			315	Saliva		
			188	Stool	04	
			806	Urine		
			16	Pleural fluid		
			30	PBMC		
			53	Whole blood		
		Convalescent serum	9084	Serum		
		Convalescent plasma	3776	Plasma		
		Covid negative	4657	Serum Nasopharyngeal swap		
4.	InSTEM Bangalore	COVID19	573	Swabs	13	Industry

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				Saliva Serum Virus		
5.	NCCS Pune	SARS-CoV-2- infected & convalescent patients	127 samples	Plasma &Peripheralbloodmono nuclearcells(PBMCs)	a) Totalnumberofplasma samplessharedsofar: 122 b) TotalnumberofPBMCsamples sharedsofar: 2	a) Plasma samples were shared with - (i) NCCS faculty: 107 (ii) Genova Biopharmaceutical s Ltd, Pune: 15 b) PBMC samples were shared with - (i) NCCS faculty: 2

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