

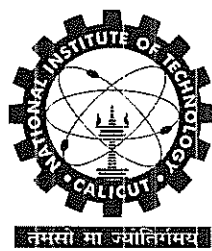
# Memorandum of Understanding

between



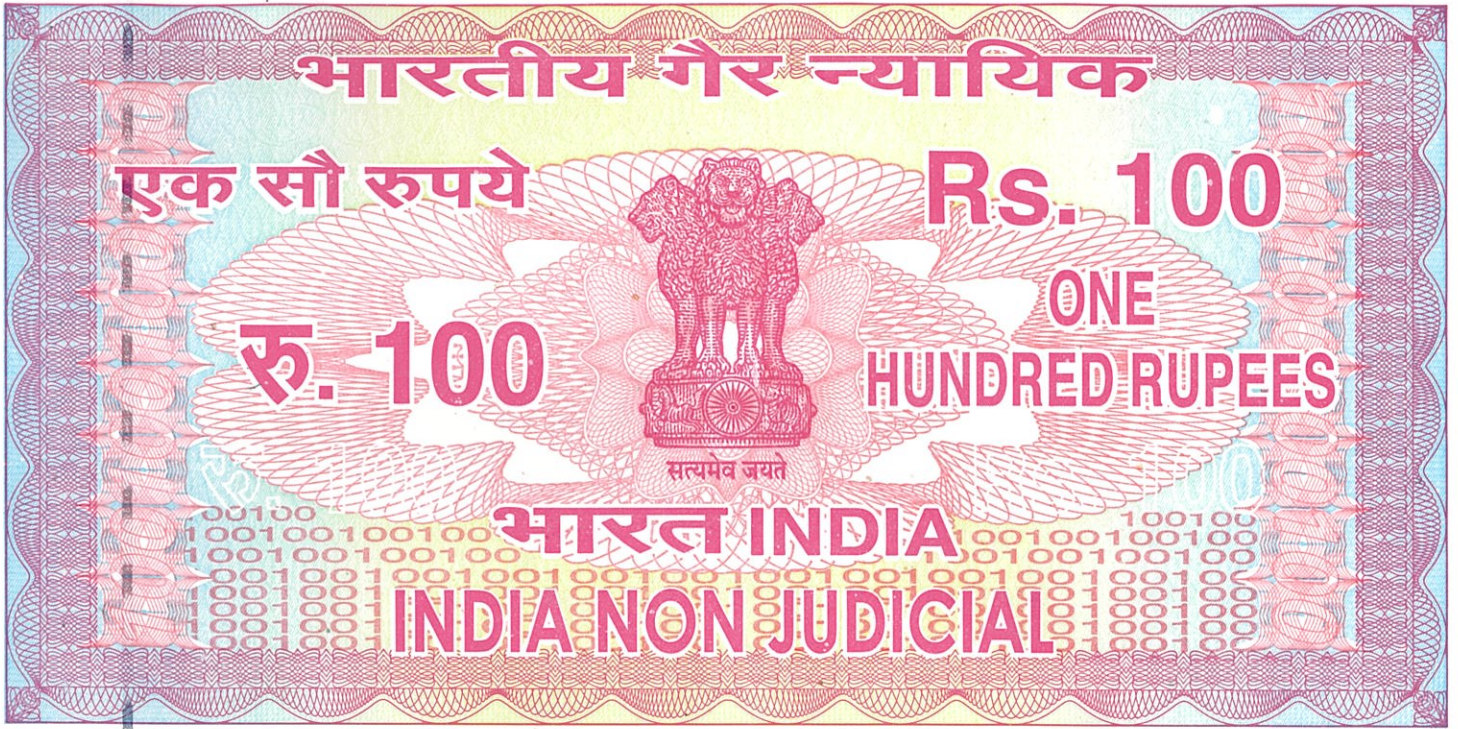
Aswini Diagnostic Services, Calicut

and



**Department of Chemistry**

**National Institute of Technology, Calicut**



കേരളം കേരल KERALA Memorandum of Understanding

DW 674343

This **MEMORANDUM OF UNDERSTANDING** is entered on the 27<sup>th</sup> day of October, 2023

**Between**

Aswini Diagnostic Services, Calicut (hereafter Aswini Diagnostic Services referred to as 'First Party') represented by the Medical Director

**And**

Department of Chemistry, National Institute of Technology Calicut, NITC (P.O) PIN-673601, Kozhikode (herein after Dept. of Chemistry, NITC, referred to as 'Second Party') represented by its Chairperson, Centre for Industry-Institutional relations (CIIR), NITC

(Both the First Party and the Second Party are also jointly referred to herein as 'Parties' and individually as 'Party')



No: 25367 Value: Rs. 100  
Date: 6-10-2023  
Name: Aswini Diagnostic Services  
BABU JOHN.K ACTING  
STAMP VENDOR PALAYAM JN.  
CALLAI ROAD, CALICUT

Kazhikode, Kasaba  
Royalam  
Medical Director  
Aswini Diagnostic Services  
Date: / /

Chairperson, Centre for Industry Institutional Relations (CIIR)  
National Institute of Technology Calicut  
Calicut, Kerala-673601, India



WHEREAS, Aswini Diagnostic Services, Calicut a NABL-accredited laboratory (ISO 15189), started in 1994, is currently an autonomous reference clinical laboratory with well-trained full-time pathologists and laboratory professionals, located in Calicut.

WHEREAS, National Institute of Technology Calicut, NITC (P.O.) PIN- 673601, Kozhikode, formerly known as Calicut Regional Engineering College, established in 1961, (herein after referred to as NIT CALICUT), has been conferred with the status of Institute of National Importance under the National Institute of Technology Act in 2007. The institute, through its various activities, takes efforts for the advancement of learning and dissemination of knowledge in various front-line areas of importance for the nation. In that pursuit, NIT CALICUT would like to link with similar National Institutes and Research Organizations and collaborate in applied research and consultancy in Science, Technology, Engineering, and Management and also promote academic and professional excellence of personnel, including the students. The Department of Chemistry at NIT Calicut was originally part of the Department of Science and Humanities in the Regional Engineering College, which later became an independent department. Now the department has 13 faculties in various disciplines of Chemistry with well-equipped research laboratories and several funded R&D projects.

WHEREAS, the two parties, through Dr.Saneesh Babu P S, Consultant Scientist, Department of Cytogenetics and Molecular testing, Aswini Diagnostic Services as the Principal investigator, Dr. Diana Mariam MBBS, MD, Consultant, Department of Biochemistry Aswini Diagnostic Services as Co-principle investigator and Dr. Suni Vasudevan, Associate Professor & HOD Dept of Chemistry, NIT Calicut as Co-principle investigator agree to take part in the joint



*Rajalal*

**Medical Director**  
**Aswini Diagnostic Services**  
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*Saneesh Babu P S*

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research initiative titled “Uric acid detection using Functionalized Metal Nanoparticles” for joint research projects, development and validation of diagnostic equipment, joint research publications, and meetings for research and development to promote academic-industry cooperation. The study shall be a part of the research of the scholar at the Department of Chemistry, NIT Calicut, under the mentorship of Dr. Suni Vasudevan, Associate Professor, Dept of Chemistry, NIT Calicut.

NOW, THEREFORE, in consideration of the mutual promises made herein and of good and valuable consideration, the receipt and sufficiency of which both Dept. of Chemistry, NITC and Aswini Diagnostic Services, Calicut, hereby acknowledge, Dept. of Chemistry, NITC and Aswini Diagnostic Services, Calicut, hereby agree to the following protocols governing their collaborations in the joint research project and to sign a Memorandum of Understanding (MoU).

#### **Article – I: SCOPE**

The Scope of collaboration on academic and research activities in this Memorandum of Understanding includes the following research project:

The study is titled “Uric acid detection using functionalized metal nanoparticles”.

#### **Article -II: TERMS OF INTERACTIONS**

The two parties agree to take part in the joint research projects in general and will collaborate in carrying out the specific research activities approved by the Institutional Ethics Committee of Aswini Diagnostic Services, Calicut.



*Rajalal*  
**Medical Director**  
**Aswini Diagnostic Services**  
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Calicut, Kerala- 673601, India

Name of Principal Investigator:

Dr. Saneesh Babu PS, Consultant Scientist, Department of Cytogenetics and Molecular Testing,

Aswini Diagnostic Services

Name of Co- Principle Investigators:

Dr. Diana Mariam, Consultant, Department of Biochemistry, Aswini Diagnostic Services

Dr. Suni Vasudevan, Associate Professor & HOD, Department of Chemistry, NIT Calicut

Mr. Muhammed Shahal K K, Biochemist, Department of Biochemistry Aswini Diagnostic Services

Ms. Archana P K, Research Scholar, Inorganic and Bio-inorganic Research Laboratory, Department of Chemistry, NIT Calicut

***The Research- Summary:***

Uric acid (UA) is generated during purine metabolism in humans and resides in bodily fluids such as serum and urine. UA is required for a healthy existence, and the typical levels of UA in human blood and urine are 0.13 to 0.46 mM and 2.49 to 4.46 mM, respectively. A high amount of UA in human fluid can lead to a variety of clinical syndromes such as high blood pressure, atherosclerosis, gout, Parkinson's disease, high blood lipids, renal illness, and Alzheimer's disease. However, the UA shortage causes psychological disorders, diabetes, and cardiovascular disease. Capillary electrophoresis, fluorometry, chromatography, electrochemical techniques, chemiluminescence, and colorimetry are various methods for



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Medical Director  
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detecting uric acid. Furthermore, the colorimetric approach using metal nanoparticles is extensively employed due to its ease of use, quick analytical speed, and high sensitivity in these procedures. This study intends to use functionalized metal nanoparticles for the development of highly selective and sensitive system for the detection of uric acid in human serum. The major aims of the study shall be the development of a novel functionalized metal nanoparticle system for uric acid detection, colorimetric and fluorimetric sensing studies of uric acid using the developed system as well as the real-time sensing studies.

### **Article – III: SHARING OF FACILITIES.**

- a) Dept. of Chemistry, NITC, and Aswini Diagnostic Services, Calicut shall make provisions to share their respective important R & D facilities in order to carry out this research project.
- b) Dept. of Chemistry, NITC and Aswini Diagnostic Services, Calicut shall permit sharing facilities in their premises required to carry out the research projects, if permissible within the rules governing the two organizations.

### **ARTICLE-IV: RESPONSIBILITIES OF EACH PARTY**

#### **Responsibilities of Aswini Diagnostic Services**

- 1) Testing and Validation: One of the primary responsibilities of Aswini Diagnostic Services is to test and validate a novel uric acid detection method developed in NIT Calicut. Aswini Diagnostic Services will also test patient samples in the method developed in NITC.
- 2) Quality Control: Aswini Diagnostic Services is responsible for maintaining strict quality control measures to ensure accurate and reliable results. This involves following standardized protocols



*Rajesh Kumar*  
Medical Director  
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as per NABL guidelines and procedures, calibrating equipment, validating test methods, and monitoring the precision and accuracy of the results.

3) Equipment Maintenance: Aswini Diagnostic Services is responsible for maintaining and calibrating the equipment used for biochemistry testing (in Biochemistry, Aswini Diagnostic Services). This includes regular maintenance, troubleshooting technical issues, and ensuring that the instruments are in optimal working condition.

4) Data Management: Aswini Diagnostic Services is responsible for accurately recording and documenting test results, maintaining detailed records of samples, and ensuring the confidentiality and integrity of patient data.

#### **Responsibilities of NIT Calicut**

1) Development of the system for the study: The main objective of NIT Calicut will be to synthesize a new functionalized system based on metal nanoparticles that has great characteristics by using appropriate approaches that satisfy the goals of the research project.

2) Characterization of the system: The composite design process will be planned by NIT Calicut and it will well characterize by different spectroscopic and spectrometric techniques to ensure the system formation, morphology, and physical and chemical properties of the developed system.

3) Sensing studies: NIT Calicut will carry out the optimization and sensing studies of the uric acid using the developed nanoparticle-based composite system under various conditions



*Rajalakshmi*  
Medical Director  
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moreover, will also investigate the interaction between the developed composite and uric acid.

- 4) Discussions and monitoring: The faculty and students in NIT Calicut related to this research project will visit the Aswini Diagnostic Services center to have discussions and periodic monitoring of the progress of the research and development. The mutual visits will be done with prior discussion and appointments without affecting the activities of NIT Calicut.

**Article V: TERMS AND CONDITIONS.**

Research projects involving human studies, and the exchange of biological samples will be as per the guidelines of the Indian Council of Medical Research and Human ethics committee of Aswini Diagnostic Services, Calicut.

**Article VI: EFFECTIVE DATE AND DURATION OF MoU**

- a) The MoU shall be effective from the date of its approval by competent authorities at both ends.
- b) The duration of the MoU shall be for a period of 5 years from the effective date.
- c) During its tenancy, the MoU may be extended or terminated by prior notice of not less than three months by either party. However, termination of the MoU will not in any manner affects the interest of the students/faculty/scientists who have been admitted to pursue a program under this MoU.
- d) The progress of the research will be reviewed periodically and necessary measures will be taken to address the challenges and to take it forward.



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Medical Director  
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- e) If any of the parties wish to terminate the MoU at the end of the stipulated period (5 years) it must notify the other institutions not less than three months prior to the expiry of the MoU.

**Article-VII: IPR, PUBLICATIONS, etc.**

Rights regarding publications, patents, royalty, ownership of software/ design/ product/ hardware developed, etc., under the scope of this MoU shall be decided by the two parties by mutual consent.

**Article VIII: CONFIDENTIALITY**

During the tenancy of the MoU, both Dept. of Chemistry, NITC, and Aswini Diagnostic Services, Calicut will maintain strict confidentiality and prevent disclosure of all the confidential information and data exchanged under the scope of this MoU for any purpose other than in accordance with this MoU.

'CONFIDENTIAL INFORMATION', shall mean any proprietary information, data, or facts belonging to PARTIES collectively or severally, disclosed by the disclosing party under this agreement or any subsequent agreement, whether in writing, verbal, or electronically, irrespective of the medium in which such information is stored, which is marked confidential or with any other words having similar meaning by the disclosing party, or specifically agreed to be kept confidential by the parties, or declared or identified so by the disclosing party before such disclosure or during the discussions.



*Rajalal*  
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Confidentiality of **patient-related information** will be given prime importance. No data related to patients will be used out of the purview of this research and all patient identifiers will be masked.

Both Dept. of Chemistry, NITC, and Aswini Diagnostic Services, Calicut shall bind their respective personnel who come into possession or knowledge of any confidential information not to disclose the same to third parties without the written approval of the disclosing party or use such confidential information for any use other than intended under this agreement or projects.

Further, the Dept. of Chemistry, NITC, and Aswini Diagnostic Services, Calicut shall put in place adequate and reasonable measures to keep and store confidential information secure so as to prevent any unauthorized use.

This clause shall survive the termination or expiry of this MoU.

#### **Article IX: AMENDMENTS**

Any article or clause of the MoU may be modified or amended by mutual agreement of Aswini Diagnostic Services, Calicut, and Dept. of Chemistry, NITC. Any amendment or modification of this MoU shall be in writing and signed by both the parties hereto and shall only after such execution be deemed to form part of the MoU.

#### **Article X: RESOLUTION OF DISPUTES**

a) This agreement shall take effect and be construed in accordance with the Laws of India.



*Rajalakh*  
Medical Director  
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- b) If a dispute or difference whatsoever arises between parties in relation to or in connection with this MoU, both parties shall first try to resolve the dispute/ difference amicably between themselves failing which the matter shall be resolved between heads of the Institutes.

#### Article XI: MISCELLANEOUS

The headings and subheadings are inserted for convenience only and shall not affect the construction of this MoU.

- a) No failure to exercise and no delay in exercising, on the party of a party, and right, remedy, power, or privilege hereunder shall operate as a waiver thereof, nor shall any single or partial exercise of any right, remedy, power or privilege hereunder preclude any other or further exercise thereof or the exercise of any other right, remedy, power or privilege. The rights, remedies, power, and privileges herein provided are cumulative and not exclusive of any right, remedies, powers, or privileges provided by Law.
- b) After this MoU has been signed, all the proceeding understandings/ negotiations and the correspondence pertaining to it shall become null and void.

Single point of Contact (SPOC)

- 1) Dr. Saneesh Babu P. S., Consultant Scientist, Department of Cytogenetics & Molecular Testing, Aswini Diagnostic Services, Calicut
- 2) Dr. Suni Vasudevan, Associate Professor and Head, Department of Chemistry, NIT Calicut



*Rajalakesh*  
Medical Director  
Aswini Diagnostic Services  
Date .....

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IN WITNESS WHEREOF PARTIES HERE TO HAVE ENTERED INTO THIS AGREEMENT EFFECTIVE AS

ON 27<sup>th</sup> day of October, 2023

FIRST PARTY

*Royalalishu*

(Medical Director, Aswini Diagnostic  
Services)



SECOND PARTY

*[Signature]*

(Chairperson, CIIR-NITC)



Witness

1. *Danallaniam*  
DIANA MARIAM
2. *Saneesh Babu*  
Saneesh Babu

Date: 27/10/2023

Witness

1. *Suni Vasudevan*  
Suni Vasudevan
2. *Mausumi Chattopadhyaya*  
Mausumi Chattopadhyaya

Date: 27/10/2023