

No.15011/01/2020-STC- Part I
Government of India
Ministry of Tribal Affairs
(STC Monitoring Division)

Ground Floor, Jeevan Tara Building,
Sansad Marg, New Delhi-110 001
Dated: 18th October, 2021

OFFICE MEMORANDUM

Subject: Minutes of the meeting held on 10.09.2021 to review the Scheduled Tribe Component Funds and discuss the convergence of Integrated Village Development Programme of the Ministry of Tribal Affairs with STC Schemes – reg.

The undersigned is directed to forward herewith the minutes of the meeting on the above subject held on 10/09/2021 under the Chairmanship of Secretary, Tribal Affairs for information and necessary action.

2. This issues with the approval of Secretary, Tribal Affairs.



(Satyendra Kumar)
Joint Director

Email: satyendra.chadha@gov.in

To

Dr. Debapriya Dutta, Associate Head & Adviosor, Department of Science and Technology
Shri K. Gopikrishna, Scientist F, Department of Science and Technology
Dr. Anurag Agrawal, Director, CSIR-IGIB
Dr. Souvik Maiti, Senior Principal Scientist, CSIR-IGIB
Dr. Muniraju S.B., Dy. Adviser (SJE-VAC), NITI Aayog

Copy to:

Secretary, Department of Science and Technology

PPS to Secretary, Ministry of Tribal Affairs
PPS/PS to JS(NJK)/DDG/EA

Minutes of the meeting held on 10.09.2021 to review utilisation of the Scheduled Tribe Component Funds and discuss the funding for Action plan for Sickle Cell Disease

A meeting was held under the chairmanship of Secretary, Ministry of Tribal Affairs (MoTA) on 10.9.2021 at 11.00 A.M. with the Department of Science and Technology (DST) to review the allocation, utilization, physical progress of STC funds by DST under various schemes and modalities for supporting research for treatment of Sickle Cell Disease with STC funds of DST. A list of participants who attended the meeting is given at Annexure.

2. Department of Science and Technology has been allocating 4.3 percent of total scheme allocation as STC for last 4-5 years. They have allocated Rs 125.45 crore under STC this year. Secretary, Tribal Affairs observed that the allocation on RE and actual expenditure in 2020-21 was not upto the mark. Further in the current financial year DST has spent only Rs 12.08 crore. Dr Dutta from DST informed that due to Covid pandemic DST could not utilise the full amount in last year.

2.1. While reviewing details of allocation and expenditure, it was observed that DST is allocating STC funds under three schemes namely Innovation, Technology Development and Deployment (ITDD), Science and Engineering Board and Science and Technology Institutional and Human Capacity Building. Major STC allocation is under ITDD.

3. As regards the details of activities under the schemes, Dr Dutta informed that

(i) DST is funding inquisitively driven research projects, individual projects and establishing Science and Technology Innovation Hub near ST communities under Innovation, Technology Development and Deployment and is working with the network of NGOs. Its focus is on creating sustainable livelihood system, capturing local know-how and providing need-based solutions to the communities. For example, Purulia which is a predominantly paddy cultivation area, faces problem of drudgery, productivity loss etc. They are doing technological intervention as per the need of communities and creating market linkages for sustainable livelihood.

(ii) 7 Knowledge Hubs have been established for STs and 12 for SCs. Apart from establishing STI hubs, various missions such as water missions, tackling climate change programmes, training and capacity building for tribal youths etc. are also being carried out under STC component of Innovation, Technology Development and Deployment.

(iii) 4 ST Cells have been established in Sikkim, Arunachal Pradesh, Tripura and Mizoram which help in mapping of livelihood system for planning of development strategies, identification of technological gaps including mapping of technological needs, formulation of research/demonstration/ projects as well as specific programmes leading to socio-economic development of the community by utilizing local resources and skills of target communities.

(iv) Science and Engineering Research Board scheme is aimed at providing research support to researchers belonging to the Scheduled Tribe in undertaking research in frontier areas of science and engineering. ST Researchers working on regular basis in an academic

institutions/national lab or any other recognized R&D institutions in the field of Science and Engineering are eligible.

(v) DST provides fellowships and awards such as INSPIRE fellowships to eligible ST Students under Science and Technology Institutional and Human Capacity Building.

(vi) DST is taking specific interventions at Science and Technology level to improve the lives of STs. The requirements and gaps in technology available to STs are mapped and bridged. DST supports the projects which cover considerable number of STs. In Chhattisgarh activities to solve the problem of Sickle Cell Disease also are being funded.

4. Dr Navaljit Kapoor, Joint Secretary mentioned that DST should identify specific areas of research with MoTA for utilization of STC funds. He gave the example of sickle cell disease, which is prevalent amongst tribals and CSIR is doing research on CRISPR technology, which can correct defects in sickle cell gene. He suggested that MoTA and DST should jointly fund this project from available sources. He also mentioned that DST has been requested for providing technical inputs in GI tagging of tribal products as protection of geographical indications leads to the **overall economic prosperity of the manufacturers and producers and** enhance the secondary economic activities in that specific region, which in turn boosts the regional economic development. He suggested that MoTA and DST should jointly fund research projects based on submission of proposal by CSIR.

Discussion on CRISPR mediated genetic correction of Sickle Cell

5. Dr. Anurag Agrawal, Director, CSIR- Institute of Genomics and Integrative Biology (IGIB) made a presentation on CRISPR mediated genetic correction of Sickle Cell, overall work plan and expected deliverables including milestones. He said Council of Scientific & Industrial Research (CSIR), India, is among the world's largest publicly funded R&D organisations. CSIR is known for its cutting-edge R&D knowledge base in diverse S&T areas.

CRISPR TECHNOLOGY: Sickle cell anemia (SCA) is a debilitating blood disorder that affects a significantly large number of tribal people of India. Current treatment approaches utilize the use of Hydroxyurea, blood transfusions or stem cell transplantation from donors. The Council for Scientific and Industrial Research (CSIR) IGIB is working on **CRISPR CAS-9 therapy** to tackle the Sickle Cell Disease. Through **CRISPR-CAS** (Clustered Regularly Interspaced Short Palindromic Repeats- CRISPR Associated) technology, researchers can permanently modify genes in living cells and organisms and, in the future, may make it possible to correct mutations at precise locations in the human genome in order to treat genetic causes of disease. It's a way of finding a specific bit of **DNA** inside a cell. After that, the next step in CRISPR gene editing is usually to alter that piece of DNA. This technology (which won the Nobel Prize in Chemistry in 2020) has the potential to be a single dose cure for blood disorders like Sickle Cell Anemia. The correction of the Hematopoietic Stem Cell can be done outside body (ex-vivo) and in-vivo, correction inside body and CSIR has already done research on the technology. The steps for achieving success in this technology requires Development of Gene editing products and Clinical Correction of Sickle Cell phenotype in patients which involves following processes.

- Design of CRISPR reagents, assessment of their efficacy and ex vivo validation
- Design and validation of optimized vectors (viral and non-viral) for safe and efficacious delivery to human cells
- Complete safety and efficacy evaluation of CRISPR based correction in non human models
- Recruitment, counselling and guidance of patients for sample collection and eventual clinical trial procedures
- Preparation of site, coordination of clinical partners and setting up a pipeline for pre and post-trial follow up
- Regular assessment of patient health, liaison with scientific and regulatory partners

Objectives of research:

- A. Preclinical studies on the safety and efficacy of genome editing of sickle cell anemia, mutation.
- B. Genome wide safety and efficacy of targeting outcomes.
- C. Development of optimal delivery systems for cell/tissue specific targeting.
- D. Clinical trial P1.
- E. Complete follow up of CT and establishment of detailed SOPs for larger groups

Work Plan:

Milestone no.	WPs involved	Expected date of completion	Mode of validation
1	Preclinical studies on the safety and efficacy of genome editing of sickle cell anemia mutation	24 months from first date of disbursal	Review by experts in the field
2	Genome wide safety and efficacy of targeting outcomes	24 months from first date of disbursal	Review by experts in the field/Publication (additional delay may be due to typical publication timelines)
3	Development of optimal delivery systems for cell/tissue specific targeting	36 months from first date of disbursal	Review by experts in the field/Publication (additional delay may be due to typical publication timelines)
4	Clinical trial P1	36 months from first date of disbursal	Review by experts in the field
5	Complete follow up of CT and establishment of detailed SOPs for larger groups	48-60 months from first date of disbursal	Review by experts in the field/Publication

Project Duration: 60 months

Budget requirements: Recurring Cost (Rs): 4596.713 Lakhs and Non-Recurring Cost (Rs): 1550 Lakhs

Dr Anurag Aggarwal submitted that the total project cost for developing the technology and clinical trial is around Rs 60 crore in 5 years and requested Department of Science and Technology to provide support from STC funds. He said that CRISPR therapy in Sickle Cell Anemia is cutting edge and only 2 or 3 countries in the world have begun clinical trials. India's participation will put it on the world map, if the efforts are successful. He also informed that whereas the trial can commence within 3 years, follow-up of at least 2 more years is needed to ensure safety and overseeing complications, if any. Dr Anurag informed that the estimated cost of the project is Rs 61.46 Crores and duration is of 5 years.

6. JS(NJK) requested that DST should fund this important project under their Scheduled Tribe Component as MoTA has prepared action plan for prevention, management and elimination of sickle cell disease. Secretary, TA expressed the need for participation of scientific and health departments to oversee the project since it has critical scientific, health and therapeutic components. He urged that an administrative set up may be set up having participation of concerned stakeholders which can oversee the project. To this suggestion, Dr. Agrawal informed that the proposal itself will include members from ICMR, AIIMS, New Delhi and National Institute of Immuno-Hematology, Mumbai. He further informed that such a participation has already been ensured by GTAEC committee (Gene Therapy Advisory and Evaluation Committee) from Department of Biotechnology (DBT) and NAC-SRT (National Apex Committee for Stem Cell Research and Therapy) from Department of Health Research (DHR). The statement released by the corresponding heads of these committees read as follows:

“Stem cell therapeutics and gene therapies are important areas of research, which are very much encouraged by the Government of India and the Indian Council of Medical Research. The intersection of these two areas, genetically engineered stem cells, is also therefore of great interest and holds much potential for treatment of hematological disease. We are delighted to see inter-ministerial cooperation towards advancing this field and confirm that the directions being pursued are aligned with the mandate of National Advisory Committee for Stem Cell Research & Therapy (NAC-SCRT) and the Gene Therapy Advisory and Evaluation Committee (GTAEC). These committees would be happy to guide this project to ensure maximum public benefit and upholding of ethical principles during the conduct of such research”

6.1. Secretary, TA appreciated the highly acclaimed research work of CSIR-IGIB. He further asked how the costs (Bone marrow transplantation, BMT) for ex vivo therapy can be reduced to make the solution more widely applicable across the tribal population. Dr. Agrawal informed that the component for in vivo therapy using viral and non-viral vectors is designed to address principally this point. If such vectors can be validated within the time frame of the project, then cost associated with BMT will be drastically reduced and a large number of participants will eventually benefit in the coming years.

6.2. Secretary, TA suggested the need of engaging pharma manufacturing companies at coming stage of the project and asked to identify such companies through Department of Pharmaceuticals and prepare an administrative set up for overseeing the project and submit to the Ministry. Dr Anurag said that he will prepare and submit all the details including expected cost of treatment per case.

6.3. DST was requested to examine the proposal on priority. Dr Dutta said that if MoTA feels this is an important project, they don't have any issue in funding the project. He suggested CSIR to give presentation to Secretary DST and apply online on website of the DST. It was decided to review the progress of the project in a month.

The meeting ended with vote of thanks to the all the participants.

List of Participants

Srl.No.	Name & Designation
1.	Shri Anil Kumar Jha, Secretary, MoTA -in- Chair
2.	Shri Naval Jit Kapoor, JS, MoTA
3.	Shri Biswajit Das, DDG, MoTA
4.	Shri Shiv Singh Meena, EA, MoTA
5.	Shri Rahul Kumar, Deputy Director, MoTA
6.	Dr. Debapriya Dutta, Associate Head & Advisor / Scientist G, Department of Science and Technology
7.	Shri K Gopikrishna, Scientist-F, Department of Science and Technology
8.	Shri Dr Anurag Agrawal, Director, CSIR-IGIB (Institute of Genomics and Integrative Biology)
9.	Dr. Souvik Maiti, Senior Principal Scientist, CSIR-IGIB
10.	Dr. Debojyoti Chakraborty, Senior Scientist, CSIR-IGIB
11.	Ms. Vinita Srivastava, Heath Advisor, MoTA