

Department of Biotechnology

Proforma for submission of Annual Progress Report supported under Star College Scheme

1. **Name of the College :** Sophia College

2. **Name of Coordinator, designation:** Dr. P. Sirisha Murthy, Asst. Professor

Address: Sophia College, Bhulabhai Desai Road Mumbai - 400026
Phone nos. 9969186094

3. **Assessment duration :** 11/07/2020 to 31/03/2023 Duration in years 3 years

4. **Details of Departments Supported**

Sl No	Name of Department	Courses (B.Sc./M.Sc./PG Diploma, certificate etc) offered	Regular Faculty members	
			With Ph.D.	Without Ph.D.
			Total = 22	
1.	Chemistry	B.Sc and M.Sc	2	5(1 permanent + 4 AD HOC)
2.	Composite Departement	B.Sc	2	1
3.	Life Science	B.Sc and M.Sc	3 (1 PERMANENT + 2 AD HOC)	2 (AD HOC)
4.	Microbiology	B.Sc and M.Sc	2	5 (2 PERMANENT + 3 AD HOC)

5. **Number & Date of Advisory committee meeting:**

Meeting was held on 3/1/2023

6. Qualitative improvements due to DBT support. Please highlight 5 salient points (within 500 words).

1) Laboratory skill enhancement:

Equipment:

The purchase of multiple units has enabled students to perform experiments independently. Procurement of sufficient glass and plastic ware helped in reducing the waiting time of the students in the laboratory especially if the apparatus had to be sterilized.

The acquisition of advanced instruments and equipment has significantly enhanced the learning experience of the stakeholders and enabled one to plan experiments that could not be conducted earlier.

As far as research was concerned, students were able to explore more areas of their research interest which was earlier not possible due to limited facilities.

Examples of the experiments introduced in the curriculum:

- Procurement of Laminar air flow and BOD incubator helped to introduce in microbial culture and growth curve studies.
- Procurement of Anaerobic jar helped to introduce cultivation of sulphate reducing bacteria.

Projects:

Hands-on research projects were encouraged, leading to a culture of questioning among students and enabling them to seek answers to such questions. This greatly helped to enhance their critical thinking and analytical skills.

2) Empowering Students and Staff:

A number of webinars, seminars, conferences and workshops were organized to give a platform for interaction with professionals and experts from various fields.

The add-on course 'Positive Health in Women' helped to sensitize the participants to the fact that physical, mental and emotional health of a woman is a pillar of work life balance.

Training at Dr. M.K.Rangnekar Memorial Testing Laboratory, Kalina Campus and at Bhatia hospital pathology department, benefited students with hands-on experience in real-world work environments. These sessions enabled the students acquire valuable skills and industry-specific insights.

Conducting pedagogy workshops for staff, and encouraging both teaching and non-teaching personnel to participate in faculty development programs and laboratory training sessions has resulted in a heightened application of these acquired skills in the teaching-learning process.

An online International workshop on 'Using POGIL' helped staff members to incorporate POGIL (Process Oriented Guided Inquiry Learning) in their teaching. This facilitated self-directed learning among students and fostered a collaborative learning environment, teamwork and communication skills.

RBPT (Research Based Pedagogical Tools) workshops helped staff members to incorporate the same in their teaching. For example- Preservation of strawberries using herbal extracts.

Students were led to observe and recognize the real life problems that could be addressed by them. One such problem identified was extending the shelf life of fresh fruits. They identified five herbal extracts that were locally available and studied their impact on inhibiting the growth of surface flora thereby inhibiting the spoilage of strawberries. Their findings were presented in the form of a poster at the 'Quest' a College level research meet.

3) **Social engagement**

Star Scheme has played a crucial role in strengthening the undergraduate program within the college, significantly improving the academic experience for the students. This increases our responsibility to extend these benefits to others in the society.

Impactful community engagement programs includes

- Participation in 'Each One Teach One' initiative organized by IWSA (Indian Women Scientists' Association)
- Collaboration with the NGO Aseema to teach municipal school children,
- 'Science Adda -Inter Departmental outreach activity,'
- Science Education through Experiments and Demonstration (SEED)- for school students

The above initiatives focused on leveraging the skills and knowledge of college students which helped to benefit younger learners, particularly those from underprivileged backgrounds.

4) Innovative research activity:

The support from the Department of Biotechnology (DBT) under the Star scheme initiative has significantly helped to create a culture of research at the undergraduate level. This is reflected not only in the increased number of research projects undertaken by students but also there has been significant enhancement in the quality of research.

The UG research programme (EXSP - Excellence in Science Program) at our college level necessitates the students to present their work in 'Aavishkar' a prestigious university-level research meet every year. This year too our students' team was qualified to present their work at zonal level.

Additionally, the research work was also presented in the form of poster presentations at several conferences including one presentation at an international conference.

Overall, the DBT's support through the Star Status initiative has been instrumental in elevating the standard of undergraduate research.

5) Communication skill development :

The outcome of research efforts at Sophia College has led to publications in the in-house journal, SCRIBE, as well as in other Scopus-indexed journals. This achievement marks a significant milestone in pursuit towards academic excellence.

Writing and presentation skills, critical thinking, data interpretation and reporting, engaging with peer review, etc were inculcated in them.

In summary, the process of publishing research significantly contributes to the development of comprehensive scientific communication skills.

7. Any Novel aspect introduced or planning to introduce during the Scheme duration.

1. e-Content development:

Creation of videos by the undergraduate students for 9th Std syllabus in Physics and Biology. Audio of these videos are proposed to be in Hindi and Marathi language. Students will use this content for teaching underprivileged children of nearby municipal schools.

2. Mentoring Other Colleges:

The experience Sophia College gained, under Star Scheme, will be shared with other College to mentor them to apply for Star College Grants.

8. Lessons learnt / difficulties faced/suggestions if any, in implementation of the programme and utilization of DBT grant. (Max 3 points within 300 words).

Logistics of utilization of the grant

Receiving the esteemed Star Status grant in 2020 was an incredible honor for us. Yet, navigating through the challenges posed by the COVID-19 pandemic during those years made it exceptionally demanding. The lockdowns made even the simplest tasks, like acquiring quotations for instrument procurement under the non-recurring grant, a laborious process.

Amid the pandemic's restrictions, obtaining the sanction letter on January 21, 2022, was a relief. With 18 months to utilize the grant, as soon as we resumed offline lectures, we initiated the equipment purchase. However, the fluctuating rates necessitated fresh quotations while ensuring adherence to DBT-sanctioned items and budgetary limits.

The establishment of our PFMS account demanded coordination with DBT finance and PFMS officials. Subsequent opening of ZBA with ICICI bank also took a long time. All these affected payments to our vendors and hence the delivery of the equipment was delayed due to which some of the experiments planned were not yet conducted.

In terms of students

Training students to identify the research problem without prior research experience and generating an awareness of ethics in scientific writing was challenging.

Experiences gained during the process of implementation provided invaluable insights, highlighting the necessity for improved planning and adaptability in future endeavours.

9. Key performance indicators

S. no	Indicator	Pre-support (During Star College Scheme)								During /After Support Star College Status								Remarks
1	No. of students admitted	Total = 2019-20 - 118								Total = 2020 - 21 - 62 2021 - 22 - 87 2022 - 23 - 104								
		M=nil				F= all admitted UG students				M=nil				F= all admitted UG students				
		S	S	OB	G	S	S	OB	G	S	S	OB	G	S	S	OB	G	
		C	T	C		C	T	C		C	T	C		C	T	C		
2	No. of students passing out (%) Students Admitted/passing out (pass %)	2019-20 92% (84/91)								FY B.Sc Total = 2020 - 21 - 75% 2021 - 22 - 43.5% 2022 - 23 - 37.37% SY B.Sc Total = 2020 - 21 - 93.82% 2021 - 22 - 83.56% 2022 - 23 - 80.65% TY B.Sc Total = 2020 - 21 - 97.22% 2021 - 22 - 79.52% 2022 - 23 - 70.67%								There were lot of challenges in admissions post covid and due to NEP this academic year
3	Drop-out rates	FYBSc- approx.30% SYBSc and TYBSc – one or two students								FY B.Sc Total = 2020 - 21 - 2 2021 - 22 - 2 2022 - 23 - 5 SY B.Sc Total = 2020 - 21 - 0 2021 - 22 - 7 2022 - 23 - 0 TY B.Sc Total = 2020 - 21 - 3 2021 - 22 - 4 2022 - 23 - 1								
4	No. of students opting for MSc	About 42% opted for MSc. Under previous star scheme								About 69% opted for MSc								

5	Average marks	53% students got an O or A grade	FY B.Sc Total = 2020 - 21 - 633.23 2021 - 22 - 485.15 2022 - 23 - 401.22 SY B.Sc Total = 2020 - 21 - 675.31 2021 - 22 - 654.75 2022 - 23 - 657.71 TY B.Sc Total = 2020 - 21 - 600.92 2021 - 22 - 530.21 2022 - 23 - 530.68	
6	No. of hands-on experiments being conducted		Annexure 1	
7	No. of new experiments introduced		Annexure 1	
8	Publications (scopus indexed) /patents, if any.	1	Annexure 2	
9	Training received by faculty		Annexure 3	
10	Exhibitions/seminars /training courses conducted		Annexure 4	
11	Books/journals subscribed from grants		Annexure 5	
12	Outreach activities (Popular lectures)		Annexure 6	

13	Colleges mentored to apply for DBT Star College grants		Nil	
14	Invited lectures		Annexure 7	

10. Self evaluation

Department	*Objective (as stated in proposal)	% achieved	Reasons for underachievement / If achieved, state in quantitative metrics
Departments of Chemistry Microbiology Life Sciences Composite (ZP)	Laboratory Skill enhancement	100% (2 marks)	All experiments in the syllabus were completed on time due to the presence of sufficient units, apparatus and chemicals. Each student got a chance to do the experiment individually. Organizing bridge practicals for the online batch gave them hands-on experience of techniques. Multiple units of the same instrument and procurement of advanced instruments also played a significant role in their skill development.
	Enrichment of Staff and student	100% (2 marks)	Staff members could upgrade their teaching and subject skills by attending faculty development programs. The guest lectures / webinars organized for students could make them aware of the advances in the specific field. Project Work - All students had to take up a project in all subjects which greatly improved their skill sets in many ways.
	Innovative research activity	100 % (2 marks)	Students learnt to plan, prepare and carry out experimental work independently through additional

			research projects(with the help of teacher-guides). This activity equipped them with organizational and time management skill, self-discipline resilience, and stamina and this improved their research skills
Departments of Chemistry Microbiology Life Sciences Composite (ZP)	Improved environmental and social interaction	100% (2marks)	Students are trained to perform experiments in microscale sensitizing them to use minimum amount of chemicals. This also reduced the waste generated. Sensitizing students about the conditions of the less privileged in the society via donation drive. We could induce a sense of social responsibility, commitment and empathy amongst all our students through the social outreach programs
	Strengthening the existing outreach activities	100 % (2marks)	Collaboration with NGO ASEEMA and IWSA gave students an opportunity to teach underprivileged school children. TY students on a regular basis help with remedial teaching.at a nearby school - St. Stephen School, Warden Road.
	e-content development	100 % (2 marks)	Students have created several digital content like infographics, ppt and videos and have published them online as Open educational resources (OER) and on YouTube. We are also in the process of utilizing the college studio facilities for e-content development for school children of 9th Standard. All departments maintain an instagram and facebook handle along with a you tube channel to disseminate information

* For quantitative analysis you may fix five objectives (max) each having 2 marks and accordingly can calculate the matrix.

11. ZBSA Status: (Mark Check Box):

Not opened Under process Opened but not mapped on PFMS

Account is functional

Remarks if, any:

12. Sanctioned Budget details:

(Rs. in Lakhs)

Head	Total Released Budget from DBT	Total Expenditure	Balance as on 31.12.2023	Remarks if any
Grants for creation of capital assets (Non- recurring)	6000000.00	5554717.50	445282.50	
Grants-in-aid General (Recurring)	1724723.00	1856898.40	0.00	
Total	7724723.00	7411615.90	445282.50	



Course Coordinator

(With Seal)



Head of the Institution

(With Seal)

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Annexure 1

Hands on and new Experiments Introduced Under Star Scheme

Life Science

Practicals	Under Star Scheme	Post Star College Scheme
FYBSc	26 (old) + 3 (new)	26 (Hands on) + 3 (Proposed)
SYBSc	30 (old) + 3 (new)	30 (Hands on) + 3 (Proposed)
TYBSc	36 (old) + 7 (new)	36 (Hands on) + 7 (Proposed)

Microbiology

Practicals	Under star scheme	Post Star College Scheme
FYBSc	63 (old) + 1 (new)	62 (Hands on) + 2 (Proposed)
SYBSc	56 (old) + 7 (new)	70 (Hands on) + 2 (Proposed)
TYBSc	63 (old) + 5 (new)	91 (Hands on) + 6 (Proposed)

Chemistry

Practicals	Under star scheme	Post Star College Scheme
FYBSc	26 (Two Papers)	26 (Hands on) + 6 (Proposed)
SYBSc	30 (Three Papers)	50 (Hands on) + 6 (Proposed)
TYBSc	46 (Four Papers)	54 (Hands on) + 13 (Proposed)

Composite Department

Practicals	Under star scheme	Post Star College Scheme
FYBSc	40 (Three Papers) - Zoology and Physics	40 (Hands on) + 16 (Proposed)
SYBSc	24 (Three Papers)	24 (Hands on) + 9 (Proposed)



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Publications list Annexure 2

1. Comparative Antioxidant potential of two drought resistant medicinal plants of Rajasthan: *Prosopis cineraria* and *Capparis decidua*, **Vegetos (2021) 34 229-234**, Hamnah Ansari Yashaswini Choudhary Prabha G. Shetty. (**Scopus Indexed**)
2. Women's attitude towards biodegradable sanitary products, **International Journal of Research** (ISSN 2231-6124), Volume 13 Issue, July-December 2023. Sakshi Rahul Bhagat, Heena Dave, Maisa Shaikh,*Sree R Nair (UGC Carelist Journal of 2023 SI No. 10105 Journal No 63072)
3. Evaluation of Antimicrobial effect of biologically and chemically synthesized silver nanoparticles on dental biofilm-forming microorganisms. **Science Chronicles in Research and Investigation Based Education** (peer-reviewed) Volume 4, 2023, Pranali Joshi, Ayesha Shaikh (Research article in SCRIBE)

Review Articles published in SCRIBE

4. Stem cell Therapy- An Effective Treatment for Autism - Science Chronicles in Research and Investigation Based Education (peer-reviewed) Volume 4, 2023, Pranali Joshi, Dr.Arjumanara Surti.
5. Dsouza D, Dsouza M, Qureshi S, Khan Y. (2020). Impact of Mobile Screen Time on Sleep Duration. Science Chronicles in Research & Investigation Based Education. *Science Chronicles in Research and Investigation Based Education, 1*, 7-11.
6. Pereira M, Khan S, Sinha D, Mantri J, Ramachandran H. (2020). Gut and The Brain: Body's Most Astounding Connection. *Science Chronicles in Research and Investigation Based Education, 1*, 45-49.
7. Pillai I, Khan S, Martin S. (2020). The Gene Fairy Godmother: CRISPR-Cas9. *Science Chronicles in Research and Investigation Based Education, 1*, 50-52.
8. Lobo SD, Subramaniam H. (2020). A glimpse into research at premiere Institutions across India: Featuring Indian Institute of Science (IISc), Bengaluru. *Science Chronicles in Research and Investigation Based Education, 1*, 59-66.
9. Qureshi SM, Nair S. (2020). Statistics without tears. *Science Chronicles in Research and Investigation Based Education, 1*, 68-69.
10. Khan, Y., & Dhaval, S. (2021). Can zebrafish (*Danio rerio*) replace rodents as a vertebrate model? *Science Chronicles in Research and Investigation Based Education, 2*, 2-7. (Invited Article)
11. Farhan, Z. Z., & Khan, Y. (2021). Hox genes-master regulator of body patterning: A mini review.



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- Science Chronicles in Research and Investigation Based Education, 2, 33-36.
12. Bhagat, S., & Martin, S. (2021). A reflection on the impact of anthropogenic actions on the future of life on Earth. *Science Chronicles in Research and Investigation Based Education*, 2, 37-41.
 13. Chandran, G., & Daswani, B. (2). Epigenetics and Autoimmunity. *Science Chronicles in Research and Investigation Based Education*, 2, 51-59.
 14. Chatteraj, A., & Subramaniam, H. (2021). Role of metals in neurodegenerative diseases. *Science Chronicles in Research and Investigation Based Education*, 2, 86-98.
 15. Khatri, M., Chatteraj, A., & Subramaniam, H. (2021). Diagnostic methods for Alzheimer's Disease. *Science Chronicles in Research and Investigation Based Education*, 2, 99-105.
 16. Lobo, S. D., & Sinha, D. (2021). Mental Health during COVID-19. *Science Chronicles in Research and Investigation Based Education*, 2, 110-112.
 17. Pereira, M., & Ramachandran, H. (2021). COVID-19 and its current diagnostic techniques. *Science Chronicles in Research and Investigation Based Education*, 2, 125- 135.
 18. Nobel Prize in Physics 2021: They Found Hidden Patterns in Complex Science Chronicles in Research and Investigation Based Education, Volume 2022 Jhansi Bhansal
 19. Systems and predicted Global Warming! Science Chronicles in Research and Investigation Based Education, Volume 1 (2020)
 20. Purposeful Hexagons Science Chronicles in Research and Investigation Based Education, Volume 1 (2020) Pranali Joshi
 21. Pregnancy And Covid19- What Are The Risks? Science Chronicles in Research and Investigation Based Education, Volume 2 Aafreen Ansari
 22. Nobel Prize in Physics 2022: Illuminating the mysteries of Quantum Entanglement. *Science Chronicles in Research and Investigation Based Education*, Volume 3 Yeshashvi Marollikar
 23. Emergence of the New Superbug: Candida auris - A mini review *Science Chronicles in Research and Investigation Based Education* (peer-reviewed) Volume 2, 2021 pg 60-62, Madhureema Pandya, Dr.Arjumanara Surti.

Training Received by Faculty:

Annexure 3

2021-22		
No.	Name of Faculty	Conference / Workshop / Course Attended
1.	Ms. Ayesha Shaikh Ms. Shraddha Prabhu	An Online FDP AICTE Training And Learning (ATAL) Academy, and Institute of Chemical Technology, 30/08/2021 to 03/09/2021
2.	Ms. Rochelle Ferns Ms. Tanaz Asha Ms. Lynelle Jeysus	National level FDP on RBPT, IISER-CoSME, 24th - 29th May 2021
3.	Ms. Tanaz Asha	Chemistry-The Catalyst for Change, TLC Ramanujan College, University of Delhi under the aegis of Ministry of education PMMMNMTT, 14th July - 28th July 2021
4.	Ms. Lynelle Jeysus	Teaching Learning strategies for outcome based education, BTTC, 25th and 26th February 2021
5.	Dr. Sree Nair	Two days online FDP on "Teaching learning strategies for Outcome based education" organized by IQAC Smt. C.H.M College, Ulhasnagar with BTTC from 25th to 26th February 2021. IISER Pune
6.	Dr. Sree Nair	Participated in National Level Faculty Development programme on Research based Pedagogical tools.24-29th May 2021 .
7.	Dr. Sree Nair	Participated in "9th Online Short Term Course on Soft Skill Development" during 07/06/2021 to 13/06/2021 organized by UGC – Human Resource Development Centre, GUJARAT UNIVERSITY, Ahmedabad.
8.	Dr. Roshan D'Souza	Design and Development of Online Courses 6 June to 11 June 2022
2022-23		
9.	Ms. Lynelle Jeysus	UNESCO open education for a better world 1st June - 14th June 2022




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10.	Ms. Tanaz Asha	MS-DEED level 2 Master trainer programme for college teachers, 16th - 26th August 2022
11.	Ms. Shraddha Prabhu	Refresher Course sponsored by UGC-HRDC organized by R.J College, Mumbai, 12th September 2022 to 24th September 2022-
12.	Ms. Lynelle Jeysus	MOOC course on Scientific research methodology UNESCO open education for a better world 1st June - 14th June 2022
13.	Dr. Sree Nair	Participated in National Initiative on Undergraduate Science (NIUS) Workshop, HBCSE 22nd Feb -25th Feb 2022
14.	Ms. Kajal Sankhala	Participated in National Initiative on Undergraduate Science (NIUS) Workshop, HBCSE 22nd Feb -25th Feb 2022
15.	Dr. Prabha Shetty Ms. Rochelle Ferns Dr. P . Sirisha Murthy Ms Rajani K Ms. Lynelle J Ms. Anjali M Ms. Shabana Dr. Neha Choudhary	Department of chemistry, Sophia College (Autonomous), Mumbai by Dr. Kelly Butler for teachers all over India 28th and 29th June 2022
16.	Dr. Prabha Shetty	MS- DEED - I Ramnarain Ruia College, Mumbai 27th and 28th July 2022
17.	Dr. P. Sirisha Murthy	Interdisciplinary Refresher course on Research Methodology and Data Analysis, Ramanujan College, Delhi 21st February 2022 to 5th March 2022, Faculty Development workshop at St. Xavier's institute of Education
18.	Mr. Vijay Vig	Integrating Educational Outcomes in the curriculum Faculty Development workshop at St. Xavier's institute of Education on 14th June 2022
19.	Dr. Swamini Patade	Intact and Subunit mass analysis of protein using LC-MS approach at Venture Center, Pune One-Day Hands-on workshop on 25 th February 2023.
20.	Ms. Sandhya Kadiru	Personal Finance and Tax Planning (An Interdisciplinary Approach) 18 Nov to 24 Nov 2022
21.	Ms. Sandhya Kadiru	Sensitization on Cutting Edge Technologies and Innovation, 12 Sep to 27 Sep 2022

22.	Dr. Meeta Saxena	MS - DEED Level 1 Online Workshop on Introduction to Innovative Pedagogies for UG Teacher, 11/01/22 to 13/01/22
23.	All staff members	Integrated Educational Outcomes in the Curriculum, IQAC Sophia College (Autonomous), Mumbai 14th June 2022
24.	Ms. Kajal Sankhala	Participated in National Initiative on Undergraduate Science (NIUS) Workshop, HBCSE February 2023
25.	Dr. Rajbinder Dehiya	
All faculty have attended an average of 10 or more webinars during the lockdown period Total numbers of webinars consolidated are 214		

Annexure - 4

Exhibitions/seminars/training courses conducted

Type of event	Name of event	Name of the Department conducting event	Participating department/s	No. of beneficiaries
2020-21				
Workshop	Awareness campaign by TY B Sc students based on the UN International year of plant health 2020.	Life Science	UG students	Shared on YouTube
Webinar	'Online Scientific Writing Course' (resource person: Dr. Radhika Tendulkar)	Life Science	UG Students	35
Workshop	Exploring Covid Vaccine by Microbiology students	Microbiology	UG students	100
2021-22				
Seminar	Sharing experiences of research in Life Sciences	Life Science	TY B.Sc Students	154



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	by our PG ex-students.			
Seminar	World Patient Safety Day – 2021	Life Science	UG students	More than 100 participants
Webinar	“PCOD and other menstruation problems in women” by Dr. Mukesh Gupta	Microbiology		103
Webinar	“Bioentrepreneurship and supporting Ecosystem” Ms Suman Gupta, Chief Operations Officer, Bio-Incubator at Regional Centre for Biotechnology, Department of Biotechnology, Govt. of India under the auspices of UNESCO.	Microbiology	UG Students	80
Webinar	‘Applications Of Microbial Technology And Entrepreneurship Opportunities ‘ by Dr. Annamma Anil Odaneth (ICT, Mumbai) on 25 th January 2022	Microbiology	UG Students	111
Webinar	“Career Opportunities in Science and Bridging Academia-Industry gap” by Dr. Abhishek Mule, Bioprocess In-field application specialist, Eppendorf.	Microbiology	UG Students	78
2022-23				
Seminar	National Science Day Session by Dr Subhojit Sen, CEBS Kalina Campus Mumbai University	Life Science	UG students	65
Seminar	The Ananya event (MILL- SCI- FEST 23’) Speaker: Dr Amrita Hazra, IISER Pune	Life Science	UG Students	62

State level Workshop	"Operation and Maintenance of Laboratory Equipments" from 26th to 30th June 2023 – D.B.J.College, Chiplun	Composite Department	Lab Staff	2
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More than 200 students participated in the HBNI-DAE AKAM lecture program on *Career Opportunities In The Field Of Basic Sciences* on 26th August 2022. - Interdepartmental activity

Annexure 5

Books/journals subscribed from grants:

Department of Chemistry

S.No	Books /Journal	Edition
1.	Practical Chemoinformatics, Katthikeyan Muthukumarasamy, Vyas Reny - Springer	Date of publication 2014
2.	3000 solved problems in organic chemistry, Meislich, Meishlich and Sharefkin	Date of publication 2009
3.	Analytical Chemistry, Christian, Dasgupta, Schug, Wiley	Date of publication 2020
4.	Basics of Analytical Chemistry and chemical equilibria, Tissue Brian , Wiley	Date of publication 2013
5.	Minerals and Metals in Ancient India, Biswas Arum Kumar, Biswas Sulekha	Volume 1
6.	Minerals and Metals in Ancient India, Biswas Arum Kumar, Biswas Sulekha	Volume 2
7	Education in Chemistry	Journal



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Department of Microbiology

S.No	Books /Journal	Edition
1	Microbiology: an Introduction by Tortora/Funke/Case 11th edition (Paperback)	Date of publication 2016
2	A Textbook of Microbiology by Dubey R.C. & Maheshwari D.K.	Date of publication 2009
3	Handbook of Food Safety by N. Sarkate	Date of publication 2023

Composite Department

S.No	Journal	Edition
1	Biochemical and Cellular Archives ISSN - 0972-5075, eISSN - 0976-1772	Vol 23 (2023)
2	Journal of experimental Zoology ISSN - 0972-0030, eISSN - 0976-1780	Vol 26 (2023)

Outreach Activities

Annexure 6

Each one teach one' organized by IWSA:

- 6 SY Students volunteered to teach Science and Mathematics at municipal school adopted by IWSA (Indian Women Scientists Association)
- They were guided by IWSA faculty.

E-Content Creation:

- Creation of Videos for 9th Std students - Physics and Biology
- OER's of various topics

Collaboration with an NGO Aseema



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- Municipal schools (KMS and SMS) were adopted by an NGO Aseema
- 14 SY and TY students volunteered to teach a few topics in science to the 8th and 9th standard students after the college hours online.
- Guided by staff members
- 60 Municipal school children took advantage of this program

Science ADDA of 2021 - 2022, 2022-2023

- 7th, 9th and 10th Standard students of Villa Theresa and St. Stephen schools were invited.
- The day filled with learning and fun was organized by all the departments.
- Learning science through performing experiments
- Chem-Housie and Science Quiz fun activities were also organized
- About 60 students participated.
- Science Day celebration (Cartoon Strip on 'Inspiring Stories of Indian Scientists')

Space Week Activity: Benefit of Science & Technology to Human Society (Poster presentation)

- Flash Mob on issues faced by students.
 - A mental health portrayal of today's youth was depicted effectively. It promoted self expression, boosted team-spirit /self confidence, creative and acting ability.
- Gracious Giving", a donation drive in aid of
 - cancer patients at Tata Memorial Hospital, Mumbai, from 20th December 2022 to 1st February 2023.
 - children residing at Aadhar Adivasi Seva Ashram, from 20th December 2022 to 29th January 2023.

Students raised money and other useful items to give to the Cancer patients and Children

Sharing Resources with other colleges:

- 1) Ms. Lakshmi Pillai , a Ph.D student from The Maharaja Sayajirao University (MSU),Baroda was trained in Hydra culturing and maintenance. She was trained in the Suman tulsiani Research lab, Sophia College(Autonomous),Mumbai by the faculty and students.
- 2) The organisms maintained in the college were given to various institutes:

<i>Hydra viridissima</i>	<ul style="list-style-type: none"> • Dept of Zoology,Birla college. • Dept of Biotechnology,Elphinstone College,Mumbai. • The Maharaja Sayajirao University (MSU),Baroda
<i>C.elegans and E.coli</i> OP50	<ul style="list-style-type: none"> • Dept of Zoology,Vaze College,Mumbai • Dept of Zoology,Ruia College,Mumbai.
<i>Drosophila melanogaster</i>	<ul style="list-style-type: none"> • Dept of Biotechnology,Ruia College,Mumbai.

SEED: Science Education through Experiments and Demonstration:

The Department of Life Sciences invites school students and they perform advanced science experiments like DNA extraction, staging of chick embryos, mitosis in onion tips etc This is to inculcate interest in STEM subjects. This year the school which was invited was 'Fazlani L'Academie Globale, Mazgaon, Mumbai.'

Nobel Oration lecture Series:

- Annual Sophia Nobel Oration describing the Nobel Prize winning work by eminent scientists working in the field is held every year in the field of Physiology or Medicine, Chemistry, Physics and Peace

**List of Popular and Invited lectures conducted
Annexure 7**

S.No	Name of the resource person	Title of the talk	Date
Academic Year 20-21			
1.	Dr. Anupma Harshal W	Project MANAV - The Human Atlas Initiative	31 st January, 2020
2.	Dr. Deepa Subramaniam	Xth Annual Science Day Talk - Quest Wider than the Sky- 'Stem Cells: a double edged sword'	28th February 2020
3.	Dr. Satyajit Rath	COVID-19 an Immunologists perspective	29th May 2020
4.	Dr. Vineeta Bal	Celebration of women in Science :Rosalind Franklin the woman behind DNA discovery	25th July 2020
5.	Dr. Sai Ram and Dr. Rajesh Medisetty	SARS-CoV-2 updates: Vaccine and treatment (National level webinar)	15th June 2020
6.	Mr. Robin Fernandes	Secrets of effective communication	20th June 2020
7.	Dr. Prabodh Chobe	Taking the right decision for a bright career in Chemistry	24th October 2020
8.	Mr. Sachin Dedhia	E-mask: Protecting yourself online	3rd June 2020
9.	Dr. Mukesh Gupta	Staying healthy during Covid 19 times	4th June 2020
10.	Dr. Mukesh Gupta	Handling women's health in covid times	28th September 2021



A.P. Patil
PRINCIPAL SOPHIA COLLEGE
(AUTONOMOUS)

11.	Dr.Jasjeet Singh Bagla, Indian Institute of Science Education and Research, Mohali	Nobel Talk - 'Nobel Prize in Physics 2020: of compact objects & black holes'	5th February 2021
12.	Mohamed Febin Farook	Understanding Epilepsy	18th January 2021
13.	Adv.Lara Jesani	The Right to Choice, the new legal age of marriage in India.	12th February 2021
14.	Dr.Grinson George and Dr. Aboobacker V.M.	National Science Fest 2021 and National Science Day 2021 was celebrated. "Academic research and career opportunities in research in Oceanography by Dr.Grinson George and Dr. Aboobacker V.M.	27th February 2021.
15.	Dr. Chandra Vishwanathan.	"Chasing hope through stem cells"	1st March 2021
16.	Dr. Shahid Jameel	Annual Sophia Oration Series	9th February 2021
Academic year 21-22			
1.	Dr. Richa Rikhy	'Mitochondria- Where They Come from And Where Will They Take Us'	26th August 2021
2.	Dr.Chitra Seetharam Misra	Talk on 'Genome editing'	22nd January 2022
3.	Dr. Shobha Tole	Annual Sophia Nobel Oration -'Just a touch of chili. No pressure!! Can you take the heat?'	14th January 2022
4.	Dr. Prabodh Chobe	Chemistry of Warfare in collaboration with the history department of Sophia college, Mumbai	17th July 2021
5.	Dr. Prabodh Chobe	Nobel Laureates who changed our world: perfect examples of hope, courage and resilience	4th December 2021
6.	Dr. Kinshuk Dasgupta	Fascinating world of carbon nanoparticles in collaboration with IWSA	23rd January 2021
7.	Dr. Debojyoti Chakraborty	Nobel oratin lecture: Generic scissors: Rewriting the code of life	13th February 2021
8.	Indian Institute of Plasma Research team	Plasma and its application and nuclear fusion	10th March 2021
9.	Dr. Utkarsh Chavan	Croc Talk	5 th March 2022

10.	Dr. Meera Venkatesh	Applications of radioisotopes in healthcare with emphasis on radiopharmaceuticals - in collaboration with IWSA	24th July 2021
11.	Dr. Avinash De souza, Ms. Samindra Sawant and Dr. Ratna Rajethar	Chemistry of moods - in collaboration with the department of psychology, sophia college, Mumbai	20th November 2021
12.	Dr. Deepa Khushlani	Nanoscience, environment and energy: a chemist's perspective	4th December 2021
13.	Dr. Shantanu Mukherji	Asymmetric Catalysis with small organic molecules - Nobel Oration lecture	28th January 2022
14.	Mr. Mohan Upadhye	Conservation of Sea Turtles	12 th February 2022
Academic year 22-23			
15.	Mrs. Latika Sethi	Yoga Session	2nd March 2022
16.	Prof. Ruchi Anand	From Laboratory Chemistry to Device Fabrication"	12th August 2022
17.	Dr. Bindu Achary	Cosmetics – The Hidden Truth!	11 th and 18 th June 2022
18..	Mr. Joshua Tivade, (Consultant psychologist at Accenture)	CrossScope: Stress management	20 th August, 2022.
19..	Dr Satyajit Rath	"National Scientific temperament Day talk"	20th August 2022
20.	Mr. Joshua Tivade, (Consultant psychologist at Accenture)	CrossScope: Stress management	20 th August, 2022.
21.	Dr Anuradha Ratnaparkhi	"Glia, Neurons and the Synapse"	22nd July 202
23.	Ms. Dievya Gohil	Prevention of acute graft versus host disease by Withaferin A via suppression of AKT/mTOR pathway	29th July 2022
24.	Mr. Sachin Rane	Fauna and Flora of Sahyadri Range	30th July 2022
26.	Ms. Pallavi Desai Sawant & Ms. Shreya Rohamare	Mandala Art Workshop	21st October 2022
27.	Dr Momna Hejmradi	"Cerebral Evolution: the ascent of intelligence"	10th November 2022

28.	Dr. Vishal Kadu , Assistant Professor, Sathaye College.	Entrance and Competitive exams-“Yes you can”, by CrossScope – A series of career guidance sessions.	10 th December 2022
29.	Mr. Syed Samiullah, Head of operations, Professional Info Tech, Coimbatore.	Opportunities in healthcare (Medical transcription, Medical coding Clinical research, Pharmacovigilance and food safety.) CrossScope – A series of career guidance sessions.	22 nd December 2022
30..	Ms. Jeevanshu Jain, Medical Physicist –C, Department of Radiation Oncology, ACTREC, Tata Memorial Centre.	Avenues in the medical field- Radiation Oncology CrossScope – A series of career guidance sessions.	14 th January, 2023.
31.	by Dr. Naomita Dhume, Coordinator and HOD of Bio Analytical Science at G.N Khalsa College.	Bioanalytical Science – A roadway to diverse opportunities, CrossScope – A series of career guidance sessions.	20 th January 2023,
32.	Dr. Vijay Mangoli, Embryologist.	CrossScope – Art in Human reproduction – contribution of an embryologist	28 th January, 2023,
33.	Dr Supreet Saini	Nobel Oration Talk “Where did we come from? The story of Human Evolution”	15th February 2023
34.	Prof. Suvarn Kulkarni	Nobel Oration - Snapping molecules together	3rd February 2023

Outreach Activities



BRAIN

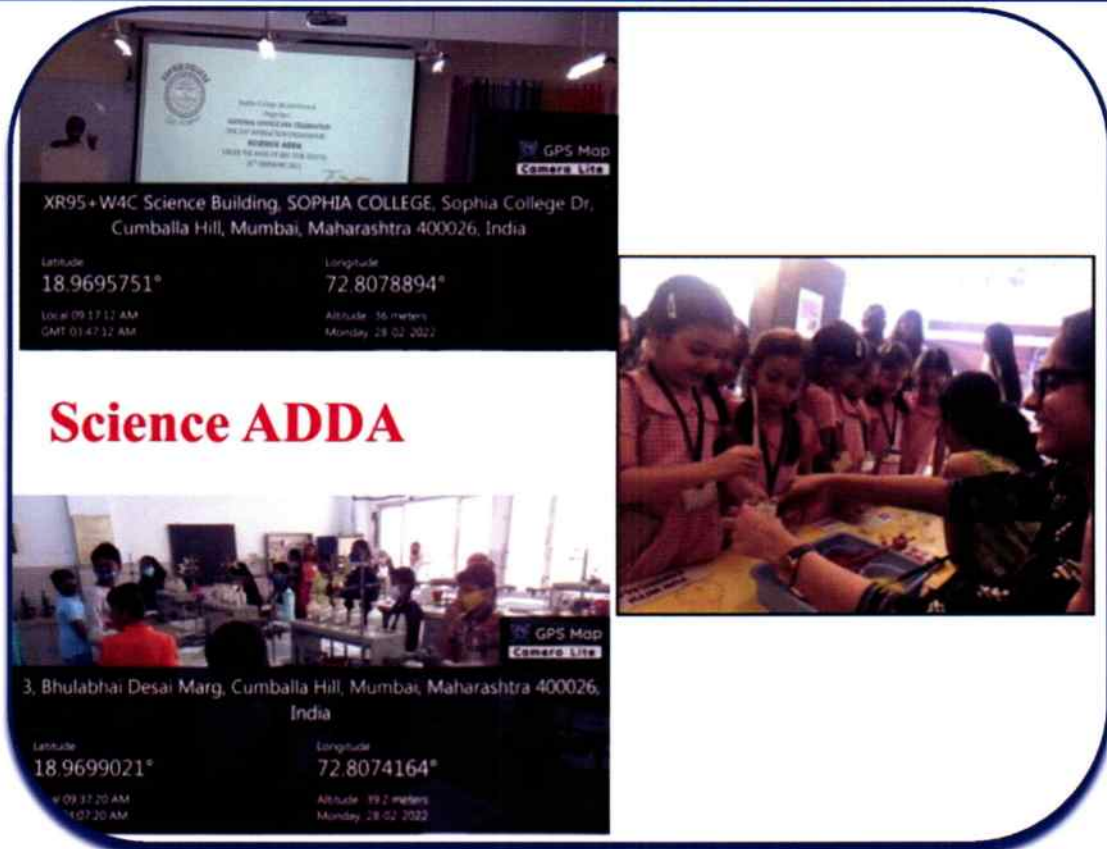
E-Content Development

Cartoon Strip

Space Week Activity

Each one Teach One

The collage features a central graphic with the word 'BRAIN' in large, colorful letters. To the left is a cartoon strip titled 'Intellectual power of HUMAN'. To the right is a space-themed activity board with text and images. Below these are two photographs: one of two women in a classroom setting and another of a group of women standing together.



Science ADDA

XR95+W4C Science Building, SOPHIA COLLEGE, Sophia College Dr, Cumballa Hill, Mumbai, Maharashtra 400026, India

Latitude: 18.9695751° Longitude: 72.8078894°

Altitude: 16 meters

Monday, 28.02.2022

3, Bhulabhai Desai Marg, Cumballa Hill, Mumbai, Maharashtra 400026, India

Latitude: 18.9699021° Longitude: 72.8074164°

Altitude: 19.7 meters

Monday, 28.02.2022

The block contains two photographs of Science ADDA activities. The top photo shows a presentation slide with the college name and location. The bottom photo shows a group of students and a facilitator working on a project at a table.

Training Received and Organized

Empowering Chemistry teachers
Online POGIL workshop



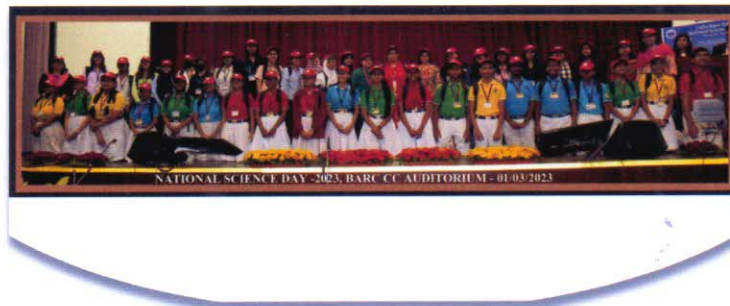
International Webinar on
Chem Libre Text as an OER



Lab
Staff
Training

Some Certificates

Industrial Visits



Research Presentations and Publications

ST61006

Aavishkar
SALICIOUS

GREEN SYNTHESIS OF NANOCOMPOSITE FILTEES FOR FACE MASK

Mumbai, MH, India
LL College Marri, Mahalaxmi, Mumbai, 400034.

SOPHIA COLLEGE FOR WOMEN (EMPOWERED AUTONOMOUS)
CERTIFICATE OF APPRECIATION

Sanika More
from Sophia College for Women (Empowered Autonomous), Mumbai has presented the paper "Investigating the toxicity of several facial cleansers using *Moina* sp." at the Annual (Online) International Conference on "Toxicology Research & Development" Organized by the Department of Zoology and RUSA on the 7th and 8th of December 2023

Dr. Roshan D'Souza
Convener

Dr. Anagha Tendulkar Patil
Principal

Presenting Research Work

INTERNATIONAL CONFERENCE ON
PLANT BIOFACTORIES
STRATEGIES AND CHALLENGES
PBSC-2019

Certificate of Presentation

This certificate has been awarded to Hannah Ansari for delivering an oral presentation entitled "Comparative Antioxidant Potential of Two Drought Resistant Medicinal Plants of Rajasthan - *Prosopis cineraria* and *Capparis decidua*" at the International Conference on Plant Biofactories Strategies & Challenges held at Ramnarain Ruia Autonomous College, Mumbai, India 400019 during December 15-21, 2019.

Dr. Jitendra Patil Technical Head
Dr. Anushka Lakkar Convener
Dr. Subhash Bhargava President
Prof. B.B. Naik Chof Patron

Home > Vegetos > Article

Comparative Antioxidant potential of two drought resistant medicinal plants of Rajasthan: *Prosopis cineraria* and *Capparis decidua*

Research Article | Published: 07 February 2022
Volume 14, pages 228–234, 2022 | [View this article](#)

Hannah Ansari, Yashashvi Choudhary & Prithvi G. Shetty

106 Accesses | 1 Citation | [Explore all metrics](#)

मधुमेह

Madhumeha

BLOOD PRESSURE SURVEY

Objective: We did a survey of around 70 people by asking the age, weight gender and whether they're suffering from blood pressure?

What is blood pressure? Blood pressure is the pressure of circulating blood against the walls of blood vessels. Most of this pressure results from the heart pumping blood through the circulatory system.

Results/Findings: A survey of around 70 people was done. 30 male and 36 female respondents. 70% of females were found to be diagnosed with blood pressure. 72% of males were found to be diagnosed with blood pressure.

Conclusion: The percentage of a person suffering from blood pressure was found higher for males. Percentage of age group 30-40 was found to be the highest. Percentage of age group below 18 was found to be the lowest. People with weight around 55 kgs were found with the highest percentage suffering from blood pressure. People with weight around 47-50 kgs were found with the lowest percentage suffering from blood pressure.

Blood Pressure Survey

Activities, Invited & Popular Lectures

Chemistry Club, Student development activities-A Glimpse

Ananya

ChemScope

Nobel Prize winners Marie Curie and Einstein Poster Competition

20th Annual Nobel Oration

National Level Quiz 'Yeh Mera India'

Chemistry Quiz 'GENIUS' for JC

Mandala

Yoga Session

Cosmetics – The Hidden Truths

Nobel Talk

Conservation of Turtles

Tiger Talk

Croc Talk

Butterfly Gardening



The Ananya event
(MILL- SCI- FEST 23')

Model organism workshop
National Science Day

SEED



Logo designing Competition

MICROGYANI 2023 (Intercollegiate
Microbiology Quiz Competition) 15th February
2023 10:30 am to 2:30 pm