

**No. BT/PR16356/BID/7/596/2016**  
GOVERNMENT OF INDIA  
MINISTRY OF SCIENCE & TECHNOLOGY  
DEPARTMENT OF BIOTECHNOLOGY

Block 2, 6-8th Floors  
CGO Complex, Lodhi Road,  
New Delhi- 110 003

Dated: / /

**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 some analytical tools for analysis of large-scale protein-protein interaction networks**" for a period of 3 Year 0 Month at a total cost of Rs. **4822125** (Rupees Fourty Eight Lakhs Twenty Two Thousand One Hundred and Twenty Five Only) on the terms and conditions detailed here under:-

**2 The Project :**

**2.1 Title :** "Development of some analytical tools for analysis of large-scale protein-protein interaction networks"

**2.2 Details of the Investigators:**

**Dr. Subhadip Basu**

Associate Professor  
Computer Science and Engineering  
Jadavpur University  
188 Raja S. C. Mollick Road Kolkata  
- 700032, Kolkata, West Bengal,  
700032

**Dr. Subhadip Basu**

Associate Professor  
Computer Science and Engineering  
Jadavpur University  
188 Raja S. C. Mollick Road Kolkata  
- 700032, Kolkata, West Bengal,  
700032

**CO-PI:**

**Prof. Mita Nasipuri**

Professor  
Computer Science and Engineering  
Jadavpur University  
Computer Science and Engineering, Jadavpur  
University, Kolkata - 700032, West Bengal

**Dr. Piyali Chatterjee**

Assistant Professor  
Computer Science and Engineering  
Netaji Subhash Engineering College  
Netajii Subhash Engineering College, Kolkata -  
700152, West Bengal

## 2.3 Objectives:

1. The volume, variety and velocity of data in biology is increasing exponentially. With the advent of hitherto unknown diseases, it has become imperative that vaccines and drugs be designed as fast as possible. This is causing an immense surge of information which is becoming increasingly difficult to process due to limited computational resources. Thus the need of the hour is to harness technologies, like Big Data Analytics, which will help distribute computations over a group of nodes and hasten the process of data analysis. In this project proposal we propose to explore the following techniques using Hadoop/CUDA/MapReduce framework to reach a fast, efficient and accurate solution. The key questions to be answered are:
  - a. How to mine key protein clusters from the large-scale PPINs ?
  - b. How to cluster functionally similar proteins and perform homology analysis ?
  - c. How to predict and assess interaction affinity between proteins in large PPINs ?
  - d. How to predict functional annotations of proteins from large-scale PPINs ?
  - e. How to implement/re-design some/all the above methods in Hadoop/CUDA/MapReduce framework?
  - f. How to disseminate the results to the research community by development of web-based resources?
- 2.
- 3.
- 4.
- 5.
- 6.

## 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. **4822125/-** (Rupees Forty Eight Lakhs Twenty Two Thousand One Hundred and Twenty Five Only) as per details given below :

Budget Head	Year I	Year II	Year III	Total(Rs.)
Equipment	2705325.00			<b>2705325.00</b>
Manpower	390000.00	390000.00	436800.00	<b>1216800.00</b>
Travel	50000.00	50000.00	50000.00	<b>150000.00</b>
Contingency	50000.00	50000.00	50000.00	<b>150000.00</b>
Overhead	150000.00	150000.00	150000.00	<b>450000.00</b>
Consumables	50000.00	50000.00	50000.00	<b>150000.00</b>
<b>Total (Rs.)</b>	<b>3395325.00</b>	<b>690000.00</b>	<b>736800.00</b>	<b>4822125.00</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. 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>3425.60.200.29.17.35</b>	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:

- A. The Non Recurring item must be procured and installed within six month period from the date of sanction.
- B. In case the whole or a part of the amount of the Grants for Creation of Capital Assets is being refunded, an interest rate of ten percent thereon shall be recovered.
- C. In case the whole or a part of the amount of the Grants-in-Aid is being refunded, an interest rate of ten percent thereon shall be recovered.

**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 Registrar, Jadavpur University, Kolkata, West Bengal 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/1994/2017-2018** dated **August, 01 2017**.
- 10.This sanction order has been noted at serial no.\_\_\_\_\_ in the Register of Grants.

**(Dr. T Madhan Mohan)**  
**Adviser/Scientist 'G'**

**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 Registrar, Jadavpur University, 188 Raja S. C. Mollick Road Kolkata - 700032, Kolkata - 700032, West Bengal
- 3 Dr. Piyali Chatterjee, Assistant Professor, Computer Science and Engineering, Netaji Subhash Engineering College, Netajii Subhash Engineering College, Kolkata - 700152, West Bengal
- 4 Dr. Subhadip Basu, Associate Professor, Computer Science and Engineering, Jadavpur University, 188 Raja S. C. Mollick Road Kolkata - 700032, Kolkata - 700032, West Bengal
- 5 Prof. Mita Nasipuri, Professor, Computer Science and Engineering, Jadavpur University, Computer Science and Engineering, Jadavpur University, Kolkata - 700032, West Bengal
- 6 Cash Section, DBT (2 copies).
- 7 Sanction Folder.
- 8 File Copy.

**(Dr. T Madhan Mohan)**  
**Adviser/Scientist 'G'**

**Annexure -I**

Details of the Equipment sanctioned for the implementation of the project titled "**Development of some analytical tools for analysis of large-scale protein-protein interaction networks**":

<b>Jadavpur University</b>			
<b>SNo.</b>	<b>Name of Equipment</b>	<b>No.</b>	<b>Cost(Rs.)</b>
1.	HP Z840 Workstation	1	1984500.00
2.	HP Z240 Tower workstation	4	396900.00
3.	HP Folio G1 Laptop	2	205800.00
4.	HP LaserJet M552dn printer	1	80850.00
5.	APC 2KVA online UPS	1	37275.00
<b>Total</b>			<b>2705325.00</b>

**(Dr. T Madhan Mohan)**  
**Adviser/Scientist 'G'**

**Annexure -II**

Details of the manpower sanctioned for the implementation of the project titled "**Development of some analytical tools for analysis of large-scale protein-protein interaction networks**":

<b>Head</b>	<b>No. of Position</b>	<b>Year I</b>	<b>Year II</b>	<b>Year III</b>	<b>Total (Rs.)</b>
Junior Research Fellow JRF @ Rs. 25,000+30% HRA per month for 1st year & 2nd year	1			0.00	<b>0.00</b>
Junior Research Fellow JRF @ Rs. 25,000+30% HRA per month for 1st year & 2nd year	1	390000.00	390000.00		<b>780000.00</b>
Senior Research Fellow SRF @ Rs. 28,000+ 30% HRA per month for 3rd year	1	0.00	0.00		<b>0.00</b>
Senior Research Fellow SRF @ Rs. 28,000+ 30% HRA per month for 3rd year	1			436800.00	<b>436800.00</b>
<b>Total(Rs.)</b>		<b>390000.00</b>	<b>390000.00</b>	<b>436800.00</b>	<b>1216800.00</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. T Madhan Mohan)**  
**Adviser/Scientist 'G'**




DEPARTMENT OF INFORMATION TECHNOLOGY  
FACULTY OF ENGINEERING & TECHNOLOGY  
SALT LAKE CAMPUS, BLOCK - LB, PLOT- 8, SECTOR-III, KOLKATA - 700 098

Date: 22/11/2016

Dr. Bibhas Chandra Dhara  
Head  
Email: bcdhara@gmail.com, hod@it.jusl.ac.in

**To whomever it may concern**

This is to certify that Dr. Chandra Das, Assistant Professor, Department of Information Technology, Netaji Subhas Engineering College, Garia is a co-investigator of the Project entitled "Analysis of Gene Expression Data" under DST-PURSE programme at Jadavpur University. The total outlay of the project is Rs. 7.00 Lakh (approximately) to be spent at the Department of Information Technology, Jadavpur University. The tentative duration of the project is 2016 – 2018. The Principal Investigator of the said project is Prof. Samiran Chattopadhyay, Department of Information Technology, Jadavpur University.

  
22/11/2016  
**HEAD**  
Dept. of Information Technology  
JADAVPUR UNIVERSITY  
Block-LB, Plot-8, Sector-3  
Salt Lake, Kolkata-700098, India

KOLKATA PAY & ACCOUNTS OFFICE-III  
GOVERNMENT OF WEST BENGAL

A/C Payee only

Dated 31 JAN 2013  
OR ORDER

PAY NETAJI SUBHAS ENGINEERING COLLEGE  
RUPEES Two Lac Eighty Four Thousand Four Hundred Only



सत्यमेव जयते

HEAD OF ACCOUNT	ST-3425-60-200-SP- 001-V-31
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Rs. **** 284400.00
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CAFSTA001 / 28479 / 28-JAN-2013 / 024863

STATE BANK OF INDIA  
BIKASH BHABAN GOC BRANCH CODE-7818

  
ADDITIONAL PAY & ACCOUNTS OFFICER  
KOLKATA PAY & ACCOUNTS OFFICE-III

⑈024863⑈ 700002114⑈

20

**Government of West Bengal**  
**Department of Science & Technology**  
**Bikash Bhavan, 4<sup>th</sup> floor, Bidhannagar,**  
**Kolkata - 91**

No: 797(Sanc.)/ST/P/S&T/2G-6/2011

Date: 21<sup>st</sup> December, 2012

**Sub: Sanction Order for Grant-in-Aid**

1. Sanctioning Authority: Joint Secretary to the Govt. of West Bengal  
Department of Science & Technology, GoWB
2. Name of the Grantee Institution: Netaji Subhash Engineering College
3. Address of the Grantee Institution: Technocity, Garia, Kolkata - 700 152
4. Category of Grantee Institution: 4 (ii) (b) Colleges  
& Category No.  
(as per list enclosed)
5. Amount Sanctioned: Rs. 2,84,400/-  
(both in figure and words) (Rupees Two lakh Eighty-four thousand Four hundred  
only)
6. Name of the D.D.O.: Registrar & D.D.O, DST, GoWB  
(by designation)
7. Department Code: 'ST'
8. Name of the Treasury/Pay & Accounts Office: Kolkata Pay & Accounts Office-III,  
IB Market, 1<sup>st</sup> floor, Bidhannagar,  
Kolkata - 700 106
9. Nature of Grant  
(a) Recurring or Non-recurring: (R or N): N  
(b) Capital or Revenue: (C or R): R  
(Detail Head 35) (Detail Head 31): (Detail Head 31)
10. Condition of Grant: Dr. Sukumar Roy, Professor, Bio-Medical Engineering,  
Netaji Subhas Engineering College will submit Progress  
Report and Director, Netaji Subhas Engineering College will  
submit Audited Statement of Expenditure and Utilization  
Certificate after completion of the 1<sup>st</sup> year's work of the  
project.  
  
Utilization Certificate required: (Yes or No): Yes
11. Category of Grant: Other Grants (02)  
(as per list enclosed)
12. Purpose of Grant: N.A.  
(Required only in case where category  
of grant purpose is 'Other')

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13. An amount of **Rs. 2,84,400/-** only is hereby allotted for the period up to 31.03.2013 in favour of the Registrar & D.D.O, DST from the head of account **"3425-Other Scientific Research-60-others-200-Assistance to Other Scientific Bodies-SP-State Plan (Annual Plan & XI/XII<sup>th</sup> Plan)-001-Financial Assistance to Other Scientific Bodies for undertaking Scientific Research/Projects/Surveys/Training/Science Awareness & Science Popularization Programme-(State Share)-[ST]-V-31-Grant-in-Aid-GENERAL-02-Other Grants"** from the budget provision of the financial year **2012-2013** under **Demand No. 48** and payable to Grantee Institution by A/c payee cheque.
14. Head of Account Code: 3425-60-200-SP-001-[ST]-31-02
15. Name of the Scheme: R & D project entitled **"Development of artificial bone graft material from eggshell waste for orthopedic and dental applications"**.
16. The amount will be drawn in T.R. Form No. 31/32(in case of Non-Govt. School)/43 ((in case of Transfer credit)  
(mention the T.R. Form No. as applicable): T.R. Form No. 31
17. The sanctioned amount will be payable to N.A. (Name of Grantee Institution) by Transfer Credit to the Head of Account N.A. of the LF/PL/Deposit Account of the Grantee Institution  
(Applicable only in case of Transfer Credit Bill)
18. Any other information: The present release is the 1<sup>st</sup> instalment of a total grant of Rs. 5,33,200/- only sanctioned for the 3(three) years' work of the project Approved budget is given at Annexure-'A'.
19. This order issues in exercise of the power delegated under Finance Department **Memo. No. 95-F.B. dtd. 18.04.2012** read with Finance Department Memo. **No. 800-F.B. dtd. 31.07.2012.**
20. Total released amount is within **75%** of Budget Provision of the above mentioned head of account during **2012-2013.**
21. The Principal Accountant Generals, West Bengal & the Pay and Accounts Officer, Kolkata Pay & Accounts Office-III, Bidhannagar, Kolkata - 700 106 and others concerned are being informed.

sd/-

**Soumitra Prasad Mitra, WBCS(Exe.)  
Jt. Secy. to the Govt. of West Bengal.**

(3)

No: 797/1(9)(Sanc.)/ST/P/S&T/2G-6/2011

Date: 21<sup>st</sup> December, 2012

Copy forwarded for information and necessary action to: -

1. Pr. A.G. (A&E), W.B., Treasury Buildings, Kolkata -1.
2. Pr. A.G. (Audit), W.B., Treasury Buildings, Kolkata - 700 001.
3. Finance Department (Gr-'B'), Bikash Bhavan, Kolkata - 91.
4. The Pay & Accounts Officer, Kolkata Pay & Accounts Office-III, IB Market, 1<sup>st</sup> floor, Bidhannagar, Kolkata - 700 106.
5. The Registrar & D.D.O., DST with 2 copies.  
He is requested to draw the cheque in favour of "**Netaji Subhas Engineering College**".
6. Dr. Amal Satpathi, P.S.O., DST.
7. Director, Netaji Subhas Engineering College.
8. ✓ Dr. Sukumar Roy, Professor & HOD, Department of Bio-Medical Engineering, Netaji Subhas Engineering College, Techno City, Garia, Kolkata - 700 152.
9. H.A., DST / Guard file.

Jt. Secy. to the Govt. of West Bengal.



**BUDGET:**

Serial no	Item of Expenditure	1 <sup>st</sup> year	2 <sup>nd</sup> year	3 <sup>rd</sup> year	Total ( Rs)
A	Capital				
	(a) Plants & Equipment				
	i) Magnetic stirrer with hot plate	10000			
	ii) Mixer & Grinder	10000	Nil	Nil	
	iii) Muffle furnace	75,000			110000
iv) Sequential shaking Sieve	15,000				
	Total:	110000			
B	Revenue				
	a) Salaries Project AssistantII@Rs.3700/- per month	44400	44400	44400	133200
	b) Chemicals (Consumable)	40000	10000	Nil	50000
	c) Glass Ware (Common & Standard)	40000	10000	Nil	50000
	d) Advanced Testing	25000	25000	25000	75000
	e) Travel	5000	10000	10000	25000
	f) Stationeries	5000	10000	10000	25000
	g) Clinical Study	10000	30000	10000	50000
	h) Other contingent expenses	5000	5000	5000	15000
<b>A+B</b>	<b>TOTAL:</b>	<b>284400</b>	<b>144400</b>	<b>104400</b>	<b>533200</b>

NSEC (107)

**Government of West Bengal**  
**Department of Science & Technology**  
**Bikash Bhavan, 4th floor, Bidhannagar,**  
**Kolkata-91**

No. 450(Sanc.)/ST/P/S&T/2G-6/2011

Dated : 11.8.2014

**Sub : Sanction Order for Grant-in-Aid**

1. Sanctioning Authority : Joint Secretary to the Govt. of West Bengal,  
Department of Science & Technology.
2. Name of the Grantee Institution : Netaji Subhash Engineering College.
3. Address of the Grantee Institution : Technocity, Garia, Kolkata- 700 152.
4. Category of Grantee Institution &  
Category No.(as per list enclosed) : 4 (ii) (b) Colleges.
5. Amount Sanctioned : Rs. 1,30,361/- only  
(both in figure and words) ( Rupees One lakh thirty thousand three hundred sixty one) only.
6. Name of the D.D.O. : Registrar & D.D.O., Deptt. of Science & Technology.
7. Department Code : 'ST'
8. Name of the Pay & Accounts Office : Kolkata Pay & Accounts Office-III, IB Market, 1st floor,  
Bidhannagar, Kolkata- 700 106.
9. Nature of the Grant  
(a) Recurring or Non recurring: R or N : N  
(b) Capital or Revenue: (C or R) :  
(Detail Head 35)(Detail Head 31) : R (Detail Head 31)
10. Condition of Grant : Documents of the grantee organization relating to the grant  
Such as Utilization Certificate, Progress Report, Audited  
Statement of expenditure, should be made available after  
completion of 2<sup>nd</sup> year's work.  
(Yes or No): Yes.
11. Category or Grant : Other Grants (02)  
(as per list enclosed)
12. Purpose of Grant :  
(Required only in case where category  
Of grant purpose is 'Other') : N.A
13. An amount of **Rs.1,30,361/-** is hereby allotted for the period up to 31.03.2015 in favour of the Registrar & DDO Science & Technology Deptt. from the voted Head of Account 3425-Other Scientific Reserch-60-others-200-Assistance-to- Other Scientific Bodies-SP-State Plan (Annual Plan & XIIth Plan)- 001- Financial Assistance to Other Scientific Bodies for undertaking Scientific Projects/Surveys/Research/Training and Science Awareness & Science Popularization Porgramme (State share)-[ST]-V-31-Grants-in-Aid-GENERAL-02-Other Grants" from the budget provision of the financial year, 2014-15 under Demand No. 48 and payable to Grantee Institution by A/c payee cheque.

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(2)

14. Head of Account Code: "3425-60-200-SP-001-ST-V-31-02".
15. Name of the Scheme Development of artificial bone graft material from eggshell waste for orthopedic and dental applications.
16. The amount will be drawn in T.R. Form No.31/32 (in case of Non Govt. School)/43 (in case of Transfer credit) : T.R. Form No. 31. (mention the T.R. Form No as applicable)
17. The sanctioned amount will be payable to N.A (Name of Grantee Institution) by Transfer, Credit to the Head of Account of the LF/PL/Deposit Account of the Grantee Institution(Applicable only in case of Transfer Credit Bill)
18. Any other information:
19. This order issues in exercise of the power delegated under Finance Department Memo.No.500- F.B. dtd. 30.07.14 read with F.A. U.O. No. 32 dt. 08.08.14.
20. Total released amount is within 75% of the total Budget Provision of this Deptt.during 2014-15.
21. The Principal Accountant Generals, West Bengal & the Pay & Accounts Officer, Kolkata Pay & Accounts Office -III, IB Market, 1st floor, Bidhannagar, Kolkata- 700 106 and others concerned are being informed.

Sd/-  
Joint Secy to the Govt. of West Bengal  
Date 11/8/2014

No 450/1(10) (Sanc.) ST/P/S&T/2G-6/2011

Copy forwarded for information and necessary action to :

1. The Pr. A.G.(A&E), W.B. Treasury Buildings, Kolkata- 700 001.
2. The Pr. A.G.(Audit), W.B. Treasury Buildings, Kolkata- 700 001.
3. Finance Deptt., (Gr-B), (9th floor)Bikash Bhavan, Kol- 91.
4. The Pay & Accounts Officer, Kolkata Pay & Accounts--III, IB Market, 1st floor, Bidhannagar, Kolkata- 700 106.
5. The Registrar & DDO, DST with 3(three) copies.  
He is requested to draw the cheque in favour of "Netaji Subhas Engineering College".
6. Dr. Amal Satpathi, PSO, DST
7. Swapan Chatterjee, S.S.O., DST.
8. Dr. Sukumar Roy, Prof. & Head, Bio-medical Engineering,  
Netaji Subhas Engineering college, Technocity, Garia, Kolkata- 700 152.
9. H.A., DST/Guard File
10. Sri Soumyajit Mukherjee, J.S.O., DST.

LB: D: My doc; G.O.: GO Format

Jt. Secy. to the Govt. of West Bengal

2/11/2014