



## भारतीय आयुर्विज्ञान अनुसंधान परिषद INDIAN COUNCIL OF MEDICAL RESEARCH

स्वास्थ्य अनुसंधान विभाग (स्वास्थ्य एवं परिवार कल्याण मंत्रालय)

वी. रामलिंगस्वामी भवन, अन्सारी नगर, नई दिल्ली - 110 029

DEPARTMENT OF HEALTH RESEARCH (MINISTRY OF HEALTH & FAMILY WELFARE)  
V. RAMALINGASWAMI BHAWAN, ANSARI NAGAR, NEW DELHI - 110 029

No. 58/48/2011-BMS

Date: 29.11.2013

The Registrar,  
University of Delhi South Campus,  
Benitoz Juarez Road, New Delhi. 21

Subject:- Sanction of budget allotment for research project entitled "Evaluation of Soya phosphatidylcholine - stearylamine liposome as antimalarial agent"

Sir/Madam,

The Director General of the ICMR sanctions the above mentioned research scheme initially for the period of one year from 1.12.2013 subject to extension up to the total duration specified in para 4 below:-

1. The Director General of the ICMR also sanctions the budget allotment of Rs. 2,73,280/- as detailed in the attached statement for the period from 1.12.2013 to 31.3.2014. The grant-in-aid will be given subject to the following conditions.
2. The payment of the grant will be made in lump-sum to the Head of the Institute. The first installment of the grant will be paid generally as soon as report regarding appointment of the staff is received by the Council. The Staff appointed on the project should be paid as indicated in the budget statement.
3. The staff on the project will be recruited as per the rules and procedure of the host institute and second part of the undertaking be obtained from the employees of the project. The staff grant will not be released unless the required undertaking [part-II] from Head of the Institute is received in this office.
4. The demand for payment of the subsequent installment of the grant should be placed with the Council in the prescribed proforma. The approved duration of the scheme is Three years. The annual extension will be given after review of the work done on the scheme during the previous year.
5. Fifteen copies of the annual progress report in the attached prescribed proforma should be submitted to the Council every year after completion of ten months of the project giving complete actual details of the research work done. Failure to submit the report in time may lead to termination of project.

The receipt of this letter may please be acknowledge.

Yours faithfully,

Admn. Officer  
For Director General

Copy together with a copy of the budget statement forwarded to information to Dr. P.C. Ghosh, Professor, Deptt. Of Biochemistry, University of Delhi South Campus, Benitoz Juarez Road, New Delhi. 21

2 Accounts. V. for information.

3. Budget forwarded to Budget Section [Finance Section] for compilation of the Council Budget
4. IRIS Cell No. 2011-010100

Admn. Officer

BUDGET STATEMENT  
2013-2014

Subject:- Research project entitled "Evaluation of Soya phosphatidylcholine – stearylamine liposome as antimalarial agent" under Dr. P.C. Ghosh, Professor, Deptt. Of Biochemistry, University of Delhi South Campus, Benitoz Juarez Road, New Delhi. 21

[1.12.2013 to 31.3.2014]

STAFF

1.	One SRF @ Rs. 18000 p.a. Plus HRA Rs. 5400 p.m.	Rs. 93,600
2.	Contingency [Recurring] Rs. 5,00,000/- p.a.	Rs. 1,66,667
3.	Over head charges 3%	Rs. 13,013
		-----
		Rs. 2,73,280
		-----

Total budget allotment of Rs. 2,73,280/- Rupees two lakh seventy three thousand two hundred eighty only]

RFC No. BMS/adhoc/5/2013-14 dated 22.11.2013.



INDIAN COUNCIL OF MEDICAL RESEARCH  
ANSARI NAGAR, NEW DELHI

No. 58/48/2011-BMS

Date: 29.11.2013

Subject:- Payment of 1<sup>st</sup> instalment of the 1<sup>st</sup> year grant-in-aid for the project entitled Evaluation of Soya phosphatidylcholine – stearylamine liposome as antimalarial agent"

**MDMORANDUM**

The Director General of the ICMR sanctions the grant of Rs. 2,73,280/- [Rupees Two lakh seventy three thousand two hundred eighty only] as the 1<sup>st</sup> instalment of the 1<sup>st</sup> year grant for the period from 1.12.2013 to 31.3.2014 (four months) for incurring expenditure in connection with the above mentioned project.

The amount of Rs. 2,73,280/- may be debited to the provision made of Rs. 2,73,280/- on the above mentioned research project for the year 2013-2014.

A formal bill for Rs. 2,73,280/- is sent herewith for payment release by cheque/demand draft in favour of the Registrar, University of Delhi South Campus, Benitoz Juarez Road, New Delhi. This issued with the concurrence of the Finance Divn., vide RFC No.BMS/adhoc/5/13-14 dated 22.11.2013.

Admn. Officer  
For Director General

Accounts. V. ICMR

Copy to: The Registrar University of Delhi South Campus, Benitoz Juarez Road, New Delhi. 21

The grant has been sanctioned on the conditions laid down in out letter referred to above.

2. Dr. P.C. Ghosh, Professor, Deptt. Of Biochemistry, University of Delhi South Campus, Benitoz Juarez Road, New Delhi. 21

It is requested that an audited statement of account together with utilization certificate of the grant received and utilized in \_\_\_\_\_ may kindly be sent to this office ..

3. IRIS Cell No. 2011-10100

4. Central File.

Admn. Officer  
For Director General

Block 2, 6-8th Floors  
CGO Complex, Lodhi Road,  
New Delhi- 110 003  
Dated: 22/06/2017

ORDER

Sanction of the President is hereby accorded, under Rule 18 of the Delegation of Financial Powers Rules, 1978, for the implementation of the project entitled: "**Screening lead molecules identified by structure-based rational drug design methods against cytochrome b5 reductase 3 and dopamine beta hydroxylase in spontaneously hypertensive rat models for antihypertensive effects**" for a period of 3 Year 0 Month at a total cost of Rs. **8752800** (Rupees Eighty Seven Lakhs Fifty Two Thousand Eight Hundred Only) on the terms and conditions detailed here under:-

**2 The Project :**

**2.1 Title :** "**Screening lead molecules identified by structure-based rational drug design methods against cytochrome b5 reductase 3 and dopamine beta hydroxylase in spontaneously hypertensive rat models for antihypertensive effects**"

**2.2 Details of the Investigators:**

**Project Coordinator**

**Dr. Suman Kundu**

Professor

Department of Biochemistry

Delhi University, South Campus

Department of Biochemistry, University of Delhi South Campus

Benito Juarez Road, Delhi 110021

**Principal Investigators:**

**Prof. Suman Kundu**

Professor

Department of Biochemistry

Delhi University, South Campus

Department of Biochemistry, University of Delhi

South Campus, Benito Juarez Road, Delhi 110021

**Prof. C C Kartha**

Professor of eminence

Cardiovascular Disease Biology

Rajiv Gandhi Centre For Biotechnology

Division of Cardiovascular Disease Biology, Rajiv

Gandhi Centre for Biotechnology, Thycaud Post,

Poojappura, Thiruvananthapuram, Kerala,

Trivandrum, Kerala 695014

**CO-PI:**

**Dr. Surya Ramachandran**

Program Scientists

Cardiovascular Disease Biology



Rajiv Gandhi Centre For Biotechnology  
Division of Cardiovascular Disease Biology, Rajiv Gandhi  
Centre for Biotechnology, Thycaud Post, Poojappura,  
Thiruvananthapuram, Kerala, Thiruvananthapuram - 695014,  
Kerala

**Dr. Rakesh S Laishram**

Scientists C and Wellcome Trust-India Alliance Intermediate  
Fellow

Chronic Disease Biology

Rajiv Gandhi Centre For Biotechnology

Division of Chronic Disease Biology Group, Rajiv Gandhi

Centre for Biotechnology, Thycaud Post, Poojappura,

Thiruvananthapuram, Kerala, Trivandrum - 695014, Kerala

## 2.3 Objectives:

### Institute wise Objectives:

#### Delhi University, South Campus

1. Expression of hCYB5R3 in E.coli; Purification of the enzyme in higher yields.  
Verifiable indicator: Availability of homogeneous, pure protein in mg quantities.
2. In silico and in vitro screening of small molecules against hCYB5R3.  
Verifiable indicator: Favourable docking scores and binding energy, ADMET properties and active site interactions. Significant inhibition of DBH activity in solution by some of the hit compounds.
3. In vitro determination of inhibitory potentialities of top leads (IC50 and Ki).  
Verifiable indicator: Acceptable IC50 and Ki values (in nm to  $\mu$ m range).
4. Crystal structures of hCYB5R3 in complex with identified inhibitors to understand mechanism of binding.  
Verifiable indicator: Acceptable R-value (R-free), Favourable Ramachandran statistics.
5. Compound screening in mammalian cell lines and against human RBCs for assessments of cytotoxicities and hemotoxicities, respectively.  
Verifiable indicator: High cell viability, low hemolysis.
6. Validation of binding (inhibition) by biophysical tools (CD, ITC, FTIR, fluorescence).  
Verifiable indicator: Appropriate changes in signals probed, Values of affinities in nm to  $\mu$ m range, acceptable thermodynamic parameters.
7. Determination of enzyme kinetic parameters and mechanism of inhibition.  
Verifiable indicator: Ki in nm to  $\mu$ m range; Reasonable Vm, Km.
8. Molecular Dynamics Simulations of CYB5R3-inhibitor complexes in combination with enzyme kinetic parameters, biophysical parameters and crystallography results to model the mechanism of action of CYB5R3 and its inhibition.  
Verifiable indicator: Favorable energy parameters, Ramachandran plot and active site interaction.
9. Chemical synthesis of potential lead molecules and assessment of their specificities by testing their ability to dock to associated enzymes, related enzymes and enzymes in the pathway where the target enzymes function. Use of available commercial kits for specificity tests and for drug metabolism will be performed.  
Verifiable indicator: Ability to obtain good yields of pure compounds at lower costs; Inability of compounds to bind non-specific proteins or enzymes.
10. In vivo lead molecule screening in established model animals like C. elegans and D. melanogaster for cytotoxicity tests. (Kaletta T. and Hengartner M.O., Nature Reviews Drug Discovery, 2006)  
Verifiable indicator: Acceptable viabilities in C. elegans and D. melanogaster; good ADMET profile of compounds; and satisfactory Physiological, Pathological and Biochemical features of the SHRs.

## Rajiv Gandhi Centre For Biotechnology

1. Spontaneously Hypertensive Rat (SHR) models for cardiovascular diseases will be used to monitor different physiological, histological as well as biochemical parameters to evaluate the anti-hypertensive efficacies of the lead compounds against CYB5R3. Lead molecules designed by us against another novel anti-hypertensive target DBH (dopamine beta-hydroxylase) will also be simultaneously tested in SHRs for comparative purposes.  
Verifiable indicator: Acceptable variables in rat models and satisfactory physiological, histological and biochemical parameters of the SHRs.  
Blood pressure monitored at intervals through implants and telemetry, cardiac structure and function evaluated by echocardiography, alterations in cardiac and renal structure by histology, measurement of GFR, measurements of blood and tissue levels of dopamine and norepinephrine.

### 2.4 Time Schedule:

The duration of the project is 3 Year 0 Month from the date of this sanction order.

### 2.5 Project Cost:

The total cost of the project is Rs. **8752800/-** (Rupees Eighty Seven Lakhs Fifty Two Thousand Eight Hundred Only) as per details given below :

Institute	Year I	Year II	Year III	Total Cost(Rs.)
1. Delhi University, South Campus	1186800	686800	686800	<b>2560400</b>
2. Rajiv Gandhi Centre For Biotechnology	2730800	2630800	830800	<b>6192400</b>
<b>Total (Rs.)</b>	<b>3917600</b>	<b>3317600</b>	<b>1517600</b>	<b>8752800</b>



Institute wise details are:

Budget Head	Year I	Year II	Year III	Total(Rs.)
<b>1. Rajiv Gandhi Centre For Biotechnology</b>				
Equipment	1800000.00	1700000.00		3500000.00
Manpower	580800.00	580800.00	580800.00	1742400.00
Consumables	200000.00	200000.00	100000.00	500000.00
Overhead	50000.00	50000.00	50000.00	150000.00
Contingency	50000.00	50000.00	50000.00	150000.00
Travel	50000.00	50000.00	50000.00	150000.00
<b>Total (Rs.)</b>	<b>2730800.00</b>	<b>2630800.00</b>	<b>830800.00</b>	<b>6192400.00</b>
<b>2. Delhi University, South Campus</b>				
Equipment	500000.00			500000.00
Manpower	436800.00	436800.00	436800.00	1310400.00
Consumables	100000.00	100000.00	100000.00	300000.00
Contingency	50000.00	50000.00	50000.00	150000.00
Travel	50000.00	50000.00	50000.00	150000.00
Overhead	50000.00	50000.00	50000.00	150000.00
<b>Total (Rs.)</b>	<b>1186800.00</b>	<b>686800.00</b>	<b>686800.00</b>	<b>2560400.00</b>

## 2.6 Equipment:

The details of the equipment sanctioned for the implementation of the project at Annexure-I

## 2.7 Manpower:

The details of the manpower sanctioned for the implementation of the project at Annexure-II

## 3. Head of Account:

The Non-Recurring expenditure involved is debitable to:

Demand No. 85	Department of Biotechnology
3425	Other Scientific Research 2017-2018
3425.60	Others (Sub Major Head)
3425.60.200	Assistance to other Scientific Bodies (Minor Head)
3425.60.200.29	Biotechnology Research and Development, Human Resource Development, Research Resources and Facilities
3425.60.200.29.17	Assistance for Research and Development
3425.60.200.29.17.35	Grants for creation of capital assets

The Recurring expenditure involved is debitable to:



<b>Demand No. 85</b>	<b>Department of Biotechnology</b>
<b>3425</b>	Other Scientific Research 2017-2018
<b>3425.60</b>	Others (Sub Major Head)
<b>3425.60.200</b>	Assistance to other Scientific Bodies (Minor Head)
<b>3425.60.200.29</b>	Biotechnology Research and Development, Human Resource Development, Research Resources and Facilities
<b>3425.60.200.29.17</b>	Assistance for Research and Development
<b>3425.60.200.29.17.31</b>	Grants-in-aid General

#### 4. Terms & Conditions:

- In case the whole or a part of the amount of the grant-in-aid is being refunded, an interest at the rate of ten percent thereon shall be recovered.
- Grantee Institution is a public funded organization.
- The equipment sanctioned under the project should be purchased within 12 months from the date of the release of the grant.

4.1 The other terms and conditions governing this sanction are attached at Annexure- III.

4.2A Memorandum of Agreement (MoA) will be signed between the Department of Biotechnology and the grantee institution on Non-Judicial stamp paper Rs. 100/- in the enclosed format and the second release/installment will be made only after signing of MoA by the grantee institutions and its acceptance by DBT. In case of NGO or Private Institution, MOA signed is mandatory first release. A format of the MoA is enclosed in Annexure-IV

4.3The Institute/Agency will keep the whole of the grant in a Bank Account earning interest, and the interest so earned should be reported to DBT in the Utilisation Certificate and Statement of Expenditure. The Interest so earned will be treated as created to the institute/Agency and shall be adjusted towards further installment of the grant and or at the time of Final Settlement of Accounts.

5.No International Travel will be undertaken from the sanctioned project grant unless specified otherwise.

6.The Director, Delhi University, South Campus, New Delhi, Delhi and The Director, Rajiv Gandhi Centre For Biotechnology, Thiruvananthapuram, Kerala would be responsible for submission of Statements of Expenditure (SoE), utilization certificates (UC), Assets Certificates, Manpower staffing & expenditure details in prescribed DBT formats to DBT in respect of grants released in this project from time to time.

7.PI's of DBT sponsored projects can consider appointment of JRF from Category-II merit list of DBT-BET exam so that candidates can be paid fellowships at par with NET/GATE/BET qualified candidates as per DST OM No. A.SR/S9/Z-09/2012 dated on 21 Oct 2014. However, there is no compulsion on PI's to select candidates for JRF in their projects from Category-II of DBT-BET.

8.As per Rule 236 (1) of GFR 2017, the accounts of all Grantee Institutions or Organisations shall be open to inspection by the sanctioning authority and audit, both by the Comptroller and Auditor General of India under the provision of CAG(DPC) Act 1971 and internal audit by the Principal Accounts Office of the Ministry or Department, whenever the Institution or Organisation is called upon to do so.

9.This issues under the power delegated to this Department and with the concurrence of IFD vide their SAN No.102/IFD/SAN/1264/2017-2018 dated June, 22 2017.

10.This sanction order has been noted at serial no. 19 in the Register of Grants.

*[Handwritten Signature]*  
23/6/17



(Dr. Anamika Gambhir)  
Director/Scientist - 'F'

To,  
The Pay & Accounts Officer,  
Department of Biotechnology,  
New Delhi - 110 003.

**Copy to:**

- 1 The Principal Director of Audit (Scientific Departments), DACR Building, New Delhi- 110 002.
- 2 Dr. Suman Kundu(Project Co-ordinator), Department of Biochemistry, University of Delhi South Campus Benito Juarez Road, New Delhi-110021.
- 3 The Director, Delhi University, South Campus, BENITO JUAREZ ROAD, New Delhi - 110021, Delhi
- 4 The Director, Rajiv Gandhi Centre For Biotechnology, Thycaud PO, Poojappura, Trivandrum, Thiruvananthapuram - 695014, Kerala
- 5 Dr. Rakesh S Laishram, Scientists C and Wellcome Trust-India Alliance Intermediate Fellow, Chronic Disease Biology, Rajiv Gandhi Centre For Biotechnology, Division of Chronic Disease Biology Group, Rajiv Gandhi Centre for Biotechnology, Thycaud Post, Poojappura, Thiruvananthapuram, Kerala, Trivandrum - 695014, Kerala
- 6 Dr. Surya Ramachandran, Program Scientists, Cardiovascular Disease Biology, Rajiv Gandhi Centre For Biotechnology, Division of Cardiovascular Disease Biology, Rajiv Gandhi Centre for Biotechnology, Thycaud Post, Poojappura, Thiruvananthapuram, Kerala, Thiruvananthapuram - 695014, Kerala
- 7 Prof. C C Kartha, Professor of eminence, Cardiovascular Disease Biology, Rajiv Gandhi Centre For Biotechnology, Division of Cardiovascular Disease Biology, Rajiv Gandhi Centre for Biotechnology, Thycaud Post, Poojappura, Thiruvananthapuram, Kerala, Trivandrum - 695014, Kerala
- 8 Prof. Suman Kundu, Professor, Department of Biochemistry, Delhi University, South Campus, Department of Biochemistry, University of Delhi South Campus Benito Juarez Road, - 110021, Delhi
- 9 Cash Section, DBT (2 copies).
- 10 Sanction Folder.
- 11 File Copy.

(Dr. Anamika Gambhir)  
Director/Scientist - 'F'

Details of the Equipment sanctioned for the implementation of the project titled "**Screening lead molecules identified by structure-based rational drug design methods against cytochrome b5 reductase 3 and dopamine beta hydroxylase in spontaneously hypertensive rat models for antihypertensive effects**":

<b>Rajiv Gandhi Centre For Biotechnology</b>			
<b>SNo.</b>	<b>Name of Equipment</b>	<b>No.</b>	<b>Cost(Rs.)</b>
1.	Implants for telemetric measurements of blood pressure, ECG and Heart Rate (accessory)	1	1800000.00
2.	Implants for telemetric measurements of blood pressure, ECG and Heart Rate (accessory)	1	1700000.00
<b>Total</b>			<b>3500000.00</b>
<b>Delhi University, South Campus</b>			
<b>SNo.</b>	<b>Name of Equipment</b>	<b>No.</b>	<b>Cost(Rs.)</b>
1.	FPLC (AKTA Starter) and Chromatography accessories	1	500000.00
<b>Total</b>			<b>500000.00</b>

  
(Dr. Anamika Gambhir)  
Director/Scientist - 'F'



Details of the manpower sanctioned for the implementation of the project titled "**Screening lead molecules identified by structure-based rational drug design methods against cytochrome b5 reductase 3 and dopamine beta hydroxylase in spontaneously hypertensive rat models for antihypertensive effects**":

Head	No. of Position	Year I	Year II	Year III	Total (Rs.)
<b>1. Delhi University, South Campus</b>					
Research Associate Rs. 28000/- per month + 30% HRA	1	436800.00	436800.00	436800.00	1310400.00
<b>Total(Rs.)</b>		<b>436800.00</b>	<b>436800.00</b>	<b>436800.00</b>	<b>1310400.00</b>
<b>2. Rajiv Gandhi Centre For Biotechnology</b>					
Attendant Rs. 12000/- per month	1	144000.00	144000.00	144000.00	432000.00
Senior Research Fellow Rs. 28000/- per month + 30% HRA	1	436800.00	436800.00	436800.00	1310400.00
<b>Total(Rs.)</b>		<b>580800.00</b>	<b>580800.00</b>	<b>580800.00</b>	<b>1742400.00</b>

Emoluments detail of research personal(s) mentioned in table(s) of Annexure-II shall be applicable only if candidate(s) met educational qualification and eligibility criteria as per DST OM No.SR/S9/Z-09/2012 dated 21.10.2014.

  
(Dr. Anamika Gambhir)  
Director/Scientist - 'F'

**No. BT/PR8391/BRB/10/1231/2013**  
GOVERNMENT OF INDIA  
MINISTRY OF SCIENCE & TECHNOLOGY  
DEPARTMENT OF BIOTECHNOLOGY

Block 2, 6-8th Floors  
CGO Complex, Lodhi Road,  
New Delhi- 110 003  
Dated: 31/03/2015

**ORDER**

Sanction of the President is hereby accorded, under Rule 18 of the Delegation of Financial Powers Rules, 1978, for the implementation of the project entitled: "**Development of Potent Small Molecule Inhibitors against Dopamine Beta-Hydroxylase to combat Cardiovascular Diseases**" for a period of 3 Year 0 Month at a total cost of Rs. **7890300** (Rupees Seventy Eight Lakhs Ninety Thousand Three Hundred Only) on the terms and conditions detailed here under:-

**2 The Project :**

**2.1 Title :** "**Development of Potent Small Molecule Inhibitors against Dopamine Beta-Hydroxylase to combat Cardiovascular Diseases**"

**2.2 Details of the Investigators:**

**Project Coordinator**

**Dr. Suman Kundu**

Professor

Department of Biochemistry

Delhi University, South Campus

Department of Biochemistry, University of Delhi South Campus

Benito Juarez Road, , Delhi, 110021

**Principal Investigators:**

**Prof. Suman Kundu**

Professor

Department of Biochemistry

Delhi University, South Campus

Department of Biochemistry,

University of Delhi South Campus

Benito Juarez Road, , Delhi-110021

**Prof. N G Ramesh**

Professor

Chemistry

INDIAN INSTITUTE OF

TECHNOLOGY, DELHI

Department of Chemistry, Indian

Institute of Technology Delhi, Hauz

Khas, New Delhi, , Delhi-110016



**CO-PI:**

**Prof. B K Thelma**

Professor

Genetics

Delhi University, South Campus

Department of Genetics, University of Delhi

South Campus, Benito Juarez Road,

New Delhi -110021, Delhi

**2.3 Objectives:**

**Institute wise Objectives:**

**Delhi University, South Campus**

1. Refinement of existing DBH model and in silico screening of small molecules – The model of DBH obtained thus far will be further refined through MD simulations and energy minimization. The refined DBH 3D model will be used to extensively screen small molecules available in several databases for their inhibitory activities.
2. In vitro screening and Lead optimization - Small molecules obtained as hits by in silico molecular docking will be assayed in vitro for inhibitory activities. The ones with inhibitory activities will be further optimized in silico based upon results of docking and MD simulation. Top leads will thus be obtained.  
Verifiable indicator: Favorable docking scores and binding energy, ADMET properties and active site interactions. Significant inhibition of DBH activity by some of the hit compounds.
3. In vitro compound analysis to determine inhibitory potentialities - Optimized and synthesized leads will be assayed against purified bovine DBH and human serum DBH. IC<sub>50</sub> and K<sub>i</sub> values of the compounds will be determined.  
Verifiable indicator: Decrease in DBH activity, low IC<sub>50</sub> and K<sub>i</sub> values.
4. Expression and purification of hDBH – Attempts will be made to express hDBH in E. coli, P. pastoris and mammalian cell line. The expressed proteins will be purified and their enzymatic activity compared. The above tested compounds will be then assayed against hDBH.
5. Compound screening in mammalian cell line for cytotoxicity - Optimized leads after synthesis and in vitro tests will be screened for cytotoxicity assessment in DBH transfected and untransfected HEK 293 cell line through MTT and hemolysis assay.  
Verifiable indicator: High cell viability, low hemolysis.
6. Validation of binding and inhibition by biophysical tools – The inhibitory potential of lead compounds will be further verified using biophysical tools such as fluorescence, CD, FTIR and ITC.  
Verifiable indicator: Changes in fluorescence intensity or wavelength and CD spectrum on inhibitor binding. FTIR and ITC data will also verify binding both qualitatively as well quantitatively.
7. Investigation of enzyme kinetics – DBH enzyme kinetics in presence of substrates and the inhibitory compounds will be performed to obtain an understanding of the mode of inhibition and strength of inhibition.  
Verifiable indicator: K<sub>i</sub> in nanomolar range.
8. Crystal structures – Crystal structures of DBH with and without inhibitors will be attempted to enable us optimize better drugs and understand mechanism of binding.  
Verifiable indicator: R-value and R-free should be < (Resolution in Å)/10, completeness for range >80%, I/sigma > 3.0, Ramachandran plot.



9. Folding and **stability** measurements - The stability of DBH against **inhibitors** will also be measured. The unfolding properties of the protein will be **monitored** using circular dichroism, **fluorescence**, DSC, SDS-PAGE and hydrodynamic methods. The affinity for ligand binding can also be followed as a function of denaturation.  
Verifiable indicators: The correlation of the data, the reproducibility and thermodynamic parameters.
10. Unraveling **mechanism** of action of DBH and its binding intermediates - Combination of enzyme kinetics, crystallographic structural information, folding results and molecular dynamics simulation of modified DBH and its complex with **substrate** or inhibitor will **allow** us to envisage different intermediate conformations and outline the mechanism of DBH enzyme activity and thus its inhibition.  
Verifiable indicator: Favorable energy parameters, Ramachandran plot and active site interaction.
11. 6D QSAR Model building - Finally, a 6-dimensional Quantitative Structure Activity Relationship model of DBH inhibitors will be generated based upon **compound** ADMET profile, MD simulation study and crystallographic structural analysis of DBH.  
Verifiable indicator: Matching of QSAR model on the superimposed view of top inhibitors and favorable binding energy and active site interaction upon docking to DBH.
12. In vivo **Compound** screening in C. elegans or Rat models - C. elegans is an excellent model for drug screening (Kaletta T. and Hengartner M.O., Nature Reviews Drug Discovery, 2006) and will be used to screen top leads for their cytotoxicity and in vivo ADMET profiling. The presence of TBH, a homologue of human DBH in C. elegans, makes this an attractive proposition. Rat models (Spontaneously Hypertensive Rats (SHRs) [Stanley WC et al., 1997, British Journal of Pharmacology, 121, 1803-1809] for cardiovascular diseases will also be tried.  
Verifiable indicator: Acceptable C. elegans viability; good ADMET profile of compounds.

#### **INDIAN INSTITUTE OF TECHNOLOGY, DELHI**

1. Synthesis of **known** DBH inhibitors for use as control- Nepicastat and Etamicastat will be chemically synthesized. The products will be thoroughly characterized for their purity using various spectroscopic techniques such as IR, NMR and HRMS as well as analytical techniques such as HPLC.  
Verifiable indicator: Structural purity indicated by IR, NMR, HRMS and HPLC studies.
2. Synthesis of **lead** molecules obtained by in-silico screens and validated by in vitro assay- Lead compounds will be chemically synthesized and characterized for their purity as described in Objective 1.
3. Synthesis of **second** round of lead molecules that will be obtained on in silico screens of simulated hDBH- Compounds will be chemically synthesized and characterized for their purity as described in Objective 1.
4. Synthesis of **optimized** lead compounds - Optimized lead molecules after assays will be chemically synthesized and characterized for their purity as described in Objective 1. Trials for optimization of chemical synthesis of compounds will be done to decrease their production cost and improve their diverse characteristics.

#### **2.4 Time Schedule:**

The duration of the project is 3 Year 0 Month from the date of this sanction order.

#### **2.5 Project Cost:**

The total cost of the project is Rs. **7890300/-** (Rupees Seventy Eight Lakhs Ninety Thousand Three Hundred Only) as per details given below :



Institute	Year I	Year II	Year III	Total Cost(Rs.)
1. Delhi University, South Campus	3133500	1016000	1016000	5165500
2. INDIAN INSTITUTE OF TECHNOLOGY, DELHI	941600	941600	841600	2724800
<b>Total (Rs.)</b>	<b>4075100</b>	<b>1957600</b>	<b>1857600</b>	<b>7890300</b>

Institute wise details are:

Budget Head	Year I	Year II	Year III	Total(Rs.)
<b>1. Delhi University, South Campus</b>				
Equipment	2117500.00			2117500.00
Manpower	96000.00	96000.00	96000.00	288000.00
Overhead	50000.00	50000.00	50000.00	150000.00
Travel	20000.00	20000.00	20000.00	60000.00
Consumables	800000.00	800000.00	800000.00	2400000.00
Contingency	50000.00	50000.00	50000.00	150000.00
<b>Total (Rs.)</b>	<b>3133500.00</b>	<b>1016000.00</b>	<b>1016000.00</b>	<b>5165500.00</b>
<b>2. INDIAN INSTITUTE OF TECHNOLOGY, DELHI</b>				
Manpower	561600.00	561600.00	561600.00	1684800.00
Overhead	50000.00	50000.00	50000.00	150000.00
Travel	10000.00	10000.00	10000.00	30000.00
Consumables	300000.00	300000.00	200000.00	800000.00
Contingency	20000.00	20000.00	20000.00	60000.00
<b>Total (Rs.)</b>	<b>941600.00</b>	<b>941600.00</b>	<b>841600.00</b>	<b>2724800.00</b>

#### 2.6 Equipment:

The details of the equipment sanctioned for the implementation of the project at Annexure-I

#### 2.7 Manpower:

The details of the manpower sanctioned for the implementation of the project at Annexure-II



### 3. Head of Account:

The **Non-Recurring** expenditure involved is debitable to:

Demand No. 88	Department of Biotechnology
3425	Other Scientific Research 2014-2015
3425.60	Others (Sub Major Head)
3425.60.200	Assistance to other Scientific Bodies (Minor Head)
3425.60.200.29	Research & Development
3425.60.200.29.03	Basic Research & Emerging Areas
3425.60.200.29.03.35	Grants for creation of capital Assets

The **Recurring** expenditure involved is debitable to:

Demand No. 88	Department of Biotechnology
3425	Other Scientific Research 2014-2015
3425.60	Others (Sub Major Head)
3425.60.200	Assistance to other Scientific Bodies (Minor Head)
3425.60.200.29	Research & Development
3425.60.200.29.03	Basic Research & Emerging Areas
3425.60.200.29.03.31	Grants-in-Aid General

### 4. Terms & Conditions:

- In the event of the grantee failing to comply with the conditions or committing breach of the conditions of the bond, the signatories to the bond shall be jointly and severally liable to refund to the President of India, the whole or a part amount of the grant with interest at ten per cent per annum thereon or the sum specified under the bond. The stamp duty for this bond shall be borne by the Government
- In case the whole or a part of the amount of the grant in aid is being refunded, an interest at the rate of ten percent per annum thereon shall be recovered
- The Nonrecurring grant shall be utilised within 18 months of the release

4.1 The other terms and conditions governing this sanction are attached at Annexure- III.

4.2A Memorandum of Agreement (MoA) will be signed between the Department of Biotechnology and the grantee institution on Non-Judicial stamp paper Rs. 100/- in the enclosed format and the second release/installment will be made only after signing of MoA by the grantee institutions and its acceptance by DBT. In case of NGO or Private Institution, MOA signed is mandatory first release. A format of the MoA is enclosed in Annexure-IV

4.3 The Institute/Agency will keep the whole of the grant in a Bank Account earning interest, and the interest so earned should be reported to DBT in the Utilisation Certificate and Statement of Expenditure. The Interest so earned will be treated as created to the institute/Agency and shall be adjusted towards further installment of the grant and or at the time of Final Settlement of Accounts.

5.No International Travel will be undertaken from the sanctioned project grant unless specified otherwise.



6. The Director, Delhi University, South Campus, New Delhi, Delhi and The Director, INDIAN INSTITUTE OF TECHNOLOGY, DELHI, New Delhi, Delhi would be responsible for submission of Statements of Expenditure (SoE), utilization certificates (UC), Assets Certificates, Manpower staffing & expenditure details in prescribed DBT formats to DBT in respect of grants released in this project from time to time.
7. PI's of DBT sponsored projects can consider appointment of JRF from Category-II merit list of DBT-BET exam so that candidates can be paid fellowships at par with NET/GATE/BET qualified candidates as per DST OM No. A.SR/S9/Z-09/2012 dated on 21 Oct 2014. However, there is no compulsion on PI's to select candidates for JRF in their projects from Category-II of DBT-BET.
8. The accounts of grantee institution shall be open to inspection by the sanctioning authority/audit whenever the institute is called upon to do so by the sanctioning authority.
9. This issues under the power delegated to this Department and with the concurrence of IFD vide their SAN No. 102/IFD/SAN/5432/2014-2015 dated March, 31 2015.
10. This sanction order has been noted at serial no. 35 in the Register of Grants.

  
(Dr. Manish Rana)  
Scientist 'D'

To,  
The Pay & Accounts Officer,  
Department of Biotechnology,  
New Delhi - 110 003.

**Copy to:**

- 1 The Principal Director of Audit (Scientific Departments), DACR Building, New Delhi- 110 002.
- 2 Dr. Suman Kundu (Project Co-ordinator), Department of Biochemistry, University of Delhi South Campus, Benito Juarez Road, New Delhi - 110021
- 3 The Director, Delhi University, South Campus, BENITO JUAREZ ROAD, New Delhi - 110021, Delhi
- 4 The Director, INDIAN INSTITUTE OF TECHNOLOGY, DELHI, Hauz Khas, New Delhi - 110016, Delhi
- 5 Prof. B K Thelma, Professor, Genetics, Delhi University, South Campus, Department of Genetics, University of Delhi South Campus, Benito Juarez Road, New Delhi, - 110021, Delhi
- 6 Prof. N G Ramesh, Professor, Chemistry, INDIAN INSTITUTE OF TECHNOLOGY, DELHI, Department of Chemistry, Indian Institute of Technology Delhi, Hauz Khas, New Delhi, - 110016, Delhi
- 7 Prof. Suman Kundu, Professor, Department of Biochemistry, Delhi University, South Campus, Department of Biochemistry, University of Delhi South Campus Benito Juarez Road, - 110021, Delhi
- 8 Cash Section, DBT (2 copies).
- 9 Sanction Folder.
- 10 File Copy.

  
(Dr. Manish Rana)  
Scientist 'D'

**Annexure -I**

Details of the Equipment sanctioned for the implementation of the project titled "**Development of Potent Small Molecule Inhibitors against Dopamine Beta-Hydroxylase to combat Cardiovascular Diseases**":

Delhi University, South Campus			
SNo.	Name of Equipment	No.	Cost(Rs.)
1.	Incubator-Shaker	1	690000.00
2.	Refractometer	1	130000.00
3.	Cold cabinet	1	202500.00
4.	Chromatography Accessories	1	1022000.00
5.	Multichannel Pipette (liquid handling)	1	73000.00
Total			2117500.00

  
(Dr. Manish Rana)  
Scientist 'D'



**Annexure -II**

Details of the manpower sanctioned for the implementation of the project titled "**Development of Potent Small Molecule Inhibitors against Dopamine Beta-Hydroxylase to combat Cardiovascular Diseases**":

Head	No. of Position	Year I	Year II	Year III	Total (Rs.)
<b>1. Delhi University, South Campus</b>					
Project Assistant @8000/-pm for three years	1	96000.00	96000.00	96000.00	288000.00
Total(Rs.)		96000.00	96000.00	96000.00	288000.00
<b>2. INDIAN INSTITUTE OF TECHNOLOGY, DELHI</b>					
Research Associate @36000/pm+30% HRA for three years	1	561600.00	561600.00	561600.00	1684800.00
Total(Rs.)		561600.00	561600.00	561600.00	1684800.00

Emoluments detail of research personal(s) mentioned in table(s) of Annexure-II shall be applicable only if candidate(s) met educational qualification and eligibility criteria as per DST OM No.SR/S9/Z-09/2012 dated 21.10.2014.



(Dr. Manish Rana)  
Scientist 'D'

BT/COE/34/SP15246/2015  
Government of India  
Ministry of Science & Technology  
Department of Biotechnology

Block 2, 6-8<sup>th</sup> Floors  
CGO Complex, Lodi Road,  
New Delhi – 110003

Dated: 21.12.2015

**ORDER**

Sanction of the President is hereby accorded, under Rule 18 of the Delegation of Financial Powers Rules, 1978, for the implementation of the project entitled "Centre of Excellence in Genome Sciences and Predictive Medicine (Phase II)" at a total cost of ₹ 718.34 lakhs (Rupees Seven hundred Eighteen lakhs Thirty Four thousand only) over a period of five years jointly at University of Delhi South Campus (UDSC), New Delhi (₹ 632.14 lakhs), University of Delhi (DU), Delhi (₹ 32.85 lakhs) and All India Institute of Medical Sciences (AIIMS), New Delhi (₹ 53.35 lakhs) on the terms and conditions detailed here under:

**2.0 The Project:**

**2.1 Project Title:** Centre of Excellence in Genome Sciences and Predictive Medicine (Phase II)

**Lead Project Title:** Systems biology of complex diseases: From genetic findings to lead molecule development for Rheumatoid arthritis

**2.2 Investigators:**

<b>Name of the Team</b>	Prof. BK Thelma
<b>Leader &amp; Implementing Institute:</b>	Department of Genetics, University of Delhi South Campus (UDSC), Benito Juarez Road, New Delhi – 110021
<b>Name and Address(s) of Co-PI(s):</b>	<ol style="list-style-type: none"><li>1. Prof. Uma Kumar, Head, Department of Rheumatology, All India Institute of Medical Sciences (AIIMS), Ansari Nagar, New Delhi – 110 002</li><li>2. Prof. Sanjay Jain, Department of Physics and Astrophysics, University of Delhi (DU), Delhi – 110007</li><li>3. Dr. Suman Kundu, Reader, Department of Biochemistry, UDSC, New Delhi</li></ol>

**Lead Project:** Systems biology of complex diseases: From genetic findings to lead molecule development for Rheumatoid arthritis

<b>Name of the PI(s) &amp; Agency(s):</b>	<ol style="list-style-type: none"><li>1. Prof. BK Thelma, UDSC, New Delhi</li><li>1. Prof. Uma Kumar, AIIMS, New Delhi</li><li>2. Prof. Sanjay Jain, DU, Delhi</li><li>3. Dr. Suman Kundu, UDSC, New Delhi</li></ol>
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**2.3 Objectives:**

1. Narrowing down of a few potential drug targets for Rheumatoid arthritis (based on inputs from COE Phase I, cell type specific networks/systems biology and functional genomics approaches).



2. Screening the potential targets (from 1 above) for chemical space across multi targeted million molecules activity data set (using computational tools), followed by identification and finalization of target(s).
3. Design and synthesis of novel small molecule(s) against the selected target(s) (from 2 above) as proof of principle (with Industry partner).

#### 2.4 Time Schedule:

The duration of the project is five years from the date of this sanction order.

#### 2.5 Manpower requirement:

S. No.	Designations	No. of positions	Emoluments (₹ in lakhs)
<b>University of Delhi South Campus (UDSC), New Delhi (Prof. B. K. Thelma component)</b>			
1.	Scientist (Genetics)	One	₹ 52,000/- fixed per month + ₹ 2,000/- increment per year
2.	Scientist (Computational)	One	₹ 52,000/- fixed per month + ₹ 2,000/- increment per year
3.	Technical Officer (Tissue Culture / Genetics)	One	₹ 42,000/- fixed per month + ₹ 2,000/- increment per year
4.	Senior Research Fellow*	One	₹ 28,000/- fixed per month + 30% HRA
5.	Senior Technical Assistant	One	₹ 35,000/- fixed per month + ₹ 2,000/- increment per year
6.	Lab Attendant	One	₹ 20,000/- fixed per month + ₹ 1,500/- increment per year
<b>University of Delhi South Campus (UDSC), New Delhi (Dr. Suman Kundu component)</b>			
1.	Lab Attendant	One	₹ 10,000/- fixed per month
<b>University of Delhi (DU), Delhi (Prof. Sanjay Jain component)</b>			
1.	Senior Research Fellow*	One	₹ 28,000/- fixed per month + 30% HRA
<b>All India Institute of Medical Sciences (AIIMS), New Delhi (Prof. Uma Rao component)</b>			
1.	Scientist (Clinical)	One	₹ 62,000/- fixed per month + ₹ 2,000/- increment per year

\* As per DST OM No. SR/S9/Z-09/2012 dated 21.10.2014

#### 2.6 Equipment requirement:

S. No.	Item	Qty.	Cost in foreign currency	Estimated Cost (₹ in lakh)
<b>I. University of Delhi South Campus (UDSC), New Delhi (PI: Prof. B. K. Thelma):</b>				
1.	Evos Microscope	One	--	28.57
2.	Spectrophotometer	One	US\$ 38,650	25.55
3.	Laminar Air Flow Chamber	One	US\$ 9,350	6.18
4.	Neon Transfector	One	--	4.71
5.	-80°C freezer	One	--	8.93
6.	-20°C freezer	One	--	0.77
7.	Sonicator		Euro (€) 16880	12.56
8.	Qubit	One	--	2.21
9.	Fumigation Apparatus	One	--	0.28
10.	Vacuum Pump	One	--	0.61
<b>Total I:</b>				<b>90.37</b>
<b>II. University of Delhi South Campus (UDSC), New Delhi (PI: Dr. Suman Kundu):</b>				
11.	Crystallization Incubator	One	Euro (€) 12300	9.15
12.	Microscope	One	--	3.13
13.	Centrifuge	One	--	2.99
14.	Fine Balance	One	--	1.10
<b>Total II:</b>				<b>16.37</b>
<b>Grand Total (I+II):</b>				<b>106.74</b>



## 2.7 Project Cost:

The year-wise estimated cost of the project is as under:

### I. University of Delhi South Campus (UDSC), New Delhi

#### i) Prof. B. K. Thelma component

Amount (₹ in lakhs)							
S. No.	Items	Year I	Year II	Year III	Year IV	Year IV	Total
A.	Nonrecurring						
1.	Equipment	90.37	0.00	0.00	0.00	0.00	90.37
B.	Recurring						
1.	Manpower	28.49	29.63	30.77	31.71	33.05	153.65
2.	Consumables	50.00	50.00	50.00	50.00	50.00	250.00
3.	Travel	0.50	0.50	0.50	0.50	0.50	2.50
4.	Contingencies	1.00	1.00	1.00	1.00	1.00	5.00
5.	Training	2.00	2.00	2.00	2.00	2.00	10.00
6.	Outsourcing Work	50.00	0.00	0.00	0.00	0.00	50.00
7.	Overheads	2.00	2.00	2.00	2.00	2.00	10.00
Total i (A+B):		224.36	85.13	86.27	87.21	88.55	571.52

#### ii) Dr. Suman Kundu component

Amount (₹ in lakhs)							
S. No.	Items	Year I	Year II	Year III	Year IV	Year IV	Total
A.	Nonrecurring						
1.	Equipment	16.37	0.00	0.00	0.00	0.00	16.37
B.	Recurring						
1.	Manpower	1.20	1.20	1.20	1.20	1.20	6.00
2.	Consumables	8.00	6.00	6.00	6.00	6.00	32.00
3.	Travel	0.25	0.25	0.25	0.25	0.25	1.25
4.	Contingencies	0.50	0.50	0.50	0.50	0.50	2.50
5.	Overheads	0.50	0.50	0.50	0.50	0.50	2.50
Total ii (A+B):		26.82	8.45	8.45	8.45	8.45	60.62
Total I (i+ii):		251.18	93.58	94.72	95.66	97.00	623.14

### II. University of Delhi (DU), Delhi (PI: Prof. Sanjay Jain)

Amount (₹ in lakhs)							
S. No.	Items	Year I	Year II	Year III	Year IV	Year IV	Total
A.	Nonrecurring						
1.	Equipment	0.00	0.00	0.00	0.00	0.00	0.00
B.	Recurring						
1.	Manpower	4.37	4.37	4.37	4.37	4.37	21.85
2.	Consumables	1.00	1.00	1.00	1.00	1.00	5.00
3.	Travel	0.20	0.20	0.20	0.20	0.20	1.00
4.	Contingencies	0.50	0.50	0.50	0.50	0.50	2.50
5.	Overheads	0.50	0.50	0.50	0.50	0.50	2.50
Total II (A+B):		6.57	6.57	6.57	6.57	6.57	32.85



III. All India Institute of Medical Sciences (AIIMS), New Delhi (PI: Prof. Uma Kumar)

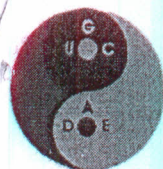
Amount (₹ in lakhs)							
S. No.	Items	Year I	Year II	Year III	Year IV	Year IV	Total
A.	Nonrecurring						
1.	Equipment	0.00	0.00	0.00	0.00	0.00	0.00
B.	Recurring						
1.	Manpower	7.44	7.68	7.92	8.16	8.40	39.60
2.	Consumables	2.00	2.00	2.00	2.00	2.00	10.00
3.	Travel	0.25	0.25	0.25	0.25	0.25	1.25
4.	Contingencies	0.50	0.50	0.50	0.50	0.50	2.50
5.	Overheads	0.00	0.00	0.00	0.00	0.00	0.00
Total III (A+B):		10.19	10.43	10.67	10.91	11.15	53.35
Grand Total (I+II+III):		267.94	110.58	111.96	113.14	114.72	718.34

3. The Non-recurring expenditure involved is debitable to Demand No. 88: Department of Biotechnology; 3425: Other Scientific Research (Major Head); 60: Others (Sub-Major Head); 60.200: Assistance to other Scientific Bodies (Minor Head); 39: Programme for Promotion of Excellence and Innovation; 39.01: Centres for Excellence and Innovation; 39.01.35: Grants for Creation of Capital Assets for the year 2015-2016 (Plan) and the Recurring expenditure involved is debitable to 39.01.31: Grants-in-Aid General for the year 2015-2016 (Plan).
4. **Other terms and conditions:**
  - 4.1 The other terms and conditions governing this sanction are attached at Annexure 'I'.
  - 4.2 The Accounts of grantee institution shall be open to inspection by the sanctioning authority/audit.
  - 4.3 A Memorandum of Agreement (MOA) will be signed between the Department and the grantee institute(s) on a Non-Judicial stamp paper of an appropriate value in the format given at Annexure II and the second release will be effected after execution of MOA between the grantee institution(s) and the DBT.
  - 4.4 The Institute(s) / Agency(ies) will keep the whole of the grant in the Bank Account earning interest, and the interest so earned should be reported to DBT in the Utilization Certificate and Statement of Expenditure. The interest so earned will be treated as created to the Institute(s) / Agency(ies) and shall be adjusted towards further instalment of the grant and / or at the time of Final Settlement of Accounts.
5. No international travel shall be undertaken from the sanctioned project grant unless specified otherwise.
6. The Director, University of Delhi South Campus (UDSC), New Delhi, the Registrar, University of Delhi (DU), Delhi and the Director, All India Institute of Medical Sciences (AIIMS), New Delhi would be responsible for submission of Statement of Expenditure and consolidated Utilization Certificate(s) to DBT and PI(s) in respect of grants released against this order from time to time.
7. This issues under the powers delegated to this Department and with the concurrence of IFD, DBT; vide their SAN No. 102/IFD/SAN/3571/2015-2016 dated 21.12.2015.

Mohd. Aslam

(Dr. Mohd. Aslam)  
Scientist 'G'





## UGC-DAE Consortium for Scientific Research

विश्वविद्यालय अनुदान आयोग – परमाणु ऊर्जा विभाग वैज्ञानिक अनुसंधान संकुल

(An autonomous institution of UGC, New Delhi)

(विश्वविद्यालय अनुदान आयोग, नई दिल्ली द्वारा स्थापित स्वशासी संस्थान)

(Formerly : Inter University Consortium for DAE Facilities : IUC-DAEF)

**Indore Centre**

इन्दौर केन्द्र

*Dr. V. Ganesan*

Centre-Director

Ref: CSR-IC-BL-01/CRS-98-2014-15/ 1134

27<sup>th</sup> March 2015

To

Dr. Suman Kundu,

Professor, Department of Biochemistry

University of Delhi South Campus

Benito Juarez Road, DhaulaKuan

New Delhi - 110021, India

Email: [sumankundu7@gmail.com](mailto:sumankundu7@gmail.com), [suman.kundu@south.du.ac.in](mailto:suman.kundu@south.du.ac.in)

**Sub: Your proposal entitled "Understanding the structure of LeishmaniamajorPhosphopantetheinylTransferase (LmjPPTase) and its interaction with cognate ACP"**

Dear Dr.Kundu,

We would like to thank you for visiting RRCAT, Indore for presenting your CRS proposal on Jan 22-23, 2015 under the CRS schemes of UGC-DAE CSR, Indore Centre. Subsequently the proposals were discussed at length by a Committee. Your above proposal has been approved.

1. The financial allocation for this year will be:

Research Student (@Rs.14,000/- pm) + HRA=	Rs. 1,68,000/- + HRA
Contingency	Rs. 15,000/-
Consumables	Rs. 30,000/-

No overheads are available under this scheme.
2. This project is sanctioned presently for one year but it may be extended on year basis subject to a total period of three years.
3. This project is assigned to beamline No. BL21 of Indus-2 and Scientist In-charge is Dr.Ravi Makde and he will coordinate the activities of the project from Indus, RRCAT side. The CSR coordinator is Dr. V. Ganesan.
4. Ph.D. Student appointed under project should spend at least 3 months in a year in working on the specified beam line at Indus synchrotron source. However, he/she may be encouraged to use other beam lines if needed for the work. The PI should ensure the filling up of the beam time request form well in advance for the utilization of beam line in consultation with the beamline in-charge.
5. The major portion of the emerging thesis of respective Ph.D. student should be centered around and contain the results from Indus synchrotron source utilization.
6. This is a Collaborative Research Scheme. In view of the complex and involved nature of the experiments, any publication emerging under the project must be of collaborative in nature with due consents from the participating institutions / persons, and in consultation


विश्वविद्यालय परिसर, खण्डवा रोड़, इन्दौर - 452 001 (म.प्र.)

University Campus, Khandwa Road, INDORE - 452 001 (M P) INDIA



- with the CRS coordinator. The publication should also acknowledge the UGC-DAECSR, Indore for the project support.
7. The project will be reviewed at the end of each year and a decision will be taken on the financial allocation for the succeeding year.
  8. Research Student may be engaged following the guidelines attached herewith. Fellowship may be sanctioned as per the guidelines given in the addendum (enclosed).
  9. The CSR will be able to reimburse the travel expenses to Project Investigators as per rules, limited to 2<sup>nd</sup> AC train fare visiting CSR, Indore Centre on project work. However, the student participant is permitted for a sleeper class train fare by the shortest route and is as per prevailing norms of CSR.
  10. At the end of the financial year (i.e. March 31) you will kindly send the (i) utilization certificate for the amount spent and (ii) a statement of account duly signed by the Registrar of your university to the Centre-Director, Indore Centre of UGC-DAE CSR. Funds for the succeeding year in view of the allocation can be released only after receiving the above documents.
  11. The PI along with the beamline coordinator from Indus, RRCAT and the coordinator from CSR side are requested to make every effort to complete the project in time that may enable the research scholar working in the project to complete his/her Ph.D. degree well within the stipulated time limit.
  12. You may please send the following information along with your acceptance for sending the grants:
    - a. Name of the Bank
    - b. Name of Beneficiary
    - c. RTGS Code of the Bank
    - d. A/c No. of Beneficiary
    - e. Branch of the Bank.
  13. Selection of research student in the project will be done as per the guidelines enclosed. A CSR nominee is needed for this.

Please let me have your acceptance of the CRS under the above conditions at the earliest so that money can be transferred to the Registrar / competent financial authority of your University/Institute.

Yours sincerely,  
  
(V. Ganesan)

Copy to the following for information and necessary action:-

1. The Director, CSR, Indore.
2. The Administrative Officer – II, CSR, Indore.
3. The Administrative Officer – I (Accounts), UGC-DAE CSR, Indore Centre.
4. The Registrar, University of Delhi
5. Dr. Ravi Makde, Scientist in-charge of the BL21, Indus-2, RRCAT, Indore.
6. Dr. V. Ganesan, CSR coordinator, Indore Centre.
7. The PS to Centre-Director, CSR, Indore Centre for project file.



DBT-NER/Health/47/2015  
GOVERNMENT OF INDIA  
MINISTRY OF SCIENCE & TECHNOLOGY  
DEPARTMENT OF BIOTECHNOLOGY  
(NER-BPMC)

\*\*\*\*\*

Administrative

Block-2, 7<sup>th</sup> Floor,  
CGO Complex, Lodhi Road  
New Delhi-110003

Dated: 7 / 6 / 2016

ORDER

Sanction of the President is hereby accorded under Rule 18 of the Delegation of Financial Powers Rules, 1978 for the implementation of the project under 'DBT's R&D programme for the NE' titled "Novel nanocluster based targeted anticancer theranostics" by Prof. Siddhartha Sankar Ghosh, Centre for Nanotechnology, Indian Institute of Technology, Guwahati, Assam, and Prof. Debi P Sarkar, Department of Biochemistry, University of Delhi South Campus, New Delhi at a total cost of ₹ 104.47 lakhs (Rupees One Crore Four Lakhs and Forty Seven Thousand only) for a period of three years, on the terms and conditions detailed as under:

**2.0 The Project:**

**2.1 Project Title:** Novel nanocluster based targeted anticancer theranostics.

**2.2 Project Investigators**

- |   |   |
|---|---|
| <b>2.2.1 Principal Investigator:</b><br>(Parent Institute)          | Prof. Siddhartha Sankar Ghosh<br>Professor,<br>Dept. of Biotechnology,<br>Indian Institute of Technology,<br>Guwahati-781039, Assam |
| <b>2.2.2 Co- Investigator I:</b>                                    | Prof. Arun Chattopadhyay<br>Professor,<br>Dept. of Chemistry,<br>Indian Institute of Technology<br>Guwahati-781039, Assam           |
| <b>2.2.3 Co- Investigator II:</b>                                   | Dr. Biplab Bose<br>Associate Professor,<br>Dept. of Biotechnology,<br>Indian Institute of Technology<br>Guwahati-781039, Assam      |
| <b>2.2.4 Principal Investigator I:</b><br>(Collaboration Institute) | Prof. Debi P Sarkar<br>Professor,<br>Department of Biochemistry,<br>University of Delhi,<br>South Campus, New Delhi-110021          |

*h*



### 2.3 Objectives:

- Establishment and validations of fast and simple protocol for synthesis of highly fluorescent gold and other noble metal nanoclusters (Au NCs) using ds DNA or similar molecular (or Q-dots) as scaffolds.
- Encapsulation of the fluorescent DNA-NCs into Sendai virosomes for tracing the real time trajectory of the virus by probing fluorescence of NCs for cancer theranostics.
- Targeted delivery of potential therapeutic DNA-NCs into cancer cells.
- Elucidation of molecular mechanism of cell signalling based on interaction of nanoclusters on cancer cells.

### 2.4 Time Schedule:

The duration of the project is three years from the date of issue of sanction order.

### 2.5 Equipment Details:

2.5.1 Indian Institute of Technology, Guwahati, Assam: NIL

2.5.2 University of Delhi South Campus, New Delhi: NIL

### 2.6 Manpower:

A year wise detail of manpower as proposed has been furnished below. HRA will be as per the Govt. Norms, an indication as stated below for the JRF and SRF's emoluments will be provided as a part of sanction order. JRF shall be ₹ 25,000/- + HRA for the 1st two years and ₹ 28,000/- + HRA for the 3rd year for SRF and applicable, (JRF - Post graduate Degree in Basic Science with NET qualification or graduate degree in Professional course with NET qualification or post graduate degree in professional course) JRF without NET qualification shall be ₹ 12,000/- + HRA for the 1st two years and ₹ 14,000/- + HRA for the 3rd year for SRF.

- For JRF/SRF/RA salary is as per the revised DST OM SR/S9/Z-09/2012, dated October 21, 2014.
- For Project Assistant salary is as per the revised DST OM C.30011/1/2007-IFD, dated 21st July 2008.

#### 2.6.1 Indian Institute of Technology, Guwahati, Assam

(₹ in lakhs)						
S No.	Position (No.)	Emolument	1 <sup>st</sup> Year	2 <sup>nd</sup> Year	3 <sup>rd</sup> Year	Total
1.	JRF/SRF (1)	JRF @ ₹ 25,000/- + 20 % HRA for the 1 <sup>st</sup> & 2 <sup>nd</sup> yr SRF @ ₹ 28,000/- + 20 % HRA for 3 <sup>rd</sup> yr	3.60	3.60	4.03	11.23
2.	Technical Officer (1)	@ ₹ 38,813 (consolidated)	4.68	4.68	4.68	14.04
3.	Lab Assistant (2)	@ ₹ 10,000 (consolidated)	2.40	2.40	2.40	7.20
		Total	10.68	10.68	11.11	32.47



2.6.2 University of Delhi South Campus, New Delhi: NIL

2.7 Budget Estimate:

The total cost of the project is ₹ 104.47 lakhs (Rupees One Crore Four Lakhs and Forty Seven Thousand only) as per budget summary given below:

2.7.1 Indian Institute of Technology, Guwahati, Assam

(₹ in lakhs)

Heads	1 <sup>st</sup> Year	2 <sup>nd</sup> Year	3 <sup>rd</sup> Year	Total
<b>I. Non-Recurring</b> (Equipment's and accessories)	0.00	0.00	0.00	0.00
Sub Total- I	0.00	0.00	0.00	0.00
<b>II. Recurring</b>				
1. Manpower	10.68	10.68	11.11	32.47
2. Consumables	10.00	10.00	10.00	30.00
3.Travel	0.50	0.50	0.50	1.50
4. Contingency	0.50	0.50	0.50	1.50
5.Overhead charges	1.00	1.00	1.00	3.00
Sub Total- II (1-5)	22.68	22.68	23.11	68.47
<b>GRAND TOTAL (I+II)</b>	22.68	22.68	23.11	68.47

2.7.2 University of Delhi South Campus, New Delhi

(₹ in lakhs)

Heads	1 <sup>st</sup> Year	2 <sup>nd</sup> Year	3 <sup>rd</sup> Year	Total
<b>I. Non-Recurring</b> (Equipment's and accessories)	0.00	0.00	0.00	0.00
Sub Total- I	0.00	0.00	0.00	0.00
<b>II. Recurring</b>				
1. Manpower	0.00	0.00	0.00	0.00
2. Consumables	10.00	10.00	10.00	30.00
3.Travel	0.50	0.50	0.50	1.50
4. Contingency	0.50	0.50	0.50	1.50
5.Overhead charges	1.00	1.00	1.00	3.00
Sub Total- II (1-5)	12.00	12.00	12.00	36.00
<b>GRAND TOTAL (I+II)</b>	12.00	12.00	12.00	36.00

(i) Grand total for 3 years (₹ 68.47+ ₹ 36.00) = ₹ 104.47 lakhs

(ii) Total for 1<sup>st</sup> year release (₹ 22.68+ ₹ 12.00) = ₹ 34.68 lakhs

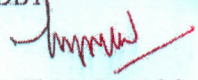
2.8 Other Terms & Conditions:

2.8.1 The other terms and conditions governing this sanction are attached at Annexure-I.

chd



- 2.8.2 A Memorandum of Agreement (MoA) will be signed between the Department of Biotechnology and the grantee institute on a ₹ 100/- stamp paper in the format given at Annexure II and the subsequent releases will be made only after signing of MoA by the grantee institute and its acceptance by DBT. All pages need to be signed by the PI and the forwarding authority and the MoA returned to DBT within 30 days of issue of this letter.
- 2.8.3 In case the amount of grant-in-aid is refunded, the whole or a part amount of the grant, with an interest at 10% per annum there on shall be recovered.
- 2.8.4 No international travel will be undertaken from the sanctioned project grant unless specified otherwise.
- 2.8.5 The Institute/Agency will keep the whole of the grant in a Bank Account earning interest, and the interest so earned should be reported to DBT in the Utilization Certificate and statement of Expenditure. The interest so earned will be treated as created to the institute / Agency and shall be adjusted towards further installment of the grant and or at the time of Final Settlement of Account.
- 2.9 Additional Terms & Conditions, specific for R&D program for NER:
- 2.9.1 Both NER & Rest of India (RoI), Institutions scientists should work together for the objectives stated in the sanction of the project and any deviation from this would attract closure of the project at any point of time.
- 2.9.2 In the project review meetings, both the PI's from NER & RoI Institutions should participate & make presentation.
- 2.9.3 The outcomes of the project such as research papers, patents, copy rights etc. should be made jointly.
- 2.9.4 The NER Scientists are to be trained at the collaborating institute appropriately to empower the NER Scientists.
- 2.9.5 The project personal such as Research Associate, JRF/SRF, Research Assistant are also to be trained at least once in the collaborating national institute.
- 2.9.6 The collaborating institute scientist should visit NER institutions more frequently to guide NER scientists in design and conduct of experiments.
- 2.10 This issues under the powers delegated to this Department and with the concurrence of IFD, DBT vide their Dy No. 102/I.F.D/SAN/4311-4316/ 2015-16 Dated 25/02/2016.
- 2.10.1 This sanction order has been noted at Serial No. ~~16-17~~ in the Register of Grants.
- 2.10.2 The accounts of grantee institution shall be open to inspection by sanctioning auditory / audit.
- 3.0 M/S Biotech Consortium India Ltd (BCIL), Anuvrat Bhawan, 210, Deen Dayal Upadhyay Marg, New Delhi- 110002, is administrating the North Eastern Region Biotechnology Programme Management Cell (NER-BPMC) of the DBT

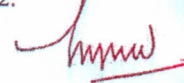
  
(Dr. T. Madhan Mohan)  
Adviser

To.

The Pay & Accounts Officer,  
Department of Biotechnology,  
New Delhi - 110003

Copy to:

1. The Principal Director of Audit (Scientific Department), AGCR Building, New Delhi - 110 002.
2. Cash Section, DBT (For information only).
3. Sanction Folder.
4. IFD, DBT.
5. The Registrar, Indian Institute of Technology, Guwahati-781039, Assam
6. The Director, University of Delhi South Campus, Benito Juarez Road, Dhaula Kuan, New Delhi-110021.
7. Prof. Siddhartha Sankar Ghosh, Professor, Dept. of Biotechnology, Indian Institute of Technology, Guwahati-781039, Assam.
8. Prof. Debi P Sarkar, Professor, Department of Biochemistry, University of Delhi, South Campus, Benito Juarez Road, Dhaula Kuan, New Delhi-110021.
9. Concern file.
10. The Managing Director, Biotech Consortium India Limited, (NER-BPMC), 5<sup>th</sup> Floor, Anuvart Bhawan, 210, Deen Dayal Upadhyay Marg, New Delhi- 110002.



(Dr. T. Madhan Mohan)  
Adviser





REGISTERED

COUNCIL OF SCIENTIFIC AND INDUSTRIAL RESEARCH  
EXTRAMURAL RESEARCH DIVISION  
CSIR COMPLEX, PUSA, NEW DELHI - 110 012

No. 37(1682)/17/EMR-II

From : Head, Human Resources Development Group

Dated :

5<sup>5</sup>/<sub>2017</sub>

To

PROF(MS) ALO NAG  
DEPT OF BIOCHEM  
DELHI UNIV SOUTH CAMPUS  
NEW DELHI 110021 DELHI

Subject: Grants-in-aid for your scheme entitled :UNRAVELING THE ROLE OF HPV16E7 ONCOPROTEIN IN MANIPULATING FoxM1 ACTIVITY VIA APC/C-Cdh1 AXIS

Sir,

I am directed to refer to your proposal for sanction of CSIR Scheme titled above and to convey the approval of DG CSIR as per the details given below.

I	Duration of the Scheme (from the date of Commencement)	36 Months		
II	Staff	1-RA/SRF/JRF		
III	Contingency (per annum in ₹)	1 <sup>st</sup> Year : 5,00,000	2 <sup>nd</sup> Year : 5,00,000	3 <sup>rd</sup> Year : 5,00,000
IV	Equipment (lumpsum in ₹)	3,50,000 (CLS)		

- The above sanction is subject to review of periodical progress of the project by expert committee.
- DG CSIR has also approved the release of the following grants for the period 01/05/2017 to 31/03/2018

No	Grants	Amount (in ₹)
I	Staff	3,96,000
II	Contingency	4,58,333
III	Equipment	3,50,000
Total :		12,04,333

- Sanction of grants is subject to strict compliance of the terms and conditions enclosed or as may be modified from time to time. Please go through the instructions carefully with regard to subsequent release of grants and your obligations under this sanction. The grant for the 1<sup>st</sup> Installment will be sent through EFT (Electronic Funds Transfer), to the concerned authority of your institution on receipt of undertaking (form-A), non-funding certificate and EFT Transaction Request Form.

The expenditure is debitable to budget head P81102.

Yours faithfully,

*Swati*

SECTION OFFICER (EMR-II)

Encl : As above

Copy to :-

- Registrar/Principal/Director Delhi University South Campus New Delhi 110021. The Dell
- Sr F&AO(EMR) alongwith FVC for first year's grant.

RESEARCHER  
11/5/17  
110012  
New Delhi-110012



No. BT/07/IYBA/2013-5  
GOVERNMENT OF INDIA  
MINISTRY OF SCIENCE & TECHNOLOGY  
DEPARTMENT OF BIOTECHNOLOGY  
(BIOINFORMATICS DIVISION)

Block- 2, 7th floors,  
CGC Complex, Lodi Road,  
New Delhi - 110 003.

Dated: 31/7/2014

**ORDER**

Sanction of the President of India is hereby accorded under Rule 18 of the Delegation of Financial Powers Rules, 1978, for the implementation of a project titled "Understanding the VirS mediated acid induced responses of mycobacterium tuberculosis in maintaining the pH homeostasis in vitro and in host" by Dr. Garima Khare, Research Scientist, Department of Biochemistry, Bimal K. Bachhawat Block, University of Delhi South Campus, Benito Juarez Road, New Delhi - 110021 at a total cost of Rs. 43.21 lakhs (Rupees Forty Three Lakhs Twenty One Thousand only) including fellowship @ Rs. 40000/- per month under Innovative Young Biotechnologist Award - 2013 (IYBA 2013) for a period of three years on the terms and conditions which are detailed here under:

2.0 **The Project:**

Project Title: "Understanding the VirS mediated acid induced responses of mycobacterium tuberculosis in maintaining the pH homeostasis in vitro and in host"

2.1 **Awardee:**


Dr. Garima Khare,  
Research Scientist,  
Department of Biochemistry,  
Bimal K. Bachhawat Block,  
University of Delhi South Campus,  
Benito Juarez Road,  
New Delhi - 110021

2.2 **Objective:**

Implementation of a project proposal "Understanding the VirS mediated acid induced responses of mycobacterium tuberculosis in maintaining the pH homeostasis in vitro and in host" under IYBA 2013.

2.4 **Time Schedule:**

The duration of the Project is three years from the date of this sanction order.





## 2.5 Budget:

(Rs. In lakhs)

S.No.	Heads	Budget			
		Year 1	Year 2	Year 3	Total
1.	Equipment/Software	0.00	--	--	0.00
2*	Manpower-One: JRF/SRF (first two year JRF@16000 + 30% HRA and subsequently @18000 + 30% HRA	2.50	2.50	2.81	7.81
3.	Consumable /Contingencies/ travel(travel expenditure to be restricted up to Rs.0.50/- lakhs per annum for every year)	6.00	6.00	6.00	18.00
4.	Overhead Charges	1.00	1.00	1.00	3.00
5.	Fellowship (@ Rs. 40000/- per month for 3 year	4.80	4.80	4.80	14.40
	Total	14.30	14.30	14.61	43.21

## 2.6 The expenditure is debitable to:

Demand No. 88	:	Department of Biotechnology
3425	:	Other Scientific Research (Major Head)
60	:	Others (Sub Major Head)
60:200	:	Assistance to Other Scientific Bodies (Minor Head)
17	:	Human Resource Development
17.08	:	Human Resource Development Programmes
17.08.31	:	Grants-in-Aid General for the year 2014-2015 (Plan)
17.08.35	:	Grants for creation of Capital Assets 2014-2015

2.7 The Accounts of the grantee institution shall be open to inspection by the sanctioning authority/ auditor.

2.8 The other terms and conditions of this sanction are attached at Annexure I.

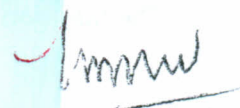
2.9 In case the amount of grant-in-aid is refunded, the whole or a part amount of the grant, with an interest at ten percent per annum thereon shall be recovered.

3.0 This issues under the powers delegated to this Department and with the concurrence of IFD, DBT vide their Dy No. 102/IFD/SAN/1647-(A)/2014-2015 dated 25/07/2014.

3.1 This sanction order has been noted at serial No. 98 in the Register of Grants.

4.0 A Memorandum of Agreement (MOA) to be signed by the grantee institution on Rs. 100 stamp paper in the format given at Annexure-II and the subsequent Releases will be made only after signing of MOA by the grantee institution and its acceptance by DBT. All the pages need to be signed and to be returned to DBT within 30 days of issue of this order.

5.0. All the Official Travel related to this programme should be made only through Air India.



(Dr. T. Madhan Mohan)  
Adviser





REGISTERED

## COUNCIL OF SCIENTIFIC AND INDUSTRIAL RESEARCH

EXTRAMURAL RESEARCH DIVISION

CSIR COMPLEX, PUSA, NEW DELHI - 110 012

No. 37(1620)/14/EMR-II

Dated : 23/04/2014

From : Head, Human Resources Development Group

To

DR(MS) AMITA GUPTA  
DEPT OF MICROBIOLOGY  
DELHI UNIV, SOUTH CAMPUS  
NEW DELHI 110021 DELHI

Subject : Grants-in-aid for your scheme entitled : IDENTIFICATION AND CHARACTERIZATION OF PROMOTERS OF TOXIN ANTITOXIN LOCI IN Mycobacterium tuberculosis

Sir,

I am directed to refer to your proposal for sanction of CSIR Scheme titled above and to convey the approval of DG CSIR as per the details given below.

I	Duration of the Scheme (from the date of Commencement)	36 Months		
II	Staff	1-RA / JRF / SRF		
III	Contingency (per annum in ₹)	1 <sup>st</sup> Year : 4,00,000	2 <sup>nd</sup> Year : 4,00,000	3 <sup>rd</sup> Year : 4,00,000 P
IV	Equipment (lumpsum in ₹)	6,00,000 LS		

- The above sanction is subject to review of periodical progress of the project by expert committee.
- DG CSIR has also approved the release of the following grants for the period 01/10/2014 to 31/03/2015

No	Grants	Amount (in ₹)
I	Staff	1,32,000
II	Contingency	2,00,000
III	Equipment	6,00,000
Total :		9,32,000

- Sanction of grants is subject to strict compliance of the terms and conditions enclosed or as may be modified from time to time. Please go through the instructions carefully with regard to subsequent release of grants and your obligations under this sanction. The grant for the 1<sup>st</sup> installment will be sent through EFT (Electronic Funds Transfer), to the concerned authority of your institution on receipt of undertaking (form-A), non-funding certificate and EFT Transaction Request Form.

The expenditure is debitable to budget head P81102.

Yours faithfully,

*[Signature]*  
23/04/14  
SECTION OFFICER (EMR-II)

Encl : As above

Copy to :-

- Registrar/Principal/Director Delhi Univ., South Campus, N.D. - 21. The utilisation of grant is subject to compliance of para-1 of the terms and conditions stated overleaf.
- Sr F&AO(EMR) alongwith FVC for first year's grant.



No. BT/PR5510/MED/29/513/2012  
GOVERNMENT OF INDIA  
MINISTRY OF SCIENCE & TECHNOLOGY  
DEPARTMENT OF BIOTECHNOLOGY

Block 2, 6-8th Floors  
CGO Complex, Lodhi Road,  
New Delhi- 110 003  
Dated:21/07/2016

**ORDER**

Sanction of the President is hereby accorded, under Rule 18 of the Delegation of Financial Powers Rules, 1978, for the implementation of the project entitled: "**Understanding the role of Rv1955-Rv1956 Toxin-antitoxin (TA) locus of Mycobacterium tuberculosis in pathogen biology**" for a period of 3 Year 0 Month at a total cost of Rs. **8721800** (Rupees Eighty Seven Lakhs Twenty One Thousand Eight Hundred Only) on the terms and conditions detailed here under:

**2 The Project :**

**2.1 Title :** "**Understanding the role of Rv1955-Rv1956 Toxin-antitoxin (TA) locus of Mycobacterium tuberculosis in pathogen biology**"

**2.2 Details of the Investigators:**

**Project Coordinator**

**Dr. Amita Gupta**

PI

Biochemistry

University of Delhi, South Campus

Department of Biochemistry

University of Delhi South campus

New Delhi 110021, South Delhi, Delhi, 110021

**Principal Investigators:**

**Dr. Amita Gupta**

PI

Biochemistry

University of Delhi, South Campus

Department of Biochemistry

University of Delhi South campus

New Delhi 110021, South

Delhi, Delhi, 110021

**Dr. Ramandeep Singh**

Assistant Professor

Vaccine and Infectious Disease

Research Centre

Translational Health Science And

Technology Institute

496 Udyog Vihar Phase II,

Gurgaon, Haryana 122016

## 2.3 Objectives:

### Overall Objectives:

- 1 Expression profiling at RNA and protein level of Rv1955 and Rv1956 of *Mycobacterium tuberculosis* under different stress conditions
- 2 Expression profiling at RNA and protein level of Rv1955 and Rv1956 of *Mycobacterium tuberculosis* under different stress conditions
- 2 Understanding the role of Rv1955 in mycobacterial physiology Regulation of Rv1955-1956 toxin-antitoxin module by Stringent Response pathways of *M. tuberculosis*.
- 3 Regulation of Rv1955-1956 toxin-antitoxin module by Stringent Response pathways of *M. tuberculosis*
- 4 Understanding the role of Rv1955-Rv1956 TA module in survival of *M. tuberculosis* in macrophages and guinea pigs

### Institute wise Objectives:

#### Translational Health Science And Technology Institute

- 1 Regulation of Rv1955-1956 toxin-antitoxin module by Stringent Response pathways of *M. tuberculosis*.
- 2 Creating a function chart for Rv1955- Rv1956 TA locus
- 3 Understanding the role of Rv1955-Rv1956 TA module in survival of *M. tuberculosis* in macrophages and guinea pigs

#### University of Delhi, South Campus

- 1 Expression profiling at RNA and protein level of Rv1955 and Rv1956 of *Mycobacterium tuberculosis* under different stress conditions.
- 2 Construction of Rv1955 over-expression, knockout and complemented strain
- 3 Determination of global transcription profile following growth of *Mycobacterium tuberculosis* over-expressing Rv1955.
- 4 Understanding the role of Rv1955 in mycobacterial physiology

## 2.4 Time Schedule:

The duration of the project is 3 Year 0 Month from the date of this sanction order.

## 2.5 Project Cost:

The total cost of the project is Rs. **8721800/-** (Rupees Eighty Seven Lakhs Twenty One Thousand Eight Hundred Only) as per details given below



Institute	Year I	Year II	Year III	Total Cost(Rs.)
1. Translational Health Science And Technology Institute	1065000	1165000	1211800	3441800
2. University of Delhi, South Campus	1760000	1760000	1760000	5280000
<b>Total (Rs.)</b>	<b>2825000</b>	<b>2925000</b>	<b>2971800</b>	<b>8721800</b>

Institute wise details are:

Budget Head	Year I	Year II	Year III	Total(Rs.)
<b>1. University of Delhi, South Campus</b>				
Manpower	585000.00	585000.00	585000.00	1755000.00
Overhead	100000.00	100000.00	100000.00	300000.00
Travel	25000.00	25000.00	25000.00	75000.00
Consumables	1000000.00	1000000.00	1000000.00	3000000.00
Contingency	50000.00	50000.00	50000.00	150000.00
<b>Total (Rs.)</b>	<b>1760000.00</b>	<b>1760000.00</b>	<b>1760000.00</b>	<b>5280000.00</b>
<b>2. Translational Health Science And Technology Institute</b>				
Manpower	390000.00	390000.00	436800.00	1216800.00
Travel	25000.00	25000.00	25000.00	75000.00
Consumables	600000.00	700000.00	700000.00	2000000.00
Contingency	50000.00	50000.00	50000.00	150000.00
<b>Total (Rs.)</b>	<b>1065000.00</b>	<b>1165000.00</b>	<b>1211800.00</b>	<b>3441800.00</b>

#### 2.6 Equipment:

The details of the equipment sanctioned for the implementation of the project at Annexure-I

#### 2.7 Manpower:

The details of the manpower sanctioned for the implementation of the project at Annexure-II

#### 3. Head of Account:

The Recurring expenditure involved is debitable to



<b>Demand No. 79</b>	<b>Department of Biotechnology</b>
<b>3425</b>	Other Scientific Research 2016-2017
<b>3425.60</b>	Others (Sub Major Head)
<b>3425.60.200</b>	Assistance to other Scientific Bodies (Minor Head)
<b>3425.60.200.29</b>	Biotechnology Research and Development
<b>3425.60.200.29.17</b>	Assistance for Research and Development
<b>3425.60.200.29.17.31</b>	Grants-in-aid General

#### 4. Terms & Conditions:

the institute should utilize this non-recurring amount within period of 18 months.(B) in case the whole or a part of the amount of the grant -in aid is being refunded an interest at the rate of ten percent per annum thereon shall be recovered.(C) the ownership of physical and intellectual assests created or acquired out of these funds shall rest with the DBT

- 4.1 The other terms and conditions governing this sanction are attached at Annexure- III.
- 4.2A Memorandum of Agreement (MoA) will be signed between the Department of Biotechnology and the grantee institution on Non-Judicial stamp paper Rs. 100/- in the enclosed format and the second release/installment will be made only after signing of MoA by the grantee institutions and its acceptance by DBT. In case of NGO or Private Institution, MOA signed is mandatory first release. A format of the MoA is enclosed in Annexure-IV
- 4.3The Institute/Agency will keep the whole of the grant in a Bank Account earning interest, and the interest so earned should be reported to DBT in the Utilisation Certificate and Statement of Expenditure. The Interest so earned will be treated as created to the institute/Agency and shall be adjusted towards further installment of the grant and or at the time of Final Settlement of Accounts.
- 5.No International Travel will be undertaken from the sanctioned project grant unless specified otherwise.
- 6.The Executive Director, Translational Health Science And Technology Institute, Faridabad, Haryana and The Prof. Umesh Rai, University of Delhi, South Campus, South Delhi, Delhi would be responsible for submission of Statements of Expenditure (SoE), utilization certificates (UC), Assets Certificates, Manpower staffing & expenditure details in prescribed DBT formats to DBT in respect of grants released in this project from time to time.
- 7.PI's of DBT sponsored projects can consider appointment of JRF from Category-II merit list of DBT-BET exam so that candidates can be paid fellowships at par with NET/GATE/BET qualified candidates as per DST OM No. A.SR/S9/Z-09/2012 dated on 21 Oct 2014. However, there is no compulsion on PI's to select candidates for JRF in their projects from Category-II of DBT-BET.
- 8.The accounts of grantee institution shall be open to inspection by the sanctioning authority/audit whenever the institute is called upon to do so by the sanctioning authority.
- 9.This issues under the power delegated to this Department and with the concurrence of IFD vide their SAN No.102/IFD/SAN/1675/2016-2017 dated July, 21 2016.
- 10.This sanction order has been noted at serial no. \_\_\_\_\_ in the Register of Grants.

(Dr.Jyoti Malik Logani)  
DBT/ Scientist 'D'



To,  
The Pay & Accounts Officer,  
Department of Biotechnology,  
New Delhi - 110 003.

**Copy to:**

- 1 The Principal Director of Audit (Scientific Departments), DACR Building, New Delhi- 110 002.
- 2 Amita Gupta(Project Co-ordinator), Department of Microbiology, University of Delhi South Campus, New Delhi - 110021
- 3 The Executive Director, Translational Health Science And Technology Institute, NCR Biotech Science Cluster, 3rd Milestone, Faridabad - Gurgaon Expressway, PO box #04,, Faridabad - 121001, Haryana
- 4 The Prof. Umesh Rai, University of Delhi, South Campus, New Delhi, Delhi 110021, South Delhi - 110021, Delhi
- 5 Dr. Amita Gupta, PI, Biochemistry, University of Delhi, South Campus, Department of Biochemistry University of Delhi South campus New Delhi 110021, South Delhi - 110021, Delhi
- 6 Dr. Ramandeep Singh, Assistant Professor, Vaccine and Infectious Disease Research Centre, Translational Health Science And Technology Institute, 496 Udyog Vihar Phase III, Gurgaon - 122016, Haryana
- 7 Cash Section, DBT (2 copies).
- 8 Sanction Folder.
- 9 File Copy.

  
(Dr. Jyoti Malik Logani)  
DBT/ Scientist 'D'

## Annexure -II

Details of the manpower sanctioned for the implementation of the project titled "**Understanding the role of Rv1955-Rv1956 Toxin-antitoxin (TA) locus of Mycobacterium tuberculosis in pathogen biology**":

Head	No. of Position	Year I	Year II	Year III	Total (Rs.)
<b>1. Translational Health Science And Technology Institute</b>					
Junior Research Fellow JRF is promoted as SRF for the third year so salary Rs.28000+30%HRA=36,400	1			436800.00	436800.00
Junior Research Fellow One JRF @Rs.25,000+30%HRA=32,500	1	390000.00	390000.00		780000.00
<b>Total(Rs.)</b>		<b>390000.00</b>	<b>390000.00</b>	<b>436800.00</b>	<b>1216800.00</b>
<b>2. University of Delhi, South Campus</b>					
Attendant one Attendant @Rs.12,350	1	148200.00	148200.00	148200.00	444600.00
Senior Research Fellow one SRF @Rs.28,000+30%HRA	1	436800.00	436800.00	436800.00	1310400.00
Senior Research Fellow One SRF @rs.28,000+30%HRA=Rs.36,400	1	0.00	0.00	0.00	0.00
<b>Total(Rs.)</b>		<b>585000.00</b>	<b>585000.00</b>	<b>585000.00</b>	<b>1755000.00</b>

Emoluments detail of research personal(s) mentioned in table(s) of Annexure-II shall be applicable only if candidate(s) met educational qualification and eligibility criteria as per DST OM No SR/S9/Z-09/2012 dated 21 10 2014

(Dr. Jyoti Malik Logani)  
DBT/Scientist 'D'



**BT/PR10948/INF/22/195/2014**  
**GOVERNMENT OF INDIA**  
**MINISTRY OF SCIENCE & TECHNOLOGY**  
**DEPARTMENT OF BIOTECHNOLOGY**

Block 2, 6-8<sup>th</sup> Floors  
CGO Complex, Lodhi Road,  
New Delhi- 110 003  
Dated: 08.07.2016

**CORRIGENDUM**

In partial modification of this Departments sanction order dated 13<sup>th</sup> June'2014, regarding project titled "DNA Sequencing Facility at University of Delhi, South Campus" sanctioned at a total cost of Rs.114.2624Lakh (Rupees One Crore Fourteen Lakh Twenty Six Thousand Two Hundred and Fourty only) in favor of Registrar, Delhi University, South Campus, New Delhi for a period of three years, Para 2.5 there of (Project cost) may be read as follows:

**2.5 Project cost:**

The revised total cost of the project is Rs.173.59735Lakh (Rupees One Crore Seventy three Lakh Fifty Nine Thousand Seven Hundred and Thirty Five Only) as per the budget breakup given below:

(Rs. in Lakhs)					
S. No.	Items	I <sup>st</sup> yr or (2014-15)	II <sup>nd</sup> yr or (2015-16)	III <sup>rd</sup> yr (or 2016-17)	Total
	<b>Non-recurring</b>				
1.	Equipments	15.18	0.00	0.00	15.18
2.	Computational Facility for analysis and storage of Microarray and NGS data and high resolution printer	0.00	9.96975	0.00	9.96975
3.	Misc. equipments such Cold/heat blocks vortex mixer, micro pipets etc.	0.00	4.37519	0.00	4.37519
	<b>Total (A)</b>	<b>15.18</b>	<b>14.34494</b>	<b>0.00</b>	<b>29.52494</b>
	<b>Recurring</b>				
2.	<b>Manpower</b>				
	A. Scientist/ Technical Officer (2) [Pay band-2, @46300/- p.m. for 1 <sup>st</sup> yr; @50930/-p.m. * for 2 <sup>nd</sup> yr; @56023p.m. for 3 <sup>rd</sup> yr]	5.556	7.6395	13.44556	26.64106
	B. Research Associate-I [1, @ Rs.22000p.m.+30%HRA]	3.432	3.432	3.432	10.296
	C. Research Associate-II [1, @ Rs.38000p.m.+30%HRA]	0.00	1.482	5.928	7.41
	D. Laboratory Assistant (1-@16100/- p.m.for 1 <sup>st</sup> yr; @17700/-p.m. for 2 <sup>nd</sup>	1.932	2.124	2.340	6.396

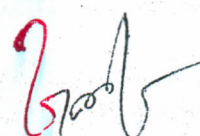


	yr; @19500/-p.m. for 3 <sup>rd</sup> yr)				
	<b>Total (B) =</b>	<b>10.92</b>	<b>14.6775</b>	<b>25.14556</b>	<b>50.74304</b>
3.	<b>Consumables</b>	2.00	<b>7.00</b>	2.00	<b>11.00</b>
4.	<b>Contingency</b>	18.00	<b>37.32935</b>	<b>23.00</b>	<b>78.32935</b>
5.	<b>Travel</b>	0.40	0.30	0.30	<b>1.00</b>
6.	<b>Overhead</b>	1.0	1.0	1.0	<b>3.00</b>
	<b>Total (B)=</b>	<b>32.32</b>	<b>60.30685</b>	<b>51.44556</b>	<b>144.0724</b>
	<b>Grand Total (A+B)=</b>	<b>47.50</b>	<b>74.65179</b>	<b>51.44556</b>	<b>173.5973</b>

Figures in Bold indicates the revision

2. The breakup of various heads is provided in attached Annexure.

3. Other terms and conditions shall remain the same of the sanction order as per the sanction order dated 13<sup>th</sup> June'2014.


  
 (डॉ. रजनीश कुमार गौड़/Dr. Rajneesh K. Gaur)  
 वैज्ञानिक- 'ग' /Scientist 'D'

To,

The Pay & Accounts Officer,  
Department of Biotechnology,  
New Delhi - 110 003.

Copy to:

1. The Principal Director of Audit (Scientific Departments), AGCR Building, New Delhi-02.
2. Cash Section, DBT (2 copies).
3. The Registrar, University of Delhi, New Delhi, Delhi, - 110021
4. Prof. Vijay K. Chaudhary, Department of Biochemistry, University of Delhi, New Delhi, Delhi, - 110021
5. IFD, DBT.
6. Project Registry Cell.

  
 (डॉ. रजनीश कुमार गौड़/Dr. Rajneesh K. Gaur)  
 वैज्ञानिक- 'ग' Scientist 'D'



**BT/PR10948/INF/22/195/2014**  
**DEPARTMENT OF BIOTECHNOLOGY**

Annexure

SUB: Breakup for the revised head

Contingency

(Rs. in Lakhs)		
Sl. No	Items Name	Cost in Indian currency (including duties & VAT)
1	Miseq.	9.33166
2.	Agilent Microarray Platform	5.26420
3.	Agilent Bio-analyser	1.17511
4.	Real Time Thermocycler	7.11248
5.	Thermocyclers	5.94590
	<b>Total=</b>	<b>28.82935</b>
	Contribution by University of Delhi	4.50
	<b>DBT's contribution=</b>	<b>24.32935</b>

  
(डॉ. रजनीश कुमार गौड़/Dr. Rajneesh K. Gaur)

वैज्ञानिक- 'ग'/Scientist 'D'

**No. BT/PR10903/MED/29/829/2014**  
GOVERNMENT OF INDIA  
MINISTRY OF SCIENCE & TECHNOLOGY  
DEPARTMENT OF BIOTECHNOLOGY

Block 2, 6-8th Floors  
CGO Complex, Lodhi Road,  
New Delhi- 110 003  
Dated: 20/03/14

**ORDER**

Sanction of the President is hereby accorded, under Rule 18 of the Delegation of Financial Powers Rules, 1978, for the implementation of the project entitled: "**Development of reagents for simple immunochemical tests for the detection of Chikungunya infection**" for a period of 3 Year 0 Month at a total cost of Rs. **14128590** (Rupees One Crores Fourty One Lakhs Twenty Eight Thousand Five Hundred and Ninety Only) on the terms and conditions detailed here under:-

**2 The Project :**

**2.1 Title :** "Development of reagents for simple immunochemical tests for the detection of Chikungunya infection"

**2.2 Project Investigator :**

**Dr. Vijay K Chaudhary**

Professor  
Biochemistry  
Delhi University, South Campus  
Department of Biochemistry, University of Delhi south campus, New Delhi, South West Delhi - 110021, Delhi

**Dr. Shyamalendu Chatterjee**

Scientist C  
Arbovirology  
ICMR Virus Unit, Kolkata  
GB-4, 1st Fl, I.D & B.G Hospital, 57, Dr. S. C. Banerjee Road, Beliaghata, Kolkata, West Bengal, Kolkata - 700010, West Bengal

**Dr. Sanjay Gupta**

Associate Professor  
Biotechnology  
Jaypee Institute of Information Technology, Noida  
A-10, Sector 62, Noida, Noida - 201307, Uttar Pradesh

**CO-PI:**

**Dr. Amita Gupta**

Assistant Professor  
Microbiology



**No. BT/PR10903/MED/29/829/2014**  
GOVERNMENT OF INDIA  
MINISTRY OF SCIENCE & TECHNOLOGY  
DEPARTMENT OF BIOTECHNOLOGY

Block 2, 6-8th Floors  
CGO Complex, Lodhi Road,  
New Delhi- 110 003  
Dated: 20/03/14

**ORDER**

Sanction of the President is hereby accorded, under Rule 18 of the Delegation of Financial Powers Rules, 1978, for the implementation of the project entitled: "**Development of reagents for simple immunochemical tests for the detection of Chikungunya infection**" for a period of 3 Year 0 Month at a total cost of Rs. **14128590** (Rupees One Crores Fourty One Lakhs Twenty Eight Thousand Five Hundred and Ninety Only) on the terms and conditions detailed here under:-

**2 The Project :**

**2.1 Title :** "Development of reagents for simple immunochemical tests for the detection of Chikungunya infection"

**2.2 Project Investigator :**

**Dr. Vijay K Chaudhary**

Professor  
Biochemistry  
Delhi University, South Campus  
Department of Biochemistry, University of Delhi south campus, New Delhi, South West Delhi - 110021, Delhi

**Dr. Shyamalendu Chatterjee**

Scientist C  
Arbovirology  
ICMR Virus Unit, Kolkata  
GB-4, 1st Fl, I.D & B.G Hospital, 57, Dr. S. C. Banerjee Road, Beliaghata, Kolkata, West Bengal, Kolkata - 700010, West Bengal

**Dr. Sanjay Gupta**

Associate Professor  
Biotechnology  
Jaypee Institute of Information Technology, Noida  
A-10, Sector 62, Noida, Noida - 201307, Uttar Pradesh

**CO-PI:**

**Dr. Amita Gupta**

Assistant Professor  
Microbiology

Delhi University, South Campus  
Department of Microbiology, University of Delhi  
South Campus  
New Delhi, - 110021, Delhi

### 2.3 Objectives:

#### Delhi University, South Campus

1. Development of CHIKV-specific antibody detection test:
2. Development of CHIKV-antigen detection test.
3. Development of CHIKV-specific combined antigen-antibody test.
4. Collection and characterization of clinical specimen for carrying out above mentioned studies.

#### ICMR Virus Unit, Kolkata

1. Development of CHIKV-specific antibody detection test.
2. Development of CHIKV-antigen detection test.
3. Development of CHIKV-specific combined antigen-antibody test.
4. Collection and characterization of clinical specimen for carrying out above mentioned studies.

#### Jaypee Institute of Information Technology, Noida

1. Development of CHIKV-specific antibody detection test.
2. Development of CHIKV-specific antigen detection test.
3. Development of CHIKV-specific combined antigen-antibody test.
4. Collection and characterization of clinical specimen for carrying out above mentioned studies.

### 2.4 Time Schedule:

The duration of the project is 3 Year 0 Month from the date of this sanction order.

### 2.5 Project Cost:

The total cost of the project is Rs. **14128590/-** (Rupees One Crores Forty One Lakhs Twenty Eight Thousand Five Hundred and Ninety Only) as per details given below :



Budget Head	Year I	Year II	Year III	Total(Rs.)
<b>• Delhi University, South Campus</b>				
Equipment	2251000.00			2251000.00
Manpower	706080.00	830880.00	830880.00	2367840.00
Overhead	100000.00	75000.00	75000.00	250000.00
Travel	25000.00	25000.00	25000.00	75000.00
Consumables	1100000.00	1300000.00	1100000.00	3500000.00
Contingency	100000.00	50000.00	50000.00	200000.00
<b>Total (Rs.)</b>	<b>4282080.00</b>	<b>2280880.00</b>	<b>2080880.00</b>	<b>8643840.00</b>
<b>• ICMR Virus Unit, Kolkata</b>				
Equipment	93200.00			93200.00
Manpower	249600.00	249600.00	280800.00	780000.00
Overhead	75000.00	75000.00	75000.00	225000.00
Travel	30000.00	30000.00	40000.00	100000.00
Consumables	700000.00	850000.00	850000.00	2400000.00
Contingency	25000.00	25000.00	25000.00	75000.00
<b>Total (Rs.)</b>	<b>1172800.00</b>	<b>1229600.00</b>	<b>1270800.00</b>	<b>3673200.00</b>
<b>• Jaypee Institute of Information Technology, Noida</b>				
Equipment	221550.00			221550.00
Manpower	249600.00	249600.00	280800.00	780000.00
Travel	20000.00	20000.00	20000.00	60000.00
Consumables	200000.00	200000.00	200000.00	600000.00
Contingency	50000.00	50000.00	50000.00	150000.00
<b>Total (Rs.)</b>	<b>741150.00</b>	<b>519600.00</b>	<b>550800.00</b>	<b>1811550.00</b>

## 2.6 Equipment:

The details of the equipment sanctioned for the implementation of the project at  
**Annexure-I**

## 2.7 Manpower:

The details of the manpower sanctioned for the implementation of the project at  
**Annexure-II**

## 3. Head of Account:

The **Non-Recurring** expenditure involved is debitable to:



<b>Demand No. 87</b>	<b>Department of Biotechnology</b>
<b>3425</b>	Other Scientific Research 2013-2014
<b>3425.60</b>	Others (Sub Major Head)
<b>3425.60.200</b>	Assistance to other Scientific Bodies (Minor Head)
<b>3425.60.200.29</b>	Research & Development
<b>3425.60.200.29.04</b>	Medical Biotechnology and Related Areas
<b>3425.60.200.29.04.35</b>	Grants for creation of capital assets

The **Recurring** expenditure involved is debitable to:

<b>Demand No. 87</b>	<b>Department of Biotechnology</b>
<b>3425</b>	Other Scientific Research 2013-2014
<b>3425.60</b>	Others (Sub Major Head)
<b>3425.60.200</b>	Assistance to other Scientific Bodies (Minor Head)
<b>3425.60.200.29</b>	Research & Development
<b>3425.60.200.29.04</b>	Medical Biotechnology and Related Areas
<b>3425.60.200.29.04.31</b>	Grants in Aid General

#### 4. Terms & Conditions:

In case the whole or a part of the amount of the grant-in-aid is being refunded, an interest rate at the rate of ten percent thereon shall be recovered.

The equipment sanctioned under the project should be purchased within 18 months from the date of the release of the grant .

**4.1** The other terms and conditions governing this sanction are attached at Annexure- III.

**4.2** A Memorandum of Agreement (MoA) will be signed between the Department of Biotechnology and the grantee institution on Non-Judicial stamp paper Rs. 100/- in the enclosed format and the second release/installment will be made only after signing of MoA by the grantee institutions and its acceptance by DBT. In case of NGO or Private Institution, MOA signed is mandatory first release. A format of the MoA is enclosed in Annexure-IV

**4.3** The Institute/Agency will keep the whole of the grant in a Bank Account earning interest, and the interest so earned should be reported to DBT in the Utilisation Certificate and Statement of Expenditure. The Interest so earned will be treated as created to the institute/Agency and shall be adjusted towards further installment of the grant and or at the time of Final Settlement of Accounts.

**5.** No International Travel will be undertaken from the sanctioned project grant unless specified otherwise.

**6.** The Director, Delhi University, South Campus, New Delhi, Delhi and The Officer-in-Charge, ICMR Virus Unit, Kolkata, Kolkata, West Bengal and The Registrar, Jaypee Institute of Information Technology, Noida, Noida, Uttar Pradesh would be responsible for submission of Statements of Expenditure (S/E) and consolidated utilization certificates (U/Cs) to DBT from PIs in respect of



grants released against this sanction order from time to time.

7. The accounts of grantee institution shall be open to inspection by the sanctioning authority/audit whenever the institute is called upon to do so by the sanctioning authority.

8. This issues under the power delegated to this Department and with the concurrence of IFD vide their SAN No. **102/IFD/SAN/5480/2013-2014** dated **March, 20 2014**.

9. This sanction order has been noted at serial no. 96 in the Register of Grants.

**Dr. Sundeep Sarin**  
(Director/Scientist 'F')

To,  
The Pay & Accounts Officer,  
Department of Biotechnology,  
New Delhi - 110 003.

**Copy to:**

- 1 The Principal Director of Audit (Scientific Departments), DACR Building, New Delhi- 110 002.
- 2 Dr. Vijay K Chaudhary (Project Co-ordinator), Professor and Head  
Department of Biochemistry  
University of Delhi South Campus  
New Delhi - 110021
- 3 The Director, Delhi University, South Campus, BENITO JUAREZ ROAD, New Delhi - 110021, Delhi
- 4 The Officer-in-Charge, ICMR Virus Unit, Kolkata, ID & BG Hospital, GB-4, First Floor, 57 Dr Suresh C Banerjee Road, Beliaghata, Kolkata - 700010, West Bengal
- 5 The Registrar, Jaypee Institute of Information Technology, Noida, A-10, Sector-62, Noida - 201307, Uttar Pradesh
- 6 Dr. Amita Gupta, Assistant Professor, Microbiology, Delhi University, South Campus, Department of Microbiology, University of Delhi South Campus  
New Delhi, - 110021, Delhi
- 7 Dr. Sanjay Gupta, Associate Professor, Biotechnology, Jaypee Institute of Information Technology, Noida, A-10, Sector 62, Noida, Noida - 201307, Uttar Pradesh
- 8 Dr. Shyamalendu Chatterjee, Scientist C, Arbovirology, ICMR Virus Unit, Kolkata, GB-4, 1st Fl, I.D & B.G Hospital, 57, Dr. S. C. Banerjee Road, Beliaghata, Kolkata, West Bengal, Kolkata - 700010, West Bengal
- 9 Dr. Vijay K Chaudhary, Professor, Biochemistry, Delhi University, South Campus, Department of Biochemistry, University of Delhi south campus, New Delhi, South West Delhi - 110021, Delhi
- 10 Cash Section, DBT (2 copies).
- 11 Sanction Folder.
- 12 File Copy.

**Dr. Sundeep Sarin**  
(Director/Scientist 'F')



**Annexure -I**

Details of the Equipment sanctioned for the implementation of the project titled "**Development of reagents for simple immunochemical tests for the detection of Chikungunya infection**":

<b>Delhi University, South Campus</b>			
<b>SNo.</b>	<b>Name of Equipment</b>	<b>No.</b>	<b>Cost(Rs.)</b>
1.	Microplate washer	1	1773000.00
2.	Miscellaneous equipment * Multi channel pipette	1	478000.00
<b>Total</b>			<b>2251000.00</b>

<b>ICMR Virus Unit, Kolkata</b>			
<b>SNo.</b>	<b>Name of Equipment</b>	<b>No.</b>	<b>Cost(Rs.)</b>
3.	-40 degree Freezer	1	93200.00
<b>Total</b>			<b>93200.00</b>

<b>Jaypee Institute of Information Technology, Noida</b>			
<b>SNo.</b>	<b>Name of Equipment</b>	<b>No.</b>	<b>Cost(Rs.)</b>
4.	Miscellaneous Equipment * Pipet (0.5-10 microlitre, 20-200 microlitre, 100-1000 microlitre)	1	22050.00
5.	* Incubator along with Flasks clamp & 8 channel micropipette	1	199500.00
<b>Total</b>			<b>221550.00</b>

**Dr. Sundeep Sarin**  
(Director/Scientist 'F')



**Annexure -II**

Details of the manpower sanctioned for the implementation of the project titled "**Development of reagents for simple immunochemical tests for the detection of Chikungunya infection**":

Head	No. of Postion	Year I	Year II	Year III	Total (Rs.)
<b>• Delhi University, South Campus</b>					
Other Lab Attendant @ Rs. 12040/month	1	144480.00	144480.00	144480.00	<b>433440.00</b>
Research Associate Rs. 22,000/- + 30 % HRA will be provided to each RA	2		686400.00	686400.00	<b>1372800.00</b>
Senior Research Fellow Rs. 18,000/- + 30 % HRA will be provided to each SRF	2	561600.00			<b>561600.00</b>
<b>Total(Rs.)</b>		<b>706080.00</b>	<b>830880.00</b>	<b>830880.00</b>	<b>2367840.00</b>
<b>• ICMR Virus Unit, Kolkata</b>					
Junior Research Fellow Rs. 18000+30 HRA for 3rd year	1	249600.00	249600.00		<b>499200.00</b>
Junior Research Fellow Rs. 18000+30 HRA for 3rd year	1			280800.00	<b>280800.00</b>
<b>Total(Rs.)</b>		<b>249600.00</b>	<b>249600.00</b>	<b>280800.00</b>	<b>780000.00</b>
<b>• Jaypee Institute of Information Technology, Noida</b>					
Junior Research Fellow 18000 + 30% HRA for 3rd year	1	249600.00	249600.00		<b>499200.00</b>
Junior Research Fellow 18000 + 30% HRA for 3rd year	1			280800.00	<b>280800.00</b>
<b>Total(Rs.)</b>		<b>249600.00</b>	<b>249600.00</b>	<b>280800.00</b>	<b>780000.00</b>

Revised emoluments shall be payable only if educational qualification or eligibility criteria as per DST OM No. A.20020/11/97-IFD dated 31.03.2010, are met by the research personnel.

**Dr. Sundeep Sarin**  
(Director/Scientist 'F')



Mr. Rai  
18/11/14

दिल्ली विश्वविद्यालय  
UNIVERSITY OF DELHI

D.U.P.-688-11-12-2000P X-100



RC/2014/BSP/7245

November 05, 2014

O/o Research Council

DST PURSE Phase-II Grant – First Instalment  
Transfer of funds to South Campus

The Department of Science and Technology under the PURSE scheme for the Phase – II has sanctioned a sum of Rs. 40.8 crore to the University of Delhi. The first instalment of the grant has been received from DST vide letter No. SR/PURSE/Phase 2/1(C) and SR/PURSE/Phase 2/1(G) (flag 'A'). A sanction of Rs. 3.0 crore (Rupees Three crore only) has been accorded by the DST as part of 1<sup>st</sup> Instalment of the grants for creation of Capital Assets in 2014-15. Sanction has also been accorded for release of Rs. 4,50,00,000/- (Rupees Four crore fifty lakhs only) as part payment of 1<sup>st</sup> Instalment of the grant for Grants-in-aid, General to be utilized in 2014-15 under said program.

The details of the distribution of funds approved for Departments in South Campus from the first instalment are as under:

Departments	Sanctioned Amount (Rs lakhs)	Grants-in-aid General Allocation in recurring head per year for 5 years (Rs lakhs) Z	Capital Assets Equipment amount in 1 <sup>st</sup> instalment (Rs lakhs) Y	Total (Z+Y) amount to be released in first instalment (Rs lakhs)
Biochemistry	150	29.34	0	29.34
Biophysics	50	1.97	15	16.97
Genetics	175	34.3	0	34.3
Microbiology	200	28.94	12.88	41.82
Plant Molecular Biology	200	32.6	14.5	47.1
CIF South	400	10.4	0	10.4
IIC	60	1.96	17	18.96
Electronics	65	1.69	11.5	13.19
Total (Rs)	1300.00 Lakhs	141.2	70.88	212.08

A copy of the letter sent to Departments is attached.

The funds as listed above received as first instalment from DST have to be transferred to South Campus.

*Sampat*  
DS-11-2014-  
Dy. Dean Research

Chairperson, RC

*Khal*  
7/11/2014

Finance Officer

*[Signature]*  
11/11/14

*[Signature]*  
11/11/14

2A B/TIF (ii)

603037  
10/11/14

Dr-FIN III  
425  
11/11/14



Dated: 05-Aug-2016

**ORDER**

Subject: Financial Sanction under National Post-Doctoral Fellowship to Dr. Pankaj Prabhakar, under the mentorship of Dr. Suman Kundu, at University Of Delhi, South Campus, New Delhi, Delhi, New Delhi, Delhi-110021- Release of 1st grant.

Sanction of Science and Engineering Research Board (SERB) is hereby accorded to the above mentioned fellowship at a total cost of Rs. 19,20,000/- (Rs. Nineteen Lakh Twenty Thousand Only) for a duration of Two years.  
The date of start of the fellowship will be 10 May, 2016

The items of expenditure for which the total allocation of Rs. 19,20,000/- has been approved are given below:

Sl. No.	Budget Head	Amount
1.	Fellowship	Rs 13,20,000 ( @55,000/- per month (consolidated))
2.	Research Grant	Rs. 2,00,000/- per annum
3.	Overheads	Rs. 1,00,000/- per annum

2. Sanction of the SERB is also accorded to the payment of Rs. 8,56,800/- (Rupees Eight Lakh Fifty Six Thousand Eight Hundred only) under 'Grants-in-aid General' to University Of Delhi, South Campus, New Delhi, Delhi being the first installment of the grant for the year 2016-2017 for implementation of the said research project.

3. The expenditure involved is debitable to

Fund for Science & Engineering Research (FSER)

This release is being made under National Post Doctoral Fellowship (N-PDF). (Life Sciences)

4. The Sanction has been issued with the approval of the competent authority vide Diary No. SERB/F/2802/2016-17 dated 04 August, 2016

5. Sanction of the grant is subject to the conditions as detailed in Terms & Conditions available at website ([www.serb.gov.in](http://www.serb.gov.in))

6. Overhead expenses are meant for the host Institute towards the cost for providing infrastructural facilities and general administrative support etc. including benefits to the staff employed in the project.

7. As per rule 211 of GFR, the accounts of project shall be open to inspection by sanctioning authority/audit whenever the institute is called upon to do so.

8. The release amount of Rs. 8,56,800/- (Rupees Eight Lakh Fifty Six Thousand Eight Hundred only) will be drawn by the Finance & Budget Officer of the SERB and will be disbursed by means of RTGS transaction as per their Bank details given below:

Account Name	Research Project Account
Account Number	10043546386
Bank Name & Branch	State Bank of India University of Delhi
IFSC/RTGS Code	SBIN0008778
Email id of A/C Holder	dir_udsc@du.ac.in
Email id of PI	pprabhakaraiims@gmail.com
Email id of Mentor	suman.kundu@south.du.ac.in

9. The institute will furnish Utilization certificate(UCs) financial year wise to the SERB and an audited statement of accounts pertaining to the grant immediately after the end of each financial year.

10. The institute will maintain separate audited accounts for the fellowship. A part or whole of the grant must be kept in an interest earning bank account which is to be reported to SERB. The interest thus earned will be treated as credit to the institute to be adjusted towards further installment of the grant.

11. The File no. PDF/2015/000766 may also be mentioned in all research communications arising from the above project with due acknowledgement of SERB

12. As this is the first grant for the fellowship, no previous U/C is required.



3.2.2,

21/7/14

Government of India  
Department of Science & Technology  
(International Division)

INT/RUS/RFBR/P-174

Date:07/05/2014

**ORDER**

Subject: Implementation of DST-RFBR project entitled: "Functional characterization of new photoreceptor proteins and ion channels in the microalga *Chlamydomonas reinhardtii* using functional genomics methods" coordinated by Dr Suneel Kateriya, Assistant Professor, Department of Biochemistry, University of Delhi, South Campus, Benito Jaurez Road, New Delhi-110021, India with his Russian counterpart Dr. Irina Sizova, Senior Research Worker, Laboratory of Molecular Genetics, The Petersburg Nuclear Physics Institute, Russia.

Sanction of the President is hereby accorded for an DST and Russian Federation of Basic Research entitled "Functional characterization of new photoreceptor proteins and ion channels in the microalga *Chlamydomonas reinhardtii* using functional genomics methods" under the MoU with RFBR at a total cost of Rs.26,16,400/- (Rupees twenty six lakh sixteen thousand four hundred only) for a period of two years as under:-

Item of Expenditure	Amount		Total
	First year	Second year	
1. Consumables	Rs 8,00,000	Rs 8,00,000	Rs 16,00,000
2. Mobility of scientists (one visit each year) <ul style="list-style-type: none"><li>For visit of Indian scientists to Russia</li></ul>	Rs 2,12,600	Rs 2,12,600	Rs 4,25,200
3. Contingency	Rs 1,00,000	Rs 1,00,000	Rs 2,00,000
4. Manpower (Project Asst @ Rs 8,000 p.m)	Rs 96,000	Rs 96,000	Rs 1,92,000
<i>Year wise Cost</i>	Rs 12,08,600	Rs 12,08,600	
<i>Overhead @10% except visit</i>	Rs 99,600	Rs 99,600	
<i>Total Annual cost</i>	Rs 13,08,200	Rs 13,08,200	
<i>Total cost</i>	Rs 26,16,400		

2. Sanction of the President is hereby accorded for release of 1<sup>st</sup> installment Rs.13,08,200/- (Rupees thirteen lakh eight thousand two hundred only) to University of Delhi, South Campus, Delhi.

3. An amount of Rs.13,08,200/- (Rupees thirteen lakh eight thousand two hundred only) will be disbursed by means of electronic transfer (E-transfer) in favour The Registrar, University of Delhi, South Campus, Delhi as details given below:-

Account Holders name/ designation	Director, University of Delhi, South Campus
Name of Bank	State Bank of India
Bank Branch	South Campus, Benito Jaurez Road, Dhaula Kaun, New Delhi-110021
Bank Account Number	10043546386
IFSC Code	SBIN0008778
MICR Code	110002175
E-Mail	suneel77@yahoo.com





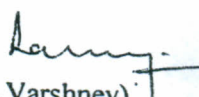
furnish the requisite utilization certificate immediately at the end of the each financial year (ending 31<sup>st</sup> March) along with the audited statement of expenditure and progress report.

12. The account of the grantee institution shall be open to inspection by the sanctioning authority/audit whenever the institution is called upon to do so, as laid down under Rule 211 (i) of General Financial Rules.

13. This issues under the delegated powers to the Minister/Departments and with approval of Director, Integrated Finance Division vide Diary No.C/740/2014-15 dated:06/05/2014.

14. This sanction order has been noted at Sl. No. 45. in Grant in Aid register.

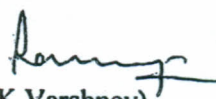
15. No UC/SE is due from University of Delhi, South Campus, Delhi for this project.

  
(S.K. Varshney)  
Scientist "F"

To,  
The Pay & Accounts Officer, Department of Science & Technology, New Delhi-110016

Copy to:

1. Principal Director of Audit, AGCR Bldg., IP Estate, New Delhi-110002
2. Cash Section (3 copies), DST
3. I.F. Division/Accounts Section, DST
4. Sanction Folder
5. ✓ Dr Suneel Kateriya, Assistant Professor, Department of Biochemistry, University of Delhi, South Campus, Benito Jaurez Road, New Delhi-110021, India "There is provision for manpower in the project. As soon as someone is appointed his/her name, copy of joining report, appointment order, qualifications & post should be sent to DST. Positions of manpower are co-terminus with duration of the project and DST would have no liability to meet these manpower costs beyond the duration of the project."
6. Director, University of Delhi, South Campus, Benito Jaurez Road, New Delhi-110021 "There is provision for manpower in the project. As soon as someone is appointed his/her name, copy of joining report, appointment order, qualifications & post should be sent to DST. Positions of manpower are co-terminus with duration of the project and DST would have no liability to meet these manpower costs beyond the duration of the project."
7. Registrar, University of Delhi, South Campus, Benito Jaurez Road, New Delhi-110021 "There is provision for manpower in the project. As soon as someone is appointed his/her name, copy of joining report, appointment order, qualifications & post should be sent to DST. Positions of manpower are co-terminus with duration of the project and DST would have no liability to meet these manpower costs beyond the duration of the project."
8. Finance Officer, University of Delhi, South Campus, Benito Jaurez Road, New Delhi-110021 "There is provision for manpower in the project. As soon as someone is appointed his/her name, copy of joining report, appointment order, qualifications & post should be sent to DST. Positions of manpower are co-terminus with duration of the project and DST would have no liability to meet these manpower costs beyond the duration of the project."
9. Project File

  
(S.K. Varshney)  
Scientist "F"



**No. BT/PR4992/MED/30/754/2012**  
GOVERNMENT OF INDIA  
MINISTRY OF SCIENCE & TECHNOLOGY  
DEPARTMENT OF BIOTECHNOLOGY

Block 2, 6-8th Floors  
CGO Complex, Lodhi Road,  
New Delhi- 110 003  
Dated: 4 / 03 / 2013

**ORDER**

Sanction of the President is hereby accorded, under Rule 18 of the Delegation of Financial Powers Rules, 1978, for the implementation of the project entitled "**Engineering of Photoactivated Adenylate Cyclase (PAC) for the Development of Optogenetic Tools for Neuroscience Applications**" for a period of 3 Year 0 Month at a total cost of Rs. **4541916** (Rupees Fourty Five Lakhs Fourty One Thousand Nine Hundred and Sixteen Only) on the terms and conditions detailed here under:-

**2 The Project :**

**2.1 Title :** "**Engineering of Photoactivated Adenylate Cyclase (PAC) for the Development of Optogenetic Tools for Neuroscience Applications**"

**2.2 Project Investigator :**

**Dr. Suneel Kateriya**  
PI  
Biochemistry  
Delhi University, South Campus  
Department of Biochemistry, University of Delhi South  
Campus, -  
110021, Delhi

**CO-PI:**

**Dr. Surajit Sarkar**  
Assistant Professor  
Genetics  
Delhi University, South Campus  
Department of Genetics  
University of Delhi, South Campus  
Benito Juarez Road, New Delhi,, - 110021, Delhi

**2.3 Objectives:**

1. Conversion of bPAC to bPGC, production of recombinant bPGC and in vitro characterization of bPGC.
2. Identification of molecular determinants responsible for light-gated cyclase activity, spectral tuning, photo-physical characteristics, enzyme kinetics and substrate specificity of PCs (bPAC and nPAC).
3. Conversion of nPAC to nPGC, production of recombinant nPGC and in vitro characterization of nPGC.
4. Comparative analysis of the developed bPGC and nPGC.
5. Optogenetic potential of developed PGC for manipulating cGMP level in eukaryotic

erated through eProMIS



cells.

#### 2.4 Time Schedule:

The duration of the project is 3 Year 0 Month from the date of this sanction order.

#### 2.5 Project Cost:

The total cost of the project is Rs. **4541916/-** (Rupees Forty Five Lakhs Forty One Thousand Nine Hundred and Sixteen Only) as per details given below :

Budget Head	Year I	Year II	Year III	Total(Rs.)
Equipment	1800000.00			1800000.00
Manpower	138972.00	138972.00	138972.00	416916.00
Overhead	100000.00	25000.00	25000.00	150000.00
Travel	25000.00	25000.00	25000.00	75000.00
Consumables	650000.00	650000.00	700000.00	2000000.00
Contingency	50000.00	25000.00	25000.00	100000.00
Total (Rs.)	2763972.00	863972.00	913972.00	4541916.00

#### 2.6 Equipment:

The details of the equipment sanctioned for the implementation of the project at Annexure-I

#### 2.7 Manpower:

The details of the manpower sanctioned for the implementation of the project at Annexure-II

### 3. Head of Account:

The **Non-Recurring** expenditure involved is debitable to:

Demand No. 87	Department of Biotechnology
3425	Other Scientific Research 2012-2013
3425.60	Others (Sub Major Head)
3425.60.200	Assistance to other Scientific Bodies (Minor Head)
3425.60.200.29	Research & Development
3425.60.200.29.04	Medical Biotechnology and Related Areas
3425.60.200.29.04.31	Grants in Aid General

The **Recurring** expenditure involved is debitable to:

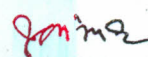


<b>Demand No. 87</b>	<b>Department of Biotechnology</b>
<b>3425</b>	Other Scientific Research 2012-2013
<b>3425.60</b>	Others (Sub Major Head)
<b>3425.60.200</b>	Assistance to other Scientific Bodies (Minor Head)
<b>3425.60.200.29</b>	Research & Development
<b>3425.60.200.29.04</b>	Medical Biotechnology and Related Areas
<b>3425.60.200.29.04.35</b>	Grants for creation of capital assets

#### 4. Terms & Conditions:

(A) The institute should utilize this Non-Recurring amount within a period of 18 months (B) In case the whole or a part of the amount of the grant-in-aid is being refunded, an interest at the rate of ten Percent per annum thereon shall be recovered (C) The ownership of physical and intellectual assets created or acquired out of these funds shall rest with the DBT (D) MOA has been executed

1. The other terms and conditions governing this sanction are attached at Annexure- III.
2. A Memorandum of Agreement (MoA) will be signed between the Department of Biotechnology and the grantee institution on Non-Judicial stamp paper Rs. 100/- in the enclosed format and the second release/installment will be made only after signing of MoA by the grantee Institutions and its acceptance by DBT. In case of NGO or Private Institution, MOA signed is mandatory first release. A format of the MoA is enclosed in Annexure-IV
3. The Institute/Agency will keep the whole of the grant in a Bank Account earning interest, and the interest so earned should be reported to DBT in the Utilisation Certificate and Statement of Expenditure. The Interest so earned will be treated as created to the institute/Agency and shall be adjusted towards further installment of the grant and or at the time of Final Settlement of Accounts.
5. No International Travel will be undertaken from the sanctioned project grant unless specified otherwise.
5. The Director, Delhi University, South Campus, New Delhi, Delhi would be responsible for submission of Statements of Expenditure (S/E) and consolidated utilization certificates (U/Cs) to DBT from PIs in respect of grants released against this sanction order from time to time.
7. The accounts of grantee institution shall be open to inspection by the sanctioning authority/audit whenever the institute is called upon to do so by the sanctioning authority.
8. This issues under the power delegated to this Department and with the concurrence of IFD vide their SAN No.102/IFD/SAN/5083/2012-2013 dated February, 27 2013.
9. This sanction order has been noted at serial no. 373 in the Register of Grants.

  
**Dr. Garima Gupta**  
 (Scientist 'C')



To,  
The Pay & Accounts Officer,  
Department of Biotechnology,  
New Delhi - 110 003.

**Copy to:**

- 1 The Principal Director of Audit (Scientific Departments), DACR Building, New Delhi- 110 002.
- 2 The Director, Delhi University, South Campus, BENITO JUAREZ ROAD, New Delhi - 110021, Delhi
- 3 Dr. Suheel Kateriya, PI, Biochemistry, Delhi University, South Campus, Department of Biochemistry, University of Delhi South Campus, - 110021, Delhi
- 4 Dr. Surajit Sarkar, Assistant Professor, Genetics, Delhi University, South Campus, Department of Genetics University of Delhi, South Campus Benito Juarez Road, New Delhi,, - 110021, Delhi
- 5 Cash Section, DBT (2 copies).
- 6 Sanction Folder.
- 7 File Copy.

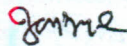
*Garima*  
**Dr. Garima Gupta**  
(Scientist 'C')



## Annexure -I

Details of the Equipment sanctioned for the implementation of the project titled "**Engineering of Photoactivated Adenylate Cyclase (PAC) for the Development of Optogenetic Tools for Neuroscience Applications**":

Delhi University, South Campus			
SNo.	Name of Equipment	No.	Cost(Rs.)
1.	1.Bench Top Centrifuge 2. Sonicator 3. Water bath Cell Culture Incubator 4. A Laminar Flow	1	1800000.00
Total			1800000.00

  
Dr. Garima Gupta  
(Scientist 'C')



**Annexure -II**

Details of the manpower sanctioned for the implementation of the project titled **"Engineering of Photoactivated Adenylate Cyclase (PAC) for the Development of Optogenetic Tools for Neuroscience Applications"**:

Head	No. of Postion	Year I	Year II	Year III	Total (Rs.)
Other1 Lab Attendants @ Rs 11581/-	1	138972.00	138972.00	138972.00	416916.00
Total(Rs.)		138972.00	138972.00	138972.00	416916.00

Revised emoluments shall be payable only if educational qualification or eligibility criteria as per DST OM No. A.20020/11/97-IFD dated 31.03.2010, are met by the research personnel.

*Dr. Garima*  
**Dr. Garima Gupta**  
(Scientist 'C')