

MESSAGE FROM THE PRINCIPAL



I am immensely delighted to know that the Department of Biotechnology is bringing out the third edition of "BIOSTUMAG" to showcase the academic talents of budding biotechnology students. I appreciate the valuable effort of the editorial team and student team who worked behind making this magazine a reality after the Covid pandemic. I hope that much more activities can be initiated by the department in the coming years. I also wish that this will be a sustained activity that will eventually lead to the publication of a regular, peer-reviewed, Biotechnology Journal of SIAS.

~ Prof. E. P. Imbichikoya, Principal, SIAS

MESSAGE FROM THE HEAD OF THE DEPARTMENT

I am happy to know that the students of the Biotechnology department are bringing out the third issue of their magazine "BIOSTUMAG" in this academic year 2021-22, the lockdown and the global pandemic changed the mindset of students in learning/experiencing/viewing the concepts in different perspectives. This magazine is a productive scientific material and subsidiary skill development tool for biotechnology students. I must congratulate the editors and the student team who work behind making this issue available after the global pandemic. I wish them all success.

~ Dr. Sahaya Shibu B, HoD, Biotechnology

DARK LADY OF DNA



Rosalind Franklin was a biophysicist. She was born in July 1920 and wanted to be a scientist from a very young age. The discovery of the structure of DNA in 1953 was made possible by Dr. Rosalind Franklin's X-ray diffraction work at King's. Her creation of the famous Photo 51 demonstrated the double-helix structure of deoxyribonucleic acid: the molecule containing the genetic instructions for the development of all living organisms. A brilliant and trailblazing scientist whose Photo 51 was essential in unlocking the mystery of how life is passed down from generation to generation. She didn't share the 1962 Nobel prize since Nobel prizes aren't awarded posthumously. She died four years earlier at the age of 37, a victim of ovarian cancer. Franklin's biographer, Brenda Maddox, called her "*the Dark Lady of DNA*", based on a disparaging reference to Franklin by one of her coworkers, and also because although her work on DNA was crucial to the discovery of its structure, her contribution to that discovery is little known.

~ MINHAS.P (3rd B.Sc BT)

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FUTURISTIC SCIENCE

Biotechnology is a multidisciplinary field that has a major impact on our daily life. The technology is known for years and involves working with cell or cell-derived molecules for various applications. It has a wide range of uses and it is termed as "technology of hope" which impact the human health well being of other life forms and our environment. Biotechnology has numerous applications, particularly in medicine and agriculture. The advantages of biotechnology application in industrial areas as diverse as formational diagnostic textiles, aquaculture, forestry chemicals, household products, environmental cleanup, and forensic food processing to name a few. Biotechnology in enabling these Industries to make new or better products often with the greatest speed efficiency and flexibility. Some of the most influential projects in biotechnology are as follows ;

Human Genome Project (HGP)

The Human Genome Project is one of the greatest scientific feats in history. The project was a voyage of biological discovery led by an international group of researchers looking to comprehensively study all of the DNA (known as a genome) of a select set of organisms. HGP was launched in October 1990 and completed in April 2003.

Invitro Fertilization (IVF)

IVF stands for in vitro fertilization. It's one of the more widely known types of assisted reproductive technology (ART). IVF works by using a combination of medicines and surgical procedures to help sperm fertilize an egg, and help the fertilized egg implant in your uterus.

DNA Fingerprinting

Identifying individuals based on hair, blood, or other biological samples is only possible through this breakthrough in science which also leads to new findings in Cancer studies.

Gene Cloning

It is the process of producing individual organisms with identical or virtually identical DNA, by artificial means. In 1996 this headline stealing sheep was the first mammal to be cloned from the cell of adult kids starting its scientific interest. eg; Sheep Dolly

~ SARAH JABEEN (2nd B.Sc BT)

DID YOU KNOW !!

1. Humans are born without bacteria, and they first acquire them while moving through the birth canal. Babies born through a C-section have a different microbiota from those born through vaginal birth. Such babies are at high risk of conditions such as obesity and allergies.

2. All human DNA is 99.9% similar. It is the 0.1% that accounts for the difference in people (individual uniqueness).

3. Goosebumps occur when the muscles near each hair on our body get tensed and then stand erect.

4. The human DNA is 98% similar to chimpanzees and 92% with mice. This would explain why mice and apes are used in drug studies.

5. Each cell in your body contains about 2 meters of DNA. If the whole DNA in one person was laid end to end in a straight line, it would measure up to 200 billion kilometres that is more than a thousand times the distance from the earth to the sun.

6. The only part of the body which does not have blood is cornea of the eye. It receives oxygen directly from the air

7. Some of the genetic material that makes up your DNA is not of human origin; viruses and bacteria have inserted some of it in a process known as Horizontal DNA Transfer.

8. DNA can be used to store data just like your typical hard drives. Scientists have been able to store 700 terabytes in a single gram of DNA.

9. You will be amazed to know that a human brain stops growing after the age of 18 years. Once you cross 18 years, 1000 brain cells are lost every day. Your brain never stop working even when you are sleeping, it works towards dreams.

10. Viruses are not alive; they are inanimate complicated organic matter. They lack any form of energy, carbon metabolism and cannot replicate or evolve unless they are in a living cell.

~ FATHIMATH NISHWA (3rd B.Sc BT)

INSULIN: A MIRACLE DRUG

According to the CDC, 463 million adults have diabetes worldwide in 2022, and this number is set to rise in the future. If The discovery and development of synthetic insulin has helped to change the lives of millions of people with diabetes. Insulin was originally derived from the pancreas of cows and pigs. Animal-sourced insulin is made from preparations of beef or pork pancreas and has been used safely to manage diabetes for many years.

However, it was soon discovered that using insulin from animals wasn't the best solution. It caused allergic reactions in human recipients, which led to the first genetically engineered human insulin, which was produced in 1978 with the help of bacteria.

~ HIBA SHERIN (2nd B.Sc BT)

PERIOD CRAMPS OF SOCIETY

Menstruation is a natural process in a woman's body that discharges blood from the inner line of the uterus. It's a monthly process that lasts for 5 to 7 days and changes may experience due to health conditions. We are living in one of the most populated countries in the world with 48.04 percent of women. During these periods, most Indian houses restrict their women from kitchens, religious practices, rituals, and household chores. Women face huge health problems during this period, and maybe it makes them physically weak. Some women may only experience abdominal heaviness or a tugging sensation in the pelvic area. Other women experience severe different cramps from premenstrual syndromes, such as moodiness, sadness, anxiety, bloating, and acne. Society should be aware of these menstrual problems, but women are still mistreated during their periods when they require the most care. Indian household mothers work hard in their kitchen without taking any rest, suffering all the pain from the vagina, uterus, and abdomen. Menstruation is a common and essential process for all women, and no one should be ashamed of it. Usually parents teach their daughters that the period is a secretive thing, it makes your body impure, expressing period cramps is shameful, and just shut up about menstruation and just suffer. It's so sad that even though we are living in the twenty-first century and yet behave as if we are living in the hell of the eighteenth century, we don't even care that women are alive.

Ladies, there's no need to be ashamed of periods. We should give proper education about periods and sexual health to both girls and boys. Providing free sanitary napkins, awareness classes, and better health care are some of the steps we should take to shut down the cramps of society. Our generation needs to learn things for the progress of a better society that can respect both men and women equally.

~ HASNA FASIN VK (3rd B.Sc BT)

ALCOHOLISM AMONG STUDENTS

Alcoholism has spread to a great extent in our society and especially among students. It is also known as alcohol use disorder. It occurs when you drink so much that your body eventually becomes dependent on or addicted to alcohol. When this happens, alcohol becomes the most important thing in your life. People with alcohol use disorder will continue to drink even when drinking causes negative consequences.

Drinking at college has become a ritual that students often see as an integral part of their higher education experience and some students come to college with established drinking habits also. During adolescence kids make irrational, impulsive decisions. It is a time in which many teens try drugs and alcohol for the first time.

After graduating high school and moving out on their own, college students want to experience their newfound freedom and independence. The reasons for drinking alcohol are curiosity, increased social pressure, relaxation, and relief of stress.

The consequences of alcoholism can be acute or chronic. Acute consequences of drinking include unintentional death and injuries like drowning, burning and falling, homicide and violence, suicide attempts, property damage, and sexual assault. About 25% of college men have committed sexual assault, and 8% have committed rape or attempted rape.

Chronic consequences of drinking include missing classes, falling behind in school work, performing badly on papers and exams, receiving lower grades, and fractured relationships. Such students experience extreme mood shifts, anxiety, and depression. Excessive alcohol consumption causes the inability to remember short words and names. Alcoholism causes conditions such as high blood pressure, heart disease, stroke, liver disease, digestive problems, cancer of the breast, mouth, throat, esophagus, voice box, liver, colon, and rectum, weakening of the immune system, increasing the chances of getting sick. It is the leading cause of impotence and sexual dysfunction.

The road to recovering from Alcoholism can be a long process that requires various treatments, counseling, or therapies. Doctors or therapists may recommend treatment such as detoxification, medications, and relapse prevention training, including therapy and behavior modification. In order to overcome alcoholism one must keep themselves busy by picking up new hobbies, doing exercises, and spending more time with your loved ones.

~ A N SANA FATHIMA (3rd B.Sc BT)

NOBEL PRIZE IN MEDICINE AND PHYSIOLOGY 2022 - SVANTE PAABO



The Nobel Prize in Medicine and Physiology 2022 was received by Svante Paabo for one of his amazing works which brought a breakthrough in human evolution. He was a Swedish geneticist who specializes in the field of evolutionary genetics and also a co-founder of paleogenetics, a study that shows our past through the genetic material extracted from fossils. We humans scientifically are known as Homo sapiens. Even other humans or Homos (Man) existed on this earth at the same time as Homo sapiens. One among them is the famous Neanderthal and another example is The Homo Denisovans. Numerous studies were conducted to check if the Hominins (Neanderthals and Homo Denisovans) and Homo sapiens ever mated in history. But that study was very controversial since reconstructing the genome of the neanderthal (extinct 30,000 years ago) from fossils was hard due to a lack of advancement in the technology at the time.

The breakthrough Discovery of Svante Paabo mainly focused on the relationship of Homo sapiens with that of the other Hominins (Neanderthals and Homo denisovans). This discovery is very important in the study of our own genome and of our evolutionary descendants. In 2012 a team of archeologists under Svante paabo discovered a 40,000-year-old fossil, a fragment of a bone from the baby finger of an undiscovered Hominin from the Denisova cave in the Bashelaksky Range of the Altai Mountains, Russia. He was also very interested in finding out the relationship between the Neanderthal and Homo sapiens. The study wasn't quite easy since reconstructing the complete DNA of the Neanderthal was not simple. Later in his career, when working in the Max Planck institute for evolutionary anthropology, Paabo and his team were able to analyze the extracted DNA with more advanced technologies and were successful in reconstructing the genome. In 2012 he published the first Neanderthal sequence.

Svante Paabo was successful in discovering the relatedness of modern humans (Homo sapiens) with that of the extinct Hominins, specifically the Neanderthals and Homo Denisovans in his research career. Finally, in the year, 2022 Paabo was awarded The Nobel Prize for Medicine and Physiology, for his discoveries concerning the genomes of extinct hominins and human evolution. Discovering our roots of origin can be breathtaking. This is the beauty of science with advancing technologies and great scientists like Svante Paabo, we were way ahead in exploring our origins and bettering our civilization for a breathtaking future

~ AYSHA DILRUBA (3rd B.Sc BT)

STUDENTS ACHIEVEMENTS



Mohammed Ashik
3rd Year B.Sc Biotechnology

National Tong-Il Moo-Do

GOLD MEDAL

District Boxing
Championship
 BRONZE MEDAL

District Judo
Championship
 BRONZE MEDAL

ARTIFESTO 2K21 VIRTUAL ART FEST

1st Prizes

- Story Writing (hindi) - A N Sana Fathima
- Ganamela - Zahda Mol
- Minha Rahman
- Ayisha Insheera
- A N Sana Fathima

2nd Prizes

- Story Writing (Malayalam) - Hina zainab KM
- Essay Writing (Hindi) - A N Sana Fathima
- Collage making - Fathimath Nishwa C

3rd Prize

- Versification (English) - Hasna Fasin V K

IEDC product innovation and idea competition KNOWZA

2nd Prizes

- Sera N
- Mohammed Ashik

TECH SIAS Scavenger Treasure Hunt

1st Prizes

- Neshla
- Raniya
- Vaishnavi
- Yumna

IEDC Entrepreneurs Day Debate Competition

2nd Prizes

- Neshla - Vaishnavi
- Raniya - Yumna

Colour club Rangoli competition

2nd Prizes

- Najiya Sherin
- Yumna
- Sulaika

She Tech Women's day Debate

2nd Prizes

- Riya Kallu
- Najiya Sherin
- Hiba Sherin
- Nasla

Islamic Finance Eid event contest: quiz competition

3rd Prize

- Aysha Hamna
- Yumna



BIOTECHNOLOGY DEPARTMENT PROGRAMMES

BIOCULOUS

The auspicious event of Bioculous 2022 was held on the 19th and 20th of September. It was a 2-day programme hosted by the Department of Biotechnology SIAS and inaugurated by our respected principal- Prof.E.P. Imbichikoya. The intent of this event was to enlighten and introduce the youth to the field of applied sciences. It included Expos with various models, Workshops with ravishing experiments, Seminars for the basic understanding of concepts, Visual imageries of important discoveries, Food stalls, and Game centers for entertainment. Day 1 was exclusively open for the college students and faculties of SIAS. Day 2 was hosted for the high school students of Horizon and PMSAPTHSS Kakkove.

- Aysha Dilruba (3rd B.Sc BT)

WORKSHOP

Department of Biotechnology conducted a workshop in connection with world water day on the topic 'water quality analysis and management' on March 22-23 2022. Resource person of programme was Dr. Hariprasad P (Assistant Manager, Quality Assurance Suguna Food Pvt. Ltd, Coimbatore). The session dealt with quality water management by pH maintenance quality assurance of water, checking chlorination.

~ SERA. N (3rd B.Sc BT)

NATIONAL SEMINAR

Dept. of Biotechnology conducted a seminar in association with the Department of Biochemistry on March 4th 2022. Dr. Pratheesh PT (Head Department of Biochemistry, Nehru Arts and Science College, Tamil Nadu) was the chief guest. He delivered a talk on -Edible vaccine: Current status and future perspectives. The session ended with a student-teacher interaction and was quite fruitful.

~ RIFA SHIRIN (3rd B.Sc BT)



NATIONAL SCIENCE DAY WEBINAR

Department of Biotechnology conducted a webinar on National Science Day on 28 February 2020. The topic of the webinar was the 'Role of algae' in sustainable development. The resource person of this webinar was Dr. M. Sathuvan, a post-doctoral fellow, at Shantou University, China. This webinar mainly focused on algal research for sustainable development.

~ SHAHLA SHERIN (3rd B.Sc BT)



FIELD TRIP

Students of 4th semester B.Sc Biotechnology was accompanied by two teaching faculties Dr. Sahaya Shibu and miss Tancia Rosalin visited Regional Agricultural Research Station, Ambalavayal, Wayanad on 1st April 2022 as part of students participative learning. The students acquired knowledge by visiting the plant tissue culture unit, modern agriculture technologies and their orchidarium. Also they were interacted with the scientists of various streams. The trip was highly informative.

~ SHIFNA SHERIN (3rd B.Sc BT)

PHOTO GALLERY



1st Harvest from Hydroponics



1st Harvest from Aeroponics



Department Expo " Bioculous 2k22 "



Field Trip to Wayanad



Water Analysis Workshop



National Seminar