

Department of Biotechnology

Proforma for submission of Annual Progress Report (2020-21) supported under Star College Scheme

1. **Name of the College:** Ram Lal Anand College, University of Delhi

2. **Name of Coordinator, designation, Address, Phone nos:**
Prof. Perna Diwan
Department of Microbiology, Ram Lal Anand College,
5, Benito Juarez Road, New Delhi- 110021
Phone: 9871290711
Email: prernadiwan@rediffmail.com; prernadiwan.mic@rla.du.ac.in

3. **Assessment duration:** 1/4/2020 to 31/3/2021 (sanctioned on 29/02/2020)
Duration in years: 1 year

4. **Details of Departments Supported**

S.No	Name of Department	Courses (B.Sc./M.Sc./PG Diploma, certificate etc) offered	Regular Faculty members	
			Total =9	
			With Ph.D.	Without Ph.D.
1	Microbiology	B.Sc. (Hons) Microbiology	9	NIL

5. **Number & Date of Advisory committee meeting:** Advisory Committee was constituted on 16th June 2020. Meeting are being regularly held in the department and advisory committee meeting for evaluation of onsite progress could not be held as the

college is running in online mode since March 2020 due to COVID. A meeting regarding the purchase of Equipment under Non-recurring Grant of star college scheme was held on 19th Jan 2021.

6. Qualitative improvements due to DBT support:

a. Docking software SEESAR was purchased with a licence of 60 terminals is effectively being used by students and faculty in the online mode especially due to the ongoing Pandemic.

b. Faculty trainings:

- One week Online Faculty Development Program entitled “**ICT Tools for Effective Teaching**”, 5-9th August, 2020 organised by Department of Microbiology and IQAC, Ram Lal Anand College.

- One week Online Faculty Development Program entitled “**Biosafety, Bioethics and IPR**” from 24th -28th August 2020 – 113 participants including outside teachers, research scholars

- A **National Workshop on Molecular docking in drug design (SEESAR)** from 31st March to 1st April 2021, organized by Department of Microbiology

c. Seminar/webinar organised:

- Webinar on “**Next Generation Sequencing and Metagenome analysis** from 15th May-16th May 2020
- International Seminar on “**Nanoparticles in Biology**” on 29th January 2020
- National Seminar on “**Metagenomics and Genome Editing**” on 5th February 2020
- **Workshop on molecular docking: a powerful tool for research at college level** on 30th April 2020.

d. **New projects approved:** Two new ICMR projects have been sanctioned during session 2020-21

- Targeting biofilm formation by inhibiting Cysteine biosynthesis pathway enzymes in ESKAPE pathogens with natural products”(Principal Investigator: **Prof. R K Gupta**, Co-investigators: **Dr Vibha Gupta, Prof. Prerna Diwan**), **INR 45 Lacs** , 3 years. funded by ICMR, Government of India.

- Resistome metagenomic profiling of bioaerosols in metro network in Delhi- NCR, (Principal Investigator: **Dr R K Gupta**, Co-investigators: **Dr Sunila, Dr Purna Diwan**), Technically Approved for **INR 56 Lacs**, 3 years by ICMR, Government of India.
- e. **Minor summer research projects:** 21 students have been so far trained under these projects.
- To study protein sequence homology and structure through bioinformatics tools. Construction of trees based on sequence homology (1st June to 31st July 2020)
 - To perform genome sequence analysis for heavy metal resistance genes of bacteria by using bioinformatics tools (1st June to 31st July 2020)
 - Training of in-silico screening of drugs against SARS-CoV-2 (1st June to 31st July 2020)
- f. **Certificate courses organised for Students:** 3 certificate courses were organised in the session 2020-21.
- 4 weeks online certificate course for students entitled “**Scientific writing and Research Ethics**” from 13th July 2020 to 7th August 2020; 63 students completed this course
 - 40 hours certificate course on “**Exploring Feasible Alternative Technologies to Address Environmental Issues**” from 12th September to 22nd November 2020-105 students completed this course
 - 40 hours online certificate course entitled “**Python in Biological Sciences**” from 16th January 2021 to 10th April 2021 – 32 students completed this course
7. Any Novel aspect introduced or planning to introduce during the Scheme duration.
- Online Skill development certificate courses for students
 - Hands on training in docking software SEESAR for use in research
8. Lessons learnt / difficulties faced/suggestions if any, in implementation of the programme and utilization of DBT grant.
- Lockdown was introduced within a month of sanction of grant under this scheme. Due to Lockdown and closing of the college laboratories summer research projects in the physical mode could not be carried out.

- Purchase of sanctioned equipment delayed because of students not coming to college for classes and practicals
- Visit to Institutions/Industries deferred due to Lockdown

9. **Key performance indicators**

S. no	Indicator	Pre-support		During /After Support		Remarks
		Total = 36		Total = 63		
		M	F	M	F	
1	No. of students admitted	SC=1 ST=2 OBC=4 Gen=13 (July 2019)	SC=3 ST=0 OBC=3 Gen=10 (July 2019)	SC=2 ST=0 OBC=5 Gen=9 (October 2020)	SC=5 ST=2 OBC=8 Gen=32 (October 2020)	The sanctioned intake strength is fixed to 40, there may be increase or decrease in students admitted due to cutoff merits and Key indicator is not applicable
2	No. of students passing out (%) Students Admitted/passing out (pass %)	27/28 96.4% (Passed in 2019)		20/21 (95.2%) (Passed in 2020)		The students of this batch did not reap the benefits of this scheme as within two months lockdown was imposed hence Key indicator is not applicable
3	Drop-out rates	42-28= 14 (33.33%) (Batch 2016-19)		27-21=6 (22.22%) (Batch 2017-19)		The students of this batch did not reap the benefits of this scheme as within two months lockdown was imposed hence Key indicator is not applicable

4	No. of students opting for MSc	(24)	(14)	Admission delayed due to COVID pandemic
5	Average marks	7.41 CGPA (74.1%) (Passed in 2019)	7.60 CGPA (76%)(Passed in 2020)	The students of this batch did not reap the benefits of this scheme as within two months lockdown was imposed hence Key indicator is not applicable
6	No. of hands-on experiments being conducted	158 in CBCS Mode of Curriculum	148 in LOCF Scheme	Change in syllabus of University of Delhi and COVID pandemic
7	No. of new experiments introduced	NA	3	The college remained closed for practicals so new experiments could not be conducted
8	Publications (scopus indexed) /patents, if any.	3 research Articles + 3 book chapters in FY 2018-19	9 Research Articles + 4 book chapters Till 2021	Students trained for scientific writing contribute to departmental publication
9	Training received by faculty	6 trainings and 1 online certificate courses completed from NPTEL	9 trainings +12 online certificate courses completed from Coursera, NPTEL and Open WHO	
10	Exhibitions /seminars /training courses conducted	3	9	
11	Books/journals subscribed	Nil	Nil	

	from grants			
12	Outreach activities (Popular lectures)	2	4	
13	Colleges mentored to apply for DBT Star College grants	Nil	Nil	
14	Invited lectures	11	36	

Proofs (S.No. 6-14) duly attested by Principal and Coordinator are attached as Annexure -3.

10. Self evaluation

Department	*Objective (as stated in proposal)	% achieved	Reasons for underachievement / If achieved, state in quantitative metrics
Microbiology	Under 5 broad objectives categories=13 action	84.6% Visits could not be conducted	Most period after receiving grant was under Covid Pandemic during which college was closed for physical teaching.
	points proposed		

Pernadiwan
Prof. Prerna Diwan
Course Coordinator

Rakesh K Gupta
Prof. Rakesh K Gupta
Principal

Annexure -3

Proofs 8-14

8. Publications (scopus indexed) /patents, if any:

- i. Dwivedi V, Ayyagari A, Chandran R, Diwan P, Gupta S, Gupta V. Repurposing Potential of Diminazene Aceturate as an Inhibitor of the *E. coli* DNA Gyrase B. *J Biomed Res Environ Sci.* 2020 Oct 31; 1(6): 263- 270. doi: 10.37871/jbres1153, Article ID: JBRES1153; ISSN 2766-2276
- ii. Chandran R, Ayyagari A, Diwan P, Gupta S, Gupta V. In silico Screening of Approved Drugs to Describe Novel *E. coli* DNA Gyrase A Antagonists. *J Biomed Res Environ Sci.* 2020 Oct 26; 1(6): 233-240. doi: 10.37871/jbres1148, Article ID: JBRES1148; ISSN 2766-2276.
- iii. Chadha, J., Gupta, M., Nagpal, N., Sharma, M., Adarsh, T., Joshi, V., Tiku, V., Mittal, T., Nain, V.K., Singh, A., Snigdha, S.K., Chandra, N.S., John, S., and Diwan, P. (2021) Antibacterial potential of indigenous plant extracts against multidrug-resistant bacterial strains isolated from New Delhi region. *GSC Biological and Pharmaceutical Sciences*, 14(02), 185-196. DOI: 10.30574/gscbps.2021.14.2.0053. (Peer Reviewed)
- iv. Bhatia, P., Sharma, A., George, A.J., Anvitha, D., Kumar, P, Dwivedi, V.P., Chandra, N.S. (2021). Antibacterial activity of medicinal plants against ESKAPE: An update. *Heliyon*, 7(2). e06310. DOI: 10.1016/j.heliyon.2021.e06310. Scopus Indexed (UGC CARE LIST II)
- v. Kaur, S.P., Gupta, V. (2020) COVID-19 Vaccine: A comprehensive status report. *Virus Research*, 288,198114. doi: 10.1016/j.virusres.2020.198114. (Impact Factor 2.934)
- vi. Moring, A, Hooda, S., Raghuram, N., Adhya, T.K. et al (2021). Nitrogen challenges and opportunities for agricultural and environmental science in India. *Frontiers in Sustainable Food Systems*, 5, 505347. doi: 10.3389/fsufs.2021.505347 (Scopus Indexed)
- vii. Sharma, B., Shahanshah, M.F.H., Gupta, S., Gupta, V. (2021). Recent advances in the diagnosis of COVID-19: A bird's eye view. *Expert Review of Molecular Diagnostics.* 21(5), 475-491. doi: 10.1080/14737159.2021.1874354. (Impact Factor 4.096)
- viii. Singh A, Gupta L, Gupta V. Heterologous Protection to COVID-19 with BCG Vaccine: Deciphering the Reality Using Meta-Analysis Approach. *J Immunological Sci.* (2020); 4(4): 34-40.
- ix. Singh, A., Gupta, V. (2021) SARS-CoV-2 therapeutics: how far do we stand from a remedy? *Pharmacol Rep.* 3,1-19. doi: 10.1007/s43440-020-00204-0. (Impact Factor 2.754)

Book Chapters:

- i. Mohan, L., Goyal, K., Anand, S., Mittal, M., Snigdha, S., Bajwa, T., Gupta, K. R., Gupta, R. K. and Diwan, P. (2020) Foldscope: A New Age Exploratory Educational Tool. Book chapter in edited book A. D. Sharma (Ed.). *Foldscope and its*

- Applications (pp. 188-193). 978-93-85835-68-1, National Press Associates New Delhi
- ii. Ghildiyal, R., Prakash, V., Chaudhary, V.K., Gupta, V., Gabrani, R. (2020) Phytochemicals as Antiviral Agents: Recent Updates. In: Swamy M. (Eds.) Plant-derived Bioactives, pp:279-295, Springer, Singapore, http://doi.org/10.1007/978-981-15-1761-7_12, Print ISBN 978-981-15-1760, Online ISBN 978-981-15-1761-7.
 - iii. Gupta, R. K., Diwan P. (2020). The Gandhian way of Life: An Impeccable solution to World Environmental Concerns. In Devendra Kumar (Eds.) Gandhi Across the Boundaries, pp: 52-62, Shivalik Prakashan, Delhi India, ISBN 978-81-945562-1-3.
 - iv. Malik, G., Chaturvedi, R, Hooda, S. (2021). Role of herbivore-associated molecular patterns (HAMPS) in modulating plant defenses. In: Singh I.K., Singh A. (Eds.) Plant-Pest Interactions: From molecular mechanisms to chemical ecology, Springer, Singapore. ISBN (978-981-15-2466-0), Online ISBN (978-981-15-2467-7).

9. Training received by faculty: (Include workshops & FDP)

- i. Introduction to Systematic Reviews and Meta-Analysis in Health from 17th - 18th March, 2020 organised by ICMR-NATIONAL INSTITUTE OF MEDICAL STATISTICS (online), National Workshop – Dr. Sunila Hooda
- ii. 6 days of Online Hands-on Workshop on Next-Gen Drug Discovery Software for Lead Optimisation from April 9th to April 24th 2021 organised by Zastra Innovations, Bengaluru, International –Dr. Sunila Hooda
- iii. Online Bioinformatics Workshop from 12 - 13 April, 2021 organised by Department of Microbiology, Institute of Home Economics, University of Delhi. – Dr. Sunila Hooda
- iv. Online workshop on “Drug Discovery Workshop Series on StarDrop and SeeSAR” by Zastra Inovations, Bengaluru from 6-10 Aug, 2020

Certificate courses Coursera/NPTEL

- i. Certificate Course on “Bioinformatics Methods I”, 8 weeks, 27th May 2020, University of Toronto, Canada on Coursera - Dr. Sunila Hooda
- ii. Certificate Course on Bioinformatic Methods II, 4 weeks, 18th June 2018, an online non-credit course authorized by University of Toronto, Coursera - Dr. Sunila Hooda
- iii. Certificate Course on Plant Bioinformatics, 6 weeks, July 13, 2020, an online non-credit course authorized by University of Toronto, Coursera - Dr. Sunila Hooda
- iv. Certificate Course on Antimicrobial resistance - theory and methods, 5 weeks, 11th July 2020, an online non-credit course authorized by Technical University of Denmark (DTU), Coursera - Dr. Sunila Hooda
- v. Certificate Course on Biohacking Your Brain's Health, 4 weeks, August 3, 2020 an online non-credit course authorized by Emory University, Coursera- Dr. Sunila Hooda
- vi. Certificate Course on “Whole genome sequencing of bacterial genomes tools and applications” 5 weeks, 24 May 2020, Offered by Technical University of Denmark on Coursera - Dr. Sunila Hooda
- vii. Certificate course on “Introduction to COVID-19: Methods for detection, prevention, response and control”, April 20, 2020, Open WHO - Dr. Sunila Hooda

- viii. Certificate course on "Presentation Skills: Designing Presentation Slides", 4 weeks, 15th May 2020, offered by National Research Tomsk State University, Russia on Coursera- Dr. Sunila Hooda
- ix. Certificate Course on "Severe Acute Respiratory Infection (SARI) Treatment Facility Design", 21st April 2020, Open WHO - Dr. Sunila Hooda
- x. Certificate course on Patents, 2 weeks, 28 Feb-14 Mar 2021 organised Turnip Innovations - Prof. Vandana Gupta
- xi. Certificate course entitled "Digital Teaching Techniques" Online, One week, 29th June 2020-04th July 2020, ICT Academy –Prof. Perna Diwan
- xii. Certificate course entitled "Metagenomics applied to surveillance of pathogens and antimicrobial resistance" 02/08/2020, Technical University of Denmark through Coursera Platform - Prof. Perna Diwan

10. Exhibitions/seminars/training courses conducted:

- i. One week Online FDP on "ICT tools for effective teaching", 5-9 August, 2020 organised by Ram Lal Anand College
- ii. One week Online FDP entitled "Biosafety, Bioethics and IPR" from 24th -28th August 2020
- iii. DBT Sponsored National Workshop on Molecular docking in drug design from 31st March to 1st April 2021, organized by Department of Microbiology, under DBT -Star College Scheme.
- iv. Webinar on "Next Generation sequencing and metagenome analysis from 15th May-16th May 2020
- v. International Seminar on "Nanoparticles in Biology" on 29th January 2020
- vi. National Seminar on "Metagenomics and Genome Editing" on 5-02-2020
- vii. Workshop on molecular docking: a powerful tool for research at college level on 30th April 2020.

Certificate courses conducted for students:

- i. 4 weeks online certificate course for students entitled "Scientific writing and Research Ethics" from 13th July 2020 to 7th August 2020
- ii. Exploring Feasible Alternative Technologies to Address Environmental Issues from 12th September to 22nd November 2020.
- iii. 40 hours online certificate course on "Python in Biological Sciences" from 16th January 2021 to 11th April 2021.

11. Books/journals subscribed from grants:

Nil

12. Outreach activities (Popular lectures):

- A Cancer awareness talk “Be Cancer Aware” was organized on 22nd March 2021 by Department of Microbiology, in association with Rajiv Gandhi Cancer Institute and Research Centre.
- Dr. Vandana Gupta initiated a social outreach campaign UDISHA: An HPV Vaccination Initiative in January 2021, which aims to create awareness about Human Papillomavirus, which causes 6 types of cancers and the vaccines available. Anurag Singh and Abhilash Jeas George are also the members of the core team.
- Dr. Prerna Diwan supervised Taniska Aggarwal (B Tech) summer training 1st March 2021 till 31st March 2021 titled” antibiotic resistance profiling of air microflora”.
- Dr. Vandana Gupta guided MSc. Biotechnology dissertation entitled “*E. coli gyrase*, an important target for novel therapeutics: in silico drug repurposing approach” by Rakhi Chandran submitted to the Department of Biotechnology, School of Sciences, Noida International University, Gautam Budh Nagar, Uttar Pradesh (Submitted in July 2020)
- M. Sc. Microbiology dissertation entitled “A Molecular docking study targeting SARS-CoV-2 3CLpro: An In-silico drug repurposing approach” by Shubham Sachdeva from the Department of Biosciences, Jamia Millia Islamia, New Delhi (Submitted in June 2021)

13. Colleges mentored to apply for DBT Star College grants: NA

14. Invited lectures:

1. Dr. Prateek Arora, Postdoctoral fellow at University of Bern, July 3rd 2020 delivered a talk on “Polarity establishment in the developing zebrafish epidermis”.
2. Dr Shailesh Pawar, Scientist E & Officer I/C, ICMR- National Institute of Virology (NIV); Dr Senthil Kumar Venugopal, Professor & Dean, FLSB, SAU
3. Dr. Sucheta Kurundkar, Director Training, Clinical Development Services Agency, THSTI
4. Prof. N Raghuram, School of Biotechnology, GGS Indraprastha University
5. Dr. Gurinderjit Randhawa, FNAAS, Principal Scientist and Head, Division of Genomic Resources, ICAR-NBPGR
6. Dr Sunil Archak, Officer-In-Charge, Biotechnology (Plant Science) Agriculture Knowledge Management Unit, ICAR-NBPGR
7. Dr. Rinu Sharma, University School of Biotechnology GGS Indraprastha University
8. Dr. Rajeev Kaul, Department of Microbiology, University of Delhi
9. Dr. Monali Bhattacharya, Department of Humanities & Social Sciences Jaypee Institute of Information Technology; Dr. Vibha Gupta, Department of Biotechnology, Jaypee Institute of Information Technology.
10. Dr Ram R Shukla, Supervisory Patent Examiner, USPTO and Dr Diptendu Das, Senior Scientific Officer, AERB.

11. Ms. Richa Chaudhry, Project Manager, Sagacious Research Pvt Ltd Gurugram
12. Dr. Archana Kumari, Assistant Professor, Jammu University
13. Dr. Ganpat, Department of Hindi and Journalism, Jamia Millia Islamia
14. Dr. Kshipra Chauhan, Founder of EduBooster Research and Technology Consultancy
15. Mr. Subrahmanyam Pulipaka, Chief Executive Officer, National Solar Energy Federation of India
16. Mr. Shubham Oswal, Director, Global Green Concepts Pvt. Ltd
17. Mr. Rahul Singh, Assistant Manager, ICLEI South Asia
18. Mr. Arvind Kumar Singh, Founder Director, Perfect Biowaste and Power Management Pvt. Ltd.
19. Dr. Arunava Dutta, Postdoctoral Researcher, Centre for Invasion Biology, Stellenbosch University, South Africa
20. Dr. Prabhat Kumar Tanwar, Director and CEO Detec Innovations Pvt. Ltd. , New Delhi
21. Ms. Bedoshruti Sadhukhan, Senior Program Coordinator, Sustainability Management, ICLEI, South Asia
22. "Mr. Vaibhav Nautiyal, Director Technical, INDUS Environmental Services Pvt. Ltd.
23. Mr. Rajesh Juneja, Chief Manager, DTTDC Ltd.
24. Dr. Vinod Kumar, Assistant Professor, JNU, New Delhi
25. Dr. Arti Jain, Assistant Professor, Daulat Ram College, University of Delhi
26. Mr. Priyanshu Jain, Founder Director, Agri Joy & Indian Hydroponics
27. Ms. Roopa Kumari, Assistant Professor, Ramjas College, University of Delhi
28. Dr. Sanchayita Rajkhowa, Assistant Professor, Jorhat Institute of science and Technology, Assam
29. Dr. Pawan Kumar Jha, Founder Director, MARC India
30. Dr. Beena Negi, Assistant Professor, Gargi College, University of Delhi
31. Dr. Dinesh Albertson Winston, Field Biologist, Aravali Biodiversity Park
32. Dr. Arif Ahamad, Assistant Professor, Daulat Ram College, University of Delhi
33. Dr. Amit K Singh, Assistant Professor, Deshbandhu College, University of Delhi
34. Ms. Toral Manwar, Team Leader (Bioinformatics) Xcleris Labs India Ltd., Gujarat, India
35. Dr. Md. Imtiyaz Hassan, Assistant Professor (Structural Biology), Centre for Interdisciplinary Research in Basic Sciences, Jamia Millia Islamia
36. Dr. Girinath G. Pillai, Director, Zastra Innovations Pvt. Ltd.

6. Qualitative Improvement due to DBT support

**a. Software
Purchased
SEESAR**



रामलाल आनंद कॉलेज

दिल्ली विश्वविद्यालय
बेनिटो हुआरेज़ रोड, नई दिल्ली-110021 (इंडिया)

Ram Lal Anand College

University of Delhi
Benito Juarez Road, New Delhi-110021 (India)

Tel. No. : 011-24112557

Fax : 24112151

E-mail : rlac.du@gmail.com;

rlac.bjr.du@gov.in

Website : www.rlacollege.edu.in

Dated: 25 Jan 2021

RLAC/2021/

To.

Zastra Innovations Private Limited

837/S3, II Floor, 3rd Cross Rd.,

HRBR 1st Block, Kalyan Nagar

Bangalore 560043 India

Tel: 080 41104821, Email: office@zastrain.com

GSTIN: 29AAACZ9706D1Z4

Subject: Purchase Order: SeeSAR Software SKU : SEE SBDD, FBDD, Med Chem, Docking, etc. (Can be installed in 2 computers) HSN: 85238020, and Academic Teaching License SKU : TCH Selected modules for internal teaching only (upto 65 computers for 1st 3 years) HSN: 85238020

Dear Sir,

This is with reference to your quotation Z29BS20RLACS0912029, dated 9-12-20 received for purchase of SeeSAR Software SKU : SEE SBDD, FBDD, Med Chem, Docking, etc (Can be installed in 2 computers) HSN: 85238020, and Academic Teaching License SKU : TCH Selected modules for internal teaching only (upto 65 computers for 1st 3 years) HSN: 85238020.

You are requested to supply the same as per the specifications mentioned in your quotation.

The delivery should be made before 28th Feb. 2021, otherwise the order will be cancelled.

Thanking you.

Yours sincerely,

Prerna Diwan

[Dr. Prerna Diwan]
Coordinator
DBT star college Scheme

Rakesh Kumar Gupta

Dr. Rakesh Kumar Gupta
Principal
Ram Lal Anand College



Zastra Innovations Private Limited

837/S3, II Floor, 3rd Cross Rd.,
HRBR 1st Block, Kalyan Nagar
Bangalore 560043 India
Tel: 080 41104821, Email: office@zastrain.com
GSTIN: 29AAACZ9706D1Z4

PAYMENT RECEIPT

Payment Date **31-03-2021**
Reference Number **NEFT3103**
Payment Mode **Bank Transfer**
Amount Received In Words **Rupees Two Lakh Ninety-Nine Thousand Three Hundred Forty Only**
Security/Performance **0**

Amount Received
Rs.299,340.00

Received From

Ram Lal Anand College (University of Delhi)
Benito Juarez Road,, New Delhi
New Delhi - 110021, India
Kind attn.: The Principal
GSTIN:



A handwritten signature in black ink, appearing to be 'R. G. G.' with a flourish.

Authorized Signatory

Payment for

Invoice Number	Invoice Date	Invoice Amount	Payment Amount
BS21RLACS0902015	09-02-2021	Rs.299,340.00	Rs.299,340.00

b. Faculty Training



Ram Lal Anand College, University Of Delhi
Media Production Centre
in Association with
Internal Quality Assurance Cell (IQAC)



UNDER DBT STAR COLLEGE SCHEME
Organises

One Week ONLINE
Faculty Development Program(FDP)

on

ICT Tools for Effective Teaching Learning
for College Faculty



FOR REGISTRATION:

<https://forms.gle/U3T5VE9dksCm24yNA>

Dates: 5th to 9th August 2020
Session Timings: 3-5.30 pm



Dr Rakesh Kumar (Dept of Hindi)
Coordinator, Media Centre

Dr Prerna Diwan
Coordinator, IQAC

Dr Rakesh Kumar Gupta
Principal



**RAM LAL ANAND COLLEGE
UNIVERSITY OF DELHI
PRESENTS**

**One Week Online
Faculty
Development
Program on
Biosafety,
Bioethics and IPR**

**Registration
QR code**



**UNDER DBT STAR COLLEGE SCHEME
24th to 28th AUGUST, 2020
3 to 6pm on Google Meet**



**Inviting Science Faculty and Research Scholars
to take this opportunity and listen to many
luminaries and experts in these areas.**

Registration link: https://docs.google.com/forms/d/e/1FAIpQLSfeJ0d1ob-gKFZiPQEqKnICnwR_4AsTeleQN6J4MRE--qb5hw/viewform?usp=sf_link

**Dr M Salome John
Coordinator**

**Dr. Prerna Diwan
DBT Star College Scheme
Coordinator**

**Dr Rakesh Kumar Gupta
Principal**



DEPARTMENT OF MICROBIOLOGY
RAM LAL ANAND COLLEGE



presents

DBT Sponsored National Workshop Under Star College Scheme

On

MOLECULAR DOCKING IN DRUG DESIGN



DR. IMTAIYAZ HASSAN

DAY-1 31ST MARCH 2021
“Introduction to InstaDock”

TALK: 11AM - 01PM

HANDS ON SESSION : 02PM - 04PM

Assistant Professor (Structural Biology)
Centre of Interdisciplinary Research in
Basic Sciences
Jamia Millia Islamia

Prerequisite softwares
(USE LAPTOPS / DESKTOPS ONLY)

PyMol (<https://pymol.org/2/>)

InstaDock: (<https://hassanlab.org/instadock/about>)

Register: <https://forms.gle/EBCsLmc3Fkv65Bst8>

LAST DATE TO REGISTER 31ST MARCH 2021 | 05:00 PM

Zoom Meeting link:

<https://zoom.us/j/96749351142?pwd=andhR0k1aUFYUkREOGFEcTZWZVlOQT09>

Participation E-certificates will be issued only to those who attend both days' sessions.

DAY-2 1ST APRIL 2021

**“Explore Bioactive
Conformation using
Docking in SeeSAR”**

TALK: 11AM - 01PM

HANDS ON SESSION : 02PM - 04PM



DR. GIRINATH PILLAI
Director & Chief Scientific Officer
Zastra Innovations
Mentor of Change
Niti Ayog's Atal Tinkering Lab
Govt. of India

ORGANIZERS

STUDENT COORDINATOR
Anurag Singh
9471158656

Dr. Vandana Gupta | CONVENER
Dr. Perna Diwan
Dr. Sunila Hooda

Dr. Rakesh K Gupta
PRINCIPAL

**c. Seminars /
Webinars
Organized**



RAM LAL ANAND COLLEGE UNIVERSITY OF DELHI



PRESENTS
WEBINAR SERIES UNDER DBT-STAR COLLEGE SCHEME
May 15th & 16th 2020; 2-3pm

NEXT GENERATION SEQUENCING & METAGENOME ANALYSIS

May 15-16th, 2020 2-3pm

Day 2
16th May 2020

Link

[https://meeting.zoho.in
/meeting/register?sessi
onid=1397305821](https://meeting.zoho.in/meeting/register?sessionid=1397305821)

For all Life Science
Faculty, Research
Scholars
&
Students

Contents

- Overview of Next Generation Sequencing (NGS)
- Overview of 16S amplicon metagenome, whole metagenome and whole metatranscriptome
- Understanding of workflow of 16S amplicon metagenome analysis

**PRESENTER: TORAL MANVAR,
TEAM LEAD, BIOINFORMATICS,
XCELRIS LABS LTD.**

Host: Dr Prerna Diwan
Co-Host: Dr Kusum R Gupta

Dr Rakesh Kumar Gupta
Principal



RAM LAL ANAND COLLEGE, UNIVERSITY OF DELHI

DEPARTMENT OF MICROBIOLOGY



PRESENTS

DBT SPONSORED INTERNATIONAL SEMINAR UNDER THE STAR COLLEGE SCHEME

ON

NANOPARTICLES IN BIOLOGY

02:00PM | 29TH JANUARY 2020 | AMPHITHEATRE, RLAC

Prof. CHRISTELLE PRINZ

Lunds University, Sweden

'One Dimensional Nanostructures
for Biosensing'

DR. ELKE HEBISCH

Lunds University, Sweden

'Nanostructure- Assisted Particle
Delivery into Living Cells'

Patron

DR. RAKESH KUMAR GUPTA



MIKROBIOLOGIKA

Program Co-ordinators

DR. VANDANA GUPTA

DR. PRERNA DIWAN

CELEBRATING 30 YEARS OF DEPARTMENT OF MICROBIOLOGY
RAM LAL ANAND COLLEGE, UNIVERSITY OF DELHI



MIKROBIOLOGIKA

PRESENTS

DBT SPONSORED NATIONAL SEMINAR UNDER STAR COLLEGE SCHEME

ON

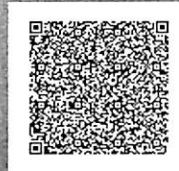
METAGENOMICS AND GENOME EDITING

10:00AM | 5TH FEBRUARY 2020 | AMPHITHEATRE, RLAC

Patron

DR. RAKESH KUMAR GUPTA

Details



Program Co-ordinators

DR. VANDANA GUPTA

DR. PRERNA DIWAN

LAST DATE: 29TH JANUARY 2020

REGISTER AT: forms.gle/3cugjz1j4ijrCAg29

For more queries

MICROBIOLOGYRLA@GMAIL.COM



RAM LAL ANAND COLLEGE

DEPARTMENT OF MICROBIOLOGY



MIKROBIOLOGIKA
PRESENTS A WEBINAR ON

**MOLECULAR DOCKING: A POWERFUL TOOL
FOR RESEARCH AT COLLEGE LEVEL**

DR. VANDANA GUPTA
ASSOCIATE PROFESSOR

03:00PM - 04:30PM | 30th April, 2020

Google Meet code: avv-abzd-gpi

DR. PRERNA DIWAN
Teacher In-Charge

DR. RAKESH KR. GUPTA
Principal

**d. New
Projects
Approved**

01 FEB 2021
पी.ए.बी.एक्स./PABX : -91-11-26588980, 26588707, 26589336.
26589745, 26589873, 26589414
फैक्स/FAX : +91-11-26588662, 26589791, 26589258

तार/GRAM: विज्ञानी/SCIENTIFI
Website: www.icmr.nic.in
Email: icmrhqds@sansad.nic.in



icmr
INDIAN COUNCIL OF
MEDICAL RESEARCH

भारतीयआयुर्विज्ञानअनुसंधानपरिषद
INDIAN COUNCIL OF MEDICAL RESEARCH
वी. रामलिंगस्वामीभवन, अंसारीनगर, पोस्टबॉक्स 4911, नईदिल्ली - 110029
V. RAMALINGASWAMI BHAWAN, ANSARI NAGAR, POST BOX 49
NEW DELHI - 110029

No. ISRM/12(113)/2020
ID No.2020-4780

RAM LAL ANAND COLLEGE (DAY)
NEW DELHI - 110021
01 FEB 2021
Diary No. 142.....

Dated: 13.01.2021

To,
The Principal
Ramlal Anand College (DU)
Benito Juarez Road
New Delhi-110021

Copy to A/CS
Copy to Dr. Prem Dhanan

Sub: - Sanction and budget allotment for the New Schemes Entitled, "Targeting Biofilm Formation By Inhibiting Cysteine Biosynthesis Pathway Enzymes In Escape Pathogens With Natural Products" under Dr Rakesh Kumar Gupta, Principal & Professor, Ramlal Anand College, New Delhi-110021.

Sir,

1. The Director General of the Council sanctions the above-mentioned research scheme initially for a period of One year from 01.02.2021 to 31.01.2022 subject to extension up to the total duration specified in para 3(c) below.
2. The Director General of the Council also sanctions the budget allotment of Rs.15,00,436/- (Rupees Fifteen lakh four hundred thirty six only) as detailed in the attached statement for the year 2020-21 subject to the condition that the grant will be utilized after following the provisions laid down in the GFRs-2017 & TA Rules. Please keep the funds in a separate Saving Bank account opened for ICMR funded Research Projects so that interest earned thereon is credited into this account.
3. The grant-in-aid will be given subject to the following conditions:
 - a) The payment of the grant will be made in lump-sum to the Head of the Institution. The first installment of the grant will be paid generally as soon as a report regarding the commencement of the project and appointment of the staff is received by the Council.
 - b) The staff appointed on the project should be paid as indicated in the budget statement attached. Joining report of the staff as well as Undertaking Part II may also send to this office.
 - c) The approved duration of the scheme is for 3 Years. The annual extension will be given after a review of the work done on the scheme during the previous year.

Contd....2

- d) Two copies of the annual progress report (with a soft copy also) of work done submitted to the Council every year after completion of ten months of the project. Submitting the report in time may lead to termination of the project.
- e) The institute will maintain a separate account of the receipts and the expenditure on the scheme. A utilization certificate and an audited statement of account pertaining to the grant may be furnished to ICMR for the period of 01.02.2021 to 31.01.2022.
- f) The next year grant will only be released after receipt of the Progress Report with Utilization Certificate and Statement of Expenditure.
- g) The other terms and conditions will be followed as per the ICMR guidelines. Terms of this letter may please be acknowledged.

Yours
Adm
for Director

RFC No. ISRM/Adhoc/41/2020-21 dt. 08/01/2021

Copy together with a copy of the budget statement forwarded for information to: -

1. Dr Rakesh Kumar Gupta, Principal & Professor, Ramlal Anand College, Delhi-110029.
2. Copy together with two copies of the budget statement forwarded to the Section, ICMR for information and necessary action.
RFC No. ISRM/Adhoc/41/2020-21 dt. 08/01/2021
3. IRIS ID No.2020-4780

Searching "All Mailbo...
Found 53 results

FROM: Rakesh G

2019 - 20

All M...

All In...

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- 1,214
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Today

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Archive

- Mailboxes Search: All All Inboxes (1,876) All Sent (28) All Drafts (14) Flagged
- Regards Dr. Rakesh Kumar Gupta
- Rakesh Gu...** Inb... 23/08/20
Draft of Review Betel nut qu...
Dear Dr. Preena I have gone through the draft. It is very exte...
- Rakesh Gu...** Inb... 07/08/20
Re: Declaration and Attestatio...
Dear Sunita and Preena I need the project proposal copy submitte...
- Rakesh Gu...** Inb... 27/07/20
Attachment module
Sorry Buddy forgot to attach the proposed module Dr. Rakesh Ku...
- Rakesh Gu...** Inb... 27/07/20
Advise on the topics and resou...
Dear Satyendra The college is planning to organize a faculty D...
- Rakesh Gu...** Inb... 23/07/20
Fw: Webinar Invite On Plagia...
Dr. Rakesh Kumar Gupta, PhD (Microbiology), PDF (USA), Prin...
- Rakesh Gu...** Inb... 18/07/20
Fw: Your submission titled '...
Dr. Rakesh Kumar Gupta, PhD (Microbiology), PDF (USA), Prin...
- Rakesh Gu...** Inb... 17/07/20
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Another resource person who is teaching this course for languag...
- Rakesh Gu...** Inb... 14/06/20
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Sent from Yahoo Mail on Android



Rakesh Gupta

Fw: Your submission titled 'DHR-GIA proposal : Resistome metagenomic profiling of bioaerosols in metro network in Delhi- NCR', Technically A

To: arpdawan, sunita neoda

Siri found updated contact info Rakesh Gupta 911124112151

Dr. Rakesh Kumar Gupta,
PhD (Microbiology), PDF (USA),
Principal.
Ram Lal Anand College,
University of Delhi
Benito Juarez Road
New Delhi-110021
Phone- 91-11-24112557 (Office) Mobile- 9891369197
Fax - 91-11-24112151
e-mail rgupta1965@yahoo.com

----- Forwarded message -----

From: icmr@cdac.in <icmr@cdac.in>
To: "rgupta1965@yahoo.com" <rgupta1965@yahoo.com>
Sent: Friday, 17 July, 2020, 02:18:57 pm IST
Subject: Your submission titled 'DHR-GIA proposal : Resistome metagenomic profiling of bioaerosols in metro network in Delhi- NCR', Technic

Dear DR. RAKESH KUMAR GUPTA,

This has reference to your submission id 2020-9584 with title DHR-GIA proposal : Resistome metagenomic profiling of bioaerosols in metr NCR. Your proposal has been technically approved.

Please upload required documents for Codal Formalities by 10 August 2020, for which the list is available on Online ICMR Extramural Portal.

With best regards ,
ICMR Team

254

**e. Minor
Research
Projects**

DBT STAR COLLEGE PROJECT

Introduction

Recently, the world has been facing a major threat due to the novel human coronavirus pandemic which originated in Wuhan, China and was later named SARS-CoV-2. It belongs to the Coronaviridae family and lies in the seventh position after 229E, NL63, OC43, HKU1, MERS-CoV, and the SARS-CoV in causing infection to humans. A lot of studies have already been done on its structure and scientists all over the world are trying to come up with different vaccines. In this project, we chose to work on SARS CoV 2 proteins, find the important residues, its function, structure and the different target sites using literature search and various computational tools (BLAST, Clustal omega, UCSF Chimera, PyMOL, UniProt, and MEGA X). The virus contains three kinds of proteins: structural, non structural and accessory proteins. In this project we worked with the structural proteins: Spike (S), Nucleocapsid (N), Membrane (M), and Envelope (E) and the human protein- ACE2 (Angiotensin Converting Enzyme 2) which facilitates the entry of virus.

ACE2 is a membrane-anchored dipeptidyl monocarboxypeptidase that primarily exists as an 805 amino acid type 1 transmembrane glycoprotein which is about 100 kDa. ACE2 comprises of a N-terminal signal peptide of 17 amino acid residues, an extracellular M2 peptidase domain (PD; residues 19-615) with an active site, zinc-binding metalloprotease motif (HEXXH) sandwiched between the two catalytic subdomains and a C-terminal collectrin-like domain (CLD; residues 616-768; collectrin is B0AT1's chaperone) bearing a ferredoxin-like fold "Neck" domain (615-726) that terminates with one transmembrane hydrophobic α -helix having 22 amino acid. This helix region is next followed by an intracellular segment with 43 amino acid residues. CLD has a significant role in trafficking B0AT1 at the plasma membrane in the intestine but not in the kidney. Two ACE2 alleles rs73635825 (S19P) and rs143936283 (E329G) might fight against SARS-Cov-2 infection. Calmodulin-binding sites are also present in the cytoplasmic tail of ACE2 which may influence shedding of its catalytic ectodomain.

Both SARS CoV and SARS CoV 2 bind to the ACE2 receptor of the host cell and cause infection. It is the Receptor-binding motif (RBM), a stretch of amino acid residues (437-508 of SARS CoV 2 and 432-486 of SARS CoV) on the Receptor-binding domain (RBD; 319-541 of SARS CoV 2 and 318-509 of SARS CoV) in the S1 subunit of the spike protein which attaches to the ACE2 receptor, enters the cell and starts the infectivity. But there is a little variation in the RBM region of both the viruses. In SARS CoV 2, RBM has four residue motifs at 482-485 (Gly-Val-Glu-Gly) thus providing better attachment with ACE2. Moreover two lysine residues, Lys31 and Lys353 are present in ACE2 that are significant for CoV binding. Gln493 and Leu455 in the RBM of SARS-CoV-2 bind to these residues. Apart from these hotspots, N90 and T92 collectively form a consensus N-glycosylation motif which is remarkable hotspot for enriched mutations. The occurrence of certain amino acids such as glutamine 493, asparagine 501, leucine 455, phenylalanine 486 and serine 494 on the SARS CoV 2 enhances their binding capacity towards ACE2.

Despite the overall similarity, a number of sequence variations and conformational deviations were found in their respective interfaces. Some of the important variations (in terms of hydrophobic and polar residues) observed between SARS CoV RBD and SARS CoV 2 RBD were T359-A372 (P-H), F360-S373

(H-P), V404-K417 (H-P), M417-T430 (H-P), A430-S443 (H-P), S432-V445 (P-H), K439-L452 (P-H), Y442-L455 (P-H), V458-E471 (H-P), F460-Y473 (H-P) and T485-P499 (P-H). Some other important variations: R426-N439, L443-F456, N479-Q493, Y484-Q498, and T487-N501.

The theoretical study showed how the interactions of RBD with ACE2 could get strengthened and weakened. The change from V404 to K417 may result in a tighter association due to salt bridge formation between K417 and D30 of ACE2. In SARS CoV 2, RBM has four residue motifs at 482-485 (Gly-Val-Glu-Gly) which are absent in SARS CoV RBM thus providing better attachment with ACE2. The change from L472 to F486 may also result in a stronger van der Waals contact with M82 of ACE2. But the interaction is weakened by the change of R426 to N329 due to removal of one important salt bridge with N329 on ACE2.

Table showing some important residues interaction between SARS CoV 2 RBD and ACE2

SARS CoV 2 Spike	ACE2			
K417	L29*	D30:	K31:	
V445	K31:	F32*		
L455	H34:	E35*		
F456	E35*	A36*	E37*	
Y473	D38:			
Q493	Q60*	N61:		
Q498	K68*	F72*	E75*	Q76*
P499	Q76*	T78.		
N501	A80 *	Q81:	M82	Y83:

Dark yellow regions show the conserved residues (*), light green regions- semi-conserved (:), and light blue regions- non-conserved (.).

Learning Outcome

Through this study, we got familiar with the sequence homology and structure of ACE2 protein, interaction of RBD with ACE2 and phylogenetic analysis.

The percent identity of SARS CoV 2 RBD with other coronaviruses was obtained and multiple sequence alignment was performed to delineate conserved, semi-conserved and non-conserved residues.

Conserved: G381, G413, G416, G431

Non-conserved: G339, G404, G496, G504

Using PyMOL and Chimera, structural study of SARS CoV and SARS CoV 2 RBD with Human ACE2 receptor was done. The ligands (NAG) and various cofactors of SARS CoV 2 (like Zn motif) were located. The important residues of chain E of RBD (R346, N354, A372, S373, T393, R403, E406, K417, N439, L455, F456, Y473, G482, V483, E484, G485, F486, Q493, Q498, and N501) were marked, polar contacts were shown. SARS CoV RBD has some of the important residues (K333, E341, T359, F360, K390, D393, V404, R426, Y442, L443, F460, L472, N479, T487, and Y484) that are not present in SARS CoV 2 RBD. Polar contacts were shown.

Next the two proteins were overlapped and were found to share a good structural similarity. When their comparison was done, 66.11% identity was shown.

This information was then planned to be used for molecular docking and identifying new drugs for the binding sites.

Next, the percent identity of Q9BYF1 (ACE2_HUMAN) with *Gorilla gorilla gorilla* (G3QWX4, 99%), *Rhinopithecus roxellana* (A0A2K6NF67, 95.2%), *Macaca mulatta* (F7AH40, 95.2%), *Felis catus* (Q56H28, 85.2%), *Rattus norvegicus* (Q5EGZ1, 82.5%), and *Mus musculus* (Q8RO10, 82.1%) was shown. Next the alignment of these sequences was done whose results are stated:

The residues were highly conserved and the important sites were noted.

Binding site: R169, R273, W477, K481, Y515

Active site: E375, H505

Metal binding site: H374, H378, E402

These residues along with the ligand (NAG) and other important conserved residues is planned to be used for creating suitable pockets for docking purposes.

Additionally, this project highlights the sequence and structural similarity between ACE and ACE2. Although ACE2 shares some homology with ACE but they are not inhibited by ACE inhibitors. The single catalytic metallopeptidase unit present in the extracellular domain of ACE2 enzyme shares 42% sequence identity and 61% sequence similarity with the catalytic domain of ACE. A study by Ponraj et.al showed that the ACE2 sequence is similar to that of the testis-specific form of ACE (tACE) with 43% sequence identities and 61% similarities. Due to this highly similar sequence they were able to construct a strong homology model of ACE2 structure. ACE and ACE2 shared a percent identity of only 29.03%, a poor similarity. This was further proved by showing their overlapping in PyMOL.

Further, through phylogenetic analysis performed in MEGA-X, insight of evolutionary relationships was provided, for generating hypotheses regarding gene or protein function for molecular and biochemical studies.

Thus through this study one can conclude that similarity is the primary predictor of homology and homology is the primary computational predictor of function. So more is the similarity between sequences, the more closely they are related and their structural and functional analysis can be done easily.

DBT star College Summer Training Project Report

“To perform genome sequence analysis for heavy metal resistance genes of bacteria by using bioinformatics tools”

Dr. Sunila

Duration: 1st June to 31st July 2020

The project involved training of eight students of B.Sc. Hons Microbiology, 2nd and 3rd Year. Each student selected a metal of interest for carrying out the project work. The details of the students are given in the table below:

NAME	YEAR	METAL SELECTED
Poorvi Saini	3 rd	Cadmium
Surbhi Singh	3 rd	Arsenic
Ananya Grewall	3 rd	Chromium
Sahrish Majeed	2 nd	Copper
Subhag Singh	2 nd	Mercury
Arya Kirone Patra	2 nd	Arsenic
Soma Banerjee	2 nd	Nickel
Nikhil Gupta	2 nd	Zinc

INTRODUCTION

Metal ions are essential pre-requisites for many reactions taking place in bacterial cells. However, excess amount of heavy metals can be toxic. Bacteria have evolved different mechanisms to protect the cell from the toxicity of metals. The presence of hazardous levels of heavy metals has been reported in subsurface sediment and groundwater and agricultural soils leading to the emergence of heavy metal resistant bacteria. Furthermore, understanding the regulation of heavy metal resistance could be useful for biological waste treatment and estimating the impact that industrial activity may have on natural ecosystems. Therefore, understanding the mechanisms and genes responsible for heavy metal resistance in these bacteria is an important field of study. Moreover, training and learning bioinformatic tools to explore genome sequence is useful skill to learn for research. Hence, the aim of this summer project was to familiarize the students with bioinformatics databases, sequence retrieval and analysis.

The students did a literature based survey of the information on the role of heavy metals and their effects on metabolism and other pathways. A brief accounts on different heavy metal resistance genes were presented in the project reports submitted by each student. GOOGLE SCHOLAR and PUBMED were used for literature search. Initially, a list of metal resistance bacteria was compiled in a tabular form.

METHODS

Heavy metals resistance genes from different bacteria were identified. A tabular report was compiled for nucleotide and protein sequences for all the genes. The students learned about NCBI database and how to retrieve and save *fasta* files. The sequences were then analysed for similarity using BLAST analysis at both gene and protein levels.

RESULTS

BLASTn and BLASTp results were individually turned in by the students in their respective project reports. The genes and bacteria selected were outlined in the form of tables. Sequence similarity results and graphical summaries were also presented. Moreover, future perspectives on the use of metal resistance bacteria as potential tools for bioremediation of polluted environments were also mentioned.

Learning outcomes:

- Using Entrez query to search database
- Sequence retrieval and sequence file formats
- Identifying a gene/protein using BLASTn and BLASTp.
- Finding a homologue in another species
- Understanding the the difference in sensitivity between megablast and blastn.
- Understanding BLAST output, concept of E value, identity and similarity

Annual Report for the student training projects conducted under the guidance of Dr. Vandana Gupta under the DBT star college Scheme from June 2020 to March 2021

A total of 15 students from the BSc (H) Microbiology were provided a year-long training starting from June 2020 to July 2021 on the delineation of inhibitors of various proteins of SARS-CoV-2 using the molecular docking approach with the SeeSAR software purchased under the DBT star college scheme.

Students benefitted from these projects:

3rdyr Students: Tanya Srivastava, Simran Preet Kaur, Priya Bhatia, Shreya Kapoor, Anurag Singh, Bhawana Sharma, Mohd Fardeen Husain Shahanshah, Himanshu Sehrawat

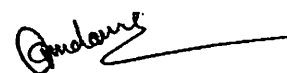
2nd yr students: Chanuka Wijewardana, D. Anvitha, Sachin Pal, Vasu Sharma, Abhilash Jeas George, Soma Banerjee, Pritika Baranwal

The emergence of SARS-CoV-2 marked the devastating outbreak of the respiratory illness called the Coronavirus Disease 2019 (COVID-19) pandemic. The viral genome is composed of a positive-sense, single stranded RNA molecule which is 5'-capped and 3'-polyadenylated. It encodes for the four structural and sixteen non-structural proteins (NSPs), which are responsible for the formation of the replication and transcription complex (RTC), taking over the host machinery and assembly of the viral particle. Targeting crucial structural as well as non-structural proteins with already approved drugs is a promising approach to delineate novel therapeutic agents in less cost and short time that the severity of COVID-19 pandemic mandates. In an attempt to provide training to the students in exploring various bioinformatics platforms and molecular docking and at the same time to describe novel inhibitors to SARS-CoV-2 the students either alone or in groups of 2-3 students worked on the following projects:

1. Identification of SARS-CoV-2 RNA Capping Inhibitors using Computational Molecular Docking Studies Based Virtual Screening: A Drug Repurposing Approach
2. Computational Identification of SARS-CoV-2 Nsp3 Antagonists
3. In silico evaluation of potential intervention against SARS-CoV-2 RNA-dependent RNA Polymerase
4. Virtual screening of approved drugs using SARS-CoV-2 Nsp1 as target

5. M Protein of SARS-CoV-2: A Potential Drug Target
6. Potential Antivirals targeting Spike Glycoprotein of SARS-CoV-2
7. Investigation into potential inhibitors of SARS-CoV - 2 NSP9: A molecular docking study
8. In-silico Screening to Delineate Novel Antagonist to SARS-CoV-2 Nucleocapsid Protein
9. Using in silico analysis to discover SARS-CoV-2 Nsp7-8 inhibitors
10. SARS-CoV-2 Non-structural Protein (Nsp) 13: An Analysis

In the process students learnt comprehensive literature search to discern all the information to carry out molecular docking including describing a target protein and the crucial residues responsible for its function structural stability. Students were trained to retrieve useful sequences from NCBI data base, sequence annotations, use Clustal omega to identify/verify conserved residues through Multiple Sequence Alignments. Students explored RCSB protein database (PDB) and were taught analysis of different PDB structures available for a single protein and how to analyze the structure and retrieval of an appropriate 3D structure of target protein. Students also learnt to create homology models for those proteins where the 3D structures were not available (M protein of SARS-CoV-2) and validate them on Ramachandran plot. Further students learnt to define the binding pockets either around the co-crystallized ligand or without a ligand and modification of the pocket if required. SeeSAR was then used to generate docking poses of FDA approved drugs on the receptor and their affinity and other properties were estimated. Residue-lead interactions were then visualized on Discovery Studio Visualizer and PyMOL. In silico approach used in this study assisted in prediction of several potential inhibitors for N, S, M, NSP1-16 which will which may be helpful for the scientists to develop effective drugs against this virus. Students will be further trained to explore the other features of SeeSAR software such as fragment building or hopping to improve the binding affinity and remove the clashes if any of the selected leads to optimize these leads further.



VANDANA GUPTA
Professor,
Department of Microbiology
Ram Lal Anand College

**f. Certificate
Courses
Organized for
Students**



Ram Lal Anand College University of Delhi



Invites application for
4 week Online Certificate Course
For Undergraduate Students on
Science Writing and Research Ethics

Organised by
Department of Microbiology
under the aegis of

Start Date
(tentative):
6th July 2020

DBT STAR College Scheme

Important dates:

Registration opens on: 29th June 2020

Registration closes by: 4th July 2020

Limited Seats and preferences
will be given to RLA students

Link for online registration:

https://docs.google.com/forms/d/e/1FAIpQLSfdU6DS_qLz5jy6buy2i2zBegZiuNAOXkKkU2_T0aMFOc0QWQ/viewform?usp=sf_link

COURSE HIGHLIGHTS

- Effective scientific writing
- Searching the literature
- Referencing tools
- Plagiarism
- Communicating Science



KEY HIGHLIGHTS

- Expert Lectures twice a week
- Interactive session once a week
- Weekly assignments
- Hands on training

For further information, please contact:
dr.shaliniswami@gmail.com

Dr. Shalini Swami
Coordinator

Dr. Prerna Diwan
Coordinator, Star College Scheme

Dr. Rakesh Kumar Gupta
Principal

The Department of Microbiology, Ram Lal Anand College organized a four-week online course on “**Science Writing and Research Ethics**” under aegis of the **DBT Star College Scheme**. It was hosted on google meet from 13th July, 2020 to 7th August, 2020.

The online course was planned and devised with an aim to provide students necessary skills and knowledge imperative for quality science writing, communication as well as research ethics. The curriculum composition for the four-week online certificate course was to cover all the relevant knowledge and skills most importantly to prepare the students to write, present and communicate science more effectively in scientific communities as well as to lay audience.

We had **114** registered participants from all over India for the course including Under Graduate students and research scholar from several Universities and Research Institutions working in ICMR and DBT funded projects. The **70** participants were shortlisted based on their profile. Certificate of participation and appreciation were awarded to **63** participants on the basis of their successful completion of quiz after each session and mandatory attendance of at least 3 complete sessions.

Several Distinguished resource persons invited for sharing their expertise In Scientific Writing and Research Ethics which includes **Prof. N Raghuram**, School of Biotechnology, GGS Indraprastha University; **Dr. Rinu Sharma**, University School of Biotechnology GGS Indraprastha University; **Dr. Rajeev Kaul**, Department of Microbiology, University of Delhi; **Dr. Monali Bhattacharya**, Department of Humanities & Social Sciences Jaypee Institute of Information Technology; **Dr. Vibha Gupta**, Department of Biotechnology, Jaypee Institute of Information Technology.



RAM LAL ANAND COLLEGE UNIVERSITY OF DELHI

PRESENTS

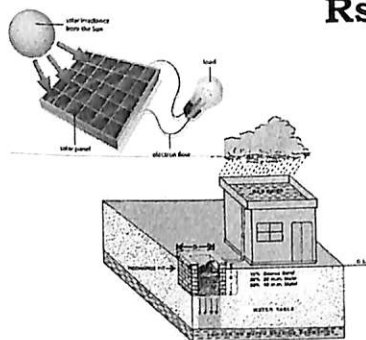
Online Certificate Course on “Exploring Feasible Alternative Technologies to Address Environmental Issues”

UNDER DBT STAR COLLEGE SCHEME

12th SEPTEMBER to 22nd November, 2020

Classes will be hosted on Google Meet on Weekends (2 to 4 pm) 
e-Certificate will be provided after completion of the course

Course fees: **Free (for Ram Lal Anand College's Students)**
Rs. 1000/- (Non-Ram Lal Anand Participant)



Registration Link: <https://forms.gle/xuMyrRcsnVsfKYGV6>

Dr. Swagata Karmakar
Course Coordinator
Department of Environmental
Studies

Dr. Purna Diwan
DBT Star College Scheme
Coordinator

Dr. Rakesh Kumar
Vice-Principal

Dr. Rakesh Kumar Gupta
Principal

REPORT – Online Certificate Course on “Exploring Feasible Alternative Technologies to Address Environmental Issues”

UNDER DBT STAR COLLEGE SCHEME, Department of Environmental Studies and Department of Microbiology, Ram Lal Anand College organised an online Certificate Course on “Exploring Feasible Alternative Technologies to Address Environmental Issues” from 12th September to 22nd November 2020 (only on Saturday and Sunday, from 2:00pm to 4:00pm) via Google meet. This course was 40 hours in duration.

This course was methodized under the guidance of Professor Rakesh Kumar Gupta, Hon'ble Principal of Ram Lal Anand College and DBT Star College Scheme Coordinator Professor Prerna Diwan. And the course Coordinator was Dr. Swagata Karmakar.

The online program was 40 hrs for an audience of about 2nd and 3rd year undergraduates students, from different fields such as Microbiology, Computer Science, Mathematics, Statistics, Geology, Business Management, B.Com (Hons), B.Com (Prog), Political Science, History, English, Mass Communication, Hindi, B.A. Program.

The objective of this course is to impart practical knowledge, understanding, and skill to undergraduate students besides theory towards environmental problems and challenges and figure out local level solutions that can directly and easily enforce realistic environmental solutions for successful implementation.

Topics such as Solar panel, Rainwater harvesting, Solid waste management, Biogas, Biodiversity, Sewage treatment, Climate change, e-waste, Eco-tourism, Landfill, Green Genesis, Hydroponics, Air pollution/ indoor/ parali/odd-even, Heavy metals, Composting, Green Chemistry, Herbal garden, Water pollution, Natural disaster, Biodiesel.

Total of 20 speakers were invited for this talk. All of them are experts in their fields and have many years of experience in the field of environment. Around 105 students were given the e-Certificate after completion of the course.

Day	Date	Speaker	Affiliation	Topic
1	12-Sep-20	Mr. Subrahmanyam Pulipaka	Chief Executive Officer, National Solar Energy Federation of India (NSEFI)	Future Energy: Solar Technology and Application
2	13-Sep-20	Mr. Shubham Oswal	Director at Global Green Concepts Pvt Ltd	Skywater collection: Rain water harvesting, Ground water recharge
3	19-Sep-20	Mr. Rahul Singh	Assistant Manager, ICLEI South Asia	Managing solid wastes
4	20-Sep-20	Mr. AK Singh	CEO, Perfect Bio -Waste & Power Management Pvt. Ltd.	Effective use of domestic waste: Bio gas
5	26-Sep-20	Dr. Arunava Dutta	Postdoctoral researcher Centre for Invasion Biology Dept. of Botany and Zoology Stellenbosch University South Africa	Saving biodiversity across local to global scale
6	27-Sep-20	Dr. Prabhat Kumar Tanwar	Director & CEO Detecinnovations Pvt Ltd	Waste water treatment plant - STP
7	03-Oct-20	Ms. Bedoshruti Sadhukhan	Senior Programme Coordinator ICLEI South Asia	Assessing the feasibility of Climate change adaptation's local practices
8	04-Oct-20	Mr. Vaibhav Nautiyal	DIRECTOR (Technical) and lead consultant, Environemnt Health & Safty, INDUS	Electronic waste management: challenge and solution at local level
9	10-Oct-20	Mr. Rajesh Juneja	Chief Manager, Delhi Tourism, Delhi Government	Urban ecotourism for more committed citizens: challenge and solution at local level
10	11-Oct-20	Dr. Vinod Kumar	Assistant Professor, Special Centre for Nanoscience, Jawaharlal Nehru University	Sustainable landfill in the future framework of waste management: local-level challenges and solutions
11	17-Oct-20	Dr. Arti Jain	Assistant Professor, Daulat Ram College, University of Delhi	Green Genesis of personal care products: a step towards the protection of the environment and human health at local level
12	18-Oct-20	Mr. Priyanshu Jain	Founder, Director at Agri Joy & Indian Hydroponics	Hydroponics: a sustainable alternative to soil gardening

13	24-Oct-20	Ms. Roopa Kumari	Assistant Professor, Ramjas College, University of Delhi	Air pollution: Environmental problems and practicle solutions
14	31-Oct-20	Dr. Sanchayita Rajkhowa	Assistant Professor, Department of Chemistry, Jorhat Institute of Science & Technology, Jorhat, Assam, India	Toxic Metals in the Environment: Impact and Removal
15	01- Nov-20	Dr. Pawan Kumar Jha	Founder Director, MARC India, Ex, Sr.Technical Specialist (FSM, SLWM and toilet technology), a World Bank supported project	Decentralised composting: a sustainable solution at home
16	07- Nov-20	Dr. Beena Negi	Assistant Professor, Department of Chemistry, Gargi College, University of Delhi	Applying green chemistry to address local and global environmental issues
17	08- Nov-20	Dr. Dinesh Albertson Winston	Field Biologist, Aravalli Biodiversity Park and Scientist, CISMHE, University of Delhi	Herbal Garden: Sustainable urban greening strategies for compact cities
18	15- Nov-20	Dr. Arif Ahamad	Assistant Professor, Daulat Ram College, University of Delhi	Urban Water Management in Delhi NCR: Yamuna River Pollution and Sustainable Solutions for the Future
19	21- Nov-20	Dr. Amit K Singh	Assistant Professor, Deshbandhu College, University of Delhi	Nature-based solutions for natural disasters management
20	22- Nov-20	Mr. Sandeep Chaturvedi	President, Biodiesel Association of India (BDAI)	Bio-diesel: Viable Alternative to Environmental Pollution

Dr. Swagata Karmakar

Course Coordinator



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Patron:

**Dr. Dr. Rakesh Kumar Gupta,
Principal, Ram Lal Anand College**

The Department of Microbiology, Ram Lal Anand College organized a ten-week online course on “**Python in Biological Sciences**” under aegis of the **DBT Star College Scheme**. It was hosted on google meet from 16th January, 2021 to 10th April, 2021.

The online course was planned and devised with an aim to provide students necessary skills and knowledge imperative to analyze and manipulate biological Data, in the form of DNA sequences, Protein Sequences and protein structure in research job profiles it is essential to know a powerful programming language to perform day to day tasks. The curriculum composition for the ten-week online certificate course was to cover all the relevant knowledge and skills most importantly to prepare the students for data Analyst, variant Analyst, data Scientist, NGS data analyst job, who are going to analyze genome data or SNP data or NGS data or Microbiome data. As these job profiles require mandatory programming experience.

We had **81** registered participants from all over India for the course including Under Graduate students and research scholar from several Universities and Research Institutions including Martin Luther Christian University, Shillong, Delhi Technological University, New Delhi and Central University of Punjab, Punjab. Certificate of successful completion of the course were awarded to **32** participants on the basis of their performance in final assignment and quiz at the end of the session and mandatory attendance of all the sessions.

Python Programming language expert and eminent resource speaker **Dr. Kshipra Chauhan** was invited to conduct the sessions on “**Python in Biological Sciences**” for ten-weeks. She is also the founder of EduBooster Research and Technology Consultancy and a very diversified professional having 14+ years of R&D and Academic experience as Scientist, Research fellow and lecturer. She was a PhD in Biotechnology from National Institute of Malaria Research under the aegis of ICMR.

8. Publications



Repurposing Potential of Diminazene Aceturate as an Inhibitor of the *E. coli* DNA Gyrase B

Varsha Dwivedi¹, Archana Ayyagari², Rakhi Chandran³, Prerna Diwan¹, Sanjay Gupta⁴ and Vandana Gupta^{1*}

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⁴Independent Scholar (former Head and Professor, Department of Biotechnology, Jaypee Institute of Information Technology, Noida, Sector 62, UP, India)

ABSTRACT

Drug-resistant *Escherichia coli* (*E. coli*) has overburdened the healthcare facilities in recent years and is getting hard to combat, mandating search for novel therapeutics with a broad antibacterial spectrum and high chemotherapeutic index. The 24 kDa domain of DNA gyrase B that is involved in the ATPase activity has been reported to be a promising target for inhibitors. A PDB structure (1KZN) of the 24kD domain of gyrase B with the co-crystallized ligand clorobiocin was used for the docking studies to explore a library of 2924 FDA approved drugs from www.zinc.docking.org. FlexX docking module from Biosolve IT was used for receptor preparation and *in silico* docking experiments. Docking studies on the pocket created around the reference ligand clorobiocin revealed the best score with diminazene aceturate and it also demonstrated interactions with the crucial amino acids present within the pocket. Diminazene aceturate has been conventionally used as an antiparasitic molecule in animals and it has also been demonstrated to exhibit repurposing potential in the treatment of disorders triggered due to overproduction of inflammatory cytokines, pulmonary hypertension, ischemia-induced cardiac pathophysiology, etc. among others. Findings from this study indicate the possibility of repurposing the age-old molecule diminazene aceturate into a DNA gyrase B antagonist to combat not just the drug-resistant *E. coli* but also other gram-negative ESKAPE pathogens. It may also aid in alleviating the inflammatory response induced in the body of the patients suffering from septicemia caused by a variety of Gram-negative bacterial pathogens.

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- ESBL
- *Escherichia coli*
- Antibiotics
- Anti-microbial resistance
- Docking
- Drug repurposing
- DNA gyrase B
- NDM

ABBREVIATIONS

ADME: Absorption Distribution Metabolism and Excretion; ESBL: Extended Spectrum β -Lactamase; ESBL-Ec: ESBL producing *E. coli*; CADD: Computer-Aided Drug Discovery; MDR: Multiple Drug Resistance; NDM: New Delhi Metallo-Beta-Lactamase; UTI: Urinary Tract Infection

INTRODUCTION

E. coli is a gram negative bacterium, normally a commensal inhabiting the human colon, and has indeed proved to be a great experimental organism of choice for all microbiology as well as gene cloning experiments for long. However, quite a few of its strains are known to cause various intestinal as well as extraintestinal diseases, owing to possession of a handful of virulence factors in some of its serotypes, which influence a number of metabolic processes [1]. Some of the problems caused by



In silico Screening of Approved Drugs to Describe Novel *E. coli* DNA Gyrase A Antagonists

Rakhi Chandran¹, Archana Ayyagari², Prerna Diwan³, Sanjay Gupta⁴ and Vandana Gupta^{3*}

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ABSTRACT

The alarming multiple drug resistance developed by *Escherichia coli* towards the routine conventional antibiotics owing to their non-judicious usage is fast becoming a tough menace. This necessitates the urgent unleashing of novel and diverse strategies and antibacterial compounds. Since finding a new antibiotic from the scratch, followed by endless clinical trials is exceedingly time-consuming, a powerful alternate strategy of CADD coupled with repurposing the available drugs could save precious time and money. DNA gyrases (topoisomerase II) of *E. coli* are among the promising new drug targets. The interface between the N-terminal domain of gyrA and C-terminal domain of gyrB which is targeted by most of the available inhibitory drugs, is of particular interest. Crucial active site residues within the N-terminal domain of gyrA were delineated through a literature search. FDA approved drugs were docked using FlexX on the receptors created around the co-crystallized reference ligand. Based on the docking scores and interactions with crucial residues, 12 leads were shortlisted, namely ceforanide, tetrahydrofolic acid, azlocillin, cefazolin, adenosine triphosphate, cefixime, dihydronicotinamide adenine dinucleotide, moxalactam, leucal, cromoglicic acid, cefotetan, and cedax. Surprisingly quinolones, which are approved inhibitors of gyrases were not picked up in the top leads, rather, the most dominant class of molecules that docked successfully was cephalosporin. Our results indicated that these cephalosporins, as well as the other shortlisted leads, could be further optimized and validated through *in-vitro* experiments for their potential as gyrase A antagonists. Hence the present study holds immense promise in combating MDR of human bacterial pathogens.

ABBREVIATIONS

ADME: Absorption, Distribution, Metabolism, and Excretion; CADD: Computer-Aided Drug Discovery; ESBL: Extended Spectrum β -Lactamase; ESBL-Ec: ESBL Producing *E. coli*; MDR: Multiple Drug Resistance; NDM: New Delhi Metallo- β -Lactamase; SD8: Simocyclinone D8; UTI: Urinary Tract Infections

INTRODUCTION

Escherichia coli, a common intestinal pathogen, is known to cause gastroenteritis and a variety of extra-intestinal diseases, such as Urinary Tract Infections (UTIs), meningitis among newborns, colisepticemia, and skin and soft tissue infections [1,2]. *E. coli* infection is also reported to be responsible for several post-operative abscesses and other complications such as neonatal sepsis [3,4]. It has been developing more and more resistance towards the available antibiotics. Extended-

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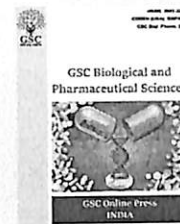
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- ESBL
- *Escherichia coli*
- Antibiotics
- Anti-microbial resistance
- Docking
- Drug repurposing
- DNA gyrase A
- Cephalosporins



(RESEARCH ARTICLE)



Antibacterial potential of indigenous plant extracts against multidrug-resistant bacterial strains isolated from New Delhi region

Jatin Chadha, Manish Gupta, Nishtha Nagpal, Madhav Sharma, Tarun Adarsh, Vaibhav Joshi, Vidhi Tiku, Tamanna Mittal, Vaibhav Kumar Nain, Ashish Singh, SK Snigdha, Nidhi S. Chandra, Salome John and Prerna Diwan *

Department of Microbiology, Ram Lal Anand College, University of Delhi South Campus, New Delhi 110021, India.

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Abstract

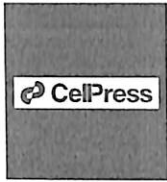
The extensive use of antibiotics to treat bacterial infections has led to the widespread emergence of multidrug-resistant (MDR) pathogens, becoming increasingly difficult to treat with currently available antibacterial agents. The present study is based on prospecting the ethnomedicinal potential of Indian plant varieties for the treatment of MDR bacteria. Plants produce an array of diverse pharmacological compounds in defence against microbial pathogens which may be employed as a novel intervention strategy to combat MDR human pathogens. In the present study, the antimicrobial activity of extracts of four common Indian plants: *Azadirachta indica* (Neem), *Murraya koenigii* (Kadipatta), *Phyllanthus emblica* (Amla), and *Ocimum sanctum* (Tulsi) prepared in four solvents, water, methanol, ethanol, and chloroform was tested against nine MDR bacterial isolates. Kirby-Bauer well diffusion assays were adopted to assess the antimicrobial activity of plant extracts against the MDR strains. The potency of plant extracts was examined by determining the Minimum Inhibitory Concentration (MIC) and Minimum Bactericidal Concentration (MBC). All MDR isolates including *Staphylococcus haemolyticus*, *Bacillus subtilis*, *B. thuringiensis*, *B. cereus*, *Enterobacter xiangfangensis*, *Klebsiella pneumoniae*, and *Pseudomonas aeruginosa* were significantly inhibited by the plant extracts. Test extracts showed promising antibacterial potential against MDR *P. aeruginosa* and *Bacillus* sp. with low MIC values ranging between 0.02-1.56 mg/ml, while most plant extracts exhibited either moderate MBC values or bacteriostatic effects. To the best of our knowledge, this is the first study that demonstrates the potential use of endemic *A. indica*, *M. koenigii*, *P. emblica*, and *O. sanctum* as therapeutic agents against circulating MDR human pathogens in the national capital.

Keywords: Plant extracts; Antimicrobial; Minimum inhibitory concentration; Minimum bactericidal concentration; MDR pathogens; *Pseudomonas aeruginosa*.

1. Introduction

Antibiotics are small antimicrobial drugs administered to cure bacterial infections in patients. They revolutionized medical science in the 20th century and emerged as wonder drugs, especially prolonging life expectancy and decreasing mortality due to microbial infections. However, their rampant and irrational use has led to dissemination in environmental ecosystems escalating the problem of Antimicrobial Resistance (AMR) [1, 2]. The emergence of AMR is a natural evolutionary process used by microorganisms in response to selective pressure against antimicrobial compounds in their surroundings [3]. Sir Alexander Fleming spoke about the emergence of AMR in his Nobel lecture. AMR to Penicillin was first reported in several strains of *Staphylococcus aureus* [4]. With the evolution of "superbugs" such as 'ESKAPE' pathogens: *Enterococcus* sp., *S. aureus*, *Klebsiella pneumoniae*, *Acinetobacter baumannii*, *P. aeruginosa*, and *Enterobacter* sp., AMR has now manifested in the form of a global health crisis. The problem of AMR has become more serious today due to the lack of newer antimicrobial scaffolds [1]. India has been called the "AMR capital of the

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Review article

Antibacterial activity of medicinal plants against ESKAPE: An update

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ABSTRACT

Antibiotic resistance has emerged as a threat to global health, food security, and development today. Antibiotic resistance can occur naturally but mainly due to misuse or overuse of antibiotics, which results in recalcitrant infections and Antimicrobial Resistance (AMR) among bacterial pathogens.

These mainly include the MDR strains (multi-drug resistant) of ESKAPE (*Enterococcus faecium*, *Staphylococcus aureus*, *Klebsiella pneumoniae*, *Acinetobacter baumannii*, *Pseudomonas aeruginosa*, and *Enterobacter* species). These bacterial pathogens have the potential to "escape" antibiotics and other traditional therapies. These bacterial pathogens are responsible for the major cases of Hospital-Acquired Infections (HAI) globally. ESKAPE Pathogens have been placed in the list of 12 bacteria by World Health Organisation (WHO), against which development of new antibiotics is vital. It not only results in prolonged hospital stays but also higher medical costs and higher mortality. Therefore, new antimicrobials need to be developed to battle the rapidly evolving pathogens. Plants are known to synthesize an array of secondary metabolites referred as phytochemicals that have disease prevention properties. Potential efficacy and minimum to no side effects are the key advantages of plant-derived products, making them suitable choices for medical treatments. Hence, this review attempts to highlight and discuss the application of plant-derived compounds and extracts against ESKAPE Pathogens.

1. Introduction

Many new antibiotics have been produced in the last four decades by pharmacological industries, and resistance by microorganisms to these drugs have been accelerated due to impetuous use of antibiotics. A report submitted to the United Nations in 2019, expects that infections caused by antibiotic resistant bacteria would cause 10 million deaths per annum and an economic crisis just like the 2008–2009 global financial collapse by 2050 [1]. Antimicrobial Resistance (AMR) can be conferred in bacteria via genetic mutation and Horizontal Gene Transfer (HGT) through chromosomes, plasmids, transposons and other mobile genetic elements [2]. AMR is a natural prevalence that is connected to a rise in "mortality, morbidity and economic burden" of nations worldwide [3]. Till date, there have been no evidences for effective antimicrobial compounds against the AMR bacteria caused infections [4, 5]. Thus, there is an immediate need for novel treatment methods targeting the issues caused by AMR.

Global priority pathogen list (PPL) was released by the World Health Organization (WHO) in 2016 to guide the researcher in discovery, and

development of new antibiotics [6]. In this sequence the five-year NAP (National Action Plan) for the control of AMR (2017–2021) that was developed by the Indian Ministry of Health and Family Welfare in April 2017, was presented at the 70th World Health Assembly (WHA) held at Geneva in May 2017. It geared towards increasing awareness, surveillance and investment in research to combat the spread of AMR. However, there are many hurdles to overcome such as lack of funding, strict implementation and ethical commercial practices [7].

The prime class of opportunistic pathogens that are a universal threat to humankind are entitled as 'ESKAPE' (Enterococcus faecium, Staphylococcus aureus, Klebsiella pneumoniae, Acinetobacter baumannii, Pseudomonas aeruginosa, and Enterobacter spp.) as they are known to "escape" antibiotics and other traditional treatments [8]. This imminent health threat has activated the development of novel antimicrobial therapies, where better care of the patient and improved governance happens to be the requirement of the hour.

The European Center for Disease Control (ECDC) and the Center for Disease Control (CDC) in USA gave the subsequent standardized definitions for multidrug resistant (MDR), extensively drug resistant (XDR),

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Review

COVID-19 Vaccine: A comprehensive status report

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ARTICLE INFO

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ABSTRACT

The current COVID-19 pandemic has urged the scientific community internationally to find answers in terms of therapeutics and vaccines to control SARS-CoV-2. Published investigations mostly on SARS-CoV and to some extent on MERS has taught lessons on vaccination strategies to this novel coronavirus. This is attributed to the fact that SARS-CoV-2 uses the same receptor as SARS-CoV on the host cell i.e. human Angiotensin Converting Enzyme 2 (hACE2) and is approximately 79% similar genetically to SARS-CoV. Though the efforts on COVID-19 vaccines started very early, initially in China, as soon as the outbreak of novel coronavirus erupted and then world-over as the disease was declared a pandemic by WHO. But we will not be having an effective COVID-19 vaccine before September, 2020 as per very optimistic estimates. This is because a successful COVID-19 vaccine will require a cautious validation of efficacy and adverse reactivity as the target vaccinee population include high-risk individuals over the age of 60, particularly those with chronic co-morbid conditions, frontline healthcare workers and those involved in essentials industries. Various platforms for vaccine development are available namely: virus vectored vaccines, protein subunit vaccines, genetic vaccines, and monoclonal antibodies for passive immunization which are under evaluations for SARS-CoV-2, with each having discrete benefits and hindrances. The COVID-19 pandemic which probably is the most devastating one in the last 100 years after Spanish flu mandates the speedy evaluation of the multiple approaches for competence to elicit protective immunity and safety to curtail unwanted immune-potential which plays an important role in the pathogenesis of this virus. This review is aimed at providing an overview of the efforts dedicated to an effective vaccine for this novel coronavirus which has crippled the world in terms of economy, human health and life.

1. Introduction

The novel beta-coronavirus SARS-CoV-2 is believed to have emerged last year in 2019 in Wuhan from Bats. Crossing the species barrier it entered human beings with furtherance of infection through human to human transmission. The beta-coronaviruses have jumped between the species and have caused three zoonotic outbreaks namely, SARS CoV (2002-03), MERS-CoV (2012), and SARS-CoV-2 (2019- till date) in the last 2 decades. The existence of a myriad of coronaviruses in bats, including many SARS-related CoV (Severe Acute Respiratory Syndrome related Coronaviruses) and the sporadic crossing over of the species barriers of the coronaviruses to humans, suggest that the future

occurrences of zoonotic transmission events may sustain (Ou et al., 2020).

Since its emergence in Nov 2019, it has spread to 188 countries and 25 territories around the globe, despite elaborate efforts by WHO and Governments to contain the infection, primarily owing to the highly infectious nature of this virus (Anon, 2020a; Anon, 2020b). As of 2 July 2020, 10,533,779 cases have been reported globally with 512,842 deaths ((WHO) World Health Organisation, 2020). There has been a monumental increase in the number of infected patients, with a 7-day moving average of 210,209 cases per day, as of 2 July 2020 (Anon, 2020a). SARS-CoV-2, a highly contagious virus, tends to spread by the inhalation of the respiratory aerosols, direct human contact, and via

Abbreviations: SARS, Severe Acute Respiratory Syndrome; CoV, Coronavirus; SARS-CoV, Severe Acute Respiratory Syndrome Coronavirus; SARS-CoV-2, Severe Acute Respiratory Syndrome Coronavirus 2; MERS-CoV, Middle East Respiratory Syndrome Coronavirus; COVID-19, Coronavirus Disease 2019; hACE2, Human Angiotensin- Converting Enzyme 2; DPP4, Dipeptidyl Peptidase; ARDS, Acute Respiratory Distress Syndrome; RBD, Receptor Binding Domains; RBM, Receptor Binding Motif; NSP, Non-structural Proteins; NTD, N Terminal Domain; TMPRSS2, Transmembrane Protease Serine 2; VLP, Virus-Like Particle; TLR, Toll-Like Receptor; LAV, Live Attenuated Vaccine; CP, Convalescent Plasma; LNP, Lipid Nanoparticle; DC, Dendritic Cells; ADE, Antibody-Dependent Enhancement; nAb, Neutralizing Antibody.

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Review

COVID-19 Vaccine: A comprehensive status report

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occurrences of zoonotic transmission events may sustain (Ou et al., 2020).

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Nitrogen Challenges and Opportunities for Agricultural and Environmental Science in India

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In the last six decades, the consumption of reactive nitrogen (N_r) in the form of fertilizer in India has been growing rapidly, whilst the nitrogen use efficiency (NUE) of cropping systems has been decreasing. These trends have led to increasing environmental losses of N_r , threatening the quality of air, soils, and fresh waters, and thereby endangering climate-stability, ecosystems, and human-health. Since it has been suggested that the fertilizer consumption of India may double by 2050, there is an urgent need for scientific research to support better nitrogen management in Indian agriculture. In order to share knowledge and to develop a joint vision, experts from the UK and India came together for a conference and workshop on “Challenges and Opportunities for Agricultural Nitrogen Science in India.” The meeting concluded with three core messages: (1) Soil stewardship is essential and legumes need to be planted in rotation with cereals to increase nitrogen fixation in areas of limited N_r availability. Synthetic symbioses and plastidic nitrogen fixation are possibly disruptive technologies, but their potential and implications must be considered. (2) Genetic diversity of crops and new technologies need to be shared and exploited to reduce N losses and support productive, sustainable agriculture livelihoods.

REVIEW



Recent advances in the diagnosis of COVID-19: a bird's eye view

Bhawna Sharma^a, Mohd Fardeen Husain Shahanshah^a, Sanjay Gupta^b and Vandana Gupta^a

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ABSTRACT

Introduction: The COVID-19 pandemic is still escalating and has shaped an extraordinary and pressing need for rapid diagnostics with high sensitivity and specificity. Prompt diagnosis is the key to mitigate this situation. As several diagnostic tools for COVID-19 are already available and others are still under development, mandating a comprehensive review of the efficacy of existing tools and evaluate the potential of others.

Areas Covered: Currently explored platforms for SARS-CoV-2 diagnostics and surveillance centered on qRT-PCR, RT-PCR, CRISPR, microarray, LAMP, lateral flow immunoassays, proteomics-based approaches, and radiological scans are overviewed and summarized in this review along with their advantages and downsides. A narrative literature review was carried out by accessing the freely available online databases to encapsulate the developments in medical diagnostics.

Expert Opinion: An ideal detection method should be sensitive, specific, rapid, cost-effective, and should allow early diagnosis of the infection as near as possible to the point of care that could alter the current situation for the better. Medical diagnostics is a highly dynamic field as no diagnostic method available for SARS-CoV-2 detection offers a perfect solution and requires more attention and continuous R&D to challenge the present-day pandemic situation

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SARS-CoV-2; nucleocapsid protein; diagnosis; covid-19; naat; serodiagnosis

1. Introduction

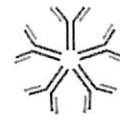
In December 2019, cases of enigmatic disease leading to pneumonia in infected individuals of unknown etiology were reported

in Wuhan City, Hubei Province of China. The number of cases grew rapidly across the region, ultimately disseminating to 183 countries and 27 territories globally within a short span of around 6 months leading to a full-blown pandemic. There have

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^aBoth the authors contributed equally to the manuscript, hence both are the 1st authors
Abbreviations

- (1) CDC: Center for Disease Control and Prevention
- (2) CRISPR: Clustered regularly interspaced short palindromic repeats
- (3) CSIR-IGIB: Council of Scientific & Industrial Research-Institute of Genomics and Integrative Biology
- (4) CT: Computerized Tomography
- (5) DETECTR: DNA Endonuclease Targeted CRISPR Trans Reporter
- (6) FDA: Food and Drug Administration
- (7) HUDSON: Heating Unextracted Diagnostic Samples to Obliterate Nucleases
- (8) LAF: Lateral flow immunoassays
- (9) LAMP: Loop-mediated isothermal amplification
- (10) MERS-CoV: Middle East Respiratory Syndrome Coronavirus
- (11) NAAT: Nucleic Acid Amplification Test
- (12) NGS: Next-generation sequencing
- (13) NP swabs: Nasopharyngeal swab
- (14) OP swabs: Oropharyngeal swabs
- (15) PBNA: Pseudovirus-based neutralizing assays
- (16) PUMCH: Peking Union Medical College Hospital
- (17) qRT-PCR: Quantitative Reverse Transcriptase -PCR
- (18) RAA: Recombinase aided amplification
- (19) RPA: Recombinase polymerase amplification
- (20) RT-PCR: Reverse Transcriptase Polymerase Chain Reaction
- (21) SARS-CoV: Severe Acute Respiratory Syndrome Coronavirus
- (22) SARS-CoV-2: Severe Acute Respiratory Syndrome Coronavirus 2
- (23) sgRNA: single-guide RNA
- (24) SHERLOCK: Specific High-sensitivity Enzymatic Reporter un-LOCKing
- (25) VNA: Virus neutralization assay
- (26) WHO: World Health Organization



Heterologous Protection to COVID-19 with BCG Vaccine: Deciphering the Reality Using Meta-Analysis Approach

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Keywords

BCG vaccination

COVID-19

Heterologous protection

SARS-CoV-2

Innate Immunity

ABSTRACT

The coronavirus disease (COVID-19) emerged in China in December 2019 and has since spread to over 188 countries affecting millions of individuals. Several reports in favour or against the heterologous protection conferred by the BCG vaccine against COVID-19 came up in the initial days of the pandemic and continue to do so. In this study, we compared the three worst-affected nations: The USA, India, and Brazil, their current pandemic scenario, and their respective national BCG immunization policies. USA recommends BCG vaccine only to a specific group of people and never had a national immunization scheme in place. Meanwhile, India introduced a nationwide scheme as early as 1948 and continues to endorse BCG immunization at birth. Brazil used the oral route to administer the BCG vaccine till 1976, and then shifted to intradermal injection. The correlation coefficient for the total number of cases, cases per million, the total number of deaths, deaths per million and case fatality rate ranges between any two countries under study. This indicates a very strong positive correlation in the various epidemiological parameters between countries with no national immunization scheme (USA) and countries with stringent national policies on BCG vaccination. The strongest correlation exists between the USA and Brazil followed by Brazil and India which is very closely followed by the USA and India. We found no consistent evidence to infer in favour of the hypothesis that BCG provides any non-specific protection against COVID-19.

Abbreviations

BCG: Bacillus Calmette-Guérin

COVID-19: Coronavirus Disease 2019

DPT: Diphtheria, Pertussis, and Tetanus

HPV: Human Papillomavirus

HSV: Herpes Simplex Virus

ICTV: International Committee on Taxonomy of Viruses

OPV: Oral Poliovirus Vaccine

RSV: Respiratory Syncytial Virus

SARS-CoV-2: Severe Acute Respiratory Syndrome Coronavirus 2

TB: Tuberculosis

WHO: World Health Organization

Introduction

It all started back in December 2019 when the case(s) of pneumonia of unknown etiology came up in Wuhan, China, and spread across the world in over 188 countries within months.



SARS-CoV-2 therapeutics: how far do we stand from a remedy?

Anurag Singh¹ · Vandana Gupta¹

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Abstract

The SARS-CoV-2 has affected millions worldwide and has posed an immediate need for effective pharmacological interventions. Ever since the outbreak was declared, the medical fraternity across the world is facing a unique situation of offering assistance and simultaneously generating reliable data with high-quality evidence to extend the scope of finding a treatment. With no proven vaccine or other interventions available hitherto, there is a frenzied urgency of sharing preliminary data from laboratories and trials to shape a global response against the virus. Several clinical trials with investigational and approved repurposed therapeutics have shown promising results. This review aims to compile the information of the reported molecules approved for emergency use and those under clinical trials and still others with good results in the studies conducted so far. Being an RNA virus, SARS-CoV-2 is prone to mutation; thus, the possibility of gaining resistance to available drugs is high. Consequently, a cocktail therapy based on drug interaction with different stages of its replicative cycle is desirable to reduce the chances of evolving drug resistance. Since this virus encodes several proteins, including 16 nonstructural and 4 structural proteins, this review also offers an insight into potential drug targets within SARS-CoV-2.

Keywords Antiviral · COVID-19 · Drug repurposing · SARS-CoV-2 · Target proteins

Abbreviations

3CLpro	Chymotrypsin-like protease
ACE2	Angiotensin-converting enzyme 2
ARDS	Acute respiratory distress syndrome
COVID-19	Coronavirus Disease.2019
CQ	Chloroquine
HCQ	Hydroxychloroquine
IFN	Interferon
MERS-CoV	Middle East Respiratory Syndrome Coronavirus
Nsp	Nonstructural protein
ORF	Open reading frame
RCT	Randomised Controlled Trial
RdRp	RNA-dependent RNA polymerase

SARS-CoV	Severe Acute Respiratory Syndrome Coronavirus
SARS-CoV-2	Severe Acute Respiratory Syndrome Coronavirus 2
TMPRSS2	Transmembrane Serine Protease 2
RECOVERY	Randomised Evaluation of COVID-19 Therapy

Introduction

Very recently, in December 2019, a novel coronavirus, now designated as Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2), triggered a pneumonia outbreak in Wuhan, China [1], and since then has spread rapidly across the world. This outbreak was declared to be a “pandemic by the World Health Organisation (WHO) on March 11, 2020”. SARS-CoV-2 belongs to the same family of viruses as Severe Acute Respiratory Syndrome Coronavirus (SARS-CoV) and the Middle East Respiratory Syndrome Coronavirus (MERS-CoV), which caused outbreaks in 2002 and 2012, respectively. According to Johns Hopkins University and Medicine Coronavirus Resource Center (<https://coronavirus.jhu.edu>), there have been 56,901,880 laboratory-confirmed cases with over

We do not recommend these drugs to be taken without a valid prescription. Guidelines from regulating authority must be followed strictly.

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FOLDSCOPE: A NEW AGE EXPLORATORY EDUCATIONAL TOOL

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Abstract

Science influences all aspects of everyday life. From the environment to the food we eat, science is everywhere. So its very important that we develop and facilitate the use of devices which are simple to use for everyone. Foldscope is one such instrument that can help us explore life sciences to environmental science, physical science to earth science, engage students in learning science beyond the classrooms, inquiring, questioning and investigating the world around them. In this chapter we present various observations made through the foldscope using cheek cells and blood cells after staining with different stains. It's affordability and flexibility to attach to any smart phone camera for taking photos and video adds to its value and scope for virtual microscopy and microscopy for all.

Introduction

Foldscope is an optical microscope that can be assembled from simple components, including lens and some sheets of paper by the technique of origami. This paper microscope developed by Manu Prakash, designed to cost less than US\$1 is an ideal system for field investigations. The Foldscope is about the size of a bookmark. The commercial Foldscope kit includes magnets that help investigator attach the foldscope to Smartphones or tab devices so that photos and videos can be easily taken. Foldscope offers several advantages, easy to carry, ultralow cost, ease of handling, and a decent resolution, versatility to view different types of cells including human cells, fungal, algal and bacterial cells. It is ideal for environmental sampling, biological research and diagnostic evaluations. It can be utilized effectively for hands on science education of college and school students to generate their interest and to enable them to explore science. This in long term will enhance scientific temperament among students to drive them towards innovation and research. Anyone can be easily trained to use foldscope and is therefore suitable for masses. It provides a magnification of 140X along with the digital zoom. We obtained images of cheek cells and blood cells using different stains (methylene blue, acetocarmine, Feulgen) and generated data of cell images with minimal investment for preliminary exploratory educational or research studies.

Foldscope for routine staining procedures

The buccal epithelial cells also commonly referred to as cheek cells are routinely used in practical sessions in schools and colleges in laboratory settings to understand the basic structure of eukaryotic animal cells and to identify its different constituents like nucleus and mitochondria by various staining techniques with the use of light microscope. These cells are also studied by research scientists extensively to study human DNA as potential models to enable the early diagnosis of oral diseases and in other health conditions. Buccal cells are easy to collect simply by scrapping the inside of mouth, a technique that is minimally invasive and painless. These being the first line of contact with any hazardous agents entering the mouth including potential carcinogens, pollutant and genotoxic agent. Hence we viewed these cells through foldscope.

Simple staining of Human Cheek Epithelial Cells for viewing general organization of an animal cell: Sterile toothpicks were used to extract cheek cells by gentle scrapping and a buccal smear was prepared on a clean glass slide. The smear was allowed to air dry and stain methylene blue was poured over the smear and allow it to stand for 60 seconds. This was followed by gentle washing of the smear with water to remove the excess stain. The slide was blot dry and observed with foldscope. Thin, irregular, flat cells with a darkly staining prominent nucleus in each were observed (Figure 1)



Phytochemicals as Antiviral Agents: Recent Updates

Ritu Ghildiyal, Vijeta Prakash, V. K. Chaudhary,
Vandana Gupta, and Reema Gabrani

1 Introduction

The distressing threat of viral diseases to human beings raises a serious concern worldwide. New viral diseases have been reported continuously with severe health issues, and the lack of effective antiviral treatment makes them more severe (Kapoor et al. 2017). Most of the viral diseases like influenza, HIV, and chikungunya and other diseases caused by alphaviruses and flaviviruses are emerging with the great risk. More recently, Coronavirus disease (COVID-19) caused by a newly identified coronavirus has become pandemic, and affected world's population severely. Nowadays, the development of effective treatment and antivirals against virus has become difficult, due to the ability of viruses to mutate their genome and become resistant to drugs (Irwin et al. 2016). Moreover, the antiviral drugs also exhibit adverse side effects, which directly and indirectly affect the human health. This leads towards the development of plant-based drugs and herbal treatments with minimal side effects (Biswas et al. 2019). Human depends on the traditional plants to fulfill their basic necessities. Plant-based anti-infection treatments are attracting the focus of modern world healthcare researchers, because of the minimal side effects with effective health benefits. Over the past few years, plant-based drug discovery has been continuously evaluated for its antibacterial, antiviral, anticancerous, and

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The Gandhian Way of Life: An Impeccable Solution to World Environmental Concerns

Rakesh Kumar Gupta *and* Prerna Diwan

Abstract

"The Earth has enough resources for our need but not for our greed."

This inspiring phrase of Gandhi depicts his concern for nature and environment. Gandhi's consciousness of environment and concerns are clear in the entirety of his works and discourses. Gandhian way of thinking considers human beings and their environment as mutually interlinked, as a feature of an incorporated entirety, and as part of an integrated whole. Gandhi's direction for people to exercise restraint with respect to the utilization of natural resources is significant in the current time frame to fathom the issues emerging with high consumerism lifestyle and high generation of waste. Gandhi's crusade was not against technology driven development, but it was against its misapplication in terms of unsustainable development.

Gandhi, dismissed the present day so called modern method of life and work, and propagated the practice of self-reliance and standing through agriculture, charkha and the village ways for every single person. The application of Gandhian principles and standards can assist us to create a low carbon world by investing in nature-based solutions. By... By... By...



Role of Herbivore-Associated Molecular Patterns (HAMPs) in Modulating Plant Defenses

Garima Malik, Ritu Chaturvedi, and Sunila Hooda

Abstract

Being sessile organisms, plants have evolved a vast range of resistance mechanism to offset biotic stress caused by insect herbivores. The coevolution of plants and insect herbivores has not only generated advanced defense strategies in plants but also led to development of feeding strategies and counter-adaptive mechanisms in insects. Several plant species can differentiate insect attack from mechanical damage by the perception of a suite of chemical signals or herbivore-associated elicitors (HAEs), also known as herbivore-associated molecular patterns (HAMPs), produced by the insect. HAMPs could arise from insect oral secretions (OS), saliva, digestive waste products, and ovipositional fluids. Apart from elicitors, OS from some insect herbivores also contain effectors that suppress plant antiherbivore defenses. HAEs are dissimilar in their origin and structure, ranging from FACs (fatty acid-amino acid conjugates) such as volicitin, chemically related oxylipins, sulfur-containing fatty acids (caeliferins), peptides (systemins and inceptins) to high-molecular-weight enzymes (glucose oxidase and glucosidase). The perception of HAEs leads to the commencement of specific physiological processes in plants in order to defend themselves from insect attack. These responses can vary from changes in plant's metabolic activity and gene expression pattern to changes in their overall growth and development. Some HAEs are also known to counteract the defense response of plants. However, relatively less is known about the molecular components used by plants to perceive and recognize HAEs and the downstream signaling pathways leading

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9. Trainings Received by Faculties



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Director, ICMR-NIMS

Topics Covered

Analysis of High Throughput Screening
Data - SD

Hit list Triaging with SAR

Guided Multi Parameter Optimisation of
2D & 3D SAR

Guiding Compound Selection & Design
in Hit-to-Lead

Metabolite, Toxicity Endpoint
Predictions with Scaffold hopping

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Discussions on case studies

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Topics Covered

Target Identification and Validation

Analysis of High Throughput Screening
Data - SD

Hit list Triaging with SAR

Guided Multi Parameter Optimisation of
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Guiding Compound Selection & Design
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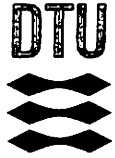
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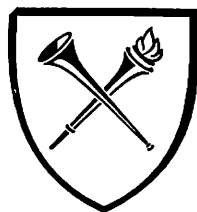
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Record of Achievement

Introduction to COVID-19: methods for
detection, prevention, response and
control

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April 20, 2020



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eldf.ru

05/15/2020

SUNILA HOODA

has successfully completed

Presentation skills: Designing Presentation Slides

an online non-credit course authorized by National Research Tomsk State University
and E-Learning Development Fund and offered through Coursera

Alexei Karamel

**COURSE
CERTIFICATE**



Verify at coursera.org/verify/ZKUXQA62X5GV

Coursera has confirmed the identity of this individual and
their participation in the course.



World Health
Organization

HEALTH
EMERGENCIES
programme

Confirmation of Participation

Severe Acute Respiratory Infection (SARI) Treatment Facility Design

SUNILA HOODA

August 23, 2021





Certificate Number: 900810

Issue Date: 06 Jul 2021

CERTIFICATE OF COMPLETION

Issued To

Dr. Vandana Gupta

For Successfully Completing the 2-Week Online Patent Course by Turnip Innovations From 28 Feb 2021 To 14 Mar 2021. The Course was facilitated by Dr. Rahul Kapoor.

TURNIP INNOVATIONS PVT. LTD
CORPORATE IDENTITY NUMBER: U74999WB2018PTC227193
WEB: TURNIP.CO.IN
ADDRESS: AWFIS, 6TH FLOOR SCHINDLER HOUSE,
CHEMTEX LANE, HIRANANDANI, MUMBAI 400076, INDIA

A handwritten signature in black ink, appearing to be "Rahul Kapoor", written above a horizontal line.

DR. RAHUL KAPOOR

Founder and Director
Turnip Innovations



ICTACADEMY

CERTIFICATE OF COMPLETION

This certificate is presented to

DR PERNA DIWAN

for successful completion of all requirements of

one week online Certificate Course on

DIGITAL TEACHING TECHNIQUES

organized by ICT Academy from 29 Jun 2020 to 04 Jul 2020.

Dr B Anbuthambi
President
ICT Academy

CERTIFICATE ISSUED

10 Jul 2020



CERTIFICATE NO

DTT-5360

M Sivakumar
Chief Executive Officer
ICT Academy



Technical University
of Denmark

COURSE
CERTIFICATE

08/02/2020

PRERNA DIWAN

has successfully completed

Metagenomics applied to surveillance of
pathogens and antimicrobial resistance

an online non-credit course authorized by Technical University of Denmark (DTU) and
offered through Coursera



[Signature]

Ana Spohr Bang-Davies

10. Exhibitions / Seminars / Training Courses Conducted

Ram Lal Anand College, University Of Delhi
Media Production Centre
in Association with
Internal Quality Assurance Cell (IQAC)



UNDER DBT STAR COLLEGE SCHEME
Organises

One Week ONLINE
Faculty Development Program(FDP)

on

ICT Tools for Effective Teaching Learning
for College Faculty



FOR REGISTRATION:

<https://forms.gle/U3T5VE9dksCm24yNA>

Dates: 5th to 9th August 2020
Session Timings: 3-5.30 pm



Dr Rakesh Kumar (Dept of Hindi)
Coordinator, Media Centre

Dr Prerna Diwan
Coordinator, IQAC

Dr Rakesh Kumar Gupta
Principal



**RAM LAL ANAND COLLEGE
UNIVERSITY OF DELHI
PRESENTS**

**One Week Online
Faculty
Development
Program on
Biosafety,
Bioethics and IPR**

Registration
QR code



**UNDER DBT STAR COLLEGE SCHEME
24th to 28th AUGUST, 2020
3 to 6pm on Google Meet**



**Inviting Science Faculty and Research Scholars
to take this opportunity and listen to many
luminaries and experts in these areas.**

Registration link: https://docs.google.com/forms/d/e/1FAIpQLSfeJ0d1ob-gKFZiPQEqKnlCnwR_4AsTeleQN6J4MRE--qb5hw/viewform?usp=sf_link

Dr M Salome John
Coordinator

Dr. Purna Diwan
DBT Star College Scheme
Coordinator

Dr Rakesh Kumar Gupta
Principal



DEPARTMENT OF MICROBIOLOGY
RAM LAL ANAND COLLEGE



presents
DBT Sponsored National Workshop Under Star College Scheme
On
MOLECULAR DOCKING IN DRUG DESIGN



DR. IMTAIYAZ HASSAN

Assistant Professor (Structural Biology)
Centre of Interdisciplinary Research in
Basic Sciences
Jamia Millia Islamia

DAY-1 31ST MARCH 2021
“Introduction to InstaDock”

TALK: 11AM - 01PM
HANDS ON SESSION : 02PM - 04PM

Prerequisite softwares
(USE LAPTOPS / DESKTOPS ONLY)
PyMol (<https://pymol.org/2/>)
InstaDock: (<https://hassanlab.org/instadock/about>)

Register: <https://forms.gle/EBCsLmc3Fkv65Bst8>
LAST DATE TO REGISTER 31ST MARCH 2021 | 05:00 PM

Zoom Meeting link:

<https://zoom.us/j/96749351142?pwd=andhR0k1aUFYUkREOGFEcTZWZVI0QT09>

Participation E-certificates will be issued only to those who attend both days' sessions.

DAY-2 1ST APRIL 2021
**“Explore Bioactive
Conformation using
Docking in SeeSAR”**

TALK: 11AM - 01PM
HANDS ON SESSION : 02PM - 04PM



DR. GIRINATH PILLAI
Director & Chief Scientific Officer
Zastra Innovations
Mentor of Change
Niti Ayog's Atal Tinkering Lab
Govt. of India

ORGANIZERS

STUDENT COORDINATOR
Anurag Singh
9471158656

Dr. Vandana Gupta | CONVENER
Dr. Perna Diwan
Dr. Sunila Hooda

Dr. Rakesh K Gupta
PRINCIPAL



RAM LAL ANAND COLLEGE UNIVERSITY OF DELHI



PRESENTS
WEBINAR SERIES UNDER DBT-STAR COLLEGE SCHEME
May 15th & 16th 2020; 2-3pm

NEXT GENERATION SEQUENCING & METAGENOME ANALYSIS

May 15-16th, 2020 2-3pm

Day 2
16th May 2020

Link

[https://meeting.zoho.in
/meeting/register?sessi
onId=1397305821](https://meeting.zoho.in/meeting/register?sessionId=1397305821)

For all Life Science
Faculty, Research
Scholars
&
Students

Host: Dr Prerna Diwan
Co-Host: Dr Kusum R Gupta

Contents

- Overview of Next Generation Sequencing (NGS)
- Overview of 16S amplicon metagenome, whole metagenome and whole metatranscriptome
- Understanding of workflow of 16S amplicon metagenome analysis

PRESENTER: TORAL MANVAR,
TEAM LEAD, BIOINFORMATICS,
XCELRIS LABS LTD.

Dr Rakesh Kumar Gupta
Principal



RAM LAL ANAND COLLEGE, UNIVERSITY OF DELHI

DEPARTMENT OF MICROBIOLOGY



PRESENTS

DBT SPONSORED INTERNATIONAL SEMINAR UNDER THE STAR COLLEGE SCHEME

ON

NANOPARTICLES IN BIOLOGY

02:00PM | 29TH JANUARY 2020 | AMPHITHEATRE, RLAC

Prof. CHRISTELLE PRINZ

Lunds University, Sweden

'One Dimensional Nanostructures
for Biosensing'

DR. ELKE HEBISCH

Lunds University, Sweden

'Nanostructure- Assisted Particle
Delivery into Living Cells'

Patron

DR. RAKESH KUMAR GUPTA



MIKROBIOLOGIKA

Program Co-ordinators

DR. VANDANA GUPTA

DR. PRERNA DIWAN

CELEBRATING 30 YEARS OF DEPARTMENT OF MICROBIOLOGY
RAM LAL ANAND COLLEGE, UNIVERSITY OF DELHI



MIKROBIOLOGIKA

PRESENTS

DBT SPONSORED NATIONAL SEMINAR UNDER STAR COLLEGE SCHEME

ON

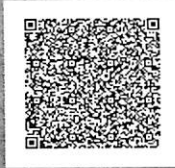
METAGENOMICS AND GENOME EDITING

10:00AM | 5TH FEBRUARY 2020 | AMPHITHEATRE, RLAC

Patron

DR. RAKESH KUMAR GUPTA

Details



Program Co-ordinators

DR. VANDANA GUPTA

DR. PRERNA DIWAN

LAST DATE: 29TH JANUARY 2020

REGISTER AT: forms.gle/3cugjz1j4jirCAg29

For more queries

MICROBIOLOGYRLA@GMAIL.COM



RAM LAL ANAND COLLEGE

DEPARTMENT OF MICROBIOLOGY



MIKROBIOLOGIKA
PRESENTS A WEBINAR ON

**MOLECULAR DOCKING: A POWERFUL TOOL
FOR RESEARCH AT COLLEGE LEVEL**

DR. VANDANA GUPTA
ASSOCIATE PROFESSOR

03:00PM - 04:30PM | 30th April, 2020

Google Meet code: avv-abzd-gpi

DR. PRERNA DIWAN
Teacher In-Charge

DR. RAKESH KR. GUPTA
Principal



Ram Lal Anand College University of Delhi



Invites application for
4 week Online Certificate Course
For Undergraduate Students on
Science Writing and Research Ethics

Organised by
Department of Microbiology
under the aegis of

DBT STAR College Scheme

Start Date
(tentative):
6th July 2020

Important dates:

Registration opens on: 29th June 2020

Registration closes by: 4th July 2020

Limited Seats and preferences
will be given to RLA students

Link for online registration:

https://docs.google.com/forms/d/e/1FAIpQLSfdU6DS_qLz5jy6buy2l2zBegZiuNAOXkKKU2_T0aMFOc0QWQ/viewform?usp=sf_link

COURSE HIGHLIGHTS

- Effective scientific writing
- Searching the literature
- Referencing tools
- Plagiarism
- Communicating Science



KEY HIGHLIGHTS

- Expert Lectures twice a week
- Interactive session once a week
- Weekly assignments
- Hands on training

For further information, please contact:
dr.shaliniswami@gmail.com

Dr. Shalini Swami
Coordinator

Dr. Prerna Diwan
Coordinator, Star College Scheme

Dr. Rakesh Kumar Gupta
Principal



RAM LAL ANAND COLLEGE UNIVERSITY OF DELHI

PRESENTS

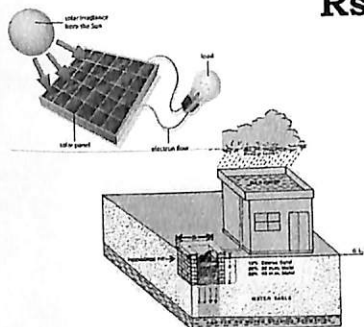
Online Certificate Course on “Exploring Feasible Alternative Technologies to Address Environmental Issues”

UNDER DBT STAR COLLEGE SCHEME

12th SEPTEMBER to 22nd November, 2020

Classes will be hosted on Google Meet on Weekends (2 to 4 pm) 
e-Certificate will be provided after completion of the course

Course fees: **Free** (for Ram Lal Anand College's Students)
Rs. 1000/- (Non-Ram Lal Anand Participant)



Registration Link: <https://forms.gle/xuMyrRcsnVsfKYGV6>

Dr. Swagata Karmakar
Course Coordinator
Department of Environmental
Studies

Dr. Prerna Diwan
DBT Star College Scheme
Coordinator

Dr. Rakesh Kumar
Vice-Principal

Dr. Rakesh Kumar Gupta
Principal



RAM LAL ANAND COLLEGE
DBT STAR COLLEGE
UNIVERSITY OF DELHI
DEPARTMENT OF MICROBIOLOGY



Presents a certificate course

on

Duration
40 hours
Saturday & Sunday

PYTHON

In Biological Sciences

16th January, 2021

Limited number of seats
Only For undergraduate
and postgraduate
students

Scan to Register



Organizing Committee

*Dr. Prerna Diwan, Associate Professor &
Coordinator, DBT Star College Scheme*

*Dr. Shalini Swami, Assistant Professor,
Department of Microbiology*

Resource Person:



Dr. Kshipra Chauhan

*Founder: EduBooster Research and Technology
Consultancy, Ph.D (Biotechnology), National
Institute of Malaria Research, JEMR*

Payment link:

<https://www.payumoney.com/customer/users/paymentOptions/#/0393F2FFF08FA76E25095AF01F024B6D/Payments1/21>

28

Patron:

**Dr. Dr. Rakesh Kumar Gupta,
Principal, Ram Lal Anand College**

12. Outreach Activities



Rajiv Gandhi Cancer Institute
and Research Centre

A Unit of Indraprastha Cancer Society
Registered under "Societies Registration Act 1860"

RAM LAL ANAND COLLEGE

DBT STAR COLLEGE

“MIKROBIOLOGIKA” society, Department of Microbiology

In association with

Rajiv Gandhi Cancer Institute and Research Centre (RGCIRC)

Presents

EXPERT TALK: “BE CANCER AWARE”

BY

Dr. A.K. Dewan

Director, Surgical Oncology

(Rajiv Gandhi Cancer Institute and Research Centre)

Monday, 22nd March 2021 from 12:30-1:30pm

Along with an Introduction to

UDISHA: An HPV Vaccination Initiative

by the members of the Dept. of Microbiology, Ram Lal Anand College, New Delhi, who are conducting a survey cum awareness campaign about HPV and cancers caused by it in order to assess the awareness level and to create awareness and encourage people to proactively take the timely vaccination and safeguard against these cancers.

Register here: <https://forms.gle/Q6PVkRd8TCa1wh557>

Zoom link for talk: <https://zoom.us/j/93166804808?pwd=WmJobFZIYUdlbW5zOTUwNTNWcjhYZz09>

(Participation certificates to be provided)

Student Co-ordinators
Anurag Singh (President) - 9471158656

Patron
R. K. Gupta

Organizers:
Dr. Kusum R. Gupta

We are trying to gather information on the community awareness level of Human Papilloma Virus (HPV). Please help us out by filling this survey form:
<https://forms.gle/wZEhujtwNYooish66>

If after filling this form you wish to learn more about HPV and its health impact, cancers caused by it and availability of vaccines, please follow the link that appears after filling the form.

If you wish to shoulder responsibility in spreading awareness and want to volunteer for this campaign, you may join us by signing up as volunteer: <https://chat.whatsapp.com/DxWmeOrxCzBBV3VvZCMCea>

Remember to join the Whatsapp group for further communication.

About UDISHA:

We, the members of a scientific community from Department of Microbiology, Ram Lal Anand College, University of Delhi, are interested in spreading awareness regarding Cancers Caused by HPV (Human Papilloma virus) and its vaccination. As a part of this initiative, we are conducting a survey to analyse the Public awareness regarding the occurrence and prevention of HPV caused cancers. Kindly fill this form and help us progress through the campaign.

रामलाल आनंद कॉलेज

दिल्ली विश्वविद्यालय

बेनिटो हुआरेज़ रोड, नई दिल्ली-110021 (इंडिया)

Ram Lal Anand College

University of Delhi

Benito Juarez Road, New Delhi-110021 (India)

Tel. No. : 011-241125

Fax : 241121

E-mail : rlac.du@gmail.com

rlac.bjr.du@gov

Website : www.rlacollege.edu

Dated: 1st March 2021

To

Ms Tanishka Aggarwal
Student, III Year BSc. (Hons) Biotechnology
Amity University, Noida

Subject: Internship for one month Starting 1st March, 2021

Dear Tanishka

This is with reference to your mail dated 6th February 2021, seeking research internship opportunity under my supervision at Department of Microbiology, starting from March 1, 2021 to 31st March 2021, I hereby offer you the same.

You will be working on project "Antibiotic Resistance Profiling of air Microflora".

Your lab working timings will be from 9.30 am to 4 pm in the laboratory.

Best of Luck

Sincerely

Prerna Diwan

Dr Prerna Diwan
Associate Professor
Department of Microbiology

STAF

Recieved



रामलाल आनंद कॉलेज
दिल्ली विश्वविद्यालय
बेनिटो हुआरेज़ रोड, नई दिल्ली-110021 (इंडिया)
Ram Lal Anand College
University of Delhi
Benito Juarez Road, New Delhi-110021 (India)

Tel. No. : 011-24112557
Fax : 24112151
E-mail : rlac.du@gmail.com;
rlac.bjr.du@gov.in
Website : www.rlacollege.edu.in

TO WHOM IT MAY CONCERN

This is to certify that the project work entitled “*E. coli* gyrase, an important target for novel therapeutics *in silico* drug repurposing approach” has been carried out by Mrs RAKHI CHANDRAN, a student of M.Sc. Biotechnology (4th semester), of Noida International University, Gautam Budh Nagar, UP. It is certified that she has successfully completed her six months (from February 2020 to July 2020) dissertation under my supervision at Ram Lal Anand College, University of Delhi, New Delhi.

Date:

Dr. Vandana Gupta

Associate professor

Department of Microbiology

Ram Lal Anand College,

University of Delhi, New Delhi-110021.

**A MOLECULAR DOCKING STUDY TARGETING
SARS-COV-2 3CLPRO: AN *IN-SILICO* DRUG REPURPOSING
APPROACH**

DISSERTATION

Submitted by

SHUBHAM SACHDEVA

ROLL NO: 19MBR-031

In partial fulfilment of the requirements of the award of the degree

Of
MASTER OF SCIENCE
In
MICROBIOLOGY

To the



**DEPARTMENT OF BIOSCIENCES
JAMIA MILLIA ISLAMIA
NEW DELHI-110025
June 2021**

CERTIFICATE

This is to certify that Mr. **Shubham Sachdeva**, student of M. Sc. Microbiology from the Department of Biosciences, Jamia Millia Islamia, has completed his dissertation entitled “**A Molecular docking study targeting SARS-CoV-2 3CLpro: An *In-silico* drug repurposing approach**” under my supervision at Department of Microbiology, Ram Lal Anand College, New Delhi from 15-12-2020 to 10-06-2021. I further certify that this is an authentic piece of work carried out by him in my laboratory. To the best of my knowledge, the matter embodied in the project has not been submitted to any other University/Institute for the award of any Degree or Diploma. I wish him success and best of luck for all future endeavors.



Dr. Vandana Gupta,
Associate professor
Department of Microbiology
Ram Lal Anand College,
University of Delhi, Delhi-21

14. Invited Lectures

Talk by Dr. Prateek Arora (Alumni 2011)

Jul 3, 2020 3:00pm to 4:00pm Jul 3, 2020 Time zone

All day Does not repeat

Event Details Find a Time

Join with Google Meet

meet.google.com/oxo-fddi-ywm · Up to 100 participants

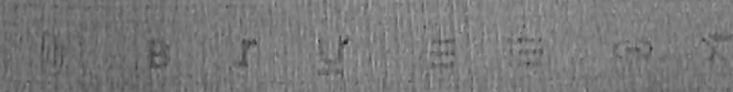
Add location

Notification 30 minutes

Add notification

Vandana Gupta

Busy Default visibility



Add description

Type here to search

Ram Lal Anand College, University of Delhi

presents

One-week Online Faculty Development Program on Biosafety, Bioethics and IPR

Under DBT Star College Scheme

For Faculty of Biological Sciences and Research Scholars

24th to 28th August, 2020

3.00 to 6.00 pm on Google Meet

Schedule for DAY 1, 24th August, 2020

Time	Name of Resource Person	Proposed Title of Talk	Topics to be covered
3.00 pm to 5.00 pm	Dr. Shailesh D Pawar Scientist E & Officer I/C ICMR- National Institute of Virology (NIV)- Mumbai Unit (Formerly Enterovirus Research Center), Haffkine Institute Compound, Acharya Donde Marg, Parel, Mumbai-400 012	An Introduction to Biosafety: Biosafety levels, Biosafety Cabinets and Risk Group Classification	<ul style="list-style-type: none">• Biosafety levels• Types of biosafety cabinets• Risk groups of microorganisms• Disposal of biohazardous waste• National Biosafety Guidelines and Regulations
5.00 pm to 6.00 pm	Dr. Senthil Kumar Venugopal Professor & Dean, FLSB, SAU	Implementation of Biosafety Guidelines in India and Role of the Institutional Biosafety Committee (IBSC)	<ul style="list-style-type: none">• An overview of the national regulatory system for Biosafety• Role of DBT, MoEF, RDAC, RCGM, GEAC and IBSC• Functioning and responsibilities of the IBSC• Communication with RCGM, PIs and Funding Agencies

Schedule for DAY 2, 25th August, 2020

Time	Name of Resource Person	Proposed Title of Talk	Topics to be covered
3.00 pm to 5.00 pm	<p>Dr. Sucheta Banerjee Kurundkar, PhD, MBA Director Training Clinical Development Services Agency Translational Health Science & Technology Institute,</p> <p>Department of Biotechnology, Ministry of Science & Technology, Government of India NCR Biotech Science Cluster, 3rd Milestone, Gurgaon- Faridabad Expressway, Faridabad 121001</p>	National Ethical Guidelines for Biomedical and Health Research Involving Human Participants and Children	<ul style="list-style-type: none"> • National Ethical Guidelines for Biomedical Research • Clinical trials for Medical Research • Patient informed consent questionnaire
5.15 pm to 6.15 pm	<p>Prof. N Raghuram School of Biotechnology, GGS Indraprastha University, Sector 16C, Dwarka, New Delhi - 110078, INDIA. Chair, International Nitrogen Initiative Co-Investigator, UKRI-GCRF South Asian Nitrogen Hub Editor-in-Chief, Physiology and Molecular Biology of Plants SC Member, UNEP Global Partnership on Nutrient Management President, SCON/ING, Trustee, Sustainable India Trust & VP, PHSSFSS</p>	An Overview of Intellectual Property Rights	<ul style="list-style-type: none"> • Introduction and importance/need for intellectual property rights (IPR) • Different types of IPR • Genesis and Development of IPR in India • Some important examples of IPR.

Schedule for DAY 3, 26th August, 2020

Time	Name of Resource Person	Proposed title of Talk	Topics to be covered
3.00 pm to 5.00 pm	Dr. Gurinderjit Randhawa, FNAAS Principal Scientist and Head Division of Genomic Resources ICAR-National Bureau of Plant Genetic Resources New Delhi-110012	GMOs and LMOs: Concerns, Challenges and Regulations	<ul style="list-style-type: none"> GMOs/LMOs: Concerns and Challenges & Overview of International Agreements especially Cartagena Protocol GMO applications in Food and Agriculture & Environmental Release of GMOs Role of Regulatory Agencies (IBSC, RCGM, GEAC) Risk Assessment, Risk Management and Risk Communication
5.00 pm to 6.00 pm	Dr Sunil Archak Officer-In-Charge Biotechnology (Plant Science) Agriculture Knowledge Management Unit ICAR- NBPGR, Pusa Campus	IPs and their Management in Agriculture	<ul style="list-style-type: none"> New Plant varieties: Requirements, Rights of Breeder, Extent and Duration Commercializing Biotechnology Inventions, Case Studies Biotechnology Research and IPR Management

Schedule for DAY 4, 27th August, 2020

Time	Name of Resource Person	Proposed Title of Talk	Topics to be covered
6.00 pm to 7.00 pm	Dr Ram R. Shukla, Ph.D. Supervisory Patent Examiner, AU 1635, 1632 Technology Center 1600 USPTO (571)-272-0735	Patent Application and Examination Process at the USPTO	<ul style="list-style-type: none"> The INTERNATIONAL Patent System USPTO Patent Application Process in the USA Timelines of International Applications
7.15 pm to 8.30 pm	Dr. Ram R Shukla, Ph.D. Supervisory Patent Examiner, AU 1635, 1632 Technology Center 1600 USPTO (571)-272-0735	Introduction to Patent Cooperation Treaty	<ul style="list-style-type: none"> An Introduction to WIPO 2 An Overview of the PCT System Filing of a PCT Application International Cooperation

Schedule for DAY 5, 28th August, 2020

Time	Name of Resource Person	Proposed Title of Talk	Topics to be covered
3.00 pm to 5.00 pm	Ms. Richa Chaudhary	The Patenting Scenario in India	<ul style="list-style-type: none"> • Patents: Types of inventions protected by a patent • Need for a patent; Claims; Searching a patent • Drafting of a patent; Step-wise filing of a patent, Grant of patent • Patent infringement, Rights and Duties of patent owner • Granted Patents vs Patent Publications • Indian patent Act 1970 and recent amendments
5.00 pm to 6.00 pm	Dr. Diptendu Das Senior Scientific Officer, AERB PhD Chemical Engineering, IIT Bombay	An Introduction to the use of Radioisotopes in Laboratories and an Overview of AERB guidelines	<ul style="list-style-type: none"> • AERB/RSD/RES guidelines for using radioisotopes in laboratories • Precautions to be taken • Safer Alternatives to the use of radioisotopes: an overview.

**Ram Lal Anand College
(Under DBT Star College Scheme)
Media Production Centre and IQAC**

Organise

One Week Online FDP on ICT Tools for Effective Teaching Learning for College Faculty

A 5 Day online FDP on "How to Teach Online using ICT tools" is being conducted jointly by Media Production Centre and IQAC of Ram Lal Anand College, University of Delhi. It is aimed at addressing the challenges faced by Higher education due to Covid-19 pandemic where physical contact with students is difficult. Hence, to tackle these challenges we need to migrate from Chalk and Talk method to online teaching methods quickly and smoothly. This FDP is an attempt in this direction It will help the fellow teachers gather the requisite skills to be able to plan, design, and deliver their courses online along with assessment of students.

Program Outline

Day -1 (Wednesday) 05.08.2020 3.00pm-5.30pm	Name of the Resource Person	Objective	Contents
S-I	Dr. Archana Kumari Assistant Professor Jammu University 'Google Certified Trainer'	G-Suite Platform	<ul style="list-style-type: none"> • Understanding G-Suite • Advantage of G-Suite • Different Programs under G-Suite • Google Meet • Google Calendar • Google Docs • Google Sheets • Google Forms • Google Slides • Google Keep • Certify'em
S-II	Dr. Archana Kumari	Hands on Activity	<ul style="list-style-type: none"> • Create Google Meeting • Add an event to the Calendar
SIII	Dr. Archana Kumari	Hands on Activity	<ul style="list-style-type: none"> • Create Google Forms • Google Quiz

Assignment			Create Google Form Create Google Meet Create Google Quiz
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Day-2 (Thursday) 06.08.2020 3.00pm- 5.30pm	Name of the Resource Person	objective	Contents
S-I	Dr. Rakesh Kumar	Google Classroom	<ul style="list-style-type: none"> • Google Classroom as LMS • Advantages of Google Classroom
S-II	Dr. Rakesh Kumar	Hands on Activity	<ul style="list-style-type: none"> • Sign Up • Create a Class • Create Assignment
S-III	Ms Shikha Verma	Create online study material	<ul style="list-style-type: none"> • Lecture notes • PPT
S-IV	Ms Shikha Verma	Hands on Activity	<ul style="list-style-type: none"> • Prepare a PPT •
Assignment			Prepare a PPT

Day-3 (Friday) 07.08.2020 3.00pm- 5.30pm	Name of the Resource Person	Objective	Contents
S-I	Dr. Prerna Diwan	Online Meeting Apps	<ul style="list-style-type: none"> • Zoom • Jio Meet
S-II	Dr. Prerna Diwan	Hands on Activity	<ul style="list-style-type: none"> • Create Meeting on Zoom • Create Meeting on Jio Meet

S-III	Dr. Rakesh Kumar	Canvas LMS	<ul style="list-style-type: none"> • Canvas as LMS • Advantages of Canvas
S-IV	Dr. Rakesh Kumar	Hands on Activity	<ul style="list-style-type: none"> • Signup • Create a Class • Create Assignment / Quiz
Assignment			<ul style="list-style-type: none"> • Create a Class on Canvas

Day-4 (Saturday) 08.08.2020 3.00pm- 5.30pm	Name of the Resource Person	Objective	Contents
S-I	Dr. Ganpat Department of Hindi and Journalism Jamia Millia Islamia	Use of Smart Phone as a Tool	<ul style="list-style-type: none"> • Basic functions of a Smartphone • Camera • Audio • Editing • Social Media Literacy
S-II	Dr. Ganpat	Hands on Activity	Record and Edit an audio lecture
S-III	Dr. Ganpat	Effective online Video Lecture	<ul style="list-style-type: none"> • Essentials for a video lecture • Effective on-camera Communication skill • Basic Video Editing tools • Filmora • Openshot
S-IV	Dr. Ganpat	Hands on Activity	<ul style="list-style-type: none"> • Record and Edit a short video
Assignment			Edit a Video on Smartphone or Laptop

Day-5 (Sunday), 09.08.2020, 11.30 am -1.30: Discussion and problem solving session followed by Vaedictory Session



RAM LAL ANAND COLLEGE
DBT STAR COLLEGE
UNIVERSITY OF DELHI
DEPARTMENT OF MICROBIOLOGY



Presents a certificate course

on

Duration
40 hours
Saturday & Sunday

PYTHON

In Biological Sciences

16th January, 2021

Resource Person:



Dr. Kshipra Chauhan

*Founder: EduBooster Research and Technology
Consultancy, Ph.D (Biotechnology), National
Institute of Malaria Research, JCMR*

*Limited number of seats
Only For undergraduate
and postgraduate
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Patron:

*Dr. Dr. Rakesh Kumar Gupta,
Principal, Ram Lal Anand College*

Organizing Committee

*Dr. Prieta Diwan, Associate Professor &
Coordinator, DBT Star College Scheme*

*Dr. Shalini Swami, Assistant Professor,
Department of Microbiology*

Exploring Feasible Alternative Technologies to Address Environmental Issues”

40 hours Online Certificate Course

(12th September to 22nd November 2020)

UNDER DBT STAR COLLEGE SCHEME

Program Schedule

Day	Date	Speaker	Affiliation	Topic
1	12-Sep-20	Mr. Subrahmanyam Pulipaka	Chief Executive Officer, National Solar Energy Federation of India (NSEFI)	Future Energy: Solar Technology and Application
2	13-Sep-20	Mr. Shubham Oswal	Director at Global Green Concepts Pvt Ltd	Skywater collection: Rain water harvesting, Ground water recharge, Managing solid wastes
3	19-Sep-20	Mr. Rahul Singh	Assistant Manager, ICLEI South Asia	Effective use of domestic waste: Bio gas
4	20-Sep-20	Mr. AK Singh	CEO, Perfect Bio -Waste & Power Management Pvt. Ltd.	Saving biodiversity across local to global scale
5	26-Sep-20	Dr. Arunava Dutta	Postdoctoral researcher Centre for Invasion Biology Dept. of Botany and Zoology Stellenbosch University South Africa	Waste water treatment plant - STP
6	27-Sep-20	Dr. Prabhat Kumar Tanwar	Director & CEO Detecinnovations Pvt Ltd	Assessing the feasibility of Climate change adaptation's local practices
7	03-Oct-20	Ms. Bedoshruti Sadhukhan	Senior Programme Coordinator ICLEI South Asia	Electronic waste management: challenge and solution at local level
8	04-Oct-20	Mr. Vaibhav Nautiyal	DIRECTOR (Technical) and lead consultant, Environemnt Health & Safty, INDUS	Urban ecotourism for more committed citizens: challenge and solution at local level
9	10-Oct-20	Mr. Rajesh Juneja	Chief Manager, Delhi Tourism, Delhi Government	

10	11-Oct-20	Dr. Vinod Kumar	Assistant Professor, Special Centre for Nanoscience, Jawaharlal Nehru University	Sustainable landfill in the future framework of waste management: local-level challenges and solutions
11	17-Oct-20	Dr. Arti Jain	Assistant Professor, Daulat Ram College, University of Delhi	Green Genesis of personal care products: a step towards the protection of the environment and human health at local level
12	18-Oct-20	Mr. Priyanshu Jain	Founder, Director at Agri Joy & Indian Hydroponics	Hydroponics: a sustainable alternative to soil gardening
13	24-Oct-20	Ms. Roopa Kumari	Assistant Professor, Ramjas College, University of Delhi	Air pollution: Environmental problems and practice solutions
14	31-Oct-20	Dr. Sanchayita Rajkhowa	Assistant Professor, Department of Chemistry, Jorhat Institute of Science & Technology, Jorhat, Assam, India	Toxic Metals in the Environment: Impact and Removal
15	01-Nov-20	Dr. Pawan Kumar Jha	Founder Director, MARC India, Ex, Sr. Technical Specialist (FSM, SLWM and toilet technology), a World Bank supported project	Decentralised composting: a sustainable solution at home
16	07-Nov-20	Dr. Beena Negi	Assistant Professor, Department of Chemistry, Gargi College, University of Delhi	Applying green chemistry to address local and global environmental issues
17	08-Nov-20	Dr. Dinesh Albertson Winston	Field Biologist, Aravalli Biodiversity Park and Scientist, CISMHE, University of Delhi	Herbal Garden: Sustainable urban greening strategies for compact cities
18	15-Nov-20	Dr. Arif Ahamad	Assistant Professor, Daulat Ram College, University of Delhi	Urban Water Management in Delhi NCR: Yamuna River Pollution and Sustainable Solutions for the Future
19	21-Nov-20	Dr. Amit K Singh	Assistant Professor, Deshbandhu College, University of Delhi	Nature-based solutions for natural disasters management
20	22-Nov-20	Mr. Sandeep Chaturvedi	President, Biodiesel Association of India (BDIAI)	Bio-diesel: Viable Alternative to Environmental Pollution



RAM LAL ANAND COLLEGE UNIVERSITY OF DELHI



PRESENTS
WEBINAR SERIES UNDER DBT-STAR COLLEGE SCHEME
May 15th & 16th 2020; 2-3pm

NEXT GENERATION SEQUENCING & METAGENOME ANALYSIS

May 15-16th, 2020 2-3pm

Day 2
16th May 2020

Link

[https://meeting.zoho.in
/meeting/register?sessi
onId=1397305821](https://meeting.zoho.in/meeting/register?sessionId=1397305821)

For all Life Science
Faculty, Research
Scholars
&
Students

Contents

- Overview of Next Generation Sequencing (NGS)
- Overview of 16S amplicon metagenome, whole metagenome and whole metatranscriptome
- Understanding of workflow of 16S amplicon metagenome analysis

**PRESENTER: TORAL MANVAR,
TEAM LEAD, BIOINFORMATICS,
XCEL RIS LABS LTD.**

Host: Dr Prerna Diwan
Co-Host: Dr Kusum R Gupta

Dr Rakesh Kumar Gupta
Principal



DEPARTMENT OF MICROBIOLOGY
RAM LAL ANAND COLLEGE



presents

DBT Sponsored National Workshop Under Star College Scheme

On

MOLECULAR DOCKING IN DRUG DESIGN



DR. IMTAIYAZ HASSAN

Assistant Professor (Structural Biology)
Centre of Interdisciplinary Research in
Basic Sciences
Jamia Millia Islamia

DAY-1 31ST MARCH 2021

“Introduction to InstaDock”

TALK: 11AM - 01PM

HANDS ON SESSION : 02PM - 04PM

Prerequisite softwares

(USE LAPTOPS / DESKTOPS ONLY)

PyMol (<https://pymol.org/2/>)

InstaDock: (<https://hassanlab.org/instadock/about>)

Register: <https://forms.gle/EBCsLmc3Fkv65Bst8>

LAST DATE TO REGISTER 31ST MARCH 2021 | 05:00 PM

Zoom Meeting link:

<https://zoom.us/j/96749351142?pwd=andhR0k1aUFYUkREOGFEcTZWZVlOQT09>

Participation E-certificates will be issued only to those who attend both days' sessions.

DAY-2 1ST APRIL 2021

**“Explore Bioactive
Conformation using
Docking in SeeSAR”**

TALK: 11AM - 01PM

HANDS ON SESSION : 02PM - 04PM



DR. GIRINATH PILLAI

Director & Chief Scientific Officer
Zastra Innovations
Mentor of Change
Niti Ayog's Atal Tinkering Lab
Govt. of India

ORGANIZERS

STUDENT COORDINATOR
Anurag Singh
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Dr. Vandana Gupta | CONVENER
Dr. Prerna Diwan
Dr. Sunila Hooda

Dr. Rakesh K Gupta
PRINCIPAL