

Government of India
Ministry of Science and Technology
Department of Biotechnology

Monthly Cabinet Summary, January-2019

1. Important policy decisions taken and major achievements during the month:

- i. **The DNA Based Technology (Use and Regulation) Bill, 2019** passed by the Lok Sabha on 8th January, 2019 during the Winter Session of the Parliament. The Bill aims to establish the identity of certain category of persons including the victims, offenders, suspects, under trials, missing persons and unknown deceased persons. The same is under consideration for passing in the Rajya Sabha.
- ii. **Inter-Ministerial Cooperation for Promotion and Facilitation of Agricultural Biotechnology Research and Education:** A MoU was signed between ICAR and DBT on 14th of January, 2019 for mutual collaboration to explore the possibility of cooperation, convergence and synergy to promote and accelerate the progress of research and training in various disciplines of agricultural biotechnology between ICAR and DBT.
- iii. **Scientific Infrastructure Access for Harnessing Academia University Research Joint Collaboration (SAHAJ):** The Department of Biotechnology announces the Access of its Research Resources and Facilities supported across the country, by way of SAHAJ. Each DBT Autonomous Institute and DBT supported Infrastructure programme will make available its high end equipments and infrastructure to Research Institutes, Universities, Colleges and Start -ups /Entrepreneurs. Their website reflects Infrastructure facility usage forms with well defined usage charges terms and conditions.
- iv. **Sakura Exchange programme in Science for Indian researchers/Administrators** was supported by Japan Science and Technology Agency from Jan. 20 to Jan 26, 2019 in Tokyo, Japan. The Indian delegation comprised of 2 officers from Department of Biotechnology ,3 officers from Ministry of Human Resources Development, 2 officers from Department of Science and Technology, 3 Officers from Department of Scientific and Industrial Research, 1 post doc from International Center for Genetic Engineering and Biotechnology (ICGEB), and 21 young scientists from IIT's & IISER's. The Indian delegation visited The University of Tokyo, Tokyo Institute of Technology, University of Tsukuba, National Institute of Advanced Industrial Science and Technology, Riken Center for Advanced Intelligence Project and Japan Electron Optics Laboratory Company (JEOL), Ltd. The focus of this exchange programme was on "Artificial Intelligence" as well as "Deep machine learning". During this exchange programme, young researchers from IITs and IISERs exchanged their ideas with Senior Professors from 16 Japanese Universities with an aim to establish strong Indo-Japanese collaborations in Science and Technology.
- v. The meetings of the **Candidate Vaccine Advisory Committee (CVAC)** and **Steering Group (SG)** of the Indo-UA Vaccine Action Programme (VAP) were held on 15-16 January, 2019 at New Delhi. Indo-US VAP is a bilateral programme of the Department of Biotechnology (DBT) and the National Institute of Allergy and Infectious Diseases (NIAID). Eleven vaccine candidates of TB, chikungunya, zika, influenza, RSV and dengue were reviewed under the aegis of this meeting. The session also included discussion on flavivirus epidemiology and surveillance. The meeting was attended by GoI representatives, representatives from regulatory bodies, NIH representatives, experts and industry participants.

- vi. **5th Meeting of FIRST HUB:** The 5th meeting of FIRST HUB, a Facilitation Cell for Startups was held on 4th January, 2019 at Biotechnology Industry Research Assistance Council (BIRAC), New Delhi to address the regulatory concerns of the Start-ups, innovators and researchers in the areas of pharmaceuticals, biomedical devices and implants.
- vii. During the 170th meeting of the Review Committee of Genetic Manipulation (RCGM) 98 applications were considered and appropriate decisions were taken.
- viii. The Department has constituted 14 Institutional Biosafety Committees during the period under report.
- ix. Comments of the Department were communicated to DSIR on 7 applications received for in-house R&D recognition.
- x. The Department has recommended 2 patent applications for filing in Indian patent Office and 5 patents for maintenance, to the empanelled patent attorneys.

Autonomous Institutions of the Department of Biotechnology

A. National Institute of Plant Genome Research (NIPGR), New Delhi

- The Institute in collaboration with University of Cambridge has participated in the launch event of the 'Cambridge India Research Foundation' (CIRF) at New Delhi, to provide momentum for India-Cambridge bilateral partnership in research.
- Institute has organized a lecture on 'Sexual harassment at workplace', by Ms. Mansi Gupta, Advocate, Delhi High Court and also a talk/discussion on 'Biotechnology Ignition Grant (BIG) Scheme from the Biotechnology Industry Research Assistance Council (BIRAC)', by a distinguished scientist from the Centre for Cellular and Molecular Platforms (C-CAMP), Department of Biotechnology (DBT).
- One of the scientists of Institute has been awarded with 'National Bioscience Award for Career Development (2017-18)' from DBT. In the area of bioinformatics, the institute scientists have developed a database for *Arabidopsis thaliana* fusion transcripts
- Besides, the 'National Facility for Genomics and Genotyping', sanctioned by the DBT and to be established/anchored at NIPGR, has been initiated with its first Executive Committee meeting. Furthermore, during this month, 18 candidates have started their short term training programme in the Institute.
- NIPGR scientists have published ten manuscripts in high impact journals during this period. Besides, one review, each on topics – ubiquitin-proteasome system (UPS) elaborating its relevance under stress; the utility of CRISPR/Cas9 to combat plant diseases and usefulness of omics approaches for improving salinity stress tolerance, have been published.

B. National Agri-Food Biotechnology Institute (NABI), Mohali

- NABI and Centre of Innovative and Applied Bioprocessing (CIAB) signed MOU with Bioendev AB, Sweden to setup a pilot project on a torrefaction R&D unit for validation of biocoal production from rice-straw. Institute also showcased its research technologies under the DBT stall in 106th Indian Science Congress, 2019 organized by the Indian Science Congress Association (ISCA) at Lovely Professional University during 03-07 January, 2019 at Phagwara, Punjab.

C. National Centre for Cell Science (NCCS), Pune

- The Institute published 4 articles during the period.
 - (i) Gandham S *et al.*, *Rhodobacter alkalitolerans* sp. nov., isolated from an alkaline brown pond. Arch. Microbiol., Dec 2018.
 - (ii) Lodha TD *et al.*, Transcriptome analysis of hopanoid deficient mutant of *Rhodospseudomonas palustris* TIE-1. Microbiol Res., Jan 2019.

- (iii) Raja I *et al.*, Prediction and identification of novel sRNAs involved in *Agrobacterium* strains by integrated genome-wide and transcriptome-based methods. FEMS Microbiol Lett., Dec 2018.
- (iv) Varankar SS and Bapat SA. Migratory metrics of wound healing: a quantification approach for in vitro scratch assays. Front Oncol., Dec 2018.

D. Center of Innovative And Applied Bioprocessing(Ciab), Mohali

- The Institute has filed a patent on a simple method for extracellular production of high purity c-phycoyanin from *Spirulina platensis*. It has also filed a provisional patent on novel process for the production of off odour/off flavour free protein hydrolysate from maize gluten meal and uses thereof.
- The Institute has published three research papers namely:
 - (i) Sucheta *et al.*, Evaluation of structural integrity and functionality of commercial pectin based edible films incorporated with corn flour, beetroot, orange peel, muesli and rice flour. Food Hydrocolloids, Jan 2019.
 - (ii) Kumar V *et al.*, Efficient and economic process for the production of bacterial cellulose from isolated strain of *A. pasteurianus* of RSV-4 bacterium. Bioresour Technol., Mar 2019.
 - (iii) Jadaun JS *et al.*, Catalytic biosynthesis of levan and short-chain fructooligosaccharides from sucrose-containing feedstocks by employing the levansucrase from *Leuconostoc mesenteroides* MTCC10508. Int J Biol Macromol., Jan 2019.
- Institute has received approval of an Indo-Sweden project on development and validation of technology for production of high energy density biocoal from rice straw and other agri-biomasses.

E. National Institute of Immunology (NII), New Delhi

- Seven research papers were published in reputed journals. A project proposal on "Role of chromokinesin and kinesin motor proteins in driving chromosomal aberrations" has been submitted for possible funding to the DBT.
- Three Material Transfer Agreements (MTAs) have been signed with Adgene (USA) to procure biological materials needed time to time for carrying out research experiments.
- Twenty two students joined the institute for the 6 months training programme. Around 28 students and four staff members from MES Keveeyam College, Kerala visited the institute.
- For promoting exchange of ideas, dissemination of information and explore collaborations, seminars by faculty of various scientific organizations were arranged as follows:
 - Dr. Milan G. Chheda, Assistant Professor of Medicine and Neurology, Washington University, School of Medicine, USA delivered a lecture on "Using Zika virus to target glioblastoma stem cells" on 02/01/2019.
 - Dr. Jennifer Philips, Associate Professor of Medicine and Molecular Biology, Division of Infectious Diseases, Washington University School of Medicine, St. Louis, MO, USA delivered a lecture on "*M. tuberculosis* Immune Evasion Strategies" on 03/01/2019.
 - Dr. Binay Panda, Ganit Labs Foundation, Bangalore delivered a lecture on "Data integration in cancer biology and why it is important to find clinically relevant signatures" on 08/01/2019.
 - Dr. Arindam Datta, Laboratory of Molecular Gerontology, National Institute on Aging, National Institutes of Health, USA delivered a lecture on "Targeting BRCA2 deficiency with a WRN-specific Helicase Inhibitor" on 09/01/2019.
 - Dr. Jayasha Shandilya, Research Scientist, Department of Physiology and Biophysics, University at Buffalo, State University of New York delivered a lecture on "Molecular Mechanisms that Regulate Gene Expression and Genomic Stability" on 21/01/2019.

- Dr. Devram Sampat Ghorpade, Department of Medicine, Columbia University, USA delivered a lecture on “Obesity: Liver dictates meta-inflammation via secretory hepatokine, dipeptidyl peptidase 4 (DPP4)” on 25/01/2019.
- Prof.B.J.Rao, Professor & Dean, Indian Institute of Science Education and Research, (IISER) Tirupati, Andhra Pradesh delivered a lecture on "DNA Damage Response intertwines with tissue homeostasis in *D. melanogaster*" on 29/01/2019.
- Dr. Sri. Rama Koti Ainavarapu, Associate Professor, Department of Chemical Sciences, TIFR Mumbai delivered a lecture on "Role of Malaria Parasite Cell Surface circumsporozoite Protein (CSP) in enhancement of cellular flexibility and motility: Is it a Lubricant?" on 29/01/2019.

F. Translational Health Science and Technology Institute (THSTI), Faridabad

- The Institute signed four MOU with the following institutes:
 - (i) THSTI signed an Academia-Industry collaborative MOU with Dabur India Ltd for joint development of herbal extracts as therapeutics for Non-Alcoholic Fatty Liver Disease (NAFLD).
 - (ii) THSTI and CSIR- inStem signed MOU for the project entitled “Insights into activation of virulence-associated Mycobacterium tuberculosis phoP/phoR system”.
 - (iii) MOU executed between THSTI and RCB for THSTI-RCB Ph.D.program.
 - (iv) MOU between THSTI and Bharat Immunologicals and Biologicals Corporation Limited (BIBCOL) executed for the project entitled “Production of safe and effective oral cholera vaccine of global GMP standards in India through Industry Academia partnership to meet India supply needs” for this e project, THSTI executed Technology Licensing Agreement with International Vaccine Institute, Korea to license a technology for evaluating immunogenicity of Oral Cholera Vaccine (OCV) developed by BIBCOL.
- Non-Disclosure Agreement between THSTI and Biocon India Ltd. executed for evaluating the possibility of a mutually beneficial collaboration in relation to the novel immunological products of Biocon.
- Funding Agreement between THSTI and Global Challenges Research Fund (GCRF) executed for the project entitled “Setting up the Typhoid Human Challenge Model in India”. THSTI and Oxford University executed funding agreement for the project entitled “CALOPUS-Computer assisted low cost POC ultrasound.
- The Scientific Papers published by the Institute are following:
 - (i) Giri S *et al.*, Rotavirus gastroenteritis in Indian children <5 years hospitalized for diarrhoea, 2012 to 2016. BMC Public Health, Jan 2019.
 - (ii) Adela R *et al.*, Serum protein signature of coronary artery disease in Type 2 diabetes mellitus. Journal of Translational Medicine, Jan 2019.
 - (iii) Kar M *et al.*, Isolation and molecular characterization of Dengue virus clinical isolates from pediatric patients in New Delhi, Int J Infect Dis., Dec 2018.
 - (iv) Nisheeth A *et al.*, Development of a multiplex PCR assay for the detection of major virulence genes in *Vibrio cholerae* including non-O1 and non-O139 serogroups. J Microbiol Methods., Feb 2019.
 - (v) Weill FX *et al.*, Genomic insights into the 2016-2017 cholera epidemic in Yemen. Nature, Jan 2019.
 - (vi) Das R *et al.*, Aptamer-mediated colorimetric and electrochemical detection of *Pseudomonas aeruginosa* utilizing peroxidase-mimic activity of gold NanoZyme. Anal Bioanal Chem., Jan 2019.
- Thirty students and faculty members from the Bioinformatics Centre of Savitribai Phule, Pune University visited THSTI.

G. Institute for Stem Cell Science and Regenerative Medicine (inStem), Bengaluru

- Four papers were published in peer reviewed journals with the following title:
 - (i) Fries CA *et al.*, Graft-implanted, enzyme responsive, tacrolimus-eluting hydrogel enables long-term survival of orthotopic porcine limb vascularized composite allografts: A proof of concept study. PloS one, Jan 2019.
 - (ii) Mukherjee O *et al.*, Making NSC and Neurons from Patient-Derived Tissue Samples. Methods Mol Biol., Jan 2019.
 - (iii) Schmid B *et al.*., Generation of a set of isogenic, gene-edited iPSC lines homozygous for all main APOE variants and an APOE knock-out line. Stem Cell Res., Jan 2019.
 - (iv) Ahmed PH *et al.*, INDEX:db The Indian Exome Reference database (Phase-I). J Comput Biol., Jan 2019.
- A blood donation camp was organized in association with Sankalp India Foundation, Bangalore. Blood was collected by the Rashtrathana Blood Bank, which would be used for different patients including children suffering from Thalassemia.

H. Regional Centre for Biotechnology (RCB), Faridabad

- The Institute has published five research papers namely:
 - (i) Ojha A *et al.*, Platelet factor 4 promotes rapid replication and propagation of Dengue and Japanese encephalitis viruses. EBioMedicine., Jan 2019.
 - (ii) Ghodke PPI *et al.*, Synthesis of N2 -deoxyguanosine modified DNAs and the studies on their translesion synthesis by the E. coli DNA polymerase IV. J Org Chem, Jan 2019.
 - (iii) Patel S *et al.*, Bacteriocins: Classification, synthesis, mechanism of action and resistance development in food spoilage causing bacteria. Microb Pathog., Jan 2019.
 - (iv) Yadav K *et al.*, Deciphering the role of intramolecular networking in cholic acid-peptide conjugates (CAPs) at lipopolysaccharide surface in combating Gram-negative bacterial infections. J. Med. Chem., Jan 2019.
 - (v) Distinct intramolecular hydrogen bonding dictates antimicrobial action of membrane-targeting amphiphiles. J. Phys. Chem. Lett., Feb 2019.
- Six PhD students got registered in the winter session and a study tour programme in respect of Faculty/Students of Savitribai Phule University, Pune came to RCB.

I. Rajiv Gandhi Centre for Biotechnology (RGCB), Thiruvananthapuram

- Three papers were published in peer reviewed journals with the following title:
 - (i) Jabeena CA and Rajavelu A., Epigenetic players of chromatin structure regulation in *Plasmodium falciparum*. Chembiochem., Jan 2019.
 - (ii) Jerath G *et al.*, Syndiotactic peptides for targeted delivery. Acta Biomater., Jan 2019.
 - (iii) Sanawar R *et al.*, Estrogen receptor- α regulation of microRNA-590 targets FAM171A1-a modifier of breast cancer invasiveness. Oncogenesis., Jan 2019.
- Following Researchers and Students were awarded during January 2019:
 - (i) Arumugham Rajavelu; **Kerala State Young Scientist Award** – 2018, , for the work carried out in RGCB on “Epigenetic players as novel drug targets in *P. falciparum*” by Kerala State Council for Science, Technology and Environment, Thiruvananthapuram, Government of Kerala.
 - (ii) G. Gayathri, PhD Student: Awarded the American Society for Biochemistry and Molecular Biology (ASBMB) travel award, to attend and present (Oral) her PhD work on tRNA methylation in *P. falciparum*, Apr 6 – 9, 2019, Orlando, USA.

- (iii) Devadathan VS, PhD Student: Awarded the EMBO Short term fellowship to work in CRICK Institute, UK for 3 months.

J. Institute of Life Science (ILS), Bhubaneswar

- A study is ongoing for Identification of stage-specific biomarker signatures in cancers.

K. National Brain Research Centre (NBRC), Manesar

- Dr Anirban Basu's laboratory at NBRC is searching for drugs that will reduce brain inflammation, and therefore severity of disease due to infection of Chandipura virus. Chandipura outbreaks happen periodically in Central India. The disease progresses rapidly from an influenza-like illness to coma and death.

L. National Institute of Animal Biotechnology (NIAB), Hyderabad

- Prajna Parimita Kar (PhD student) got best poster award in Genomic 2019 conference held in Bengaluru.
- The Institute has published research paper namely:
 - (i) Islam S *et al.*, Microfluidic-based graphene field effect transistor for femtomolar detection of chlorpyrifos. Sci Rep., Jan 2019.

Public Sector Undertaking (PSU) of the Department of Biotechnology

A. Biotechnology Industry Research Assistance Council (BIRAC), New Delhi

- BIRAC has organized discussion meeting on 'Guar Gum: Tapping the potential of Natural Gem' by involving academia, industry and other stake holders to understand the existing gaps in the area of Guar-Gum. To create a BIRAC Women Entrepreneur Network & Incubator in North Eastern Region the Institute conducted a stakeholders meeting, at IBSD, Shillong. To encourage sustenance of entrepreneurial spirit BIRAC organized a mentoring workshop through its Regional Entrepreneurship Centre at CCAMP (BREC).
- SPARSH programme of BIRAC aims at finding innovative solutions to society's most pressing social problems by supporting development of various Products, Processes and Technologies through Biotechnological approaches. BIRAC announced 8th call of SPARSH under which proposals with well-established Proof of Concept have been invited.
- Winners for BIRAC Innovation Challenge Award i.e. Solutions for Community Health (SoCH), were identified through MyGov and was awarded to Bodhisattwa Sanghapriya for developing a Smartphone Based Low Cost Point of Care Device for Early Screening of Breast Cancer & Ajinkya Dhariya for developing Eco-Sanitary Pad Disposer.
- BIRAC and ISBA jointly organized a full day workshop at North Eastern Hill University (NEHU), Shillong for Creating Biotech Start up Ecosystem. BIRAC organized an IP Law clinic in association with FIIT, Delhi at BIRAC office, where BIRAC supported innovators/startups were invited to get an opportunity to have one to one interaction and solution based approach on IP related matters.

B. Bharat Immunologicals and Biologicals Corporation Limited (BIBCOL), Bulandshahr

BIBCOL has signed following MOU/Agreements in the month of Jan 2019:

- BIBCOL has signed Technology Transfer Agreement with International Vaccine Institute (IVI) Korea for transfer of technical knowhow to BIBCOL for setting up of pilot plant for production of Oral Cholera Vaccine to be set up at BIBCOL plant site Chola, Bulandshahr. BIBCOL has signed MOU with National Institute of Immunology (NII) New Delhi for jointly working on the development and process optimization of plasma derived medicines (PDMs) like albumin, immunoglobulin etc.
- BIBCOL has also signed tripartite agreement with International Vaccine Institute Korea, Translational Health Science and Technology Institute (THSTI), Faridabad for clinical development of OCV, pre clinical study and vibriocidal assay and support in clinical and regulatory studies in India in connection with oral cholera vaccine project. BIBCOL has also

signed MOU with THSTI for jointly working in development, setting up of OCV project and clinical development.

2. Important policy matters held up on account of prolonged inter-ministerial consultations: NIL

3. Compliance of Cabinet/Cabinet Committee decisions.

No. of COS decisions pending for compliance	Proposed action plan/time lines for compliance of COS decisions	Remarks
NIL	NA	NA

4. No. of cases of ‘sanction for prosecution’ pending for more than three months: NIL

5. Particulars of cases in which there has been a departure from the Transaction of Business Rules or established policy of the Government: NIL

6. Status of implementation of e-Governance:

Total No. of files	Total No. of e-files
5256	962

7. Status of Public Grievances:

No. of Public Grievances redressed during the month	No. of Public Grievances pending at the end of the month
30	82

8. Information on the specific steps taken by the Ministry/ Department for utilization of the Space, Technology based tools and application in Governance and Development: NIL

9. (i). Confirmation that the incumbency details of all posts in the Ministry/Department and its organizations falling under the purview of the ACC have been updated on AVMS: It is confirmed that the incumbency details of all the posts in the Ministry/Department (both Autonomous Institutes and PSUs under DBT) falling under the purview of the ACC have been updated on AVMS.

(ii). Status regarding compliance of the directions of ACC. A paragraph on Cases in which the ACC directions have not been compiled with distinct heading: It is also confirmed that the directions of ACC are complied with.

(iii). Status of cases where recommendations from PESB have been received but the proposals are yet to be submitted to the ACC Secretariat: It is stated that the same may be treated as ‘Nil’

(iv). Status of Government e- Marketplace (GeM): Goods worth **Rs. 10,92,934/-** has been procured through GeM in the month of January 2019.