

## **LIFE SCIENCES DEPARTMENT REPORT (2018-19)**

### **GUEST LECTURES / WORKSHOP ARRANGED FOR STUDENTS:**

9<sup>th</sup> August 2018 A Bioinformatics workshop was organized for SY B.Sc. Students and Dr. Sagarika Damle from K.C. College was the resource person.

T.Y. B. Sc. students Screened the Hindi movie “Paramanu” as a part of awareness program about India’s Nuclear policy and world disarmament on 26<sup>th</sup> July 2018.

Ms. Shweta Naik from an NGO Roots and Shoots associated with Jane Goodhall foundation visited our department to interact with TY B Sc students about what they can do to help conserve our planet.

13<sup>th</sup> December **Ananya Activity** cum awareness program:

### **Plant-Pluck-Provide-Perish**

#### **Ananya Event 2018**

This event was jointly organized by the department of Life Sciences and Department of Education. The third year students of Life Sciences and Education participated in the event. The focus of the event was to create an awareness of the distress experienced by farmers of our country, in this event the students focused on the drought scenario of Maharashtra. They traced the district wise grim picture of our state farmers. This was followed by associating the type of cropping from these districts and the input cost for the cultivation of the crop. The students represented the data of the crop cultivated, produced and water requirements for the same.

Based on the type of crop affected the students selected those ingredients in preparing nutritious food snacks and sold them at the canteen extension.

Dr. Madhavi Kaji was the special invited judge for the Life Sciences even as to understand the relevance/sensitivity of environmental issues represented as this was to be included as a part of extra academic assignment. She was impressed by the sincerity of the students in collecting the information and representing them at the event. She specially praised the presentation by Ms. Tanisha about her colourful representation of the Maharashtra map and drought affected districts.

The event attracted a lot of students and the sale of the food snacks.

The students of both the departments collected a total amount of rupees 5870/- .The amount was donated to an NGO based in Nashik “Snehvan” that supports the orphans of farmers from Maharashtra who committed suicide.

The students were excited about the fast sale of their food preparations at the event and achieved a sense of satisfaction in sensitizing the issue of precious food produced by the farmers,our dependence on them, and the scenario of their current stressful conditions.





#### **EXCURSIONS / FIELD VISITS / STUDY TRIPS ORGANIZED:**

##### **Annual Kandala Seminar:**

Students of TY B Sc and M.Sc participated in the departmental seminar. Dr. Rita Mukhopadhyay was the expert and Anand Pendarkar was the field expert. The students enjoyed both the session and returned back to Mumbai following day. Dr Yasmin coordinated the planning of the trip.

Field trip of TY B Sc students was arranged for Mahim Nature park. On 19<sup>th</sup> December 2018. The students reported at 9 am at the centre and session concluded by 12 noon. The students were accompanied by Dr. Dwight.F.





### **SGNP Field trip by F.Y. B.Sc. students**

A field trip was organized for FY students as part of their Biodiversity study component on 5<sup>th</sup> January 2019. The required permissions were taken from NIC at SGNP, Borivili for taking the students nature trail through Silondavalley. The trail began at 7 am and our field expert came well before the start of the trail and offered welcome morning tea and biscuits to energise our students before embarking on the trip on a cold morning. Some students of TY B.Sc student's also joined in as the trail was for a package of 25 students.

Dr. Parvish Pandya (Ex-Vice Principal) of Bhavan's College, Andheri joined us to describe everything about SGNP, area and the good forest patch of land adjacent to Mumbai city.

The students experienced the silence of the forest the plant and insect biodiversity and also realised the problems of human population, habitats around SGNP and also was told about the role of Forest officials in keeping the forests poaching free.

In all 24 students participated with each student paying 350 rupees to the NIC. The field trip concluded at 11.30 am and the students were happy to have visited the park forested areas about which they were not even aware .



### **Darwin Fest Report:**

Darwin Fest was held on the occasion of remarkable Naturalist Charles Darwin's 210<sup>th</sup> birth anniversary on 31<sup>st</sup> Jan 2019 by the Department of Life Sciences. It was organized by FYBSc Life Science students. Various activities like games, puzzles, poster presentations were organized. The most appreciated activities were the games since the audience enjoyed playing them. They were as follows:

- Evolutionary ladder based on timeline of evolution, which was a giant size ladder game and each step of ladder had either puzzles or scrabbles or question sessions to solve in order to move to the next step,
- Evolve-Devolve was based on human evolution, which was a large sized snake and ladder type game
- Darwin's life history dart.
- Giant scrabble game with clues based on different aspects of evolution

There were also many posters made and presented by FYBSc Life Science students on various topics such as: Evolution of Dental Anatomy, Fossil formation and preservation, Migration patterns in early humans, Bipedalism and Evolution of Brain. There was an interactive poster on 'What physical features would you like to have in future?' which the audiences relished in mentioning. Apart from these, students had kept fossils and clay models of human brain, goat brain, earthworm brain and cranial and spinal nerves of humans on display, which amused many FYJC and other FYBSc students.

Apart from these, few real fossils were displayed such as Trilobite (organisms seen in paleozoic era which are extinct now), Ammonite and its cross-sections (predatory Molluscs of Jurassic and Cretaceous period which were found in Madagascar) and Shark teeth. These were generously given by Emeritus Professor. (Dr.) Medha Rajyadhakshya, Ex- Head of Department of Life Sciences.

It was a day filled with merriment and enjoyment wherein the students not just played games and interacted with each other but it was a day where students learned evolution in a completely new way by playing games, solving puzzles and playing darts.



**REPORT of the 17<sup>th</sup> ANNUAL SOPHIA – NOBEL ORATIONS in PHYSIOLOGY / MEDICINE**  
**2<sup>nd</sup> March 2019**



The 17<sup>th</sup> Annual Sophia-Nobel Oration in Physiology / Medicine, was held this year on 2<sup>nd</sup> March 2019. This is the third running year that the event has been supported by the DBT-Star college Scheme.

This year, it was also possible to include the Physics Nobel talk on the same day, following the one on Physiology / Medicine.

Dr Ullas Kolthur, from the DBS, TIFR delivered the Annual Sophia-Nobel Oration in Physiology / Medicine titled: " 'Braking' news: Cancer Immunotherapy accelerated" wherein he explained the role of immunotherapy in cancer.

The next talk was by Dr.GRavindra Kumar, form the Nuclear physics group of TIFR, whose talk, “Extreme Optics”, was on the latest on laser technology.

Both talks were very well received by the audience who had a fruitful interaction during and after the sessions.

The event was well attended. Theaudience numberingupto 105(98 registered + in-house faculty members), were from eleven other Institutions / Colleges including CHM, SIES, VES, Wilson, Ruia, Elphinstone, and University of Mumbai, apart from our College’s Undergraduate and Post-graduate students as well as faculty. Feed-back forms handed out indicated that almost all participants expressed a positive feedback, commented on the relevance of the topics and said that the talk was useful for them. Selected relevant publications on the award winning research related works were prepared and given as Hand-outs, to groups of participants for both the talks.

The Staff of the Department of Life Sciences as well as the M.Sc.I and the TYBScLife Sciencestudents helped to conduct the program, and it is to their credit that it was concluded smoothly. In addition, all other faculty members of Sophia College and Heads of Science Departments’ co-operation made the event a success.

We express our gratitude to the DBT-Star College Scheme for funding the session and the Principal, all faculty and students for their support in making the event a success.

(Dr. H.Subramaniam)

Convener,  
Sophia - Nobel Orations in Physiology / Medicine  
Sophia College.



**EXSP GUIDANCE:** Dr. Sree participated as member of EXSP committee and Hema S , Hema R and Yasmin Khan helped the students in EXSP Lit survey and research work.

**INVITED AS JUDGE / RESOURCE PERSON:**

**Dr. Hema R Invited by the Department of Youth and Sports Affairs, Government of Goa** for a Two day DYSA Youth Seminar for college students, at St. Xavier's College Mapusa on 24-25 January 2019, and at Carmel College, Margao on 28-29 January 2019; by Dr. Hemalatha R. and Dr. Andrea C.

**Dr. Hema R invited by the College of Home Science Nirmala Niketan**, have organized a research competition titled AARYA Awareness and Action Research for Youth Awakening an Intercollegiate Interdisciplinary -Undergraduate Research Competition on 26th February.

**WORKSHOPS / SEMINAR ATTENDED BY STAFF:**

**Dr. Hema R attended one day workshop at St. Xavier's College on "Preparation of lesson plans on Climate Change" –under Tropic ICSU funded by International council of Science**

National Hands-on Training Workshop on Innovative Experiments in Biological Sciences for College teachers under STAR COLLEGE SCHEME at HBCSE,Mumbai 29<sup>th</sup>August to 4<sup>th</sup> Sep 2018 attended by **Dr.Sree Nair**

**Dr. Sree Nair attended a meeting at BMC Ward Office at Tardeo, on 11<sup>th</sup> October on greening our ward and control of Mosquito vector borne diseases and creating awareness about clean environment.**

**Brain Camp: 28<sup>th</sup> and 29<sup>th</sup> September 2018**

*Bombay International School's annual Brainstorming with Science Camp 2018, on September 28 and 29.* THE THEME FOR BRAIN CAMP 2018 was on **MEMORY**.The Department of Life Sciences' helped in coordinating and conduct of the sessions in our campus. Eight schools visited the

session and participated. The organizers were happy to have got the space and facility for the conduct of the program.

**LTMT SPONSORED TEACHERS TRAINING** held on 17<sup>th</sup> – 19<sup>th</sup> January 2019  
**PROGRAM“EXPERIMENTAL APPROACHES FOR DRUG STUDIES”**. This workshop was in collaboration with Microbiology and Biochemistry department.

Dr. Yasmin Khan represented the college as Coordinator of Star College Scheme for the ‘Star College Scheme – 2<sup>nd</sup> Task Force Meet at Gargi College, New Delhi on 8<sup>th</sup> May 2018

Dr. Yasmin Khan Presented a paper at the **International Conference on Neuroscience & XXXVI Annual Meeting of Indian Academy of Neurosciences**, Varanasi 29<sup>th</sup> to 31<sup>st</sup> October, 2018.  
Title of presentation - **Role of Retinoic acid in multiple developmental pathways of zebrafish-formation of lateral line and craniofacial cartilage.**

Dr. Yasmin Khan was Invited to attend the Indian Zebrafish Investigators Meet 2018 (iZIM) at CSIR –Centre for Cellular and Molecular Biology, Hyderabad from 3<sup>rd</sup> to 6<sup>th</sup> July 2018.

Dr. Yasmin Khan Invited as Subject Expert for CAS promotions for Life Sciences at St. Xavier’s College on 2<sup>nd</sup> August 2018.

Dr. Yasmin Khan Appointed Chairperson and Moderator of the Panel for generating Questions for the Ph.D. Entrance Test 2018 exam in Applied Biology.

Dr. Yasmin Khan Appointed as paper setter in the panel for generating questions for the Ph.D Entrance Test 2018 exam in Life Sciences.

Dr. Hema R, Dr. Yasmin Khan, Dr. Hema S Dr. Sree Nair, Ms. Aisha was appointed as moderators for the examination held Jai Hind College (Autonomous) 2018-19.

Dr. Yasmin Khan Received Certificate for clearing the first round and Participating in the Final Round (University Level) at 13<sup>th</sup> Avishkar Research Convention 2018-19 on 3<sup>rd</sup> January 2019.  
Research project titled “Response of developing Zebrafish (*Danio rerio*) embryos under hypoxic stress to ethanol toxicity” in the Medicine and Pharmacy Category at UG level. (students who did the project – Afifa Siddique and Eeman Shaikh).

Ms. Aisha Zakaria attended a four day workshop on Cellular and Molecular Biology-from Gene cloning to protein expression and localization from 19<sup>th</sup>-22<sup>nd</sup> December 2018 organized by UM-DAE centre for Excellence in Basic Sciences (Mumbai).

Dr. Hema R participated at a symposium on Conservation: Role of Citizens at Thane on 17<sup>th</sup> of March 2019 organized by the Urban Biodiversity conservation group (UBCG).

Dr. Yasmin Khan Invited to examine a Ph.D. thesis from Manipal Academy of Higher Education – Thesis of Ms. Shaista Jabeen, Guide Vatsala. March/April 2019

Attended Session on Data Validation and Verification & Revised Accreditation and Self-study Report at V.G.Vaze College of Arts, Science and Commerce on 22<sup>nd</sup> March 2019.

Prof. Medha R along with Ms. Katie Bagli published book of poems for children **Zoo around you**. This poem was written to make children observe environment as they grow up. The book launch also took place at BNHS and was attended by Dr. Hema R.

Prof. Medha also contributed an article as Book review “Knowledge as Resistance written by Stevienna De Saille. This book review article was published in Urdhva Mula, April 2018 :Volume11.

Osteoporosis: Biochemistry and Frax® in a nutshell by Bhavna Daswani. Dr. Bhavna is guest faculty under our PG program.

#### **ANY OTHER:**

**Dr. Yasmin Khan immensely contributed both as faculty member of the department as well as a administrative expert staff at various levels:**

Vice Principal – Science  
Coordinator of Star College Scheme  
Member Secretary of the CPCSEA  
Member of IQAC cell  
External Expert on the RRC of Applied Biology  
Editorial board of Spectrum

Appointed as Member Secretary of Academic Council of Sophia College (Autonomous)  
Member of the CDC Committee of Sophia College  
Member of the Planning and Evaluation Committee of Sophia College.

Dr. Hema was appointed as member of the Governing body - Sophia College (Autonomous) and as Head of the department also as chairperson of BOS – Life Sciences and member of Academic council.

#### **Visitors to our department:**

##### **Student visitor for research:**

Effect of chemical hypoxia on egg-laying behaviour of *Caenorhabditis elegans*

**Position:** Co-guide, Project of Ms. Shryli from Yuvaraja's college (Autonomous), Mysore University, NIUS Biology-Olympiad, Jan 2018-till date.

#### **Remedial class students:**

##### **Extra Academic Matters :**

**Dr. Anuttama B. Kulkarni** was awarded the **DST INSPIRE Faculty Award January 2018 under the Biomedical science category.** (DST/INSPIRE/04/2018/000374). Since Dr. Anuttama has since joined HBCSE, Mankurd as a faculty and she has transferred her research project to that centre.

**Ms. Sonali** was granted enrollment by Mumbai University to pursue M.Sc (By research in Life Sciences) :17<sup>th</sup> July 2018

On 17<sup>th</sup> July: College received the Autonomy status letter from UGC. The need of our department with framing of Autonomous syllabus was discussed and staff duties were accordingly allocated.

ON 26<sup>th</sup> July M.Sc Admission entrance exam conducted followed by interviews on 27<sup>th</sup> July 2018.

Ex-students visit to department: On 1<sup>st</sup> October 2018 Dr. Anita Chavan interacted with our PG students and discussed her Post-Doctoral work and enlightened them about how to pursue a research program in foreign university. Struggles of a student while carrying out Doctoral research work in a foreign university.

BOS Life Sciences meeting held on meeting of the Department held on 29 September 2018 and 29<sup>th</sup> March 2019.

Our department along with Microbiology started the course on **“INTRODUCTORY COURSE IN SCIENCE WRITING”** from January as 30 hour one credit course from 12<sup>th</sup>



January 2019 program. Dr. Hema R and Dr. Rajbinder as coordinators for the course the response for the course has been excellent open to FY B Sc students.

Bioinformatics course for SYB.Sc. students was held in this academic year. Dr. Fatima and Ms. Nabila successfully conducted the program and the students are currently completing their internship program at various labs.

## **National Science Day 28 February 2019**

*Quest-wider than the sky –*

### **Ninth UG, PG students & Faculty Research Meet**

**(supported by DBT Star College Scheme)**

In celebration of the National Science day, the science departments held conference “QUEST – WIDER THAN THE SKY”. This was planned as meet of the UG, PG students and staff on 28<sup>th</sup> Feb 2019 (9 am – 3.30pm) at two different venues, Canteen extension and Chapel corridor. Research is increasingly entering the interdisciplinary mode. This meet was proposed to be a common platform for exchange and interaction among the students and faculties of all, UG, PG departments of the Sophia College. The meet got good response from students and staff. There were 117 participants which initiated a scientific discussion among the visitors. The posters were exhibited by the PG students and staff of Life Science, Microbiology, and Biochemistry. The topics on which models were exhibited covered a wide range of subjects, from physics to environmental conservation. The posters were exhibited of research work done by the UG and PG students. Many curious undergraduates, junior college students and even the canteen staff visited the venue. The meet was convened by a joint collaboration with the department Life Sciences, Microbiology and Physics represented by Dr. Sree S Kumar, Dr. Rajbinder Kaur Dehiya and Dr. Meeta Saxena.

A talk was also organised to bring out the importance of the day. The talk was delivered by Dr. Subhojit Sen, DBT Ramalingaswami Fellow, UM-DAE Centre for Excellence in Basic Sciences (CEBS), Mumbai on “How the environment can shape us? Querying Lamarckian heresy through Cancer Epigenetics”. The venue was Convention Centre and the timing was from 11.00 a.m. to 12:30 pm. In-house Undergraduate and Post-graduate research meet Model and Poster appraisal was done by Dr. Sagarika Damle, Associate Professor, K. C. College, Mumbai.

**Coordinator from Life Sciences Department: Dr. Sree**

**Extension Activity by our department with NSS.**



**Dr. Hema Subramanum visited the Haloli village school. Helped in the conduct of Biology class sessions along with NSS unit of Sophia College.**

## **SEED – Science Education through Experiments & Demonstrations**

### **A Star College Scheme (DBT) supported one day workshop**

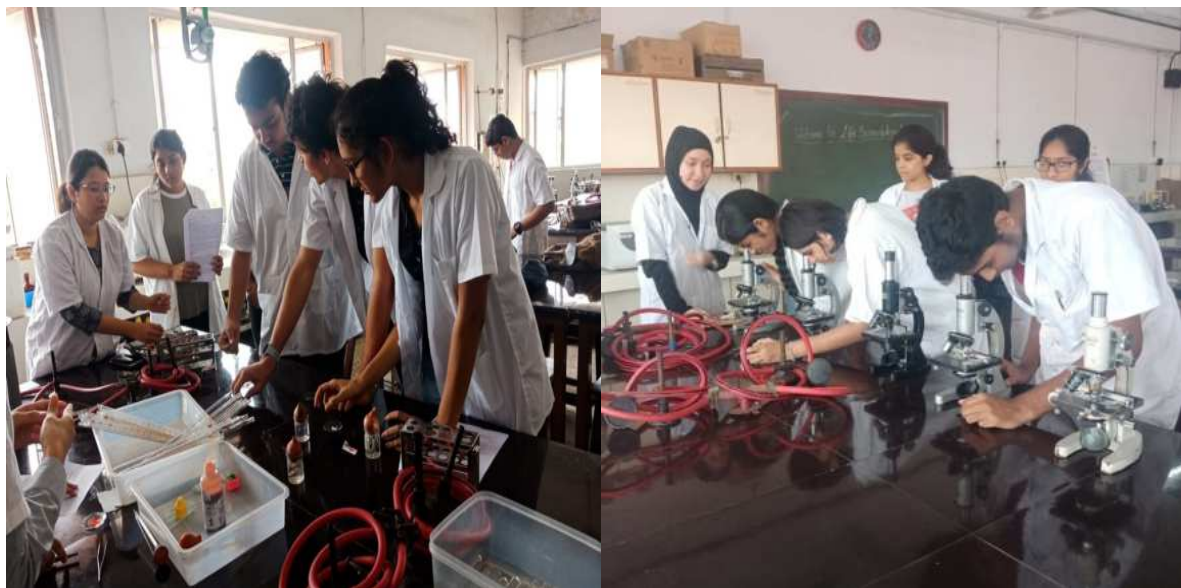
The Department of Life Sciences conducted a one day workshop for students of Gopi Birla Memorial School on 18<sup>th</sup> August 2018. The workshop was supported by Star College scheme (DBT). Dr. Sree R Nair organized and coordinated the workshop with the assistance of Ms. Nabila Sorathia.

A total of eight students attended the workshop along with one teacher. They paid fees of Rs. 100 per student.

The organization of the workshop was done by TYBSc students of the department. The workshop started with a welcome speech and a brief introduction on cell & molecular biology. Presentations on Mitosis, Meiosis, DNA structure and function & Chick embryo development were given by TYBSc students. The students then were taken to Life Science Lab where they performed experiments such as observation of mitosis from onion root tips and gel electrophoresis of DNA from onion. They saw the various stages of Meiosis from permanent slides. They also saw embryo development stages. There was also a demonstration for them on developing chick embryo by performing dissection of fertilized eggs.

All participants and TYBSc students were given lunch break. After lunch, students were taken to Suman Tulsiani Research Centre and a brief introduction to the research facilities was given. Various model organisms used for research were given by MSc students.

Finally the session ended with Valedictory speech & Certificate distribution to participants and the TYBSc & MSc students.



**A File divider** based on Campus Bird diversity was made and given to the College as our Annual Gift article theme making for guest visitors to our campus.





### **On going / completed research project.**

‘Smt. Dhandevi Mahindra Scholarship Award’ for the research project entitled ‘Biochemical and gene expression involved in hypoxia induced oxidative stress in *Caenorhabditis elegans*’, Sophia College- Autonomous, 2018-2019 by Nabila Sorathia.

### **Papers presented in conference /seminars/workshops and Symposia**

Annual Indian Academy of Neuroscience Conference and participation and presentation by staff and students of M.Sc. Part II. Following were the posters presented:

#### **The International Symposium on Neurosciences & 36<sup>th</sup> Annual Conference of Indian Academy of Neurosciences, Banaras Hindu University, Varanasi, 2018.**

- 1.The effects of Action Video Games on Executive Control, Gaming Motivation, Aggression and Sleep. By Akshay Dixit, Divya Sinha and H Ramchandran.
- 2.Statins as a possible therapeutic for Alzheimer's Disease in AD model of *Drosophila melanogaster*. By Deepika Jauhar and Hema S.
- 3.A Survey On Prevalence Of Premenstrual Syndrome (PMS) Among College Students Of Mumbai by Jerissa P. Samuel, Divya Sinha and H. Ramachandran.
- 4.Assessment of the effect of valproic acid on feeding response of *Hydra viridissima* by Pavan Pramod Pandit and Aisha Zakaria.
- 5.Effect of Retinoic Acid on Zebrafish Craniofacial Development by Prajakta Mahadik and Yasmin Khan.
- 6.Assessment of Apoptosis and Mitochondrial Dysfunction in *Drosophila melanogaster park<sup>13</sup>* Mutants with Rescue using GLP-1 Agonist. By Sidra Mohamed Yaqoob.
- 7.Role of DHA in hypoxia-induced motor impairment of *Caenorhabditis elegans*. by Wasifa Qadri and Nabila Sorathia.

8.Effect of Metformin on the stalk length of Dictyostelium discoideum by Vivek Mishra and Sree Nair.

### **Invited lectures in conference and seminar.**

Dr. Yasmin Khan Invited as Guest of Eminence in the International Hands-on Workshop on “Essential Zebrafish Techniques – Development and Genetics” at Nitte University Centre for Science Education and Research on 29 – 30 November 2018, Mangalore.

Title of the talk given “**Zebrafish model for developmental studies** - Importance of Retinoic acid during early development of zebrafish - role in formation of lateral line and craniofacial cartilage”

### **IQAC , HOD, Research committee**

Dr. Yasmin Khan : Attended the National level workshop on CAS process and MOOCs by the IQAC at Sophia College (Autonomous) on 25<sup>th</sup> January 2019.

**Muslim Women’s struggle for Gender Justice-Milestones and Challenges by Zakia Soman, Founder member, Bharatiya Muslim Mahila Andolan on 31 st August 2018.**

“Pilot study: Mindfulness based stress reduction intervention on college students was published in International Journal of Indian Psychology Vol6,mlssue 3, ISSN 2348-5396,July-Sept 2018.

Divya Sinha, H Ramachandran, Medha Rajadhyaksha.

Impact of climate change on future food safety and security and the agricultural sector in Asian countries. Talk by Ravi Gooneratne 21<sup>st</sup> August 2018.

R Ruia college zoology dept was assisted in developing Hydra culure and Thadomal Sahani college , Biotechnology department was provided a trining on C elegan culturing and maintenance.

Nidhi Solanki, Sophia Samuel, and Ashvini Chakor presented their research project at Inter Collegiate research scholar's meet held at KC College on 25<sup>th</sup> Feb 2019. Their research work was on Starch grain morphology using Light Microscopes.

Tanisha Mehta TY B Sc student appeared for the entrance exam at TIFR and IISER Pune and cleared both the test and was called for interviews. Tanisha Mehta was selected for the summer Internship at IISER Pune.