Government of India
Ministry of Science & Technology
Department of Biotechnology

सत्यमेव जयते

Call for proposals on T Cell based Vaccines and Biologics in Infectious diseases, Cancer and Autoimmune diseases

1. Background

T cells are central to protective immunity and disease pathogenesis orchestrating pathogen clearance, tumor surveillance and immune homeostasis. Increasing evidence demonstrates that effective T-cell responses (quality, magnitude and durability) determine disease susceptibility, severity and long term protection. T-cell function is dynamically influenced by contextual factors like metabolic state, tissue environment, microbiome, inflammatory milieu, and stress-associated pathways, leading to substantial inter-individual variability in vaccine and therapeutic responses.

Advances in immunology, systems biology, and bioengineering have transformed our ability to interrogate T Cell biology at an unprecedented resolution. These advances have enabled the emergence of T cells as powerful therapeutic and preventive tools. Next generation vaccine platforms, including mRNA based technologies are being designed to elicit robust and long lasting T cell responses alongside humoral immunity, esp. in chronic and complex diseases. Advances in understanding immune tolerance mechanisms, particularly the role of regulatory T cells, have opened new avenues for antigen-specific therapies aimed at restoring immune balance without broad immunosuppression.

However, significant challenges remain in identifying protective epitopes, understanding response determinants, predicting immune outcomes, ensuring durability of responses, and translating laboratory findings into scalable clinical solutions.

This Call seeks to support projects that advance fundamental understanding and translational applications of T cells towards the development of next-generation interventions addressing major health challenges, with a focus on infectious diseases, cancer, and autoimmune disorders.

2. Objectives

- To support the development of next-generation T-cell vaccines/vaccine candidates, biologics, and engineered cellular therapies across infectious diseases, cancer, and autoimmune disorders.
- To advance the fundamental understanding of protective, pathogenic, antitumor, and tolerogenic T-cell biology to identify mechanisms underpinning immune protection, disease pathogenesis, and therapeutic response.

- To strengthen antigen, neoantigen and epitope discovery, AI based predictions, immune monitoring, and biomarker development to enable the rational design and evaluation of T-cell-targeted interventions.
- Establish platforms for human immunophenotyping, standardized immunological assays, interoperable datasets, and other enabling resources to support T-cell research.
- Develop and validate preclinical models to accelerate T-cell research and translation.

3. Scope of the Call

This call aims to support programs spanning discovery research, technology development, preclinical validation and early clinical validation of T-cell-based vaccines, biologics, and cellular therapies for infectious diseases, cancer and autoimmune disease conditions.

3.1 Suggested disease areas

Proposals may address, but not limited to the following diseases:

Infectious diseases: Arboviral infections, particularly dengue and neurotropic flavivirus infections**;** chronic hepatitis B virus (HBV) infection**;** congenital and perinatal cytomegalovirus (CMV) infection**;** influenza and other respiratory viral infections**;** tuberculosis**.**

Cancers: HPV associated cancers, colorectal cancer, breast cancer, lung cancer, head & neck cancer, ovarian cancer, haematological malignancies, melanomas

Autoimmune diseases: Systemis Lupus Erythematosus, Rheumatid Arthritis, Vitiligo, Multiple Sclerosis, Celiac disease, Inflammatory Bowel disease, Type I diabetes, Psoriasis

3.2 Proposal categories

Proposals are invited in the following three categories.

A. Foundational research and capacity building: This vertical aims to advance fundamental understanding of T-cell biology by defining the mechanisms underlying protective immunity, immune-mediated pathology, antitumor responses, and immune tolerance. It will establish foundational national capabilities, including shared platforms, datasets, assays, and resources to enable discovery and translation. Suggested areas under this vertical include:

- Mapping HLA Class I and Class II diversity across Indian populations
- Identification and functional validation of disease-relevant T-cell antigens and epitopes
- Identification of disease-associated and antigen- specific T-cell receptors and clonotypes
- Defining immune correlates of protection, disease progression, immune escape, tolerance, and therapeutic response

- Development of peptide-MHC tetramers, multimers, and antigen discovery platforms
- Development and harmonization of immune monitoring assays and workflows (assays, reporting standards etc.)
- Establishment of resource networks comprising validated reagents, standardized immune-monitoring assay panels, reference materials, and curated interoperable immunological datasets

B. Applied research and technology development: This vertical aims to support development of candidate vaccines, biologics, engineered cell therapies and enabling technologies in the following specific areas:

Vaccine platforms: Multi-antigen and multi-epitope vaccine design; Preventive and disease modifying T-Cell vaccine platforms; mRNA and other next-generation vaccine technologies; Novel delivery systems.

Cellular therapeutics: TCR-engineered T cells, CAR-T cells, CAR-Treg therapies, Antigen-specific regulatory T-cell therapies

Immune-engaging biologics: Bi-specific and multi-specific T-cell engagers, Synthetic antigen-presenting cells, in-vivo T-cell targeting technologies

Immune modulation: Antigen-specific tolerance platforms, Metabolic engineering of T cells, Strategies to improve persistence, trafficking, tissue residency, functional fitness, and resistance to exhaustion

Enabling technologies: HLA-epitope-TCR–clinical outcome databases; AI/ML approaches for antigen prediction and immune response modelling; In vitro and in vivo models for translational studies

C. Early clinical development: This vertical aims to support advancement of vaccines and biologics from preclinical validation towards clinical validation with clearly defined milestones, decision points and translational outcomes. Suggested areas under this vertical include:

- GMP-compliant manufacturing and process optimization
- Scale-up strategies
- Product characterization, quality assurance, and release criteria
- Clinical-grade immune monitoring and biomarker validation
- Early-phase clinical evaluation and proof-of-concept studies
- Biomarker-guided patient stratification and clinical response assessment

4. Funding modalities

a. The Department of Biotechnology envisages support for **upto 5 programmes in each disease area** (Infectious Diseases, Cancer and Autoimmune disorders).

b. **Budget limit** will be as follows:

i. Maximum 2.5 crores for the Principal Investigator (PI) driven projects

ii. Maximum 10 crores for Collaborative projects with atleast two PIs

iii. 15 crores for Network projects with 3 - 5 PIs/Institutes

c. Projects will be supported for an initial period of **up to three years**, extendable by **two additional years**, subject to generation of promising research outcomes.
d. In case of Collaborative/Network projects, the Project Coordinator who will be the lead PI will be responsible for project management and be the central contact point for communication with Department.
e. Investigators shall **submit only one proposal against this Call where financial support is sought**. In the event that a PI submits or is included as a funded Investigator in more than one proposal, only one proposal shall be considered for evaluation, and all other proposals shall be rejected. Accordingly, the Project Coordinator shall ensure that no PI included in the consortium has submitted or is participating as a funded Investigator in any other proposal under this Call.
f. Given the existing national capacity, proposals that are infrastructure-intensive will not be prioritized for funding.
g. Proposals that demonstrate a clear progression from the applicants' earlier research will be prioritized for accelerated outcome.
h. Continuation of funding shall be subject to satisfactory achievement of predefined milestones and periodic review.

5. Grant Component

a. GIA-Capital (Non-Recurring Budget): Equipment & Other Accessories (Only for essentially required equipment)
b. GIA-General: Manpower (as per DST norms), Consumables, Contingencies, Travel (Domestic only), Others (if any with proper justification) & Overheads as per DBT guidelines

6. Eligibility

a. **Lead PI:** Indian Nationals holding a regular position in a DSIR-recognized academic or scientific institution.

b. **Eligible Organizations:** Central/State Government Institutions.
Private Universities/Research Institutions (DSIR recognized)
NGOs (DSIR-recognized, Must be registered on the DARPAN Portal of NITI Aayog).

c. **PI(s) who have ongoing DBT funded projects with a cumulative funding of Rs. 20 crore or more (wherever he or she is receiving funds as PI/Co-PI) will not be considered.**

d. There should be at least one co-investigator from each participating institute.

7. Proposal Submission process

a. Interested applicants should submit the proposals in the prescribed format through the Department's e-ProMIS portal (www.dbtepromis.nic.in).

i. For a proposal in the area of Infectious diseases, select Infectious diseases
ii. For a proposal in the area of cancer, select Cancer research program
iii. For a proposal in the area of autoimmune disorders, select Chronic/ Lifestyle diseases

b. In case of Collaborative/Network projects, the Project Coordinator, to upload the final proposal in the prescribed format including endorsements from the Executive Authority from all partnering institutions.

c. The proposals which are not submitted through the said portal will be rejected without review.
d. Incomplete proposals and those which do not fulfil eligibility criteria, will not be considered for further processing.
e. PIs are advised to submit proposal well ahead of the last date to avoid any last minute congestion. The deadline will not be extended due to any technical difficulties with the website or server.

8. General Conditions

a. All proposals must adhere to statutory regulatory requirements. Proposals involving human participants, human biological samples, or animal studies must indicate the applicable regulatory approval pathway – including IEC/IAEC certificates and CDSCO approval, as relevant – to be secured prior to initiation of the concerned work package.
b. Based on the scientific merit, thematic relevance, technological requirements, and complementary expertise, DBT may recommend restructuring of the proposal, including the integration of complimentary/ synergistic projects and into larger collaborative networks/reconstitution of the consortium, wherever considered necessary.
c. Financial support for proposals recommended under this Call shall commence in FY 2027–28 and shall be subject to the availability of budgetary allocations and the continuation of the relevant scheme of the Department.
d. The Intellectual Property (IP) generated will be in accordance with the IP Policy of DBT
e. All aspects of the RFP, including funding, review, evaluation, and consideration of support, will be governed by the applicable policies, guidelines, and prevailing norms of DBT.

9. Contact Information

Area of Research	Programme officer	Email ID
Infectious diseases	Dr. Neha Bansal, Sc. ‘D’, DBT	neha.bansal@dbt.gov.in
Cancer	Dr. Niloo Srivastava, Sc. ‘F’, DBT	nsrivastava@dbt.gov.in

Autoimmune diseases	Dr. Kakali Dey Dasgupta, Sc. ‘F’, DBT	kakali.dey@dbt.gov.in

In case of any technical difficulties in the eProMIS portal, please contact eProMIS portal administrator on the email ID: epromis.dbt@nic.in Phone: 011-24365136

Last date of submission of proposals is 06.10.2026

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