



# **KISHINCHAND CHELLARAM COLLEGE CHURCHGATE, MUMBAI 400020**

## **DBT STAR STATUS ANNUAL REPORT**

**Period: April 2020 - March 2021**

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### **DEPARTMENTS**

**BIOTECHNOLOGY**

**CHEMISTRY**

**LIFE SCIENCES**

**MICROBIOLOGY**

**STATISTICS**

**Department of Biotechnology****Proforma for submission of progress reports for Annual Review of Colleges supported under Star College Status**

(Kindly note that the annual report from S.no. 6 to 10 should not be more than 10 A4 size sheets, with font size 12pt and line spacing 1.5)

- Name of the College:** Kishinchand Chellaram College
- Name of Coordinator, Designation:**  
Address, Phone nos. Dr.Sagarika Damle, HOD, Dept of Life Sciences, +91 - 98203 60383
- Assessment duration:** 01/04/2020 to 31/3/2021 Duration in years: 01
- Details of Departments Supported**

Sl No	Name of Department	Courses (B.Sc./M.Sc./PG Diploma, certificate etc.) offered	Faculty members	
			With Ph.D.	Without Ph.D.
			<b>Total = 20 Ph.D. and 17 Without Ph.D.</b>	
1.	Biotechnology	B.Sc.	01	05
2	Chemistry	BSc, MSc by research and Papers and Ph.D	09	01
3	Life Sciences	B.Sc; Ph.D.	06	01
4.	Microbiology	B.Sc, M.Sc by papers and research	02	03
5	Statistics	B.Sc; M.Sc.	02	02 + 05 (Ad-hoc)

- Number & Date of Advisory committee meeting: - 01; 21<sup>st</sup> December, 2020**
- Qualitative improvements due to DBT support. Please highlight 5 salient points (within 500 words).**

(You may enumerate 5 minor projects where students were involved and their impact or similar activities and their outcome; this is for representative purpose and coordinator may include details as per his own choice; kindly refrain from providing philosophical data Avoid any introduction. All the justifications must be very crisp like any aspect non-existent pre-STAR Scheme and you achieved after the grant).

**BIOTECHNOLOGY**

- The DBT STAR STATUS aided in uplifting the quality of projects undertaken, especially with respect to Survey based projects and projects based on medical and environmental application. Key projects are “A survey on antibiotics- usage pattern, perception, side effects and awareness on antibiotic resistance” and “Isolation of Pseudomonas species from soil sample and evaluation of its potential as an antimicrobial agent and for production of pyoverdinin.” Details of other projects are tabulated below.

- A two-day virtual Workshop on ‘Research Methodology’, allowing students around the state where they gained insight on knowledge about publishing a research paper and application of different research tools that aids in publication process.
- Interdepartmental collaboration between Biotechnology, Life Science and Microbiology, a “5 Day Virtual Training Workshop in Biotechniques” where all the students learnt different concepts in biotechnology, molecular biology, phytochemistry etc.
- An International Webinar on “Growth factor receptors: Mechano-organizers regulating cell spreading and tension (Connecting the past. Loading the future series 2)” by our prestigious Alumini Dr. Tejeshwar Rao was conducted where the participants got an opportunity to understand the growth receptor EGFR.
- A Virtual visit was arranged by the department to ACTREC and ANCHROM where the students were demonstrated on the working of instrumentation around the ACTREC facility and also the principle and working of HPTLC instrument and its various application in different fields.

## CHEMISTRY

- Students could interact with experts from different industries like cosmetics, healthcare, perfumery and paints. We had invited experts from Johnson and Johnson, Eaglewings perfumes, Nerolac paints to name a few to share their expertise with our students.
- Talk by Dr Shadab Maghrabi, Innovation Manager, Oil, fuels and Lubricants, USA provided an insight in to the field of Conventional Energy Resources and Virtual Visit to M/s Cleanchem laboratories, Navi Mumbai helped the students to understand the routine working of industry.
- Band it Up- a three days collaborative workshop conducted with the Department of Life science was designed to explain the basics of Chromatography and to perform small experiments based on same using material available at home.
- We could arrange for an important collaborative activity Know your Rights in collaboration with Gender Issues Cell of the College, a two days’ workshop focusing on Protection of Women from Domestic Violence. We could invite speakers through an NGO Majlis to express their views on the topic.
- The session on Corona Pandemic by Dr Manvi Porwal, Scientist, WHO, Germany conducted in the initial stages of the Pandemic served as an eye opener for the students and Faculty making them aware of a new dimension of the Pandemic. The session involved participants from colleges all over the State

## LIFE SCIENCES

- A workshop on Research Paper Reading in association with ‘Homi Bhabha Centre for Science Education’ inculcated the scientific temperament among students.
- Q-Rius Series by the department continued to strengthen research activities and resulted in a greater number of students engaged in research activities.
- Research projects such as ‘A Survey Based analysis on the Awareness of vegan and cruelty free cosmetic product’, ‘A Survey Based Analysis of Various Available Treatments Used by the General Population for the Management of Acne’ etc. and many more have been communicated for publication in peer reviewed recognized scientific journals.
- The departmental program, ‘Evengers’, trained students in Online Event Management and development of soft skills.
- Throughout the year, National and International Seminars and Webinars were conducted for creating awareness regarding various biological topics such as ‘One Earth One Love, 2020 (Biodiversity)’, ‘Pawse for A Second to Hear: Tail Tales (Animal welfare)’ to name a few.

## MICROBIOLOGY

- Projects like ‘Evaluation of antibacterial activity of vegetable bio cleaners’ and ‘Determining the efficiency of commercial handwash and sanitizer on normal flora’ were conducted in the wet lab with a part of the project being survey to be in stride with the current pandemic situation.
- Lectures on Chromatography- Types and its recent Applications, Future Vista, Hiding in Plain Sight: (+) RNA Virus Replication Compartments were conducted virtually with speakers from across the globe which helped the students learn about career opportunities as science graduates, widen their horizon beyond their syllabus and generated interest in research.
- Funding by DBT helped us in procuring instruments & thus provide training to teaching and non- teaching staff members in the handling of Camag Linomat 5 and Smart Digi (HPTLC), Trinocular Microscope, Rotary vacuum Evaporator, Eppendorf Centrifuge, and Microfuge.
- Virtual visits to Anchrom Enterprise Pvt Ltd, Cell culture Basics Virtual lab by Thermofisher, ACTREC, Common Instrumentation Facility, K. C. College helped students in enhancing their knowledge, ignite curiosity and interest in the subject.
- Microfiesta 5.0 video and model making competition was conducted virtually and it helped our S.Y.B.Sc students become facilitators to promote scientific temper amongst school students.

## STATISTICS

- Due to DBT STAR status students were given more hands-on with different statistical packages like MS-Excel, SPSS, R-Programming, Jamovi etc. Hence, Students got exposure to statistics data analysis related projects which enabled UG students to take-up small in-house projects. This helped them to gain an insight into research in statistics.
- New practical was designed from the perspective of understanding theoretical concepts taught in class rooms.
- With enhanced ability Students started getting interest in analytics and hence opportunity for internship to placement in small numbers.
- Department has designed Software and Analytics based Applied Statistics Courses under New HSNC University which is present need of Job Industry with the wings developed over a period of time under aegis of DBT-Star Status Scheme.

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

## BIOTECHNOLOGY

- With the shift of offline to online learning, a new concept of collective teaching and learning “Learn and Let Learn video activity” was introduced where enormous effort was taken by the SYBSc students to teach and learn different immunological techniques, transcription, translational and molecular techniques and a creative idea of compiling the etiology of various bacteria and virus in the form of a manual- “Understanding bacteria and viruses- Vol 1”.
- With the COVID pandemic hitting the nation, the department organized online webinars, and a poster competition “Biote-Covid” for school, junior college, degree and postgraduate degree students.

## CHEMISTRY

- With the ongoing restrictions due to Covid 19, we realized that it was possible to invite experts from overseas which was otherwise not possible.
- Our students were benefitted from the sessions conducted by our esteemed Alumni, which otherwise could not materialize due to time constraint (The online webinars were a boon in disguise).
- We conducted a two-day online workshop on Chromatography with novel Do at home activities for better understanding of the chromatography technique.

- Planning to have Lab on wheels so that we can reach the less privileged students from remote areas.
- Planning to conduct training programmes for faculty in the field of Advanced instrumental analysis.
- We are planning to introduce a new set of experiments that can be conducted by UG students using the newly procured IR Spectrophotometer under Star Status.
- In case of normalization of college working, we are planning to introduce quite a few activities involving laboratory experiments.

## **LIFE SCIENCES**

- Online videos of experiments were created by faculty members and students during the lockdown which could be used for all the classes. To continue the learning process off-campus, students were oriented to use materials available at hand to learn basic scientific concepts through online workshops such as ‘Band it up’ and ‘Microgreens Superfoods’.
- Department plans to start Online internship programs in collaboration with External experts and agencies.

## **MICROBIOLOGY**

- You Tube channel for demonstration of various Microbiology techniques and Invited lecture recordings from eminent scholars was made available online for access to learners. <https://www.youtube.com/channel/UCfglG14MxWYigwS2EPibtJQ/videos>
- Training of teachers was conducted for Camag Linomat 5 and Smart Digi (HPTLC) which was done in a blended pattern (Online and Hands-on mode).
- Microfiesta 5.0 was organized online for school students with the Exhibition of Videos and Working models being presented along with a virtual Microbiology Lab tour.

## **STATISTICS**

- Department of Statistics, K.C. College launched a YouTube channel as an open learning platform to make guest lectures by eminent speakers and statistical technique videos accessible to learners. <https://www.youtube.com/channel/UCFDI374xDzY1VrdGUPUjc5g>
- A three-day National Online training workshop was conducted on ‘Structural equation Modeling using SPSS AMOS’ to train the teachers from Mumbai, interiors of Maharashtra state, National and International. The workshop also includes lectures for UG and PG students for colleges from Mumbai and India.

- Online paid version of software become free for 90 days and online virtual platform like Google Collaboratory to R and Python to mobile technology is used as computing facility for students New Practical & training Trainee's in workshops.

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

- The DBT grant gave us an opportunity for procuring a wide range of advanced instruments which has benefitted the students in enhancing their research projects as well as their knowledge on handling and working of the instrument. With the availability of grant various speakers from National and International institutes could be invited on online platforms which helped in overall development of the students.
- Due to the lockdown, procuring materials and instruments from vendors posed numerous challenges.

As the entire teaching learning process became online, it was a huge task managing all the activities along with regular lectures and practical. Since, there was no actual contact between Students and Teachers, hand-on experimentation was a major hurdle and even field work had to be carried out on a digital platform. But learning continued as team effort between teachers and students of all departments along with interdepartmental and interinstitutional activities.

- Timely disbursement of grants is required for proper planning of activities and allotment of funds for support staff and AMC for instruments is a necessity.

**9. Key performance indicators**

S. no	Indicator	2019 - 2020		2020 - 2021		Re marks
1	No. of students admitted	<b>Total = 440</b>		<b>Total = 455</b>		
		<b>M=104</b>	<b>F=336</b>	<b>M=90</b>	<b>F=365</b>	
		<b>Biotechnology</b> – M-06; F-32 G-25, SC-2, OBC-3 <b>Chemistry</b> – M-36; F-144 G – 145; SC – 16; OBC - 19 <b>Life Sciences</b> – M – 19; F – 83 G – 87; SC – 6; OBC - 9 <b>Microbiology</b> – M - 7; F - 46 G - 42; SC – 5; OBC - 6 <b>Statistics</b> – M-36; F-31 G-58; SC – 2; OBC – 7		<b>Biotechnology</b> – M-07; F-39 G-35, SC- 3, OBC-6 <b>Chemistry</b> – M-39; F-120 G- 128, SC- 10, OBC- 21 <b>Life Sciences</b> – M – 12; F- 107 G - 98; SC – 7; OBC - 14 <b>Microbiology</b> – M-11; F-71 G-63; SC-10; OBC-12 <b>Statistics</b> – M-21; F-28 G-39; SC – 2; OBC – 4		
2	No. of students passing out	<b>Biotechnology</b> – 100%		<b>Biotechnology</b> – 100% (Sem 5)		

	(%) Students Admitted/ passing out (pass %)	<b>Chemistry – 100%</b> <b>Life Sciences – 100%</b> <b>Microbiology – 100%</b> <b>Statistics – 97.87%</b>	<b>Chemistry – 100% (Sem 5)</b> <b>Life Sciences – 100% (Sem 5)</b> <b>Microbiology – 100% (Sem 5)</b> <b>Statistics – 98.42 % (Sem 5)</b>	
3	Drop-out rates	<b>Biotechnology – 20.00%</b> <b>Chemistry – 45.00%</b> <b>Life Sciences – 8.51%</b> <b>Microbiology – 15.09%</b> <b>Statistics – Nil</b>	<b>Biotechnology – 22.00%</b> <b>Chemistry – 24.50%</b> <b>Life Sciences – 6.00%</b> <b>Microbiology – 29.27%</b> <b>Statistics – Nil</b>	
4	No. of students opting for MSc (Projected data for 2020 - 2021)	<b>Biotechnology – 85.29%</b> <b>Chemistry – 39.58%</b> <b>Life Sciences – 56.00%</b> <b>Microbiology – 63.33%</b> <b>Statistics – 36.17%</b>	<b>Biotechnology – 78.94%</b> <b>Chemistry – 56.33%</b> <b>Life Sciences – 60.00%</b> <b>Microbiology – 80.00%</b> <b>Statistics – *Data will be provided with next year report</b>	
5	Average marks (Mode is used as average)	<b>Biotechnology – A+</b> <b>Chemistry – O</b> <b>Life Sciences – A+</b> <b>Microbiology – A+</b> <b>Statistics – O</b>	<b>Biotechnology – O</b> <b>Chemistry – O</b> <b>Life Sciences – A+</b> <b>Microbiology – O</b> <b>Statistics – O</b>	
6	No. of hands- on experiments being conducted	<b>Biotechnology – 17</b> <b>Chemistry – 16</b> <b>Life Sciences – 30</b> <b>Microbiology – 15</b> <b>Statistics – 08</b>	<b>Biotechnology – 16</b> <b>Chemistry – 04</b> <b>Life Sciences – 20</b> <b>Microbiology – 13</b> <b>Statistics – 12</b>	
7	No. of new experiments introduced	<b>Biotechnology – 21</b> <b>Chemistry – 03</b> <b>Life Sciences – 12</b> <b>Microbiology – 23</b> <b>Statistics – 21</b>	<b>Biotechnology – 14</b> <b>Chemistry – 02</b> <b>Life Sciences – 07</b> <b>Microbiology – 12</b> <b>Statistics – 27</b>	
8	Publications (Scopus indexed) /patents, if any.	<b>Biotechnology – 01</b> <b>Chemistry – Nil</b> <b>Life Sciences – Nil</b> <b>Microbiology – Nil</b> <b>Statistics – Nil</b>	<b>Biotechnology – 03</b> <b>Chemistry – 04</b> <b>Life Sciences – Nil</b> <b>Microbiology – 01</b> <b>Statistics – Nil</b>	
9	Training received by faculty	<b>Biotechnology – 07</b> <b>Chemistry – Nil</b> <b>Life Sciences – 02</b> <b>Microbiology – 06</b> <b>Statistics – 03</b>	<b>Biotechnology – 07</b> <b>Chemistry – 03</b> <b>Life Sciences – 05</b> <b>Microbiology – 02</b> <b>Statistics – 02</b>	
10	Exhibitions/se minars/training courses conducted	<b>Biotechnology – 01 exhibition; 4 trainings/workshops; 06 seminars</b> <b>Chemistry – 5 trainings/workshops; 5 Seminars</b>	<b>Biotechnology – 01 Exhibition; 07 trainings/workshops; 01 Seminar</b> <b>Chemistry – 04 trainings/ workshops; 01 Seminar</b>	



		<b>Life Sciences</b> – 02 exhibitions; 04 trainings/workshops; 02 seminars <b>Microbiology</b> – 01 exhibition; 03 trainings/workshops <b>Statistics</b> – 01 Exhibition; 05 trainings/workshops; 2 Seminars	<b>Life Sciences</b> – 02 exhibitions; 08 training courses; 04 seminars <b>Microbiology</b> – 03 exhibitions; 08 trainings/workshops; 01 seminars <b>Statistics</b> – 01 exhibitions; 05 trainings/ workshops; 01 seminars
11	Books/journals subscribed from grants	<b>Biotechnology</b> – Nil <b>Chemistry</b> – Nil <b>Life Sciences</b> – Nil <b>Microbiology</b> – 01 <b>Statistics</b> – 26	<b>Biotechnology</b> – Nil <b>Chemistry</b> – Nil <b>Life Sciences</b> – Nil <b>Microbiology</b> – Nil <b>Statistics</b> – Nil
12	Outreach activities (Popular lectures)	<b>Biotechnology</b> – 02 <b>Chemistry</b> – 07 <b>Life Sciences</b> – 04 <b>Microbiology</b> – 05 <b>Statistics</b> – 01	<b>Biotechnology</b> – 01 <b>Chemistry</b> – 06 <b>Life Sciences</b> – 02 <b>Microbiology</b> – 01 <b>Statistics</b> – 02
13	Colleges mentored to apply for DBT Star College grants	<b>Biotechnology</b> – Nil <b>Chemistry</b> – Nil <b>Life Sciences</b> – 01 <b>Microbiology</b> – Nil <b>Statistics</b> – 01	<b>Biotechnology</b> – Nil <b>Chemistry</b> – Nil <b>Life Sciences</b> – 01 <b>Microbiology</b> – Nil <b>Statistics</b> – Nil
14	Invited lectures	<b>Biotechnology</b> – 02 <b>Chemistry</b> – 11 <b>Life Sciences</b> – 10 <b>Microbiology</b> – 01 <b>Statistics</b> – 02	<b>Biotechnology</b> – 05 <b>Chemistry</b> – 11 <b>Life Sciences</b> – 37 <b>Microbiology</b> – 09 <b>Statistics</b> – 02

(For Point 6-14 under S. No. 9 not more than 5 pages, 1.5 line spacing 12 times roman font size) to be provided duly attested by Principal and Coordinator.

## 10. Self-evaluation

*Objective (as stated in proposal)	% Achieved	Reasons for underachievement / If achieved, state in quantitative metrics
<b>DEPARTMENT OF BIOTECHNOLOGY</b>		
Scientific training, Hands on training for skill upgradation	80% = 1.5	With a total of 30 (14+16) online experiments using virtual lab, 13 new research projects and 14 completed research projects (Lab and survey-based projects), 3 paper publications and various student activities focused on preparing survey questionnaire, designing research posters and dissertation writing and use of reference tools. Training of various instruments such as rotary evaporator, cold centrifuge etc were organised for teachers and the non-teaching staff. We've been able to achieve the best of this objective.
Field trips/ industrial visits-	60% = 1.2	2 virtual industrial visits were organized this

Learning outside four walls		year, wherein demonstration and verbal explanation were given with respect to cancer biology and further student opportunities were informed. Also, the working and handling of HPTLC instrument was demonstrated live.
Collaboration/ interdepartmental activities	80% = 1.6	Various workshops and interdepartmental activities were conducted based on Mental Health, Molecular and immunological techniques. Also, student-teacher training was organized about different online portals and tools for E-Learning.
To materialize and commercialize research by development of cost-effective alternative products, and generate e-resources.	80% = 1.6	More than 50 educational videos demonstrating collective teaching and learning, compiling SOPs of various instruments and a manual on “Understanding bacteria and viruses Vol I” listing 28 different infectious bacteria and viruses. We also have 4 in-house publications in Jigyasa.
Outreach activity/ Extension activity	75% = 1.5	14 posters on biotechnological invention through Inspirus’21, and and 133 E-posters on COVID Awareness generated through Biote-Covid activity this has turned out to be satisfactory objective accomplished.
<b>DEPARTMENT OF CHEMISTRY</b>		
Training Programmes Research Projects and new extended practicals	80% = 1.6	Virtual training Programmes involving Chem draw and other software related to chemistry were done for students. As a positive outlook to the pandemic, we were able to deliver the knowledge of representing complex structures using software
Collaboration and Interdepartmental Activities	75% = 1.5	The pandemic restricted the completion of planned activities
Field Trips	75% = 1.5	Only virtual industrial visit could be arranged in the current scenario. Virtual visit was arranged for S.Y.B.Sc and T.Y.B.Sc. students and also for students and faculty from other colleges. Though the number of visits was low, it had a wider reachability.
Outreach Activities	90% = 1.8	Lab on wheel is one Outreach activity that is still in the planning stage. We are currently working on it.
Resource generated <ul style="list-style-type: none"> <li>• Contributed to Jigyasaa</li> <li>• Compilation of essays received for online essay competition</li> <li>• Compilation of procedures of new experiments conducted under Star Status</li> </ul> You tube link For the session	85% = 1.7	We are still in the planning stage as far as resources to be generated. You tube link For different online sessions conducted were generated. The procedures of different experiments conducted would be serving as a ready reference for students. Around 20 essays on various aspects of the Pandemic were compiled and would be a good reading material for all.

conducted on Dos and Don'ts of Corona <a href="https://youtu.be/jK4uW2MD-5w">https://youtu.be/jK4uW2MD-5w</a>		
<b>DEPARTMENT OF LIFE SCIENCES</b>		
<b>Training Programs: 08</b> <b>Research Projects and New/extended Practical</b> 16 completed and 08 ongoing Research projects 07 New and 20 Extended practical	70 % = 1.5	The Department focusses on inculcating Research temperament in students from first year itself. Due to restriction of pandemic, more emphasis has been given on Survey based research projects as lab-based research was not possible
<b>Field trips and Industrial Visits = 4</b>	50% = 1.0	Due to pandemic situations, virtual lab visits were undertaken. As a positive side, visit to international labs such as Share labs Norway, was completed. For field visits, teachers visited the location and conducted the visit on Zoom.
<b>Collaboration and Interdepartmental Activities</b>	90% = 1.8	Many other collaborative plans are in progress and shall be carried on in the upcoming years
<b>Outreach and Extension activities = 2 (04: targeted)</b>	50% = 1.0	Awareness competitions were carried out. Many other collaborations and activities are in the pipeline.
<b>Resource Generation</b>	75% = 1.5	Based on the available resources, online resource generation was targeted. On line resources such as practical demonstration videos, home based practical activities by students, Newsletters etc were generated.
<b>DEPARTMENT OF MICROBIOLOGY</b>		
Training for skill upgradation	80% = 1.6	Training sessions were conducted for students, teaching and non-teaching staff of various department of K. C. College. We would like to extend the training to staff from other colleges.
Tie-ups/ Collaboration/ Interdepartmental activities	75% = 1.5	Interdepartmental Activities like Training in Molecular Biology Techniques; Happy Mind, Happy Life, Mental Wellness were organized along with other STAR Status and Scheme departments.
Industrial/ Institutional/ Field visits	50% = 1.0	The opportunities for Industrial and Institutional visits were limited and could be done virtually due to the pandemic.
Outreach activities	50% = 1.0	Limited activities could be conducted due to the pandemic.
Resource generated	90% = 1.8	You Tube channel for demonstration of various Microbiology techniques & Invited lecture recordings were made available online. Also, SOP manuals were created. Contributed to Jigyasa.
<b>DEPARTMENT OF STATISTICS</b>		
Development of educational resources	80% = 1.6	Contribution by Research Scholars in Jigyasa every year. Google form is used to collect project. Created You Tube Channel of the

		Department.
Collaborative and Interdepartmental Activities	100% = 2.0	Statistics Department believes in open door social policy. Joined hands for Majlis workshop and extension activities. Always readily available to render all kinds of help from training program to research pursuits of students, researchers and teachers.
To train students on statistical /Data analysis skills at institution level and also to strengthen Hands on training programs of the students	80% = 1.6	Made use of Pandemic for learning and teaching. Online paid version of software become free for 90 days and online virtual platform like Google Collaboratory to R and Python to mobile technology is used as Computing facility for students New Practical & training Traniees in workshops.
To inculcate Research Culture	70% = 1.4	Online resources are used due to pandemic.

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

