BIOBYTES

DEPARTMENT OF BIOTECHNOLOGY

Parvatibai Chowgule College of Arts & Science Autonomous

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HIGHLIGHTS

- Faculty publications & Webinars series
- Project findings 2019-2020
- Covid-19 Lockdown activities

CONTENTS

EDITORIAL

As we have progressed from lockdown times in our country to the present day today with 3rd unlock order, wherein the gates of educational institutes have not yet been opened for students but the faculty have been busy exploring and working tirelessly to keep our departmental students engaged with the use of various Online teaching-learning and assessment methodologies.

In this special Covid-19 edition of our departmental newsletter, happy to share with you a brief note on the project findings completed by the final year B.Sc. Biotechnology students of 2019-20 and the achievements of our faculty and students. Also, do not skip the interesting contributions by our multi-talented students to convey important message to the general public in the form of writings, art, scientoons, nature photography, etc. through the fun learning activities conducted by our Biotechnology Club – Biochrome.

The final take home message from this edition is that the 'Awareness and self realization of blessings each one is bestowed upon and having gratitude as we go through this pandemic situation, is indeed a tough phase for all socially as well as economically, but we will all in the end be transformed as better individuals to lead a good and positive life ahead very soon post Covid-19, so let's stay home and safe by taking good care of ourselves as well as others by being responsible'. Happy reading!!!

- By, Ms. Madhavi M. Motankar, Assistant Professors in the Department of Biotechnology

FACULTY ACHIEVEMENTS

1. Dr. R. Kanchana, HOD of Biotechnology has a research paper publication as follows;
   R. Kanchana, Sancia Vaz, Divya Reddy, Abigail Antao, Trusha Shirodkar, Surthi Ravedar (2020). ***Sensory Evaluation of Nutritionally Potential High Protein Low Glycaemic Index Noodles.*** **Journal of Scientific Research, 64 (2): 131-134. DOI:10.37398/ JSR.2020.640218 (UGC Care Listed Journal ISSN: 0447-9483).**
2. Ms. Madhavi M. Motankar, Assistant Professor in Biotechnology has a research a paper publication as follows;
   Madhavi M. Motankar, Prachiti Vaidya, Sreetam Halder, Sanika Neurenkar, Megha Desai, Sagarika Gaonkar (2020), ***Comparative Analysis of Value-added Cancer Preventive Ice-creams,*** **Journal of Scientific Research, 64 (2), 118 – 121. DOI: 10.37398/ JSR.2020.640215. (UGC Care Listed Journal ISSN: 0447-9483).**
3. Dr. R. Kanchana, Assistant Professor in Biotechnology received e-certificates for the participation in Webinar on;

- 'Use of Elsevier Tools for developing Research Workflow and Academic Writing' by Dr. Shubra Dutta, organized by the Directorate of Higher Education in association with Elsevier for the Teachers, Research Guides and Research Scholars in Goa University and Colleges in Goa on 18th May, 2020.
- 'How to Write a Great Research Paper, and get it accepted by a Good Journal' organized by the Directorate of Higher Education, Goa in collaboration with ELSEVIER on 3rd June, 2020.
- 'Patents and other IPRs' organised by Patent Information Centre (PIC), Goa State Council for Science & Technology, Saligao - Goa in collaboration with TIFAC, DST, New Delhi from 23rd to 26th June, 2020.
- "Effective Online Teaching Learning Evaluation" organised by In-house Centre For Teaching Learning, powered by IQAC, held on 23rd and 24th June, 2020 .
- International Webinar on 'Wild life Conservation: An insight into the effect of COVID-19 pandemic' organized by Dhempe College of Arts & Science, Panaji, Goa on 1st & 2nd July 2020. **- By, Ms. Madhavi M. Motankar, Assistant Professor in Biotechnology**

FACULTY AND STUDENTS ACTIVITIES

The third year B.Sc. Biotechnology students are required to complete a dissertation project as a part of the curriculum. Presenting here, a brief description of the various innovative project work carried out by the students with the final outcome as follows;

PROJECT 1 : Innovative approaches in development of specialized food products **carried out by Ms. Sancia Vaz, Ms. Divya Reddy, Ms. Abigail Antao, Ms. Surthi Ravedar and Trusha Shirodkar under the guidance of Dr. R. Kanchana, HOD in Biotechnology.**

The increasing market of specialized food products indicates that the end users are seeking minimal processed food with extra nutritional benefits. The aim of this present study was to prepare specialized and value-added food products which could supplement to the normal diet. Taking the above facts into account with the health benefits offered by the various ingredients, products like low glycaemic index protein rich noodles, ice-cream prepared with watermelon seed milk and kokum jelly.

Fig. 1: Left to Right showing Low Glycaemic Index noodles, Ice-cream made of water melon seeds of milk, Kokum jelly, Probiotic white chocolates and Probiotic brown chocolates

PROJECT 2 : Study of the prebiotics and probiotics **carried out by Ms. Myla Pereira, Ms. Aliya Sayed, Ms. Saina Patel, Ms. Kimberly Carvalho and Ms. Ashwini Naik under the guidance of Dr. R. Kanchana, Assistant Professor in Department of Biotechnology.**

The main objective of this project work was to develop a potential probiotic chocolate by using microencapsulated Lactobacillus strains along with fruit pulp as prebiotics and to study the sensory evaluation and shelf-life of the probiotic chocolate. Probiotic chocolate that was formulated using fruit extract, probiotic beads and chocolate is a functional food since it has the beneficial effects of fruit, probiotic and chocolate. The idea of combining all these ingredients and making a product with the goodness of each of the ingredients gives the synergistic effect in the functional food.

- By, Dr. R. Kanchana, HOD, Assistant Professor in the Department of Biotechnology

PROJECT 3 : Nutritionally enriched healthsome products with medicinal properties carried out by Ms. Shravani Parker, Ms. Shreya Verlekar, Ms. Shreya Arundekar, Ms. Kora Barreto and Ms. Shawna Correia under guidance of Ms. Madhavi M. Motankar,

With the ever increasing rise in annual death rate of cancer patients in our state of Goa, led to the innovative investigation towards preparation of various types of healthy Graviola soymilk-based milk ice creams using medicinal plant extracts having health benefits as well as an enjoyable dessert by all age groups. Also, various types of the Goan traditional pao having low glycaemic index, rich in calcium and chemo preventive properties were prepared by enhancing its nutritive as well as medicinal value using plant extracts and mixed herbs. These innovative preparation of pao were found to have shelf life up to 2 days at various temperatures retaining its original taste and texture making it a great substitute for health and a sustainable lifestyle.

- By, Ms. Madhavi M. Motankar Assistant Professor in the Department of Biotechnology

Fig. 2: L – R pictures showing Various types of healthy Graviola-Soymilk based Ice-creams, Goan pao with health benefits and Aquaponics set up

PROJECT 4 : An investigation into different approaches of organic farming carried out by Ms. Sarah Khandekar, Ms. Nisha Kumar, Ms. Jyoti Poonia, Ms. Neha Gauncar and Ms. Inoska Mendes under the guidance of Ms. Vallanka Dias, Assistant Professor

Organic farming techniques like Aquaponics and Vermicomposting are environmentally friendly ways of promoting the sustainable use of the natural resources and the production of healthy organic vegetables. This research aimed at setting up an Aquaponics system and growing a variety of plants while monitoring the process. Analysis of the water samples from the system was done to determine the Concentration of Nitrates, Nitrites and Ammonia levels. This study concluded that Aquaponics is an effective way of growing plants like Chillies, Ladyfingers and Moong while using vermicompost and gravel as the grow bed medium. Further studies can be done to grow plants like Papaya and Bananas using the techniques of aquaponics.

- By, Ms. Vallanka Dias, Assistant Professor in the Department of Biotechnology

PROJECT 5 : Preparation and comparative study of different composts and its effect on plant growth **carried out by Mr. Shubham Shet Shirodkar, Ms. Apurva Damdar Sawant and Ms. Radha Mardolkar under the guidance of Dr. Starlaine Mascarenhas.** This work focussed on waste management. Nowadays, organic wastes like vegetable and kitchen wastes are dumped in the garbage providing no benefit to mankind. However, biodegradable potential of these wastes can be harvested for production of useful products like organic fertilizers that can boost up agricultural productivity. Domestic food waste tops charts of total organic wastes disposed globally.Hence without management, these wastes create several environmental probleorganie greenhouse emission resulting in global warming which calls for the need to understand benefits of waste management. Therefore, composting is best low cost solution to overcome this problem. Composting is an eco-friendly way of waste management that reduces organic waste. Derived product is used as a manure for plant growth. We looked for assisted ways to fasten and nutritionally enriching the process, hence we used cow dung as base material (since its enriched in faecal microbiotic decomposers). Cow's urine (Gomutra) and effective microorganisms (EM) solution was added as a nutritional enhancing additives to composting. Additionally, we implemented vermicomposting strategy to check whether it enriched compost better than Gomutra and EM solution. Our study proved Gomutra based compost to be better soil nutrient enrichment additive as evident from enhanced plant growth. **- By, Dr. Starlaine Mascarenhas, Asst. Prof. in Biotechnology**

Fig. 3: Left - Right pictures showing Growth of pea plant compared on EM solution based, Gomutra based compost, Reflex condenser setup for saponification and the New oil Blend

PROJECT 6 : Evaluation of intermediate food product: An approach towards a healthier diet **carried out by Ms. Raisa Nashville Rodrigues, Ms. Lakiesha Coelho E Costa, Ms. Leah Georgina Cassia Rebelo under the guidance of Ms. Hashma Mujawar.** This project aims at evaluating the presently used cooking oils in India and finding an alternative approach for a healthier lifestyle. There are numerous kinds of oils present in the market which leads the general public in sort of a dilemma as to which oil is the best. The main objective of this project is to create a new oil sample with better health benefits from the already existing oils and to compare the results of the new oil sample with the existing ones. Sunflower and coconut oil were evaluated separately and a blend of the two was prepared and compared to its respective oil components. Sensory evaluation and physicochemical tests (peroxide test, acid value test, saponification test) were carried out to compare and study the three different oils. The results for physicochemical (peroxide and saponification test) and sensory tests of the blend was found to be comparatively satisfactory. And it was concluded that the blend had its own advantages & disadvantages. **Ms. Hashma Mujawar Asst. Prof. in Biotechnology**

Biochrome - Biotechnology Club activities

A Department of Biotechnology initiative, since 2014, 'Biotechnology Club - Biochrome' conducted various Online Biochrome Activities during the lockdown. The online activities were conducted through Google classrooms such as - 1) COVID-19 Scientoon Competition; 2) Innovative Online recipe contest (novel healthy food dishes prepared during lockdown period with nutritional benefits); 3) Innovative Photography Contest - Happy family during lockdown, food at display, nature or happy times spent staying at home; 4) Essay writing competition on 'Covid-19 - Boon or Bane?'; 'Lockdown ke side effects'; 'Social distancing – present and future'; 'Hand sanitizing - ever thought it would be so important?' 5) Online Art contest on theme Covid-19 (Pointillism). The main objective was to keep the students engaged positively as well as spread awareness towards COVID-19, as they are the young creative minds who do it the best way! Also the main aim was to keep creativity and analytical skills balanced along with self appreciation that each one is being blessed with.

Fig. 4: L-R: Innovative Covid-19 Scientoons prizes bagged by Ms. Selcea D'Costa - 1st ; Ms. Scimran DaCosta and Mr. Prathamesh Shetgaonkar – 2nd

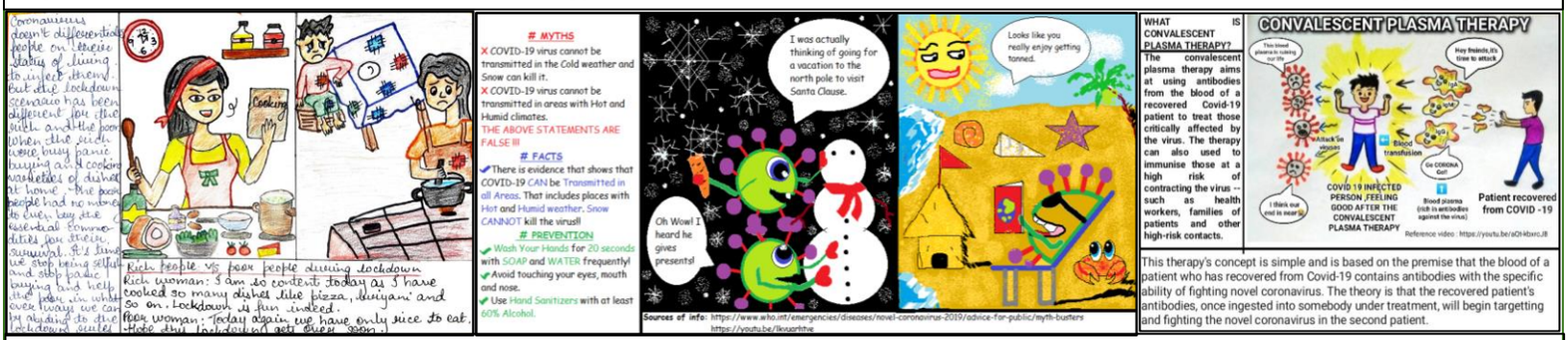
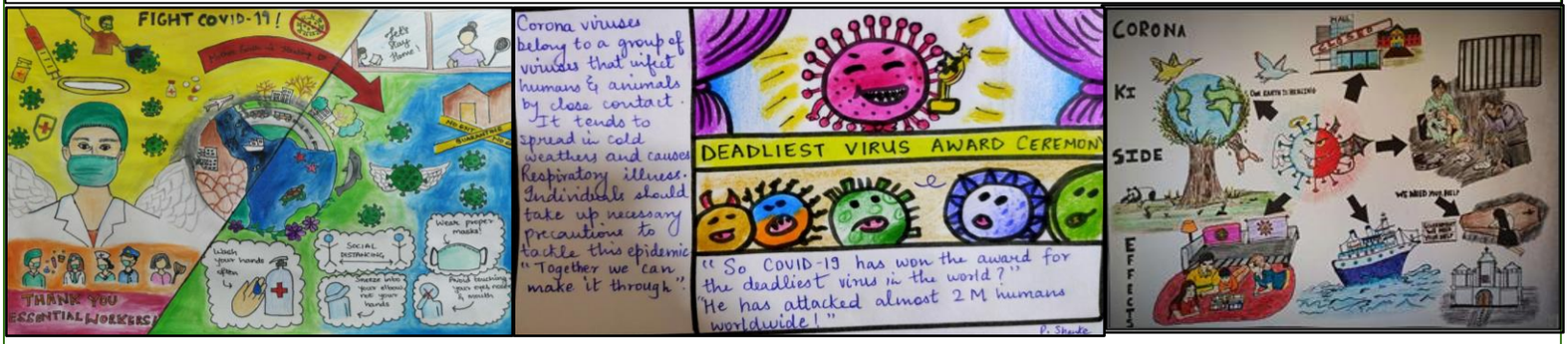


Fig. 5: L-R: Innovative Covid-19 Scientoons prizes bagged by Ms. Shreesiddhi Bhomkar - 3rd ; Ms. Melisha Cardoso & Ms. Priyanka Shanke - Consolation



Amongst the above competitions conducted, the best essays, Art, Photographs, Scientoons, and Online recipes too were posted on WhatsApp status, Instagram posts, Insta-story and on Facebook, as social media is the best way to convey good messages to the public. Also, the majority of the Scientoons contributions from our college have been included in the Scientoon Book named **'Bye-Bye Corona'**, publication sponsored by Vigyan Prasar under the authorship of Dr Pradeep Srivastava, Father of Scientoonics which shall be sent to the PMO and CMs of all the states as conveyed by him. Also, the covid-19 related essays and other contributions by Biotech students are being published in 'Vidya magazine 2020-21'.

- Organized by, Ms. Madhavi M. Motankar, Asst. Prof. in Biotech & Co-ordinator of Biochrome

"COVID-19 – Is it a Boon or Bane?"

Well, the saying goes like this, 'not all wars are fought with weapons', and Covid-19 is just a very good example of that. Our earth has seen many wars and bloodshed since the time mankind was born. The loss of human lives, property and precious resources can never be compensated by the technological advancements of the prosperity. Added to this the agony of the families of the deceased and the terrible state of the defeated nation in the aftermath of the war is the deadly nightmare. The picture that appears in the mind is depressing and spine chilling. War wastes the national resources, kills people and put a break on industrial development and above all promotes inequality, cruelty and violence in the minds of individuals. Looking at these characteristics of War, how can anyone deny the fact that Covid-19 is not a war? Millions of orphan dead bodies lying in garbage bags waiting for proper funeral is asking humanity just one question, 'have we gone too far with our needs and greed and hatred that we went on destroying nature and never stop even when we saw poison flowing into the river, environment turning gas chamber?'. Definitely this was not enough and people were waiting for some great destructor. Finally, the dream came true and Covid-19 was created in the laboratories of mankind. Covid-19 is a new strain of Corona virus. This monster virus has done nothing good than pushing thousands of lives into ultimate darkness with negligible or no space to escape. The development of countries has been pushed behind by several years. Humans are forced to live in self build cages and no one knows till when giving rise to depression, anxiety, job insecurity, domestic violence and other serious mental illnesses. Covid-19 has crippled the world economy with negligible recovery state for the several coming years. Youth's job opportunities have been dumped into garbage and few small daily wage workers from the unorganised sector are almost on the verge of losing their identities into ultimate darkness of their hunger. Despite government policies to feed two meals to poor is failing to reach their empty stomach and all this is not ending just here. Many economists estimated that world should plan for negative growth rate. Financial year FITCH rating scale cut the 2020-2021 growth projection for India to 0.8% from 2% projected on April 3rd and the Global economy from 6.7% to 3.9% in 2020. It may bring Asia's 2020 growth to halt for the first time in 60 years. Major commercial sectors like Cinemas halls, Shopping malls, etc. has been shutdown today.

Covid-19 has forced people to live in ultimate fear of losing the jobs. Many companies have already sent their employees to unpaid leave giving rise to depression and anxiety. One cannot deny the very fact that along with Covid-19, there is a rise in mental illness and will continue to do so long after covid-19 is gone. Small industrialists are finding it hard time to stand the losses incurred on a daily basis and they are forced to see the present and future in the ultimate darkness. The backbone of many start ups has been paralyzed. This treacherous predator has brought sunset to the lives of small industrialists, shop owners and vendors. One should note that this is not the story in every case there is always chances of exception, as the pharmaceutical as well as biopharmaceutical industries, companies manufacturing soaps, antiseptics, hand wash, sanitizers, surgical masks and gloves and other medical equipment's are flourishing like never before. Small shops selling grocery items, vegetables and other items catering basic needs are witnessing an upward surge on the profit scale. On the other hand companies providing power, fuel for vehicles, automobiles are in loss. It is an understandable fact that the economy and development of any country is closely related to the youth power. Today, the future of our youth is in darkness. The very education system which is supposed to turn our youth into valuable assets contributing towards the development is shaking today. The entire education system is on a halt today. It's a very good thing that many educational institutions have come up with innovative ideas of online teaching. Also, it is important to know that only students with good internet connection are able to benefit themselves. Poor are still at the mercy of their luck, forget about the net pack families are not even able to fill their empty stomach of their children. Moreover online classes are doing no good than harming students in a few scenarios. Rising from the fear of the Covid-19, students are constantly complaining about poor concentration to a never ending online assignments and submissions leading to depression and anxiety. Covid-19 is corrupting our youth minds.

Continuation of essay on....."COVID-19 – Boon or Bane"

It is very unfortunate that where government and media is talking about work from home, stay home stay safe, this lockdown has given rise to crime against women and children around the globe. On 17th April 2020, the reported cases of domestic violence went up to 587. Unfortunately the unreported cases will surely be in thousands. Women and children are sexually harassed by their close family members, relatives and neighbours. Being squeezed into small little place for 24x7 has adversely affected people physically and mentally. Elderly people and others who are on continuous medication are also finding it difficult to cope up though the government has made concession in lockdown rules for the people who are sick but the terror of Covid-19 is such that people are choosing to suffer and die at home then going out and dying due to fear of Covid-19 infection and death. Covid-19 has made minor health issues turn into a serious one. Also the lockdown was so sudden that people did not get time to return to their homes and are caught in dingy hostels, in other cities away from home, at friends or relatives houses.

Today, when more than 50 percent of the human population is behind the doors and almost all the industrial work are at halt, the nature has decided to re-establish itself. It is astonishing that the chirps of the birds, singing of the nightingale which had gone a long ago could be heard now. It is a proof that humans tried their level best to destroy the mother nature following unethical practices, never understanding the fact that they are putting their own life in grave danger. Due to Covid-19 the nature is healing like never before and headlines like 'dolphins have returned to Ganga', 'birds have flooded the river in Maharashtra' has become quite common. Himalayas, which had decided to hide its existence from the humans due to never ending pollution has once again showed itself to remind humans that they are allowed to admire its beauty only if they control their greed and reduce pollution. Many places have started gaining their natural beauty which was once lost. Covid-19 has brought back the human instinct which was almost at the verge of extinction. Suddenly people have become more concerned towards each other. From love to money, people are ready to shower everything. This virus has brought the enemies together with ultimate one-ness. From the rich to poor, everyone is busy serving the nation. We cannot ignore the sacrifices made by our medical team, police personnel's and our three defence forces, Army, Navy and Air force.' They have turned out to become the barrier between the people and Covid-19. Day and night they are busy in selfless services for the betterment of society.

Surely these days of darkness will end very soon. A cheerful dawn is all waiting with lovely surprises. It is just the time of examination which is demanding sheer determination and a lot of patience. Sitting at home is not as easy task when people have so many dreams to be turned into reality. But one should remember that even when student has not been studying as hard as the teachers and parents wanted, the fact that he goes to the next class is immensely reassuring. We don't have proper equipment's; vaccine is yet not invented, in this situation people just need to keep cool and carry lots of hopes because all is well that ends well and this all will end soon!!! - By, Ms. Swati Mishra F. Y. B.Sc. Biotechnology (Bagged 1st prize in Essay competition)

Fig. 6: L-R: Innovative Photography Competition prizes bagged by Mr. Stanford Fernandes - 1st ; Ms. Shreesiddhi Bhomkar – 2nd & Mr.Sahil Chawan - 3rd

Biochrome - Biotechnology Club activities

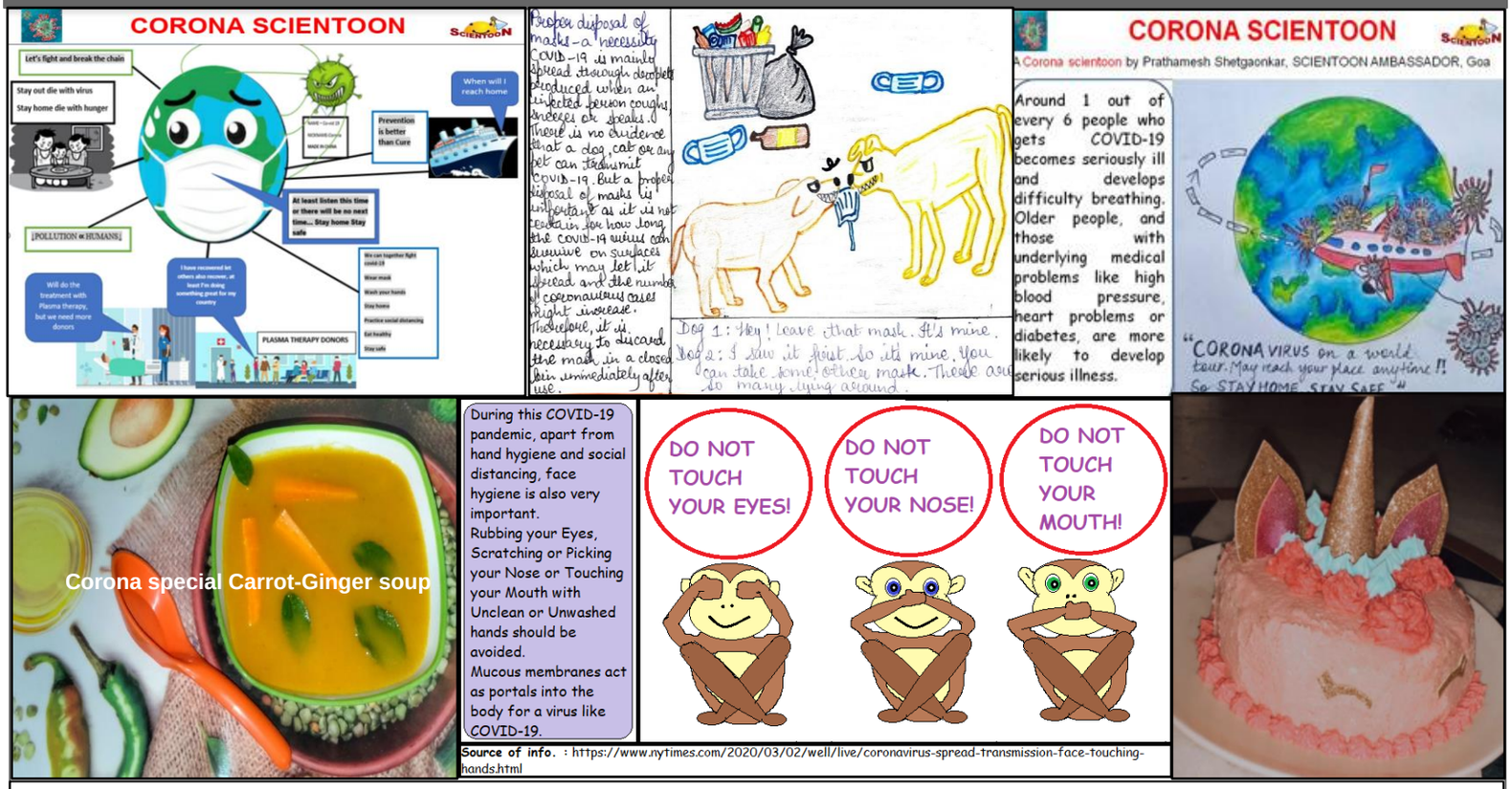


Fig. 8: Glimpses of the various online activities conducted by Biotechnology club during Lockdown period through Google classrooms page Biochrome!

Fig. 9: Innovative Art Contest Competition prizes bagged by Ms. Swati Mishra – 1st ; Ms. Shrey Arundekar – 2nd and Ms. Priyanka Shanke – 3rd

The main goal of conducting various Biochrome activities during lockdown was successfully achieved as the students enjoyed as well as were triggered to display their best possible creativity. Each one mastered learnt many important life lessons right from having gratitude towards all that they are blessed with as well as the importance of values and pioneered many life skills during lockdown time at home, which is the true essence of living a fruitful life!

- Conducted by, Ms. Madhavi M. Motankar Coordinator of Biochrome - Biotechnology Club

Editor: Ms. Madhavi M. Motankar Asssitant Professor in the Department of Biotechnology

Reports and pictures of the project activities contributed by Dr. R.Kanchana, Ms. Madhavi M. Motankar, Miss Vallanka Dias, Dr. Starlaine Mascarenhas, Ms. Hashma Mujawar (Faculty of the Department of Biotechnology)