

प्राणी शास्त्र विभाग

गु. पा. वि. वि.

विषय:- MOU Guru Ghasidas Vishwavidyalaya Department of Zoology and Department of Biotechnology, Bansal Institute of Engineering and Technology, Lucknow, (U.P.)

MOU Guru Ghasidas Vishwavidyalaya Department of Zoology and Department of Biotechnology, Bansal Institute of Engineering and Technology, Lucknow, (U.P.) के मध्य हुए MOU के आवश्यक प्रपत्र सूचनार्थ व रिकार्ड हेतु नस्ती के साथ प्रेषित है।

For your information and record.

S/O
17/03/22

Bhaskar 17/3/2022

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17.7.2022

Guru Ghasidas Vishwavidyalaya
Department of Zoology,
Bilaspur (C.G.) India



MEMORANDUM OF UNDERSTANDING



BETWEEN

Guru Ghasidas Vishwavidyalaya, Bilaspur, Chhattisgarh

AND

**Department of Biotechnology, Bansal Institute of Engineering
and Technology, Lucknow, UP.**

This Memorandum of Understanding (here in after referred to as this "MoU") is
made effective on and from 10th March, 2022

By

Guru Ghasidas Vishwavidyalaya, Bilaspur, Chhattisgarh

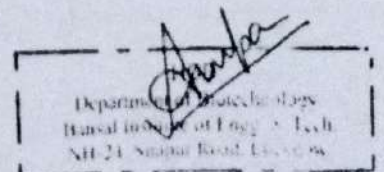
(herein after referred to as "Guru Ghasidas Vishwavidyalaya" which expression,
where the context admits shall include its successors in interest and permitted
assigns) of the **FIRST PARTY**

AND

**Department of Biotechnology, Bansal Institute of Engineering and Technology,
Lucknow, UP**

(herein after referred to as "DBT, BIET, Lucknow" which expression, where the
context admits shall include its successors in interest and permitted assigns) of the
SECOND PARTY.

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WHEREAS

Guru Ghasidas Vishwavidyalaya Guru Ghasidas Vishwavidyalaya is a Central University of India, located in Bilaspur C.G. State, established under Central Universities Act 2009, No. 25 of 2009. This University is appropriately named to honor the great Satnami Saint Guru Ghasidas (born in 17th century), and an active member of the Association of Indian Universities and Association of Commonwealth Universities. Vishwavidyalaya offers opportunities to young minds and facilitates the accomplishments of their creative talent with emphasis on their character building through various streams of knowledge. The Vishwavidyalaya comprises 32 teaching departments under 11 Schools of studies.

DBT, BIET, Lucknow has the vision to be a world-class Department to excel in teaching, innovative research and consultancy in the disciplines of Biotechnology thereby empowering the stakeholders to compete globally. Their mission is to achieve the goals by continuously upgrading the curriculum catering to the societal needs and industrial requirements, by conducting research in intra, inter, multi and trans-disciplinary areas, and by imparting quality education for enhancing knowledge, employability skills and entrepreneurship capabilities through start-up environment.

The purpose of this Memorandum of Understanding is to provide a frame work for the proposed collaboration.

A. Objectives

The goal of this cooperation is to foster academic and research collaboration, provide opportunity for global experience, and to facilitate advancement of knowledge on the basis of reciprocity, best effort, mutual benefit, and frequent interactions.

Guru Ghasidas Vishwavidyalaya and DBT, BIET, Lucknow agrees:

- 1) To jointly propose and engage in research or training programmes as per national priorities; sponsored by funding agencies, and to invite each other's scientists/faculty to participate therein.

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Department of Biotechnology,
Bansal Institute of Engg. & Tech
NH-24, Noida Road, Lucknow

- b) To exchange the information on research and educational programmes, teaching, learning material and other literature, with due approval of the competent authority of both the organizations.
- c) To jointly organize seminars, conferences, or workshops on topics of mutual interest and to invite each other's scientist/faculty to participate therein,
- d) To exchange, on a reciprocal basis students/scholars for limited periods of time for purpose of education and /or research.
- e) To encourage any other academic/research activities that both the institutions agreed to be on mutual benefit.

Guru Ghasidas Vishwavidyalaya and DBT, BIET, Lucknow agree that detailed terms and conditions that guide each activity identified above will be separately determined and agreed upon by the two institutions. These terms shall include a technical description of proposed activity, financial arrangements, and person(s) responsible for its implementation, etc.

B. Joint Sponsored Research, Development and Consultancy

Guru Ghasidas Vishwavidyalaya and DBT, BIET, Lucknow agree to help identify and invite scientists/faculty members from the other institution to participate in research or development programmes already sponsored as well as new proposals by external funding agencies. The terms and conditions for such participation will be worked by mutual agreement between the scientists/faculty member(s) and the institution extending such an invitation. Data generated through such collaborative research shall be published in scientific journals jointly, with due approval of the competent authorities of both the institutions. When a scientist/faculty member visits the other institution on invitation or as part of such joint research project, then such a visit will be classified as such, and handled as per rules of the individual institution.

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Department of Biotechnology
Bansal Institute of Engg & Tech
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C. Exchange of Faculty, Scientists, Staffs and Students

Guru Ghasidas Vishwavidyalaya and **DBT, BIET, Lucknow** agrees to encourage collaboration between faculty and scientists from the two institutions. Specifically, the institutions will encourage members of their scientist/faculty to undertake short visits to, or take up fixed-term visiting assignments at, each other's institution. The terms and conditions for each visit or an assignment, including those concerning stipend, travel, and housing, will be heard by the concerned individual scientist/faculty members no financial liabilities from either university will be involved. Students and staffs may exchange between both the institution for R&D and academics.

D. Exchange of Scientific and Technical Material

Guru Ghasidas Vishwavidyalaya and **DBT, BIET, Lucknow** will exchange information on research and educational programmes, teaching, learning material and other literature, relevant to their educational and research programmes, with due approval of the competent authority of both the organizations. Further, **Guru Ghasidas Vishwavidyalaya** and **DBT, BIET, Lucknow** agree to explore ways to share teaching material, and other relevant literature, while respecting each other's intellectual property and other rights.

E. Joint Conferences, workshops and short-term courses

Guru Ghasidas Vishwavidyalaya and **DBT, BIET, Lucknow** agrees to help identify and invite scientists/faculty members from the other institution to participate in conferences, workshops and short-term courses. The terms and conditions for such participation will be worked out by mutual agreement between the invited scientist/faculty member(s) and the institution extending such an invitation. When a scientist/faculty member visits the other institution on invitation or as part of such joint activity/research project, then such a visit will be classified as such, and handled as per rules of the individual institution.

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F. Intellectual Property

Guru Ghasidas Vishwavidyalaya and DBT, BIET, Lucknow agrees to respect each other's rights to intellectual property. Further, the intellectual property rights that arise as a result of any collaborative research or activity under this MoU will be worked out on a case-to-case basis by the competent authorities of both the institutions, and will be consistent with officially laid down IPR policies of the two institutions.

G. Co-ordination Committee

a) Head of both the institutions

• Prof. LVKS Bhaskar	Head Department of Zoology, Guru Ghasidas Vishwavidyalaya, Bilaspur, CG
• Dr. Anupam Singh	Head of Department, DBT, BIET, Lucknow, UP

b) Coordinating Officers from both the institutions

<i>Two Coordinators from Guru Ghasidas Vishwavidyalaya</i>	<i>Two Coordinators from DBT, BIET, Lucknow</i>
1. Dr. Manish Kumar Tripathi Assistant Professor Department of Zoology Guru Ghasidas Vishwavidyalaya Bilaspur, CG	1. Mr. Ankit Kumar Assistant Professor Department of Biotechnology BIET, Lucknow, UP
2. Dr. Sushant Kumar Verma Assistant Professor Department of Zoology Guru Ghasidas Vishwavidyalaya Bilaspur, CG	2. Mr. Ashish Kumar Rai Assistant Professor Department of Biotechnology BIET, Lucknow

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Dr. Ankit Kumar
Department of Biotechnology
Bansal Institute of Engg. & Tech.
NH-24, Suapur Road, Lucknow

The coordination committee will periodically review and identify ways to strengthen cooperation between these two institutions.

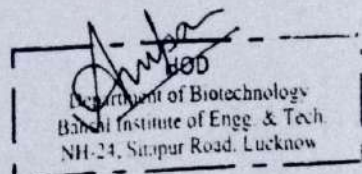
H. Tenure and Termination

- 1) This MoU will take effect from the date it is signed by heads of **Guru Ghasidas Vishwavidyalaya** and **DBT, BIET, Lucknow**.
- 2) This MoU may be amended at any time by written mutual consent of the competent authorities from both the institutions.
- 3) Either institution may terminate the MoU by giving written notice to the other institution, not less than six months prior to the desired termination date. However, **Guru Ghasidas Vishwavidyalaya** and **DBT, BIET, Lucknow** agree that all on-going research/activities are allowed to complete successfully, and obligations of the funding bodies, if any, are met in full, subsequent to the notice of termination.
- 4) The termination of this MOU shall not affect the rights or obligations of either institutions regarding any binding offer or firm obligation approved and agreed to either institution prior to the termination date.

I. Arbitration Clause

In event of any disputes arising between **Guru Ghasidas Vishwavidyalaya** and **DBT, BIET, Lucknow** hereto, it shall be endeavor of **Registrar, Guru Ghasidas Vishwavidyalaya** and **Head, DBT, BIET, Lucknow** to first make an attempt to resolve the dispute amicably by mutual discussion and deliberations in a spirit of independence, mutual respect, and shared responsibility, failing which the disputes shall be referred to Arbitration. The Arbitration shall be conducted as per the provisions of arbitrations and conciliations Act I 996. The Arbitral tribunal shall consist of a Sole Arbitrator, to be appointed mutually by both the institutions. The award of the Tribunal shall be final and binding on both the institutions.

Seema



IN WITNESS, WHEREOF GURU GHASIDAS VISHWAVIDYALAYA AND DBT, BIET, LUCKNOW HERETO HAVE EXECUTED THIS MOU OR CAUSED IT TO BE EXECUTED IN THEIR NAMES AND ON THEIR BEHALF BY THEIR DULY AUTHORIZED REPRESENTATIVES ON THE DATE SET FORTH.

<p>For and on behalf of GURU GHASIDAS VISHWAVIDYALAYA</p>	<p>For and on behalf of DBT, BIET, LUCKNOW</p>
<p>Signature: Date: 10-03-2022 Seal:</p>  <p>डॉ. सीमा राय Dr. Seema Rai सह. प्राध्यापक Associate Professor जन्तु विज्ञान विभाग Department of Zoology गुरु घासीदास विश्वविद्यालय, बिलासपुर (छ.ग.) Guru Ghasidas Vishwavidyalaya, Bilaspur (C.G.)</p> <p>Name: Dr Seema Rai Designation: Associate Professor Department of Zoology Guru Ghasidas Vishwavidyalaya Bilaspur, C G</p>	<p>Signature: Date: 10-03-2022 Seal:</p>   <p>Name: Dr. Anupam Singh (Head) Designation: Head & Associate Professor Department of Biotechnology, Bansal Institute of Engineering and Technology, Lucknow.</p>
<p>Witnesses:</p> <p>Signature: Date: 10-03-2022 Seal:</p>  <p>अधिष्ठाता/Dean जीवविज्ञान अध्ययन शाला School of Life Sciences गुरु घासीदास विश्वविद्यालय, बिलासपुर (छ.ग.)/Bilaspur (C.G.)</p> <p>Name: Professor LVKS Bhaskar Designation: Dean (School of Life Science) Head (Department of Zoology) Guru Ghasidas Vishwavidyalaya Bilaspur, C G Date: 10-03-2022</p>	<p>Signature: Date: 10-03-2022 Seal:</p>   <p>Name: Mr. Ashish Kumar Rai Designation: Assistant Professor Department of Biotechnology, Bansal Institute of Engineering and Technology, Lucknow Date: 10-03-2022</p>



Report of Activity performed under MoU, BIET, Lucknow

Name of the activity performed: *In silico assessment using STRING and Molecular Docking*

Number of Teachers/students participated: 01/ 01

Who Dr. Seema Rai, Adyasha Purohit

Date of Event : 01/04/2022 and 31/07/2022

Venue : VIRTUAL MEETING WITH BIET, Bioinformatic Lab

1. Virtual Discussion regarding requirement of protein IDs (PDB) for In silico analysis of Poly cystic ovarian syndrome (PCOS) associated Protein (LHR, FSHR, ER α , β LEPR) and central/peripheral clock proteins (*BMAL*, *PER1*, *CRY1*) with melatonin receptors MT1R and MT2R) using STRING and Molecular Docking (Cluspro, Zdock)

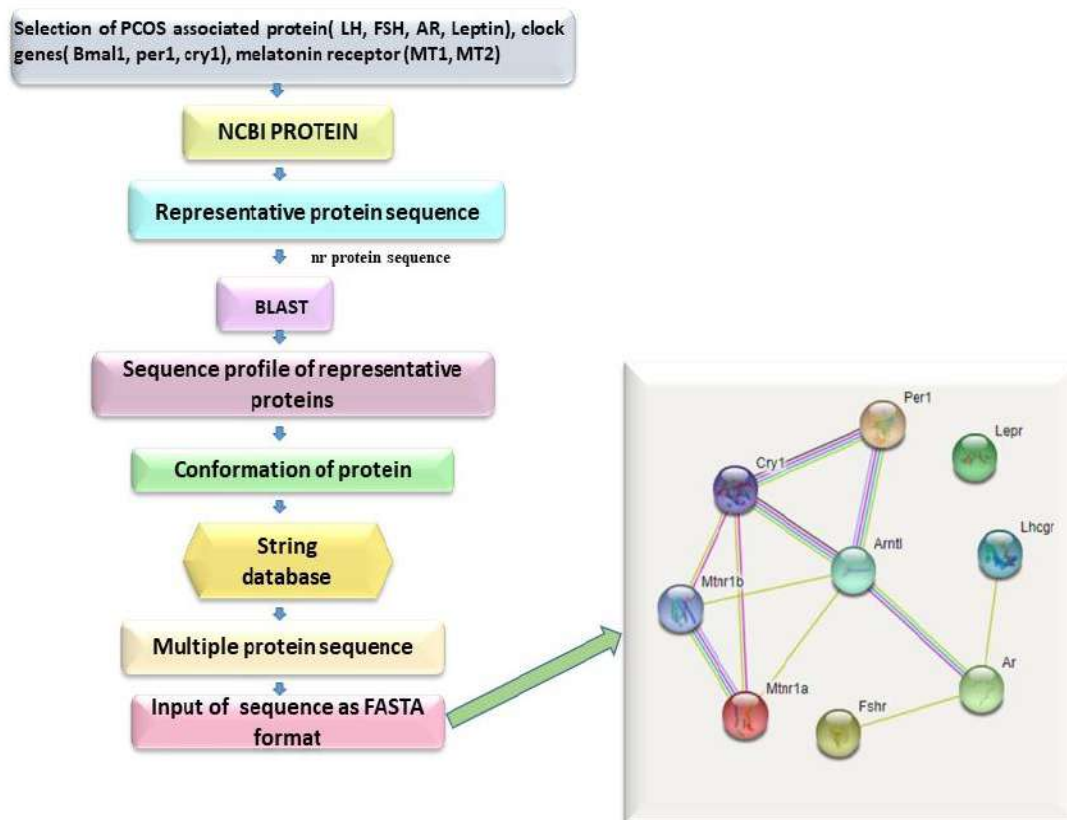
Details of Event Proceedings

Date (DD-MM-YYYY)	Details of the Session	Details of Resource Person	Number of Participants
22-03-2022	2021-2022	Dr. Anupam Singh Mr. Ashish Kumar Rai	02
30-03-2022	2021-2022	Dr. Anupam Singh Mr. Ashish Kumar Rai	02
03-04-2022	2021-2022	Dr. Anupam Singh Mr. Ashish Kumar Rai	02
02.05.2022	2021-2022	Dr. Anupam Singh Mr. Ashish Kumar Rai	02
01.06.2022	2021-2022	Dr. Anupam Singh Mr. Ashish Kumar Rai	02

A Brief Abstract of the Event (Maximum 500 Words):

We have started jointly to work on In silico analysis of PCOS associated proteins (LHR, FSHR, estrogen α and β , leptin) and central/ peripheral clock proteins (BMAL1, PER1 and CRY1) with melatonin receptors (MT1 and MT2) using molecular docking as bioinformatic tool. Preliminary results obtained using Search Tool for the Retrieval of Interacting Gene (STRING) data base suggest that Per1, Cry1, and BMal1 showed direct

interaction with other, however MT1r and MT2D have no direct interaction rather it is mediated via Cry 1 protein. LH, FSH shows a n indirect interaction with Bmal1and among themselves through Androgen Receptor. Androgen receptor (AR) and Bmal1 are two main keys regulator which keeps clock genes associate and connected with LH, FSH. Further, Leptin receptor requires recruitment of other intermediate protein to interact with LH, FSH, Clock genes (Bmal1, Per1, Cry1) and melatonin receptors MT1r and MT2R. The result also showed the co-expression and co-occurrence of the protein by given average local clustering coefficient value. The interpretation suggest that there must be a functional association between the protein and it will be useful for better understanding of protein-protein interactions. work. The visit proved to be very much



useful for the student in their future field of Practice.

However, a further study to know more accuracy regarding the interaction of PCOS associated genes / Protein regarding the affinity of legend and receptor is still ongoing by



using Cluspro, Zdock Bioinformatic software. This part of the study belongs to the thesis part of Ph D scholar Ms Adyasha Purohit.

2. We will start working towards comparative effect of different nano-formulation with a strong antioxidative molecule melatonin and nanoparticle loaded melatonin in *Drosophila melanogaster*, a model with 70 % genetic similarity with human being, which will help in understanding of the therapeutic potential of melatonin in different models including human being. We also start working towards comparative study for the effect of different metal nanoparticles like silver nanoparticles, gold nanoparticles, zinc oxide nanoparticles and melatonin against *Drosophila melanogaster*.
3. A NATIONAL CONFERENCE On "Current Approaches Using Latest Techniques in Life-Sciences" 24th-25th Oct 2022 will be organized jointly.

Dr. Seema Rai

Mr. Ashish Kumar Rai

Dr. Anupam Singh