

**Biotechnology Industry Research Assistance Council (./index.php)**

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# **DBT-BIRAC JOINT CALL FOR PROPOSALS ON 'BIO AI' FOR FOSTERING HIGH PERFORMANCE BIOMANUFACTURING UNDER BIOE3 POLICY LAST DATE :30TH JUNE,2026**

## INTRODUCTION

Bio-AI is one of the enablers for building data-driven, cutting-edge, programmatic research support for the Biomanufacturing initiative. The outcomes are expected to provide critical and novel research leads impacting Health, Agriculture and Environment

Bio-AI Hubs: The Bio-AI Hubs will focus on interdisciplinary and interinstitutional collaborations. These Hubs will be anchored by organizations (academia/industry) with established expertise in AI/ML, supported by robust infrastructure and advanced computational methodologies. Startup/SMEs and other academic institutions can participate as spokes, contributing to the hub's research and innovation ecosystem. Bio-AI Hubs are expected to develop AI-guided closed loop platforms, in which predictions, experiments and analyses are integrated into the system to improve performance. All of these would be connected in a positive feedback loop leading to accelerate scientific discoveries, optimize processes and decision-making. Bio-AI hubs with state-of-art facilities in PPP mode will be established as a shared DBTL facility for scaling-up of various research activities in academia/ industrial or joint industry-academia settings.

## KEY FEATURES OF THE CALL

The Proposals are invited under the following five categories:

***i) Biomolecular Design***

Engineering novel proteins, enzymes, and RNA-based molecules for advanced biomedical and biotechnological applications.

Designing next-generation protein, and RNA-based antibodies for targeted therapeutics and immune modulation.

Developing advanced enzyme inhibitors, RNA aptamers, and de novo enzyme designs for precision disease intervention and metabolic engineering.

Constructing bio-nanomachines and catalytic biomolecules with programmable molecular functions for diagnostics, therapeutics, and synthetic biology applications.

***ii) Sustainable Agriculture***

Engineering drought-resistant cereal crops for enhanced climate resilience

Developing AI-powered, non-invasive sensing technologies (e.g., drone imaging, infrared spectroscopy) for early disease detection

Predictive modeling of milk production and health parameters in dairy cattle using AI and genomics

***iii) Synthetic Biology***

AI optimized metabolic pathways for biofuel and biomaterial production.

Predicting enzyme functions for more efficient bioprocessing.

Improve strain engineering for microbial factories.

Synthetic/engineered organisms as environmental biosensors

***iv) Ayurveda***

AI-driven Ayurvedic Pharmacogenomics: Developing predictive models to personalize Ayurvedic treatments based on genetic, metabolic, and microbiome profiles.

AI-enabled Herb-Drug Interaction Analysis: Identifying potential interactions between Ayurvedic formulations and modern pharmaceuticals using AI and molecular modelling.

Standardization & Authentication of Ayurvedic Formulations: Leveraging AI and analytical chemistry to validate and authenticate medicinal plant extracts.

AI-assisted Plant-Based Drug Discovery: Mining Ayurvedic texts and databases to identify bioactive compounds with therapeutic potential.

Gut Microbiome Modulation through Ayurveda: Understanding how Ayurvedic diets and herbs influence gut microbiota for managing metabolic and autoimmune disorders.

***v) Genome Diagnostics***

AI-powered risk prediction models for diabetes, cardiovascular diseases, and metabolic disorders

Biomarkers for early cancer detection, disease progression tracking, and treatment response prediction.

Single-cell and spatial genomics: Utilizing AI to analyze single-cell RNA sequencing and spatial transcriptomics for tumor microenvironment profiling and rare disease diagnosis.

Genetic risk stratification for neurodegenerative disorders: Identifying genomic and RNA-based signatures associated with conditions like Alzheimer's and Parkinson's to enable early diagnosis and intervention.



## WHO CAN APPLY?

Companies established under the Companies Act 2013 and Startups.

The Limited Liability Partnership (LLP) incorporated under the Limited Liability Partnership Act,2008.

Academic from various Institutions/Universities/Societies/ Trusts/NGOs/Foundations/ Voluntary Organizations, recognized as a Scientific and Industrial Research Organization (SIRO).

## HOW TO APPLY?

Proposals for the Scheme is required to be submitted online only. To submit a proposal online, please log on to the BIRAC website ([www.birac.nic.in](http://www.birac.nic.in)).

No Hard Copy to be submitted. Proposals submitted online only would be considered.

Last date for Submission of Proposals: **30th June 2026 (midnight)**

**Announcement Date:** 21-11-2025

**Last Submission Date:** 30-06-2026

(Proposals will be evaluated periodically in a rolling manner and supported)

## ANNOUNCEMENT DATE | LAST SUBMISSION DATE

**Announcement Date:** 24-11-2025

**Last Submission Date:** 30-06-2026

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