

MEMORANDUM OF AGREEMENT

Signature of Purchaser

This MEMORANDUM OF AGREEMENT is made on this ______ day of Two thousand and Twenty-Four BY AND BETWEEN President of India, acting through Secretary, 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; Jr. Bhakli & Salgiankin Microbiology Programme School of Biological Sciences & Biolechnology Goa University, Science Block E, Taleigao Plateau, Goa - 403206

Signature of Vendor Michael Fernandes

Lic. No .:- AC/STP/VEN/08/2015

Goa University, a state University cum affiliating University under the Government of Goa established by state legislature by notification No. LD/10/7/84(D) of the year 1984 having its registered office in/at Taleigao Plateau, Goa hereinafter referred to as Goa University (which expression shall where the context so admits include its successors and permitted assigns) of the OTHER PART;

WHEREAS DBT being desirous of "Technology Development and Bioprocess Engineering of Agro-Industrial and Single use Polyethylene biodegradable Polyhydroxyalkanoates by Halophilic waste to Microorganisms" decided to support a project submitted by Dr. Bhakti Balkrishna Salgaonkar (PI) Microbiology discipline, School of Biological Sciences and Biotechnology) and Dr. Diptesh Naik (Co-PI), School of Chemical Sciences, Goa University along with Prof. Judith Maria Bragança, Department of Biological Sciences, Birla Institute of Technology & Science (BITS) Pilani, Goa Campus for the attainment of the objectives, hereinafter described in the Annexure I and milestones & 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 "Technology Development and Bioprocess Engineering of Agro-Industrial and Single use Polyethylene waste to biodegradable Polyhydroxyalkanoates by Halophilic Microorganisms".

NOW THE PARTIES HERETO AGREE AS FOLLOWS: -

1.0. ROLE OF DEPARTMENT OF BIOTECHNOLOGY, NEW

DELHI D. Braklis Silga Sickier Microbiology Programme

Microbiology Programme School of Biological Sciences & Biotechnology Goa University, Science Block E, Taleigao Plateau, Goa - 403206

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To provide funds to the extent of **Rupees Thirty Eight Lakhs Eighty Four Thousand Two Hundred and Eighty only (₹ 3884280.00)** over a period of **Three years** from the date of sanction of the project, to **Goa University and BITS** for undertaking activities as detailed in Annexure 1 & Annexure III. Details of the funds to be provided are given in Annexure II.

2.0 ROLE OF Goa University

- 2.1. To provide their contribution of Rupees Thirty Eight Lakhs Eighty Four Thousand Two Hundred and Eighty only (₹ 3884280.00) for Three years from date of sanction of the project as detailed in Annexure – II. (if a jointly supported project).
- 2.2. To provide existing facilities as mentioned in the project document.
- 2.3. To be responsible for accomplishing objectives identified and activities listed.
- 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 and is single project period only. Microbiology Programme School of Biological Sciences & Biotechnology Goa University, Science Block E, Andrew Goa Putters and the second science of the science of

Taleigao Plateau, Goa - 403206

3.0 DURATION OF PROJECT

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

4.0 RIGHTS OF OWNERSHIP/TECHNOLOGY TRANSFER AND UTILIZATION

- 4.1 Every effort should be made by the institutes to disseminate knowhow and transfer the IP emanating from public-funded research for the larger public good. All institutes should mandatorily report the details of their scientific outcomes-published articles, patents granted, technologies commercialized to DBT as per the formats provided for both completed and on-going projects. The outcomes are to be reported at the following links https://dashboard.dbtindia.gov.in/sbt/publication/ & https://dashboard.dbtindia.gov.in/sbt/patents/
- 4.2 The Intellectual property generated from DBT-funded on-going and completed project by **Goa University and BITS** will be the owned by the institution **Goa University and BITS**. It shall be the responsibility of **Goa University and BITS** to take necessary action for protection of the intellectual property arising out of the PROJECT through proper instruments, such as, patents, copyrights, industrial designs, etc. The Intellectual property developed may be transferred by the institutions through review by their scientific advisory committees adhering to DBT IP Guidelines. The equipment acquired will be the property of DBT and shall not be utilized for purposes other than those for which the grant has been sanctioned.

It shall be the responsibility of Goa University and BITS to ensure that support of DBT is suitably acknowledged in the publications Diptest Nouls School of Biological Sciences & Biotechnology MEIGODE Goa University, Science Block E, Taleigao Plateau, Goa - 403205

(papers, reports, etc.), products, technologies and the catalogues arising out of the PROJECT.

5.0 MONITORING

- The progress of implementation of the project and proper utilization 5.1 of grant shall be reviewed by the DBT and by the Monitoring Committee set up by DBT.
- The periodic progress of physical achievements and the utilization of 5.2 funds, statement of expenditure shall be evaluated by the Monitoring Committee.
- The Comptroller and Auditor General of India, at his discretion shall 5.3 have the right of access to the books and accounts of Goa University and BITS for the grants received from DBT for this project.
- The DBT may terminate the grant at any stage if it is convinced that 5.4 the grant has not been properly utilized or appropriate progress has not been made. In the event, DBT terminates the grant, Goa University and BITS shall hand over all documents including technical details and equipment purchased related to the project.

DURATION OF MEMORANDUM OF AGREEMENT 6.0

This MoA will remain inforce for the duration of the project and until 6.1 all claims are settled between DBT and Goa University and BITS.

7.0 ARBITRATION

Dr. Chat

In the event of any question, dispute or difference whatsoever 7.1 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 goukar Microbiology Programpot agree on the appointment of the Arbitrator within a period of School of Biological Sciences & Biotechnology Goa University, Science Block E. Taleigao Plateau, Goa - 403206

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 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.

8.0 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:

Signed by -----

(Designation)

For and on behalf of The President of India

Signatures of two witnesses (from DBT):

i.

D. Bhatel S Superinker Microbiology Programme School of Biological Sciences & Biotechnology Goa University, Science Block E, Taleigao Plateau, Goa - 403206



Signed and stamped by:

Prof. V. S. Nadkarni Registrar REGISTRAR Goa University Goa Universityao Plateau-Goa.

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For and on behalf of Goa University

Name, Signature and stamp of Two Witnesses (from Goa University):



i. Dr. Bhakti B. Salgaonkar

Assistant Professor of Microbiology School of Biological Sciences and Biotechnology

Goa University Microbiology Programme School of Biological Sciences & Biotechnology Goa University, Science Block E, Taleigao Plateau, Goa - 403206



TALEIGAO PLATEA

ii. Dr. Diptesh G. Naik

Assistant Professor of Physical Chemistry School of Chemical Sciences Goa University

Project Objectives

- Optimization, Bioprocess Engineering, bulk Synthesis and characterization of the production of the biodegradable plastics [polyhydroxyalkanoates (PHAs)] by halophilic microorganisms using various renewable agro-industrial byproducts.
- Studies on the conversion of the single use polyethylene waste to biodegradable plastics (PHAs) by halophilic microorganisms.
- Biodegradation and biocompatibility studies of the biopolymer synthesized by Halophilic Microorganisms

Details of the Funds

1. Project Cost: The total cost of the project is **Rs. 3884280/- (Rupees Thirty Eight Lakhs Eighty Four Thousand Two Hundred and Eighty only)** as per the details given below:

	(Financial figures are shown in Rs.)				
Institute	Year I	Year II	Year III	Total Cost (Rs.)	
Goa University	1800960.00	743960.00	809360.00	3354280.00	
Birla Institute of Technology & Science,	110000.00	210000.00	210000.00	530000.00	
Pilani-Goa					
Total (Rs.)	1910960.00	953960.00	1019360.00	3884280.00	

2. Institute wise budget details are:

(Financial figures are shown in Rs.)							
Budget Head	Year I	Year II	Year III	Total Cost (Rs.)			
	Goa University						
Grants for Creation of Capital Assets	907000.00			907000.00			
Grants-in-aid General	893960.00	743960.00	809360.00	2447280.00			
Total	1800960.00	743960.00	809360.00	3354280.00			
	Birla Institute of Technology & Science, Pilani-Goa						
Grants for Creation of Capital Assets	00.00			00.00			
Grants-in-aid General	110000.00	210000.00	210000.00	530000.00			
Total	110000.00	210000.00	210000.00	530000.00			
Grand Total	1910960.00	953960.00	1019360.00	3884280.00			

Annexure III

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

Details of the quarterly deliverables sanctioned for the implementation of the entitled "Technology Development and Bioprocess Engineering of Agro-Industrial and Single use Polyethylene waste to biodegradable Polyhydroxyalkanoates by Halophilic Microorganisms"

Milestone	Deliverable	Quarter
First Year		
1.	Processing of the file and administrative approvals for the recruitment of the Junior research Fellow	1-3 months
	(JRF). Literature review and planning of the experiments.	
2.	Processing of the file and administrative approvals for the purchase of the equipment under non-	4-6 months
	recurring budget. Reviving the halophilic cultures. Procurements of the consumables.	
3.	Optimization of media parameters and conditions for high PHA production by the potential halophilic	7-9 months
	isolate. Screening for the isolates for the utilization of more lignocellulosic waste substrates.	
4.	The scale up studies and designing of the fermentor. Data Analysis and report writing. Administrative	10-12 months
	procedures such as submitting the Utilization certificate (UC) and Statement of Expenditure (SE).	
Second Yea	ſ	
5.	Extraction and Characterization of the polymer synthesized using lignocellulosic waste substrates.	13-15 months
	Data Analysis	
6.	Polyethylene (PE) waste and its byproducts such as oxidized wax will be used as carbon substrates for	16-18 months
	the production of PHAs	
7.	The samples of the PE will be checked for its degradation using various physic-chemical methods such	19-21 months
	as SEM, TGA-DTA, FT-IR	
8.	Fed-batch process for PHA production will be developed using polyethylene wastes as substrates.	22-24 months
	Compilation of data simultaneously and filing of process patent or communicating the preliminary data	
	in the form of manuscript to peer-reviewed journals.	
	Data Analysis and report writing. Administrative procedures such as submitting the Utilization	
	certificate (UC) and Statement of Expenditure (SE).	
Third Year		
9.	Procurement of chemicals and other requirements for performing the Biodegradation and	25-27 months
	biocompatibility studies	
10.	Preparation of biopolymer film from Co-Polymer synthesised by halophilic	28-30 months
	microorganisms and its characterization	
11.	Characterization of the film Biocompatibility studies using cell line (Animal Tissue culture). The <i>in</i>	31-33 months
	vitro degradability of the macroporous films/ scaffolds will be determined	
12.	Compilation of data and filing of process patent or communicating the preliminary data in the form of	34-36 months
	manuscript to peer-reviewed journals.	
	Consolidated data Analysis and report writing. Administrative procedures such as submitting the	
	Utilization certificate (UC) and Statement of Expenditure (SE).	