

TEACHER'S ACTIVITY REPORT 2019-2020

FACULTY: Science **DEPARTMENT:** Zoology **IQAC ACTIVITY No:** SVC/2019-20/ZOO/AV/1

NAME OF THE ACTIVITY: INSA 'Delhi local Chapter' Programme for celebrating Science week
Scheme: Workshop for UG/PG students for three days
Theme: Computational Biology for (Meta) Genomics Analysis

DATE	FACULTY	DEPARTMENT/COMMITTEE	COORDINATOR NAME
24 th -26 th February, 2020	Science	Department of Zoology	Convenors Dr. Anita Verma Dr. Mansi Verma Co- Convenors Dr. Rajendra Phartyal Dr. P. Jayaraj
TIME	VENUE	NUMBER OF PARTICIPANTS	NATURE: Outdoor/Indoor
9:30AM to 4:00 PM for 3 days	Sri Venkateswara college	A total number of 45 students (43 undergraduate and 2 Ph.D. students) participated in the workshop	Indoor
SUPPORT/ASSISTANCE:	Indian National Science Academy (Delhi Local Chapter)		

BRIEF INFORMATION ABOUT THE ACTIVITY (CRITERION NO. - II, III, V):

TOPIC/SUBJECT OF THE ACTIVITY	Three day workshop on “ Computational Biology for (Meta) Genomics Analysis ”
OBJECTIVES	To enlightening students about the importance of celebrating Science Day and to provide basic knowledge and hands on training on various softwares available for bioinformatics analysis in addition the workshop also aimed to highlight the interdisciplinary nature of bioinformatics with respect to other subjects.
METHODOLOGY	The workshop conducted at ICT (Information and Communication Technology) Lab of Sri Venkateswara college. In total, twenty student volunteers were involved to help in organizing this workshop. The workshop was advertised using posters, google form, standee and banner.
OUTCOMES	A total number of 45 students (43 undergraduate and 2 Ph.D. students) participated in the workshop to gain basic knowledge and hands on training on

	<p>various softwares available for bioinformatics analysis. Students of various disciplines (B.Sc. (Hons.)Zoology, B.Sc. (Hons.)Biological Sciences, B.Sc. (Hons.) Biochemistry and B.Sc. Life Sciences) showed enthusiasm for participating in the workshop and we got 91 total entries by google form, but finally 45 students were short listed for hands on workshop</p> <p>Students gave their feedback about the workshop and expressed they wanted a full add on course on bioinformatics</p>
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PROOFS & DOCUMENTS ATTACHED (Tick mark the proofs attached):

Notice & Letters	Student list of participation ✓	Activity report✓	Photos✓	Feedback form
Feedback analysis	News clip with details	Certificate	Any other	

IQAC Document No:	Criterion No:	Metric No:
Departmental file no	IQAC file No;	

NAME OF TEACHER & SIGNATURE	NAME OF HEAD/ COMMITTEE INCHARGE & SIGNATURE	IQAC COORDINATOR (SEAL & SIGNATURE)
Dr. Anita Verma Dr. Mansi Verma Dr. Rajendra Phartyal Dr. P.Jayaraj	Dr. Anita Verma	

For Reference

Criterion I	Curricular Aspects (planning & Implementation)	Criterion V	Student Support & Progression
Criterion II	Teaching Learning & Evaluation	Criterion VI	Governance
Criterion III	Research, Innovations & Extension	Criterion VII	Institutional Values & Best Practices
Criterion IV	Learning Resources and Infrastructure		

Report on
INSA 'Delhi local Chapter' Programme for
celebrating Science week
Scheme: Workshop for UG/PG students for three days
Theme: Computational Biology for (Meta) Genomics
Analysis
Date: 24th-26th February, 2020
Sponsored by: Indian National Science Academy (Delhi
Local Chapter)
Venue: Sri Venkateswara College, University of Delhi

The three days workshop on **“Computational Biology for (Meta) Genomics Analysis”** was held at **Sri Venkateswara College**, University of Delhi under the aegis of **Indian National Science Academy (INSA) ‘Delhi Local Chapter’** during 24th-26th February, 2020 (See Annexure I and II). A total number of 40 students (38 undergraduate and 2 Ph.D. students) participated in the workshop to gain basic knowledge and hands on training on various softwares available for bioinformatics analysis. Students of various disciplines (**B.Sc. (Hons.) Zoology, B.Sc. (Hons.) Biological Sciences, B.Sc. (Hons.) Biochemistry and B.Sc. Life Sciences**) showed enthusiasm for participating in the workshop and we got 91 total entries by google form, but finally 40 students were shortlisted due to limitation of our ICT (Information and Communication Technology) Lab space (Annexure III). In total, twenty student volunteers were involved to help in organizing this workshop. The workshop was advertised using posters, google form, standee and banner (Annexure IV).

Day I-The workshop started with inauguration ceremony in the presence of Prof. Rup Lal (INSA Fellow) and Dr. P. Hemalatha Reddy (Principal, SVC and Patron, INSA workshop). The purpose to hold this workshop was given by Dr. Rajendra Phartyal (Co-coordinator, INSA workshop) enlightening students about the importance of celebrating Science Day on 28th February 2020 and need of hour to learn bioinformatics highlighting the interdisciplinarity of this area with respect to other subjects. This was followed by the Welcome address by principal, Dr. P. Hemalatha Reddy who envisioned students about INSA and introduced Prof. Rup Lal to the audience. Event started with the mind opening lecture of Prof. Rup Lal on **“Role of Computational Biology and Bioinformatics in Microbiology”** which made students thrilled about some of his personal experiences while sampling in different dumpsites and also about his journey from microbial diversity to genomics to metagenomics and continuing to microbiomes. Prof. Rup Lal was overwhelmed to see students’ enthusiasm at SVC. He appreciated the efforts of team members for organizing this workshop. The session ended with High Tea.

Session was resumed after tea break with Dr. Vipin Gupta who enlightened students about Computer Hardware and Software, Programming & Coding Languages, Sequencing and its major breakthrough, Data and Databases, BLAST and its Scoring Matrices and Types of Blast. It started with the details of linux based interface (CLI) and graphical user interface (GUI). Students also created a free demo account over the cloud services to perform the hands-on over it. Complete guidelines were explained to student for creating virtual servers online over the

google cloud services. With some internet hiccups, the first module was completed followed by lunch break. Second module started with Multiple sequence alignment, Phylogenetic tree, difference between phylogenetic tree and Dendrogram and HeatMap. Students were excited to see the phylogenetic relation between organisms and constructing a phylogenetic tree which they had only seen in their textbooks. Students also were excited to see publication quality heat maps.

Day II- Developing more interest in bioinformatics, students came prepared with their assignments and doubts for next day. It started with module 3 with Dr. Utkarsh Sood (Research Associate, TERI) who took the discussion to further heights with Introduction to Genomics, where students were introduced with several terminologies like sequences, Sanger sequencing, Next Gen Sequencing, contigs, scaffolds, assemblers etc. The hands on session included using Abbyss assembler for assembling sequence files. Students assembled the genome and also performed comparative genomics.

Post lunch, the session was continued under the expertise of Dr. Princy Hira who trained students for annotating genomes using RAST, Harvest and Orthovenn. The assembled genome was run on RAST and further, few genomes were compared using Orthovenn. Students visualized Orthologous clusters using Orthovenn.

Day III- With hands on session on linux, followed by basics about sequencing, moving on to genomes and then to core and pan genomics, third day started with one more exciting module on proteomics. Mrs. Nirjara Singhvi started with explaining the basics of primary, secondary and tertiary structures of proteins, and introduced students with Prosite and swissprot softwares. Students retrieved the protein sequences and used various softwares and tools to predict primary secondary and tertiary structures of proteins. Swiss-Prot was used for homology modeling and students worked on Rifamycin H sequence. Protein modeling and docking were done using Chimaera software.

The last day was concluded with the Valedictory function by Dr. P Jayaraj (Co-Coordinator, INSA workshop). All the resource persons were felicitated with a certificate, a memento as a token of appreciation. Students gave their feedback about the workshop and expressed they wanted a full add on course on bioinformatics. Resource persons also expressed their glee after interacting with such an energetic audience.

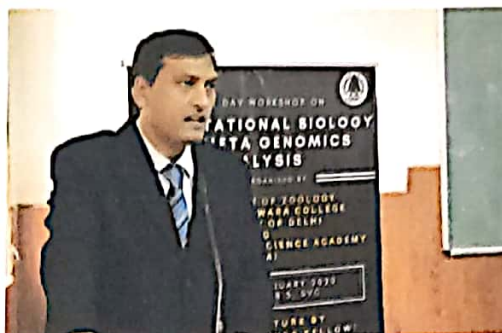
Annexure I



(Right to Left) Dr. P. Hemalatha Reddy (Principal, SVC and Patron, INSA workshop), Prof. Rup Lal (INSA Fellow) and Dr. Anita Verma (Coordinator, INSA workshop)



A.



B.



C.



D.



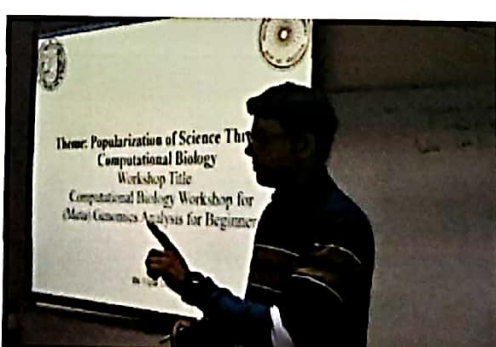
E.



F.



G.



H.

A. Dr. P. Hemalatha Reddy (Principal, SVC and Patron, INSA workshop) felicitating Prof. Rup Lal (INSA Fellow) at the INSA workshop

B. Dr. Rajendra Phartyal (Co-Coordinator) addressing the gathering and introducing the workshop.

C. Enthusiastic participant engaged during the hands-on workshop at well equipped ICT-LAB

D. Resource person(s) Dr. Utkarsh Sood and Dr. Princy Hira during their hands on session interacting with students

E. Dr. Princy Hira (Resource person) being felicitated by Dr. Anita Verma (Coordinator, INSA workshop)

F. Mrs. Nirjara Singhvi (Resource person) being felicitated by Dr. Rajendra Phartyal (Co-Coordinator)

G. Coordinators and Co-Coordiators along with resource persons during the event

H. Dr. Vipin Gupta (resource person) addressing the participants during the work shop



A.



B.

Workshop organizers, resource persons with the participants in the Workshop held Sri Venkateswara College. A. Inaugural Ceremony B. Valedictory function.



**THREE DAY WORKSHOP ON
COMPUTATIONAL BIOLOGY FOR
META GENOMICS ANALYSIS
ORGANISED BY
DEPARTMENT OF ZOOLOGY
SRI VENKATESWARA COLLEGE**



In association with
Indian National Science Academy (INSA)

**24TH-26TH FEBRUARY, 2020
VENUE : ICT LAB-3**

Objectives:

1. Introduction to big data generation by Next Generation Sequencing (NGS) platform for (meta)genomic analysis.
2. Hands on to Linux operating system
3. Cloud computation for handling large data sets
4. Bacterial genomic assembly
5. Annotation of genomic sequences: Making sense out of sequence
6. Phylogenetic and Phylogenomic approaches
7. Metagenomic assembly and diversity analysis
8. Systems biology

Day 1 (24th February 2020, Monday)

Time	Event
09:00am-09:10am	Welcome address Dr. P. Hemalatha Reddy, Principal, SVC
09:10 am -09:20 am	Introduction by Workshop Coordinators
09:20 am -10:00 am	Prof. Rup Lal, Fellow INSA "Role of Computational Biology and Bioinformatics in Microbiology"

10:00 am -10:30 am	Tea Break
10:30 am -01:00 pm	Day-1: Module: Introduction Computer Hardware and Software Programming & Coding Languages Sequencing and its major breakthrough Data and Databases BLAST and its Scoring Matrices Types of Blast
01:00 pm -01:30 pm	Lunch Break
01:30 pm -04:00 pm	Multiple sequence alignment Phylogeny Phylogenetic tree Difference between phylogenetic tree and Dendrogram HeatMap
04:00 pm -04:30 pm	Discussion and Vote of Thanks for day 1

Day -2(25th February 2020, Tuesday)

Time	Day-2 Genomics
09:30 am -10:00 am	Recapitulation of Day 1
10:00 am -10:30 am	Introduction to Genomics
10:30 am - 11:00 am	Tea Break
11:00 am -01:00 pm	Hands on to Genome assembly
01:00pm-01:30 pm	Lunch
01:30 pm -02:30 pm	Concept of Core and Pan Genomics
02:30 pm -04:00 pm	Hands on to Core Pan Genomics
04:00 pm -04:30 pm	Discussion and Vote of Thanks for day 2

Day 3(26th February 2020, Wednesday)

Time	Introduction to Protein Modelling and Molecular Docking
09:30 am -10:00 am	Recapitulations of Day 2
10:00 am -11:30 am	Active Site Prediction 2D and 3D structure prediction Protein Modelling and Validation Ramachandaran Plot and Docking <i>Insilico</i> Protein Docking
11:30 am -11:45 am	Valedictory
11:45 am -12:00 pm	High Tea

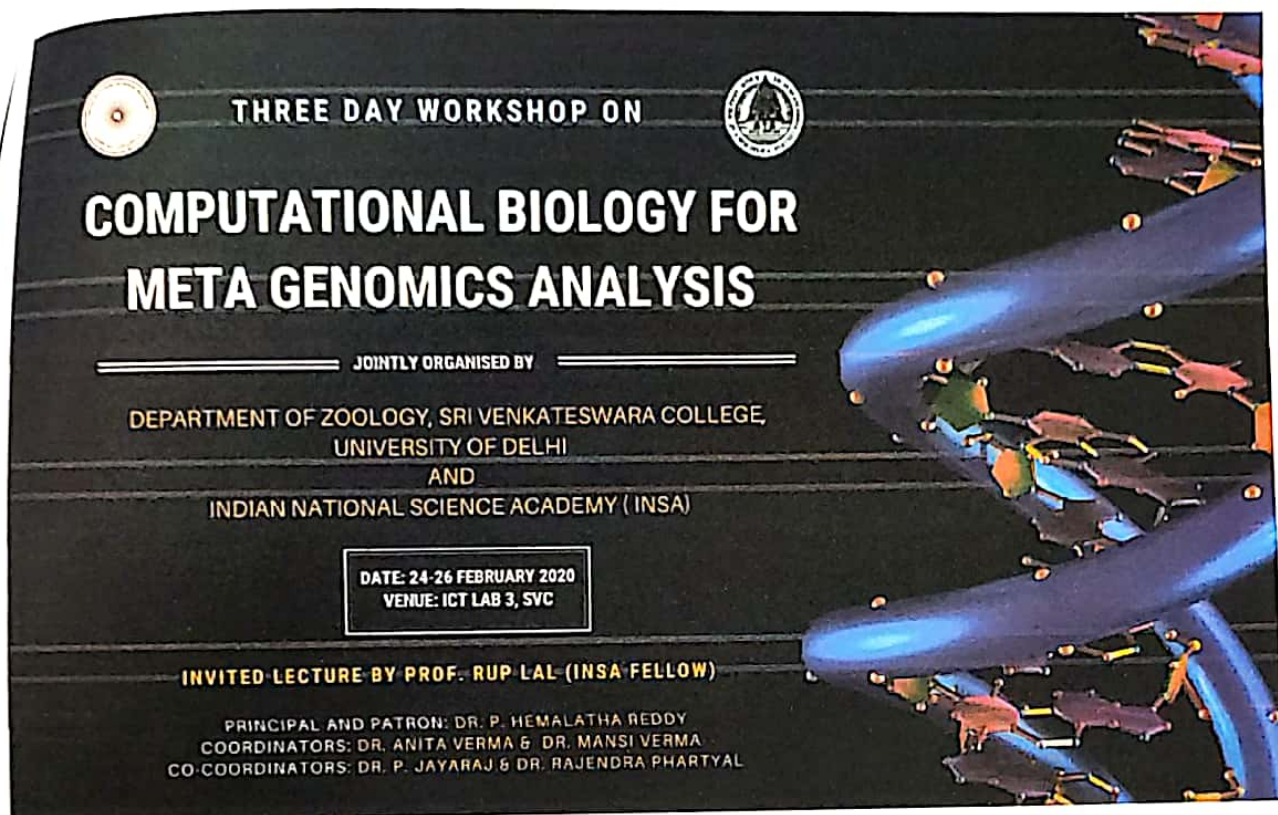
Annexure III

List of participants

S.No.	name	Course	Year
1	Shivam kumar	Zoology (hons.)	2nd Year
2	Anshika	Bsc.zoology hons.	2nd Year
3	Aastha Bhatnagar	Bsc(H) Zoology	2nd Year
4	Arsha Liz M Jos	BSc(Hons) Zoology	2nd Year
5	Vaibhav Sharma	B.Sc. H Zoology	2nd Year
6	Amit Bhatt	BSc. Zoology Hons	2nd Year
7	Somya Pathak	Bsc. Zoology hons	2nd Year
8	Abhilasha Singh	Bsc.Zoology (H)	2nd Year
9	Akshita Khosla	Bsc. Zoology (H)	2nd Year
10	Prateek Goyal	B.Sc. (Hons.) Zoology	2nd Year
11	Akansha Saxena	Bsc Hons zoology	2nd Year
12	Kartikey Saxena	Bsc. Hons.Zoology	3rd Year
13	Pooja Yadav	Bsc(Hons) Zoology	3rd Year
14	Aashi bansal	Zoology hons	3rd Year
15	Twinkle Kathuria	Bsc. Zoology Hons.	3rd Year
16	Laxman mali	Bsc hons. Zoology	3rd Year
17	Jassika Gupta	Bsc. Zoology hons	3rd Year
18	Ankita Saha	Bsc. (Hons.) Zoology	3rd Year
19	Pranavi	Zoology Hons	3rd Year
20	Harshita Rupani	Zoology Hons	3rd Year
21	Aastha Saini	BSc. Zoology (Hons)	3rd Year
22	Lovlesh	B.Sc(H) Biological Sciences	3rd Year
23	Abhimanyu Singh	BSc H Biological Sciences	3rd Year
24	Riya Vats	Bsc.(H) Biological Science	3rd Year
25	Sejal Sharma	B.Sc (H) Biological Science	3rd Year
26	MAHIMA PANDEY	Biological Sciences	3rd Year
27	Mehak	B.Sc (H) Biological Sciences	3rd Year
28	Shiva Satija	Bsc Life Sciences	3rd Year
29	Ojasvi Verma	Bsc Life sciences	3rd Year
30	Suminder kaur	Bsc life sciences	3rd Year
31	Ruchi Kumari	B.sc. Life Science	3rd Year
32	Kriti arya	Bsc. Life Sciences(P)	3rd Year
33	Rahul kumar	Bsc(hons.) Biochemistry	2nd Year

34	Surbhi Agarwal	singer.surabhi@gmail.com	PhD
35	Kavita verma	kavitav282@gmail.com	PhD
36	Anushka Saxena	Bsc(Hons) Zoology	3rd Year
37	Muskan	Bsc(Hons) Zoology	1st Year
38	Palak	Bsc(Hons) Zoology	1st Year
39	Chandni	Bsc(Hons) Zoology	1st Year
40	Dhritismita	Bsc(Hons) Zoology	1st Year

Annexure IV



The poster features a dark background with a large, stylized DNA double helix on the right side, rendered in blue and purple with colorful base pairs. At the top left is a circular logo with a sun-like design, and at the top right is the official seal of the Indian National Science Academy (INSA).

THREE DAY WORKSHOP ON

**COMPUTATIONAL BIOLOGY FOR
META GENOMICS ANALYSIS**

JOINTLY ORGANISED BY

DEPARTMENT OF ZOOLOGY, SRI VENKATESWARA COLLEGE,
UNIVERSITY OF DELHI
AND
INDIAN NATIONAL SCIENCE ACADEMY (INSA)

DATE: 24-26 FEBRUARY 2020
VENUE: ICT LAB 3, SVC

INVITED LECTURE BY PROF. RUP LAL (INSA FELLOW)

PRINCIPAL AND PATRON: DR. P. HEMALATHA REDDY
COORDINATORS: DR. ANITA VERMA & DR. MANSI VERMA
CO-COORDINATORS: DR. P. JAYARAJ & DR. RAJENDRA PHARTYAL



THREE DAY WORKSHOP ON
**COMPUTATIONAL BIOLOGY
FOR META GENOMICS
ANALYSIS**

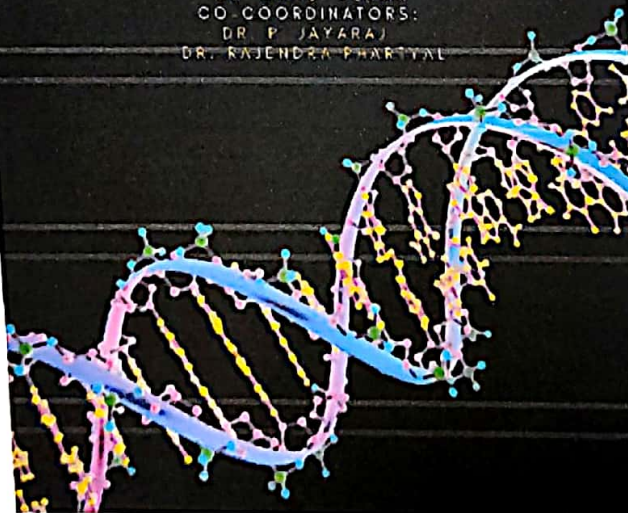
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(INSA)

DATE: 24-26 FEBRUARY 2020
VENUE: ICT LAB 3, SVC

INVITED LECTURE BY
PROF. RUP LAL (INSA FELLOW)

PRINCIPAL AND PATRON:
DR. P. HEMALATHA REDDY
COORDINATORS
DR. ANITA VERMA
DR. MANSI VERMA
CO-COORDINATORS:
DR. P. JAYARAJ
DR. RAJENDRA PHARTYAL





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(University of Delhi)

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Principal
Sri Venkateswara College

IQAC Coordinator

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Department of Commerce

Dr. Padma Priyadarshini
Department of Sociology

Dr. Nimisha Sinha
Department of Biochemistry

Shri D. Venkat Ramana
A.O (I/C)

This is to certify that the Activity report (Teacher/Department /Society/Association) has been submitted for documentation to IQAC, Sri Venkateswara College, University of Delhi.

N. Latha

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