



Memorandum of Understanding

Between



H.O.
Boshay
4/4/2024

Anthropological Survey of India
Ministry of Culture, Government of India, Kolkata

And



University of Hyderabad (Institute of Eminence)
Hyderabad

On

Collaboration to analyze the metagenomic sequences of the human gut microbial DNA datasets generated from the collection of Anthropological Survey of India

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H A NAGARAJARAM
S/o H A ADIMURHY
R/o HYDERABAD
For Whom
U O H

BADAM SAIBABU
LICENSED STAMP VENDOR
Lic. No. 15-22-030/2013
Ren.No. 15-22-037/2022
H.NO 2-39/1/B, PLOT NO 7,
GOUTAM
NAGAR.CHANDANAGAR.SERILINGAM
MANDAL OF RANGAREDDY
DISTRICT
Ph 9848596722

Memorandum of Understanding

This Memorandum of Understanding executed on this 3rd day of the month April of the year 2024

BETWEEN

Anthropological Survey of India, Ministry of Culture, Government of India EN-79, Salt Lake, Sector-V, Kolkata-700091 represented by its Director (hereinafter referred to as "AnSI") which expression shall, unless excluded by repugnant to the context or the meaning thereof be deemed to include its successors and assigns in office and permitted assigns of the ONE PART.

AND

University of Hyderabad located at CR Rao Road, Hyderabad Central University Rd, Gachibowli, Hyderabad, Telangana, a premier institution of post graduate teaching and research in the country, was established by an Act of Parliament (Act No.39 of 1974) as a Central University, represented by its Registrar hereinafter referred to as "University of Hyderabad", (Which terms of expression shall, unless excluded by or repugnant to the extent or the meaning thereof be deemed to include its successors and permitted assigns) on the OTHER PART

[Signature]

कुलसचिव / REGISTRAR
हैदराबाद विश्वविद्यालय
University of Hyderabad
हैदराबाद / Hyderabad - 500 046.

[Signature]

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OFFICE OF THE
DISTRICT REGISTRAR
RANGA REDDY DIST., T.S.
10 FEB 2024
STAMPS DEPOT

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1 Background

- 1.1 Anthropological Survey of India (AnSI) and University of Hyderabad (UoH); (Institute of Eminence), Hyderabad have formed this partnership in order to enhance the study and understanding of the gut microbial DNA. The entire collaborative work will be done in the DBT- Centre for Microbial Informatics (DBT-CMI), School of Life Sciences under the direction of University of Hyderabad.
- 1.2 The University of Hyderabad is a prestigious institution stands as a beacon of academic excellence and intellectual pursuit. Renowned for its commitment to fostering innovation, research, and interdisciplinary learning, the university has carved a niche for itself in the landscape of higher education. The University of Hyderabad houses the DBT-Centre for Microbial Informatics (DBT-CMI), a leading Bioinformatics/Computational Biology Centre funded generously by the DBT-BTISNet. Operating with the aim of advancing microbial research over a five-year period (2021-2026), DBT-CMI is renowned for its academic excellence and significant contributions to the field of computational bioinformatics. This five-year endeavour of DBT-CMI underscores a steadfast commitment to advancing innovation and excellence in the field of bioinformatics.
- 1.3 Anthropological Survey of India (AnSI) is a specialized centre for advanced scientific research in Anthropology. For over seven decades, the AnSI has been doing an yeoman's service to the world of knowledge through its contribution on the People of India in respect of their biological, social and cultural heritage. Over the years, the AnSI has developed state - of - the art facilities and expertise to study the genetic composition of the Indian populations from various classical human biological/genetic markers to the latest molecular markers at the genomic level. Now there has also been a move towards applying a combination of advanced methodological approaches with the help of **Bioinformatics tools** to the study of contemporary DNA as well as human gut microbiome profile to enhance the understanding with the human-environment relationship.
- 1.4 It is an equal partnership for the mutual benefit of the AnSI and the, University of Hyderabad.


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- 1.5 This opportunity arises from the National Project of the AnSI entitled “**The Gut Microbial Genomic Study Among the PVTGs of India**” which will be the first major study on the gut microbial abundance in particularly vulnerable tribal communities (henceforth PVTGs) across India. The proposed research can help exploring the genetic diversity of PVTGs, and compare gut microbiota in different contexts. Furthermore, the study will inform how dietary shifts impact the gut microbiome and thus may provide insights into the biomedical consequences of changing dietary habits in diverse populations. Enhancing our understanding of the gut microbiome is an opportunity to observe the direct evolutionary effects of dietary shifts and their impact on nutrition and health. The study will also be of special interest to understand health issues of the PVTGs and recommend strategies for improving their health status.

2 Partnership aims and objectives

- 2.1 The overarching aim of this partnership is for DBT-CMI to share and explore relevant bioinformatics analysis of human gut microbiome DNA.

2.2 Specific objectives are:

- 2.2.1 To construct a metagenome-wide data using advance bioinformatics techniques on human gut microbiome datasets collected from the PVTGs of India in order to understand the diversity of human gut microbiome.
- 2.2.2 To characterize the diversity of population specific gut microbiome profiles of the PVTGs of India.
- 2.2.3 To understand the compositional diversities in the gut microbiomes of PVTGs with respect to their diet and geographical locations.

3 Scope of the MoU

- 3.1 Activities to be delivered by the MoU partnership include:

Both the organizations will provide access to researchers to analyze the microbiome DNA data.


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- 3.2.1 The UoH as a collaborative partner agrees to undertake this venture on an equal basis to implement this as a part of the national plan research scheme of AnSI.
- 3.2.2 The Anthropological Survey of India will be the chief custodian of the generated data from the sequenced DNA isolated during the research, and all the sequenced data will be housed at the archive of the AnSI.
- 3.2.3 Both collaborators will strictly maintain the privacy and confidentiality of the research.
- 3.2.4 The AnSI will provide access to its computing infrastructure harboring the metagenomic data to the DBT-CMI, UoH to carry out the analyses of the gut metagenome data generated by AnSI either remotely from its working laboratory at SLS, UoH or at the computing premises of the AnSI. AnSI will take all the responsibility of providing metagenomic data of required quality and will take steps for data protection during the entire period of metagenome analyses.
- 3.2.5 AnSI will send two to three of its scientists initially for a period of two to three weeks to undergo training on tools and pipeline-related metagenome analysis at the DBT-CMI, UoH premises. The expenditure involved in this man-power training of AnSI, will be borne by the AnSI.
- 3.2.6 The AnSI and the UoH, the collaborating institutes, would jointly publish the outcome of the study. The first authors will be from AnSI.
- 3.2.7 The AnSI agrees to submit the metagenomic data both raw and the annotated data that is done with collaboration of UoH to the central data repository being created by DBT-CMI, UoH. This can be done after publication of outcome of the study.
- 3.3 In return for access to the collections, UoH will agree to the following:
- 3.3.1 UoH will agree to share relevant knowledge of the scientific methods of advanced bioinformatics analysis undertaken at DBT-CMI by providing in-depth training of the AnSI manpower partly at AnSI Mysore and mostly at DBT-CMI, SLS. The TA and DA expenses for DBT-CMI, UoH staff will be


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completely borne by the AnSI during their visit to AnSI centres. The duration of the training is as mentioned in 3.2.5.

3.3.2 Share the results of the scientific analyses with AnSI in the form of a brief written report for their archive.

3.3.3 The bioinformatics analysis of the sequenced data will be conducted phase wise, where in each phase a number of sequenced data will be provided to the collaborating Institute for Analysis (DBT-CMI), UoH. Upon successful completion of first phase of analysis second set of data will be given to the DBT-CMI, UoH for further analysis.

3.4 Both parties agree that there will be no other collaborations within India, or outside of India, relating to the aforementioned study samples without getting permission from AnSI

3.5 The initial timeframe for partnership activities will be three years; however, the MOU can be extended as needed for the current gut microbiome project or any other similar project of mutual interest.

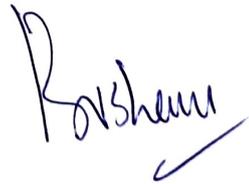
During the tenure of the agreement, the collaborating parties can terminate the MOU either for the breach of any of the terms and conditions of this agreement or otherwise by giving a month's notice, in writing, to the other party.

4 Monitoring

4.1 Both partners commit to ongoing monitoring, with the aim of ensuring accountability and performance against milestones.

4.2 The activities under MoU will be reviewed half yearly/yearly to ensure that the aims of the MoU are being delivered as agreed. However, the consultancy would be on a continuous basis with the provision of review of the terms and conditions as and when necessary.


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5 Manpower and Financial contributions

Both collaborating parties shall agree to use the available manpower, infrastructure, materials, and other resources necessary for executing the project. Further, it is more explicitly clarified that, UoH will not have additional financial implications in terms of manpower engagement, additional equipment or maintenance. If any costs on maintenance of existing equipments/machinery are to be incurred, AnSI shall consider to meet from its funds after following a due procedure and keeping in view its budget allocations.

6 Disclaimer

It should be noted that by signing this document or by participating in the Memorandum of Understanding, the partners are not committing to legally binding obligations. It is intended that the partners remain independent of each other and that their collaboration and use of the term 'partner' does not constitute the creation of a legal entity, nor authorise the entry into a commitment for or on behalf of each other.

7 Coordinators

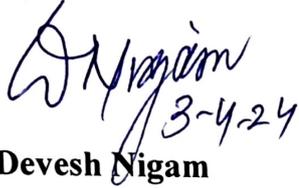
Prof. B.V. Sharma from A.S.I and Prof. H.A.Nagarajaram from UoH will be the coordinators, a key representative responsible for overseeing the implementation of the terms outlined in this Agreement.


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Memorandum of Understanding between the University of Hyderabad and Anthropological Survey of India (AnSI)

IN WITNESS WHEREOF, the undersigned, being duly authorized thereto, have signed this Agreement in two original copies in English at the place and on the date(s) indicated below:


3-4-24

Dr. Devesh Nigam
Registrar
University of Hyderabad
Prof. CR Rao Road, Gachibowli
Hyderabad-500046, Telangana, India

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Witness 1



Prof. H.A. Nagarajaram
Department of Systems and
Computational Biology,
School of Life Sciences

Date: 3rd April 24

Witness 2

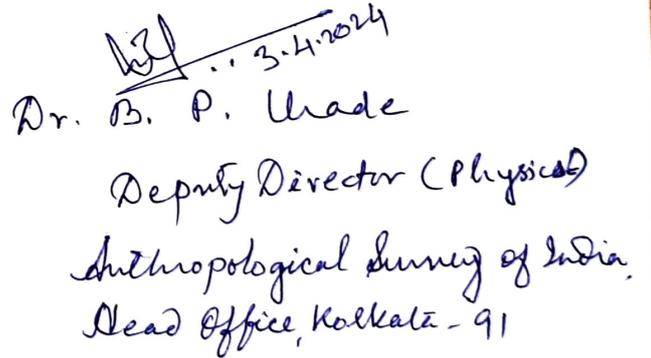


Prof. Anand Kumar Kondapi
Dean,
School of Life Sciences

Date: 3/4/24



Prof. B.V. Sharma
Director,
Anthropological Survey of India
Ministry of Culture, Government of
India
EN- 79, Sector-V, Salt Lake City
Kolkata- 700091, West Bengal, India


3-4-2024
Dr. B. P. Uade
Deputy Director (Physics)
Anthropological Survey of India,
Head Office, Kolkata - 91