

**GOVERNMENT OF INDIA
MINISTRY OF SCIENCE AND TECHNOLOGY
DEPARTMENT OF BIOTECHNOLOGY**

LOK SABHA

UNSTARRED QUESTION NO. 2910

TO BE ANSWERED ON 15.12.2021

FUNDS FOR RESEARCH & DEVELOPMENT

2910. SHRI GNANATHIRAVIAM S.:

Will the Minister of SCIENCE AND TECHNOLOGY

विज्ञान और प्रौद्योगिकी मंत्री

be pleased to state:

- (a) whether the department of bio-technology has been allocating funds for research and development to universities, colleges and NGO's in the state of Tamil Nadu and other States;**
- (b) if so, the details thereof; and**
- (c) the details of the funds and projects sanctioned by the department for the purpose?**

ANSWER

**MINISTER OF STATE (INDEPENDENT CHARGE) OF SCIENCE AND
TECHNOLOGY AND EARTH SCIENCES**

(DR. JITENDRA SINGH)

(a) Yes Sir.

(b) & (c) Details of the R&D projects and funds sanctioned by the Department of Biotechnology along with its PSU, Biotechnology Industry Research Assistance Council (BIRAC) in the state of Tamil Nadu and other States in the current financial year may please be seen at **Annexure A and B** respectively.

ANNEXURE A

1. R&D Projects sanctioned by DBT in Tamil Nadu

S. No.	Name of project	Sanctioned amount (in Rs. lakhs)
1	Generation and Characterization of Chicken Egg Yolk Antibodies (IgY) for Passive Therapy against Clarithromycin Resistant Helicobacter pylori and its Preclinical Evaluation in a Suitable Animal Model	28.768
2	Cold active lipase from Pseudomonas sp. and its utilization in the enrichment of ?-3 poly unsaturated fatty acids (PUFAs) in plant and fish oils	35.3682
3	Are fusion inhibitors potential pan-coronavirus therapeutic agent?	52.67704
4	Solid state fermentation technology for development of cost effective customized plant protein products as fishmeal alternate for shrimp feed	72.7672
5	Recombinant Probiotic-mediated targeted delivery of CRISPR/Cas13 for the treatment of SARS CoV-2 viral infection	41.02
6	Role of wild type and disease-relevant mutant LRRC8B proteins in ER stress related signaling	77.90676
7	Investigating the miRNAs as potential biomarkers to classify autism phenotype for clinical management	53.0808
8	Functional validation of lncRNAs involved in the molecular processes that underlie the development of Congenital Heart Disease	39.94611
9	Cell and Developmental Biology of Marine Organisms under Marine Bioresource and Biotechnology Network Programme	499.8304
10	Identification of genes that promote proliferation of germline stem cells in Caenorhabditis elegans	45.6776
11	Impact of COVID-19 on clinical manifestations, diagnosis, treatment outcome and immune response for pulmonary tuberculosis	48.486
12	Bioprospecting of Marine microbial diversity for various products under the Marine Bioresource and Biotechnology Network Programme	204.268
13	MIMSA: Role of the oral microbiome & mucosal immunity in COVID-19 disease: diagnostic/prognostic utility in South Asian populations	44.3016
14	“CoV-Ind-UK” “Prospective investigation of the determinants for COVID-19 outcomes amongst South Asians in India and the United Kingdom”	21.8568
15	Precision brackishwater aquaculture technology using Machine Intelligence	132.45934
16	Dissemination of Arbuscular Mycorrhizal fungi (AM fungi) production technology (carrier and liquid formulation) to enhance and empower the livelihood of farm women in the Aspirational district (Ramanathapuram) of Tamil Nadu	28.3352

17	Banana Shakti Nanoformulations – Effective delivery systems of the micronutrient mixture for improved banana cultivation	36.2445
18	Development of Zinc-Selenide-Cerium Nanocomposite and Quantifying Its Potential on Alleviation of Drought Stress on Sorghum	37.6956
19	Development of Automated Low-Cost Reader for Soil NPK Detection using Printed Electrode with Integrated Android Application	35.8436

2. R&D Projects sanctioned by BIRAC in Tamil Nadu

S. No.	Name of project	Sanctioned amount (in Rs. lakhs)
1	Eco-friendly management of Citrus Greening Disease through phloem specific Delivery of IMPDH inhibitors encapsulated in Nano system.	36.4

ANNEXURE B

1. R&D Projects sanctioned by DBT in other States

S. No.	Name of project	Sanctioned amount (in Rs. lakhs)
1	Characterization of interaction of SARS Cov-2 spike protein with placental endothelial cells for developing CoV-2 inhibitors	7.838
2	Early mesoderm patterning: Mechanism underlying the emergence of organogenic progenitors	80.8615
3	Developing double herbicide tolerant pigeonpea for improved weed management employing two pronged approach: haplotype mining in native germplasm and CRISPR/Cas9 mediated genome editing tool	70.5336
4	Chitosan based nanoparticulate delivery system for the effective delivery of calcium and its impact on productivity of groundnut	53.058
5	Centre for depression diagnosis and medication adherence	66.36
6	Development of novel gallium-based metallodrugs as chemotherapeutic anticancer agents	32.79595
7	Multi-institutional approach on development of technology driven bio-input production clusters for mass production of biofertilizers and biopesticides for promotion of eco-friendly farming with collateral development of bio- entrepreneurship in vegetables, spices and small tea growers of North East Region of India for better livelihood	133.5001
8	Catalyzing Complementary Olericulture in Assam, Arunachal Pradesh and Nagaland for Livelihood Security by Provisioning Quality Seed and Seedling of Indigenous and Commercial Vegetables Generated through Hi Tech Mini Plug Nursery and Conventional Means and Promotion of Bio-Enterprise	259.57587
9	Establishment of Bioresource Centre for making S&T Intervention in Banana Value Chain for Socio Economic Development in Udalguri District, Assam	69.20987
10	Bio-surfactant mediated enhanced oil recovery for Assam oil reservoirs	36.4
11	Biopolymer based Electrospun Membranes for Recovery of Heavy Metals from industrial Wastewater	8.0352
12	Root exudates modified hydrogel - nano LDH - bacteria loaded composite system for efficient generation of plant available phosphorus.	32.7812
13	Nanotechnological interventions in dental and bone metal implants: Tailoring smart, multifunctional interfaces towards improved osseointegrative and anti-bacterial properties	38.2524
14	Development of herbicides against Acetyl Co-A Carboxylase to address resistance and cross resistance in Phalaris minor: A weed of wheat crop field	50.372
15	Imaging intracellular replication and various stages of Theileria parasite infection by overcoming resolution limitations	7.041

16	Validation and characterization of novel functional role of SARS-CoV-2 ORF8 protein in tricking host complement system using molecular mimicry	23.6186
17	Understanding the Role of Ser/Thr Protein Kinases in the regulation of Toxin-Antitoxin loci in <i>Mycobacterium tuberculosis</i>	123.8627
18	Prions as stress sensors in plants: Role of DNA/RNA binding proteins in regulating stress memory	25.624
19	Deciphering the cross-talk between Toll Like Receptors and C-type-Lectin Receptors in mediating immune responses upon mycobacterial infection	38.4
20	Understanding Inter Compartmental Crosstalk between Insulin-sensitive and insulin-resistant obese and non-obese phenotypes using Adipose Tissue	61.8136
21	Electrochemical ultra-sensing platform integrated with biomarker coated on graphene detecting neonatal sepsis	26.43645
22	Investigation of Key splicing events Modulated in DENV Infection	52.3
23	Efficacy of a PD-1 as an Adjunct Immunotherapy in Tuberculosis Patients	126.28048
24	Biotechnological approaches to improve shelf life, productivity of vegetables-(Tomato).	43.224
25	Understanding the Epigenetic Regulation of T cell Responses during Tuberculosis	24.4336
26	Designing precision therapies by targeting cancer-specific synthetic lethal genetic interactions	24.4336
27	Development of technologies for measuring and maintaining ecosystem services from forests	16.575
28	Development of BCMA based Chimeric antigenic receptor T (CAR T) cell in Multiple myeloma (MM).	98.94234
29	Deciphering the role of microRNA-191, in regulation of chemoresistance and stemness in breast cancer	39.3352
30	Deciphering the role of SIX genes in virulence and host-specificity of <i>Fusarium oxysporum</i> f. sp. <i>carthami</i>	73.4952
31	Targeting Pup1 independent mechanisms for improving low soil phosphorus tolerance and use-efficiency in rice	124.6896
32	Network Programme for Enrichment and Update of Database on Genome Related Information for Indian Spermatophyta and Archegoniatae Taxa-Phase II	35.4672
33	“CARDINNATE”“Variation in innate immune activation and cardiovascular disease risk as drivers of immune pathology in COVID19 outcome in South Asians in UK and India”	51.9912
34	DiSeCT”：“Explaining the differential severity of COVID-19 between Indians in India and the UK	95.016
35	“CoV-Ind-UK” “Prospective investigation of the determinants for COVID-19 outcomes amongst South Asians in India and the United Kingdom”	31.0824
36	Electrochemical sensor connected to smart phone app for club drug detection at point of need	31.5792
37	EVALUATION OF EFFECT OF MACROPHYTES-BASED FEED ON THE GROWTH, GUT PHYSIOLOGY, EXPRESSION OF SPECIFIC GENES INVOLVED IN THE BIOSYNTHESIS OF DHA & EPA AND PRODUCTION OF QUALITY FRESHWATER FISHES	93.1704

38	Combined neurological and functional assessments for the prediction and appreciation of individualized recovery profiles an international study benchmarking clinical outcomes in acute spinal cord injury	138.6568
39	Developing double herbicide tolerant pigeonpea for improved weed management employing two pronged approach: haplotype mining in native germplasm and CRISPR/Cas9 mediated genome editing tool	121.6717
40	Development of a sophisticated illumination device for regulating algal photoreceptors for enhancing photosynthetic and metabolic efficiency	96.11773
41	Mapping and transfer of novel resistance genes for multiple biotic stresses in wheat (<i>Triticum aestivum</i> L.)	165.2434
42	Nanotechnological interventions in dental and bone metal implants: Tailoring smart, multifunctional interfaces towards improved osseointegrative and anti-bacterial properties	30.42438
43	Bioprospecting of Marine microbial diversity for various products under the Marine Bioresource and Biotechnology Network Programme	105.1096
44	Deployment and piloting of Improved Indigenous Fermented Food Product, 'Chubitchi' and 'Tungrymbai' for the sustainable Livelihood in Meghalaya, Northeast India	20.4352
45	Ultrasound-enabled oncotripsy for breast cancer treatment	22.5712
46	Bioprospecting of Marine microbial diversity for various products under the Marine Bioresource and Biotechnology Network Programme	62.5048
47	Inter-Institutional Program for Maternal, Neonatal and Infant Sciences A translational approach –interdisciplinary Group for Advanced Research on Birth outcomes - DBT India Initiative (GARBH-Ini Phase II)	2626.15219
48	Modulating effective connectivity in the 'agency network' of humans	24.4336
49	A mass spectrometric approach to unravel the landscape of sphingolipids as major signaling determinants of drug resistance and virulence in emerging human fungal pathogen <i>Candida auris</i>	64.4577
50	Generation of milk somatic cell reference values and intelligent predictive modelling for monitoring mammary profile and milk quality of indigenous dairy animals	73.06072
51	DBT Network Programme on Anthrax Diagnosis and Control in India	1006.1546
52	YAP function in growth factor receptor signalling in mammary epithelial cells during growth control and tumorigenesis.	61.868
53	Nanocarriers for topical delivery of pathogen-specific RNAi molecules for sustained protection of pea crop against powdery mildew	38.33519
54	Development of an aptamer-based diagnostic kit for detection of <i>Campylobacter</i> infections in cattle and poultry.	55.9424
55	Network Programme for Enrichment and Update of Database on Genome Related Information for Indian Spermatophyta and Archegoniatae Taxa-Phase II	66.6096
56	Deciphering the molecular mechanisms of dysregulation caused by mutations in LSD1 leading to Intellectual Disability	24.4336
57	Investigating the molecular basis of inositol pyro phosphate regulation in <i>Arabidopsis thaliana</i>	24.4336

58	Potential role of mitochondrial uncoupling protein 2 as a biomarker in patients with sepsis and septic shock: An observational study	14.768
59	Fuel supply to the Human placenta: Maternal obesity and placental trafficking of amino acids and fatty acids	79.27696
60	Molecularly Imprinted Polymers (MIPs) based Electrochemical Biosensors for Selective Bio-analyte Detection	26.2256
61	Delineation of SLIT-ROBO signaling derived molecular intermediates in the regulation of oxidative stress responses upon virulent mycobacterial infection	103.0315
62	Role and regulation of stress-induced autophagy in proteostasis mechanisms underlying artemisinin resistance	29.928
63	Lessons from bacterial warfare: Using microbial evolutionary arms-race for the identification of novel antibiotic resistance mechanism and antimicrobial strategies	24.4336
64	Deep Phenotyping, Comprehensive Genomic Studies and Investigations into Pathomechanisms of Congenital Heart Defects	64.9722
65	Valorization of byproducts from fish industry: Isolation and characterization of glycosaminoglycans for various applications	44.2576
66	Profile of Micronutrient Deficiency nutritional status and cognitive dysfunction among elderly residing in tribal areas of Southern Karnataka	26.0804
67	Role of Human antigen R (HuR) in Coxsackievirus life cycle and virus induced Myocarditis	79.5384
68	Exploring the combination of new Topoisomerase I inhibitors with frontline anti-TB drugs on intracellular Mycobacterium tuberculosis survival	165.548
69	Shortening Tuberculosis Therapy Duration using Chloroquine/Hydroxychloroquine	88.78687
70	"Studies on population diversity and role of host plant volatiles cues for enhancing egg laying in temperate tasar silk moths (<i>Antheraea proylei</i>)	26.9336
71	"CARDINNATE" "Variation in innate immune activation and cardiovascular disease risk as drivers of immune pathology in COVID19 outcome in South Asians in UK and India"	60.876
72	DiSeCT": "Explaining the differential severity of COVID-19 between Indians in India and the UK	10.412
73	PRESCRIP-TEC": "Prevention and Screening Innovation Project towards Elimination of Cervical Cancer	72.528
74	Therapeutic potential of AHL analogues through neutrophil extracellular traps mediated bacterial clearance during chronic obstructive pulmonary disease	42.57
75	Translational platforms for discovery, repurposing, and clinical development for COVID-19 therapeutics	442.68104
76	SARS-CoV-2 Network for Genomic Surveillance in Brazil, Russia, India, China and South Africa NGS-BRICS	10.416
77	Unravelling signatures of growth and salinity adaptation in <i>Etroplussuratensis</i> through omics approaches	11.1

78	Unrevealing the entry mechanism of Tick-borne Kyasanur Forest diseases Virus	31.93
79	Profiling the epigenetic signatures induced in plants by the dung of indigenous cow varieties	39.676
80	Development of plasticizer free acrylic denature soft liners using nanogel additives	23.5024
81	Functional Analysis of putative S genes in pomegranate bacterial blight interaction	63.226
82	Cell and Developmental Biology of Marine Organisms under Marine Bioresource and Biotechnology Network Programme	301.2256
83	Bioprospecting of Marine microbial diversity for various products under the Marine Bioresource and Biotechnology Network Programme	83.0416
84	Development of Novel Benzo fused Heterocycles to Improve the Treatment of Drug Resistant Tuberculosis	18.3952
85	A longitudinal study of COVID-19 infected patients for convalescent plasma therapy	42.0072
86	OVOL-alpha-actinin-4 crosstalk in EMT and breast cancer stemness	110.5928
87	Elucidating the effects of organ ismal aging on the signalling micro-environment in the niche-stem cell ecosystem and its impact on immunity in Drosophila	24.4336
88	Role and regulation of stress-induced autophagy in proteostasis mechanisms underlying artemisinin resistance	39.8039
89	Evaluating the role and proteolytic processing of Trop1 and Trop2 in normal placentation and placental pathologies	33.5384
90	Dissection of signalling mechanisms that couple flagella biogenesis to cytokinesis in bacteria	79.70071
91	Design and development of a microfluidic chip for sperm selection/sorting based on chemotaxis	28.0872
92	Bioprospecting of Marine microbial diversity for various products under the Marine Bioresource and Biotechnology Network Programme	140.71024
93	Dry Powder Inhalation Containing Biodegradable Nanoparticles Of Niclosamide To Combat Covid-19 Infection	44.0848
94	Regulation of 14-3-3 ligand interactions by conserved residues in the phospho-peptide binding pocket.	166.678
95	Catalyzing Complementary Olericulture in Assam, Arunachal Pradesh and Nagaland for Livelihood Security by Provisioning Quality Seed and Seedling of Indigenous and Commercial Vegetables Generated through Hi Tech Mini Plug Nursery and Conventional Means and Promotion of Bio-Enterprise	67.14733
96	Distribution of pathogenic micoraerophilic Arcobacter sp. in seafood and development of a rapid method for its detection	52.9236
97	Functional significance of testis specific histone H2B variant (TH2B) in spermatozoa and early embryonic development	54.3332
98	Network Programme for Enrichment and Update of Database on Genome Related Information for Indian Spermatophyta and Archegoniatae Taxa-Phase II	33.0048
99	YAP function in growth factor receptor signalling in mammary epithelial cells during growth control and tumorigenesis.	24.668

100	PRESCRIP-TEC”: “Prevention and Screening Innovation Project towards Elimination of Cervical Cancer	39.0192
101	Nano-mediated rapid detection and biocontrol of downy and powdery mildew of grapes and powdery mildew of tomatoes	57.38
102	Investigating the osteogenic potential of extracellular vesicles loaded injectable hydrogels	36.4384
103	Developing a system-level model of the human cochlea using measured otoacoustic emissions and psychophysical tuning curves	22.7336
104	DBT-ICT CENTRE FOR EXCELLENCE For Bioprocessing for Bioenergy and Biochemicals (DBT-ICT CoE3B)	698.63784
105	"Studies on population diversity and role of host plant volatiles cues for enhancing egg laying in temperate tasar silk moths (<i>Antheraea proylei</i>)	73.0136
106	Deployment and piloting of Improved Indigenous Fermented Food Product, ‘Chubitchi’ and ‘Tungrymbai’ for the sustainable Livelihood in Meghalaya, Northeast India	76.63432
107	Multi-institutional approach on development of technology driven bio-input production clusters for mass production of biofertilizers and biopesticides for promotion of eco-friendly farming with collateral development of bio- entrepreneurship in vegetables, spices and small tea growers of North East Region of India for better livelihood	38.3348
108	Network Programme for Enrichment and Update of Database on Genome Related Information for Indian Spermatophyta and Archegoniatae Taxa-Phase II	52.932
109	Catalyzing Complementary Olericulture in Assam, Arunachal Pradesh and Nagaland for Livelihood Security by Provisioning Quality Seed and Seedling of Indigenous and Commercial Vegetables Generated through Hi Tech Mini Plug Nursery and Conventional Means and Promotion of Bio-Enterprise	98.98963
110	Deployment and piloting of Improved Indigenous Fermented Food Product, ‘Chubitchi’ and ‘Tungrymbai’ for the sustainable Livelihood in Meghalaya, Northeast India	26.2
111	Deciphering the role of DZIP3, a RNA binding E3-Ligase in innate immunity and viral restriction	97.68034
112	"Impact of climate change on the emergence of stress tolerant Symbiodinium clade and altered microbiome in reef building corals” under the Marine Bioresource and Biotechnology Network Programme	351.6832
113	Hierarchically organized amino acid/protein core-shell nanobowls with 2 photon responsive off-on switchable lids for light activable delivery of an array of anti miRNA therapeutics in glioblastoma	23.5024
114	Rice stubble management through altered genotype x environment x management (GEM) interventions in wheat crop	28.6548
115	Antisense oligonucleotide-loaded, 3D printed, double-layered, and multifunctional wound healing matrix to target angiogenesis in chronic diabetic wounds	37.5712
116	Development of Aptamer-based multiple biosensors for sensing of pesticides in real time	23.5712
117	Enhanced osteogenesis promoted by bone injury specific co-delivery of BMP2 and Noggin Si-RNA loaded in microfluidically fabricated amino acid-based nanobowls with pH tunable lids	44.4712

118	Development of resistant starch potato using nanomaterial-mediated genome editing technology	45.3912
119	Nanocarriers for topical delivery of pathogen-specific RNAi molecules for sustained protection of pea crop against powdery mildew	25.176
120	DBT PAN IIT Center For Bioenergy : Phase II	148.4136
121	PRESCRIP-TEC": "Prevention and Screening Innovation Project towards Elimination of Cervical Cancer	20.5136
122	Design and Development of cost-effective Label-free detection of Alzheimer's biomarkers using liquid crystals	37.4
123	Inorganic polyphosphate in eukaryotes - synthesis, detection, metabolism and physiology	51.6244
124	Studying the efficacy of PPE2 protein in the treatment of inflammation and tissue injury	57.648
125	Understanding the growth and regulation of bacterial cell envelope	63.55648
126	Establishment of a Consortium for One Health to address Zoonotic and Transboundary Diseases in India, including the Northeast Region	3110.0884
127	Development of Novel Benzo fused Heterocycles to Improve the Treatment of Drug Resistant Tuberculosis	1.5
128	Characterization of interaction of SARS Cov-2 spike protein with placental endothelial cells for developing CoV-2 inhibitors	30.788
129	Elucidating the role of chromatin re modelers in yeast meiosis, especially in meiotic recombination, chromosome segregation and transcription of meiosis-specific genes	25.624
130	Development of affordable Immunochromatographic Test (ICT) based on recombinant proteins for point-of-care detection of Toxoplasma gondii infection	23.642
131	Characterization of human E2 enzyme Ube2N response to DNA	35.13654
132	Studies on the regulation of cell size, membrane biogenesis and fabY a novel gene contributing to fatty acid metabolism by (p)ppGpp&DksA	61.5728
133	Mechanistic studies on the divergent regulation of potassium transporters belonging to distinct protein families by dephospho-PtsN in Escherichia coli	44.4336
134	Post-transcriptional regulation in Acinetobacter baumannii DS002: Role of novel small RNA, AbcR200 in regulation of lut (lactate utilization) operon	48.1308
135	Elucidating the role of histone H3 lysine methylation in antifungal drug resistance	94.9892
136	Regulation of Innate dsRNA Sensing Pathways by Epithelial mesenchymal transition-TFs	75.33862
137	Phenotypic characterization of ruminant B cells from precursors to effector cells: Phase I	57.2416
138	Studies on the immunodominant proteins of the zoonotic pathogen, Brucella to develop improved diagnostic assays and vaccines for brucellosis.	84.4384
139	Identification of key molecular players specially lncRNAs involved in response to NDV challenge in indigenous and exotic chicken breeds using RNA-seq analysis.	18.196

140	Therapeutic protein production in milk of farm animals to increase their affordability.	230.36076
141	Development of novel gallium-based metallodrugs as chemotherapeutic anticancer agents	17.2
142	Targeting Pup1 independent mechanisms for improving low soil phosphorus tolerance and use-efficiency in rice	130.3548
143	Validation of DBT-NIAB SNP chip for Breed Identification and Preliminary Genome Wide Association Studies on Milk yield	57.7268
144	SARS-CoV-2 Network for Genomic Surveillance in Brazil, Russia, India, China and South Africa NGS-BRICS	12.4992
145	Investigating the role and regulation of transcription factor Grainyhead in <i>Drosophila</i> neural stem cells.	106.6672
146	Establish A Drug Metabolomics Lab For North Eastern States	418.26888
147	Design and fabrication of amperometric enzyme sensors for the detection of parabens	34.7736
148	Identification of genetic determinants and risk factors for drug resistance to bedaquiline and delamanid in native isolates of <i>Mycobacterium tuberculosis</i> in India	30.142
149	Bridging the genomic and transcriptional heterogeneity in oral cancer for identifying clinically relevant features	24.616
150	Electrochemical ultra-sensing platform integrated with biomarker coated on graphene detecting neonatal sepsis	6.5176
151	A mass spectrometric approach to unravel the landscape of sphingolipids as major signaling determinants of drug resistance and virulence in emerging human fungal pathogen <i>Candida auris</i>	18.9024
152	A study on the intergenerational effect of Maternal Vitamin D3 deficiency on cognition and hippocampal neurons in rats	68.35024
153	Identification of key molecular players specially lncRNAs involved in response to NDV challenge in indigenous and exotic chicken breeds using RNA-seq analysis.	31.4184
154	Exploring DNA Transactions and Genome Maintenance in the Malaria Parasite	193.8924
155	Establish SCHOOL OF INTERNATIONAL BIODESIGN (SIB)-Synergizing healthcare, innovation and entrepreneurship (SHInE)	921.83812
156	Bioprospecting of Marine microbial diversity for various products under the Marine Bioresource and Biotechnology Network Programme	43.116
157	Elucidating the Mechanism of Small RNAs and RNA Chaperone Hfq in Antibiotic Tolerance and Virulence in <i>Acinetobacter baumannii</i>	87.7152
158	Treatment of Septage using lab and pilot-scale Hybrid Constructed Wetland system in Dehradun, Uttarakhand	42.5104
159	The genetic control of morphological and ionic adaptation during the colonization of India by grain amaranth	94.88184
160	"Impact of climate change on the emergence of stress tolerant <i>Symbiodinium</i> clade and altered microbiome in reef building corals" under the Marine Bioresource and Biotechnology Network Programme	26.7736
161	Computer-aided Glioblastoma and Intracranial Aneurysms Treatment Response Quantification in Neuroradiology	39.6948

162	Developing a nature-inspired, general approach for enzymatic synthesis of hybrid biopolymer peptide oligonucleotide conjugates	10.0
163	DBT PAN IIT Center For Bioenergy : Phase II	92.58
164	Structural and functional characterization of Mycobacterium tuberculosis β -hydroxyacyl-ACP dehydratase & monooxygenases for understanding its thiourea mediated mode of inhibition	61.55
165	Campylobacter Jejuni Outer Membrane Vesicles: Role in Host Pathogen Interaction and vaccine perspectives	39.578
166	Assessing the immuno-therapeutic potential of type III interferons-IFNs (IFN-?) against Avian Influenza virus (AIV) infections in murine and chickens models	43.552
167	AI based Detection of Acute Respiratory Distress Syndrome (AI-DARDS): An artificial intelligence aided non-contact framework for detecting acute respiratory distress syndrome using microwave sensors	49.33873
168	PRESCRIP-TEC”: “Prevention and Screening Innovation Project towards Elimination of Cervical Cancer	61.33176
169	SARS-CoV-2 Network for Genomic Surveillance in Brazil, Russia, India, China and South Africa NGS-BRICS	67.8252

2. R&D Projects sanctioned by BIRAC in other States

S. No.	Name of project	Sanctioned amount (in Rs. lakhs)
1	Generation and Characterization of third party donor derived AdV, CMV and EBV multivirus specific T cells for therapeutic intervention in patients undergoing Hematopoietic Stem Cell Transplantation	50.0
2	Development Of Smart Vision Inspection System For Identification And Removal Of Foreign Particles During Black Tea Processing	50.0
3	Overcoming the problem of high oxygen demand by using formate instead of methanol to induce the AOX1 promoter of Komagataella phaffii Pichia pastoris	35.78
4	Development of a glutamate-inducible Pichia pastoris yeast expression system	47.784
5	Pre-clinical evaluation of promising drugs for a rare syndromic cardiomyopathy in children	49.98
6	TITLE: Double-blind randomized control trial for a novel algorithm P-Score on variables including OCTbased phenotyping and soluble plasma VEGFR2 for the stratification of Anti VEGF Therapy response among Diabetic Macular Edema.	40.0
7	Development of Lateral Flow Assay Kit for diagnosis of pebrine disease in silkworms	46.12