

MICROSCOPE



.....SEE THE
UNSEEN

...

DEPARTMENT OF
MICROBIOLOGY

VOL 21
2025-26

PIPETTING
DREAMS

THE
MENTORS
I MET
ALONG
THE WAY

An in depth exposé of the
department's inner
workings from a former
student.

-Grazielle Serrao

ST.
XAVIER'S
COLLEGE,
MAPUSA-
GOA

DEPARTMENT OF MICROBIOLOGY

OUR VISION

Promotion of an atmosphere for a greater understanding of the diversity and application of the microbial world.

OUR MISSION

To challenge students to integrate learning and research skills in the pursuit of excellence.

“Microscope See the Unseen”

MESSAGE FROM THE ADMINISTRATOR



"Education is not the filling of a pail, but the lighting of a fire." This oft-quoted insight, attributed to the renowned Irish poet and playwright William Butler Yeats, aptly captures the true purpose of education. Inspired by this vision of igniting minds and nurturing human potential, the Church in Goa embraced the mission of education with remarkable zeal and commitment.

Soon after the liberation of Goa, the Church established St. Xavier's College, Mapusa under the pioneering leadership of Fr. Edwin D'Cruz, SJ, its founding Principal. The College began its journey in a building belonging to the MSFS Fathers at Bastora and functioned there until 1969, when it was shifted to Mapusa, where it continues to flourish today.

A decisive chapter in the institution's history began when its stewardship was entrusted to Dr. Nicolau Pereira, a visionary educationist and an eminent academic. Building upon the strong foundation laid by Fr. Edwin D'Cruz, he transformed the College into one of Goa's premier centres of higher learning. His legacy of excellence, innovation, and service continues to inspire the institution to this day.

Over the years, the landscape of education has undergone profound changes. Yet, St. Xavier's College has remained steadfast in its commitment to academic excellence, thanks to the dedication of its teaching and non-teaching staff, the perseverance of its students, and the enduring vision of Dr. Nicolau Pereira. Their collective efforts have enabled the College to uphold its cherished values while responding creatively to the challenges of a changing world.

As we place this departmental magazine in the hands of our staff and students, we express our gratitude to all those who have contributed to the growth and reputation of the College. May the spirit of dedication, excellence, and service that has shaped our journey continue to guide us towards greater heights. A perusal of the contents of this magazine leads us to appreciate the work that is going on in the Department of Microbiology and which will definitely serve as a valuable guide, helping to strengthen our shared commitment to learning, integrity, and the holistic development of every student.

*I would like to congratulate the Editorial Board for releasing this magazine at the start of the new academic year. This will help the freshers to understand the academic excellence that is demanded of them, while tickling the enthusiasm of the seniors to set a benchmark for themselves.
May God bless all!*

*Fr Tony Salema
Administrator*

PRINCIPAL'S NOTE



This message for our Microbiology newsletter comes from the principal's desk with pride and passion because before the administrative office, there was the lab table, the laminar flow, the plates of culture with fascinating colonies of microbes. So this message goes out with two hats and one heart that still beats faster at the sight of a nichrome loop and an agar plate.

Microbiology is not just another subject at undergraduate studies. It is the most vibrant, enthusiastic, and restless branch of science. From the bread and butter we begin our day with, the antibiotics that save lives, the soil that feeds us, and the vaccines that protect us, microbiology and microorganisms remain invisible to the eye but indispensable to life.

The world learnt the word "microbiology" anew during the pandemic. But we always knew: big changes come from small organisms, and bigger changes from the people who study them. Dear students, you have chosen such a field, be proud.

As I pen these lines my thoughts go back with deep respect to the visionary leader of this Institution, the man who brought microbiology (at undergraduate level) to Goa, at St Xavier's College, the late Rev. Dr. Nicolau Pereira, whose birth centenary we proudly celebrate this year. This was in the early 1980's, and since then there is no looking back. The subject gained popularity due to its significance and scope and continues to draw students from all over the state and beyond.

The faculty members strive hard to balance teaching syllabi as well as keeping learners abreast with latest developments and current research through activities, seminars, workshops, and outreach. From classroom tests, to guiding projects to celebrating days with unmatched zeal the teachers make this department a vibrant learning place, equipping students with the necessary skills to step into the outside world, to be job ready.

This newsletter reflects the energy and intellectual rigor of the department. Hearty Congratulations to the Editor Dr. Marielou Ferrao and the entire Editorial Team, especially the student contributors. Keep that spirit, keep reading, keep writing.

Congratulations and sincere appreciation to all the faculty members and Head of Department Ms Linette de Souza, on the excellent work done throughout the year. To our finalists, congratulations on your results! Well done! And to the freshers and current students, here's wishing you the best! Keep the plates streaked, the microscopes busy and keep the curiosity contagious.

*Warmly,
Ursula Barreto*

MESSAGE FROM THE HEAD OF DEPARTMENT



I am pleased to present this edition of the Department of Microbiology Newsletter; a reflection of the enthusiasm, creativity and accomplishments of our students, alumni and faculty.

This newsletter perfectly captures the diverse facets of our department. The Student Corner highlights the remarkable talents of our students proving that learning extends well outside the laboratory! Our Alumni Corner reconnects us with our graduates whose journeys and experiences continue to encourage our current students. The Departmental Activities reflects another exciting year of academic excellence and hands-on learning, each activity contributing to holistic student development.

A sincere expression of gratitude goes to our student editorial team: Ms. Anushka Salgaonkar, Ms. Cenobia Fernandes and Ms. Prapti Sawant. Their passion, creativity, and efforts made this newsletter a reality. I would also like to express my sincere appreciation to Dr. Marielou Ferrao, The Editor. Her guidance, encouragement and leadership have been instrumental in shaping this publication.

I extend my heartfelt appreciation to everyone for their contributions that have made this newsletter possible.

As you turn these pages, I hope you find inspiration in the stories, achievements and experiences shared within. May this newsletter continue to strengthen our sense of community and encourage us all to strive for excellence in the fascinating world of microbiology.

I wish you an enjoyable and enriching read.

*Ms. Linette M. de Souza Noronha
Head, Department of Microbiology*

EDITOR'S NOTE



Breaking the silos -communicating and aligning with the rest of campus -but yes!! Microscope-see the unseen is more than just another update -its our teams internal heartbeat. This edition is our archived single source of truth for the academic year gone by.

As an editor I have focused on three aspects-knowledge sharing, showcasing our best practices in 2025-26 which reinforce our departmental values and vibe; and engagement and belonging of the students of microbiology with their contributions. The spotlight is on our alumni, they have made this into a bridge between past, present, and future. The heartwarming stories of Lakshangy Charya, Jenney Pereira, Larissa Menezes, Milind Naik, Diana Dias and Grazielle Serrao will give our current students a real world perspective as their paths pivot, failures and wins will make abstract careers tangible.

One of my own students of the yesteryears completed the challenging Kilimanjaro trek -Puja Lotlikar went full circle to becoming my teacher delivering the ultimate inspiration injection and giving me the motivation boost to successfully complete a glacier trek of 2940m above sea level.

My sincere appreciation to my student team- Anushka Salgaonkar, Cenobia Fernandes, and Prapti Sawant. Anushka Salgaonkar for having helped design the format & overall aesthetics of the magazine and compilation, Prapti for having assisted proofreading and designing. Cenobia for having designed the cover and the theme of the magazine.

I thank my Head of Department, Ms.Linette D'Souza for giving me the opportunity to serve in this role. I appreciate the trust and confidence placed in me .

To the Principal of St Xavier's College, Goa, Ms.Ursula Barreto and the administrator, Rev. Fr.Antonio Salema for the unwavering support – a big thank you !

*Dr Marielou Ferrao
Assistant Professor
Department of Microbiology*

CONTENT

STUDENT'S CORNER

1. Microbe of the year - <i>Penicillium</i>	01
2. Beyond the Microscope - Poem	02
3. An Indian Microbial Taxonomy	03
4. Beyond the naked eye	04
5. The Lab, My second home - Poem	05
6. More than microbes	06
7. Culturing Memories	08
8. Beyond the Routine	09
9. Life	10
10. A Day in My Life - Monsoon Edition	11
11. Microbiological Chapter	12
12. My Experience in BSc Microbiology	13
13. Pipetting Dreams- An artist's vision	14

ALUMNI'S CORNER

1. My Research Journey	15
2. Journey to success- An alumnus's story	17
3. Microbiologist to motherhood	19
4. Tracing my Journey	21
5. From Curiosity to Career	23
6. From the Microbiology Lab to the Depths of the Ocean	25
7. Mentors I met along the way	27
8. Then to Now: A Journey of Growth, Grit and Gratitude	34

DEPARTMENTAL ACTIVITIES

1. Value Added Course	36
2. Invisible Majority (BulletinBoard)	37
3. ICAR Goa-Educational Trip	38
4. Proteus 3.0	39
5. Field trip to GoVeda Farm	40
6. Workshop on 'Tools in Bioinformatics'	41
7. Career Counselling session	42
8. Biomonitoring and Physiochemical analysis of water resources Project	43





STUDENTS CORNER



MICROBE OF THE YEAR 2026



Few microbes have changed the world, brought advancement in the bioscience sector and shaped history like this heavyweight. The microbe of the year, 2026 is something that has been around for a century; none other than *Penicillium*. In recognition of its massive impact on medicine, food, and modern industry, Germany's prominent microbiology association, VAAM, has officially named this famous fungus the Microorganism of the Year for 2026.

Its name comes from the Latin word *penicillus*, meaning "small brush", a perfect description of how its spore structures look under a microscope. Most of us know it as the accidental hero. When Alexander Fleming left a messy lab bench over the weekend in 1928, this blue-green mold floated onto his petri dishes, wiped out dangerous bacteria, and gave us the world's first true antibiotic: Penicillin. Today, factories worldwide pump out roughly 50,000 tons of penicillin a year, proving that a simple kitchen mold can save millions of lives.

However, reducing *Penicillium* to just a medical miracle doesn't do justice to its skills. If you have ever enjoyed a fancy cheese board, you have this fungus to thank. Species like *Penicillium camemberti* and *P. roqueforti* serve as gourmet artisans which use special enzymes to break down fats and proteins, giving Brie, Roquefort and Camembert their unique, signature textures. Beyond the dining hall, industries also use these enzymes to clarify fruit juices and soften denim fabrics for your favourite jeans.

Astonishingly, scientists recently discovered how to get this mold to reproduce sexually rather than just cloning itself. This means researchers can now cross-breed different strains to create next-generation "super-producers" of eco-friendly pesticides and medicines. A boon for the research world indeed. Ultimately, the 2026 title reminds us that ordinary organisms can do extraordinary things. So, the next time you leave behind a messy lab desk, know that a new discovery awaits, or it's just your old pal, *Penicillium*.

-Anushka Salgaonkar

T.Y. BSc 2026-27

BEYOND THE MICROSCOPE

-

Like unseen microbes, I entered quietly,
Searching for a place where I could truly belong.
Lost in an unfamiliar culture, I slowly discovered
That even the smallest cells can grow remarkably strong.

Every lecture, every practical, every culture plate
Became more than lessons confined to a lab.
Friendships multiplied like thriving colonies,
While memories stained my heart, impossible to wash away.

From microscopes that revealed invisible worlds
To stages where confidence finally found its voice,
St. Xavier's became my perfect growth medium,
Nurturing both the scientist I aspire to be and the person I chose
to become.

Now, as my final year begins, I carry every lesson within me—
Not only those learned through cells, cultures, and science,
But also those of friendship, courage, and belonging.
For once a Xavierite, always a Xavierite—and forever a
microbiologist at heart.

-Lynette Dantas
T.Y.BSc (2026-27)

AN INDIAN MICROBIAL TAXONOMY



Dr. Aditi Pant



Dr. APJ Kalam

Recently I read an article on an extremophilic microbe being named after the person who discovered it. Thought to myself as an Indian, have we made it to the microbial Taxonomy? The answer is yes, and these are few that I stumbled upon.

Imagine traveling 400 kilometers above Earth, moving through the clean, high-tech walls of the International Space Station (ISS). You might not expect to find a piece of Indian history up there. Yet, trapped inside a high-efficiency particulate air filter, lives *Solibacillus kalamii*, a bacterium known for its high resistance to radiation and it's named in honour of India's Missile Man, Dr. A.P.J. Abdul Kalam. A personality that shaped India's space ventures, whose name still fills us with pride.

In microbiology, naming a newly discovered organism is more than just a standard practice, it's a true scientific tribute. Over the past few decades, both global and local researchers have increasingly drawn on India's rich history in science, literature, and exploration for their discoveries.

Consider *Pantoea tagorei*, Discovered in the soil of West Bengal by researchers at Visva-Bharati University, this unique bacterium acts as a natural boost for agriculture. It naturally extracts potassium and fixes nitrogen, eliminating the need for harsh chemical fertilizers. Naming it after Rabindranath Tagore was intentional as it honours Tagore's deep passion for independent organic farming in rural India.

Meanwhile, on the frozen, dry plains of northern Antarctica, researchers from Pune's National Centre for Cell Science isolated *Deinococcus pantiae* from a remote lake. This microbe not only survives extreme UV radiation, it also shows resistance to Vancomycin, a powerful antibiotic used as a last resort against MRSA in modern hospitals, scary yet fascinating. The team dedicated this discovery to Dr. Aditi Pant, the pioneering oceanographer who was the first Indian woman to set foot on Antarctica in 1983.

From the ancient mathematical legacy of *Bacillus aryabhata*, named after India's own Mathematician; in the stratosphere to *Pradoshia eiseniae*, a gut microbe that can eliminate harmful neurotoxins and is named after the respected microbiologist Pradosh Roy, these tiny organisms illustrate something important: True legacy isn't only found in history books or carved into stone monuments. Sometimes, it is woven into the very fabric of living DNA.

BEYOND THE NAKED EYE: A FASCINATING JOURNEY THROUGH MICROBIOLOGY

Entering the field of microbiology was never a dream I had imagined for myself. However, as I started this journey, I slowly realized that it was one of the most meaningful decisions I had ever made. What began as an unfamiliar path, soon became an exciting experience filled with learning, discovery, and curiosity.

Being a part of the microbiology department gave me the opportunity to explore a world that exists beyond our vision. When I joined this department, I had many questions about this subject. Slowly, I started learning about microorganism and understood that there is a whole hidden world that we cannot see with our naked eyes. These tiny organisms may look simple, but they play very important roles in our environment and in human life.

During my time in this department, I learned many new things through classes, practical work and laboratory activities. The department provided me with the required equipments and guidance to understand microorganisms in a better and easier way. Every experiment increased my curiosity and made me more interested in this field.

The most interesting thing I learned is that microorganisms, although very small in size, can have a huge impact. Some are harmful, but many are useful and help in maintaining the balance of nature. They are like small factories working continuously, performing important functions that effect humans and the environment.

This journey has helped me gain knowledge, confidence and a better understanding of microbiology. I feel grateful for the experiences and learning opportunities I have received and I will continue to learn and cherish every moment in this department for future. This department has inspired me to continue exploring this amazing world and learn more about the unseen life around us.

-Prapti Sawant

T.Y.BS.c (2026-27)

THE LAB, MY SECOND HOME

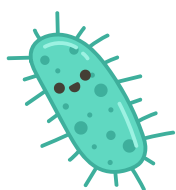
At first, the autoclave's smell,
A cloud I knew too well.

I scrunched my nose, wished to escape,
But science insists, patience takes shape.

The lab is cool, a curious den,
Even monkeys stroll in now and then.
Plates bloom with colors and colonies rise,
Tiny worlds forming before our eyes.

Here, microbes whisper secrets untold,

Patterns of life in stories unfold.



Each streak, each culture, each careful test,
Teaches that science is vibrant at best.

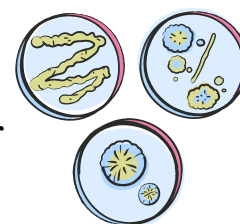
Yet beyond the pipettes, agar, and flame,
It's the friendships that gives the lab its name.

Laughs over spills, cheers when things grow,
A second home where bonds truly show.

From hating the autoclave's sharp stench,
To finding comfort in this busy room,

I've learned resilience, strength-

The lab is my home, with friends always near



-Arush Khorjuvekar
T.Y.BSc (2026-27)

MORE THAN MICROBES: MY JOURNEY THROUGH THE DEPARTMENT OF MICROBIOLOGY

When I chose to pursue a B.Sc. in Microbiology, I never imagined that it would take me on a journey far beyond textbooks and laboratory benches. Coming from South Goa to North Goa for my degree was a significant step into a new environment. It meant meeting new people, adapting to a different atmosphere, and stepping outside my comfort zone. Looking back today, I can confidently say that joining the Department of Microbiology at St. Xavier's College has been one of the most rewarding experiences of my life.

At first, microbiology was simply a fascinating subject that explored the unseen world around us. However, over the years, it became much more than that. It taught me to observe carefully, think critically, and approach problems with curiosity and creativity. Every practical session, project, assignment, and discussion challenged us to think beyond the obvious and encouraged us to develop scientific reasoning.

One of the most memorable aspects of our department has been our teachers. Their dedication, enthusiasm, and constant encouragement made learning both engaging and enjoyable. Classes were never limited to lectures alone. Through creative assignments, presentations, projects, and interactive activities, they kept us on our toes and inspired us to approach learning in innovative ways. They challenged us not only to acquire knowledge but also to develop confidence, communication skills, and a sense of responsibility.

The laboratory became a second classroom where some of the most valuable lessons were learned. Working together during practical sessions taught us the importance of teamwork, patience, and trust. Experiments did not always go as planned, and mistakes were inevitable. Yet these moments taught us to support one another, learn from failures, and understand that growth comes through experience. Over time, our class developed a strong team spirit, where everyone contributed in their own unique way and celebrated each other's successes.

Microbiology itself has offered many lessons that extend beyond science. Microorganisms constantly adapt to changing environments, teaching us the importance of resilience and perseverance. Extremophiles, which thrive under harsh conditions, remind us that challenges often reveal strengths we never knew we possessed. Microbial communities demonstrate cooperation and interdependence, showing us the value of collaboration and mutual support. Through the study of these tiny organisms, we learned lessons that are surprisingly relevant to our own lives.

The department also provided me with opportunities to grow personally. It gave me a platform to showcase my talents, participate in events, take up responsibilities, and develop leadership qualities. Whether organizing activities, working on projects, or contributing to departmental events, I learned how to take initiative, lead teams, and manage challenges effectively. These experiences strengthened my confidence and encouraged me to think in both critical and creative ways.

Perhaps the greatest gift of this journey has been the friendships and memories created along the way. From long hours in the laboratory and exam preparations to laughter-filled classrooms and shared experiences, the people I met here have made this journey truly special. Together, we learned, grew, overcame challenges, and created bonds that will remain long after our college years have ended.

As I reflect on my time in the Department of Microbiology, I realize that it has given me far more than academic knowledge. It has broadened my horizons, shaped my personality, improved my social skills, and taught me valuable lessons about teamwork, leadership, resilience, and lifelong learning. The microorganisms we studied may be microscopic, but the impact this department has had on my life is immeasurable.

As we now look ahead to our Third Year, a new chapter awaits us. Along with exciting opportunities comes the challenge of our TY project and thesis work, which will undoubtedly test our knowledge, dedication, and perseverance. Yet, if our journey so far has taught us anything, it is that we are capable of achieving more than we imagine when we support one another. I hope that the same spirit of friendship, teamwork, and enthusiasm that has carried us through the past years continues to guide us through the year ahead.

As we enter what will be our final year together, I hope we make the most of every opportunity that comes our way, learning new skills, gaining valuable experiences, creating unforgettable memories, and strengthening the bonds we have built. May we continue to inspire one another, nurture meaningful connections that last beyond college, and carry forward the values that the Department of Microbiology has instilled in us. Like the microbial communities we study, may we thrive through cooperation and mutual support. Together, let us harness our collective strength, reach greater heights in knowledge and achievement, become beacons of positivity for those around us, and strive to lead fruitful and purposeful lives. The future is bright, and I look forward to walking into it alongside my classmates, teachers, and departmental family.

For all these experiences, lessons, friendships, and opportunities, I will always be grateful to the Department of Microbiology, a place that has not only taught me about the microbial world but has also helped shape the person I am becoming.

-Lizanne D'Souza
T.Y.BSc (2026-27)

CULTURING MEMORIES

Choosing Microbiology as my field of study and joining this college has been one of the most memorable parts of my academic journey. When I first entered the microbiology lab in my first year, everything felt unfamiliar and exciting. From learning how to handle petriplates to getting accustomed to the distinctive smell of the autoclave, every experience was new and fascinating.

In the beginning, stepping into the lab, there was something new to learn. Over the past two years the lab feels less like a classroom and more like our own space. It is filled not only with experiments but also countless memories. The sight of everyone in their lab coats working along with their lab partners, discussing results, helping each other during practicals and sharing laughter in between experiments has made the experience truly special.

Of course, not every experiment went exactly as planned. There were moments of confusion, unexpected results, and the occasional chaos of trying to complete an experiment on time. Yet, those moments often became the most memorable ones. They taught us patience, teamwork, and the importance of learning from mistakes.

The lab has given me much more than practical knowledge. It has provided us opportunities to learn, grow, build friendships, and create memories that I will always cherish. What once felt like an unfamiliar place has now become a space filled with experiences that will remain a meaningful part of my college life.

-Shruti Naik

T.Y. BSc 2026-27

BEYOND THE ROUTINE: LESSONS FROM A LAB & TEAM

College life often runs on a predictable loop—wake up, rush to college, attend lectures, survive practicals, exchange casual conversations, go home, and repeat. Days blend into each other until routine becomes comfort. Yet, somewhere between lectures and lab coats, a question quietly lingered in my mind: Is this all college life is meant to be? The answer arrived unexpectedly in our second year, disguised as a single word—project. A group project. Fifteen people. Fifteen minds. Fifteen opinions. The idea sounded exciting and terrifying at the same time. Working together every day under one roof, coordinating ideas, adjusting egos, and sharing responsibility—was that even possible? But as a microbiology student, I slowly realized that collaboration is not optional; it is essential.

Microorganisms survive not in isolation, but in communities. Perhaps we were meant to learn the same. It was an ordinary day. The lab work was done, semester fatigue was settling in, and holidays were just around the corner. As we were leaving the laboratory, our teacher stopped us midway and introduced an external microbiology project. What initially sounded like extra work soon turned into an opportunity—an experience beyond marks and attendance. The project wasn't perfect. There were disagreements, failed attempts, confusion, and moments of frustration. But there was also laughter, cooperation, shared responsibility, and growth. Slowly, something remarkable happened.

Like microbes forming a stable culture after initial stress, we adapted. We learned to listen, compromise, and support one another. Fifteen individuals transformed into a team. By the time the project was completed, we had gained more than technical knowledge. We had learned teamwork, patience, ethics, and the value of collective effort—skills no textbook can teach. That project changed how I viewed not just microbiology, but people. Sometimes, growth doesn't happen in sterile conditions. Sometimes, it happens in shared spaces, shared failures, and shared success. And that, perhaps, is the most important experiment college ever conducted on us.

-Vanish Waman Chari
T.Y.BSc 2026-27

LIFE

What is life? What are the different experiences of life?

Life holds multiple meanings and is filled with experiences. Above all, life is not merely about existence, but also about how an individual defines that existence. Therefore, it is important not to view life from a single perspective. Life is like a river that flows continuously, encompassing the hope for existence and survival. Life is also happiness and sorrow.

Life is the journey of living. We live and conduct our lives, yet life is not the same for everyone; some people face many hardships, while others do not. Those who do not face many hardships view life differently from those who do. It is often said that life is precious and fulfilling.

Furthermore, to truly value life, one must recognize that it holds meaning and purpose—elements that shape the course of a person's life. Life is, therefore, something more than just intriguing. And one thing we should never forget, is to always be humble in life.

-Aarina D'Cruz
T.Y.B.Sc 2026-27

A DAY IN MY LIFE: MONSOON EDITION

While many students dream of waking up just in time for class, my day begins at 5:30am. Living in South Goa and studying in North Goa means travelling 42 km everyday ,crossing two rivers before I can even think about attending a lecture. By the time I reach college at 8:30 a.m, I feel like I deserve attendance for journey alone. And then there are the monsoons.

Many people love Goa's rainy season. They think of hot chai, cozy weather, and beautiful views. As someone who has to travel daily, I respectfully disagree. For me, monsoons mean carrying an umbrella that somehow never does its job properly, unpredictable roads, and spending the entire journey wondering whether I will reach college dry, damp or looking like I accidentally swam there. While others admire Goa's beautiful rainy season from their windows, I am busy crossing rivers, navigating flooded roads, and every life decision that brought me to this exact moment. There is nothing quite like sitting through a lecture while your sandals make suspicious squeaky sounds every time you move.

People often ask me what motivates me to make this journey everyday. The truth is, it's probably my friends and the comforting thought that each day attended is one day closer to graduation. As final year student, that thought keeps me going.

The lectures are informative and engaging, but by the middle of the day, I'm usually counting down to my favourite part of the time table-the fifteen minute recess. Those fifteen minutes remind me of what happiness feels like before returning to academic reality.

Once classes end, the long journey home begins. By the time I finally reach home, nearly twelve hours have passed since I first stepped out in the morning.

Despite the early mornings, long commutes and monsoon adventures-I wouldn't trade these memories for anything. College isn't just about earning a degree; its about the friendships, experiences, and stories we collect along the way. And while I complain about it now, I know these are the moments I'll look back on fondly once graduation finally arrives.

-Bellona Fernandes

T.Y.B.Sc 2026-27

THE MICROBIOLOGICAL CHAPTER

As I stand at the threshold of completing my Bachelor's degree in Microbiology, I find myself reflecting on a journey that has been far more meaningful than I ever imagined. What began as a choice of academic study gradually transformed into a passion, a perspective, and a way of understanding the world around me. When I first stepped into the department of Microbiology three years ago I thought it was merely the study of microorganisms that could have been studied under a microscope. Little did I know that this subject would offer me an amazing new way of looking at the world.

To me this department has been more than just a place of learning, it has been a place of growth. It provided me with such an environment that it enhanced my skills like critical thinking and encouraged curiosity and scientific enquiry. Theory transformed into reality in the laboratory. I still remember the excitement of observing microbial cultures, performing staining techniques and identifying organisms that existed in a world hidden from everyone's sight. From preparing culture media, observing microbial growth to performing biochemical tests and taking up projects each component strengthened my confidence and love for the subject. Experiments do not always produce expected results, cultures refuse to grow, and mistakes become inevitable. Yet these challenges thought me to learn from failure rather than fear it.

Beyond academics the department fostered friendships, teamwork and personal development. Therefore as I prepare to move forward into the next chapter of my academic and professional life, I carry with me the lessons, experiences and values that this department has given me.

The world of Microbiology may be invisible to the eye, but its impact- and the impact of these three wonderful years will remain visible in my life forever.

-Liza Saira Paras
T.Y.B.sc 2026-27

MY EXPERIENCE IN B.SC. MICROBIOLOGY

When I first planned my career, I wanted to study Forensic Science. However, life led me to pursue B.Sc. Microbiology at St. Xavier's College, Mapusa and looking back, it became a journey of discovery.

At first, I thought microbiology was only about studying microorganisms, but over time I realized it offers much more. Through theory classes and practical laboratory sessions, I explored how microbes influence health, food, industries, the environment, and scientific research.

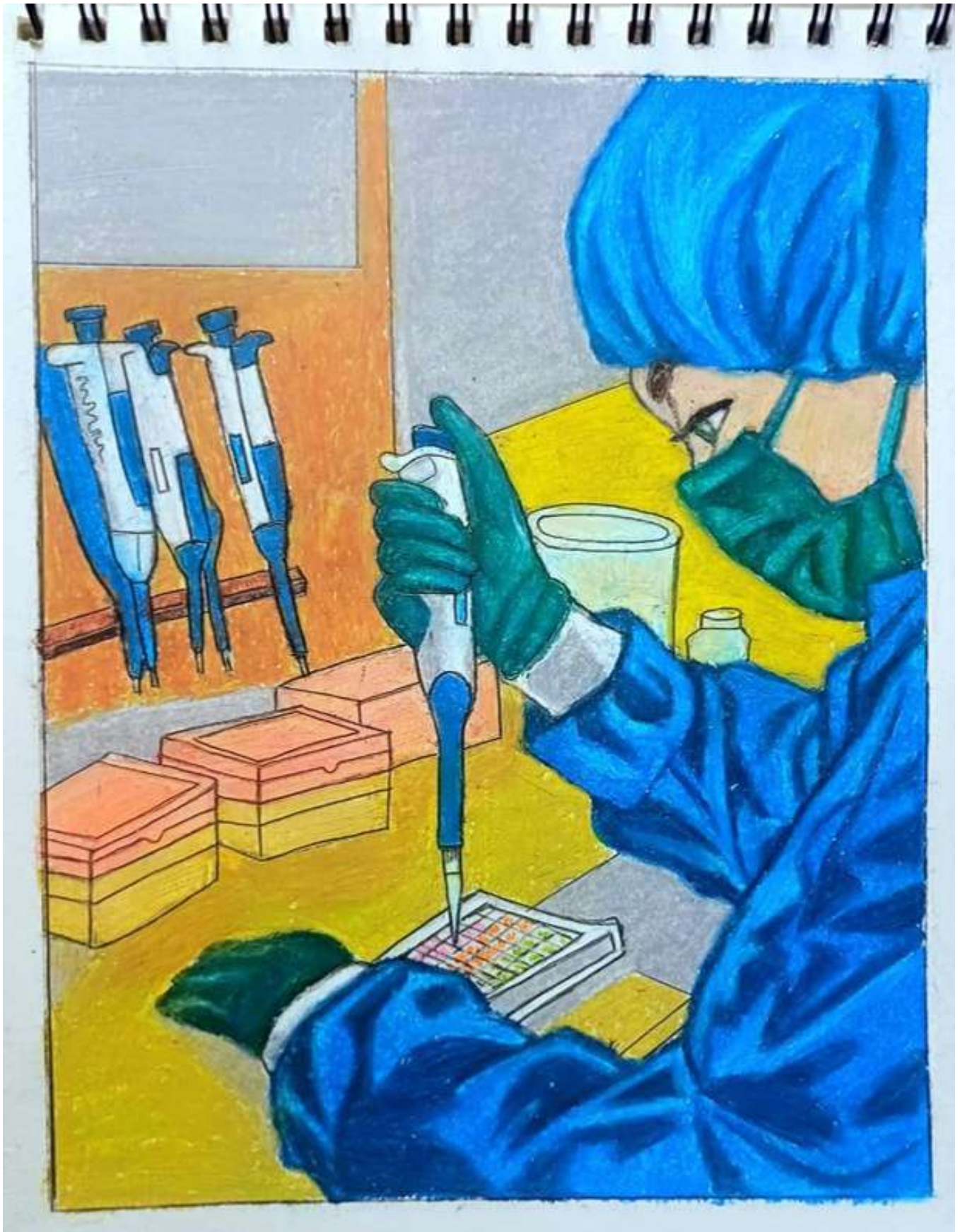
The Department of Microbiology encouraged me to develop research skills, curiosity, and scientific thinking. One of the most exciting parts was working in the laboratory, where experiments helped me connect classroom learning with real-life applications.

Although microbiology was not my first plan, it gave me the scope to discover new interests, learn new skills, and understand that career paths can open unexpected opportunities. It taught me patience, observation, teamwork, and confidence.

For anyone considering microbiology: sometimes the path you choose becomes even more meaningful than the one you first imagined. My journey at St. Xavier's College, Mapusa showed me that even the smallest organisms can lead to the biggest discoveries.

-Ayushi Nemlekar
T.Y.BSc 2026-27

PIPETTING DREAMS!



-An artpiece by Heetal, T.Y.BSc 2026-27



ALUMNI'S CORNER



MY RESEARCH JOURNEY



My Academic and Research journey began during an undergraduate degree in Microbiology at St. Xavier's College, Mapusa (2002-2005), where dedicated mentorship sparked a lifelong passion for scientific inquiry. After earning an M.Sc. from Goa University (2007) and gaining critical industry experience in pharmaceutical quality control, I secured the prestigious UGC-JRF fellowship for meritorious student in Science and registered for PhD in Microbiology in 2008 under mentorship of Prof. Santosh Kumar Dubey. This mentorship was pivotal, instilling in me a deep sense of scientific rigor and analytical excellence. I earned a Ph.D. in Microbiology in 2012 from Goa University conducting quality research on the bioremediation of lead using bacteria isolated from polluted marine and terrestrial environments. During this doctoral research, I have successfully elucidated the diverse molecular mechanisms driving bacterial lead resistance. My impactful research work since last 16 years has culminated in over 37 high-quality publications in reputable international scientific journals with academic impact of 2,671 citations, an h-index of 21, and an i10-index of 33. In 2012, joined as an R&D Scientist at Molbio Diagnostics Pvt. Ltd., and worked on development of portable chip-based real-time PCR assays for Tuberculosis, Malaria, and Hepatitis B.

Later, as a Scientist C at the National Institute of Malaria Research (NIMR) on an National Institute of Health USA-funded project, I led a team that discovered *Anopheles subpictus* as a primary malaria vector in Goa—a landmark finding for regional public health.

Since joining the Goa University as Assistant professor in 2013, I has secured 3 major grants from apex scientific bodies to tackle critical environmental and health challenges such as 1) Biosecurity & Public Health: Leading a DBT-funded project investigating microplastics in ballast water as vectors for harmful algal blooms and pathogens. 2) Food Safety: Completed a major SERB-DST project mapping quorum sensing and biofilm formation in dairy industry pathogens. 3) Digital Health Solutions: Partnering with NIMR-ICMR, BITs Goa, DHS Goa on a digital platform to track and control malaria among Goa's migrant workforce.

I have edited three International books for premier global publishers: Marine Pollution and Microbial Remediation (Springer Nature), Advances in Biological Sciences: A Practical Approach (Elsevier), and Advances in Nano and Biochemistry: Environmental and Biomedical Applications (Elsevier). I also advanced my technical expertise by completing specialized training in Basic and Advanced Proteomics at the esteemed Indian Institute of Technology (IIT), Bombay. My current research is focuses on bacterial quorum sensing and the bioprospecting of novel marine-derived molecules.

This work aims to disrupt bacterial communication systems, paving the way for alternative therapeutic strategies against multidrug-resistant (MDR) bacteria. My research has earned significant national and global acclaim: 1) I am featured in Top 5% Scientist worldwide ranking by SciRank Global. 2) Senior Scientist Award recipient from the Microbiologists Society of India. Presently three students are perusing PhD under my mentorship at Goa University, Goa.

JOURNEY TO SUCCESS...AN ALUM'S STORY!!



A picture from now..

When I entered the First year graduation in Microbiology at St. Xavier's College in Goa, I was brimming with joy, as acquiring a seat for Microbiology was considered prestigious back then. Why? Well because it's the best college and was also the only college providing Graduation in Microbiology specialization in Goa until then!

My parents were overjoyed as I was on the path to what I wanted to do. I'd decided in Grade 9 that I wanted to be a Pharmaceutical Microbiologist; thanks to the career guidance sessions we were blessed with in school.

Well, getting into Microbiology was just the first step!

Always a meritorious student and an all-rounder in school and college, I still had moments of self-doubt. I wondered if all those practicals and experiments, the vast Micro syllabus and the challenging projects, would really be useful in my future roles or not; also whether I would secure that one coveted internship, or whether I would even excel in the 'real world'.

Looking back from the vantage point of 18 years into my career, I can tell you with certainty that it matters; well not in the way that you expect, but it does!

Your academic grades do open professional doors, however, the most crucial value that I carried away from this campus wasn't just my major's syllabus; it was how to be resilient in times of challenges and disappointments, it was how to balance serious work and fun, it was how to learn, unlearn, and relearn quickly.

This adaptability, agility and grit is what set me apart!!

The real career path is never a straight line of success. The professional sphere evolves oh so rapidly, and your ability to adapt and adept to new technologies and pivot during unexpected setbacks is what will give you that extra edge. You're going to see struggles, unfair decisions, lay-offs, difficulty to come back post a career break (due to whatever reason such as health issues, family support, studies or post maternity) as much as you're going to see appreciation, promotions and awards. You get to taste it all!



A picture from then...

Xavier's grooms your personality holistically and nurtures you into a beautiful human being and that is the first step to success in life!

While in college, I had the opportunity to not just lead Microbiology group projects but also participate in various extra-curricular events, competitions and sports.

I reminisce the late-evening library discussions, debates at the basketball court, curiosity in the Micro labs, the quick bites in canteen and the breath-taking campus environment.

21 years to graduating, and every memory is still afresh!!

In a fast-moving world where relationships and experiences often fade as we move forward to newer avenues, I'm glad to be given the opportunity to share my journey from the classroom to the corporate world.

Immense gratitude to the college and Microbiology faculty/staff for moulding me and guiding me through my foundation years. Thanks to every senior and batch mate who inspired me in their own way.

I went on to complete my Masters in Microbiology, Post-graduation in Clinical Trial and Research, Internationally accredited QMS Lead Auditor certification and Lean Six Sigma Black Belt certification. I'm also pursuing doctorate.

Learning NEVER stops. Never be complacent when it comes to enhancing knowledge.

The strong base in Microbiology helped me grab roles in some of the finest Pharma organisations; I've had the privilege to be associated with Glenmark, Dr.Reddy's, Pfizer and PAR Endo Pharmaceuticals. Its humbling and overwhelming to grow from a Trainee Microbiologist to the Department Lead. Grateful to my teams, seniors and especially my managers who mentored me along the way!

Whatever you do in life, do it with passion and dedication. Life gets more exciting and beautiful when you explore beyond your realms and try doing things that were never on your mind! Well, I recently participated in Charming Mrs. India Pageant and emerged as the 1st Runner-Mrs. India 2026 in the Classic category!

A message to all you amazing budding Microbiologists at Xavier's, you're being sculpted by the best hands; stay curious dear Microbiologists, stay hungry for knowledge and keep upskilling yourselves; your efforts today will inevitably reap the fruits of success tomorrow! And definitely add some zany moments to your life!

Stay humble, stay grounded!!

What greater joy than to make our Alma Mater proud!!

Shine you jewels!! Best wishes!!

*Diana Dias (Diana Coutinho)
A proud Xavierite
Microbiology (2005 Graduation Batch)*

FROM MICROBIOLOGIST TO MOTHERHOOD



Swapping a daily routine of test tubes, microscopes, pipettes, petri dishes, and strictly temperature-controlled incubators for the chaotic, dynamic world of full-time motherhood was not an easy decision. And let's be honest: it is not as easy as it sounds. Nonetheless, my journey from a Microbiologist to a stay-at-home mum has been shaped by profound changes—many of which mirror the exact biological processes I used to study under a lens.

1. The Transition: Changing Environments

The first stage was a massive environmental transition. Moving from the sterile laboratory to the “domestic wild” meant shifting priorities, routines, and responsibilities. While I no longer spend my days conducting peer-reviewed experiments, I still approach everyday challenges with the analytical mindset microbiology taught me. Whether I am experimenting with new recipes, optimizing household cleaning protocols, or managing the delicate microbial balance of my backyard compost pile, the inner scientist remains.

2. The Transcription: Copying Code into Real Life

As a microbiologist, I spent the third year studying transcription (Thank you Mrs. Ursula Barreto)—the process by which genetic information in DNA is copied into RNA. In a similar way, I have “transcribed” my scientific knowledge into practical, everyday applications.

For instance, before my kids head off to school, I constantly subject them to “germ talk.” I equip them with the knowledge that proper handwashing tackles most coughs and colds OR explain how a diet rich in probiotics and fiber feeds their gut microbiome rather than their all-time loved food- pizza! Now, I must admit defeat here: during the peak of flu season, the viruses still win occasionally. But my understanding of the microbial world helps me make highly informed decisions about food safety, hygiene, and illness prevention, maintaining a healthy home environment for my family.

3. The Transformation: Acquiring New Traits

Motherhood has also brought about a profound transformation. Just as bacteria undergo transformation by acquiring foreign genetic material and developing entirely new characteristics, I have absorbed a whole new set of skills, perspectives, and strengths.

Caring for kids, managing a household, and supporting my family's dreams/growth have transformed me in ways I never anticipated. Believe me in that. For instance, I never knew I possessed the cellular-level patience required to remain perfectly calm while my three-year-old throws a tantrum on the floor. But viewing it scientifically helps; she, too, is just undergoing a critical developmental transformation.

4. The Transversion: A Critical Base Change

Finally, there has been a personal transversion—a term in genetics describing a specific mutation where a single purine base is swapped for a pyrimidine, or vice versa. Although small at the molecular level, such changes can completely alter an organism.

Likewise, shifting from a career person to a stay-at-home mum might look like a simple change in job title on paper, but it has profoundly altered my daily life, my priorities, and my sense of purpose. Yet, through it all, I have retained the core values that define who I am.

My workplace may have shifted from a laboratory bench to a family home, but microbiology remains an active part of my everyday life. The scientific principles I learned continue to guide me, proving objectively that the knowledge gained in science extends far beyond the walls of a lab.

*Jenney Pereira
Wisconsin, USA
SFX Alumni 2001-2003*

TRACING MY JOURNEY: FROM A CURIOUS STUDENT TO A MARINE MICROBIOLOGIST



Looking back at my journey in microbiology fills me with gratitude and a sense of nostalgia. What began as a fascination with the unseen microbial world gradually transformed into a lifelong passion and a fulfilling career in academics. I completed my B.Sc. in Microbiology from St. Xavier's college in 2010, followed by an M.Sc. in Marine Sciences, Goa University in 2012. My academic journey then led me to pursue a Ph.D. in Microbiology at CSIR–National Institute of Oceanography, affiliated with Goa University, which I completed in 2019. Since 2020, I have had the privilege of serving as an Assistant Professor in Marine Microbiology at Goa University. Returning to the same university as a faculty member has been one of the most rewarding milestones of my life.

As an undergraduate student, I was particularly fascinated by Environmental Microbiology, Industrial Microbiology, and Microbial Genetics. These subjects helped me appreciate the immense role microorganisms play in our environment, industries, and everyday lives. I genuinely enjoyed spending time in the laboratory, where theory came alive through experiments. One of my fondest academic memories is my final-year project on the preparation of wines from rice, tomato, and pineapple. Working on this project strengthened my interest in applied microbiology and made learning both exciting and meaningful.

During my postgraduate studies, I discovered my true calling. I knew with certainty that I wanted to become a university teacher. I was determined to build my identity as a microbiologist and remained focused on that goal throughout my academic journey. One of my greatest challenges was language.

I often found it difficult to understand lectures, especially when they were delivered rapidly in English. There were times when I had to put in extra effort to understand concepts that others seemed to grasp more quickly. I was never a brilliant student in terms of grades, but I was hardworking, persistent, and unwilling to give up. For most of my academic life, I was a student who scored around 60%. Therefore, securing 82% during my B.Sc. was a defining moment for me. It was not merely a number—it was proof that genuine interest in a subject, coupled with consistent hard work, can bring out one's true potential.

Beyond academics, some of my happiest college memories revolve around my friends, participating in Plus Points competitions, and eagerly looking forward to classes that inspired me to learn.

To the current students of the Department of Microbiology, I would like to share one message: never let your marks define your potential. Grades are only one aspect of your journey. What truly shapes your future is your passion, perseverance, and clarity of purpose. Set meaningful goals, stay committed to them, and keep learning with curiosity. Even if your dreams seem distant today, consistent effort and belief in yourself can make them a reality. All the best.

Nikita Lotlikar
Batch (2008 - 2010)

FROM CURIOSITY TO CAREER: THE BEGINNING OF MY MICROBIOLOGY JOURNEY



Walking back through the gates of my college as an alumnus fills me with a deep sense of gratitude and pride. Choosing to pursue graduation in microbiology was one of the most defining decisions of my academic life, and my college played a pivotal role in shaping not only my scientific understanding but also my outlook on learning, discipline, and responsibility.

When I first joined the program, microbiology was a fascinating yet filled with challenges. The unseen world of microorganisms appeared vast, complex, and highly abstract. However, the well-structured curriculum, committed faculty, and supportive academic environment gradually transformed this complexity into curiosity and confidence. Learning extended far beyond textbooks; interactive lectures, demanding yet enriching practical sessions, joyful field trips, and wet-lab projects addressing real-life problems together made the academic experience engaging and truly enjoyable.

The laboratory sessions were particularly impactful and were the highlight of the day which I eagerly looked forward to each time. Handling cultures, learning aseptic techniques, observing microorganisms under microscope and interpreting results taught me precision, patience, and scientific integrity. These practical experiences laid a strong foundation for research-oriented thinking and problem-solving skills. Beyond technical competence, the laboratory instilled teamwork and accountability still continue to guide me in my professional journey.

Equally important was the mentorship I received from my teachers. Their guidance extended beyond academics; they motivated us to aim higher, pursue further studies, and remain ethically grounded as future microbiologists. Their encouragement during challenging times enabled me to overcome self-doubt and develop a strong sense of perseverance. The college also provided opportunities through seminars, workshops and academic discussions that broadened my exposure and helped me understand the relevance of microbiology in diverse fields.

Life on campus was not confined to classrooms and laboratories. Interactions with peers from different backgrounds fostered lifelong friendships and taught me collaboration and team work. I even miss the healthy practice of climbing the slope while talking with friends to reach the college and group discussions in canteen. Participating in academic and extracurricular activities helped me develop confidence and communication skills, which are equally essential as technical knowledge.

As an alumnus, I now realize that my B.Sc. Microbiology degree at St. Xavier's college was more than an academic qualification. It was a truly transformative experience through which my shy personality gradually evolved into that of a confident and recognized teacher at Goa University. I carry forward the values and lessons learned from my college in every professional and personal endeavour.

I remain deeply grateful to my alma mater for nurturing my passion for microbiology and for preparing me to contribute meaningfully to science and society. I am proud to be an alumnus and hope to inspire current students to make the most of the opportunities their college provides, just as I once did.

Dr. Lakshangy Suresh Charya
B.Sc. Microbiology, 1997

FROM THE MICROBIOLOGY LAB TO THE DEPTHS OF THE OCEAN: A JOURNEY OF COMING FULL CIRCLE



Stepping back into the familiar, comforting world of the microbiology department—if only through the pages of this newsletter—brings back a beautiful flood of memories. For those who don't know me, I was the quiet nerd who surprisingly chose to be a back bencher along with her friends! I was deeply introverted and shy, the kind of student who found solace in the predictable patterns of a perfectly streaked agar plate rather than the bustle of large social crowds. I was fiercely sincere about my practicals, meticulous with my journals, and entirely absorbed in the marvels of chemistry, botany and microbiology that unravelled themselves in every class.

Yet, our department had a unique magic. My teachers saw past my quiet exterior. They pushed me gently out of my comfort zone, cheered for my small successes, and made me feel deeply appreciated. It was their unwavering belief in me that gave a shy girl the courage to say "yes" to the unexpected. Because of them, my college days weren't just spent behind a microscope. I somehow found myself singing in inter-class competitions, in the Christmas choir and even joining the gruelling tug-of-war team and doing pretty well. However, I also faced two failed attempts at Badminton trials, definitely being beaten by better sportsmen. College taught me that it was okay to try, wonderful to participate, and completely fine to fail.

After graduating, my fascination with the microbial world only grew. I pursued my MSc in Microbiology right here in Goa, took a brief detour into the fast-paced biotech industry, and eventually found my true calling in research at the CSIR-National Institute of Oceanography (NIO).

If you had told my undergraduate self that I would one day become a marine researcher, I wouldn't have believed you. My very first research expedition changed everything. I found myself snorkelling in the breath-taking, turquoise waters near the Lakshadweep Islands. That exhilarating glimpse into the marine world was so profound that I knew I couldn't just stay on the surface—I immediately enrolled in SCUBA diving classes to explore the ocean properly.

This passion culminated in a PhD at NIO in marine microbiology. My research focused on the invisible engines of the ocean: the bacteria driving the Sulfur (S) and Carbon (C) cycles within the Indian Ocean's oxygen minimum zones (OMZs). Using high-throughput DNA sequencing, I spent years mapping out who these common but incredibly abundant bacteria were across different depths of the water column and decoding their metabolic activities in the dark.

Life has a spectacular way of bringing you right back to where you belong. After defending my PhD, I stepped to the other side of the podium. I spent six wonderful years teaching MSc Microbiology at PES Ravi Naik College, sharing the complexities of the microbial world with passionate postgraduate students. Today, I am blessed to join my Alma Mater once again, this time teaching Biotechnology, but back to my second home. It is a profound, full-circle moment. Looking into the eyes of my students, I often see the same curiosity, the same ambitions, and yes, the same quiet hesitation that I once carried.

To the current students reading this, especially those who feel a bit too shy or unsure of their voice: your quietness is not a weakness. Be sincere in your practicals, pour your heart into your projects, listen and marvel at what you are taught in class, and don't be afraid to fail at the "badminton trials" of life. Trust the incredible faculty guiding you. The microscopic world you are studying right now is just the beginning—there is a whole ocean of opportunity waiting for you out there. All the very best! To my Microbiology department too!

Larissa Menezes
B.Sc.Microbiology, 2010

THE MENTORS I MET ALONG THE WAY



“Every scientist dreams of doing something that can help the world.”

— Tu Youyou, Nobel Laureate in Physiology or Medicine

When I look back at my journey, this quote feels deeply personal. My path in science has never been only about grades, degrees, awards, or titles. At its heart, it has always been about curiosity, purpose, and the hope that the work I do can one day help someone, somewhere.

My journey began at St Xavier’s College, where I pursued my undergraduate degree in Microbiology. Those years shaped me in ways I am only beginning to fully understand now. Xavier’s gave me my scientific foundation, but more importantly, it gave me discipline, confidence, resilience, and the courage to dream beyond what felt familiar. It was there that I began to understand how science could be used not only to study the world, but to solve problems, build ideas, and create meaningful change.

Xavier’s also gave me friendships that have become one of the most cherished parts of my life, the people who shared the chaos, laughter, pressure, small victories, and growing pains of those years, and who continue to hold a very special place in my heart.

One of the most important lessons I learnt at Xavier’s was that growth often begins when you are willing to try something before you feel completely ready. The industrial microbiology fermentation project in which our group chose to make kombucha (with some exotic flavours, of course) that Ma’am Arina guided us through is a perfect example of this. What began as a class project soon became one of my first real experiences in entrepreneurship. We were not just learning about fermentation; we were making the kombucha, designing labels, thinking about branding, marketing the product, and understanding what it takes to bring an idea beyond the classroom. It pushed me to move from theory to practice and showed me that confidence is often built through action, experimentation, and the willingness to learn along the way.

Some of the strongest influences during my time at Xavier’s came from the teachers who helped me see science as something alive, practical, and deeply connected to the world around us.

Ma'am Trelita played an important role in inspiring my interest in Microbiology and science in general. Through her teaching, I began to see microbiology not just as a subject, but as an exciting space where science, sustainability, health, and innovation could come together. That inspiration stayed with me and later shaped my interest in fermentation, food preservation, and applied biotechnology.

Ma'am Sheryanne had a very important initial role in my microbiology journey, helping build the foundation on which so much of my interest in the subject grew. Ma'am Linette and Ma'am Katelyn helped shape my fundamental understanding of molecular biology, which continues to support the work I do today

Sir Siddhesh and Ma'am Valerie were instrumental in changing the way I approached biostatistics and bioinformatics, subjects that can feel intimidating at first but are so important in modern science. I also fondly remember Ma'am Nadine and her support, especially in helping us work through difficult virology concepts with patience and clarity.

Ruella Ma'am, I still use your ketchup example when explaining concepts, and your teaching is one of the reasons I went on to specialise in Medical Biotechnology. Ma'am Marielou, I am also deeply grateful for your support and encouragement, which helped build my confidence beyond the classroom.

(And if I have missed anyone, please know that I truly appreciated all the help, guidance, and support I received during my time at Xavier's. Each of you played a meaningful role in my journey, and I carry those lessons with me even today.)

I am deeply grateful to Ma'am Ursula, whose teaching gave me a strong foundation in genetics and in life. At the time, I may not have fully realised how important that foundation would become, but today I draw on those concepts almost every day in the lab.

Whether I am thinking about mutations, gene expression, protein function, channel isoforms, cloning strategies, or how small genetic changes can alter disease biology, I often find myself returning to the basics I first learnt at Xavier's. Her classes helped me understand that genetics is not just theory; it is the language behind so much of modern biology and biomedical research. (a recently published paper that has been gaining attention in the news and is definitely worth a read: <https://www.science.org/doi/10.1126/science.aed1656>)

Looking back, I realise that Xavier's did not just teach me Microbiology. It gave me teachers who shaped the way I think, question, troubleshoot, and connect ideas across different fields. Their influence continues to follow me from food science, core concepts and entrepreneurship to the work I now do in ion channel research.

Beyond the classroom, one of the experiences I still cherish deeply is Proteus. It showed me a side of science that was energetic, creative, and full of possibility. Proteus reminded me that science is not only found in textbooks, exams, or protocols. It can also be found in ideas, teamwork, problem-solving, communication, creativity, and the courage to make learning exciting for others.

Proteus was part of the core memories I have of Xavier's. It was fun, chaotic, competitive, and deeply memorable, but it was also much more than an event. It captured something I still believe in strongly: that science becomes powerful when people feel connected to it.

LabOlympics - an event we had at the department, brings back so many cherished memories, it made the lab feel less intimidating and more alive. It brought people together through curiosity, teamwork, and laughter. And guess what? the spirit of it has followed me all the way to the labs I work in now, where versions of those same lab games still make their way into the lab parties we have every now and then.

That is something I am genuinely proud of and grateful for. I am glad to see Proteus being taken forward, and I hope it continues to do what we intended it to do: inspire students to see that science is not limited to textbooks. Science is versatile. It can become research, innovation, entrepreneurship, communication, education, community, and even joy. Sometimes, the experiences that seem small at the time become the ones that shape how we carry science with us for years.

Another major turning point was my third-year project on eco-friendly bioplastics. That project was not just an academic requirement; it became a defining experience in how I approached problem-solving. It taught me the importance of troubleshooting, patience, and persistence. Experiments did not always work as planned, and results were not always straightforward. But every failed attempt pushed me to think more deeply, adjust my approach, and keep going. Looking back, that project was an important step in shaping the way I now approach both research and innovation.

Those early experiences eventually came together in Spoil Spot, a venture that I co-founded which is a low-cost, biodegradable smart sticker designed to detect real-time meat spoilage.

Although in its initial stages, the idea behind Spoil Spot is simple: a small sticker placed inside meat packaging that changes colour as the food begins to spoil. For consumers, it could provide a clearer visual indication of freshness. For retailers and food rescue organisations, it could help reduce unnecessary waste by giving a more practical signal than relying only on expiry dates.

Spoil Spot grew from my interest in food microbiology, sustainability, and accessible innovation. It was also shaped by my belief that science should not remain locked away in laboratories; it should be able to serve communities. Having the idea supported and encouraged through OzHarvest was incredibly meaningful because it connected the project to a larger mission of reducing food waste and creating real-world impact.

Graduating at the top of my class at St Xavier's College and receiving recognition for it from both the Microbiologists Society of India and the college itself were milestones I will always be grateful for.

But beyond the awards, what I value most are the lessons behind them: consistency matters, humility matters, and hard work done quietly over time can create opportunities you once only hoped for.

Moving from Goa to Australia to pursue my Master of Biotechnology at The University of Queensland was one of the biggest steps of my life. It was exciting, but it was also challenging. I had to adjust to a new country, a new academic system, financial responsibilities, part-time work, and the emotional reality of being far away from home. There were moments of homesickness, uncertainty, and self-doubt. Like many international students, I had to learn how to balance ambition with independence.

But every challenge taught me something. I learnt to become more resilient. I learnt to ask for help when I needed it. I learnt to keep showing up, even when things felt overwhelming. Slowly, Brisbane became a place of growth, and UQ became a space where I could see myself building a future in science.

During my Master's, I explored different areas of biotechnology, including food microbiology, drug discovery, entrepreneurship, molecular biology, and biomedical research. Over time, I began to understand what Rosalind Franklin meant when she said: "Science and everyday life cannot and should not be separated."

That idea has stayed with me. Science is in the food we eat, the medicines we develop, the diseases we try to understand, the communities we hope to help, and the innovations we create. This belief has connected every part of my journey, right from kombucha, Proteus to Spoil Spot, and now to the rare disease research I do at the Institute for Molecular Bioscience.

One of the most defining chapters of my journey has been joining Professor Glenn King's laboratory at the Institute for Molecular Bioscience, The University of Queensland. The lab is led by one of Australia's most accomplished scientists whose work on venom-derived peptides has gained international recognition and contributed significantly to drug discovery, including the development of novel therapeutics inspired by spider venom.(and on a lighter note, someone who surprisingly knows exactly where Goa is, which, as many of us know, is quite a rare achievement for people on this side of the world)

What began as my Master's research project has since grown into my current role as a Research Assistant within an MRFF-funded team working to develop target-specific anti-seizure medications for KCNH1 epilepsy, a rare genetic disorder linked to gain-of-function mutations in the KV10.1 potassium channel.

At first glance, my work now may seem very different from food microbiology and sustainability. But to me, the thread is the same: using science to understand a problem deeply enough that we can begin to build better solutions.

My current research focuses on ion channels, which are tiny structures that sit in cell membranes and control the movement of charged particles, or ions, in and out of cells. These ion movements help generate electrical signals in the body, especially in excitable tissues such as the brain, heart, and nerves. When ion channels do not work properly, even small changes can have major consequences. In the case of KCNH1 epilepsy, mutations in the KV10.1 potassium channel can alter neuronal excitability and contribute to severe neurological disease. The KCNH1 gene encodes two main isoforms of the KV10.1 channel: the short form and the long form. These differ by a 27-amino acid insertion in the S3-S4 extracellular loop of the long isoform. This may sound like a small difference, but in ion channels, small structural changes can have meaningful effects on how the channel behaves.

To study this, I use electrophysiology, which encompasses a technique that allows us to measure electrical activity from cells and understand how ion channels behave. One of the main techniques I use is two-electrode voltage clamp, or TEVC, using *Xenopus laevis* oocytes.

In simple terms, we inject RNA into oocytes so they express the ion channel we want to study, then use electrodes to control the voltage across the cell membrane and measure the currents that flow through the channel. These currents help us understand how the channel opens, closes, responds to mutations, and reacts to potential drugs or venom-derived peptides.

My Master's project pushed me into truly uncharted territory. I characterised the long isoform of the human KV10.1 channel and demonstrated that its biophysical and pharmacological properties are considerably different from the canonical short isoform that has dominated previous research. This discovery challenges existing assumptions in the field and highlights that both isoforms are not only present but functionally significant in the human brain. It underscores a critical shift in how we approach KCNH1 epilepsy, revealing that effective, targeted therapies must account for both forms to truly address the complexity of the disease.

Building on this, I created a panel of KV10.1 chimeras in which external loops of the voltage sensor domain were swapped with those of the closely related KV11.1 channel, which is an off-target and affects the heart. This work is helping us determine the binding site of Apl1a, a venom-derived peptide, gating-modifier of KV10.1. Together with collaborators in structural biology and computational modelling, this research will contribute to building a rational model of the Apl1a- KV10.1 complex and help inform future rounds of anti-seizure medication design.

Electrophysiology has become one of the most challenging and fascinating parts of my scientific journey. TEVC has taught me that sometimes the smallest currents can carry the biggest stories. There is something humbling about watching a channel respond in real time. A tiny movement of ions across a membrane can reveal how a mutation changes excitability, how a peptide alters gating, or how a potential therapy might one day be designed. It is slow, technical, sometimes frustrating work, but it is also beautiful. And somehow, through this journey, I now find myself learning from people whose names I once would have only read in papers or heard in conversations between experts.

I will soon spend a week with Dr Ian Forster at The Florey in Melbourne, one of the most seasoned and resilient electrophysiologists I have ever met. What inspires me most about him is not only his expertise, but his continued excitement for the field. Even after decades in science, he is still happy to talk all things electrophysiology and willing to teach techniques I would have only dreamt of learning.

I also hope to travel to Switzerland before the end of the year to train with Prof Daniel Bertrand, who developed the HiClamp system, an excellent automated electrophysiology platform that I use every day. The thought of being trained by someone so deeply connected to a machine that has become central to my daily research feels almost beyond comprehension.

There is a beautiful continuity in all of this. Names like Ian Forster, Daniel Bertrand, Stephan Kellenberger, and Luis Pardo are part of a close-knit electrophysiology community that I am only beginning to step into. It is a niche field, but one that is deeply interconnected, where knowledge, techniques, and ideas are shared across generations of scientists.

To even find myself on the edges of this network, knowing that I may soon collaborate with, learn from, or even interact with individuals whose work has shaped the very foundations of the field, fills me with a sense of awe that is difficult to put into words. These are names I once encountered only in papers and discussions, and now they feel just within reach, not as distant figures, but as part of a living, evolving scientific community I am slowly becoming a part of.

At the centre of my own journey within this space is my supervisor, Dr Elena-Laura Budusan, an exceptional electrophysiologist whose depth of knowledge, precision, and intuition in the lab continue to inspire me every day. Through her, I feel connected to this wider network of scientists, and I am incredibly grateful for the opportunity to learn from someone who embodies both technical excellence and a genuine passion for electrophysiology.

Being connected, even in a small way, to individuals whose work has shaped the field feels incredibly special. It reminds me that science is not built in isolation. It is built through people, mentorship, techniques passed down over time, and the generosity of those willing to teach the next generation.

Even within my current work, I am lucky to move between techniques I once only hoped to learn. From TEVC to newer automated platforms like the SyncroPatch, I am beginning to see how each method offers a different window into ion channel function.

It is at this point in my journey, standing on the verge of beginning something new, that I feel the full weight of what lies ahead. A PhD is exciting, but it is also a commitment, one that will require discipline, resilience, and a version of myself I am still growing into. There is so much opportunity waiting for me that I can almost feel it, and that truly terrifies me. But it also makes me deeply grateful to God. Grateful for every door that has opened, every mentor who has believed in me, every lesson that has strengthened me, and every opportunity that has brought me to this point.

The fear does not come from uncertainty alone. It comes from knowing that the next chapter matters. It comes from realising that the work I am stepping into has meaning, and as Spider-Man famously said, with great power comes great responsibility, and I believe that with great opportunity comes that same responsibility. But if my journey so far has taught me anything, it is that growth often begins in the very spaces that scare us most.

Research has taught me patience in a way nothing else has. Experiments rarely work perfectly the first time. There have been failed (and expensive) RNA preparations, challenging electrophysiology recordings, cloning setbacks, and countless hours troubleshooting protocols, even taking apart whole protocols and rebuilding each step to find an error. Yet every obstacle has strengthened my ability to think critically, adapt quickly, and persevere. Those moments have become some of my greatest teachers.

Receiving encouragement from mentors has been one of the most humbling aspects of this journey. Professor Glenn King, who has supervised many research students throughout his career, has recognised not only academic achievement but also dedication, independence, and problem-solving ability in the laboratory.

This support has led to the opportunity to pursue a PhD under his supervision, and to be the last PhD student he takes on, along with a fully funded scholarship from the University of Queensland to support the journey ahead.

As I now look ahead with hope to beginning my PhD journey soon, I am excited by the opportunity to build on this foundation. My proposed PhD project will focus on the long isoform of KV10.1 and form part of a broader research program involving exciting areas such as stem-cell-derived brain organoids and mRNA-based therapeutics. The project will also involve collaborations with researchers, clinicians, and patient-focused groups across Australia, Europe, and the United States. Knowing that this work has the potential to contribute both to fundamental science and to the development of future therapies is what motivates me every day.

Along the way, I have also had the privilege of growing as a leader. Serving as a Postgraduate Officer for the UQ Biotechnology Society allowed me to connect with students, organise events, and contribute to a community that supported both learning and belonging. I learnt that leadership is not always about being the loudest person in the room. Sometimes, it is about creating spaces where others feel encouraged, included, and confident enough to grow.

Today, I feel both proud and grateful. Proud of the student who started at St Xavier's with curiosity, determination, and big dreams. Grateful for my family, teachers, mentors, supervisors, friends, and every person who has guided me, challenged me, and encouraged me to keep going. My journey is still unfolding. I know there will be more challenges, more failed experiments, more learning curves, and more moments of uncertainty. But I also know that every step so far has prepared me for what comes next.

From St Xavier's College to The University of Queensland, from kombucha to Spoil Spot, from studying the effect of different hand washes to electrophysiology and ion channel research, my journey has taught me that success is not built overnight. It is built through consistency, courage, gratitude, and the willingness to keep moving forward even when the path is unclear.

When I first walked through the doors of St Xavier's College, I simply wanted to study science. Today, I am preparing to begin a PhD with the hope of contributing to treatments for rare genetic epilepsies. The destination has changed many times, but the purpose has remained the same: to use science in service of others.

As Tu Youyou said, "Every scientist dreams of doing something that can help the world." I am grateful that every step of my journey has brought me a little closer to that dream.

Grazielle Serrao
B.Sc.Microbiology, 2023

THEN TO NOW: A JOURNEY OF GROWTH, GRIT AND GRATITUDE



When I joined the Microbiology Department at St. Xavier's College in 2001, I had no idea where life would take me. Looking back, I realise that the knowledge, discipline and curiosity I developed there became the foundation for a journey that would span countries, careers and countless new experiences.

After graduating in 2004, I took a gap year, teaching briefly at three schools while preparing for my IELTS examination. Soon after, I moved to Wales to pursue an MSc in Biomedical Science at the University of Wales Institute, Cardiff (now Cardiff Metropolitan University). My dream was to work in cancer research, but my course director encouraged me to specialise in Microbiology, recognising the strong foundation I had gained at St. Xavier's. That decision would shape my future in ways I could never have imagined.

Life as an international student was challenging. Alongside my studies, I worked in a call centre, and during my dissertation period I balanced full-time work between a call centre and a coffee shop. Those years taught me resilience, determination and the importance of perseverance.

After completing my MSc, I moved to England after meeting my husband. Although I had the qualifications, I lacked laboratory experience and found it difficult to enter the profession. I worked as a receptionist in a family health centre until an opportunity arose to gain experience in a microbiology laboratory. After three months there, I was offered support to complete my State Registration portfolio, an essential requirement for practising as a Biomedical Scientist in the UK. I worked unpaid for thirteen months to achieve this goal, and it remains one of the best decisions I have ever made.

That experience led to a position at Birmingham Heartlands Hospital, home to a Public Health England Microbiology Laboratory. Over the next twelve years, I progressed from Biomedical Scientist to Specialist Biomedical Scientist, completed my specialist portfolio, became a member of the Institute of Biomedical Science, mentored trainee staff and managed my own Enteric Laboratory. Alongside my career, I also became a wife and mother to two wonderful children.

In 2022, just months before I was due to become a Section Lead, my family made the decision to return to Goa. After the COVID-19 pandemic, being closer to our parents and extended family felt more important than career progression.

Returning home gave me the opportunity to reinvent myself. Today, I run a small home baking business, conduct workshops for children in baking, crafts, storytelling and even microbiology, and enjoy being actively involved in my community. I am also pursuing an MSc in Counselling and Family Therapy while volunteering with Novi Survat Goa, a paediatric palliative care service.

My journey has taught me that careers are rarely linear. The path from a microbiology classroom at St. Xavier's to a UK public health laboratory, and now to community work and counselling, has been filled with unexpected turns. Through it all, the lessons I learnt as a microbiology student—curiosity, critical thinking and perseverance—have remained constant.

To today's students, I would simply say: stay open to opportunities and trust the journey. Life may not unfold exactly as planned, but sometimes the detours lead to the most meaningful destinations.

Dareena Lobo
B.Sc.Microbiology, (2001 -2004)



DEPARTMENTAL ACTIVITIES



ACADEMIC PROGRAMMES ORGANISED:

VALUE ADDED COURSE

PRESERVATION AND PACKAGING OF VEGETABLES BY FERMENTATION

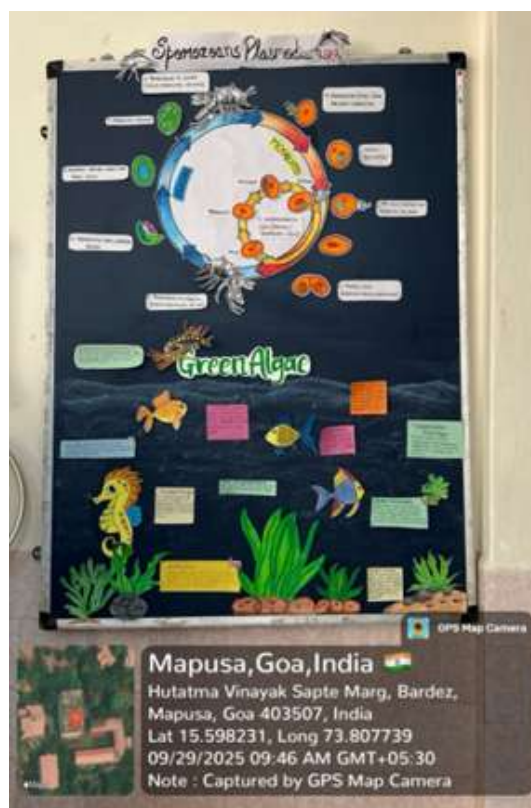
Fresh vegetables - carrots, cabbage, cauliflower, and onions were fermented by encouraging the growth of lactic acid bacteria (LAB). Beyond microbial processes, students were guided to consider aspects of product presentation. They created simple labels detailing ingredients, shelf life and storage instructions. The exercise encouraged creative application of microbiology knowledge, as students worked in groups and experimented with packaging and presentation to make the fermented vegetables appealing.

This two month hands-on approach from 21 July 2025 to 20 September 2025 fostered both scientific understanding and creative application, bridging microbiology with everyday food practices. The reel making to boost sale of the product encouraged students to use skill of videography to advertise as well as monetise their fermented vegetables.

BULLETIN BOARD DESIGNING COMPETITION

The Invisible Majority

A bulletin board designing competition titled “The Invisible Majority” was organised by the Department of Microbiology in association with the Microbiologists Society, India, from the 8th of September to the 17th of October 2025. Coordinated by Dr. Valerie Gonsalves, the competition aimed to create awareness about the roles and need of the abundant microorganisms in our lives. The competition saw an enthusiastic & hearty response, with around 52 students teaming up to present 19 brilliant bulletin boards judged on visual aesthetics, content quality, and originality. Ms. Shanvi Salgaonkar, Ms. Sancia Pereira, and Ms. Aayushka Naik emerged as the winners of the competition, with Ms. Sakshi Mirgal, Ms. Sakshi Mane, and Ms. Siddhi Bugde claiming the consolation prize. The activity successfully promoted collaborative learning, encouraged subject understanding, and providing artistic & visual learning resources



EDUCATIONAL VISIT TO ICAR – CENTRAL COASTAL AGRICULTURAL RESEARCH INSTITUTE

To bridge the gap between academic theory and field applications, an educational visit to ICAR–CCARI, Old Goa, was organised for T.Y. B.Sc. Microbiology (2025-26) students studying the Virology paper. The visit aimed to orient students with the interdisciplinary connections between agriculture and microbial research. Guided by soil scientist, Mr. Rahul Kulkarni, the students were briefed on the institute's initiatives in natural farming, sustainable agriculture, and the implementation of Jivamruth biofertilizers to enhance soil fertility.

A campus tour allowed students to observe specialized crop varieties like bush pepper and dwarf arecanut—alongside Goa's indigenous Shweta Kapila cattle. The tour highlighted the industrial and ecological relevance of microbiology, giving students conceptual insights into how soil microorganisms, plant-associated viruses, and bacteriophages quietly govern crop health, soil vitality, and ecosystem sustainability, building curiosity towards the agricultural aspect of Microbiology.



PROTEUS 3.0 – A CELEBRATION OF SCIENCE, CREATIVITY & TALENT

On the occasion of International Microorganism Day, the Department of Microbiology, St. Xavier's College, Mapusa, in collaboration with the Microbiologists Society India (MBSI), proudly hosted the third edition of its flagship state-level intercollegiate competition in life sciences, Proteus 3.0, on the 17th and 18th of September 2025. The event was co-ordinated by Dr. Valerie Gonsalves.

The two-day extravaganza brought together 105 students from educational Institutes across Goa, who competed with enthusiasm, creativity, and scientific zeal. The event showcased a perfect blend of knowledge, team spirit and artistry, with 19 exciting competitions spanning on-stage and off-stage categories.

After two days of spirited competition and stellar performances, the team from Discipline of Biotechnology, School of Biological Sciences and Biotechnology, Goa University emerged victorious, lifting the coveted Proteus 3.0 trophy. Runners-up place was bagged by Ponda Education Society's Ravi S. Naik College of Arts and Science followed by Government College of Arts, Science & Commerce, Khandola.



FIELD TRIP TO GOVEDA FARM



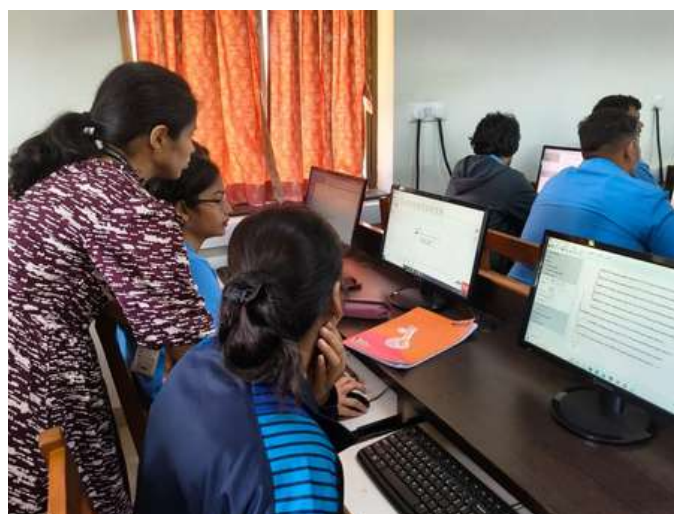
A Field Trip to GoVeda farm, Bicholim was organised by the Department of Microbiology for 60 S.Y. SEC students on the October 03rd 2025. The students were accompanied by Ms.Arina Frank, Ms.Ruella Dsouza, Mr.Siddhesh Menon and Dr.Marielou Ferrao. This trip shed light on practical aspects of production and processing of milk and milk products.

The students gained an insight on procession of curd into ghee, butter, buttermilk and preparation of paneer was demonstrated live by Mr.Rajeev Narvekar (one of the founders). They were also informed on the cattle management, use of natural feeds and the sustainable practices carried out at the farm. The visit concluded on a refreshing note, where every student was served with a glass of buttermilk.

TOOLS IN BIOINFORMATICS - A WORKSHOP

The Department of Microbiology, in association with the Microbiologists Society of India, organized a three-day Hands-on Workshop on “Tools in Bioinformatics” from 20th to 24th February 2026. Dr. Nadine de Souza, Assistant Professor, Department of Microbiology, was the resource person for the workshop, which was coordinated by Dr. Valerie Gonsalves.

The programme aimed to introduce students to the essential tools and databases of bioinformatics through both theoretical and practical sessions. Students learned about biological databases such as NCBI, sequence retrieval methods, sequence alignment using BLAST, phylogenetic analysis, and protein structure prediction tools. The hands-on training helped them understand the integration of biology with computational tools.



CAREER GUIDANCE SESSION

“CAREERS IN FOOD TECHNOLOGY”



The Department of Microbiology and Department of Biotechnology in association with Microbiologists Society India organized a Career guidance session on ‘Careers in Food Technology’ On the 05th January 2026. This session was conducted by the Assistant Professor of Post Graduate Department of Food Technology from Carmel College, Nuvem-Dr. Maria Cordeiro, who introduced the scope of Food Technology and the diverse career opportunities in this field.

She highlighted the curriculum offered at Carmel College, Nuvem ,including practical training, internships, and admission process for the Food Technology programme in their college .This interactive session helped a total of 78 students to have a better understanding of food technology with aspects to it’s available career options , enabling them to make informed decisions about their higher studies.

The programme was coordinated by Dr.Valerie Gonsalves and co-coordinated by Ms. Jocelyn Fernandes.

BIOMONITORING AND PHYSIOCHEMICAL ANALYSIS OF WATER RESOURCES - PROJECT

The Department of Microbiology, were handed an official project titled 'Biomonitoring and Physiochemical analysis of water resources' which was successfully completed under the guidance of Dr. Valerie Gonsalves with a team of 15 S.Y.B.Sc student volunteers. The project spanned from December 2025 and was successfully completed in March 2026. The students showed enthusiasm to learn and gained hands on experience and skills through the project, learning different testing procedures, understanding fundamentals of Water analysis.

