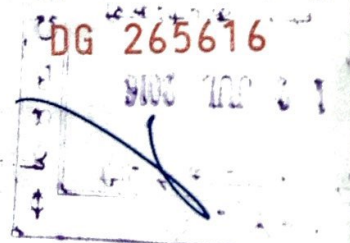




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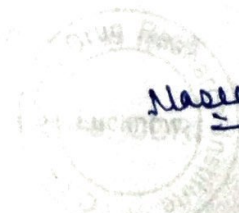
MEMORANDUM OF UNDERSTANDING

1. This MoU made and entered into on this...^{10th}...day of November Two Thousand Sixteen between Council of Scientific and Industrial Research, a Society registered under the Societies Registration Act XXI of 1860 having its registered office at Anusandhan Bhawan, 2 Rafi Marg, New Delhi-110 001 (hereinafter called CSIR which expression shall where the context so admits, include its successors and permitted assigns) through its CSIR-Central Drug Research Institute having its office at B.S. 10/1, Sector 10, Jankipuram Extension, Sitapur Road, Lucknow-226031, India, (hereinafter called CSIR-CDRI) of the one part.

And

Centre of Biotechnology, University of Allahabad, Allahabad-211002 (hereinafter called AU) which expression shall where the context so admits, include its successors and permitted assigns) of the other part.

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2.0 Preamble

- 2.1 WHEREAS Dr. Awadh Bihari Yadav, Assistant Professor, Centre of Biotechnology, AU has requested Dr. Amit Misra, Scientist, Pharmaceuticals Division, CDRI for studying (i) "Synthesis and characterization of siRNA/shRNA loaded ligand bearing PLGA micro and nanoparticles for targeted delivery to the for lung inflammation and lung cancer treatments" and (ii) "Targeted delivery of shRNA loaded microparticles to the lung macrophage for lung inflammation disease" (hereinafter called as PROJECT) as per Annexure I.
- 2.2 WHEREAS Dr. Awadh Bihari Yadav of AU has all necessary facilities & expertise for undertaking the studies under the PROJECT.
- 2.3 WHEREAS Dr. Amit Misra of CDRI has all necessary facilities and expertise for undertaking the study and agreed to collaborate with Dr. Awadh Bihari Yadav of AU.
- 2.4 WHEREAS the proposed research objectives has already been approved under CSIR BioScience cluster project BioDiscovery of CSIR-CDRI.
- 2.5 WHEREAS Dr. Amit Misra of CSIR-CDRI shall submit the PROJECT to Institutional Animal Ethics Committee of CSIR-CDRI for obtaining necessary permission for initiating the studies under the PROJECT.
- 2.6 WHEREAS the above PROJECT has already been approved for funding by DST & SERB, New Delhi, vide their Order Nos. SR/NM/NS-1470/2014(G) approval Dated 09-08-2016 and SB/YS/LS-28/2014 dated 18-09-2014, respectively as per Annexure II.

Now, therefore, the parties have following understandings:

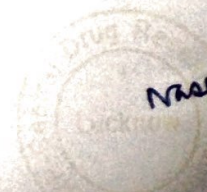
3.0. Responsibility of AU

- (a) Synthesis and preparation of siRNA or shRNA loaded micro and nano carriers for targeted delivery in in-vitro and in-vivo.
- (b) Characterization of siRNA or shRNA loaded micro and nano carriers for their encapsulation efficiency, release profile, integrity of encapsulated siRNA and shRNA and in-vitro uptake study in different cell line will be performed in AU.
- (c) AU shall provide Penn-Century Devices for dosing formulation in mice lung for targeted delivery study at CDRI Lucknow.
- (d) AU shall provide the samples to CSIR-CDRI in appropriate medium along with investigation reports.
- (e) AU shall make the payment as per clause 4(d) to CSIR-CDRI.

4.0 Responsibility of CSIR-CDRI

- (a) Characterization of prepared inhalable formulations for administration to mice, containing siRNA or shRNA loaded PLGA/chitosan nanoparticles.
- (b) Efficacy of siRNA or shRNA loaded micro and nanoparticles *in vivo* in mice model.
- (c) AU will provide apparatus and method for administering DPI to mice, CDRI will train collaborating lab personnel for dosing in animal.

NSB



- (d) Division of Laboratory Animals of CSIR-CDRI shall generate the bill/invoice in the name of Dr. Awadh Bihari Yadav, Assistant Professor, Centre of Biotechnology, Nehru Science Centre, University of Allahabad, Allahabad, 211002 for the utilization of animals as per current prevailing rate.

5.0 General Provisions

- (i) The MoU shall remain valid for a period of four (04) years from the last date of signing of the MoU.
- (ii) The MoU shall also be governed by the terms and conditions of the funding agency.
- (iii) The progress of implementation of the PROJECT shall be reviewed by AU and CSIR-CDRI, as mutually decided and the benefits of the collaboration shall be shared mutually.
- (iv) Both parties shall complete the responsibilities as per clause 3 & 4 without any financial liability on each other except the charges of animal and other consumables used at CSIR-CDRI.
- (v) Both parties and their student can visit the collaborating institutes as per requirements of the PROJECT, and shall have adequate insurance coverage without any financial liability on each other.
- (vi) The parties shall consult each other for any publication in respect of research work. These publications (papers, reports etc.) shall be in the names of actual research workers, wherein it will be duly acknowledged that the work has been carried out under the collaborative research program of CSIR-CDRI and AU. As a part of collaboration, the outcomes of the research under this MoU shall develop joint publication.
- (vii) Any publication, document and/or paper arising out of joint work conducted by the participants pursuant to this MoU will be jointly owned. The use of the name, logo and/or official emblem of the participants on any publication, document and/or paper will require prior permission of both the participants. It may however be ensured that the official emblem and logo is not misused.
- (viii) Applications for joint Patents will be filed in the name of institutions namely CSIR-CDRI, Lucknow, India and AU, Allahabad.
- (ix) Both parties agree to ensure appropriate protection of Intellectual Property Rights generated from such cooperation consistent with their respective laws, rules and regulations and other international agreements to which both parties are signatories.
- (x) In case research is carried out solely and separately by the Party or the research results are obtained through the sole and separate effort of the Party the Party concerned alone will apply for grant of IPR and once granted the IPR will be solely owned by the concerned Party.
- (xi) In case of research results obtained through joint activities, the grant of intellectual property rights will be sought by both the parties jointly and once granted these rights will jointly owned by the parties.
- (xii) In case of research results obtained through joint activities under this MoU both parties will apply as co-applicants for the protection of intellectual property rights subject to exclusive rights of both the Parties to commercialize the technology jointly on mutually acceptable terms and conditions.

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- (xiii) The annual maintenance of the facility including all the instruments shall be the responsibility of each party without any financial liability on each other.
- (xiv) Nothing contained herein shall constitute this a partnership or joint venture agreement or constitute either party as the partner, principal or agent of the other, this being a MoU between independent contracting entities.
- (xv) No amendment or modification of this MoU shall be valid unless the same is made in writing by all the parties or their authorized representatives and specifically stating the same to be an amendment of this MoU. The modifications shall be effective from the date on which they are made, unless otherwise agreed to.
- (xvi) The parties will use their best efforts to settle all matters in dispute amicably. All disputes and differences of any kind related to this MoU shall be jointly settled between Director, CSIR-CDRI and VC of the AU, Allahabad.

This MoU has been executed in two originals; one of these has been retained by each party.

In witness whereof the parties hereto have signed this MoU on the day, month and year mentioned herein before.

For and on behalf of **CSIR-CDRI**

Signature *Naseem Ahmed Siddiqui*
Name Naseem Ahmed Siddiqui
 Scientist
 Business Development & Intellectual Property Unit
 CSIR-Central Drug Research Institute
 Sector-10, Jankipuram Extn., Sitapur Road
 Lucknow - 226 031, U.P., India
Designation
Seal

For and on behalf of **AU**

Signature *N.R.*
Name REGISTRAR
 University of Allahabad
 Allahabad
Designation
Seal

Witnesses

1- *A.S. K*
A. S. KUSHWAHA
 Sr. Tech. Officer (2)
 Business Development & Intellectual Property Unit
 CSIR-Central Drug Research Institute
 Sector-10, Jankipuram Extn., Sitapur Road
 Lucknow - 226 031, U.P., India
 2- *Neelima*
 (Neelima Srivastava)
 BD&IP Unit,
 CSIR-CDRI, LKO

Witnesses

1- *[Signature]*
 11.04.17
 Dean
 Research and Development
 University of Allahabad
 2- *S. Shankar*
 11/4/17
Prof. Shanthi Sundaram
 Co.-ordinator
 Centre of Biotechnology
 University of Allahabad
 Allahabad U.P. 211002