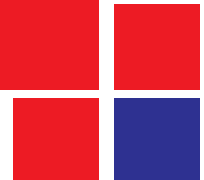


**JSS  
ACADEMY  
OF HIGHER  
EDUCATION  
AND RESEARCH  
MAURITIUS**

*A degree awarding institution registered with  
the Higher Education Commission, Mauritius*



**JSS Health & Education  
Newsletter  
Issue XVI  
January - April 2026**



## **About JSS Academy of Higher Education and Research, Mauritius (JSSAHERM)**

The JSS Academy of Higher Education and Research, Mauritius (JSSAHERM) was established in 2018 with degree-awarding powers and is an approved and registered institution with the Higher Education Commission (HEC), Mauritius.

JSSAHERM is located on a sprawling eight-acre freehold campus at Bonne Terre, Vacoas, the only one of its kind in the country, including some 15,000 sq. mts of built-up areas with necessary academic, learning, and recreational infrastructure. The campus also comprises of hostels for boys' and girls' students, sports facilities such as Volleyball, Basketball, Football and in-door games. There are also residential units for staff and guests. Building on its philosophy of quality education at affordable costs, JSSAHERM aims to present itself as the destination of choice for higher education and training in Mauritius and the Indian Ocean region.

JSSAHERM launched the Bachelor of Pharmacy (BPharm) programme in 2020 and Doctor of Pharmacy in 2023. The Bachelor of Pharmacy and Doctor of Pharmacy programmes of JSSAHERM have received Pre-accreditation from the Accreditation Council for Pharmacy Education (ACPE), USA, making JSSAHERM the first institution in the African region to get ACPE pre-accreditation. JSSAHERM started the Doctor of Philosophy in Health Sciences, Life Sciences and Management Studies in 2024 and recently received the accreditation of Bachelor of Medicine, Bachelor of Surgery (MBBS) from HEC. It reflects the institution's commitment to producing skilled, ethical, and globally competent medical professionals.

JSS Mahavidyapeetha (JSSMVP), Mysuru, India is the sponsoring society of JSSAHER, Mauritius. JSSMVP has established more than 350 educational institutions in India, Dubai, Mauritius, and USA, with a total student population over 100,000 and a staff strength of over 12,000.

The parent institution for the establishment of JSSAHERM, is the JSS Academy of Higher Education & Research, Mysuru (JSS AHER, Mysuru, India), formerly known as the JSS University. The Times Higher Education Impact ranking 2024, JSS AHER, Mysuru has been ranked 1<sup>st</sup> in the World for SDG 3 - Good Health & Well-being. Caring the legacy of JSS AHER Mysuru, JSSAHERM entered the international ranking for the first time and has been ranked in the band of 81-100 in Times Higher Education and Sub-Saharan Africa University Ranking 2024

The JSSAHERM started its Newsletter "Health & Education" in the year 2021 (Triannual issues) with the aim to cover general information related to health care, life sciences & pharma sector, the latest happenings in the world of science, scientific articles of students and staff members on health and life sciences, invited papers and views, drug-related information and event corner of the JSSAHERM etc.

# JSS Health & Education Newsletter

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REPUBLIC OF MAURITIUS

MINISTRY OF ENERGY AND PUBLIC UTILITIES

*Office of Minister*



**Message from the Hon. Patrick Gervais Assirvaden**

**Forward for the XVI Issue of the Health and Education Newsletter**

It gives me immense pleasure to pen this message for the XVI Issue of the Health and Education newsletter of the JSS Academy of Higher Education and Research, Mauritius (JSSAHERM). As we unveil this latest edition, I am reminded of the Academy's enduring commitment to sculpting a healthier, more knowledgeable society through the twin pillars of academic rigor and compassionate service.

I am particularly heartened to witness the growing vibrancy of the campus, which is in my constituency, and which has truly become a melting pot of cultures and ideas. It is a matter of great pride for Mauritius to see such a significant influx of international students who have chosen our shores as their destination for higher learning. To see these bright young minds from across the globe diligently pursuing their courses in **MBBS, B Pharmacy, Doctor of Pharmacy, BSc Biotechnology, MBA and PhD** programmes, is a testament to the high standards of education JSSAHERM offers.

It is deeply encouraging to know that the B Pharm programme has received full accreditation from the Accreditation Council for Pharmacy Education (ACPE), which serves as an important benchmark for the recognition and ranking of leading pharmacy institutions worldwide. JSSAHERM remains steadfast in its mission to nurture and produce the next generation of competent healthcare professionals. The newsletter has successfully reached a wide readership across the country, showcasing impactful articles, notable achievements of staff and students, and their valuable contributions to society. Through its meaningful content and updates, the newsletter is creating a positive impact across various healthcare sectors.

I extend my heartiest congratulations to the entire JSSAHERM team for their dedicated efforts in bringing out this excellent newsletter and my warmest congratulations to the editorial team, the faculty, and the students on the release of this XVI Issue. I am confident that JSSAHERM will continue to shine as a beacon of excellence, nurturing the talents that will safeguard our future health and well-being.

**Hon. Patrick Gervais Assirvaden**  
**Minister of Energy and Public Utilities**


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# Skeletal Health in Transgender Individuals

Bone health is a fundamental determinant of mobility, independence, and quality of life across the lifespan, and its importance is increasingly recognized within transgender and gender-diverse populations. The skeleton is a dynamic organ system that undergoes continuous remodeling under the influence of genetic, hormonal, nutritional, mechanical, and environmental factors (1).

In transgender individuals, bone physiology is uniquely shaped by variations in endogenous sex hormone exposure, the use of gender-affirming hormone therapy (GAHT), timing of medical transition, and broader psychosocial determinants of health (6,10). These interacting factors make bone health an essential yet still under-explored component of comprehensive transgender healthcare. Sex steroids are central regulators of bone metabolism. Estrogen suppresses osteoclast-mediated bone resorption and supports osteoblast survival, while testosterone promotes periosteal bone formation and contributes indirectly to skeletal maintenance through aromatization to estrogen (2). In transgender women receiving estrogen-based GAHT, circulating estradiol levels typically rise and testosterone levels are suppressed, creating a hormonal milieu that is generally protective for bone when treatment is continuous and adequately dosed (6,10). Longitudinal studies indicate that bone mineral density (BMD) in transgender women is largely maintained, and in some cases modestly increased, at the lumbar spine and hip after initiation of estrogen therapy (3,4). In transgender men, testosterone therapy has been associated with stable or increased BMD, particularly at cortical bone sites, reflecting the anabolic effects of androgens on bone (3,5).

Vulnerability may arise during periods of low sex-steroid exposure. Puberty suppression with gonadotropin-releasing hormone analogues, although beneficial for alleviating gender dysphoria in adolescents, temporarily reduces gonadal hormone production at a critical stage of peak bone mass accrual (6,7). If not followed by timely initiation of gender-affirming hormones, this state of relative hypogonadism may compromise maximal bone mass and potentially increase future fracture risk (7). Similarly, interruptions in hormone therapy in adulthood, whether due to access barriers, cost, or medical contraindications, can lead to accelerated bone loss analogous to that observed in cisgender individuals with hypogonadism (5,10). Fracture epidemiology in transgender populations remains limited, but available evidence does not indicate a markedly elevated fracture rate among adults receiving consistent GAHT (3,10). Nevertheless, the presence of traditional osteoporosis risk factors—including low body mass index, vitamin D deficiency, smoking, excessive alcohol consumption, sedentary lifestyle, and chronic glucocorticoid use can compound fracture risk (1,8). Mental health conditions such as depression and anxiety, which occur at higher prevalence in transgender populations, may further influence bone health indirectly through altered nutrition, reduced physical activity, and poorer adherence to medical therapy (9,10). Beyond biological considerations, social and structural determinants play a decisive role. Stigma, discrimination, and lack of culturally competent care contribute to delayed healthcare engagement and reduced uptake of preventive services (9). Transgender individuals are less likely to receive routine screening for osteoporosis or counseling on lifestyle strategies that support bone health, which may exacerbate long-term skeletal vulnerability (6,9).



Clinical strategies to protect skeletal health in transgender individuals should be individualized and proactive. Baseline assessment of fracture risk and consideration of dual-energy X-ray absorptiometry (DEXA) scanning are recommended for those with prolonged hypogonadism, history of fractures, or additional risk factors (1,6). Maintenance of physiologic sex-steroid levels through appropriately monitored GAHT, combined with adequate intake of calcium and vitamin D, regular weight-bearing and resistance exercise, and avoidance of tobacco and excessive alcohol, form the cornerstone of prevention (1,6). Importantly, interpretation of BMD results should be contextualized to the individual's clinical history, duration of hormone exposure, and overall risk profile (3,10). At a public health level, the inclusion of bone health considerations in transgender-specific clinical guidelines and professional training curricula is essential (6,9). Expanding research on long-term skeletal outcomes, particularly in individuals who initiate puberty suppression during adolescence, will further inform evidence-based recommendations (7,10).

Equitable access to gender-affirming care and preventive health services is not only a matter of social justice but also a prerequisite for reducing the future burden of osteoporosis and fragility fractures in this population. In conclusion, bone health represents a critical intersection between endocrinology, preventive medicine, and social determinants of health in transgender individuals. Current evidence indicates that most people receiving consistent, well-monitored gender-affirming hormone therapy can achieve and maintain healthy bone density (3,4,6). Nonetheless, specific clinical scenarios and systemic barriers place some individuals at increased risk, underscoring the need for holistic, inclusive, and evidence-driven approaches to ensure optimal skeletal health and overall well-being for transgender and gender-diverse populations.

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**Compiled by:**

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Editor (Main)



# THE ROLE OF A PHARMACIST BEYOND THE WHITE COAT: AN EXPERIENCE

When I first chose pharmacy, I thought it would be all about drugs, dosages, and drug interactions. I imagined a career built on knowledge and responsibility. What I did not anticipate was that pharmacy would quietly become one of my greatest teachers of humanity.

Every day behind the prescription counter, patients remind me that pharmacy is not just about prescriptions. They arrive carrying worry, fear, pain, frustration, hope, or sometimes despair. Over time, I realized that while drugs treat diseases, Pharmacists often care for the person behind the illness. Often, the most powerful medicine we can provide is not in a bottle or in a box; it is patience, understanding, and just taking the time to listen without judgment. Pharmacy taught me how to truly listen. Sometimes patients share their stories, their illnesses, or their worries and just talking to someone makes them feel better. In those moments, the role of the Pharmacist goes far beyond dispensing. We become a calm presence, a source of trust, and sometimes the only healthcare professional they feel comfortable talking to.

And then there are hilarious, unique pharmacy moments. Patients will spell medicines in ways you did not even know were possible. 'Jardy-met' becomes 'Jardinage', 'Accu-check' becomes 'Accu-chook' and sometimes you just have to laugh (quietly, of course) before gently figuring out what they mean. These little moments, unexpected laughter brightens our day. Then there are the challenging moments at the pharmacy counter. Sometimes encounters with difficult clients will make you want to give up, but you should never give in. Patients may express anger or impatience because of long waiting times. Pharmacy taught me not to take these moments personally but compassionately. It taught me resilience, emotional intelligence, and the ability to remain kind even under pressure. The profession also revealed the unseen strength Pharmacists must develop. We work under constant responsibility, knowing that a small mistake can have serious consequences, we balance accuracy with efficiency, professionalism with empathy. Mistakes and difficult interactions become lessons that shape us not just as professionals but as individuals.

The most rewarding moments are simple yet profound: patients coming back smiling, thanking you because they feel better, or sharing their gratitude for your guidance. These moments sometimes small, sometimes life-changing make all the long shifts, missed family gatherings, and hard days' worth it.

Mentoring interns and pre-registration Pharmacists have been one of the most meaningful parts of my journey. Guiding them is not always easy. Sometimes I must correct mistakes, have tough conversations, or challenge them to think differently. I do it not to criticize them but to help them grow into skilled, confident, and compassionate Pharmacists. Watching their confidence increasing, counseling skills improving, professionalism deepening, and clinical decision-making strengthening is incredibly fulfilling.

Being a pharmacist also means being a leader. Lead by example. Our presence means a lot to our staff. They look up to us, depend on our guidance, and take cues from how we handle challenges. Treating them with respect, empathy, and support is just as important as caring for patients. A strong team culture built on trust and encouragement allows everyone to deliver their best care. I have seen how encouragement can lift a staff and how unity can transform a challenging work environment into a place of growth. These experiences reinforced my belief that success in pharmacy is built as much on human relationships as on clinical knowledge. One of the most valuable lessons pharmacy has taught me is humility. Every day is a reminder that learning never stops whether it is about new treatments or about understanding people better. Every patient interaction has something to teach us. There are times when patients experience adverse drug reactions. In those situations, staying calm, explaining the next steps clearly, and reassuring them can make a huge difference. Sometimes, what we do quietly: counseling, monitoring, guiding can subtly make life better, safer, or even save it, though it may never be acknowledged openly.

The white coat often symbolizes expertise, but underneath it is a human being, someone who cares, feels, and sometimes struggles. Pharmacy reminded me that our humanity is our greatest strength. Empathy does not reduce professionalism, it strengthens it. Kindness does not slow us down, it makes our work meaningful. To aspiring Pharmacists and students: your journey will be more than learning doses and interactions. You will become a mentor, a guide, and sometimes the steady hand your patients or staffs need. Embrace mistakes, challenges, and lessons. They shape not only the Pharmacist you will become, but the person you are meant to be. Pharmacy has taught me patience, compassion, resilience, and respect for the stories every person carries. Beyond medicines and prescriptions, the heart of this profession is about people: the joy when patients recover, the pride when interns and pre-registration pharmacists grow into competent, confident professionals, the laughter and human connection that make the day brighter and the quiet satisfaction of knowing your leadership, guidance, and care made a difference. Hold on to these truths, and you will leave a lasting impact on patients, staffs and yourself.

**Compiled by:**

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# The Global Medicine Supply Chains in an Era of Geopolitical Conflict

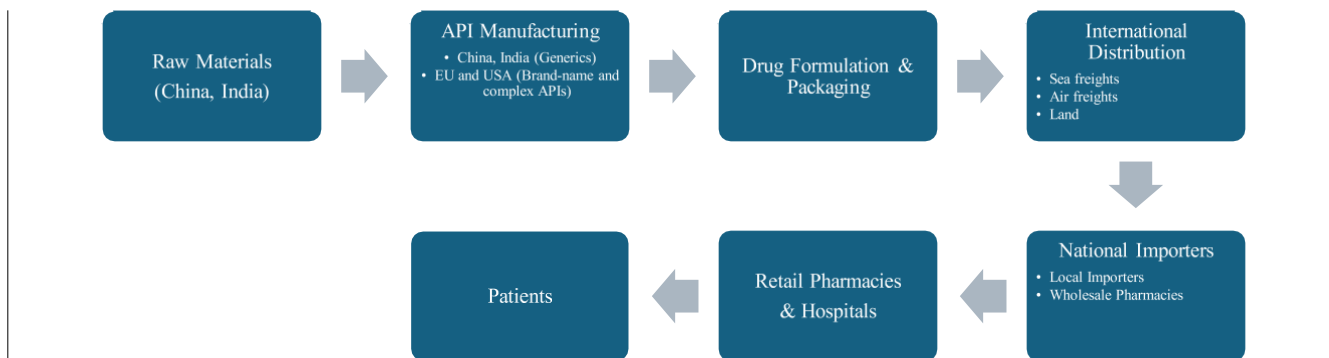
**Assessing how wars, trade tensions, and logistics disruptions influence medicine availability globally and especially in Mauritius.**

In an increasingly interconnected world, the global pharmaceutical supply chain has become one of the most complex and critical systems supporting healthcare delivery. Medicines consumed in one country may rely on raw materials from another, manufacturing processes in a second region, and shipping networks that span multiple continents. While this globalised model has significantly improved efficiency and reduced costs, it has also exposed pharmaceutical systems to geopolitical instability. In recent years, geopolitical conflicts, trade disputes, and maritime security challenges have increasingly disrupted international trade routes and supply chains. These disruptions have important implications for the pharmaceutical sector, where continuity of supply is essential for patient safety and healthcare system stability. Especially for small island economies such as Mauritius, which rely heavily on imported medicines, these risks are more significant. Currently, Mauritius imports the vast majority of its pharmaceutical products from international manufacturers, primarily from India, Europe, and South Africa. While this model ensures access to a wide range of medicines at competitive prices, it also means that global disruptions in logistics, manufacturing, or trade policies can directly affect local availability and pricing of medicines.

## 1. Global Pharmaceutical Supply Chains

The modern pharmaceutical supply chains involve multiple stages spanning several countries. The process typically begins with the production of raw chemical materials used to manufacture Active Pharmaceutical Ingredients (APIs). These APIs are then processed into finished pharmaceutical products such as tablets, capsules, injections, and syrups before being packaged and distributed globally. The majority of API production is concentrated in a few key countries. India and China dominate global pharmaceutical production, supplying over 60% of the world's generic medicines and a large share of active pharmaceutical ingredients (APIs). Finished pharmaceutical products are then exported to markets worldwide via international logistics networks that include maritime shipping, air freight, and regional distribution systems.

This highly globalised system has created efficiencies in pharmaceutical production, allowing countries without domestic manufacturing capacity to maintain access to essential medicines. However, it also creates a dependency on stable trade routes, predictable manufacturing outputs, and reliable international logistics infrastructure. The simplified flow of the global pharmaceutical supply chain is illustrated below.



*Figure 1: Global Pharmaceutical Supply Chain*

While the system functions efficiently during periods of stability, disruptions at any stage of the chain can propagate quickly across international markets.

## 2. Impact of Geopolitical Conflicts on Pharmaceutical Logistics

Geopolitical conflicts can affect pharmaceutical supply chains in several ways, including disruptions to transport routes, economic sanctions, and increased operational costs. Armed conflicts can directly impact maritime trade routes that are critical for global logistics. At the time of writing, the recent tensions in parts of the Middle East have created concerns regarding the safety of shipping lanes that connect Asian manufacturing hubs to European and African markets. When shipping companies are forced to reroute vessels to avoid conflict zones, transportation times increase significantly, resulting in delays and higher freight costs.

In addition to physical disruptions to shipping routes, economic sanctions imposed during conflicts may restrict financial transactions, insurance coverage, and trade agreements. Even when pharmaceutical products themselves are exempt from sanctions, the associated financial and logistical constraints can slow down supply chains. Another important factor is the rise in global energy prices, often triggered by geopolitical instability such as the current increase in international petrol prices following the Middle East war outbreak, which involves the OPEC countries. Pharmaceutical manufacturing and distribution rely heavily on energy-intensive processes, including chemical synthesis, sterilisation, and temperature-controlled transportation.

Wars can significantly increase the cost of medicines through multiple channels. For instance, the Russia–Ukraine conflict caused pharmaceutical energy costs to rise by 50–160%, while Middle East conflicts have doubled freight costs and added \$4,000–\$8,000 shipping surcharges per pharmaceutical shipment, demonstrating how geopolitical instability directly affects global medicine prices and availability. Increases in fuel and electricity costs can therefore raise both manufacturing and logistics expenses, ultimately affecting the price of medicines. These dynamics demonstrate how geopolitical tensions can indirectly impact healthcare systems worldwide by influencing the stability and affordability of pharmaceutical supplies.

### 3. Mauritius and Its Dependence on Imported Medicines

Mauritius remains highly dependent on international pharmaceutical suppliers, with more than 80% of medicines consumed locally imported from foreign manufacturers, primarily from India, Europe, and South Africa. According to trade statistics, pharmaceutical imports to Mauritius have been estimated at approximately USD 180–190 million annually in recent years.

Country	India	France	Germany	USA	UK	South Africa	Others
Import Share	58%	9%	6%	4%	3%	3%	17%


*Table 1: Major Sources of Pharmaceutical Imports to Mauritius*

The Mauritian pharmaceutical supply system typically follows a structure in which medicines are imported by licensed wholesalers and distributors before being supplied to hospitals, clinics, and community pharmacies. While this system ensures access to a diverse range of medicines, it also means that disruptions in international logistics can quickly affect the local market. Delays in shipping, shortages of certain medicines at manufacturing sources, or fluctuations in exchange rates may lead to temporary supply shortages or increased procurement costs. Furthermore, because Mauritius is geographically isolated and relies primarily on maritime freight for large shipments, disruptions to international shipping routes can have a particularly pronounced impact on delivery timelines.

### 4. Strengthening Pharmaceutical Supply Resilience

The increasing frequency of global disruptions has highlighted the importance of strengthening pharmaceutical supply resilience for import-dependent countries. One approach involves diversifying sources of pharmaceutical imports to reduce reliance on a limited number of manufacturing regions. By establishing supply agreements with manufacturers across different geographical locations, procurement agencies can reduce the risk associated with disruptions in a single region.

Another strategy involves maintaining strategic reserves of essential medicines. National stockpiles can serve as buffers during temporary supply disruptions, ensuring continuity of treatment for critical conditions. For example, in the case of petroleum energies, the International Energy Agency (IEA) member countries are required to hold emergency reserves equivalent to 90 days. A similar policy approach could be explored for essential medicines, where national legislation would require the maintenance of minimum strategic reserves to mitigate temporary supply disruptions. In addition, improvements in supply chain monitoring and forecasting systems can allow healthcare authorities and distributors to anticipate potential shortages earlier and adjust procurement strategies accordingly.



Finally, some policymakers have suggested that Mauritius could explore limited local pharmaceutical manufacturing or packaging capabilities for selected essential medicines. While large-scale production may not be economically feasible for the domestic market alone, targeted manufacturing initiatives could enhance supply security and create opportunities for regional exports.

### **Conclusion**

The global pharmaceutical supply chain is a highly interconnected system that depends on stable geopolitical conditions, reliable logistics networks, and consistent manufacturing outputs. While globalisation has enabled efficient production and widespread access to medicines, it has also created vulnerabilities that become evident during periods of geopolitical instability. In the near past, the COVID-19 pandemic exposed similar vulnerabilities in global medicine supply chains, highlighting the risks associated with excessive dependence on limited manufacturing regions. Now, conflicts, trade tensions, and disruptions to maritime transport routes can influence the availability, cost, and delivery timelines of pharmaceutical products worldwide. For countries such as Mauritius that rely heavily on imported medicines, these challenges highlight the importance of strengthening supply chain resilience through diversification, strategic planning, and improved logistics management.

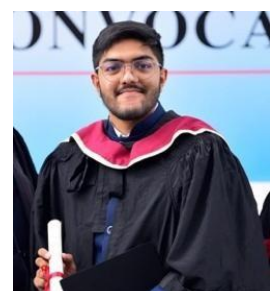
As geopolitical dynamics continue to evolve, ensuring reliable access to essential medicines will remain a critical priority for healthcare policymakers and pharmaceutical supply stakeholders.

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# Revolutionising drug discovery: The Synergy of AI and Network Pharmacology in Modern Medicine

Drug discovery and development is a complex, time-consuming, and costly process characterized by high attrition rates. Traditional single-target drug discovery approaches often fail to address the multifactorial nature of complex diseases such as cancer, neurodegenerative disorders, and metabolic syndromes. The integration of artificial intelligence (AI) with network pharmacology offers a promising paradigm shift by enabling a systems-level understanding of disease mechanisms and drug actions. This article explores how AI and network pharmacology can be used synergistically to accelerate drug discovery, improve target identification, and enhance therapeutic efficacy.

## What is network pharmacology?

Conventionally, the drug discovery process is based on the principle of “one drug- one target- one disease”. Though this method has proved itself fruitful throughout the years especially for monogenic and infectious diseases, it is far less effective when it comes to complex diseases involving various factors or complex pathways or multiple genes. This limitation can be bypassed through the use of network pharmacology, which studies the interactions amongst drugs, targets, genes and biological pathways, using a network framework. Network pharmacology integrates pharmacology with systems biology and bioinformatics to construct interaction networks among drugs, targets, proteins, and disease pathways. Instead of focusing on a single target, this approach emphasizes polypharmacology, where drugs modulate multiple targets to achieve therapeutic effects. The main focus of network pharmacology is:

- **Drug-target networks:** identifying correlation between compound and biological targets
- **Protein-protein interactions:** understanding the functional relationships between protein molecules
- **Pathway networks:** linking targets to signaling and metabolic pathways involved in disease.

## Significance of Artificial Intelligence in drug discovery

The advent of AI has greatly revolutionized the process of drug discovery in various aspects such as:

1. **Target identification & validation:** Machine learning (ML) models can predict novel disease-associated genes and prioritize targets based on biological relevance.

**2. Compound screening:** AI-driven virtual screening reduces the need for exhaustive experimental testing by predicting ligand–target interactions.

**3. Lead optimization:** Deep learning models can predict pharmacokinetic properties, toxicity, and bioavailability.

**4. Drug repurposing:** AI can uncover new therapeutic uses for existing drugs by analyzing large-scale omics and clinical datasets.

However, the use of AI does come with certain limitations, the main one being limitation of biological impretability. This is where network pharmacology synergises with AI by providing mechanistic insights.

### **Synergistic use of network pharmacology and AI:**

- Enhancing Target Identification: Network pharmacology identifies key nodes and pathways involved in disease networks, while AI algorithms analyze multi-omics data to rank and validate these targets. The integration enables more accurate identification of multi-target intervention strategies. By combining the mechanistic mapping provided by network pharmacology with the predictive power of AI, researchers can systematically uncover complex interactions and optimize therapeutic approaches for multifactorial diseases.
- Improved Drug–Target Interaction Prediction: AI-based models predict potential drug–target interactions, which can then be mapped onto biological networks to evaluate their systemic effects. This helps in selecting compounds with optimal network modulation rather than isolated target binding.
- Rational Polypharmacology and Combination Therapy: Network analysis can reveal synergistic target pairs or pathways, while AI can predict the most effective drug combinations. This is particularly useful for treating complex diseases requiring combination therapy, as seen in cancer and autoimmune disorders.
- Mechanistic Interpretation of AI Predictions: Network pharmacology provides biological context to AI predictions by situating them within disease-relevant pathways and interaction networks. This enhances trust, interpretability, and translational potential of AI-driven discoveries.

### **Applications in drug discovery and development:**

1. Drug Repurposing: Researchers can identify existing drugs that modulate disease associated networks, significantly reducing development time and cost by integrating clinical data and AI-based predictions.
2. Precision and Personalized Medicine: AI stratifies patients by molecular profiles, and network pharmacology connects these profiles to pathway mechanisms, enabling personalised treatments targeting individual network changes.
3. Natural Product and Herbal Medicine Research: Network pharmacology has been widely applied to study multi-component herbal formulations. AI further refines this approach by predicting active compounds, target profiles, and synergistic interactions.

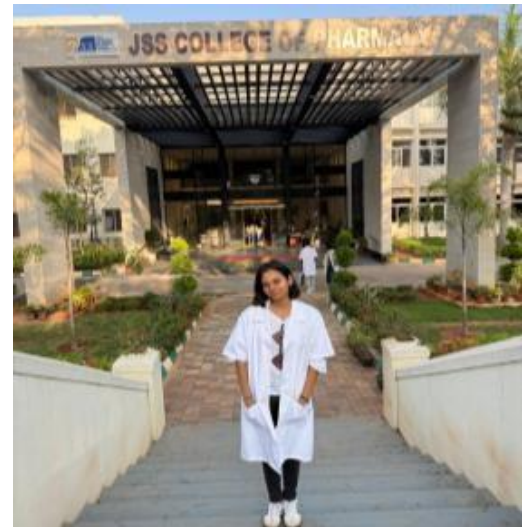
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# Balancing fitness and pharmacology: What happens when you supplement?

In today's health-conscious world, fitness culture and supplementation have become deeply intertwined. From protein powders and creatine to multivitamins and pre-workout formulas, dietary supplements are widely used by individuals seeking improved performance, muscle gain, and overall well-being. While supplementation can offer benefits when used correctly, it also raises important pharmacological considerations. Understanding how supplements interact with the human body—and with medicines—is crucial for maintaining both fitness and health.

## Pharmacological Role of Common Supplements

Supplements are often perceived as harmless because many are available over the counter. However, from a pharmacological perspective, supplements contain bioactive substances that can influence physiological processes. Protein supplements support muscle repair and growth by supplying essential amino acids, while creatine enhances adenosine triphosphate (ATP) regeneration in muscles, improving strength and endurance. Vitamins and minerals act as cofactors in enzymatic reactions, contributing to metabolism, immunity, and bone health.

## Risks of Excessive or Unsupervised Use

Despite their benefits, excessive or unsupervised supplementation can lead to adverse effects. High protein intake may place strain on renal function in susceptible individuals. Overuse of fat-soluble vitamins such as vitamins A, D, E, and K can result in toxicity due to their accumulation in body tissues. Similarly, excessive intake of stimulants found in pre-workout supplements—such as caffeine—can cause insomnia, palpitations, anxiety, and increased blood pressure.

## Drug–Supplement Interactions

A major pharmacological concern arises when supplements are combined with prescription medicines. Supplements may alter drug absorption, metabolism, or excretion. For example, calcium and iron supplements can reduce the absorption of certain antibiotics, including tetracyclines and fluoroquinolones. Herbal products such as St. John's wort may induce hepatic enzymes, reducing the effectiveness of oral contraceptives and anticoagulants.

## **Fitness Culture and Self-Prescription**

From a fitness standpoint, many gym enthusiasts rely on online advice or peer recommendations rather than professional guidance. This practice increases the risk of inappropriate dosing and adverse effects, especially in individuals with underlying medical conditions. Applying pharmacological principles encourages evidence-based supplementation and greater awareness of contraindications.

## **Quality, Regulation, and Safety Concerns**

Unlike prescription medicines, many supplements are not subjected to rigorous clinical testing before marketing. Issues such as contamination, incorrect labeling, and presence of banned substances have been reported. These risks pose serious health concerns and ethical challenges, particularly for competitive athletes.

## **Role of Healthcare Professionals**

Pharmacists and other healthcare professionals play a crucial role in promoting safe supplementation. Pharmacists can identify potential drug-supplement interactions, counsel patients on appropriate choices, and ensure rational use. Integrating fitness goals with pharmacological knowledge allows individuals to optimize performance without compromising health.

## **Conclusion**

Supplementation can be a valuable tool when aligned with sound pharmacological principles. Rather than avoiding supplements entirely, individuals should focus on informed, responsible use. Balancing fitness and pharmacology ensure that supplementation supports long-term health, safety, and sustainable performance.

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## **Compiled by:**

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# Nanobots in Medicine

## Introduction

Nanobots, formally referred to as medical nanorobots or nanoscale robotic devices, represent an emerging field in biomedical science. Operating at dimensions measured in nanometers (one billionth of a meter), these devices are engineered to function within biological systems at the cellular and molecular levels. Their development integrates nanotechnology, materials science, molecular biology, and medicine to enhance diagnostic precision and therapeutic effectiveness.

## Fundamental Concepts and Design

Many experimental designs use DNA origami techniques, where DNA strands are folded into programmed three-dimensional shapes capable of carrying therapeutic agents. Other systems rely on magnetic, chemical, or biological propulsion for controlled movement. Such designs enable nanobots to sense specific biological signals, like pH shifts or the presence of molecular markers, and respond accordingly.

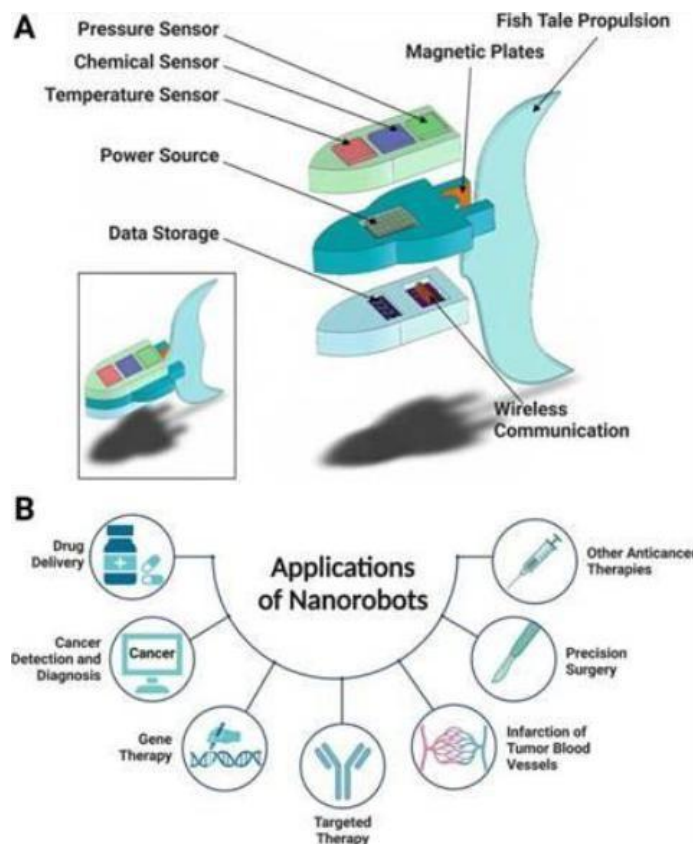


Figure 1. Nanorobot Architecture and Functional Design Adapted from Kong et al. (2023), Advances of medical nanorobots for future cancer treatments, Journal of Hematology & Oncology, 16(1), 74. <https://doi.org/10.1186/s13045-023-01463-z>

## **Magnetically Guided Nanorobots for Precision Therapy**

Magnetic nanorobots are designed for precise navigation and drug delivery within tumors using externally applied magnetic fields. For example, doxorubicin-loaded nanorobots can be guided toward three-dimensional tumor spheroids, where they accumulate in malignant tissue. Inside cancer cells, the acidic microenvironment of endosomes and lysosomes triggers drug release. This ensures that therapy is concentrated at the tumor site. Advanced designs include nickel-silver nanoswimmers capable of transporting drug-loaded polymer particles through narrow biological channels, enhancing penetration into dense tumor masses. These nanorobots combine magnetic guidance, responsive drug release, and biocompatible materials to maximize tumor targeting, reduce systemic toxicity, and improve treatment efficacy.

## **Crossing the Blood-Brain Barrier: Nanorobot Approaches**

One strategy involves using nanoparticles, such as NK@AIEdots, that can temporarily modulate tight junctions between endothelial cells, creating short-lived openings for passage. They are programmed to identify tumor markers, so drugs are delivered mainly to cancer cells, sparing healthy brain tissue. They often incorporate stimuli-responsive features, allowing drugs to be delivered in response to local conditions such as pH, enzymes, or oxidative stress. Beyond drug delivery, these nanorobots can carry imaging agents, enabling real-time monitoring of tumor localization and treatment progress. By combining targeted delivery, controlled release, and diagnostic capabilities, this approach maximizes treatment efficacy while minimizing toxicity to healthy brain tissue, offering a promising solution for precision therapy in brain cancers.

## **Microenvironment-Responsive Nanorobots for Targeted Cancer Therapy**

Nanorobots, such as HApt-tFNA complexes, can selectively bind to cancer cell receptors like HER2, triggering cellular uptake and lysosomal degradation. They are designed to respond to tumor microenvironment cues—such as acidic pH, specific enzymes, or external ultrasound—enabling precise release of chemotherapeutic agents. This approach not only improves drug accumulation in tumors but also overcomes microenvironment-driven drug resistance, reduces off-target toxicity, and promotes programmed cancer cell death.

## **Ultrasound- and Light-Driven Nanomotors in Oncology**

Ultrasound-propelled gold nanowires can penetrate living cells, enabling targeted gene silencing, while DNA origami nanorobots are programmed to release thrombin upon recognizing tumor-specific markers like nucleolin. These nanomotors respond to external stimuli—ultrasound or light—to control movement and drug release, enhancing precision and reducing damage to healthy tissues.

## Applications in Cancer Treatment

Nanorobots offer targeted cancer therapy by recognizing tumor-specific markers and releasing drugs directly at malignant sites (Kong et al., 2023; Singh & Deshmukh, 2023). Magnetic and ultrasound-driven nanobots enable controlled tumor penetration and localized drug delivery, improving efficacy while reducing systemic toxicity (Gupta et al., 2022; Soto et al., 2020). Preclinical studies show promising tumor inhibition.

## Conclusion

Nanobots hold strong potential in precision medicine through targeted drug delivery, enhanced diagnostics, and controlled therapeutic action. Although current applications are primarily preclinical, continued technological progress may enable their future integration into routine healthcare practice.

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## Compiled by:

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# Bacterial-Mediated Cancer Therapy: Mechanisms of Bacteria as Potential Anticancer Therapeutic Agents

## Introduction

Cancer is one of the leading causes of mortality worldwide. Traditional treatment methods like radiotherapy and chemotherapy are associated with numerous side effects such as alopecia, myelosuppression, cognitive impairment and so on. Research has shown that many of these undesirable complications are related to the non-targeted distribution of drugs which has led to damage of healthy tissues. In order to alleviate this problem, Bacteria-Mediated Cancer Therapy (BMCT) is emerging as a new oncological treatment plan. Several bacteria have already demonstrated their potential as anti-cancer therapeutic agents. For instance, *Salmonella typhimurium* has been tested for melanoma, lung cancer and pancreatic cancer; *Escherichia coli* Nissle 1917 for colorectal cancer; *Bifidobacterium* for leukaemia, *Clostridium butyricum* for kidney cancer and *Listeria monocytogenes* for breast cancer.

## History

The first BMCT was achieved by William B. Coley in 1891 who was a surgeon specialising in bone sarcomas. Coley initiated the first bacterial-based tumour therapy by injecting *Streptococcus pyogenes* in a bone cancer patient, which caused erysipelas, a skin infection caused specifically by this streptococcal bacterium in the dermal layer of the skin. This in turn caused the tumour to suppress and to shrink. He further experimented with a mixture known as Coley's toxin which is made up of *Streptococcus pyogenes* and *Serratia marcescens* to reduce risks. By 1893, he had received positive results with almost all of his 10 patients with untreatable bone sarcomas and further continued his studies.

## Mechanisms of action of bacteria

### 1. Production of bacteriocins

Bacteriocins are proteinaceous toxic substances released by bacteria. They have shown promising anti-cancerous activity compared to conventional cancer drugs. Examples include *E. coli* and some of its strains which produce colicins used in breast cancer treatment, pediocin from the genus *Pediococcus* which is utilised in colon cancer and so on. However, these bacteriocins could damage healthy tissues as well if the correct dosage and intensity of toxicity is not chosen properly.

## 2. Stimulation of immune system

Some bacteria have the ability to stimulate the recruitment and activation of T cells and initiate an anti-cancer immune response by identifying cancer cells as antigens. For instance, *E. coli* and *S. typhimurium* enhance the defense mechanism of the body against the tumour cells by increasing the production of CD4<sup>+</sup> and CD8<sup>+</sup> T cells in the cancer area. This is crucial in the destruction of cancer cells.

## 3. Targeting the Tumour Microenvironment

Tumour Microenvironment (TME) is made up of components like immune cells, blood vessels and ECM that surround the cancer cells and aids in functions like angiogenesis, immune tolerance and nutrition supply. Cancer cells are usually hypoxic which makes them resistant to radiotherapy and chemotherapy effects. However, this environment is very favourable towards bacteria which colonise and infiltrate the tumour tissue through the TME. For example, the obligate anaerobes *Clostridium* and *Bifidobacterium* precisely target the hypoxic areas of the tumour and destroy the cells.

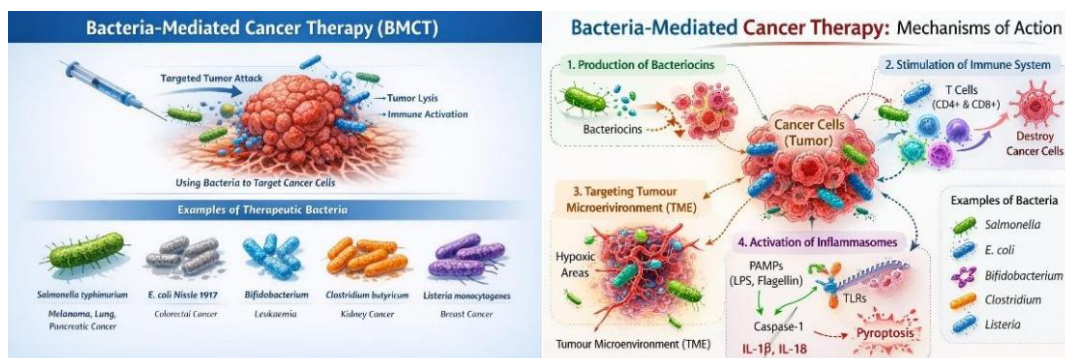
Moreover, facultative anaerobes like *Salmonella* and *Listeria* trigger an inflammatory response by invading the blood vessels in TME which leads to apoptosis of cancer cells.

## 4. Activation of inflammasomes

Inflammasomes are large complexes of the innate immune system consisting of several proteins that are responsible for causing inflammatory cell death, that is pyroptosis. These structures activate the enzyme caspase-1 which in turn leads to the maturation of pro-inflammatory cytokines, namely IL-1 $\beta$  and IL-18, thus resulting in pyroptosis. Structures like lipopolysaccharide, flagellin or lipoprotein are known as Pathogen-Associated Molecular Patterns and these activate Toll-like receptors (TLRs) on immune cells which in turn trigger cell signaling pathways to release cytokines and chemokines for suppression of the tumour.

## **Conclusion**

Most of the studies being carried out on BMCT remain in the early stages of preclinical and clinical development. BMCT combined with conventional methods of cancer treatment could emerge as a potential cancer immunotherapy strategy in the future with promising outcomes.



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## FDA APPROVED DRUGS

S.N	Drug	Indication	Date of approval
1.	Zycubo (copper histidinate) INJECTION	A copper replacement therapy for the treatment of Menkes disease used in pediatric patients	12/01/2026
2.	Filkri (filgrastim-laha) INJECTION	Filkri is a leukocyte growth factor biosimilar to Neupogen for treatment of neutropenia, neutropenia associated with chemotherapy, neutropenia associated with radiation, bone marrow transplantation, and peripheral progenitor cell transplantation.	15/01/2026
3.	Quiofic (folic acid) ORAL SOLUTION	Folic acid oral solution for the treatment of folic acid deficiency in adults and pediatric patients	26/01/2026
4.	Darzalex Faspro (aratumumab and hyaluronidase-fihj) INJECTION	For adults with newly diagnosed multiple myeloma who are ineligible for autologous stem cell transplant (ASCT)	27/01/2026
5.	Yuvezzi (brimonidine tartrate and carbachol) OPHTHALMIC SOLUTION- formerly Brimochol PF	Yuvezzi (brimonidine tartrate and carbachol) is an alpha-adrenergic agonist and cholinergic agonist combination indicated for the treatment of presbyopia in adults.	28/01/2026
6.	Vykoura (leucovorin calcium) SOLUTION FOR INJECTION	Vykoura is a folate analog used as an antidote for methotrexate toxicity, to treat specific anemias, and to treat metastatic colorectal cancer in combination with 5-fluorouracil	03/02/2026
7.	Vybrique (sildenafil) ORAL FILM	Dissolves on the tongue, allowing for discreet, water-free, as needed use, typically 30 minutes to 4 hours before sexual activity for treating erectile dysfunction in men	05/02/2026

8.	Clemidsogene lanparvovec RGX-121INJECTION	For the treatment of Mucopolysaccharidosis II (MPS II), also known as Hunter syndrome, which is a rare X-linked disorder caused by deficiency of iduronate-2-sulfatase	08/02/2026
9.	Keytruda Qlex, Merck ( pembrolizumab and berahyaluronidase alfa-pmph) INJECTION	For adult patients with platinum-resistant epithelial ovarian, fallopian tube, or primary peritoneal carcinoma whose tumors express PD-L1 (CPS $\geq$ 1) as determined by an FDA-authorized test, and who have received one or two prior systemic treatment regimens	10/02/2026
10.	Cerezyme (imiglucerase) IV INFUSION	To treat patients with Gaucher disease type 3 (GD3), with no age limitation for patients with GD1 and GD3	12/02/2026
11.	Adquey (difamilast) OINTMENT	Adquey (difamilast) is a topical phosphodiesterase 4 (PDE-4) inhibitor for the treatment of mild to moderate atopic dermatitis in patients 2 years of age and older.	12/02/2026
12.	Bysanti (milsaperidone) TABLETS	An atypical antipsychotic for use in the treatment of schizophrenia and manic or mixed episodes associated with bipolar I disorder.	20/02/2026
13.	Keytruda (pembrolizumab Regimen) INJECTION	For the treatment of Platinum-resistant recurrent ovarian cancer	20/02/2026
14.	Zepbound (tirzepatide) MULTI-DOSE INJECTABLE PEN	Help in weight-loss therapy	23/02/2026
15.	Loargys (pegzilarginase-nbln)	A recombinant human arginase-1 enzyme replacement therapy to treat hyperarginemia in adults and pediatric patients two years and older with Arginase 1 Deficiency, in conjunction with dietary protein restriction	23/02/2026

16.	Desmoda (desmopressin acetate) ORAL SOLUTION- formerly ET-600	Desmoda is an oral solution formulation of the approved vasopressin analog desmopressin for use in the management of central diabetes insipidus.	25/02/2026
17.	Hernexeos (zongertinib) TABLETS	A kinase inhibitor, for an expanded indication for adults with unresectable or metastatic non-squamous non-small cell lung cancer (NSCLC) whose tumors have HER2 (ERBB2) tyrosine kinase domain (TKD) activating mutations	26/02/2026
18.	Yuviwel (navepegritide) INJECTION	To increase linear growth in pediatric patients 2 years and older with achondroplasia with open epiphyses	27/02/2026
19.	Raxone (Idebenone) ORAL TABLETS	For the treatment of Leber hereditary optic neuropathy (LHON). This inherited mitochondrial disorder damages retinal ganglion cells, resulting in rapid vision loss. Idebenone is expected to restore mitochondrial function and reactivate retinal ganglion cell function	28/02/2026
20.	Dupixent (Dupilumab) INJECTION	For the treatment of allergic fungal rhinosinusitis (AFRS), a subtype of chronic rhinosinusitis, in adults and children aged 6 years and older	28/02/2026
21.	Pylarify (Piflufolastat F 18) INJECTABLE SOLUTION	New formulation, a diagnostic agent used as medical imaging for Biochemically Recurrent Prostate Cancer (CONDOR)	06/03/2026
22.	Sotyktu (Deucravacitinib) ORAL TABLETS	For the treatment of moderate to severe plaque psoriasis	06/03/2026
23.	Reproxalap TOPICAL OPHTHALMIC SOLUTION	Act as small-molecule modulator of Reactive Aldehyde Species (RASP) to treat conditions like dry eye disease, allergic conjunctivitis, non-infectious anterior Uveitis	16/03/2026
24.	Kresladi (marnetegrage autotemcel) IV INFUSION	For severe Leukocyte Adhesion Deficiency-1, a rare genetic immune disorder	28/03/2026
25.	LNTH-2501 (Gallium Ga-68 edotreotide) INJECTABLE SOLUTION	PET Diagnostic Imaging Kit Targeting Somatostatin Receptor-Positive (SSTR+) Neuroendocrine tumors (NETs) in adults and pediatric patients	29/03/2026

26.	Keynote-905/Keytruda (pembrolizumab) LIQUID SOLUTION/LYOPHILIZED POWDER	For patients with Muscle-Invasive Bladder Cancer	07/04/2026
27.	Opdivo (nivolumab) IV INFUSION	Resected esophageal or gastroesophageal junction (GEJ) cancer in the adjuvant setting	08/04/2026
28.	RP1 +Opdivo (nivolumab) IV INFUSION	To treat various cancers, including melanoma, lung, kidney and head/neck cancers by inhibiting the PD-1 receptor to help the immune system attack cancer	10/04/2026
29.	Filspari (sparsentan) ORAL TABLETS	Endothelin and angiotensin II receptor antagonist indicated to reduce proteinuria (protein in urine) in adults with primary immunoglobulin A nephropathy (IgAN) at risk of rapid disease progression, generally a UPCR $\geq 1.5$ g/g	13/04/2026
30.	Auvelity (AXS-05) ORAL TABLETS	For major depressive disorder and ongoing research for Alzheimer's disease agitation and smoking cessation	30/04/2026

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# Drug Profile: Injection Bevacizumab

## What Is Bevacizumab?

Bevacizumab is a recombinant humanized monoclonal antibody used mainly in cancer treatment. It targets a protein called vascular endothelial growth factor (VEGF), which helps tumors grow new blood vessels. By blocking VEGF, Bevacizumab limits blood supply to tumors, slowing or stopping their growth

## How It Works

Bevacizumab binds to VEGF-A and prevents it from interacting with its receptors on blood vessel cells, blocking angiogenesis (formation of new blood vessels). This starves tumors of oxygen and nutrients.

## Uses / Indications

Metastatic colorectal cancer, advanced non-small cell lung cancer (non-squamous) renal (kidney) cancer, Ovarian, fallopian tube, or primary peritoneal cancer, Cervical cancer, Glioblastoma (a recurrent brain tumor)

## Dosage & Administration

Bevacizumab is not taken orally — it is given intravenously (IV) in a medical setting by a healthcare provider.

Typical dosing regimens

Colorectal cancer:

- 5 mg/kg every 2 weeks or 7.5 mg/kg every 3 weeks with chemo

Lung cancer (NSCLC):

- 15 mg/kg every 3 weeks with chemo

Kidney cancer:

- 10 mg/kg every 2 weeks

Glioblastoma:

- 10 mg/kg every 2 weeks

Ovarian & cervical cancers:

- 10–15 mg/kg every 2–3 weeks depending on regimen

Note: Exact doses depend on body weight, cancer type, treatment combination, and patient condition. Always follow your doctor's prescription.



## **Important Precautions**

Pregnancy & contraception: Can cause serious fetal harm. Avoid pregnancy during treatment and for 6 months after.

Breastfeeding: Should not be done during treatment and for 6 months after last dose.

Surgery: Bevacizumab may delay wound healing — often stopped 28 days before and after surgery.

Fertility: Can affect fertility; consult your doctor if planning children.

## **Common & Serious Side Effects**

Common (may not need urgent care)

High blood pressure, Headache, Changes in taste, Nose-bleeds, Nausea/constipation, Skin changes or dry skin, Back pain, Serious (seek immediate help), severe bleeding or unusual bruising,

Gastrointestinal perforation (severe abdominal pain),

Blood clots, Signs of stroke (sudden numbness, trouble speaking), Poor wound healing

Infusion reactions (fever, chills, difficulty breathing)

Posterior reversible encephalopathy syndrome (PRES) — headaches, seizures, visual changes

## **Interactions & Monitoring**

Bevacizumab can increase blood pressure — doctors often monitor blood pressure regularly. Can lower white blood cells and platelets, raising infection or bleeding risk.

## **Summary**

Bevacizumab (e.g., Avastin) is a targeted anti-angiogenesis cancer therapy given by IV infusion. It's used for several advanced cancers and works by cutting off tumor blood supply. It has important precautions — especially around pregnancy, surgery, and wound healing — and can cause both common and serious side effects. Your oncologist will determine appropriate dosage and monitoring for your situation.

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Chairman, Pharmacy Council of Mauritius



# Events' Corner

## Event 1: Launch of the Master of Pharmacy (M Pharm) Programme in Regulatory Affairs and Opening of Admissions for the February 2026 Intake

The JSS Academy of Higher Education and Research Mauritius has opened admissions for the February 2026 intake of its M Pharm in Regulatory Affairs, offered in a fully online mode. The 1.5-year programme is designed for graduates with a B Pharm or equivalent qualification and focuses on global regulatory frameworks including US FDA, EMA, and CDSCO, while integrating modern AI and regulatory technology in the curriculum. The programme provides flexible learning and strong career prospects in the pharmaceutical and biotechnology industries



**JSS AHER**  
JSS ACADEMY OF HIGHER EDUCATION AND RESEARCH MAURITIUS  
A degree awarding institution registered with the Higher Education Commission, Mauritius

## Master of Pharmacy (M Pharm) Regulatory Affairs

### ADMISSIONS OPEN

### FEBRUARY 2026 INTAKE

**About the Programme**

The Master of Pharmacy (M Pharm) in Regulatory Affairs is an online mode programme designed to equip students and professionals with the latest knowledge and skills in pharmaceutical legislation, global regulatory frameworks, and compliance for drugs, medical devices, and nutraceuticals.

**Programme Highlights:**

- Flexible Distance Learning Mode
- Global Regulatory Focus (US FDA, EMA, CDSCO, TGA, SAHPRA)
- Integrated Modules on AI, Python Programming & Regulatory Tech
- Hands-on Regulatory Documentation & Dossier Preparation

**Career Opportunities**

Graduates of this programme can work as:

- Regulatory Affairs Specialist/Manager
- Pharmacovigilance Officer
- Quality Assurance Executive
- Dossier & Submissions Associate
- RA Consultant in Pharma, Biotech, CROs, & FMCG industries

**Programme Delivery**

**Mode:**  
Part time Online Distance Learning via Interactive E-Learn Platform

**Duration:** 1.5 Years

**Assessment:**  
Online Quizzes, Assignments, Virtual Labs, Capstone Project

**Eligibility:**  
Bachelor of Pharmacy (B Pharm) or equivalent degree in health sciences

**Apply Now**

**For More Information:**  
Email: [info@jssaher.edu.mu](mailto:info@jssaher.edu.mu) | Tel: +230 4016415 / + 230 54896172  
Web: [www.jssaher.edu.mu](http://www.jssaher.edu.mu)

## Event 2: Introduction of the Foundation Programme in Pharmacy at JSS Academy Mauritius

Students who did not obtain 21 points in HSC A-Level still have the opportunity to pursue a career in pharmacy through the Foundation Programme in Pharmacy offered by JSS Academy of Higher Education and Research Mauritius. This programme provides students with the essential academic foundation required for pharmaceutical studies. Upon successful completion, students become eligible to progress to the B Pharm or Pharm D degree programmes, enabling them to continue their journey toward a professional career in the pharmaceutical field.



**ADMISSIONS  
OPEN FOR  
MARCH 2026  
INTAKE**

**NOW STUDY**

## **FOUNDATION PROGRAMME IN PHARMACY**

The Foundation Programme in Pharmacy (FPP) is a comprehensive one-year basic programme designed to provide students with the necessary knowledge and skills to pursue a career in the pharmaceutical sciences and practice.

### **OPPORTUNITY**

You want to become a registered pharmacist but do not meet the requirement of 21 points as required by the Pharmacy Council of Mauritius. Here is an opportunity for you. Follow our JSS Foundation programme in Pharmacy approved by the Pharmacy Council of Mauritius and thereafter join our B Pharm programme.

### **ENTRY REQUIREMENT**

The candidate must have:  
3 "A" Level Passes in one and the same sitting, including one science subject of the Higher School Certificate Examination (or equivalent).

**Programme Duration**    **1 Year**

**Career Progression**    **Bachelor of Pharmacy (B Pharm)  
Doctor of Pharmacy (Pharm D)**

**Tuition Fees**

**MUR 90 000**

### **For More Information:**

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### Event 3: Inauguration of JSS School of Medicine

The JSS School of Medicine Mauritius was officially inaugurated on 4 February 2026 at JSS Academy of Higher Education and Research, Mauritius marking a significant milestone in the institution's commitment to advancing medical education and healthcare training in Mauritius. The inauguration ceremony was held in the gracious presence of Jagadguru Sri Shivarathri Deshikendra Mahaswamiji. The event was formally inaugurated by His Excellency Shri Dharambeer Gokhool, Hon'ble President of the Republic of Mauritius. The establishment of the JSS School of Medicine aims to provide high-quality academic programmes, modern learning facilities, and global opportunities for aspiring medical professionals, while contributing to the growth of healthcare education and research in Mauritius and the wider region.





## Event 4: Induction and Orientation Programme for the First MBBS Cohort and Other Programmes at JSSAHER Mauritius – March 2026

JSS Academy of Higher Education and Research successfully organized a one-week Induction and Orientation Programme from 3 March to 6 March 2026 to welcome the newly admitted students for the academic year. The programme marked the commencement of several important academic milestones, including the 1st cohort of the MBBS programme, the 1st cohort of the Foundation Programme in Pharmacy, the 3rd cohort of the BSc Biotechnology programme, and the 7th cohort of the Bachelor of Pharmacy (B Pharm) programme. During the orientation, students were introduced to the academic structure, institutional values, and learning environment of the university. Eminent personalities and distinguished speakers from various sectors addressed the students, sharing valuable insights and extending their best wishes for a successful academic journey and professional career. The programme provided an excellent platform for students to familiarize themselves with the institution and begin their academic pursuits with enthusiasm and confidence.

As part of the induction programme, the newly admitted students were also given the opportunity to interact with their seniors, creating a welcoming and supportive academic environment. An engaging ice-breaking session was organized to encourage open communication and help students become more comfortable with one another. Through various interactive activities, the session helped students build new friendships, strengthen teamwork, and develop a sense of belonging within the university community as they embarked on their academic journey.



### Orientation Programme for MBBS, B Pharm and BSc 03 March - 06 March 2026 AGENDA

Day 1: Tuesday, 3 March 2026 Venue: Conference Room 2.11

10:00 AM	Welcome and About JSSAHER, Mauritius, and Transition from College to University	Prof (Dr) Praveen Mahadeb, CEO & Vice-Chancellor
10:45 AM	Overview of administrative and student services	Mr Naveen K P. Registrar
11:05 AM	General Laboratory Safety Measures (Dos and Don'ts)	Prof (Dr) V Jaishree, Head, Faculty of Life Sciences
11:20 AM	Campus Visit	Dr Goutham V, Assistant Professor and Ms Bhavna, Admin Assistant
12:00 Noon	Lunch Break	
01:15 PM	Guest Lecture: Campus Mental Health Awareness, Emotional Intelligence and Stress Management	Prof (Dr) Kishor M. Head, Department of Psychiatry, JSS Medical College and Hospital, JSS AHER, Mysuru, India

Day 2: Wednesday, 4 March 2026 Venue: Conference Room 2.11

09:30 AM	Guest Lecture: Crime Prevention and Safety	Representative from the Police Crime Prevention Unit, Mauritius
11:00 AM	Briefing on JSSAHER E-learn Platform	Dr Datta Kumar and the team Enhanced, India
01:15 PM	Introduction and Icebreaking session for all the freshers (Room:2.11)	Dr Khayati Mondgil, Assistant Professor, and selected students

Day 3: Thursday, 5 March 2026 Venue: Conference Room 2.11

09:30 AM	Guest Lecture: Drug Abuse and Drug Prevention	Representative from ADSU Education and Training Cell
10:00 AM	About the JSS School of Pharmacy and Program Orientation (Room: 1.1)	Prof (Dr) Ashish Wadhvani, Head, Faculty of Health Sciences Dean, JSS School of Pharmacy
	About the Faculty of Life Sciences and Program Orientation (Room: 2.2)	Prof (Dr) V Jaishree, Head, Faculty of Life Sciences and Management Studies
	About the JSS School of Medicine and Program Orientation (Room: 2.11)	Prof (Dr) Ajay Babu, JSS School of Medicine
01:15 PM	Guest Lecture: Current Scenario of Health Care and Life Sciences sector in Mauritius	Mrs Kaajal Nathoo, Executive Director Transphorm Pharma

Day 4: Friday, 6 March 2026 Venue: Conference Hall 2.13

09:30 AM	International Women's Day	Chief Guest: Hon. (Ms) Anshita Bahouram Junior Minister, Ministry of Health & Wellness, Republic of Mauritius
01:15 PM	First Aid Awareness Lecture	By the trained professionals from the field

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## Event 5: Celebrating Women's Excellence; JSSAHERM Marks International Women's Day 2026

The JSS Academy of Higher Education and Research, Mauritius proudly celebrated International Women's Day 2026 on 6th March 2026 under the theme #GivetoGain. The event highlighted the invaluable contributions of women across all spheres of life and emphasized the power of giving back to the community. The occasion was graced by The Hon. (Ms) Anishta Babooram, Junior Minister, Ministry of Health and Wellness, Republic of Mauritius, who served as the Chief Guest and delivered an inspiring address to the gathering. She appreciated the role of women in shaping society and encouraged continued efforts in health, education, and social welfare.

On this occasion, the XV issue of the "JSSAHER - Health & Education" Newsletter was released, featuring comprehensive insights into the healthcare and pharmaceutical sectors, latest developments in science, scientific articles contributed by students and staff, invited expert articles, drug-related information, and coverage of JSSAHERM events.

In recognition of their academic and professional achievements, Certificates of Participation were awarded to the B Pharm and BSc Biotechnology students for successfully completing their Internship at JSS AHER, Mysuru.

The celebration, aligned with the #GivetoGain theme, reflected the institution's commitment to empowering women, promoting education, and fostering a spirit of service within the health and life sciences community.





## Event 6: 58<sup>th</sup> Independence Day and 34<sup>th</sup> Anniversary of the Republic of Mauritius

### Celebrations at JSSAHER Mauritius

On the 11<sup>th</sup> of March 2026, around 10:30 AM, the 58<sup>th</sup> Independence Day and the 34<sup>th</sup> Anniversary of the Republic of Mauritius were celebrated at JSSAHER Mauritius. The celebration started off traditionally with the National Anthem being harmoniously sung by the students and the staff. This was followed by the raising of the national flag, marking a moment of pride and unity among those present. The CEO and Vice Chancellor, Prof. (Dr.) Praveen Mohadeb, addressed the gathering. A student from the new cohort conveyed the Honourable Prime Minister's message to the audience. The celebration concluded on a pleasant note with refreshments shared among the students and staff.



# Publications, Visits, Achievements and Conferences/Workshop Attended by Staff and Student between January - April

## Conferences/Achievements/Workshop/Meetings

### 1. Distinguished Invited Lectures at the College of Pharmacy, JSS University, Noida

The College of Pharmacy at JSS University Noida organized an invited lecture on 30<sup>th</sup> December 2025 at the Seminar Hall of the College of Pharmacy. The academic session brought together faculty members and students for an engaging knowledge-sharing event featuring distinguished academicians from JSS Academy of Higher Education and Research, Mauritius. The lectures focused on emerging developments in pharmaceutical sciences and the evolving roles of healthcare professionals, providing valuable insights and encouraging academic interaction.



#### **Prof. (Dr.) Ashish D Wadhvani**

Prof. (Dr.) Ashish D Wadhvani, Head of the Faculty of Health Sciences and Dean of the School of Pharmacy at JSSAHER Mauritius, delivered a lecture on “Development of Insulin-loaded Microneedle: A Closed-Loop Transdermal Drug Delivery System for Management of Diabetes.” His presentation highlighted the potential of microneedle-based transdermal systems as an innovative approach for insulin delivery. The lecture emphasized advancements in drug delivery technologies aimed at improving diabetes management and enhancing patient compliance through minimally invasive therapeutic strategies.



**Dr. Khayati Moudgil** presented a talk titled “The Versatility of Clinical Pharmacist: Shifts from Dispensing to Bedside Care for Delivering Better and Safer Healthcare.” Her lecture focused on the expanding responsibilities of clinical pharmacists in modern healthcare systems. She highlighted the transition from traditional dispensing roles to active involvement in bedside care, medication management, and patient safety, emphasizing the importance of clinical pharmacists in delivering effective and patient-centered healthcare.



## **2. Internship at JSS Academy of Higher Education & Research, Mysuru**

### **Day 1 – Saturday**

On Saturday, 24 January 2026, a group of 23 Mauritian students comprising 19 BPharm and 4 Biotech students departed from SSR International Airport to Kempe Gowda International Airport in Bengaluru for the Student Exchange Programme. The students were accompanied by Dr. Goutham Yerrakulla and travelled to JSS Academy of Higher Education and Research (JSSAHER) in Mysuru, where they were welcomed by Dr Arundaya BS and Mr Shivadarshan J and were accommodated at the JSSAHER Guest House.

### **Day 2 – Sunday**

On Sunday, the group visited the famous Mysore Palace, one of the most iconic historical landmarks in the city. The visit allowed the students to learn about the rich cultural heritage and architecture of Mysuru while enjoying the beautiful surroundings.

### **Day 3 – Monday**

On Monday, the students participated in the 77th Republic Day celebrations held at JSSAHER Mysuru. The event included cultural activities celebrating India's national pride. In the afternoon, the group visited the Mysore Zoo, where they observed a wide variety of animals.

### **Day 4 – Tuesday**

Tuesday began with a meet-and-greet session between the students, the principal Dr TM Pramod Kumar, Dr Shailesh T, and members of the academic staff. This session allowed the students to introduce themselves and learn more about the institution. After the meeting, the group was given a quick visit to several departments, the sophisticated Instrumentation Centre and the Sparkle Cine within the campus. In the afternoon, the students attended a lecture at the Department of Pharmacy Practice, conducted by Dr Acsah Annie Paul.

### **Day 5 – Wednesday**

On Wednesday, the students visited JSS Medical Hospital in Mysuru. During this visit, they observed the Immunisation Centre, Oncology Department and Poison and Information Centre. The group also visited the Department of Pharmacy Practice to better understand clinical pharmacy activities. In the afternoon, a lecture session was conducted by Dr Monica P of the Department of Pharmaceutical Analysis and Chemistry, where students learned about analytical techniques used in pharmaceutical research.

### **Day 6 – Thursday**

Thursday's activities included a visit to the Medical College. Students explored several departments, including the Anatomy Museum, Gross Anatomy Theatre, and the Biochemistry Laboratory. Later, the group visited the School of Life Sciences to learn about ongoing research and academic programs. In the afternoon, the students visited the Animal House, where laboratory animals are maintained for research and experimental purposes under controlled conditions.

## Day 7 – Friday

On Friday, the group participated in an industrial visit to Arya Vaidya Sala in Kottakkal, a renowned institution specializing in Ayurvedic medicine. The visit provided insight into traditional medicine manufacturing and quality control processes. In the afternoon, the students attended demonstrations of experiments conducted in the Pharmacology and Pharmacognosy Departments at JSS College of Pharmacy, Mysuru. These demonstrations allowed students to observe experimental procedures and understand the role of natural products and pharmacological testing in drug development.

### Conclusion

The internship visit to Mysuru was a valuable educational experience for the Mauritian students. It provided exposure to academic institutions, hospital practices, research laboratories, and pharmaceutical industries. The visit also allowed students to experience Indian culture and heritage. Overall, the internship helped broaden the students' knowledge and provided practical insights into various fields within pharmaceutical sciences.



### Compiled by:

Ms Moosuddee Aamina Haadiya & Ms Toshtee Jankee

B Pharm (Cohort 4)

### 3. Internship at JSS College of Pharmacy, Ooty

Following the completion of our 6th and 7th semesters of the Bachelor of Pharmacy programme at the JSS Academy of Higher Education & Research Mauritius, we were given the opportunity to participate in a one-week academic internship at the JSS College of Pharmacy, Ooty, located in Ooty, Tamil Nadu, India. The internship was conducted from the 31st of January to the 6th of February 2026 and aimed to expose students to various academic departments, research facilities, and related industries.

To give an in-depth insight of this enriching experience, let's start at the beginning. Upon our arrival at the campus, we got to experience the vibrant celebration of the Pongal festival, which allowed us to appreciate the rich cultural traditions of the region through music, colours, and festivities. Following that we met the principal of the college, Dr. Dhanabal Palanisamy and the vice president, Dr. Arun Kanniyappan Parthasarathy, who gave us a very warm welcome and provided us with an overview of the institution and introduced the academic departments and industry visits planned for our internship. During our stay, we visited several departments within the college. Our first visit was to the Department of Pharmacognosy and Phytochemistry, where the Head of Department, Dr. L. Priyanka Dwarampudi, along with Dr. R. Shanmugam, delivered a lecture on crude drugs and the various traditional systems of medicine. This session provided valuable insights into the role of natural products and medicinal plants in pharmaceutical sciences. The next department we visited was the Department of Pharmacology, where we toured the animal house and gained first-hand exposure to the handling and maintenance of experimental animals such as rats, mice, and rabbits used in pharmacological research. This experience was particularly beneficial, as our practical exposure at the Mauritius campus is primarily based on simulation-based pharmacology experiments.

Next on the list was the JSS AHER School of Life Sciences, where we explored the departments of Environmental Sciences as well as Food, Nutrition, and Dietetics. During this visit, we even had the opportunity to receive a brief consultation from a professional nutritionist. At the Department of Biotechnology, JSSCPO, we were introduced to Dr Raman Rajeshkumar, who gave us an in-depth explanation about the various instruments and equipment used in the department. Furthermore, we visited the Department of Pharmaceutical Analysis, where Dr K. Nagappan explained several instrumental analytical techniques used in pharmaceutical research, including High-Performance Liquid Chromatography–Mass Spectrometry (HPLC-MS), Gas Chromatography–Mass Spectrometry (GC-MS), and Infrared (IR) spectroscopy.

In addition to academic visits, we had the opportunity to explore important research institutions. One of the highlights was our visit to the Pasteur Institute of India in Coonoor, where we attended an informative lecture on the discovery of vaccines and the emerging story behind anti-rabies and DPT vaccines.

The last industry we visited, though not related to the medical field, was nevertheless very enriching. It was the Cosmic Ray Laboratory, also known as the GRAPES-3 observatory in Ooty, it is an observatory designed to study the origin, acceleration and propagation of cosmic rays. There, we toured the premises, observed the detector systems, and learned about the scientific principles behind cosmic ray detection. On the last day, we attended a workshop on the Future of Neuroscience by AI and ML: NextGen Software Tools and Integrative Clinical Research organized by the Department of Pharmaceutical Chemistry. With this, our internship at JSS College of Pharmacy, Ooty, which was an extremely insightful and valuable experience, came to an end. It allowed us to gain exposure to advanced research facilities, different scientific disciplines, and real-world pharmaceutical practices.

As students approaching the later stages of our Bachelor of Pharmacy programme, this opportunity helped broaden our perspectives regarding potential career paths and future prospects within the pharmaceutical field. The time spent at JSS College of Pharmacy, Ooty, though short, gave us a clearer perspective. We want to express our sincere gratitude to the faculty and administration of JSS College of Pharmacy, Ooty, for organising this enriching internship programme. We would also like to thank the staff members and researchers who took the time to guide us and share their knowledge throughout the various departmental and industry visits.



Workshop at JSSCP Ooty



Pasteur Institute Coonoor

**Compiled by:**

Ms Bheenick Gitikha & Ms Beeharry Khushi Devi,

B Pharm (Cohort 3 & 4)

#### 4. Internship of the Biotechnology students at JSS Academy of Education & Research in India

We, the Biotechnology cohort students, successfully completed a two-week academic and industrial internship from 24 January to 7 February 2026 at the prestigious JSS Academy of Higher Education and Research. The internship was conducted across two campuses:

- Week 1: Mysuru
- Week 2: Ooty



This internship aimed to bridge theoretical knowledge with hands-on experience, enhance our technical competencies, and provide insight into real-world research environments. The program also encouraged cultural exchange, teamwork, and professional development. Outlined below is a time-ordered summary of the events that took place after we reached India on 24<sup>th</sup> January 2026.


##### **Week 1: Academic and Research Exposure in Mysuru**

Our internship officially commenced on 24 January 2026, marking the beginning of an enriching journey. On 25 January, we visited the iconic Mysore Palace, where we gained a deeper appreciation of India's architectural heritage and royal history.

On 26 January, we had the honor of being invited to attend the 77th Republic Day of India celebrations, an experience that instilled a strong sense of national pride and unity. Later that day, we explored Shri Chamarajendra Zoological Gardens, where we learned about biodiversity conservation and wildlife management. The day concluded with a visit to a local mall in Mysuru, giving us time for relaxation and shopping.



On 27 January, we were formally welcomed by Dr. Pramad Kumar T. M., Principal of JSS College of Pharmacy Mysuru, marking the academic commencement of our internship. We then visited JSS College of Pharmacy, where we were warmly received by the Principal and the Program Coordinator, Dr. Sailesh T. We were given an internship handbook for reference. We toured various classrooms, laboratories, and advanced facilities, gaining an overview of the academic infrastructure and research environment. The following day, 28 January, we visited the JSS Hospital, including the Pharmacology Department. We were introduced to advanced analytical techniques, particularly High-Performance Liquid Chromatography (HPLC). The principles, applications, and significance of HPLC and other sophisticated instruments were clearly explained by Dr. Komal Kumar Javarappa, enriching our understanding of pharmaceutical analysis. In the evening, we explored local shopping areas, especially Meena Bazaar, experiencing the vibrant culture of Mysuru.



On the next day, our learning continued at the medical college, where we visited the Anatomy Museum and observed preserved specimens that enhanced our understanding of human anatomy. We also visited the forensic laboratory. Later, at the School of Life Sciences, we met the lecturers and research students, who introduced us to ongoing research projects, including advanced work on retinal cells. We also learned about biotechnology research focusing on molecular biology of abiotic stress in plants and stress response mechanisms. We visited the polyhouse facilities and performed Polymerase Chain Reaction (PCR) using isolated DNA, gaining valuable laboratory experience.

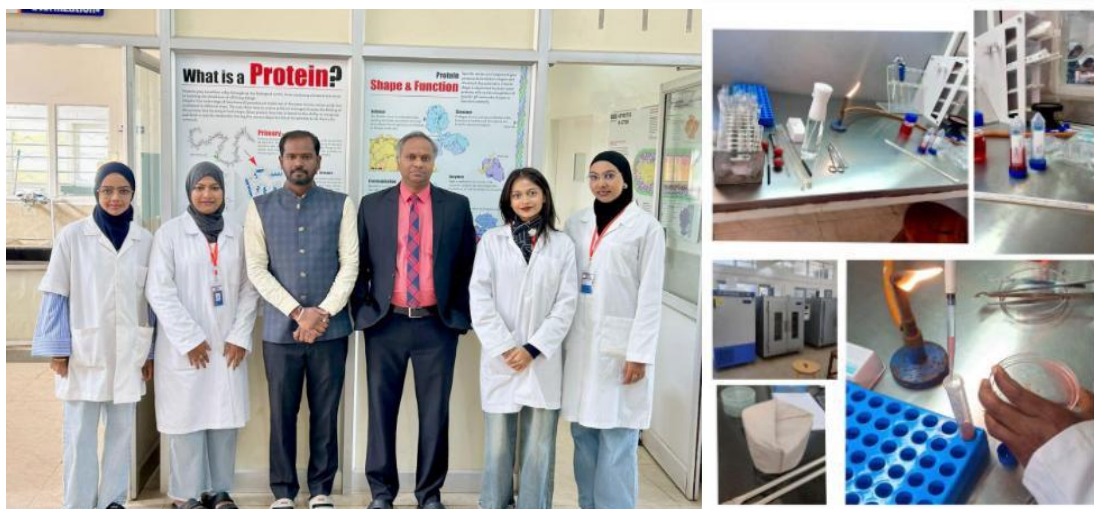
On 30 January, we visited Arya VaidyaSala factory in Kottakkal, where we observed the complete drug manufacturing process from raw plant material collection and processing to formulation and packaging. This visit highlighted the integration of traditional medicine with modern quality control practices. We departed from Mysuru on 31 January, cherishing the academic richness and memorable experiences. During our journey to Ooty, we passed through the largest wildlife reserve in Karnataka, stopped at a chocolate factory, and enjoyed scenic views of lush greenery, flowers, and the refreshing drop in temperature.

### **Week 2: Advanced Biotechnology Training in Ooty**

Upon arrival at the JSS Academy Guest House in Ooty, we witnessed local students celebrating a cultural festival and were warmly welcomed by the Principal Dr. Dhanabal Palanisamy. On 1 February, we visited Pothy's for shopping and experienced local cuisine at SS Hyderabad biryani restaurant. On 2 February, we visited the Biotechnology Department, followed by an educational trip to the Government Botanical Garden, where we explored diverse plant species. We also enjoyed hot chocolate from Moody's and vegetarian momos from Spicy Spot. One unforgettable moment was seeing wild Bysons walking freely on the roadside. On 3 February, under the guidance of Dr. R. Rajeshkumar, we received advanced laboratory handling training. We were given the opportunity to handle various laboratory instruments.

We also visited the Faculty of Life Sciences, including departments of Nutrition, Data Science, and Bioinformatics. The campus impressed us with its extensive use of natural lighting, especially in the library and learning spaces. The faculty graciously hosted us with refreshments. Later, we explored the Karnataka Siri Horticulture Garden, admiring its beautifully maintained landscapes, fishponds, bridges, and floral diversity. On 4 February, we participated in demonstrations and hands-on sessions in the Cell Culture Laboratory and performed microbiology experiments. We had the unique opportunity to prepare cell cultures using chicken liver tissue and culture the cells in appropriate media. Later, we visited the Pasteur Institute of India, where we learned about vaccine development and rabies research. This visit was one of the most scientifically enriching experiences of our internship, as it directly connected biotechnology principles to public health, vaccine production, and translational research.

That evening, we were honored with a dinner hosted by the Principal of JSS College of Pharmacy, Ooty at Club Mahindra, Ooty, reflecting the institution's warmth and hospitality.



On 5 February, we continued advanced cell culture techniques with hands-on practice, followed by a visit to the Cosmic Ray Laboratory, which introduced us to interdisciplinary scientific research.

On 6 February, we were invited as delegates to a two-day national workshop titled “The Future of Neuroscience by AI and ML: Next-Gen Software Tools and Integrative Clinical Research.” We explored emerging AI-based tools used in pharmaceutical and biotechnology fields under the guidance of Dr. Shashanka K. Prasad.

Later, we attended a concluding meeting with Dr. Dhanabal Palanisamy (Principal) and Dr. Arun K. Parthasarathy (Vice-Principal), where we shared our experiences and feedback.

On 7 February 2026, we packed our belongings and departed from Ooty to Bengaluru with gratitude. This internship was an invaluable experience that strengthened our academic foundation, enhanced our laboratory skills, and broadened our perspective on research, healthcare, and biotechnology applications.

We sincerely thank the coordinators, principals, faculty members, and staff of JSS Academy of Higher Education and Research for their constant guidance, hospitality, and support. The journey through Mysuru and Ooty was not only educational but also culturally enriching and personally transformative. We truly appreciate the opportunity and will carry these learnings forward in our academic and professional pursuits.

**Compiled by:**

Ms. Saamiyah Bhoyroo & Ms. Hayfaah Bhoyroo,

BSc Biotechnology (Cohort 1)



## **5. Export of Services Mission to Zimbabwe**

The Export of Services Mission to Zimbabwe was organized by the Economic Development Board, Mauritius and took place from **23<sup>rd</sup> to 24<sup>th</sup> February 2026**. Prof Dr Praveen Mohadeb, CEO & Vice Chancellor and Mr Naveen K P, Registrar participated in the mission. The mission was aimed to promote Mauritian Educational Institutions internationally and to strengthen partnerships with educational agents and institutions in the region. Participation in this mission provided an opportunity to promote academic programmes and expand the network of recruitment partners in Southern Africa.

### **Agent Engagement and Partnerships**

During the mission, a total of 34 education agents from Zimbabwe and South Africa were contacted and engaged in discussions regarding student recruitment and collaboration opportunities.

As a result of these meetings:

- 7 agents signed recruitment contracts to collaborate in the recruitment of international students.
- 4 additional agents expressed interest in signing contracts and are currently in further discussions to finalize the agreements.

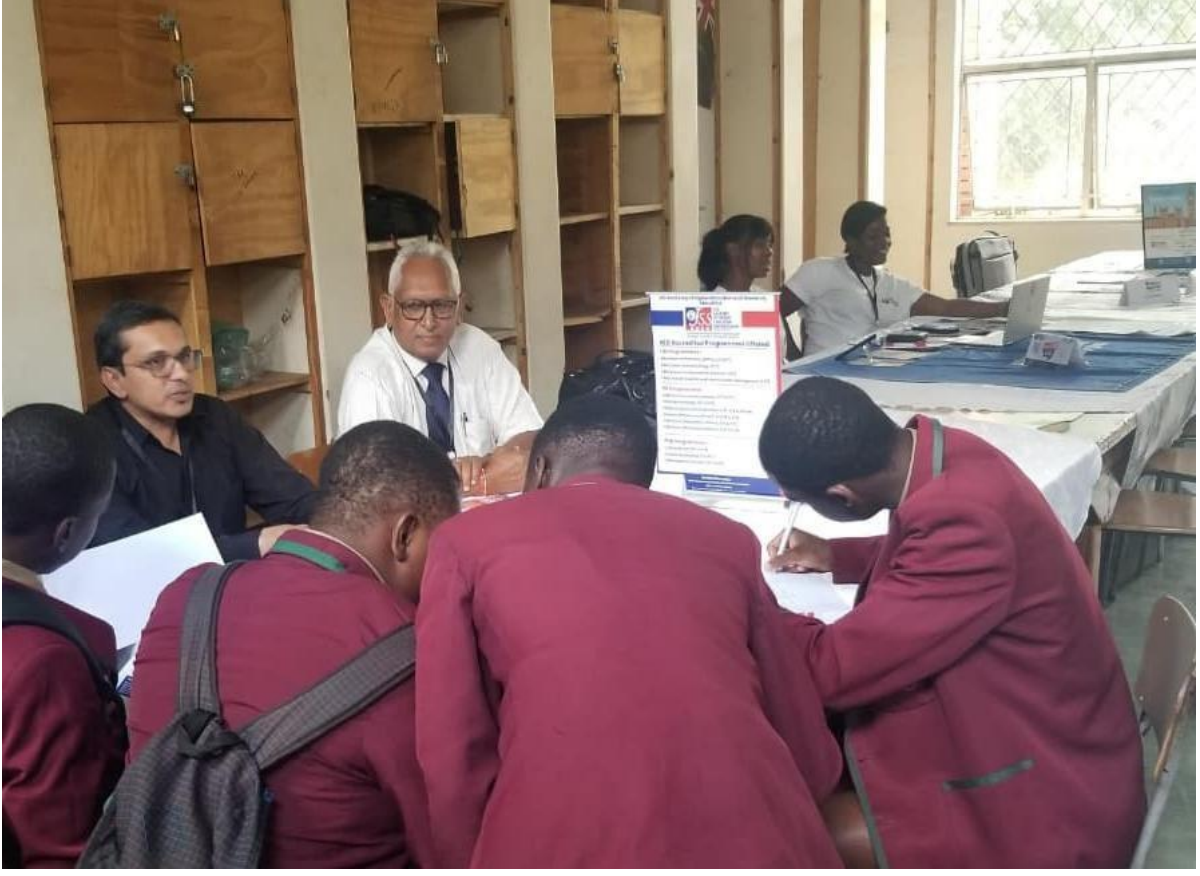
These partnerships are expected to strengthen the recruitment pipeline and improve outreach in the Southern African region.

### **Education Fair Outcomes**

Participation in the Education Fair organized during the mission generated strong interest in the MBBS programme. Many prospective students and agents sought information regarding admission requirements, programme structure, and career opportunities. The response from both Zimbabwean and South African students was particularly encouraging. Based on the interest shown during the fair and the newly established agent partnerships, a promising number of student applications is expected for the next intake scheduled for August/September 2026. During the school visits and educational fair, 67 students showed interest in our MBBS, BPharm, BSc (Hons) Biotechnology programmes. 12 applications were received and offer made.

### **Conclusion**

The Export of Services Mission to Zimbabwe proved to be a productive and strategic initiative for expanding recruitment networks and promoting academic programmes in the Southern African market. The newly established collaborations with agents and the positive reception at the Education Fair indicate strong potential for increased student enrollment from Zimbabwe and South Africa in upcoming intakes.

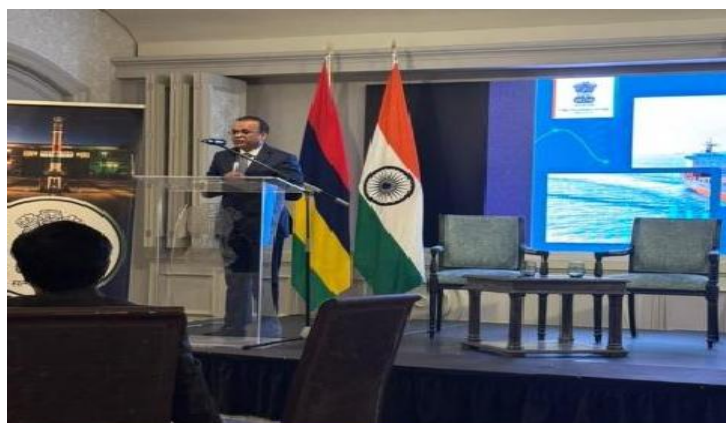


## 6. MAHASAGAR DIALOGUE: Shaping a Future of Shared Growth and Prosperity

On 17th March 2026, Dr. Khayati Moudgil, accompanied by Mrs. Milan Sharma (4th Year BPharm student) and Ms. Bhanavi Devi Jeevuth (3rd Year BPharm student), attended the Mahasagar Dialogue 2026, a one-day conference held at the Labourdonnais Waterfront Hotel, Mauritius. The event brought together policymakers, academicians, maritime experts, and key stakeholders to deliberate on critical issues related to ocean governance and regional cooperation.

The dialogue primarily focused on strengthening India–Mauritius relations, continuing the vision of the SAGAR (Security and Growth for All in the Region) initiative, while promoting sustainable development and shared prosperity across the Indian Ocean region. The conference commenced with opening remarks by Shri Anurag Srivastava, High Commissioner of India to Mauritius, and Hon. Dhananjay Ramful, Minister of Foreign Affairs, Republic of Mauritius. Ambassador Shyam Saran, Former Foreign Secretary of India, delivered a keynote address highlighting the enduring and deep-rooted relationship between India and Mauritius, underscoring their shared history, cultural connections, and strategic partnership. The programme was structured into three thematic sessions, each addressing key aspects of maritime cooperation, regional security, and sustainable ocean development. The Mahasagar Dialogue 2026 successfully reinforced existing bilateral ties between India and Mauritius while also creating new avenues for collaboration across the wider Indian Ocean region. By fostering meaningful dialogue among diverse stakeholders, the event contributed significantly to shaping a forward-looking vision of inclusive growth, regional stability, and sustainable maritime development.

Glimpses of the event:



## 7. Report on the NCVTS Implementation Training Workshop

The National Credit Value Transfer System (NCVTS) Implementation Training Workshop was held on Wednesday, 04 March 2026 at the Caudan Arts Centre from 09:15 to 16:00. The workshop was organized to provide guidance and training on the implementation of the NCVTS in higher education institutions in Mauritius. The representatives from all higher education institutions and experts in the field to discuss the credit system, its implementation, and related concepts such as learning outcomes, credit transfer, and recognition of prior learning.

### Opening Session

The programme started with registration from 09:15 to 09:30, followed by the opening session.

The workshop officially began with a welcome address by Dr N. Baguant, Acting Head of the Regulatory Affairs and Accreditation Division at the Higher Education Commission (HEC) welcomed participants and highlighted the importance of implementing a standardized credit transfer system in Mauritius to improve flexibility and mobility within the higher education.

Professor R. Mohee, Commissioner of HEC, presented an overview of the NCVTS in Mauritius. She emphasized the role of the system in harmonizing academic credits across institutions and improving the quality and transparency of higher education.

Dr Eduarda Castel-Branco explained the credit system, focusing on how credits reflect the workload required to achieve learning outcomes in academic programmes.

### Official Opening by Dr Hon. Kaviraj Sharma Sukon

The workshop was officially launched by Dr The Hon. Kaviraj Sharma Sukon, Minister of Tertiary Education, Science and Research. During his opening speech, he also launched the NCVTS Implementation Guide for Higher Education Institutions, marking an important milestone in the adoption of the system.

In the morning session Dr N. Baguant provided detailed information about the structure and objectives of the NCVTS and how it will be implemented across institutions.

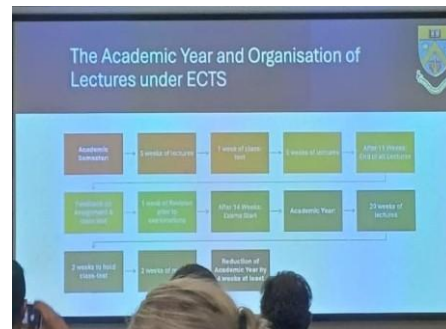
### Understanding the Credit System

Professor R. Mohee explained the relationship between credits, notional learning hours, learning outcomes, and credit allocation in full-time programmes of study. This session helped participants better understand how academic credits are calculated and assigned.

Programme Type	LCCS Credits	Notional Hours	Number of contact hours
Master's Award	72 – 84	2160 – 2520	360 – 420
3-Year Undergraduate Degree	192 – 212	5760 – 6360	960 – 1060
Undergraduate Diploma	120 – 140	3600 – 4200	600 – 700
Undergraduate Certificate	60 – 85	1800 – 2400	120 – 180

## Implementation of NCVTS at the University of Mauritius

Prof M. Santally, Acting Vice-Chancellor and Pro-Vice-Chancellor (Academia) of the University of Mauritius, presented the university's experience with the credit system and discussed the current progress in implementing NCVTS. He discussed about LCCS (learner centred credit system) and ECTS (European Credit Transfer System), self-study hours (60 hrs) and other learning hours (90 hrs) to calculate the credits for UG, PG programs.



## Implementation at the Open University of Mauritius

Mr A. Domah, Deputy Registrar of the Open University of Mauritius, also shared insights on how the credit system operates at the institution and the status of NCVTS implementation at Open University of Mauritius. He discussed on the course outcome to map with program learning outcomes.

Curriculum Map of Programme Learning Outcomes Against Module Intended Learning Outcomes

Module Unit and Code				Knowledge and Understanding					Cognitive Skills						Practical Skills				Transferable Skills and Personal Attributes						
Module Title	Code	Type	Mode	K1	K2	K3	K4	K5	C1	C2	C3	C4	C5	C6	P1	P2	P3	P4	P5	T1	T2	T3	T4	T5	
Year 1 QF-MQA Level 6																									
Computer Architecture	OU/033111	C	BL	•				•	•	•	•							•	•					•	
Computational Mathematics	OU/033112	C	BL	•																					•
Principles of Programming 1	OU/033113	C	BL	•	•	•		•																	•
Cyber Laws & Ethics	OU/033114	C	BL	•																					•
Client Side Web Technologies	OU/033121	C	BL	•	•	•	•	•																	•

## Recognition of Prior Learning

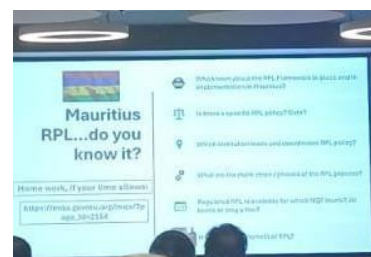
The afternoon session focused on Recognition of Prior Learning (RPL) and its role in higher education. The big debate on the prior learning system in the higher education institutions. Most of the participants informed that in the recognition of RPL, education and qualification should not be diluted. On top of this the consideration of micro credentials in all sectors yet to be framed and discussed on industrial credentials for the consideration in prior learning.

## Learning Outcomes and NCVTS

Dr Eduarda Castel-Branco discussed the importance of learning outcomes in the implementation of NCVTS. She highlighted how clearly defined learning outcomes help ensure transparency and consistency in credit allocation.

### Recognition of Prior Learning

Another presentation by Dr Castel-Branco explained how Recognition of Prior Learning allows students to receive credit for knowledge and skills gained outside formal education, such as through work experience or informal learning.



## Discussion Session

A discussion session facilitated by HEC staff, where they shared perspectives, raised questions, and discussed practical challenges related to NCVTS implementation. Credit Accumulation and Transfer Guidelines. Dr Eduarda Castel-Branco presented the initial concept for credit accumulation and transfer guidelines, explaining how students could transfer credits between programmes or institutions.



## **Way Forward**

The workshop concluded with a way forward session presented by Professor R. Mohee, who summarized the key points discussed during the day and highlighted the next steps for institutions in implementing NCVTS. She emphasized collaboration among higher education institutions to ensure successful adoption of the system.

## **Conclusion**

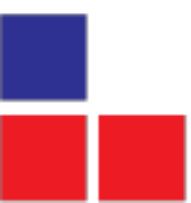
The NCVTS Implementation Training Workshop provided valuable insights into the structure, objectives, and implementation of the National Credit Value Transfer System in Mauritius. The workshop helped participants understand the credit system, learning outcomes, recognition of prior learning, and credit transfer mechanisms.

Overall, the event was informative and contributed to strengthening the capacity of higher education institutions to adopt and implement NCVTS effectively.

## **Participation from JSSAHERM**

Prof Dr Jaishree V, Head

Faculty of Life Science and Management Studies



## 8. Workshop on the Development of the Mauritius Quality Code for Higher Education

**Theme:** “Towards a Quality Code for Mauritius”

**Date:** 5–6 March 2026

**Venue:** Caudan Arts Centre

**Organiser:** Quality Assurance Authority, Mauritius (QAA)

**Inauguration:** Hon. Minister Dr Kaviraj Sharma Sukon

**Key Speakers:** Eduarda Castel-Branco (Expert) and Dr Lee Pheiffer (Executive Director, QAA)

### Objectives:

The workshop aimed to co-create a National Quality Code that is internationally benchmarked and nationally owned. Key objectives included:

- **Evaluating** the benefits of the Quality Code for the international recognition of Mauritian qualifications.
- **Reviewing** the UK Quality Code and its mapping to the European Standards and Guidelines (ESG).
- **Integrating** the Quality Code with existing Quality Assurance structures to ensure synergy.
- **Conceptualising** the localised framework and developing a strategic **road map** for implementation

This workshop was a strategic transition from understanding global standards to designing a local framework. Over two days, stakeholders from both public and private Higher Education Institutions moved from theory to active creation.


### Session 1: Global Standards (5 March 2026)

The first day established a foundation by examining the **UK Quality Code** and international benchmarks. Key areas included:

- **Strategic Context:** The role of quality codes in maintaining institutional standards and facilitating the **international recognition** of qualifications.
- **Alignment:** Mapping the UK framework against **ESG (European Standards and Guidelines)** to ensure global compatibility.
- **Operational Insight:** A deep dive into the **QAA IQR Manual**, covering the latest updates and practical implementation strategies.

### Session 2: Local Application (6 March 2026)

The second day shifted toward a collaborative, "bottom-up" approach to define the **Quality Code for Mauritius**. The primary goal was to move from learning global standards to **architecting a localised framework**.

- 
- **Group Brainstorming:** Participants were divided into **six working groups** to ensure diverse perspectives. Rather than a traditional lecture, this was a high-energy "work session" where participants brainstormed original ideas and guidelines.
  - **Co-Creation:** This session empowered attendees to move from listeners to architects, actively developing **new guidelines** tailored to the Mauritian context. Each group focused on translating international best practices into **concrete, actionable guidelines** specifically tailored to the Mauritian higher education landscape.
  - **Active Participation:** The hands-on format ensured that the final ideas were grounded in the reality of local public and private HEIs.

The session concluded with the preliminary drafting of a **strategic road map** for the official rollout of the Code

**Participants from JSSAHERM:**

1. Dr Goutham Yerrakula
2. Ms Bhavna Devi Puran

## 9. Publications

1. S Wahidna, Z Bhatoo, V Bangalee, **K Moudgil\***, An academic review of the developed diagnostic and educational tools for bone diseases or disorders S Afr Pharm J 2026 Vol 93 No 1 (Scopus-Q4)
2. **Goutham Yerrakula**, Nikhitha Shanmukhan, Gyanendra Kumar Sharma, Hemendra Gautam, Shabari Girinath Kala, Divyadharshini S., and Arun R. Obstacles to Combining Artificial Intelligence with Nanotechnology for Nucleic Acid Delivery, Nanotechnology for Nucleic Acid Delivery, Chapter 10, CRC Press Taylor & Francis Group.

REVIEW

### An academic review of the developed diagnostic and educational tools for bone diseases or disorders

S Wahidna,<sup>1</sup> Z Bhatoo,<sup>1</sup> V Bangalee,<sup>1</sup> **K Moudgil\***<sup>2</sup>

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<sup>2</sup> Discipline of Pharmaceutical Sciences, College of Health Sciences, University of KwaZulu-Natal, South Africa  
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**Abstract**  
Educational tools are exemplary means of disseminating comprehensive information on bone diseases or disorders which negatively influence a patient's quality of life. These resources require constant revision to provide the latest facts and figures to the global population at all times. Existing tools, while effective, may require updating and the adoption of novel approaches to meet the needs of specific target populations. Coupling educational resources with diagnostic tools such as Dual-energy X-ray absorptiometry (DEXA/DXA) is one such innovative way of providing optimum patient care and quality treatment. Furthermore, should new educational tools be devised, developers will need to reflect on the specific incongruity between the standards achieved using the current tools and the desired standards envisaged from the new tool. Reflecting on the former and latter tools will aid in identifying and addressing areas that require improvement in the current tool to optimise patient outcomes.

**Keywords:** role, educational tools, bone diseases, patient care

https://doi.org/10.36303/SAPJ.3020

**Introduction**  
When the term bone disease or disorder is mentioned, though it refers to a group of conditions which affect bone sturdiness, the most common word a layperson might think of is, in most cases, osteoporosis.<sup>1</sup> Exploring the term meticulously through various patient educational tools would provide patients with clarity on information pertaining to other notably prevalent conditions of the human skeleton including Paget's disease, osteogenesis imperfecta, osteomalacia, osteoarthritis, rickets, and fibrous dysplasia, to name a few. Each of these disorders is characterised by a specific set of signs and symptoms which, for the most part, is unfavourably dismissed due to its imperceptibility and poor patient awareness. In fact, the term 'silent disease' is assigned to osteoporosis,<sup>2</sup> since patients are perceptive of the disease only after suffering from a fracture following an otherwise insignificant fall.

In this regard, educational tools serve as valuable resources to enlighten the general population about the numerous known bone diseases. On the one hand, the availability of webinars, leaflets, brochures, fact sheets, infographics, posters, slide kits, thematic reports, videos, risk calculators etc., provides patients with multiple educational tools that contain concise informational items<sup>3</sup> to choose from. Each available tool has a potential of addressing the diverse learning needs and capabilities of everyone. On the other hand, there are also certain unique tools which have been developed with the aim of aiding healthcare professionals in the identification, early diagnosis, and prevention of bone diseases, with the main focus being osteoporosis. Much importance is accorded to this specific condition which increases bone porosity

and consequently induces bone fragility, because of the extent to which it can impact patients' lifestyles. An excerpt from a leaflet on osteoporosis published by the International Osteoporosis Foundation (IOF) for the occasion of World Osteoporosis Day, in describing the severity of osteoporosis, mentions that "When a sneeze can break your bones, that's Osteoporosis!"<sup>4</sup>

**Current diagnostic and educational tools being used for bone diseases**  
A tool which can foreshadow the risk of an osteoporotic fracture over a decade is what John Kanis and his team had in mind when they developed the Fracture Risk Assessment Tool (FRAX\*).<sup>4,5</sup> The FRAX\* tool not only incorporates data from elemental bone mineral density (BMD) tests, but it also encompasses the major factors contributing to a reduced bone quality in the hope of perfecting fracture-risk prediction. Being relatively straightforward to use, patients are simply required to complete a questionnaire<sup>6</sup> provided which comprises basic queries regarding the individual's femoral neck BMD, age (tailor made for those aged between 40 to 90 years old), gender, weight, height, past fractures, parental history of fractures, smoking habits, glucocorticoid therapy, presence of rheumatoid arthritis and secondary osteoporotic diseases, and finally, the daily alcohol consumption of the patient. Additionally, this readily available calculation tool facilitates decision-making concerning the treatment plan for those at elevated risk of a fracture.<sup>6</sup>

In a vastly similar manner, the QFracture\* risk calculator was developed in the United Kingdom for health care professionals and researchers to achieve goals akin to those of FRAX\*, however,

## Nanotechnology for Nucleic Acid Delivery

### CHAPTER 10

### Obstacles to Combining Artificial Intelligence with Nanotechnology for Nucleic Acid Delivery

GOUTHAM YERRAKULA,<sup>1</sup> NIKHITHA SHANMUKHAN,<sup>2</sup> GYANENDRA KUMAR SHARMA,<sup>3</sup> HEMENDRA GAUTAM,<sup>4</sup> SHABARI GIRINATH KALA,<sup>5</sup> S. DIVYADHARSHINI,<sup>2</sup> and R. ARUN<sup>2\*</sup>

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<sup>3</sup>Sharda School of Pharmacy, Sharda University, Agra, Uttar Pradesh, India  
<sup>4</sup>School of Pharmaceutical Sciences, Bahra University, Solan, Himachal Pradesh, India  
<sup>5</sup>Central Drugs Standard Control Organization, FDA Bhawan, Kotla Marg, New Delhi, India

\*Corresponding author

**ABSTRACT**  
This chapter elucidates the dynamic relationship between artificial intelligence (AI) and nanotechnology, exploring their convergence, challenges, and transformative potential. As two frontier disciplines, AI and nanotechnology offer complementary capabilities that, when combined, promise groundbreaking advancements across various domains. However,

Nanotechnology for Nucleic Acid Delivery: Pankaj Sharma, Saloni Jain, and Vinay Jain (Eds.)  
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Head, Faculty of Health Sciences  
Dean, JSS School of Pharmacy  
JSSAHER, Mauritius

**RESOURCE PERSONS**



**28<sup>th</sup> March 2026**  
**Saturday 10:00 AM (MUT)**

**Women, Wisdom, and  
the White Coat:  
Lessons from My  
Journey**

**Dr Lakshmi Nagendra**

MD (Medicine), MRCP (UK), FRCP (Edin),  
DrNB (Endocrinology), DM (Endocrinology),  
Associate Professor, Department of Endocrinology  
JSS Medical College  
JSS Academy of Higher Education and Research, Mysore

**Learning Objectives:**

- To understand the challenges and opportunities faced by women in healthcare
- To understand the key principles in the prevention and management of diabetes and obesity
- To highlight the importance of osteoporosis prevention and bone health management, particularly among women

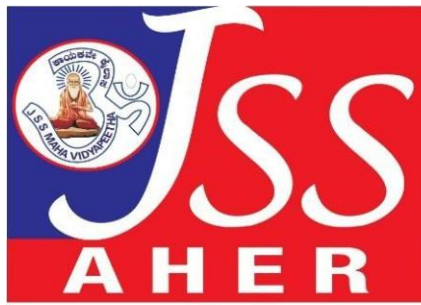
E-certificate will be issued to all the attendees



<https://us06web.zoom.us/join/91619125296>

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## WORLD HEALTH DAY 2026

*"Together for health. Stand with science"*

**18<sup>th</sup> and 25<sup>th</sup> April 2026**

**ONLINE CPD** for 2 Credit Points approved by  
Pharmacy Council of Mauritius

**18<sup>th</sup> April at 10:00 AM**

Managing Mental Health in the AI Era &  
Breaking the Stigma

by **Dr Rajesh Vagiri**

Associate Professor

Division of Pharmacology,

Faculty of Pharmacy

Rhodes University, South Africa

**25<sup>th</sup> April at 10:00 AM**

Expanding Clinical Roles of Pharmacists in  
Universal Health Coverage

by *the Expert from the Field*



**11<sup>th</sup> April 2026**

**11:00 AM – 03:00 PM**

**Free Health Check-up**

- Complete Blood Count (CBC)
- Body Fat
- Ear Check-up - Hearing test
- Eye Check-up
- Blood Glucose Level
- Blood Pressure
- Body Mass Index (BMI)
- HIV Awareness, Testing and Prevention
- Patient Guidance
- Distribution of pamphlets
- Distribution of Reading Glasses (first cum first serve for Age 50+ Only, Limited Stock)

**CASCAVELLE SHOPPING MALL**

**9<sup>th</sup> April 2026**

**10:00 AM – 11:30 AM**

Chief Guest

**The Hon.**

**Patrick Gervais**

**Assirvaden**

Minister of Energy and Public Utilities

Republic of Mauritius

**For Invited Guests Only**

**As from 1:15 PM onwards**

Guest Lecture 1: Healthy Living through  
Exercises by *Expert from the Field*

Guest Lecture 2: Pharmacovigilance and  
Drug Safety by *Mrs Gopee, Ag. DPhs, MoHw*

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Click the Zoom link to register:

<https://us06web.zoom.us/join/register/ozXKwbw7Tou7fuWCscViVg>

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**For Clarifications/Feedback, Write**

To:

The Editor (Main)

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