NSUPC
Presents

IN ASSOCIATION WITH
Department of Pharmaceutical Sciences
North South University

season 12

PHARMA fest 2025

Redesign
Reformulate
Regenerate

REDESIGN THE PATH
REFORMULATE THE PROCESS
REGENERATE THE PURPOSE

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REDESIGN REFORMULATE REGENERATE

THE PATH THE PROCESS THE PURPOSE

Where the Craft of Healing Meets the Speed of Silicon

Today we stand at a hinge in history, a moment when the craft of healing meets the speed of silicon. Redesign, Reformulate, Regenerate is not a slogan; it is a charge. It asks us to refocus pharmacy's purpose, remap the route by which medicines reach people, and rebuild processes so that health, not profit, is the true north.

The pharmaceutical industry has achieved remarkable milestones and science-fiction-like therapies as we advance into an era of unprecedented scientific capability. Yet commercialization increasingly overshadows the original purpose. When profit margins dictate drug pricing and access becomes a privilege rather than a right, we've strayed from the fundamental commitment. This theme emerges from concern for the patient, for the profession, and for an industry that must earn trust.

Redesigning the Purpose: Returning to the Patient's Side

Redesign begins with a singular question that should pierce every heart: "Who are we serving?" Not which market segment or demographic profile, but who. Behind every prescription is an actual person with hopes of getting better with the medications inscribed. When commerce casts its shadow over care, these faces blur into figures. To redesign our purpose is to cross back to the patient's side of the table, to remember that everything we build is to ease suffering of a patient. Business considerations exist, but they must be governed by a higher principle, accompanied by capable stewards rather than calculating gatekeepers. Automation and artificial intelligence stand as powerful allies, only if we wield them with integrity rather than expediency.

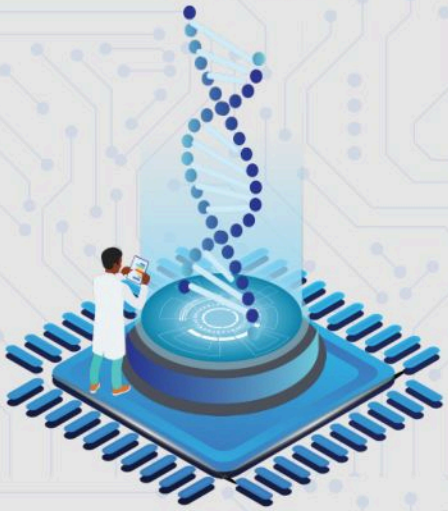
Reformulating the Path: Intertwining Innovation into Ethics

To reformulate is to construct a better path from discovery to delivery. The route we travel today must utilize artificial intelligence not as a novelty to dazzle investors, but as an instrument that deepens our capacity to heal. True reformulation means passing these tools through ethical frameworks so tightly that innovation cannot advance without advancing equity. Yet, silicon alone holds no answers. AI processes data at speeds that vastly overshadow human capabilites; it identifies patterns invisible to the naked eye. But it cannot fathom the lived weight of illness, the fear in a diagnosis, the dignity in a choice. These remain the province of human understanding.

Regenerating the Process: Renewal with Human Stewardship

Regeneration is not replacement but renewal. It means redesigning workflows to remove bias, while preserving the judgment unique to human beings. But regeneration without stewardship is automation without soul. Tomorrow's pharmacists require skills not only in pharmacology and patient care, but in digital health literacy, and the ethics of emerging technologies. Crucially, regenerating our processes means recognizing that technology is a tool, never a replacement for the compassion that define human care. No algorithm can replicate the empathy of a patient's unspoken fear or make the moral decisions using protocols, replacing humanity.

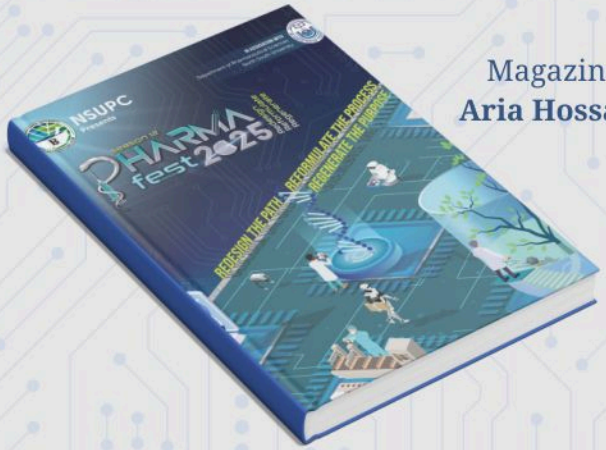
The Urgency: What Hangs in the Balance



"Redesign, Reformulate, Regenerate" is not merely an aspiration, it is an urgent summons. The pharmaceutical industry is facing novel challenges requiring both technological strength and moral clarity to overcome. The tools we possess now carry powers our predecessors could only imagine. However, the stakes have never been greater. The choices we make, will echo through generations of pharmacy yet unseen. The future we aspire is not in which people are replaced by robotics or patients are reduced to data points. Redesign with compassion. Reformulate with wisdom. Regenerate with vigilance.

The Logo: Intent in Every Element

Every element of the Pharma Fest 2025 logo carries deliberate meaning. The "P" bears a serpent coiled around a syringe, interlacing the wisdom of Asclepius to contemporary science. The bionic chip embedded in the "M" represents artificial intelligence and intelligent systems that are accelerating discovery to new frontiers. The DNA helix woven into "fest" represents the new paradigms in genetics and therapy. While the tablet marked 2025 serves as a bridge between craft and code and the algorithm-driven future. The color carries significance; Silver is technology: advanced, precise, relentlessly forward. Blue is pharmacy: competence, compassion, clinical rigor. Sketching a future where empathy and engineering stand shoulder to shoulder; where remedies drawn from nature are perfected by synthetic precision.



Magazine design by
Aria Hossain Saye, 203

Editorial Message

The most awaited Pharma Fest 2025, organized by the North South University Pharmaceutical Club (NSUPC) in collaboration with the Department of Pharmaceutical Sciences, has arrived. The Publication Team is honored to present this year's magazine, which bears testament to the remarkable achievements of our students and faculty members throughout the year.

This year's theme, "Redesign, Reformulate, Regenerate," represents a crossroads where traditional healing intersects with modern technology. It challenges us to refocus on pharmacy's core mission, reimagine how medicines reach patients, and reconstruct our systems with health as the guiding principle. This theme urges us to place patients at the center of everything we do, ensuring that technological advancement enhances rather than diminishes human influence in healthcare.

From its inception, the Pharma Fest has grown eminently, becoming a highlight event of the calendar year that bridges academia with industry. The fest allows an opportunity for aspiring pharmacists to connect with mentors through its various engaging competitions, workshops, and meaningful dialogue.

This annual magazine holds the collective passion and tireless effort of our Publication Team, in which our team have worked diligently to capture the vibrant energy defining our community. Let us celebrate together and commit ourselves to building a healthier future for all. Welcome to Pharma Fest 2025.

Editors

Dr. Md Shaki Mostaid
Associate Professor
Department of
Pharmaceutical Sciences
North South University

Aria Hossain Saye, 203
Publication In-Charge
NSUPC

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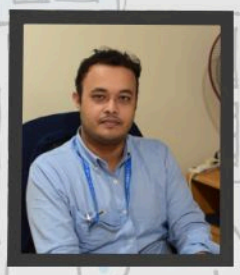

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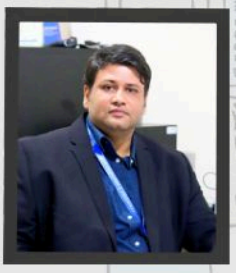

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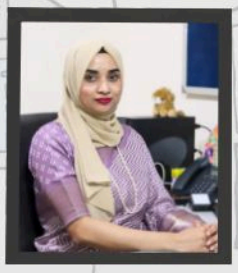

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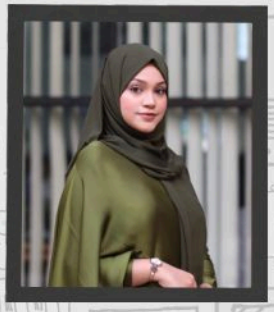

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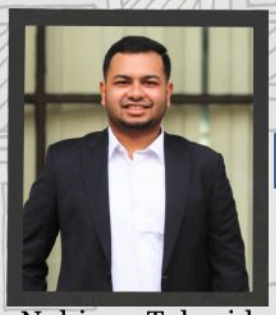

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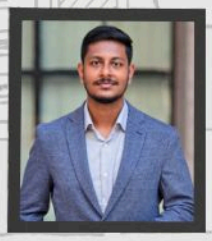

Kazi Zubaer Bin Selim

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MESSAGES

AZIZ AL KAISER
Chairman
Board of Trustees

It is my great pleasure to welcome all participants, faculty members, guests, and industry leaders to Pharma Fest 2025. The upcoming event, organized by the North South University Pharmaceutical Club (NSUPC), is a vibrant celebration of talent and innovation-featuring informative stalls, a debate competition, Olympiad, poster presentations, and the traditional Pharma Walk. This festival serves as a unique platform for students to connect with peers from other universities and engage with experts from the pharmaceutical industry. Beloved alumni, professionals, and healthcare specialists will inspire young pharmacists through seminars and exhibitions, sharing valuable real-world insights.

I extend my heartfelt congratulations to the faculty advisor, organizers, and participants for their dedication and hard work in bringing Pharma Fest 2025 to life. I hope this event fosters meaningful connections and becomes a resounding success.

It is truly remarkable to be able to witness and experience yet another Pharma Fest, the premier event of the Department of Pharmaceutical Sciences. A hub for knowledge and a promise to bridge the gap between industry and academia, this festival is invaluable to the pharmacy students of North South University. Pharma Fest helps to shape the future pharmacists of our institution. Students receive industry exposure as they get to interact with individuals from the various pharmaceutical companies that attend the event. Moreover, it enables the students of numerous universities to come together and connect. The poster presentation, as well as the debate competition, allows them to work on and showcase valuable skills of communication and presentation. The festival is a unique blend of learning and skill-building, whilst being fun and engaging. The effort that goes into organizing an event of such scale is truly applaudable. Congratulations to everyone who contributed to organizing Pharma Fest. As always, we cannot wait to join in on the festivities!

PROFESSOR ABDUL HANNAN CHOWDHURY, PHD
Vice Chancellor
North South University

Professor Abdur Rob Khan
Pro-Vice Chancellor (IC)
& Treasurer
North South University

Like every other year, Pharma Fest is undoubtedly one of the most innovative and exciting events hosted at North South University. Through various segments, such as debate, olympiad, or poster presentation, students get an opportunity to showcase their talents beyond academics while creating memories with the department that last a lifetime.Pharma Fest connects the students with the vast world of pharmaceutical health sciences and industry. It helps students gain a broader understanding of scientific developments while learning to apply their skills in the real world. Vibrant and festive events like these represent the true potential and creativity of our university to the rest of the world. I sincerely extend my best wishes to the entire Pharmaceutical Club and respected faculty members for their immense hard work and dedication in making this fest and the magazine a huge success. I hopethat the whole campus can come together to celebrate the fest with utmost enthusiasm.

I'm incredibly proud to see our students, faculty, and industry partners come together to celebrate innovation and collaboration in the life and health sciences.

This year's slogan, "Redesign, Reformulate, Regenerate," gives us a vision of what future pharmaceutical sciences have in store for us. I believe these innovations will play an integral role in improving our healthcare and provide a cure for many incurable diseases. This Pharma Fest would not have gotten its momentum without the sheer hard work and dedication of the North South University Pharmacy Club (NSUPC).

Pharma Fest is more than just a festival; it's a testament to the hard work and brilliance of all involved. This festival is an excellent platform that showcases the talents of young pharmacists from all over the country while promoting collaboration between them. So grab this chance and indulge yourself in the festivities along with the valuable experience that awaits you.

Best wishes for a successful and memorable Pharma Fest!

Prof. Dr. Dipak Kumar Mitra
Dean and Professor
School of Health & Life Sciences
North South University

Shariare

Dr. Mohammad Hossain Shariare
Professor and Chair
Department of
Pharmaceutical Sciences
North South University

Effort. Merit. Talent. In my experience, if all three were to coalesce, the coruscating kaleidoscope of colors would be Pharma Fest. As Pharma Fest 2025 approaches, it is my distinct privilege as the Chairman of the Department of Pharmaceutical Sciences (DPS) to extend my warmest welcome to all students, participants, sponsors, organizers, faculty members, alumni, as well as industry professionals to this prestigious event.

Pharma Fest markedly bridges the gap between academia and industry, bolsters inter-university interaction, and above all, offers a dynamic platform for students to display their skills via a variety of activities, including vibrant stalls teeming with the spirit of innovation, Olympiad, Debate, Poster presentation, the Cultural Night, and many more.
Pharma Fest remains a bit closer to my heart as it directly mirrors the unswerving dedication of my students. I would like to extend my gratitude to all Faculty members and staff of DPS, the Faculty Advisor, and the members of NSUPC for their painstaking efforts in hosting it, and to everyone working behind the scenes to make this event a success.

Together, let us work to 'Redesign, Reformulate and Regenerate' the future of pharmacy.

Iqbalur R. Rokon

Mr. Iqbalur Rahman Rokon
Director of Student Affairs
North South University

It is my great pleasure to witness Pharma Fest once again in its signature grand fashion at North South University. Throughout the years, the North South University Pharmaceutical Club (NSUPC), in association with the Department of Pharmaceutical Sciences, has worked tirelessly to establish Pharma Fest as one of the most celebrated and impactful events of the university.

This year's Pharma Fest provides opportunities for students to show their knowledge, teamwork, leadership and skills through competitions like debates, Olympiads, poster presentations and stall exhibitions while competing with students not only from this university but also with students from all over the country.

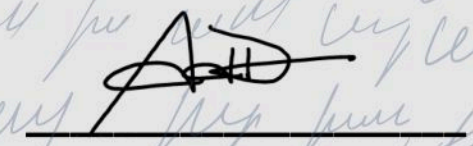
As the Director of Student Affairs, it amazes me how these students organise an event of such magnitude and vision meanwhile balancing their academic responsibilities. I would like to appreciate and congratulate all the members of NSUPC, organizing committee and participants. I hope that Pharma Fest - 2025 will once again surpass expectations and become an inspiration for years to come.

It is my utmost pleasure to once again witness the brilliance and enthusiasm that define Pharma Fest. As a two-time Faculty Advisor of the North South University Pharmaceutical Club, I have had the privilege of observing how this festival has evolved over the years—from its humble beginnings a decade ago to the vibrant, large-scale celebration it is today. What was once a small yet ambitious platform has now become a national benchmark for creativity, collaboration, and academic excellence in pharmaceutical sciences.

I would like to take this opportunity to congratulate the organizers and the participants of this year's Pharma Fest for making it a resounding success. Following in the footsteps of last year's event, we have once again come together to empower bright minds, dedicated professionals, and eager learners, and to celebrate two days of knowledge, innovation, and collaboration across the diverse sectors of pharmaceutical sciences.

Beyond the academic sphere, Pharma Fest embodies the spirit of unity and collaboration that defines our department. It bridges the gap between theory and practice, providing students with the invaluable opportunity to connect with industry professionals, researchers, and alumni. These engagements not only strengthen their professional networks but also enrich their understanding of the dynamic and ever-evolving landscape of pharmacy and healthcare.

Having witnessed the dedication, teamwork, and relentless passion of the Pharma Fest 2025 organizing committee, I am proud to be part of this incredible journey. May this year's celebration continue to inspire brilliance, foster unity, and ignite the spirit of scientific exploration in every participant.



Md. Adit Muktadir Pavel
Senior Lecturer
Department of
Pharmaceutical Sciences
North South University

The Alumni Association of North South University Pharmacy (AANSUP) is thrilled to witness the dynamic leadership of the North South University Pharmaceutical Club (NSUPC). In a world where healthcare challenges grow more complex, events like Pharma Fest serve as living testaments to the passion, intellect, and resilience of our students with qualities that echo through the corridors of our alumni network.

AANSUP encourages all participants to take up this opportunity to learn, innovate, and share as we envision Pharma Fest 2025 as a catalyst for regional and global partnerships, where students become the trailblazers of change. We commend NSUPC for fostering a platform
that bridges academia, community, and industry.

As alumni, we take immense pride in witnessing the next generation of pharmacists step forward with vision and enthusiasm. Your energy and dedication remind us of our own
formative years, where curiosity met purpose, and passion gave birth to innovation. Each Pharma Fest represents not only an event but a continuum of excellence that carries forward the legacy of NSU's pharmacy community.

Let this year's Pharma Fest ignite new conversations, lifelong collaborations, and groundbreaking ideas that transcend the boundaries of classrooms. May your efforts and dedication spark not only innovation but also a deeper sense of belonging to the legacy we share, nurture, and build together as we shape the future of pharmacy for generations to
come.

ALUMNI ASSOCIATION OF NORTH SOUTH UNIVERSITY PHARMACY (AANSUP)

It is indeed a great pleasure to join you at Pharma Fest 2025. Over the years, this event has rightfully earned its place as a distinguished platform for aspiring pharmacists and future leaders of the pharmaceutical sciences. I extend my sincere appreciation to the Department of Pharmaceutical Sciences and the North South University Pharmaceutical Club (NSUPC) for their unwavering dedication and meticulous efforts in bringing this remarkable event to fruition.

Syed S Kaiser Kabir
CEO and Managing Director
Renata PLC

The theme for this year—Redesign, Reformulate, and Regenerate"—is most fitting. It encapsulates the very essence of innovation, adaptability, and renewal that define the evolving landscape of pharmaceutical sciences.

This theme not only reflects the spirit of this festival but also offers a forward-looking vision of how the discipline must continue to evolve in response to global challenges. Pharma Fest stands as a vital bridge between academic pursuit and professional practice. It is through such initiatives that students gain the skills, knowledge, and perspectives necessary to navigate the complexities of the modern healthcare environment. Learning, however, does not conclude with graduation. In today's dynamic and competitive world, the pursuit of knowledge and the spirit of innovation are indispensable—sine qua non—for success. I therefore urge students to remain ever curious, to sustain their engagement with academia, and to cultivate meaningful connections with industry professionals. It is through this continuous exchange of ideas that true progress is achieved. I also take this opportunity to extend my heartfelt congratulations to the esteemed faculty members for their tireless commitment to academic excellence, and to the organizing committee and every student involved in making this event a success.

I am confident that Pharma Fest 2025 will once again surpass all expectations and stand as a beacon of inspiration—celebrating creativity, collaboration, and the enduring quest for knowledge in the service of humanity.

It is with great enthusiasm that I extend my warmest congratulations to the Department of Pharmaceutical Sciences and the North South University Pharmaceutical Club (NSUPC) on the occasion of Pharma Fest 2025. This year's theme, "Redesign, Reformulate, and Regenerate" resonates deeply with the ethos that drives innovation in our industry, a commitment to continuous improvement and transformative solutions for better healthcare outcomes.

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Md. Nasser Shahrear Zahedee
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Events like Pharma Fest serve as vital catalysts for nurturing the next generation of pharmaceutical professionals. They provide students with invaluable opportunities to engage with industry leaders, showcase their talents, and develop the critical thinking and collaborative skills essential for success in this dynamic field. I encourage all participating students to embrace every opportunity this festival offers, network confidently, question deeply, and collaborate meaningfully.

My heartfelt appreciation goes to the organizing committee, faculty advisors, and all those working tirelessly behind the scenes to make Pharma Fest 2025 a resounding success. Together, let us continue to elevate pharmaceutical excellence and contribute meaningfully to the health and well-being of our nation.

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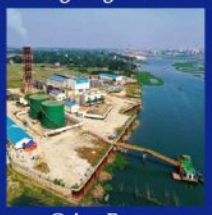
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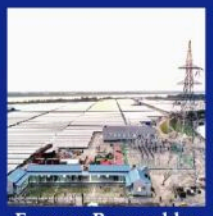
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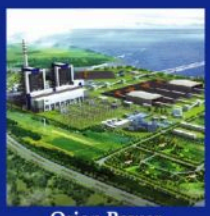
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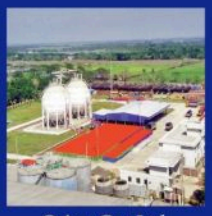
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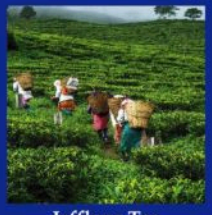
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WELCOME TO THE CLUB

North South University Pharmaceutical Club extends beyond the traditional framework of a club. It is a vibrant hub that simultaneously fosters personal development, academic prowess and inter-disciplinary collaboration, cementing it as one of the brightest, most prominent clubs in NSU. Its unique feature is unabridged inclusivity — all students of every batch, along with esteemed faculty members, unite in this community to explore and contribute to life and health sciences.

The club is headed by a dedicated Executive Body (EB) Panel under the supervision of our honorable Faculty Advisor. Our activities range from arranging educational workshops, seminars, and webinars to jovial events that give us breathing space like the Field Trip, Pharmacy Football League and similar tournaments. Pharma Fest, the flagship event of NSUPC, is held annually. It kicks off with a passionate flash mob, followed by two days of inter-university competitions which includes the Pharma Olympiad, Pharma Debate, Poster Presentation, Stall Exhibition and ends with the fabulous, breath- taking cultural night. All this culminates in the forging of deep inter-personal connections, cherished experiences, and a whole lot of joyful memories.

Pharma Fest 2025 returns with a powerfully resounding theme — Redesign, Reformulate, Regenerate — a mantra that reflects the core principles of the club, that which lies at the root of all our hard work. It's that eventually, we are going to be pharmacists and as pharmacists', our role is to leverage this triad as
we redesign patient care, reformulate our understanding of drug therapies and regenerate trust in the healthcare sector.

Our club embraces new methods of learning to strive for excellence in the face of AI and evolving technology. As we work together to bring about a golden age of pharmaceutical sciences, we honor and reward our members' commitment and accomplishments in academia, research, and innovation.

NSUPC

2025-2026

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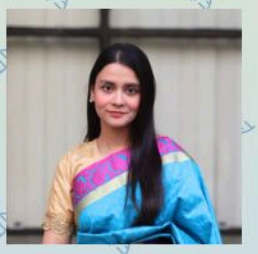

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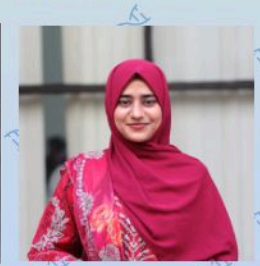

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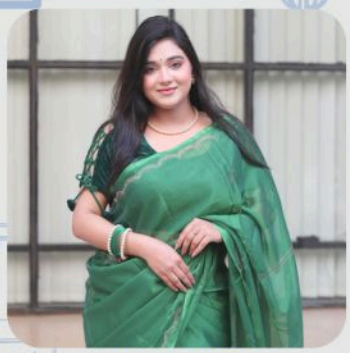

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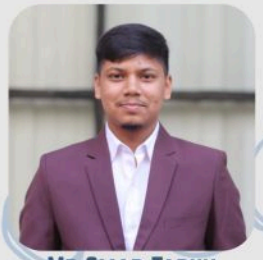
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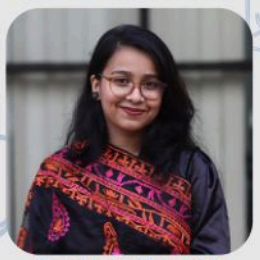
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DR. SHAZID MD. SHARKER
ASSOCIATE PROFESSOR

FACULTY ARTICLE

THE DILEMMA OF COURSE LOAD AND GRADUATION TIME IN PHARMACY EDUCATION

Pharmacy is a multidisciplinary degree covering chemistry, biology, pharmacology, pharmaceutics, manufacturing, and even marketing. The question often arises—what don't pharmacy students study before graduation? This vastness reflects centuries of pharmaceutical advancement, yet today's students are expected to master it all within just four or five years of undergraduate study. It was once a three-year program, later extended to four in 1996, and a master's degree adds another year. Some argue this is manageable since our pharmacy departments admit some of the brightest students. But realistically, can anyone fully grasp centuries of accumulated scientific knowledge in such a short time? Despite best efforts, many feel that even five years are not enough. Still, discussions continue about increasing both program duration and course numbers. When curricula are revised, the reasoning often sounds vague— "others are doing it, so we should too," or "some dislike it, so we cannot keep it." Rarely is there a deeper discussion about purpose.

In neighboring countries, longer programs had already been in place. India launched its six-year PharmD in 2008, followed by Nepal in 2010. Both countries also continue to offer regular 4/5-year BPharm (Honors/Professional) programs. Every country designs its education system according to its needs and economic conditions. In our context, most pharmaceutical jobs are in industry or product marketing, with fewer opportunities in hospital or clinical pharmacy—though the global trend in pharmacy education is shifting toward clinical practice. Not all undergraduate courses are directly relevant to the current job market. While pharmacy is a professional field, perhaps students should be allowed to shape their own learning paths—choosing courses according to career goals and interests, similar to selecting a major or minor degree-program. Those seeking broader training, hospital residency, or research could still opt for additional courses. To illustrate, let us consider a story. A poor patient once visited a physician for diagnosis. The doctor prescribed twenty medicines—simply because an A4 sheet could hold about twenty names if written on both sides. The physician, knowing thousands of drugs, believed the more he prescribed, the greater the chance that one would work. The patient, having no choice, followed the instructions. Isn't pharmacy education facing a similar dilemma? The more courses we keep adding, the heavier the burden becomes for students, who must simply follow the system. But does more always mean better?

FACULTY ARTICLE

A MILESTONE IN BANGLADESH HEALTHCARE: CONCEPTS OF MODEL PHARMACY

DR. MD. BORHAN UDDIN
ASSOCIATE PROFESSOR

Model Pharmacies are emerging as a demanding component of Bangladesh's healthcare system. Their introduction, development, and implementation are focused on enforcing uniform standards to safeguard the public interest, which is the compelling reason for regulating the practice of pharmacy and the distribution of drugs. A major benefit expected is the prevention of the sale of counterfeit medicines and also antibiotics sales without prescription from a registered physician.

Key Standards and Operations: they are mandated to sell drugs that comply with all standards, including the appointment of Qualified Pharmacists. The concept is divided into two categories—Level-1 (A) and Level-2 (B). Level-1 pharmacies are conducted by Grade-A pharmacists, while Level-2 pharmacies are run by Grade-B and C pharmacists. Furthermore, government rules dictate that all Model Pharmacies must maintain separate spaces for over-the-counter (OTC) drugs and prescription drugs. A critical standard is the requirement for a pharmacist:

- Without an A grade pharmacist, the government will not declare an establishment as a Model Pharmacy.
- The permanent pharmacist registration copy must be present in the pharmacy shop, as announced by the Drug Administration.
- The Drug Administration has also declared that a graduate pharmacist must be present

Enhancing Patient Care: Just as in developed countries, where patient counseling is a vital part of treatment, the government aims to apply this to Bangladesh to ensure patients receive better healthcare services. These pharmacies are required to have separate counseling sections where pharmacists can provide people with the correct information about medicines and their usage.

Workplace and Environment: The Drug Administration also sets standards for the physical environment, stating that an optimum temperature and light must be maintained in the Model Pharmacy through an air-controlling system. Currently, there is no established government rule for a pharmacist's working time; the shop owners decide the working hours. As per our knowledge till to date, with over 150,000 licensed pharmacies in the country, the Model Pharmacy initiative represents a significant step towards improving drug distribution standards and patient health in Bangladesh.

DR. MD. SHAKI MOSTAID
ASSOCIATE PROFESSOR

FACULTY ARTICLE

50 MILLESIMAL POTENCY: AN OVERLOOKED METHOD IN HOMEOPATHY

Homeopathy, an alternative medical system founded by Dr. Samuel Hahnemann, has endured for over two centuries. One of his key yet often overlooked contributions is the 50 Millesimal (LM) potency system, introduced in 1921 in the *Organon of Medicine*. It was developed to address the limitations of centesimal potencies and enable faster, gentler healing without symptom aggravation.

How LM Potencies Are Prepared: LM potency preparation differs from the centesimal system. One grain (0.062 g) is triturated with three grams of lactose for three hours, diluted with water and alcohol (400:100), and succussed to form LM1. A medicated globule is dissolved in water, shaken before dosing thus increasing potency with each administration with minimal chance of symptoms aggravation.

How LM Differs from the Centesimal Scale: In the Indian subcontinent, centesimal potencies dominate the clinical practice in which a single/two doses are prescribed followed by extended waiting periods. LM medicines, however, are designed to consume daily or several times a day without symptom aggravation. making them especially suitable for sensitive patients, children in chronic illness.

Why LM Potencies Remain overlooked in Bangladesh: Despite their clear benefits, LM potency remedies remain underutilized in Bangladesh. The homeopathic curriculum still emphasizes centesimal potencies, leaving new practitioners unfamiliar with LM remedy preparation and use. Additionally, pharmacies rarely stock them, and many practitioners rely on remedies they already know or have readily available.

Ongoing Scientific Debate: Modern science often questions homeopathy, arguing that medicines diluted beyond Avogadro's number contain no measurable molecules. However, proponents claim it works dynamically by stimulating the body's immunity rather than through conventional pharmacology. Millions still prefer homeopathy and report improvement in conditions like autism, epilepsy, ADHD, schizophrenia, depression, and psoriasis. Homeopaths assert, "Homeopathy treats the patient, not the disease," which is why no fixed medicine exists for any specific illness.

Conclusion: In Bangladesh, holistic management of chronic illnesses with LM potency homeopathic medicines along with modern medicines can play a significant role in restoring patient's health. LM potency remedies are gentle, adaptable, with minimal risk of strong aggravations. To unlock their potential, a single simple LM potency medicine must be prescribed at one time based on the symptoms.

FACULTY ARTICLE

A FEW WORDS OF ADVICE BEFORE YOU GRADUATE

MAHINOOR FAIROOZ
LECTURER

University life begins with anticipation and excitement, but as your graduation draws closer, that energy often shifts into uncertainty. The joy of earning a degree comes with new and sometimes frightening questions: “What should I do next? What now?” Trust me, we’ve all been there. As both a lecturer and an alumni of North South University, I would like to share some reflections and advice to aid you in this consequential transition. Graduation marks the culmination of years of growth and learning, but it also marks the beginning of making real-world decisions. For those of you that are still navigating the halls of NSU, my first and foremost advice would be to start early. Time and foresight are your allies, and a bit of preparation now can make the transition after graduation that much smoother. Avoid prematurely ruling out job prospects and opportunities. You should know that no company or institute can land the “perfect” candidate who checks all of their boxes. If you meet the basic requirements and have a genuine interest, apply confidently. Next is networking. Cultivating the right relationships can be just as important as earning a high CGPA. Get involved in clubs, attend events, and engage with your NSU community. Many of you aspire to earn your graduate degree at a reputable overseas university. In my opinion, pursuing a degree abroad makes the most sense if you are not paying the full cost out of pocket, even if you can afford to. International education can be rewarding, but it is also expensive, especially since tuition fees for international students are often double compared to local students. There are many scholarship programs that will cover your tuition and even living costs. If you’re planning to settle abroad, consider selecting a city with companies that are known to sponsor work visas, so that you can strategically target those organizations after graduating.

Finally, remember that your university life is what you make of it. Some students recall it as the best time of their lives, while others feel that it slipped by uneventfully. The difference lies in effort. Good times aren’t simply handed to us; we create them ourselves. Participate in events, travels, and connect with people, all while staying focused on your academics. Enjoyment and achievement are not mutually exclusive. You can, and must, have both. When you eventually look back on your years at NSU, it won’t just be the degree that defines your experience, but the development, friendships, and confidence you built along the way.

NADIA AFRIN
LECTURER

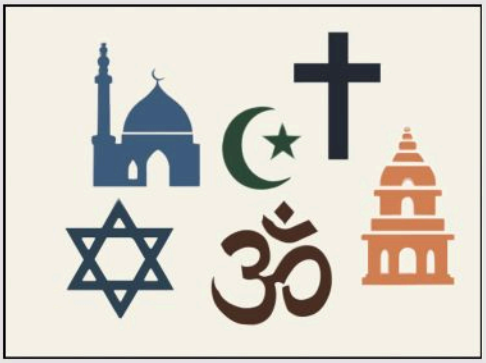
FACULTY ARTICLE

RELIGIOUS CAMOUFLAGE - ACCEPTING THE CHANGE WITHOUT CHANGING

While studying abroad is a most rewarding experience, it is equally daunting for every individual who has the opportunity to make the trip. While crossing borders geographically, one has to cross many other personal borders as well to cope with many changes which can come as a real shock. One of the biggest challenges is facing religious and cultural difference and it is not as easy to accept as it might seem. While doing so, most of the people fail to keep up and end up losing their own “skin”. It requires a proper mix of all the four mental quotients where Adversity Qoutients is mostly underestimated and overlooked. In the process of following this famous saying, “when in Rome, do as the Romans do”, we end up in trying to be a Roman.

International students get exposed to a diverse set of beliefs and cultures and it can be overwhelming for many to find their own place. That is where religious camouflage comes in, rooted in the core idea of adapting. The precarious scale has to be balanced by curating a persona that can have the cake and eat it too. You must have the ability to get along with almost anyone while maintaining a tight grip on your own beliefs.

As representatives of an ethnicity and nation, it is important for students to be proud of who they are and present that to the world. The onus is on you to belong or make a spot for yourself by embracing the change without giving up your core values. Staying connected to your roots develops self-identity, confidence; it breeds individuality. It is quite literally the best way to honour your family, nation and, religion.



Finding the right communities, joining relevant associations makes a big difference. Unfortunately, you also have to take initiatives especially if you want to practice faith as a community or celebrate cultural aspects together.

I hope the graduating class realizes that studying abroad. For a strong sense of belonging and to curb homesickness while building a new life, I hope every one of you will accept the upcoming changes without compromising your belief system. After all, there is no point of watering the tree without its roots.

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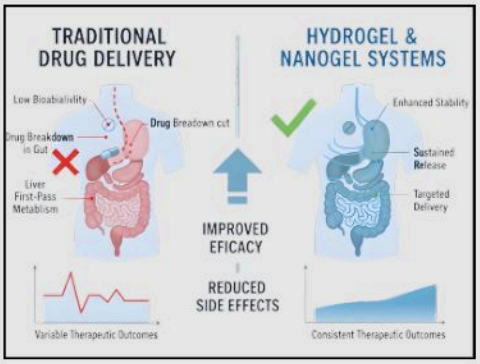
STUDENT ARTICLE

DRUG DELIVERY SYSTEM RE-IMAGINED

ARIA HOSSAIN SAYE, 203

Hydrogels and nanogels are recent developments in drug delivery systems that address some of the shortcomings of traditional systems like tablets and capsules having low bioavailability. Some other problems are drug instability and breakdown in the gut system, and liver first-pass metabolism that result in variable therapeutic outcomes. Such properties may lead to more frequent administration and increased risk of side effects.

Hydrogels, which are 3D structures made of hydrophilic polymers, provide a hopeful alternative drug-delivery system. Due to high tissue compatibility and water content, they can mimic the body's natural environments closely. Their unique structure allows them to entrap drugs and release them slowly over time. They can be administered through a variety of routes including topical, oral, or even injectable gels.



Nano-gels are an advanced form of hydrogels typically ranging from 20 to 100 nanometers in size. As a result, they achieve greater penetration into tissues and longer dwelling time at the target sites. This quality is most useful in treating cancer and neurodegenerative diseases. Nanogels exploit the EPR effect, in which they are able to penetrate tumor tissues due to the damaged blood vessels in the tumors. Innovations have brought about the creation of smart hydrogels and nanogels that respond to certain environmental stimuli to release drugs in a controlled manner. For instance, pH-sensitive hydrogels may alter their size in acidic conditions such as tumors, and temperature-sensitive hydrogels can release drugs when there is a local increase in temperature. Light-sensitive systems can be made to release their payload upon exposure to specific wavelengths of light so that it is possible to control when and where the drug should be released. Several hydrogels and nanogels are already used clinically, including the hydrogel Cervidil® for cervical ripening and the nanogel Copaxone® for treating multiple sclerosis. However, the field still faces a variety of issues, such as large-scale production, ensuring batch-to-batch uniformity, and regulatory compliance. Future research will be focused on the creation of dual-stimuli responsive systems, increasing targeting through the functionalization of antibodies, and the incorporation of biosensors for real-time monitoring, potentially making treatments more customized and efficient in medicine.

THE ACCIDENTAL CLUB EXECUTIVE

ZOERYA AYESHA AZIZ, 211

If someone had told me during my first year of university, that I would be a part of a club, let alone the Executive Body, I would have laughed it off. My first year at North South University was spent behind a screen, doing online classes, hardly knowing anyone. I did not get the chance to experience campus life as a fresher, nor the chance to be properly orientated with the club.

When I finally stepped into the campus, I was struggling to adjust to the new environment. Everything felt so loud and overwhelming. To make matters worse, I had a few unfortunate interactions which led me to swear that I'll never join the club. Famous last words.

However, back in May 2023, I attended a seminar called Pharma Troopers. After the session, a senior executive approached me and asked if I could write an article about the event. As I look back now, the interaction felt very minute and normal, however, that was my turning point.

The article that I wrote got me selected into the Publication Team, as we affectionately call it the Pubteam. I joined during a tumultuous time in my life. Working as an Officer of the Pubteam in Pharma Fest 2024 gave me the sense and purpose I didn't know was missing from my life.

That experience motivated me to apply for a Sub Executive position. But life, as it often does, had other plans. I became the Treasurer instead and truth be told, I wouldn't have it any other way.

From this club, I have received everything- love, respect, support, guidance but most importantly, an identity. I discovered parts of myself that I never knew existed, I experienced things that I never imagined. Somewhere along the way, this club became the fuel for my growth.

As my tenure draws to an end, I'm taking an important lesson with me, it is this:
life has a way of surprising you when you let go of your "never". Sometimes the things you resist the most, end up changing you for the better.

STUDENT ARTICLE

LOTS OF FISHES IN THE SEA, YOU'RE NOT ALONE

NAHIYAN TAHMID, 222

You have heard at least one person say that university life is the best time of your life. If movies and TV shows are anything to go by, universities are packed with all-night parties, road trips, and Instagrammable pictures. But university life isn't just one long party, and it can be challenging to look after your mental health. This might be your first time without your mom consistently checking your forehead for a temperature during a fever. The better you take care of yourself, the better you can balance and care for your body and mind.

Mental health refers to our emotional, psychological, and social well-being, affecting how we think, feel, and act. Research tells us that over 80% of students feel overwhelmed at some point in their university life. So if you find yourself feeling this way, you're pretty much in the same boat as everyone else. The relationship between university students and sleep is informal, on again or off again. You might wonder how you can get more sleep given all of your responsibilities, but adequate sleep can help you be more productive. Poor sleep quality can make it difficult to think clearly, work efficiently, and maintain a positive mood and can also impact our memory, focus, and immune system.

Not only do we need sleep, but our brains also need enough energy to function. Hence, nutrition is another key way to protect mental health. We are just so-called busy people, looking for fast and cheap things which might mean scavenging a lot of pizza, quickly microwaving ramen, or grabbing a coffee instead of stopping for lunch. And this can lead to lower grades, getting sick more frequently, feeling tired and unmotivated, and experiencing depression and anxiety. Training your mind is also essential. Mindfulness is finding a practice that helps you be aware of your thoughts, feelings, surroundings, and body without judgment. From personal experience, university can be an emotional rollercoaster. You might feel excited, overwhelmed, lonely, or homesick, but if you develop a support system, it can help you. This support system should be filled with students with similar mindsets or backgrounds who will help you feel like part of a community. There's a lot we can do to protect our mental health. But it's important to remember that we don't have to do everything on our own. Ultimately, our mental health can have a "domino effect" on our overall health. So look out for yourself and look out for each other.

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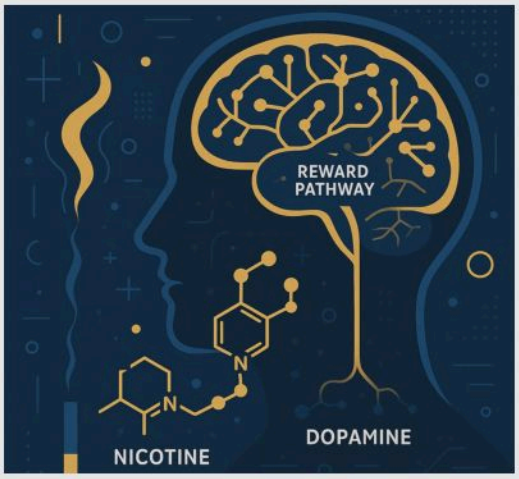
PRANTOR DEY, 202

REWARDING BEHAVIOR TO ADDICTION

STUDENT ARTICLE

Ever wondered what's happening in your brain when you puff a cigarette? This is a tale of two chemicals, the nice and the not-so-nice, and what happens when they meet. Nicotine is fast and sneaky. Like an Olympic sprinter, it races into the lungs, enters the bloodstream, and reaches the brain within seconds of that first puff.

The brain is made up of billions of cells called neurons, connected through complex pathways. One of these is the reward pathway, a system that motivates us to repeat things that feel good, like eating, laughing, or achieving something meaningful. It's vital for survival because it helps reinforce positive behaviors. When nicotine reaches the brain, it binds to specific nicotine receptors on neurons, like a key fitting into a lock, and this activates the reward pathway. As a result, the brain releases dopamine: the "feel-good" chemical that makes us feel satisfied, relaxed, and happy. But nicotine is clever.

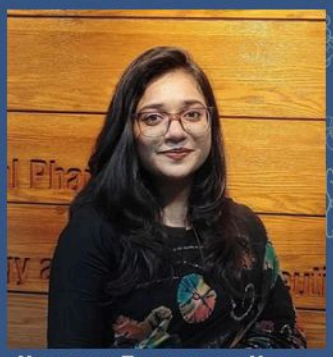


It hijacks this reward system, tricking the brain into thinking smoking is something worth repeating. Each puff floods the brain with dopamine, reinforcing the habit and convincing you that you need another cigarette. Over time, the brain creates more nicotine receptors, each one craving its fix. Soon, you don't smoke to feel good. you smoke just to feel normal. When nicotine levels drop, those receptors go empty, dopamine falls, and withdrawal symptoms appear like restlessness, irritability, and intense cravings. This is why quitting feels so difficult.

Humans naturally seek reward, it's what drives us to grow, explore, and survive. But that same drive can turn harmful when substances like nicotine exploit it. The brain's reward system, built to help us thrive, becomes the very mechanism that traps us in addiction. The good news is that the brain can heal. Once you quit, the number of nicotine receptors gradually decreases, and dopamine balance returns to normal. With time and persistence, your brain can reclaim its natural rhythm, proof that recovery is not just possible, but powerful.

STUDENT ARTICLE

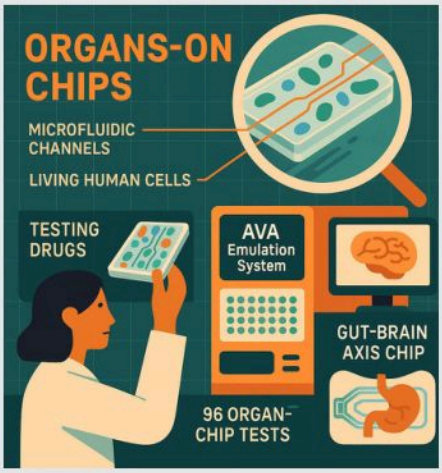
ORGANS-ON-CHIPS: PERSONALIZED MEDICINES



NOUSHIN TABASSUM NEHA, 201

What if your liver, lung, or gut was recreated on a tiny chip, in a lab, letting doctors test medicines on you? Welcome to the world of "Organs-on-Chips" (OoCs): tiny devices built with living human cells that can act just like our real organs. Inside each chip are microfluidic channels that mimic blood flow, allowing these little models to breathe, react, and function almost the same way an actual organ would. More so, scientists now often take cells from a patient, from biopsies or induced pluripotent stem cells and grow them in these chips so that the model reflects that person's unique biology.

This lets researchers test how you would respond to a drug, its effectiveness, safety, and dose, before ever giving it to you. In 2025, at the MPS World Summit, Emulate introduced the AVA Emulation System, a self-contained platform that can run 96 organ-chip tests at once, automating imaging and culture. This means that scientists can test many drug doses or compounds side-by-side, much like high-throughput plates in traditional labs. Also, new systems like "Gut-Brain Axis Chips" are being developed to study how what happens in your gut can affect your brain. Why does this matter for the pharma sector? Animal tests often don't predict human results well, and many drug candidates fail in trials. Regulators are shifting too. In 2025, the FDA released a roadmap to reduce required animal testing, explicitly including methods like organ-chips in the plan. Also, the U.S. GAO report shows that the FDA and EPA are now reviewing organ-chip data in regulatory decisions. For pharmacists, this signals a future for precise, personal medicine.

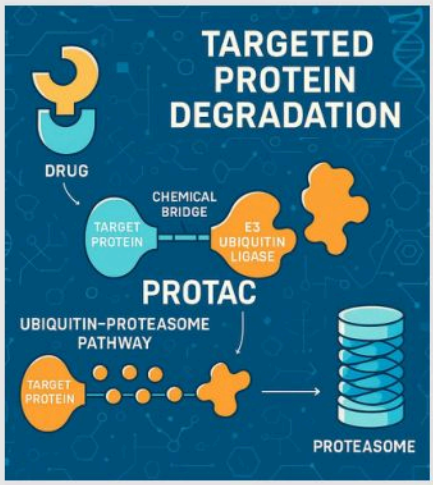


Imagine doctors, Pharmacists or researchers growing your liver cells on a chip, trying multiple drug options, and choosing the one that works best with minimal side effects. Of course, challenges such as getting patient tissue easily, making chips standard and cheap, and convincing pharma companies and regulators to adopt them remain. But the progress is fast, and with platforms like AVA pushing scale, organ-chips are moving from the lab towards real world pharmacy. Next time you think of a "microchip", don't just picture computers! Think of the possibility that one day it might hold your kidney, your heart, or your best drug test.

PROTACS: REWRITING THE DRUG DISCOVERY

AMIAYA BISWAS TURJYA, 212

For many years, most medicines have worked like locks and keys: drugs fit into specific pockets on harmful proteins to stop them from causing problems. However, almost 80% of human proteins lack these pockets, so traditional drugs cannot target them. These hard-to-reach proteins are often linked to diseases such as cancer, neurological disorders, and autoimmune conditions.



A new breakthrough in drug discovery is starting to change this. Instead of only blocking harmful proteins, scientists are now finding ways to remove them completely using a method called Targeted Protein Degradation, or TPD. The technology lead this approach: PROTACs, which stand for Proteolysis Targeting Chimeras. It uses the cell's own waste disposal system, known as the ubiquitin-proteasome pathway, to find and break down disease-causing proteins. PROTACs are molecular matchmakers. These small molecules have two active ends connected by a chemical bridge. One end attaches to the target protein, and the other brings in an enzyme called E3 ubiquitin ligase.

When these parts meet, the ligase tags the target protein with ubiquitin, marking it for breakdown by the cell's proteasome. Traditional inhibitors only block a protein's function for a short time, but PROTACs can keep working, with one molecule able to destroy many copies of the same protein.

Early PROTACs had trouble getting into cells and staying stable, but advances in chemistry and the discovery of important ligases like CRBN and VHL have helped the technology move forward quickly. Drugs such as ARV-110 for prostate cancer and ARV-471 for breast cancer are already being tested in people. Still, PROTACs are often large and complex, so making them stable and effective in the body is an ongoing challenge. Scientists are now working to design smaller, stronger, and more selective versions. PROTACs are redefining how scientists think about drug design, shifting the focus from blocking proteins to removing them entirely. With the help of artificial intelligence and advanced screening technologies, Targeted Protein Degradation is expected to drive the next generation of precision medicines, offering new hope for conditions once thought untreatable.

STUDENT ARTICLE

YOUTUBER FOR PHARMACISTS

AHMED SHAHRIYAR ROMEL, 222

From reviewing gas-station pills to exploring the darkest sides of the pharmaceutical industry in the United States, Grant Harting is someone who covers it all. Grant Harting is a native Pennsylvanian who began pursuing a career at the young age of 14, a decision that most people take decades to make: becoming a licensed pharmacist. As of now, Grant Harting is a licensed pharmacist in 4 different states in the U.S.A. and has acquired over 700,000 subscribers on YouTube.

Besides YouTube, Grant Harting is also the founder of CrushCost, an application that offers free pharmacy discounts to help users save money on expensive prescription medications, as well as make informed healthcare decisions through consultation with experts from the healthcare industry. For a country like the United States, the markup prices for prescription drugs reach new heights every year. To help patients pay for life-saving medications, Grant Harting has taken it upon himself to give back to the community by helping to educate people about how to purchase medications at cheaper costs.

The recurring theme in his videos covers cheap and effective alternatives to over-the-counter drugs. However, his videos also address the good, the bad, and the ugly of the healthcare industry in the U.S.A. As a licensed pharmacist, Grant Harting has discovered his calling to educate people about the nature of retail pharmacy from a consumer's standpoint. One of the other charming points in his videos, as his viewers suggest, is the soft-spoken delivery of his experiences. Another point, as observable in his videos, is that he takes it upon himself to try the medications being prescribed and sold in retail pharmacies in a pragmatic approach to review the effects they have on him.

One of the quotes that stood out to me personally from his videos is from one titled, “Licensed Pharmacist Rare, Expensive Cough Syrup!”, where he stated that, “It doesn’t matter how good a med is if no one can afford it.” Grant Harting creates an atmosphere with his videos that is not from the standpoint of a high-ranking industry expert or researcher, but as a consumer. At the root, pharmacy is about giving people access to health. And in my opinion, Grant Harting is someone who is doing it vigilantly. May his words and actions affect you as they have affected me.

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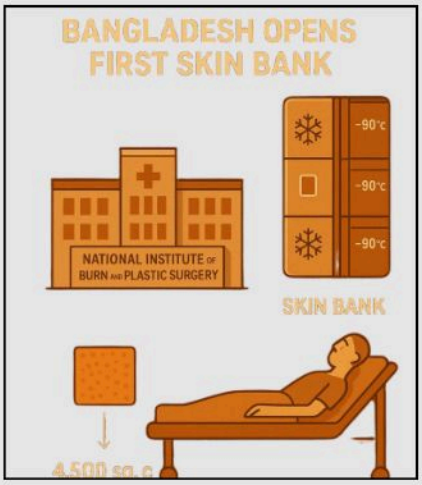
BANGLADESH'S FIRST SKIN BANK

RAMISHA NOOR, 232

On 9th January, Bangladesh opened its first-ever skin bank at the National Institute of Burn and Plastic Surgery in Dhaka. Set up with the technical assistance from Singapore General Hospital, it currently has 8 doctors and nurses, all trained there. The facility is equipped with 8 freezers where the skin dipped into liquid nitrogen can be stored at -90°C for up to 5 years. Immediately after its inception, the skin bank received 4,500 sq. cm of skin from 7 donors and successfully performed skin transplants on several burn patients. Patients with more than 40-50% burns have their veins exposed. All types of fluids, including albumin and electrolytes, flow out of the body. They face difficulties with temperature regulation. Hence, administering anesthesia becomes life-threatening.

The patient does not have enough healthy, unburned skin left for autografting. While artificial substitutes exist, they are expensive and comparatively ineffective. This leaves donated skin as the only viable option. It helps cover exposed nerve endings, maintain fluid balance and prevent infections. People who undergo abdominoplasty, a surgery for treating obesity, lose 400-500 sq. cm of skin, which can easily be donated. Moreover, the inner layer of the placenta, the amniotic membrane, can also be donated after a cesarean section. Small skin grafts of 0.3- 0.4 mm thickness can also be taken from areas like the thigh or buttocks.



This skin can later be meshed to cover large wounds. The procedure is carried out under local or general anaesthesia with minimal scarring. Anybody can donate skin as skin transplantation does not require tissue matching. The transplanted skin prompts the patient's body to grow its own and shed the foreign one. The recent Milestone tragedy caused a significant surge of interest in skin donation, with over 100 individuals interested. Official sources reveal that as of July 27, 34 individuals injured in the crash received treatment at the burn institute.

Bangladesh has always been in a dire state when it came to treating burn patients, with over 300,000 burn injuries reported annually. With the advent of the skin bank, some significant progress is surely expected.

STUDENT ARTICLE

DISCOVERED IN JUST 30 MONTHS

KAZI ZUBAER BIN SELIM, 232

Drug discovery used to be the slowest race in science, as it takes up to 15 years and over 2 billion dollars to bring a single new drug to the market. But in 2025, a medicine designed entirely by artificial intelligence entered advanced clinical trials in less than three years. It's called "Rentosertib".

A drug designed to treat idiopathic pulmonary fibrosis (IPF). IPF is a chronic, progressive condition which causes the lung tissues to scar and stiffen over time. Existing treatments can only slow the damage, but none can stop or reverse it. This is where Rentosertib emerges as a potential saviour. But to me, this breakthrough is remarkable not just for the disease or the drug, but for the process behind it.

To discover this drug, researchers used a generative artificial intelligence platform developed by Insilico Medicine. It's a system (PandaOmics) trained to think like a scientist but work at machine speed. Instead of starting with random chemicals, the generative AI was first trained with large volumes of biomedical data (everything from gene expression profiles, protein networks, and published research papers to molecular structures of existing drugs). So after processing millions of patterns, it pointed to a specific enzyme called TNIK (Traf2 and Nck-interacting kinase) as a critical player in the fibrosis process. TNIK was known in cancer biology, however, it was never considered central to lung scarring. But from there, the idea became the initial foundation of the discovery. A second generative chemistry model (Chemistry42) started designing molecules that could specifically inhibit TNIK's harmful activity. The AI designed new molecular structures from scratch and simulated their behaviour. In the past, chemists had to manually create and test thousands of compounds to identify the one that worked. But the AI did the same exploration in weeks. After experimental testing, one molecule stood out as promising, ISM001-005, which was later named Rentosertib. Compared to the usual 4-6 years, discovering the molecule and perfecting the lead molecule only took 18 months. Within 30 months of the initial AI discovery, Rentosertib advanced from a concept to Phase 1 trials, followed by Phase 2a testing in humans. A 2025 Nature Medicine study reported its phase 2A results. They confirmed the drug's safety, mentioned it was well-tolerated, and showed measurable improvements in lung function, especially at higher doses. This wasn't just an achievement, but for the first time in history, a drug designed and discovered entirely by AI had reached a stage where it could help patients breathe easier. It showed that the future of drug discovery may begin in an algorithm, not a lab.

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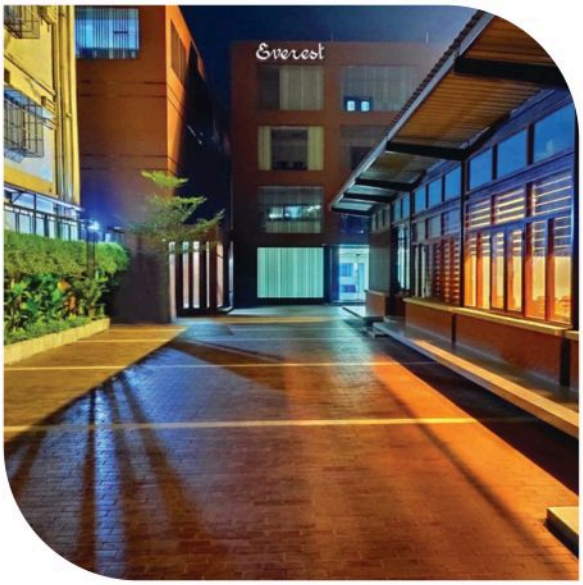

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KAZI MASHFEE, 232

AI'S PROTEIN INNOVATION TO FIGHT DISEASE

STUDENT ARTICLE

In a scientific breakthrough, scientists in Australia have designed an artificial intelligence (AI) program that can design sophisticated proteins in seconds- something that used to take years or even decades. The revolution, led by scientists from Monash University and the University of Melbourne, has the ability to revolutionize how scientists develop cancer therapies, antibiotic-resistant diseases, and other potentially deadly conditions. Proteins are fundamental molecules that carry out virtually all functions in living cells.

The construction of new proteins has been one of the big challenges in biotechnology for decades, since it involves the prediction of how a string of amino acids will spontaneously fold into a stable three-dimensional conformation. It is a time-consuming, costly, and generally narrow process using traditional experimental techniques. The novel AI device avoids such limitations by using machine learning algorithms that are trained on vast libraries of known protein structures and activities.

According to Dr. Rhys Grinter and Associate Professor Gavin Knott, co-leaders of the project, their system can synthesize "de novo"; proteins—entirely new molecules that nature has never encountered before—optimized for specific medical or industrial uses. In one of its showcase demonstrations, the AI successfully designed a protein to kill antibiotic-resistant bacteria E.coli by targeting a critical transporter protein called ChuA. The discovery suggests that AI design has promise to introduce a new generation of antibiotics to combat the escalating menace of antimicrobial resistance. Besides infectious diseases, the technology holds immense possibilities in cancer therapy, vaccine construction, and enzyme design. The speed of design—seconds—is the computer building of protein structure, while testing and synthesis in the lab is not instantaneous but takes considerable time for confirmation. The speedup in design, though, constitutes a qualitative leap for biotechnology. The research, published in Nature Communications, marks a milestone for Australia's growing role in the global AI-biotechnology frontier. "We are entering an era where AI does not just analyze biology—it creates it"; Dr. Knott said. The way that people find medications, create vaccinations, and address the most important health issues facing the globe may soon change as a result of this combination of artificial intelligence and molecular research.

STUDENT ARTICLE

Seize Control of Tumors

Sumaiya Afrose, 232

Have you ever heard of a bacterium and a virus collaborating to combat a tumor in the human body? Researchers have developed a new cancer therapy platform called CAPPSID (Coordinated Activity of Prokaryote and Picornavirus for Safe Intracellular Delivery), which combines engineered Salmonella typhimurium bacteria with oncolytic viruses, such as Senecavirus A or poliovirus replicons, to transcribe and deliver oncolytic viral RNA into tumors, thereby killing them.

CAPPSID therapy was tested mainly against small-cell lung cancer (SCLC) using the H446 human SCLC xenograft mouse model. Salmonella naturally tends to accumulate in tumors, which makes them ideal for systemic/tumor-targeting delivery. To control the viral spread, the viral genome is fused into the engineered bacteria, which supplies the TEVp (Tobacco Etch Virus protease) / TEVs (TEV cleavage site).

As the viral genome's structural protein cleavage site is replaced by a TEVs, the virus maturation and spread become dependent on bacterially supplied TEVp. The bacteria are administered intratumorally (IT) and intravenously (IV). Then, they invade tumor cells via SPI-1 effectors and become enclosed within the SCV (Salmonella-Containing-Vacuole). Inside the SCV, SPI-2 promoters (PsseA and PsseJ) are activated, triggering the bacterial production of T7 polymerase, reporters, and lytic proteins, respectively. T7pol transcribes the bacterial plasmid- encoded viral cDNA into full-length viral RNA. Bacterial lysis protein E ruptures the bacterial membrane, and HlyE forms SCV pores; together, these allow viral RNA to transit into the host cytoplasm.

In the host cytosol, incoming viral RNA utilizes an IRES to initiate translation. As TEVp is supplied only by the co-delivered bacteria, only the initial bacteria-infected local cells can produce infectious virions capable of a single round of spread to neighbouring bacteria-free cells. This enables localized but transient spread and bacterial control of viral persistence. The team also engineered a mutation-resistant TEV site (rTEVs) to reduce the risk of reversion. The immune system clears viral particles and bacterial debris. Once concealed within bacteria and delivered into tumor cells, the viral genome decays over time or remains controlled without TEVp. This microbial cooperative system (bacterial vector + replicating virus) shows strong tumor selectivity, high preclinical efficacy, and low toxicity in mice. Still, it remains in the preclinical stage and requires extensive safety and regulatory evaluation before human trials.

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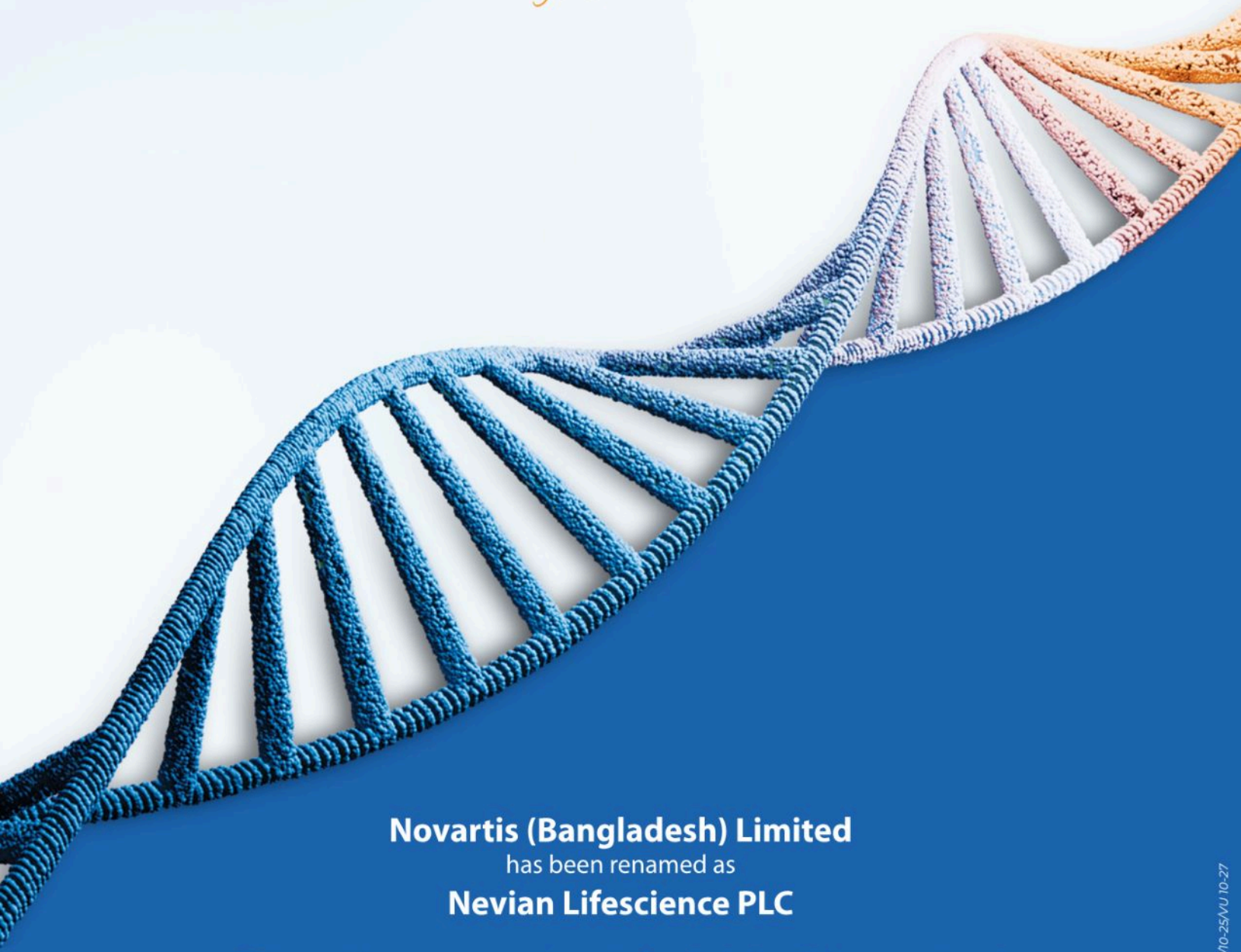

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AHMED IBRAHIM, 242

NANOMETALS FOR THERANOSTICS

STUDENT ARTICLE

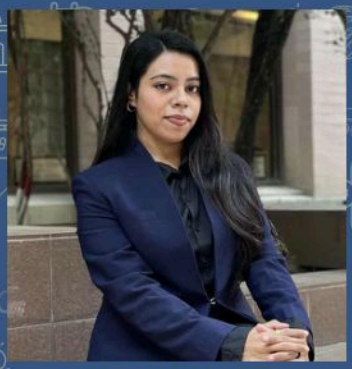
Metal nanomedicines brought in a new way forward towards theranostic strategies toward cancer in tackling grand challenges such as the invasiveness and homogeneity of cancer cells. These novel solutions are anticipated to increase the specificity of cancer diagnosis and efficiency of therapies, which in turn will translate into improved survival rates of patients. It comprises diverse structures like pure metal nanomaterials, metal oxides, metal complexes, and metal-organic frameworks (MOFs). These nanomedicines have unique optical, magnetic, thermal, and electrical properties that allow them to potentially interact with living systems.

One of the largest advantages of metal-based nanomedicines is that their circulatory half-life and biodistribution can be engineered. Researchers can engineer parameters such as size, surface charge, and geometry to enhance their in vivo performance. Apart from this, they can also be developed to have particular target populations since they have a high surface area, which improves their stability, biocompatibility, and capacity to target the tumors directly.

Also, since they act as drug delivery systems (DDSs), not only do they carry therapeutic entities to cancer targets, but they also aid in controlled release, which increases the drug concentration locally while reducing systemic side effects. Most of these nanomedicines are therapeutic and imaging in nature and therefore play a significant role in cancer diagnosis and treatment. In terms of applications, metal-based nanomedicines are extensively utilized for cancer diagnosis through various ways, including Computed Tomography (CT), Magnetic Resonance Imaging (MRI), Fluorescence Imaging, and Photoacoustic Imaging. Coupling such functionalities with multimodal imaging systems provides an enhanced insight into cancer detection. For therapy, they fight various cancers by various therapeutic approaches such as chemotherapy as DDSs, radiotherapy as radiosensitizers, and other phototherapies, among others. The possibility for multimodal therapy, in which various treatment approaches are combined, increases tumor eradication and averts metastasis. Despite many potential advantages, issues still remain, i.e., long-term biosafety and toxicity from the slow in vivo biodegradability of certain metal-based nanomaterials. Future studies need to tackle the development of biodegradable, tumor microenvironment-responsive nanomaterials that will ensure safe excretion from the organism. Up until now, few metal-based nanomedicines, e.g., NBTXR3/Hensify® and NanoTherm®, have reached clinical application, which justifies calling for more research and effort in this promising area.

STUDENT ARTICLE

MEDICINES IN REMOTE AND CRISIS ZONES



SHAHRIN HAMID,222

Domination of doctors and nurses are frequently seen when a disease strikes. But the role of pharmacists in this aspect remains untold. They work silently ensuring the right choices of medicines or doses in the refugee camps, flooded areas and in the war zones too. It is more of a humanitarian matter nowadays. Medicines are the real life warriors in crisis. From vaccines to insulin, from cure of infections to balance your blood sugar level, the role of pharmacist is imperative. They often play the role of bridging between chaos and peace among the refugees ensuring the supplies and survival. However working in remote zone has always been challenging.

The roads are broken, shortage of refrigerators and gas lines, which results into unavailability of vaccination and supply of medicines. Which can be delayed for weeks or months. Due to vulnerable situation, quality control is a difficult task. And also, pharmacists need to deal with ethical choices while in shortage of supplies. They measure the insulin vials or antibiotic as per the ratio of these parameters and help to regain the confidence of the communities to before effective treatment by the help of logistics too.

A practical situation can be highlighted according to this perspective. To prevent deadly outbreaks in Rohingya refugee camp in Bangladesh, pharmacist have been distributing oral rehydration salts and vaccines. In Haiti , 2010, after the massive earthquake, mobile pharmacies provided antibiotics and essential drugs to affected families. Also in Syria and Ukraine, pharmacists have been providing life saving drugs such as chemotherapy, insulin and antibiotics etc.

To overcome these challenges, technologies have given pharmacists advanced tools. Mobile pharmacies are located inside buses or tents which are closer to affected people. In Rwanda and Ghana, drones deliver vaccines and blood products to isolated villages. Telepharmacy connects pharmacists and urban people, while small-scale local production of medicines can prevent shortages during crises.

According to this context, pharmacy is more than a science, it is a service. They manage every crisis situation and ensure human rights which are not only privileges. They save lives, restore trusts, handle epidemic situations for refugees. This demonstrates that pharmacy knows no border indeed.

TAIBUR KABIR TABIR, 242

ENGINEERED BACTERIA FOR TARGETED THERAPY

STUDENT ARTICLE

The human body has around 30 trillion cells and hosts 38 trillion bacterial cells with other microbes that create the human microbiome. Now what if there were ways to outfit these microbes to secrete the drug molecules that we desire? New advancements in precision medicine delivery have made this a reality. Live biotherapeutic products, including genetically modified bacteria, are able stay alive and deliver the therapeutic payloads at the sites of disease. This can enhance therapeutic efficacy and lower side-effects commonly associated with traditional approaches.

The bacteria are primarily designed to target complications in the gastrointestinal tract, tumors and skin regions which can support the growth of the bacteria. The potential of these genetically engineered super bugs is vast. One such case can be seen with Nissle 1917 E. coli that have been engineered with bacteriocin gene to produce and secrete microcin an antimicrobial protein that inhibit the growth of related species. For example, Microcin I47 and Microcin J25 specifically target pathogenic E. coli and closely related species such as Salmonella. With Microcin I47 having a broader range, targeting members of Enterobacteriaceae family along with beta- lactamase (ESBL) E. coli and carbapenem-resistant Klebsiella pneumoniae, it is showing potential to eradicate MDR (Multiple Drug Resistant) bacteria from the gut microbiota.

Another approach was to make the bacteria secrete Microcin 47 upon sensing tetrathionate, a metabolite produced in the setting of inflammation, a condition associated with gastroenteritis. In other studies, EcN was engineered to secrete nanobodies that could neutralize TNFα, a pro-inflammatory cytokine, display proteins outside their cell walls that promoted healing of the mucosa in inflammatory bowel diseases in mice. Not only are microbes being employed inside the body, but also outside. One such case is engineering microbes to secrete CXLC12 by Lactobacilli, a type of protein, which signals macrophages and neutrophils at the site of wound to promote wound healing and keep other microbes at bay. Employing L. lactis in a hydrogel along with cyanobacteria, which produced the sucrose for it, ensured their survival and showed promising results with wound healing.

We are in the early days of development of engineered microorganism for therapeutics. But the future is promising and can potentially help in treating many untreatable or difficult to treat diseases once made available commercially.

STUDENT ARTICLE

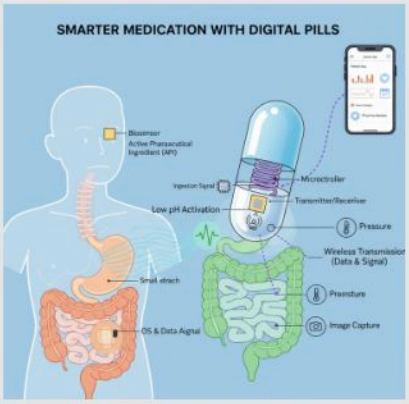
SMARTER MEDICATION WITH DIGITAL PILLS

RUMMAN TABASSUM, 242

The efficacy of a patient's treatment is contingent on how well they follow their treatment plan. However, patient adherence and compliance are not always guaranteed. Whether patients willingly or unwillingly deviate from their prescription, the repercussions can be massive, in the form of sub-optimal healing and subsequent complications. It is especially crucial in individuals with severe mental illnesses or the elderly who might not remember or understand their regimen. That is where digital pills come in – as medication as well as useful assistants to healthcare workers. Simply put, a digital pill is a cross between a medicine and messenger.

Integrating a sensor and active pharmaceutical ingredient (API) into a single product, digital pills have been in use and FDA-approved since 2017. Apart from treatment, their work description includes detection of drug ingestion, its efficacy, collecting physiological data of the gastrointestinal tract and more. Fitted with degradable biosensors that can be taken orally, the pill also contains microcontrollers, transmitters, receivers, operating systems and tools for data analysis. These components allow it to capture images, gauge changes in pressure, temperature and several other factors and interpret the data. Wireless technology is then employed to transmit the data to smartphones or similar gadgets.

Advanced pills can even encrypt data as a safety measure or contain timers for sustained release of drugs. Upon consumption, the pill reaches the stomach and its low pH leads to the activation of the sensor. It creates a specific signal for when the pill is taken, to identify the drug. This particular signal and other relevant data are then transmitted to a receiver (patch or device) worn in proximity to the abdomen. Thus, the consumption of the drug is logged along with information about the internal environment.



Applications on smartphones are used to review the data by patients and physicians. As such, diagnosis can take place or changes could be brought to the regimen. The pills boost adherence, ease management of GIT diseases, mental health illnesses etc. Physicians can customize the treatment or make prompt decisions based on the patient's requirements. Despite the accuracy, the high cost, complexity and issues with data privacy have dampened their rise in popularity. Even so, these pills could do a world of good especially as AI gets increasingly involved in the healthcare sector.

ARTIFICIAL INTELLIGENCE VS DRUG ADDICTION

STUDENT ARTICLE

SARAH ADIBA ZUBAYER, 242

Drug addiction is one of the most pervasive and complex conditions that consumes the lives of millions of people around the world. It's a syndromic condition that compels the body to engage in rewarding stimuli regardless of the harmful effects. Artificial Intelligence has remarkably transformed the process through which anti-addiction drugs can be generated. AI does this by utilizing machine learning algorithms to process large chemical and biological databases.

Databases are digital collections of information related to specific chemical substances and their properties. Databases are crucial in the process of anti- addiction drug synthesis as they directly influence the output and accuracy of AI models. For example, when dealing with substance abuse with cocaine, the primary therapeutic strategy involves suppressing dopamine reuptake by regulating the dopamine transporter (DAT). The DAT database is critical in this scenario as it offers insight into DAT interactions.

In addition, databases such as BindingDB provide protein-ligand binding affinity data crucial for understanding receptor-ligand dynamics in addiction-related pathways, whereas toxicity-focused datasets such as Tox21 present chemical toxicity information, helping researchers to design safer therapeutic agents. By analyzing an individual's genetic inheritance patterns, social environment, or mental health status, AI- driven models can predict the risk of relapse or generate personalized treatment strategies - leading to efficient and timely interventions. Drug addiction involves intricate neurological pathways such as the dopaminergic reward system (causes feelings of pleasure) and the GABAergic system. AI has made it easier for scientists to identify the neurobiological and molecular targets by encompassing the expertise to screen billions of chemicals and compounds. Through virtual screening, anti-addiction drugs can be synthesized, and the time and cost associated with conventional drug development methods significantly decrease. Moreover, the discovery of new medicines for addiction is also enhanced through De Novo drug design, a process that functions by utilizing computer models, learning methods, and biological knowledge. For instance, RNNs are trained generative models that learn patterns in molecules, helping researchers to create safe and effective drugs, able to mitigate withdrawal symptoms. However, the complicated pathways of drug addiction sometimes challenge the limitations of AI, as it can often be difficult for a digital medium to precisely predict drug efficacies reliably. Regardless, when it comes to positive progress towards addiction-related drug discovery, Artificial Intelligence still takes the triumph, thanks to the advanced world of coding and technology.

STUDENT ARTICLE

XENOPLANTATION: THE HEART OF THE FUTURE

ISHRAK AHMED, 201

In the 21st century, the remarkable growth in technology, precision medicine, and integrative approaches has transformed into a revolution in medical science. Artificial intelligence, personalized treatments, and genomics are just some of the advancements that have enhanced the treatment and diagnosis and the efficiency of healthcare.

Additionally, opportunistic research centers like immunotherapy, nanotechnology, and regenerative medicine are enhancing global health outcomes and breaking boundaries in the development of new therapies for diseases. On 7th January, 2022, years of preclinical work and ethical deliberation were followed by University of Maryland surgeons; transplanting a gene-modified pig heart into a living human named David Bennett Sr, which was a landmark moment in Xenotransplantation. While clinical restrictions and correlations exist, the operation demonstrated that a gene-modified pig heart to reduce immunological rejection is functional in a human body Multiple targeted genetic changes were present in the donor pig's heart, including modifications aimed to reduce the risk from porcine endogenous retroviruses, improve coagulation pathway compatibility, and modify pig antigens that cause hyperacute rejection. These methods were created by research teams and commercial breeders. In addition to the gene- edited organ, the surgical team used a rigorous immunosuppressive and monitoring regimen that was adapted from experimental xenotransplantation and heart surgery. Clinically, the heart functioned well at first, but graft malfunction eventually occurred, and the patient passed away in March 2022. A latent porcine cytomegalovirus (pCMV) was detected in the donor heart by later studies. Scientists thought that viral activity and the resultant inflammation were a partial cause of organ failure. With xenotransplantation protocols, they required immediate development of more efficient antiviral systems and ultra-sensitive screening for pathogens. Then single-patient outcome, the University of Maryland team accelerated calls for standardized pathogen surveillance, ethical consent procedures, and controlled clinical trials to mitigate their proven feasibilities. In terms of an ideological perspective, xenotransplantation lies at the junction of caution and innovation. Scientists pointed out the potential to save lives and alleviate shortages of organs. Concerns expressed by the critics include animal welfare, zoonotic risk, and premature roll- out into the clinic. Adequate testing, stringent biosafety, global surveillance, and patient and public involvement are all the requirements for a balanced future. Genetically modified animal organs can be an ethical, controlled solution to the world's transplant needs if requirements are met.

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Clicking pictures in front of student affairs	Clicking pictures in the 3rd floor garden
Study session in library	Studying alone in silent zone
Watching concert in the middle of intense crowd	Watching concert from the NAC-SAC linking bridge
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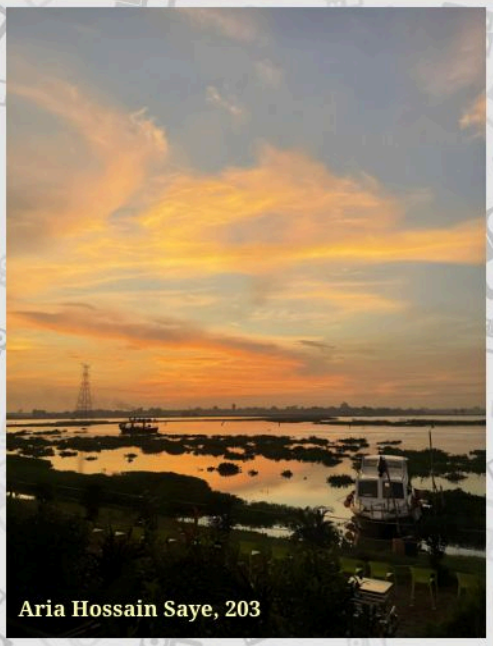
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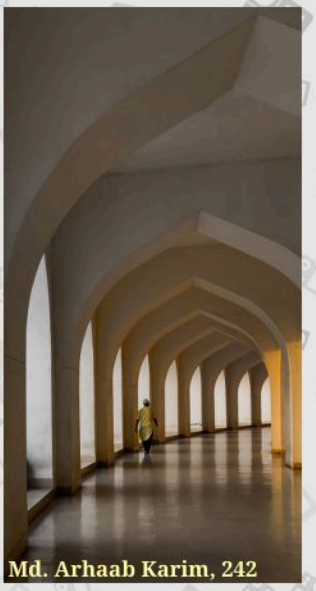
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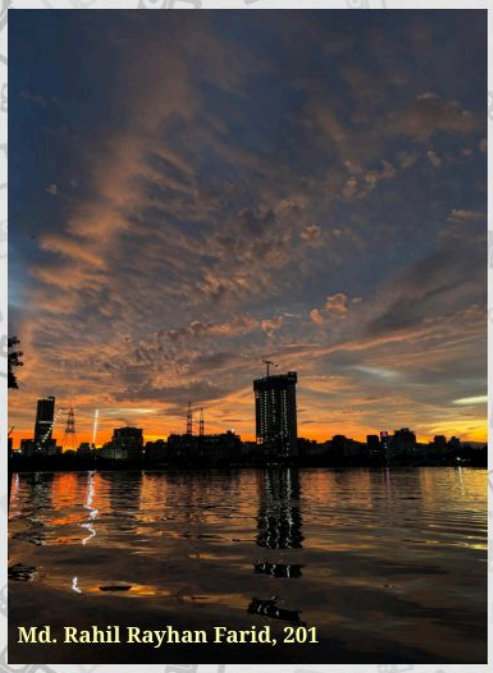
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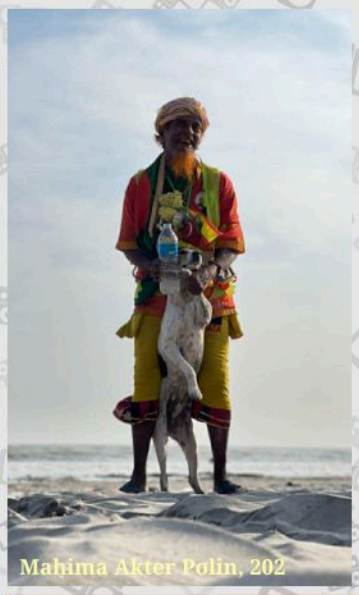
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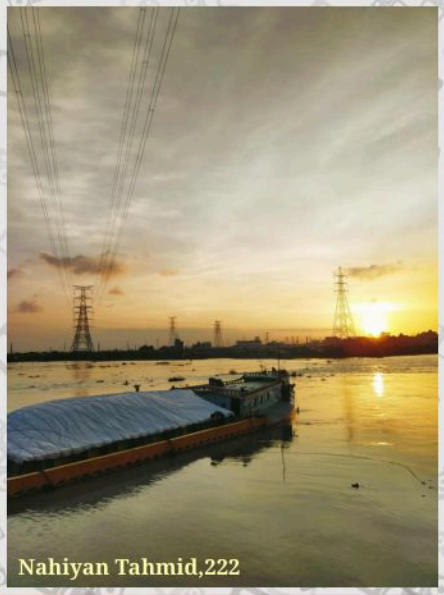
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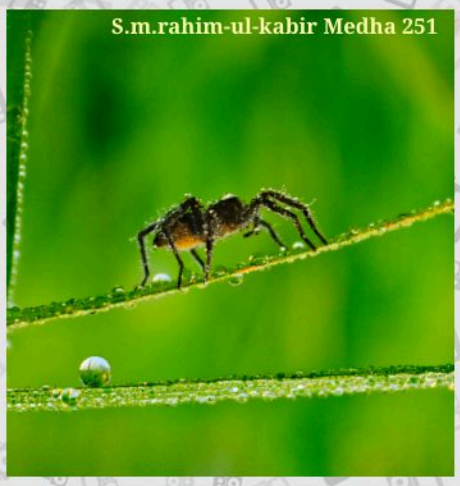
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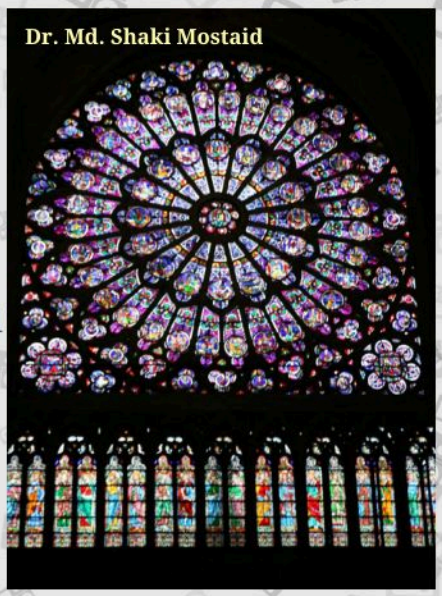
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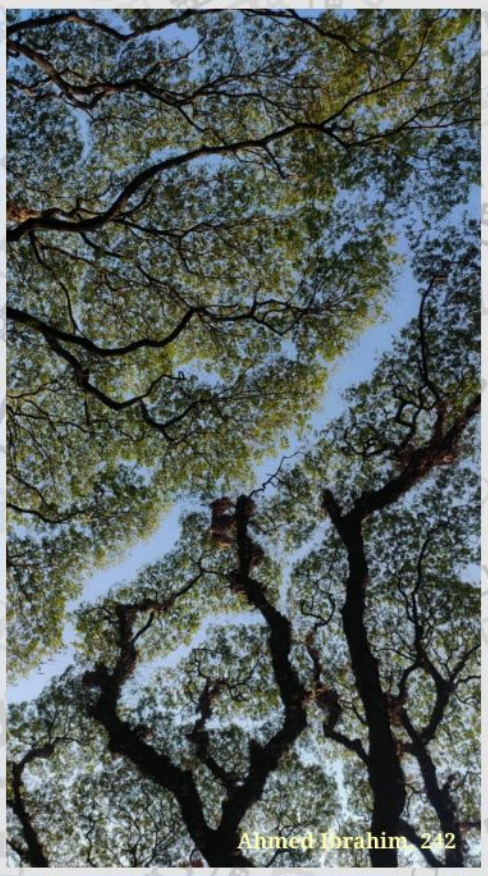
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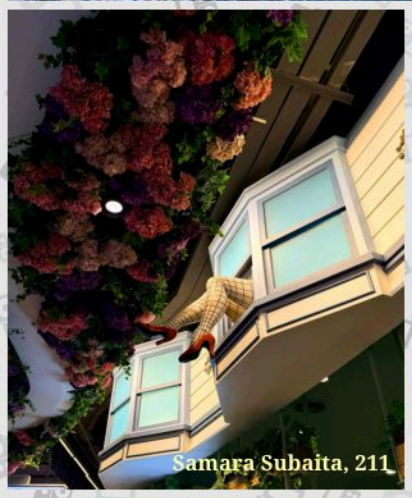
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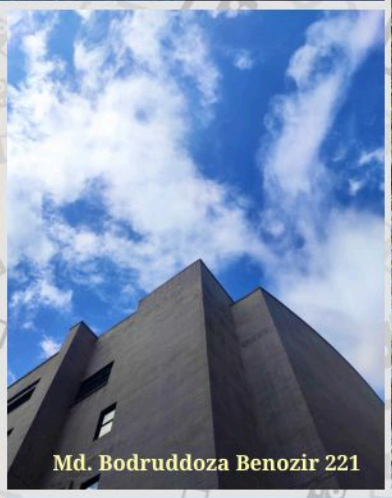
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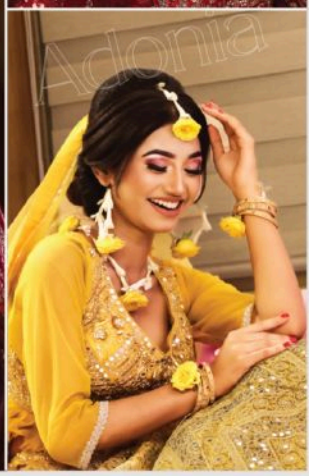

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Events

Field Trip 2025

On February 20th, 2025, the Department of Pharmaceutical Sciences organized its most anticipated annual field trip to Royal Palace Resort in Mawa.

Alumni Advisory Board

The Department of Pharmaceutical Sciences proudly introduced the 'Alumni Academic Advisory Board', which plays a crucial role in shaping the future of NSU Pharmacy to thrive globally, along with innovation and dedication.

Iftar Mahfil and Iftar Donation 2025

On 18th March 2025, faculty members and students convened to attend the annual Iftar Mahfil organized by the Department of Pharmaceutical Sciences. Respected Chairman, Dr. Mohammad Hossain Shahriare and Faculty Advisor, Md. Adit Muktadir Pavel worked alongside students to organize the event.

On campus hiring by Popular Pharmaceuticals PLC

Popular Pharmaceuticals PLC held an on-campus hiring event on 24 April 2025 at North South University for aspiring pharmacy graduates. The aim of this event was to match education with industry standards.

Beximco Pharma and NSU Forge Research Partnership

On May 5, 2025, Beximco Pharmaceuticals Ltd. And the Department of Pharmaceutical Sciences at North South University (NSU) signed a landmark Memorandum of Understanding (MoU) to foster industry-academia collaboration.

The Industrial Advisory Board

The Industrial Advisory Board (IAB) was introduced by the Department of Pharmaceutical Sciences of North South University with the goal of bridging the gap between academia and industry.

UNIMED UNIHEALTH MoU Signing

On 22 June 2025, Department of Pharmaceutical Sciences at North South University has signed a Memorandum of Understanding (MoU) with one of the leading pharmaceutical companies in Bangladesh, UniMed UniHealth Pharmaceuticals.

EduCultural Research Fusion Exchange Program 2025

On July 22 2025, six students of Department of Pharmaceutical Sciences at North South University accompanied by Professor Dr. Mohammad Hossain Shariare, Chairman, went for the EduCultural Research Fusion Exchange Program 2025, hosted by Universiti Kebangsaan Malaysia (UKM).

Club Room Inauguration and Renovation

Department of Pharmaceutical Sciences reached a new milestone this year with the proud inauguration of its elevated and refurbished club room. The ceremony was graced by the presence of our respected Chairman, Dr. Mohammed Hossain Shariare, Faculty Advisor, Md. Adit Muktadir Pavel.

Succession ceremony and club orientation

NSUPC proudly hosted a remarkable day that blended tradition, honor, and fresh beginnings on 2nd August 2025. The event honored the outgoing executive panel's dedication and contributions. The program concluded with the orientation of Batch 252.

Pharmacy Football League

This year's Pharmacy Football League (PFL), organized by NSUPC, began with a whooping total of 14 teams vying for the ultimate Champions' trophy. The grand finale, held on 9th August, was between Team Alumni and Aspirin Avengers, the latter snatching away victory by a penalty shootout.

Celebration of World Pharmacist Day 2025

'Think health, think pharmacist' was the theme of World Pharmacist Day 2025. The Department of Pharmaceutical Sciences, in collaboration with NSUPC, celebrated the day with a rally.

Seminars

Nanotechnology: Small Things Matter and Have Power to Transform Energy, Health, and the Environment - 23 January 2025

The Department of Pharmaceutical Sciences, North South University, organized a seminar intending to advance modern scientific research and innovation. Dr. Jamal Uddin, a Coppin State University professor and the founder of the Center for Nanotechnology, was the keynote speaker.

Statins as a new class of Blood pressure medication - 26 November 2024

A seminar on the potential of statins as new class medication for blood pressure. Dr. Raquibul Hasan, a renowned researcher and an associate professor, delivered and insightful lecture highlighting the dual benefits of statins as a solution for blood pressure regulation.

Circadian Rhythms in Health and Aging - 18 December 2024

The seminar featured an informative keynote delivered by Dr. Yasukazu Nakahata, Associate Professor in the Department of Biomedical Sciences at Nagasaki University, Japan. He had shed light on the importance of our internal biological clock, the circadian rhythm, on our cellular aging.

Career Opportunities in The Pharmaceutical Sciences Sector - 21 August 2025

Mohammed Ikhtiar Hossain, Executive Director at Eskayef Pharmaceuticals Ltd., briefed the young pharmacists at NSU on the current scenario of the Pharmaceutical industries of Bangladesh.

Innovations in drug discovery: From cancer to infectious disease - 5 December 2024

The North South University Pharmaceutical Club hosted the "Innovations in drug discovery: From cancer to infectious disease" seminar. This highly anticipated seminar was presented by the keynote speaker: Professor Khondaker Miraz Rahman from Kings University London.

Drug discovery and development-Translating molecules into medicine - 27 April 2025

The Department of Pharmaceutical Sciences organized a seminar on Drug discovery and development titled "Translating molecules into medicine"; with Professor Dr. Atia-tul-Wahab, OIC-COMSTECH scholar and Professor at the University of Karachi, Pakistan, as the keynote speaker.

Raising Awareness on Cervical Cancer - 21 August 2025

A seminar to raise awareness on cervical cancer was held on 21 st August 2025 in collaboration
with Healthcare Pharmaceuticals Ltd. The prevalence, cause, and
treatment of cervical cancer, alongside prevention methods, were discussed briefly during the
span of the seminar.

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BLUEPRINTS FOR

How did being a part of NSUPC influence or shape your academic journey and professional outlook?

I truly realized the impact of NSUPC during job recruitments. Candidates who were active in club activities always appeared more dynamic, confident, and adaptable. They knew how to communicate, take initiatives, lead projects and work in teams. It taught skills no classroom teaches. Being engaged in NSUPC helped me develop that mindset. Employers notice those who can lead, manage, and collaborate, not just good grades!

Benjamin Mashroor
Site Quality Head (a.i.)
Nevian Lifescience PLC

Being part of NSUPC and organizing events like Pharma Fest was such a valuable experience. It helped me build two important skills, teamwork and communication. These are things you don't really learn from lectures but from real experiences and working with people. NSUPC gave me that experience, and it's something I still carry with me today.

Dr. Rasiqh Wadud
Assistant Research Professor/ PI
University of Cambridge, UK

Being part of Pharma Fest helped me build my self confidence. While organizing the Pharma walk, I was forced to pay attention to details so that the event can be meaningful and successful. NSUPC allowed me to work with others towards a same goal as a team and to motivate others which is very essential in any leadership role.

Samia Islam Farah
Clinical Pharmacist/Prior Authorization
Optum, UnitedHealth Group

Being part of the inaugural Pharma Fest at North South University remains one of my most cherished experiences. The experience taught me how to work under pressure, manage teams and to communicate effectively.

Safayet Hossain
Senior Marketing Manager
Oncology and Palliative Care
Beacon Pharmaceuticals PLC.

THE FUTURE

What is one funny or memorable moment from your time in NSUPC or Pharma Fest that still makes you smile?

I always treasure and feel proud about is when we gave our all-out effort to form a club when there wasn't any. Back in 2009, when we were just settling into the Bashundhara campus, there were no labs, no club rooms - not even a proper setup. We had just come up with the idea of organizing an event just after the formation of our beloved club.. As the club's first General Secretary, I remember sitting with my fellow club mates, brainstorming for our very first event. One suggested a seminar, another pitched for poster presentation, and someone else proposed to go with pharma olympiad.

One of my favourite memories has to be the drama performance we did during Pharma Fest. The rehearsals, the laughter, the last minute chaos, it was all so much fun.

Events like poster presentations, scientific stalls, and even "Pharma walk" (colorful way of showcasing different drugs with its uses) showcase students' talent and enthusiasm, which is very memorable. I still look back and feel blessed that I was given the opportunity to organize the Pharma walk during one of the years when I was studying at NSU. Walking down the ramp being showcased as fungi (with crazy makeup and hair) was funny but also, one of the best memories that I will treasure forever.

The last-minute preparations — charged with excitement, enthusiasm, and anticipation — reflected the true spirit of NSUPC. Those vibrant moments of teamwork and unity continue to inspire me to this day.

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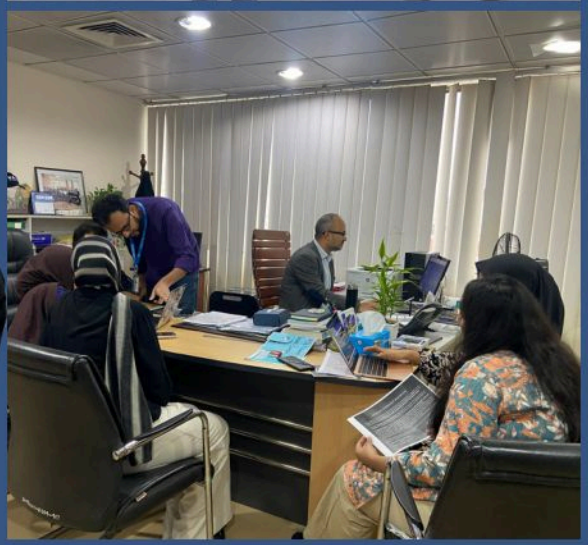

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মোনালিসা
স্যানিটারি ন্যাপকিন

এসো
সামলে নিব এক হয়ে

6 Lock System

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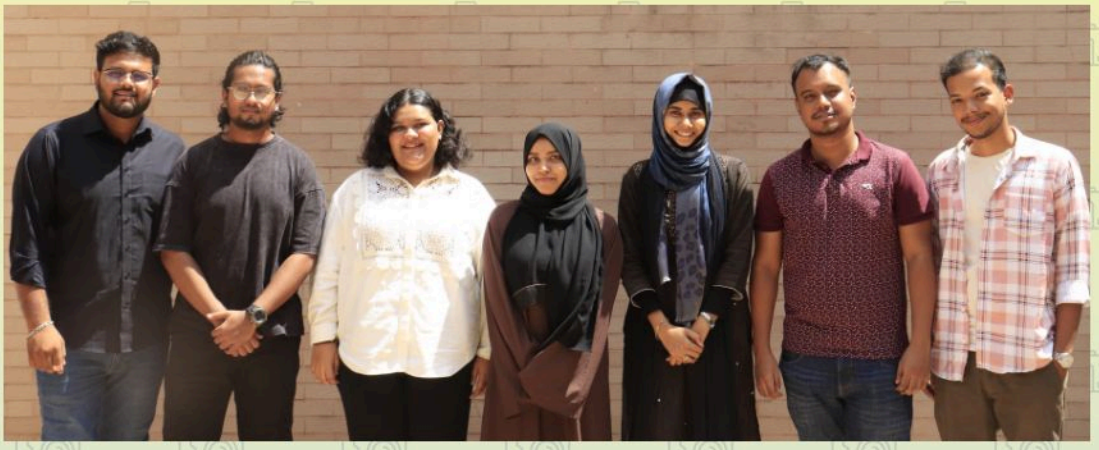

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Biopharma Limited has been practising its quality policy from the inception in 1999 in order to provide finest quality medicines for the patients in home and abroad. Recently, 11 products have been undergone Bioequivalence (BE) Study in US-FDA approved, renowned Contract Research Organization (CRO) and compared with innovator company's products. These BE studies have shown and proven that Biopharma's Products comply with Pharmaceutical and Pharmacological parameters and Bioequivalent to the Originator Brands.

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Inpro™ Omeprazole equivalent to **Losec (AstraZeneca)**

Mextil™ Cefuroxime equivalent to **Zinacef (GlaxoSmithKline)**

Glucostat MR™ Gliclazide Modified Release equivalent to **Diamicron MR (SERVIER)**

Clamycin™ Clarithromycin equivalent to **Klaricid (Abbot)**

Vasofex XR™ Prazosin extended release tablet equivalent to **Minipress XL (Pfizer)**

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