DBT-BIRAC Joint Call for Proposals on 'Precision Biotherapeutics-Cell and Gene Therapy' for Fostering High Performance Biomanufacturing under BioE3 Policy

1. Background

The **BioE3** (**Bio**technology for **E**conomy, **E**nvironment & **E**mployment) **Policy** for '*Fostering High Performance Biomanufacturing*' has been approved by Union Cabinet in August 2024. This Policy lays down the framework for high-performance Biomanufacturing, to accelerate the development and scale up of bio-based products in the country. Biomanufacturing can fundamentally transform the global economy from today's consumptive manufacturing paradigm to the one based on regenerative principles, and will play a pivotal role promoting in '*Green Growth'* while driving country's Bioeconomy.

2. Scope of The Call

Cell and Gene Therapy (CGT) has been identified as one of the priority areas under the 'Precision Biotherapeutics' vertical of the BioE3 Policy for 'fostering high performance Biomanufacturing'. The CGT sector is a rapidly evolving field with transformative potential for treatment of a range of complex and previously untreatable diseases. The potential of this emerging therapeutic modality is highlighted by the increasing number of CGTs which have been approved and are also in the development pipeline.

Hence, DBT and BIRAC aim to foster an innovation ecosystem for enabling the development of novel CGTs with an emphasis on improving clinical outcomes, enhancing safety, and advancing translational applications in the field.

In view of this, DBT and BIRAC invite proposals on "Precision Biotherapeutics-Cell and Gene Therapy", with the objective to build requisite capabilities and create necessary infrastructure for advancing this field through novel approaches/ technologies, and enabling development of a pipeline of indigenous and affordable CGT candidates. The proposals are invited under the categories:

(i) Discovery & Application-oriented Integrated Network Research; and

(ii) Bridging the gaps for scale-up.

2.1 Discovery & Application-oriented Integrated Network Research: (Expected Outcomes –TRL: 3-5)

Under this category, the proposals are expected to advance cutting-edge innovative research with applied knowledge, for accelerating innovations and fostering the development of affordable solutions. The proposals may be focused on the following, including but not limited to:

a. Design and development of safer and more efficient viral and non-viral gene delivery vectors with application in *ex vivo* and *in vivo* gene therapies;

b. To explore advanced gene editing techniques with improved precision, reduced off-target effects and ability to target a range of treatable conditions;

c. Demonstration of 'Proof-of-Concept' and early stage validation of i) innovative engineered and non-engineered cell-based therapies for various diseases, and ii) new and improved gene therapy strategies for correcting mutations or restoring normal function in genetic diseases and/or conditions that are difficult to treat using traditional methods;

d. Development of novel mRNA based cell therapy technologies for applications in various diseases.

2.2 Bridging the Gaps for Scale-up: (Expected Outcomes –TRL: 5-8)

Under this category, the focus would be on early and late-stage development of CGT candidates including: clinical translation of existing CGT leads, addressing challenges in scaling up CGT production; improving quality control; and development of clinical trial models for evaluating safety and efficacy of CGTs.

Accordingly, proposals are invited on the following aspects, including but not limited to:

a. IND-enabling studies of existing CGT leads with established Proof-of-Concept so as to advance into *First-in-Human* studies;

b. Development of specific QA/QC assays and standards for CMC testing;

c. Early and late stage clinical development of CGTs, i.e., clinical trials for the demonstration of safety and efficacy for the most promising CGT products; scale-up and manufacturing of clinical trial materials to conduct clinical trials;

d. Production of indigenous components/reagents (media components; antibodies; cytokines like IL-7, IL-15, etc.; mRNAs etc.) for manufacturing of CGTs;

e. Production and scale-up of viral vectors for cGMP manufacturing of advanced clinical stage products for Phase-II and Phase-III clinical trials.

2.3 Key Requirements for the Proposed Projects:

a. Plan for collaboration between academic institutions, industry partners, and clinical researchers, for enabling early translational leads and outcomes

b. For proposals related to IND-enabling studies and clinical development, there should be clearly defined Product Development Plan with defined proposed activities, specific milestones & timelines, and the budget estimates depending on the stage of development.

c. Details on feasibility of advancing the candidate from the current readiness state of technology/stage of development by providing a clear understanding and articulation of risks and proposed solutions to these challenges including technical, regulatory & IP risks.

d. Proposals for early and late stage clinical development should include previously conducted studies and available supporting data depending on the stage of development, as described below:

- For regulatory toxicology studies: 'Proof-of-Concept' studies such as functional *in vitro* assays; animal safety and efficacy studies; batch consistency and stability data.
- After completion of regulatory toxicology studies, studies on manufacturability and stability of the CGT products, and previously conducted clinical trials in India or globally, need to be included.

e. For proposals involving CGT candidates in Phase-II/Phase-III clinical trial, details of uniqueness/novelty of their proposed product from the ones already existing in

the market, as well as, cost comparison with marketed products, need to be included.

f. If seeking support for clinical development, then following needs to be submitted:

- Clinical assay development plan: Details of clinical assays, selected facilities or partners for conduct of assays.
- Manufacturing strategies: Details of expression platforms, cell lines, analytical assays, formulation strategy.
- Clinical trial strategy: Details of the clinical development plan and clinical trial sites; Plan for utilization of DBT/BIRAC/NBM established clinical trial networks for conduct of clinical trials.
- Regulatory plan

3. Mode of Submission

Proposals maybe submitted by both Academia and Industry applicants, either independently or as a collaborative project.

a. **For proposals from Academia/Research Institutions**: Interested applicants should submit the proposals in the prescribed format duly forwarded by the executive head of the institution through the Department's e-ProMIS portal (www.dbtepromis.nic.in)**.**

b. **For proposals from Industry and Industry-Academia collaboration**: Interested applicants should submit the proposals in the requisite format duly forwarded by the executive head of the Company/LLP/Institution by logging to the BIRAC website (www.birac.nic.in).

4. Eligible Organizations

4.1 Academic Organisations:

a. Proposals may be submitted by interested applicants engaged in research activities at various Institutions/Universities/Societies/ Trusts/NGOs/Foundations/ Voluntary Organizations, recognized as a Scientific and Industrial Research Organization (SIRO).

b. The Principal investigator must have at least four years of the employment remaining in the institution at the time of proposal submission.

4.2 Industry:

a. Eligibility criteria for the Industries will be as per "*Implementation Plan for the Biomanufacturing and Biofoundry Initiative*" attached at ANNEXURE I.

b. Pre-requisite documents required to be submitted by the Industry as per the BIRAC norms are as follows:

A. Companies/Startups:

a. Incorporation certificate.
b. CA/CS certified share holding pattern as per BIRAC format (Companies having a minimum of 51% Indian shareholding / individuals holding Indian passports are only eligible) mentioning UDIN number.
c. Details regarding in-house R&D facility, if any; or Incubation Agreement with recognized Incubator.
d. Audited financial details of latest last three financial years,
e. Copy of passports of the shareholders if required (in support of 51% eligibility criteria).

B. Limited Liability Partnership:

a. Incorporation/Registration Certificate.
b. Partnership deed; CA/CS certified certificate which states that minimum half of the partners are Indian citizens mentioning UDIN number.
c. Copy of passports of Indian partners/subscribers
d. Research mandate/ details regarding in-house R&D facility, if any/ Incubation agreement
e. Audited financial details of last three financial years;

Companies/LLP if recommended have to provide a declaration stating that Company/LLP is not in default of BIRAC OR any other organization. Further there are no Legal Proceedings going against the applicant.

5. Evaluation Criteria

The proposals will be evaluated as per existing norms of DBT and BIRAC.

6. Funding Modalities

a. Projects having academic partners only will be funded by DBT. Projects involving Academia and Industry or only Industry will be supported by BIRAC.

b. Extent of funding will depend on the proposed activities and will be in alignment with the "*Implementation Plan for the Biomanufacturing and Biofoundry Initiative*" attached as ANNEXURE-1.

c. Project duration will be upto 2 years, extendable upto 5 years based on the performance.

7. Scope of Intellectual Property Generated During the Duration of the Project

The Intellectual Property (IP) generated during the duration of the project will be in accordance with the IP Policy of DBT and BIRAC.

8. Discretion

DBT/ BIRAC shall reserve the discretion on determination of sanction of funding and processes as per its standard norms and such determination shall be final. The selection process is not open to review.

9. Contact Information

Any queries may be addressed to the e-mails BioE3cgt@dbt.nic.in and **BioE3cgt@birac.nic.in**

Last date for submission of proposals is 15th March, 2025.