

**Department of Biotechnology
Ministry of Science and Technology
Government of India**

CALL FOR PRE-PROPOSALS

**Establishment of Bioinformatics and Computational Biology Centres in India
(Last date for submission extended till 25th May, 2019)**

Attention: This Call may be read not only by the Bioinformatics Scientists and Computational Biologists but by all the scientists in other disciplines of Biosciences who are willing to collaborate with Bioinformatics Scientists and Computational Biologists in their research endeavors.

BACKGROUND

Recognizing the importance of Bioinformatics and Computational Biology at the intersection of various disciplines of Bio-Sciences, the Department of Biotechnology (DBT) supported one of the largest nation-wide Biotechnology Information System Network (BTISNet) to accelerate R&D in biotechnology sector. At present, 5 Centres of Excellence (CoE), 12 Distributed Information Centres (DICs), 43 Distributed Information Sub-Centres (DISCs) and 88 Bioinformatics Infrastructure Facilities (BIFs) are being supported all over the country. Keeping in view, a paradigm shift in information technology and biological research due to generation of large scale biological data by high-throughput platforms particularly with the advent of cost effective next generation sequencing platforms, DBT has decided to leverage the outcome of its nation-wide network of Bioinformatics Centres supported across the country and to ensure their role in the large National Network Projects (NNPs) involving data driven research, applications of artificial intelligence, machine learning, high-throughput data related informatics etc. in various sectors of life sciences.

PURPOSE

The purpose of this 'Call for Pre-proposals' is to seek proposals from various institutions/universities/organizations (not only existing centres but other institutions outside the BTISNet) to establish Bioinformatics and Computational Biology Centres with a core theme in their area of expertise relevant to this field, framed with a long term objective keeping in view the speedy developments in the area. Further, the proposal should also have a focus to combine bioinformatics and computational science with high throughput molecular biology, proteomics, metabolomics and structural biology for extracting relevant leads from the growing bio-molecular data, and utilize them for the advancement of understanding of biological processes and application oriented research and development.

Keeping in view the rapid revolution in data science and its applicability in other sectors, revamping of BTISNet of DBT is planned with a focused attempt to engage best expertise in

network mode in development of advanced computational tools and technologies from various institutions in NNPs in various areas of Bioinformatics and Computational Biology; apart from the core theme of the proposed centre. NNPs may be proposed (please see Part 4 in the Format) with participation of Project Coordinator (from the Lead Institution) and Primary Collaborators (to be involved in research project directly and also act as resource of experimental data/information) and/or Secondary Collaborators (act as resource of experimental data/information) in the areas like Structural Bioinformatics, Drug Design & Molecular Modeling, Metagenomics/ High Through-put Genomics & Sequence Analysis including Data Visualization and Comparative Analysis Tools for Multi-genome Level Data, Proteomics/Metabolomics, Chemical/Synthetic Biology, Systems Biology, Medical Informatics, Animal Bioinformatics, Plant Bioinformatics, Agricultural Data Mining and Informatics, Biodiversity Informatics, Data Mining, Digitization and Integration Logistics for Diverse Data-sets, Ontology Development and Applications, Artificial Intelligence/Machine Learning based implementations; but not limited to only these areas. The main purpose of NNPs will be to bring together and strengthen linkages among the institutions working in the similar areas through the lead role of proposed centre. Through revamping of BTISNet, the department plans to decide a road map to deal with the scientific problems of the current time with the evolving scenario of large volumes of data and requirement of data driven solutions along with skill development in advanced area of research.

ELIGIBILITY

This call for proposals is open to all applicants normally eligible for DBT funding. The proposals are sought from not only the existing centres of BTISNet but all other institutions that have core expertise in Bioinformatics and Computational Biology. The existing Centres of BTISNet of DBT (if interested to receive funding beyond March 2020) should also submit fresh proposals in response to this Call. Continuation of funding to them (as a fresh applicant) will be assessed alongside and in competition with all other proposals submitted to the Call.

Essential Requirement: Core strength in Bioinformatics and Computational Biology and related areas, in terms of expertise, linkages (national/international) and minimum infrastructure. Each applicant submitting pre-proposal for “Establishment of Bioinformatics and Computational Biology Centre” must propose his/her participation in at least one NNP as a Project Coordinator (Lead Institution) or Primary Collaborator or Secondary Collaborator (please see Part 4 in the Format).

How can scientists from other disciplines apart from Bioinformatics and Computational Biology collaborate in these proposals? Scientists from any other discipline of Biosciences looking for collaboration with Bioinformatics Scientists and Computational Biologists to develop NNP may identify suitable applicant and become a Primary Collaborator or Secondary Collaborator (please see Part 4 in the Format). In case, you are not able to identify a suitable applicant, you may send us one page brief concept note on the proposed NNP. The department

may also discuss these concepts to assess suitability to create linkages with suitable Project Coordinators. However, scientists from other disciplines are not eligible to apply for “Establishment of Bioinformatics and Computational Biology Centre”.

SCOPE

The application may contain the following:

1. Core theme and overall activities of the proposed centre
2. Proposal on advanced research in Bioinformatics/ Data science/ Computational Biology/ Machine Learning involving new algorithms, methods, tools and technologies
3. Modalities to access and utilize existing resources/ data sets/information
4. Creation of new tools and technologies and resources/ data sets/information/software, etc.
5. Proposed plan on education, training, skill development and outreach programmes
6. Existing/Proposed linkages with industries and international organizations

FINANCIAL SUPPORT

The proposals will be considered for funding for 5 years initially; however likely to be continued. The funding on NNP will be for 3-5 years depending on the project objectives.

MODE OF SUBMISSION

Pre-Proposals may be submitted in the prescribed Format, clearly stating ‘Pre-Proposal on Bioinformatics and Computational Biology Centre’ in the subject line of the email and send it to bioinformatics@dbt.nic.in. Your queries, if any, may be addressed to Dr. Suchita Ninawe, Adviser/Scientist ‘G’ at sninawe@dbt.nic.in. **The closing date of the call is 15th May, 2019.**

Subsequently, three hard copies should also be sent to: Bio-informatics Division, Department of Biotechnology, Block-2, Room No. 707, 7th Floor, CGO Complex, Lodhi Road, New Delhi-110003. Please mention ‘Pre-Proposal on Bioinformatics and Computational Biology Centre’ on the envelope. Hard copies should reach by 20th May, 2019.

FORMAT

Pre-proposal on Establishment of Bioinformatics and Computational Biology Centre in India

(The proposal may be prepared with utmost thinking, definite and serious intentions and after thorough knowledge search and required interactions with other groups working in the similar areas. Pre-proposal may be written with due efforts)

PART 1: Title and Contact Details

1. Title: Establishment of Bioinformatics and Computational Biology Centre (*Specify the theme/major area*)
2. Contact details of Centre Coordinator/PI/Co-PIs (Name, designation, address, email, mobile number):

PART 2 (A) or PART 2 (B) may be filled up as applicable

PART 2 (A): Strength of the Institution (BTISNet centres of DBT)

3. Since when DBT support has been received by your Centre
4. Core objective of the support (tick mark): Infrastructure Development Capacity Building
R&D Others (Please specify)
5. Existing relevant expertise available: Mention Name, Position and Expertise in tabular form (also enclose brief CV of not more than 3 most relevant scientists on separate sheets):
6. Infrastructure available
 - a. Basic Infrastructure available including space and other facilities:
 - b. Specific major equipment and facilities available with reference to this proposal:
7. Brief description of the present activities in the area of Bioinformatics and related areas:
8. Major quantifiable achievements (like datasets, algorithms, softwares, etc - please give links for the resources available in public domain) of the BTISNet centre:
9. Please give account of utility of outcomes of your centre/institute by others/end users (during last 5 years):
10. Brief justification for continuation of support from DBT:

OR

PART 2 (B): Strength of the Institution (Institutions/Labs not part of BTISNet of DBT)

11. Existing relevant expertise in the area of Bioinformatics and related areas: Mention Name, Position and Expertise in tabular form (also enclose brief CV of not more than 3 most relevant scientists on separate sheets):

12. Infrastructure available
 - c. Basic Infrastructure available including space and other facilities:
 - d. Specific major equipment and facilities available with reference to this proposal:
13. Brief description of the present activities in the area of Bioinformatics and related areas:
14. Support received so far in the area of Bioinformatics and related areas from DBT in bioinformatics for major R&D projects or any other agency (mention only major grants above Rs one crore):
15. Major quantifiable achievements (like datasets, algorithms, softwares, etc - please give links for the resources available in public domain) of your institution:
16. Please give account of utility of outcomes of your centre/institute by others/end users (during last 5 years):
17. Brief justification for establishment of proposed Bioinformatics Centre at your institute:

PART 3: Core Theme, Objective and overall activities

18. Core Theme in brief of the proposed centre:
19. Main objective of the proposed centre:
20. Need based overall activities (keeping in view that the centre will be supported for a longer duration as a continuous program) [also mention in short how these activities will be a revamped time to time]:
21. Proposed organizational structure to run the activities of the centre:
22. What will be the anticipated outcome of this proposed centre (say after 3-5 years) that will give it a unique identity; and what is that Unique Identity?:
23. Proposed mechanism for dissemination of outcome:
24. Approximate funding requirement to the Centre per year:

PART 4: National Network Project

25. Research proposal on NNP
(You may give all the details (a) to (m) only if you are the Lead Institution and will act as a Project Coordinator. Project Coordinator of the proposed NNP may engage any scientist(s) as Primary Collaborator and Secondary Collaborator irrespective of whether he/she is applying for “Establishment of Bioinformatics and Computational Biology Centre” or not and may be from different discipline and not having expertise in Bioinformatics and Computational Biology but their collaboration is essential in the proposed NNP.

Primary Collaborators and Secondary Collaborators may/may not submit pre-proposal for “Establishment of Bioinformatics and Computational Biology Centre”. If they apply, they should ensure their involvement in at least one such NNP and should submit a pre-proposal separately giving all the details in other Parts of the format, while mention only the title of NNP and name of the Project Coordinator and Lead Institution in this section i.e. Part 4.

If any applicant proposes to act as a Primary Collaborator or Secondary Collaborator, however is not able to identify Project Coordinator - Lead Institution to team up in the NNP, he/she may indicate areas of his expertise and resources available with him/her and proposed contributions in brief as an Annexure in place of Part 4. The department may consider such application if any other application is received in the similar area and help in teaming up only on scientific merit and requirement of such collaborations)

- a. Title:
- b. Whether you proposes to act as Project Coordinator or Primary Collaborator or Secondary Collaborator
- c. Introduction:
- d. Global research scenario (Focus on major current areas and impact):
- e. National research scenario
 - Strengths and areas covered (Broad description):
 - Research groups working in this area:
 - Main research outputs (Few snapshots of significant publications/patents, product, tools, databases, webservers developed):
- f. Gap areas to be addressed:
- g. Potential and challenging areas (focusing national interest):
- h. How other institutions can collaborate (as Primary Collaborator and as Secondary Collaborator) and what will be contribution from them? Which are they? Whether you have existing collaborations with them? If yes, give brief. If no, propose a plan to establish such collaborations:
- i. Are you aware about the datasets/ information resources, if available in the country with other institutions? Modalities to access and utilize existing resources/data sets/information available with the proposed collaborators:
- j. Goal - Immediate and Long term:
- k. Objectives *vis-à-vis* proposed duration
- l. Methodology and Technical Work Plan:
- m. Clear measurable deliverables:
- n. Funding requirement year wise (for 3-5 years) and under different heads-Equipment(list to be enclosed), Manpower (Position and no. to be specified), Consumables and other costs [Give details separately for the centre and collaborators]

PART 5a: Other Information

26. Proposal on Creation of new tools and technologies and resources/data sets/information/software, etc:
27. Proposed plan on education (not degree courses), training and skill development and outreach programmes (DBT has created bioinformatics facilities – BIFs; how these facilities would be utilized in the proposed programs):

28. Proposed linkages with industries and international organizations, if any. (Any specific proposal, wherein India's capability and strengths can get prominence/visibility internationally-submit details separately as International Collaboration Program as one of the activity of the proposed centre):
29. Any other information that may strengthen your proposal (e.g. potential for commercialization, societal benefit, link to various national missions/initiatives etc.):
30. Approximate fund requirement/year on 26-28 above:

PART 5b: Other Information

31. Sustainability plan, if DBT does not continue funding to the centre after 5 years:
32. Expected quantifiable outcome (Part 4 + 5a + 5b) at the end of 5 years (in bullet form):

Note: The proposal should be more scientific and technical and should contain all the details and quantitative information e.g. size of data, algorithms, tools, softwares to be used, etc. especially on Part 4, that may require by the Committee to evaluate it. However, repetitions and not-relevant information may be avoided. The Pre-proposal document should not be more than 18 pages (including all parts 1-5b, CVs and enclosures, if any), A4 size, Times New Roman, 12 font size, normal margins. Please follow this.
