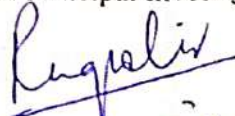


MoA Checklist

(This Checklist shall accompany the duly Executed MoA in Physical Form)

01.	No MoA has been modified in any way	<u>Yes</u>
02.	The MoA has been signed on stamp paper at an appropriate value of Rs.100	<u>Yes</u>
03.	Blank Spaces have been filled	<u>Yes</u>
04.	The MoA is signed and Stamped by PI and Competent Authority on every page	<u>Yes</u>
05.	A copy of Terms & Conditions of the grant signed and stamped by PI and Competent Authority is attached as Annexure IV	<u>Yes</u>
06.	A copy of Sanction order signed and stamped by PI and Competent Authority on every page is attached at Annexure V	<u>Yes</u>

Name & Signature in original (with stamp & Date) of Principal Investigator:


Dr. Ruqeya Nazir
Principal Investigator
DBT, Project
Govt. of India

1. Dr. Ruqeya Nazir (Principal Investigator)

MEMORANDUM OF AGREEMENT

This MEMORANDUM OF AGREEMENT is made on this 18th day of March Two thousand and Twenty Four.

BY AND BETWEEN

President of India, acting through, Department of Biotechnology, Ministry of Science and Technology, Government of India, New Delhi, hereinafter referred to as the 'DBT' (which expression unless excluded by or repugnant to the subject shall mean and include its successor-in-office and assigns) of the ONE PART;

AND

University of Kashmir, having its registered office in/at Hazratbal Srinagar-190006, hereinafter referred to as University of Kashmir (which expression shall where the context so admits include its successors and permitted assigns) of the OTHER PART;

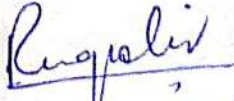
WHEREAS DBT being desirous of "Process Optimization & Upscale Production of Lignocellulosic Extremozymes from Himalayan Microbes for Biomass Valorization/ Depolymerization" decided to support a project submitted by Dr. Ruqeya Nazir, University of Kashmir for the attainment of the objectives, hereinafter described in the Annexure I and milestones and deliverables described in the Annexure III;

This Memorandum of Agreement (MoA) defines the role and responsibilities of the participating agencies, monitoring and other matters related to the "Process Optimization & Upscale Production of Lignocellulosic Extremozymes from Himalayan Microbes for Biomass Valorization/ Depolymerization"

NOW THE PARTIES HERETO AGREE AS FOLLOWS:

1.0 .ROLE OF DEPARTMENT OF BIOTECHNOLOGY, NEW DELHI

To provide funds to the extent of 42.84560 (in lakhs) over a period of 3 years from the date of sanction of the project, to Dr. Ruqeya Nazir, University of Kashmir for undertaking activities as detailed in Annexure I & Annexure III. Details of the funds to be provided are given in Annexure II.


Dr. Ruqeya Nazir
Principal Investigator
DBT, Project
Govt. of India

2.0. ROLE OF University of Kashmir (Institute)

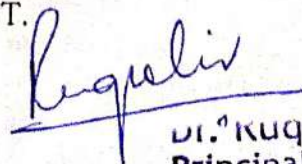
- 2.1. To provide existing facilities as mentioned in the project document.
- 2.2. To be responsible for accomplishing objectives identified and activities listed.
- 2.3. To allow the Scientists authorized by DBT to work with the Research & Development team of the center in all stages of process development and production.
- 2.4. To recruit all scientific and non-scientific staff as sanctioned by DBT.
- 2.5. To prepare and submit all periodical reports and other documents that would be required by DBT.
- 2.6. To maintain a separate audit head of account for the grants received from DBT for the project.
- 2.7. To submit an annual audited statement of expenditure incurred under the project.
- 2.8. To ensure effective utilization of the grant given by DBT for the purpose for which it was granted and to ensure timely progress of project work.
- 2.9. The manpower, both scientific and non-scientific, recruited shall be purely on contractual terms & conditions such that the contract for engagement of the manpower shall run concurrently with the said project period only.

3.0 DURATION OF PROJECT

- 3.1 Duration of project shall be 3 years from the date the Project has been sanctioned by DBT.

4.0 RIGHTS OF OWNERSHIP/TECHNOLOGY TRANSFER AND UTILIZATION

- 4.1 The know-how generated from the project by **University of Kashmir** will be the joint property of **University of Kashmir** and DBT, Government of India. It shall be the responsibility of **University of Kashmir** to take necessary action for protection of the intellectual property arising out of the PROJECT through proper instruments, such as, patents, copy rights, etc.
- 4.2 The know-how developed may be transferred to other entrepreneurs on a non-exclusive basis on such terms and conditions as may be determined by DBT.
- 4.3 All the assets including the equipment and produce acquired will be the property of DBT and shall not be utilized for purposes other than those for which the grant has been sanctioned. The rights of **University of Kashmir** under this MoA shall not be transferred to any other party without prior approval in writing of DBT.



Dr. R. K. Gupta
Principal Investigator
DBT, Project
Govt. of India

4.4 It shall be the responsibility of the project investigator (s) and **University of Kashmir** to ensure that support of DBT is suitably acknowledged in the in scientific publication/ patents/ technology transfer documents etc. arising out of the PROJECT. It shall also be the responsibility of the project investigators and institute to ensure the inclusion of reference/ grant number and duration of the financial support while making the acknowledgement of the financial support received from DBT.

5. **SECRECY**

It is hereby agreed that the participating agencies shall keep information and data collected completely secret provided that the right to transfer the technology shall rest with the DBT.

6. **MONITORING**

6.1 The progress of implementation of the project and proper utilization of grant shall be reviewed by the DBT and by the Monitoring Committee set up by DBT.

6.2 The periodic progress of physical achievements and the utilization of funds, statement of expenditure shall be evaluated by the Monitoring Committee.

6.3 The Comptroller and Auditor General of India, at his discretion shall have the right of access to the books and accounts of **University of Kashmir** for the grants received from DBT for this project.

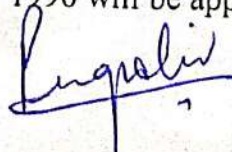
6.4 The DBT may terminate the grant at any stage if it is convinced that the grant has not been properly utilized or appropriate progress has not been made. In the event, DBT terminates the grant, **University of Kashmir** shall hand over all documents including technical details and equipment purchased related to the project. However, before terminating the grant, the DBT shall inform and give one Month notice to **University of Kashmir** regarding Unsatisfactory utilization & progress of Project.

7.0 **DURATION OF MEMORANDUM OF AGREEMENT**

This MoA will remain in force for the duration of the project and until all claims are settled between DBT and **University of Kashmir**.


8.0 **ARBITRATION**

In the event of any question, dispute or difference whatsoever arising between the parties to this Agreement out of or relating to the construction, meaning, scope, operation or effect of this Agreement or the validity of the breach thereof shall be referred to an Arbitrator to be appointed by mutual consent of both the parties herein. If the parties cannot agree on the appointment of the Arbitrator within a period of one month from the notification by one party to the other of existence of such dispute, then the Arbitrator shall be nominated by the Secretary, Department of Legal Affairs, Ministry of Law & Justice, Government of India. The provisions of the Arbitration and Conciliation Act, 1996 will be applicable and the award



Jr. Ruqeya Nazir
Principal Investigator
DBT, Project
Govt. of India

made there under shall be final and binding upon the parties hereto, subject to legal remedies available under the law. Such differences shall be deemed to be a submission to arbitration under the Indian Arbitration and Conciliation Act, 1996, or of any modifications or reenactments thereof.


Dr. Rugeya
Principal Investigator
DBT, Prpject
Govt. of India

9.0. GOVERNING LAW

This Contract shall be governed by the Law of India for the time being in force.

IN WITNESS WHEREOF the parties hereto have signed, sealed and delivered this Agreement on the day, month and year first above written in presence of:

To be signed by DBT Officials

Witnesses:

1.

Signed by -----

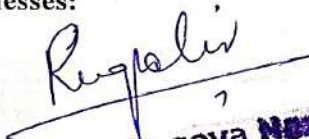
Name & Official seal

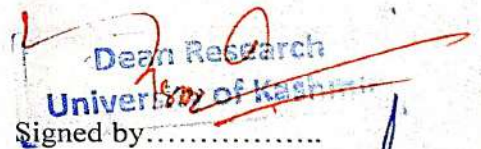
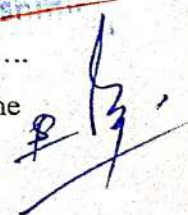
2.

For and on behalf of The President of India

(To be signed by the Head of the Organization & Project Investigator)

Witnesses:


Dr. Ruqeya Nazir
Principal Investigator
DBT, Project
Govt. of India


Signed by.....
For and on behalf of the (Head of the
Department/Division/Organization). 

1. Dr. Ruqeya Nazir (Principal Investigator)

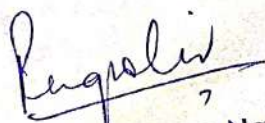
Annexure – I of MoA

Detailed Project Activities

Details of the activities to be undertaken by University of Kashmir, Hazratbal Srinagar-190006 under the project entitled "*Process optimization & Upscale production of Lignocellulosic Extremozymes from Himalayan Microbes for Biomass Valorization*"

Project Objectives:

S.No.	Sanctioned Objectives as defined in the Sanction Order	Abbreviated Name of the Institutions Contributing to these objectives
1.	Evaluation of lignocellulolytic activity for Cellulases, Hemicellulases, and Oxidoreductases from potential leads based isolates for optimum activity, and bioinformatics assisted identification of novel lignocellulolytic extremozymes	UoK
2.	Process optimization for production of above enzymes using selected potential isolates.	UoK
3.	Demonstration of biomass valorization using above enzymes	UoK
4.	Up-scale production and partial purification of above enzymes from identified isolates.	UoK



Dr. Ruqeyya Nazir
Principal Investigator
DBT, Project
Govt. of India

Annexure – II of MoA

Details of Funds

Name & Address of the PI

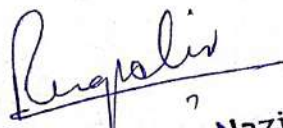
Dr. Ruqeya Nazir (Sr. Assist. Professor)

Centre of Research for Development

University of Kashmir-190006

Component wise, Head wise & Year Wise details of Sanctioned Funds

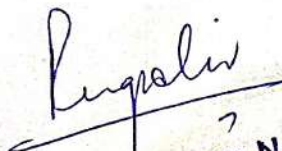
Items	I year	II year	III year	Total
Non-recurring (Equipment etc.)	1200000.00			1200000.00
Manpower	431520.00	431520.00	431520.00	1294560.00
Consumables	600000.00	450000.00	350000.00	1400000.00
Travel	30000.00	30000.00	30000.00	90000.00
Contingencies	50000.00	50000.00	50000.00	150000.00
Overhead	50000.00	50000.00	50000.00	150000.00
Others (If applicable)				
Total (Rs.)	2361520.00	1011520.00	911520.00	4284560.00


Dr. Ruqeya Nazir
Principal Investigator
DBT, Project
Govt. of India

ANNEXURE-III

Quarter Wise Milestone Title (s) and Deliverable Title (s)

S.No.	Sanctioned Objectives as defined in the Sanction Order	Abbreviated Name of the Institutions Contributing to these objectives	Tasks to be completed	(Proposed Milestone) Quarter 1-Quarter 12 (To be expanded for each quarter)				(Proposed Deliverables) Quarter 1-Quarter 12 (To be expanded for each quarter)			
				Quarter 1/12	Quarter 2/12	Quarter 3/12	Quarter 4/12	Quarter 1/12	Quarter 2/12	Quarter 3/12	Quarter 4/12
01.	Evaluation of lignocellulolytic activity for Cellulases, Hemicellulases, and Oxidoreductases from potential leads based isolates for optimum activity, and bioinformatics assisted identification of novel lignocellulolytic extremozymes	UoK, Srinagar	Comparative quantitative evaluation of leadson potential isolates for lignocellulolytic enzymatic activity to identify the bestisolates for enzyme production using enzymespecific substrates.	Initial screening: Perform preliminary screening to identify isolates showing promising lignocellulolytic activity	Data Analysis: Analyze the initial screening data to select the top candidate isolates for further evaluation of potential isolates.	Culture optimization: Optimize culture conditions (temperature, pH, carbon source etc.) for selected isolates to maximize lignocellulolytic enzyme production		Recruited manpower and procurement of chemicals. Optimized growth conditions for potential bacterial isolates.	Optimized enzyme activity evaluation using enzyme specific substrate	Optimized different parameters for the process such as seed size, agitation, carbon source, and growth temperature.	Evaluated different medium compositions for the optimum cell mass and enzyme production


Dr. Ruqeya Nazir
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S.No.	Sanctioned Objectives as defined in the Sanction Order	Abbreviated Name of the Institutions Contributing to these objectives	Tasks to be completed	(Proposed Milestone) Quarter 1-Quarter 12 (To be expanded for each quarter)				(Proposed Deliverables) Quarter 1-Quarter 12 (To be expanded for each quarter)			
02.	Process optimization for production of above enzymes using selected potential isolates.	UoK, Srinagar	<p>a). Optimization of different parameters for the process such as seed size, aeration, agitation, carbon source, and growth temperature etc.</p> <p>b). Evaluation of different medium compositions for the optimum cell mass and enzyme production.</p>	<p>Quarter 5/12</p> <p>Conduct Systematic Experiments such as seed size, aeration rate, agitation speed, carbon source concentration and growth temperature for the production of Lignocellulolytic enzymes</p>	<p>Quarter 6/2</p> <p>Analyze data from process optimization experiments to identify optimal parameters for maximizing cell mass and enzyme production.</p>	<p>Quarter 7/12</p> <p>Determine the effects of individual parameters and their interactions on process performance</p>	<p>Quarter 8/12</p> <p>Design and prepare various medium compositions by systematically varying components such as carbon sources, nitrogen sources</p> <p>Conduct batch fermentation experiments using different medium formulations to assess their impact on cell growth and enzyme production</p> <p>Compare the performance of different medium formulations to identify compositions yielding optimum results</p>	<p>Quarter 5/12</p> <p>Optimized different cellulolytic biomass (powdered wheat straw, corn straw and rice straw) for optimum cell mass or enzyme production.</p>	<p>Quarter 6/12</p> <p>Developed the pretreatment methods to lignocellulose for optimum enzyme efficiency.</p>	<p>Quarter 7/12</p>	<p>Quarter 8/12</p> <p>Characterized the enzymatic activity for specificity to various substrates.</p>

Ruqeya Nazir
Dr. Ruqeya Nazir
 Principal Investigator
 DBT, Project

Sanctioned Objectives as defined in the Sanction Order	Abbreviated Name of the Institutions Contributing to these objectives	Tasks to be completed	(Proposed Milestone) Quarter 1-Quarter 1 (To be expanded for each quarter)		(Proposed Deliverables) Quarter 1-Quarter 12 (To be expanded for each quarter)	
03. Demonstration of biomass valorization using above enzymes	UoK, Srinagar	Optimizing the process for degradation or transformation of a particular biomass (rice, wheat/maize/sugarcane straw) using the screened microbes as a whole cell or partially purified enzymes	Quarter 9/12 Begin optimization process for degradation or transformation of biomass using screened microbes or enzymes. Initiate analysis of whole cell microbial cultures for hydrolytic and oxidoreductase enzymes.	Quarter 10/12 Continue optimization process, fine-tuning parameters for efficiency. Progress analysis of microbial cultures, identifying potential enzymes for biomass hydrolysis.	Quarter 9/12 Quarter	Quarter 10/12 Optimizing the process for degradation or transformation of a particular biomass (rice residues/maize residues/bagasse) using the Screened microbes.


 Dr. Ruqeya Nazir
 Principal Investigator
 DBT, Project
 Govt. of India


S.No	Sanctioned Objectives as defined in the Sanction Order	Abbreviated Name of the Institutions Contributing to these objectives	Tasks to be completed	(Proposed Milestone) Quarter 11-Quarter 12 to be expanded for each quarter		(Proposed Deliverables) Quarter 11- Quarter 12)	
				Quarter	Quarter	Quarter	Quarter
04.	Up-scale production and partial purification of above enzymes from identified isolates.	UoK, Srinagar	<p>Optimization of different parameters for upscale fermentation such as optimization parameters will include carbon source, substrate concentration, determination of growth/product limiting factors, pH, temperature, dissolved oxygen and kinetics</p> <p>Development of protein purification system for partially purified enzyme and purified enzyme will be done</p>	<p>Quarter 11/12 Conclude experiments on substrate concentration optimization. Analyze results and determine growth/product limiting factors. Begin experiments on pH, temperature, aeration optimisation. Enhance protein purification system Prepare documentation and reports for upscale fermentation optimization and protein purification systems.</p>	<p>Quarter 12/12 Synthesize findings from optimization experiments. Develop comprehensive model for upscale fermentation. Begin development of partially purified enzyme purification system. Finalize development of both partially purified and purified enzyme purification systems. Validate efficiency of purification protocols Present findings and conclusions from the research.</p>	Quarter 11/12 Quarter	Quarter 12/12 Quarter


 Dr. Ruqeya Nazir
 Principal Investigator
 DBT, Project
 Govt. of India

TERMS & CONDITIONS OF THE GRANT

(To be signed and enclosed with MoA)

1. Approval of the Research proposal and the grant released would be for the specific project mentioned in paras I to V of this proposal and grant should be exclusively spent on the project for which it has been sanctioned within the stipulated time. The Institute is not permitted to seek or utilise funds from any other organisation (Government, Semi Government, Autonomous or Private) for this research project. Any unspent part of amount would be surrendered to the Govt. of India through an account payee demand draft drawn in favour of the "Drawing and Disbursing Officer, Department of Biotechnology, New Delhi", and carry forward of funds of the next financial year for utilization for the same project may be considered only with the specific approval of the Department of Biotechnology (DBT).
2. For permanent/semi-permanent assets acquired solely or mainly out of the grant, an audited record in the form of a register in the prescribed proforma (enclosed at **Appendix- 'A'**) shall be maintained by the Institute. The term "assets" means (I) immovable property and (II) movable property of a capital nature, where the value exceeds Rs. 1000/- The grant will not be utilised for construction of any immovable property, Full facilities by way of accommodation, etc. for the project will be given by the Institute.
3. All the assets acquired from the grant will be the property of Govt. of India and should not without the prior sanction of the Deptt. of Biotechnology, be disposed of, or encumbered or utilised for purpose other than those for which the grant has been sanctioned.
4. At the conclusion of the project, the Govt. of India will be free to sell or otherwise dispose of assets which are the property of the Government. The Institute shall render to Govt. necessary facilities for arranging the sale / disposal of these assets. **The Government may, however, consider the request of host institutions to retain the assets created under a project for carrying out similar work for the promotion of science.**
5. The implementing Institute/PI will furnish progress report of work on the project every six months. The progress of the project will also be reviewed/monitored at least once a year by the concerned Task Force/Project Monitoring Committee, etc. In addition the DBT shall designate Scientists/Specialists to visit the Institute periodically for reviewing the progress of work and for suggesting such measures as to ensure early realisation of the objectives of the project. On completion of the project five copies of a consolidated report of the work done on the subject would be submitted to the Department of Biotechnology.
6. The Institute is required to send to DBT a list of assets referred to at Sl. No. 2 above at the end of each financial year as well as at the time of seeking further installments of the grant.
7. The Institute would furnish to the Deptt. of Biotechnology a Utilization Certificate (Copy enclosed at **Appendix - 'B'**) and an audited statement of expenditure (Copy enclosed at **Appendix - 'C'**) duly signed by the P.I., the Head of the Institute and the Head of the Finance wing, pertaining to the grant at the end of each financial year as well as a consolidated statement of expenditure at the end of the completion of the project.
8. A stamped receipt be sent to the Deptt. of Biotechnology on receipt of the Cheque/ Demand draft towards each release.


Dr. Ruqeyya Nazir
Principal Investigator
DBT, Project
Govt. of India

9. The Comptroller and Auditor-General of India at his discretion shall have the right of access to the books and accounts of the Institute for the grant received from the Government.

10. The Institute would maintain separate audited accounts for the project. If it is found expedient to keep a part or whole of the grant in a bank account earning interest, the interest thus earned should be reported to the Deptt. of Biotechnology.

11. Sale proceeds, if any, as a result of the development of the project arising directly from funds granted by the Deptt. of Biotechnology shall be reported to the Govt. of India. The Govt. of India may at its discretion allow a portion of such receipt to be retained by the Institute for its utilisation for the project activities.

12. Investigators/Institutes wishing to publish papers based on the research work done under Deptt. of Biotechnology projects should acknowledge the financial support received from the Deptt. of Biotechnology.

13. Investigators/Institutes may utilize various resources such as the Bioinformatics resources, experimental materials, reagents, cell lines, animals, etc. from the National facilities/Institutes/Centres established by this Department as per the terms of transactions followed by them. More information may be obtained about such facility from DBT websites: <http://www.dbtindia.org//> www.dbtindia.nic.in, www.btisnet.ac.in.

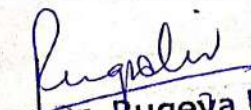
14. Investigators / Institutes shall follow the detailed instructions on technology transfer and Intellectual Property Rights (IPR) as given at Annexure - V. The same has the approval of the Ministry of Finance, Govt. of India vide Deptt. of Expenditure, Plan Finance II – Division Letter No. 33 (5) /PF.II/99 dated 22nd February, 2000. Any deviation from these instructions may be brought to the notice of this Department.

15. Investigators / Institutes may file patents with the help of the Biotechnology Patents Facilitating Cell (BPFC) established at DBT on priority bases. The format for filing the patents may be seen at Annexure –VI.

16. The Govt. of India (Deptt. of Biotechnology) will have the right to call for drawings, specifications and other data necessary to enable the transfer of know-how to other parties and the Institute shall supply all the needed information at the request of the Department of Biotechnology which will ensure confidentiality. The information required for commercializing Biotechnologies may be furnished to this Deptt. as per the format enclosed at Annexure – VII. More information on commercialization can be found at the website www.ebc.nic.in.

17. The Institute may not entrust the implementation of the work for which the grant is being sanctioned to another institution and to divert the grant receipts as assistance to the latter institution. However, in such situations the express permission of DBT may be obtained. In case the grantee is not in a position to execute or complete the project, it may be required to refund forthwith to the Govt. of India (Department of Biotechnology) the entire amount of grant received by it.

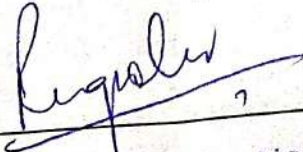
18. The human resources that may be engaged for the project by the Institute are not to be treated as employees of the Govt. of India and the deployment of such human resource at the time of completion or termination of project, will not be the concern/responsibility of the Govt. of India. The Organisation may make reservations for Scheduled Castes, Schedule Tribes etc. in the human resource to be engaged for the project in accordance with the instruction issued by the Govt. of India from time to time.


Dr. Ruqeya Nazir
Principal Investigator
DBT, Project
Govt. of India

19. The Deptt. of Biotechnology reserves the right to terminate the grant at any stage and also to recover the amounts already paid if it is convinced that the grant has not been properly utilized or the work on the project has been suspended for any unduly long period or appropriate progress is not being made.

Name & Signature in original (with Stamp & Date) of Principal Investigator(s)/ Co- PI (s):

1. Dr. Ruqeya Nazir (PI)


Dr. Ruqeya Nazir
Principal Investigator
DBT, Project
Govt. of India

Name & Signature in original (with Stamp & Date) of Executive Head of the Institution:

Executive Head of the Institute
(University of Kashmir)



Dean Research
University of Kashmir

36-37

Annexure - IV

Admin (HBM)

No. BT/PR45190/NER/95/1902/2022
GOVERNMENT OF INDIA
MINISTRY OF SCIENCE & TECHNOLOGY
DEPARTMENT OF BIOTECHNOLOGY

Block 2, 6-8th Floors
CGO Complex, Lodhi Road,
New Delhi - 110 003

Dated: 21/03/2022

ORDER

Sanction of the President is hereby accorded, under Rule 18 of the Delegation of Financial Powers Rules, 1978, for the implementation of the project entitled: "Process optimization and up-scale production of lignocellulosic extremozymes from Himalayan microbes for biomass valorization/depolymerization" under Himalayan Bioresource Mission for a period of 3 years at a total cost of ₹ 4,26,68,840.00 (Rupees Four Crores Twenty-Six Lakhs Sixty-Eight Thousand Eight Hundred and Fourty Only) on the terms and conditions detailed here under:

2 The Project:

2.1 Title: Process optimization and up-scale production of lignocellulosic extremozymes from Himalayan microbes for biomass valorization/depolymerization

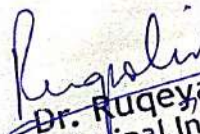
2.2 Details of the Investigators:

Principal Investigators (PIs):

1. Dr. Dharam Singh, Principal Scientist, Department of Biotechnology, CSIR-Institute of Himalayan Bioresource Technology (IHBT), Post Box No. 6, Palampur - 176061, Himachal Pradesh
2. Dr. Sudesh Kumar, Scientist F, Department of Biotechnology, DBT-Centre of Innovative and Applied Bioprocessing (CIAB), Sector-81 (Knowledge City), PO Manauli, S.A.S. Nagar, Mohali - 140306, Punjab
3. Prof. Kamal Dev, Faculty of Applied Sciences and Biotechnology, Shoolini University of Life Sciences and Business Management (SULSBM), Oachghat-Kumarhatti Highway, Bajhol, Solan - 173229, Himachal Pradesh
4. Dr. Amit Kumar Rai, Scientist C, Microbial Resources Division, DBT-Institute of Bioresources and Sustainable Development (IBSD), Tadong, Gangtok - 737102, Sikkim
5. Dr. Ruqeya Nazir Shiekh, Sr. Assistant Professor, Centre of Research for Development, University of Kashmir, Hazratbal, Srinagar - 190006, J&K
6. Dr. Tulika P Srivastava, Associate Professor, School of Basic Sciences, Indian Institute of Technology (IIT), Mandi - 175005, Himachal Pradesh

Co-PIs:

1. Dr. Arun Kumar, Senior Scientist, Dept. of Biotechnology, CSIR-IHBT, Palampur
2. Dr. Sarita Devi, Scientist, Dept. of Biotechnology, CSIR-IHBT, Palampur
3. Dr. Upendra Sharma, Senior Scientist, Chemical Technology Division, CSIR-IHBT, Palampur
4. Er. Mohit Sharma, Senior Scientist, Chemical Technology Division, CSIR-IHBT, Palampur


Dr. Ruqeya Nazir
Principal Investigator
DBT Project
Govt. of India



5. Dr Meena Krishanla, Research and Innovation System Analyst R&D, Department of Food processing, DBT-CIAB, Mohali
6. Prof. Anuradha Sourirajan, Dean, Faculty of Applied Sciences and Biotechnology, SULSBM, Solan
7. Dr. S. Indira Devi, Scientist-D, DBT-IBSD, Takyelpat Institutional Area, Imphal – 795001, Manipur

2.3 Objectives:

1. Evaluation of lignocellulolytic activity for Cellulases, Hemicellulases, and Oxido-reductases from potential leads-based isolates for optimum activity, and bioinformatics assisted identification of novel lignocellulolytic extremozymes.
2. Process optimization for production of above enzymes using selected potential isolates.
3. Demonstration of biomass valorization/depolymerization using above enzymes.
4. Up-scale (5-22 L) production and partial purification of above enzymes from identified isolates and enzymes cocktail for biomass processing.

2.4 Time Schedule: The duration of the project is 3 years from the date of this sanction order.

2.5 Project Cost: The total cost of the project is ₹ 4,26,68,840.00 (Rupees Four Crores Twenty-Six Lakhs Sixty-Eight Thousand Eight Hundred and Fourty Only) as per details given below:

Institute	Year I	Year II	Year III	Total Cost (₹)
1. CSIR-IHBT, Palampur	5488240	5038240	4538240	15064720
2. DBT-CIAB, Mohali	3799600	2451600	2303440	8554640
3. SULSBM, Solan	3068520	1703520	1607200	6379240
4. DBT-IBSD, Imphal	2052520	1603520	1403520	5059560
5. University of Kashmir, Srinagar	2361520	1011520	911520	4284560
6. IIT, Mandi	1530760	1221760	573600	3326120
Total (₹)	18301160	13030160	11337520	42668840

Institute wise details:

Budget Head	Year I	Year II	Year III	Total (₹)
1. CSIR-IHBT, Palampur				
Manpower	2838240.00	2838240.00	2838240.00	8514720.00
Consumables	2500000.00	2000000.00	1500000.00	6000000.00
Travel	50000.00	50000.00	50000.00	150000.00
Contingency	50000.00	100000.00	100000.00	250000.00
Overhead	50000.00	50000.00	50000.00	150000.00
Total (₹)	5488240.00	5038240.00	4538240.00	15064720.00
2. DBT-CIAB, Mohali				
Equipment	1048000.00			1048000.00
Manpower	1101600.00	1101600.00	1153440.00	3356640.00
Consumables	1500000.00	1200000.00	1000000.00	3700000.00
Travel	50000.00	50000.00	50000.00	150000.00
Contingency	100000.00	100000.00	100000.00	300000.00
Total (₹)	3799600.00	2451600.00	2303440.00	8554640.00

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3. Shoolini University of Life Sciences & Business Management, Solan				
Equipment	1265000.00			1265000.00
Manpower	803520.00	803520.00	907200.00	2514240.00
Consumables	800000.00	700000.00	500000.00	2000000.00
Travel	50000.00	50000.00	50000.00	150000.00
Contingency	100000.00	100000.00	100000.00	300000.00
Overhead	50000.00	50000.00	50000.00	150000.00
Total (₹)	3068520.00	1703520.00	1607200.00	6379240.00
4. DBT-IBSD, Imphal				
Equipment	299000.00			299000.00
Manpower	803520.00	803520.00	803520.00	2410560.00
Consumables	800000.00	700000.00	500000.00	2000000.00
Travel	50000.00	50000.00	50000.00	150000.00
Contingency	100000.00	50000.00	50000.00	200000.00
Total (₹)	2052520.00	1603520.00	1403520.00	5059560.00
5. University of Kashmir, Srinagar				
Equipment	1200000.00			1200000.00
Manpower	431520.00	431520.00	431520.00	1294560.00
Consumables	600000.00	450000.00	350000.00	1400000.00
Travel	30000.00	30000.00	30000.00	90000.00
Contingency	50000.00	50000.00	50000.00	150000.00
Overhead	50000.00	50000.00	50000.00	150000.00
Total (₹)	2361520.00	1011520.00	911520.00	4284560.00
6. Indian Institute of Technology, Mandi				
Equipment	499000.00			499000.00
Manpower	401760.00	401760.00	453600.00	1257120.00
Consumables	500000.00	700000.00		1200000.00
Travel	30000.00	20000.00	20000.00	70000.00
Contingency	50000.00	50000.00	50000.00	150000.00
Overhead	50000.00	50000.00	50000.00	150000.00
Total (₹)	1530760.00	1221760.00	573600.00	3326120.00

2.6 Equipment: The details of equipment sanctioned for the implementation of the project are at Annexure-I.

2.7 Manpower: The details of the manpower sanctioned for implementation of the project are at Annexure-II.

3. Head of Account:

The Non-Recurring expenditure involved is debitable to:

Demand No. 89	Department of Biotechnology
3425	Other Scientific Research 2021-2022
3425.60	Others (Sub Major Head)
3425.60.200	Assistance to other Scientific Bodies (Minor Head)
3425.60.200.29	Biotechnology Research and Development

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3425.60.200.29.17	Assistance to Research and Development
3425.60.200.29.17.35	Grants for creation of capital assets

The Recurring expenditure involved is debitable to:

Demand No. 89	Department of Biotechnology
3425	Other Scientific Research 2021-2022
3425.60	Others (Sub Major Head)
3425.60.200	Assistance to other Scientific Bodies (Minor Head)
3425.60.200.29	Biotechnology Research and Development
3425.60.200.29.17	Assistance to Research and Development
3425.60.200.29.17.31	Grants -in-Aid General

4. Terms & Conditions:

4.1 The Non-Recurring items must be procured and installed within 18-months of the sanction of the project, failing which the PIs have to return the remaining/unutilized non-recurring grant with 10% of Interest. In case the amount of grant-in-aid is refunded, the whole or a part amount of the grant, with an interest at 10% per annum there on shall be recovered. The other terms and conditions governing this sanction are attached at Annexure- III.

4.2 The expenditure by the implementing agency is to be incurred only through the EAT module of PFMS.


4.3 A Memorandum of Agreement (MoA) will be signed between the Department of Biotechnology and the grantee institution on non-judicial stamp paper ₹100/- in the enclosed format and the second release/installment will be made only after signing of MoA between the grantee institutions and DBT. In case of NGO's and Private Institution's, execution of MOA is mandatory before first release. A format of the MoA is enclosed in Annexure-IV

4.4 The Institute/Agency will keep the whole of the grant in a Bank Account earning interest, and the interest so earned should be reported to DBT in the Utilisation Certificate and Statement of Expenditure. The interest earned should be remitted to the Consolidated fund of India through Bharat Kosh portal (www.bharatkosh.gov.in) as per GFR-2017-230(8) after finalization of the account for a given Financial Year.

5. No International Travel will be undertaken from the sanctioned project grant unless specified otherwise.

6. The Director, CSIR-IHBT, Palampur, Himachal Pradesh and The CEO, DBT-CIAB, Mohali, Punjab and The Registrar, Shoolini University, Anand Campus, The Mall, Solan, Himachal Pradesh and The Director, DBT-IBSD, Imphal, Manipur and The Dean Research, University of Kashmir, Jammu, J&K and The Registrar, Indian Institute of Technology, Mandi, Himachal Pradesh would be responsible for submission of Statements of Expenditure (SoE), utilization certificates (UC), Assets Certificates, Manpower staffing & expenditure details in prescribed DBT formats to DBT in respect of grants released in this project from time to time.

7. PI's of DBT sponsored projects can consider appointment of JRF from Category-II merit list of DBT-BET exam so that candidates can be paid fellowships at par with NET/GATE/BET qualified


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candidates as per DST OM No. A.SR/S9/Z-05/2019 dated on 30 Jan 2019. However, there is no compulsion on PI's to select candidates for JRF in their projects from Category-II of DBT-BET.

8. As per Rule 236 (1) of GFR 2017, the accounts of all Grantee Institutions or Organisations shall be open to inspection by the sanctioning authority and audit, both by the Comptroller and Auditor General of India under the provision of CAG(DPC) Act 1971 and internal audit by the Principal Accounts Office of the Ministry or Department, whenever the Institution or Organisation is called upon to do so.

9. If the Research Project involves biological resources, the obligations under the Biological Diversity Act 2002 as applicable shall be complied with by the Project Investigator, the details of such obligations can be accessed at www.nbaindia.org

10. (I) The PIs/Implementing Agencies shall strictly adhere to the GoI instructions issued vide OM No.F.4.1.2021-PPD dated 30.6.2021 in the matter of issue of Global tender Enquiry with special reference to instructions contained under para 4 of the said OM for procurement of equipments, spares and consumables for research purposes and shall not issue Global Tenders Enquiries before seeking the approval of the competent authority.

(II) After incurring the expenditure on import of such items and at the time of submission of UCs to the department next year, the PIs will also furnish the copy of the approval sought from the competent authority for issue of the GTE for such items of import. The release of next installment of grant will be subject to the fulfillment of the above condition.

11. If any biological data as specified in the guidelines are being generated in the project, then PI should submit the data generated in the project to Indian Biological Data Centre – The National Repository being implemented at Regional Centre for Biotechnology, Faridabad in compliance with the Biotech-PRIDE Guidelines 2021.

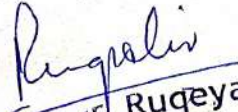
12. This issues under the power delegated to this Department and with the concurrence of IFD vide their SAN No.102/IFD/SAN/3434/2021-2022 dated March 21, 2022.

13. This sanction order has been noted at serial no. 36, 37 in the Register of Grants.
(NR) (R)

To,
The Pay & Accounts Officer,
Department of Biotechnology,
New Delhi – 110 003.

Copy to:

1. The Principal Director of Audit (Scientific Departments), DACR Building, New Delhi – 110002
2. The Director, CSIR-Institute of Himalayan Bioresource Technology (IHBT), Post Box No. 6, Palampur – 176061, Himachal Pradesh


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- The CEO, DBT-Centre of Innovative and Applied Bioprocessing (CIAB), Sector-81 (Knowledge City), PO Manauli, S.A.S. Nagar, Mohali – 140306, Punjab
4. The Registrar, Shoolini University, Anand Campus, The Mall, Solan – 173212, Himachal Pradesh
 5. The Director, DBT-Institute of Bioresources and Sustainable Development (IBSD), Takyelpat Institutional Area, Imphal – 795001, Manipur
 6. The Dean Research, University of Kashmir, Hazratbal, Srinagar – 190006, J&K
 7. The Registrar, Indian Institute of Technology (IIT), Mandi – 175005, Himachal Pradesh
 8. Dr. Dharam Singh, Principal Scientist, Department of Biotechnology, CSIR-Institute of Himalayan Bioresource Technology (IHBT), Post Box No. 6, Palampur – 176061, Himachal Pradesh
 9. Dr. Sudesh Kumar, Scientist F, Department of Biotechnology, DBT-Centre of Innovative and Applied Bioprocessing (CIAB), Sector-81 (Knowledge City), PO Manauli, S.A.S. Nagar, Mohali – 140306, Punjab
 10. Prof. Kamal Dev, Faculty of Applied Sciences and Biotechnology, Shoolini University of Life Sciences and Business Management (SULSBM), Oachghat-Kumarhatti Highway, Bajhol, Solan – 173229, Himachal Pradesh
 11. Dr. Amit Kumar Rai, Scientist C, Microbial Resources Division, DBT-Institute of Bioresources and Sustainable Development (IBSD), Tadong, Gangtok – 737102, Sikkim
 12. Dr. Ruqeya Nazir Shiekh, Sr. Assistant Professor, Centre of Research for Development, University of Kashmir, Hazratbal, Srinagar – 190006, J&K
 13. Dr. Tulika P Srivastava, Associate Professor, School of Basic Sciences, Indian Institute of Technology (IIT), Mandi – 175005, Himachal Pradesh
 14. Cash Section, DBT (2 copies).
 15. Sanction Folder.
 16. File Copy.

Vaishali

(Dr. Vaishali Panjabi)

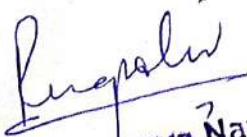
Scientist 'E'

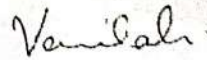
Ruqeya Nazir

Dr. Ruqeya Nazir
Principal Investigator
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Details of the Equipment sanctioned for the implementation of the project entitled "Process optimization and up-scale production of lignocellulosic extremozymes from Himalayan microbes for biomass valorization/depolymerization";

S. No.	Name of Equipment	No.	Cost (₹)
DBT-Centre of Innovative and Applied Bioprocessing, Mohali			
1.	Microbial Fermenter	1	725000.00
2.	Pulveriser	1	100000.00
3.	Sonicator Probe	1	129000.00
4.	Data Analysis System	1	94000.00
Total			1048000.00
Shoolini Institute of Life Sciences & Business Management, Solan			
1.	Incubator shaker (Temperature controlled)	1	690000.00
2.	Ultra-deep freezer (-80OC)	1	575000.00
Total			1265000.00
DBT-IBSD, Imphal			
1.	Shaking Water Bath / Thermo Scientific Vacuum Concentrator	1	299000.00
Total			299000.00
University of Kashmir, Srinagar			
1.	Incubator Shaker	1	570000.00
2.	Gel Electrophoresis	1	130000.00
3.	Refrigerated Centrifuge	1	500000.00
Total			1200000.00
Indian Institute of Technology, Mandi			
1.	HPC cluster	1	499000.00
Total			499000.00


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(Dr. Valshall Panjabi)
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Details of the manpower sanctioned for the implementation of the project entitled "Process optimization and up-scale production of lignocellulosic extremozymes from Himalayan microbes for biomass valorization/depolymerization":

Head	No. of Position	Year I	Year II	Year III	Total (₹)
1. DBT-IHBT, Palampur					
Project Associate-I (₹ 31,000/- fixed per month + 8% HRA)	3	1205280	1205280	1205280	3615840
Senior Project Associate (₹ 42,000/- fixed per month + 8% HRA)	3	1632960	1632960	1632960	4898880
Total (₹)		2838240	2838240	2838240	8514720
2. DBT-CIAB, Mohali					
Junior Research Fellow (₹ 31,000/- fixed per month + 8% HRA for year I and II, ₹ 35,000/- fixed per month + 8% HRA for year III)	1	401760	401760	453600	1257120
Research Associate-III (₹ 54,000/- fixed per month + 8% HRA)	1	699840	699840	699840	2099520
Total (₹)		1101600	1101600	1153440	3356640
3. Shoolini University of Life Sciences & Business Management, Solan					
Junior Research Fellow (₹ 31,000/- fixed per month + 8% HRA for year I and II, ₹ 35,000/- fixed per month + 8% HRA for year III)	2	803520	803520	907200	2514240
Total (₹)		803520	803520	907200	2514240
4. DBT-Institute of Bioresources and Sustainable Development, Imphal					
Project Associate-I (₹ 31,000/- fixed per month + 8% HRA)	2	803520	803520	803520	2410560
Total (₹)		803520	803520	803520	2410560
5. University of Kashmir, Srinagar					
Project Associate-I (₹ 31,000/- fixed per month + 16% HRA)	1	431520	431520	431520	1294560
Total (₹)		431520	431520	431520	1294560
6. Indian Institute of Technology, Mandi					
Junior Research Fellow (₹ 31,000/- fixed per month + 8% HRA for year I and II, ₹ 35,000/- fixed per month + 8% HRA for year III)	1	401760	401760	453600	1257120
Total (₹)		401760	401760	453600	1257120

Emolument details of research personal(s) mentioned in table(s) of Annexure-II shall be applicable only if candidate(s) met educational qualification and eligibility criteria as per DST OM No. SR/S9/Z-05/2019 dated 10.07.2020.

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Vaishali
(Dr. Vaishali Panjabi)
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