GURU NANAK COLLEGE OF PHARMACEUTICAL SCIENCES DEHRADUN

Affiliated to Veer Madho Singh Bhandari Uttarakhand Technical University

Approved by Pharmacy Council of India · Established 2018

PHARMA INSIGHT

Volume I — Annual Magazine

Academic Year 2022–23

August 2022 – July 2023

— Institutional Highlights · Global Pharma Developments · Student Excellence —

FROM THE CEO's DESK

A Message to the GNCPS Community · August 2022 – January 2023

"

As we present the inaugural issue of our college newsletter, I feel a profound sense of pride in the collective achievements of our institution. Over the past six months, from August 2022 to January 2023, Guru Nanak College of Pharmaceutical Sciences has witnessed remarkable growth and dynamic engagement across academic, cultural, and social domains. From insightful seminars on pharmaceutical research and workshops on intellectual property, to vibrant celebrations of our national and cultural heritage, energetic sports events, and meaningful community outreach initiatives, this period truly reflects the spirit and dedication of our academic community.

I extend my sincere appreciation to the editorial team for their dedication and creativity in bringing together this publication. Their efforts have ensured that our collective accomplishments are thoughtfully documented and shared.

— Mr. Bhupinder Singh Arora, CEO

FROM THE PRINCIPAL'S DESK

Principal's Foreword — Academic Year 2022–23

"

As we publish this inaugural annual magazine of Guru Nanak College of Pharmaceutical Sciences, Dehradun, I am filled with a deep sense of pride in the journey that our institution has travelled during the 2022–23 academic year. This magazine celebrates two distinct but connected dimensions of our life as a pharmacy college: the institutional dimension — our events, achievements, and academic progress — and the professional dimension, in which we situate ourselves within the broader global landscape of pharmaceutical science and practice. The integration of these dimensions is deliberate: we believe that our students must not only excel within the walls of GNCPS but must understand themselves as members of a worldwide profession in perpetual evolution. I commend the editorial team for the care with which this volume has been assembled, and I invite every reader — faculty colleague, student, parent, alumnus, or friend of the institution — to spend time with these pages and find in them a reflection of what Guru Nanak College of Pharmaceutical Sciences represents.

— Dr. Mohit Gupta, Principal

FROM THE EDITOR'S DESK

Editor's Note — Volume I — Annual Magazine

"

Welcome to the inaugural annual magazine of Guru Nanak College of Pharmaceutical Sciences, Dehradun. This publication is substantially more ambitious than our two-monthly newsletters: it aims to combine an institutional record of the academic year with a wider survey of the pharmaceutical profession in which our graduates will make their careers. Editorial decisions about which global developments to include required genuine deliberation — the year 2022–23 offered far more noteworthy events than we could treat at length. We settled on eleven developments spanning policy, vaccines, oncology, neurology, endocrinology, digital therapeutics, and the GLP-1 revolution, each documented in sufficient depth that the reader can appreciate both what happened and why it matters. We welcome all feedback on this first magazine and will carry those suggestions forward into future volumes.

— Ms. Kriti Dabral, Editor

ABOUT THE COLLEGE

Guru Nanak College of Pharmaceutical Sciences, Dehradun

Guru Nanak College of Pharmaceutical Sciences, Dehradun, was established in 2018 under the aegis of the Guru Nanak Educational Trust. The College is affiliated with Veer Madho Singh Bhandari Uttarakhand Technical University and is approved by the Pharmacy Council of India. Situated in Jhajhra on the Chakrata Road in Dehradun, Uttarakhand, the institution offers Pharmacy programs designed to produce graduates who are technically competent, ethically grounded, culturally rooted, and professionally ready.

The College's vision is to create a progressive learning environment inspired by Guru Nanak Dev Ji's teachings, focusing on 'Learning by Doing,' providing practical experiences, and making quality education accessible to all.

The mission statements of the institution are:

- Integrate modern technology into the curriculum, promoting practical learning.
- Support female students and physically challenged students with resources and entrepreneurial ventures.
- Maintain a faculty of experienced professionals and include industry experts in the management team.
- Offer scholarships to various student groups and support nearby villages with free education.
- Provide career guidance for jobs, research, entrepreneurship, and further studies.
- Encourage research and development of affordable generic medicines, ensuring accessible healthcare solutions with a no-profit-no-loss approach.

IN THIS MAGAZINE

COLLEGE HIGHLIGHTS

Institutional Snapshot — Academic Year 2022–23

The 2022-23 academic year was a foundational period for Guru Nanak College of Pharmaceutical Sciences, Dehradun. Having been established in 2018, the College entered its fifth year of operation with a clear institutional identity, an expanding student body, and a growing portfolio of academic, co-curricular, and research activities. This year marked significant consolidation across multiple institutional dimensions: faculty strength, research output, student engagement, industry partnerships, and community service.

HEADLINE HIGHLIGHTS

First Full Post-Pandemic Year	Resumption of full on-campus academic and co-curricular activities after two years of pandemic disruption
4 Active Student Clubs	Sports Club, Cultural Club, Research Club, and Entrepreneurship Club — all operating full calendars
21 Pharmacy-Related Academic Events	Seminars, workshops, and webinars on drug discovery, IPR, biotechnology, and pharmaceutical research
50+ Student Competition Participations	Students represented GNCPS at multiple inter-institute events, earning several 1st and 2nd positions
Research Club Formally Launched	The institutional Research Club was formally inaugurated to cultivate research culture from the first year onwards

INFRASTRUCTURE & FACILITIES

- Faculty strength maintained across key departments — Pharmaceutics, Pharmaceutical Chemistry, Pharmacognosy, Pharmacology, and Pharmacy Practice.
- All laboratory infrastructure met Pharmacy Council of India specifications for a four-year B. Pharm programme.
- Library collection expanded in line with curriculum evolution, including both printed and digital resources.
- Hostel, recreational, and sports infrastructure maintained to support a full residential student experience.

RESEARCH & PUBLICATIONS

- Faculty members published research papers in peer-reviewed journals spanning pharmaceutics, phytochemistry, herbal drug formulations, and water-quality research.
- Several student dissertation projects were initiated and advanced toward completion during this academic year.
- Year-round workshops addressed research methodology, literature review using PubMed and Google Scholar, and research ethics.
- Faculty participated in national and international conferences, strengthening the College's academic network.

STUDENT ACHIEVEMENTS

- Inter-institute wins at Baba Farid Institute of Technology (Dehradun) — including 1st positions in Essay/Writing Competition, Working Model Competition, and Logo-Making Competition.
- Students represented GNCPS at SHIVATECH 2022 — the State Level Technical Event hosted by Shivalik Group of Colleges.
- Successful participation in online Independence Day Special Quiz hosted by ABP Live, Mumbai.
- Strong showing in state-level cultural competitions with multiple podium finishes.

COMMUNITY SERVICE & OUTREACH

- Tree Plantation Drive, Anti-Plastic Drive, Blood Donation Camp, Health Checkup Camp — each reinforcing the College's commitment to community well-being.
- Seven-day residential camp (NSS-type programme) involving intensive service activities.
- Voters' Day, Constitution Day, and other civic observances conducted with active student participation.
- World AIDS Day awareness programme conducted jointly by the Research Club and Cultural Club.

GOVERNANCE

The College Governing Body, chaired by Hon. Bhupinder Singh Arora and supported by a ten-member committee including the Principal (Member-Secretary), Vice-Principal, Heads of Department, and representatives from the Trust, provided steady strategic oversight throughout the year. Regular meetings of the Academic Council, IQAC, Examination Committee, and Research Committee ensured that institutional decisions were taken in accordance with regulatory and professional requirements.

Global Pharma Developments

11 major developments that shaped the world of pharmacy during Academic Year 2022–23

The pharmaceutical profession is in constant evolution. The following pages document the most consequential developments worldwide during the period covered by this magazine — approvals, policy shifts, scientific breakthroughs, and industry transformations that our students and graduates will navigate throughout their careers.

Inflation Reduction Act Signed — U.S. Medicare Empowered to Negotiate Drug Prices

On 16 August 2022, the United States Inflation Reduction Act (IRA) was signed into law by President Joe Biden, marking a watershed moment for the global pharmaceutical industry. For the first time in the six-decade history of Medicare — the U.S. federal health insurance programme for senior citizens — the government was given statutory authority to negotiate the prices of a selected set of high-cost prescription drugs directly with manufacturers. The Act also introduced an annual out-of-pocket cap of USD 2,000 on prescription drug spending for Medicare beneficiaries and imposed rebates on pharmaceutical companies whose drug prices rise faster than inflation.

The scale of the policy shift cannot be overstated. The United States, the world's largest pharmaceutical market, had for decades operated a free-market pricing model in which drug manufacturers enjoyed significant autonomy over list prices. The IRA reversed that equilibrium, ushering in a more interventionist framework aligned with pricing practices in Europe, Canada, and much of the developed world. Industry analysts estimated that the law would save the U.S. government over USD 100 billion over the following decade, but would also compress the revenues of leading pharmaceutical multinationals whose Medicare-facing portfolios included widely-prescribed therapies for cancer, diabetes, cardiovascular disease, and autoimmune disorders.

For pharmacy students at Guru Nanak College of Pharmaceutical Sciences and their counterparts worldwide, the IRA signalled a new era in which pharmacoeconomics, health technology assessment, and value-based pricing would take centre stage in the profession. The legislation also had ripple effects for Indian generic manufacturers, whose role as low-cost suppliers to the U.S. market took on renewed strategic importance. Industry observers predicted a flurry of mergers, pipeline recalibrations, and biosimilar launches in response to the new pricing realities. The signing of the IRA therefore represented not merely a domestic American policy event but a reshaping of the global pharmaceutical landscape whose full consequences would unfold across the following decade.

Bivalent COVID-19 Boosters Authorised — First Omicron-Targeted mRNA Vaccines

In the autumn of 2022, the U.S. Food and Drug Administration (FDA) granted Emergency Use Authorization to the world's first bivalent COVID-19 booster vaccines, developed separately by Pfizer-BioNTech and Moderna. Unlike the original monovalent mRNA vaccines, which targeted only the ancestral Wuhan strain of the SARS-CoV-2 virus, the bivalent formulations combined mRNA instructions for both the original spike protein and for the BA.4/BA.5 Omicron sub-variants that had come to dominate global transmission by mid-2022. This represented the first generation of updated mRNA vaccines tailored to circulating viral variants.

The rapid clinical translation of the bivalent boosters demonstrated the platform flexibility that had long been promised as the signal advantage of messenger-RNA vaccine technology. Whereas conventional vaccine development typically required five to ten years from antigen selection to regulatory approval, the updated mRNA formulations were manufactured, tested in immunogenicity studies, and authorised in a matter of months. The episode validated the long-term strategic case for mRNA platforms across infectious-disease portfolios, and accelerated industry investment in mRNA applications beyond COVID-19 — including influenza, respiratory syncytial virus (RSV), cytomegalovirus, and even personalised cancer vaccines.

For pharmacists worldwide, the 2022 booster roll-out reinforced the profession's central role in immunisation delivery, patient counselling on vaccine choice, and navigation of evolving public-health recommendations. In India, regulatory agencies and domestic vaccine manufacturers followed the international developments closely, and the episode contributed to the continuing maturation of India's own vaccine innovation ecosystem — a topic of significant strategic importance given that the country supplies roughly 60% of the world's vaccines by volume. For student-pharmacists, the bivalent authorisation offered an instructive case study in adaptive regulatory science, platform-based drug development, and the evolving public-private partnership model that had sustained the COVID-19 response worldwide.

FDA Approves Tzield (Teplizumab) — First Disease-Modifying Therapy to Delay Type 1 Diabetes

On 17 November 2022, the FDA approved Tzield (teplizumab-mzwv), a humanised anti-CD3 monoclonal antibody developed by Provention Bio, to delay the onset of clinical Stage 3 Type 1 Diabetes (T1D) in adults and paediatric patients aged 8 years and older who are at Stage 2 of the disease. This landmark approval made Tzield the first therapy in history capable of modifying the underlying autoimmune disease course of T1D, rather than merely managing its downstream consequences through insulin replacement.

Type 1 Diabetes is an autoimmune condition in which the body's own T-cells destroy the insulin-producing beta cells of the pancreas. By the time clinical symptoms appear, most beta-cell function has already been lost, committing patients to lifelong insulin therapy with its attendant burden of continuous glucose monitoring, dietary restriction, and long-term complications. Tzield acts by binding to CD3 receptors on T-cells and modulating the autoimmune attack on beta cells, effectively delaying the onset of clinical diabetes by a median of approximately two years based on the pivotal clinical trial data.

The significance of Tzield extended well beyond its immediate population of at-risk individuals. The approval demonstrated the clinical viability of immunomodulatory disease-modification strategies in autoimmune endocrinopathies, and opened strategic pathways for similar approaches in Type 2 Diabetes, celiac disease, and autoimmune thyroid disorders. For the global pharmacy community, the launch highlighted the growing importance of screening-based preventive pharmacotherapy — patients had to be identified at the presymptomatic Stage 2 of T1D in order to benefit from the drug, placing new diagnostic and counselling responsibilities on endocrinology pharmacists and primary-care teams. In India, where the diabetes epidemic is among the world's most severe, the Tzield approval generated intense professional interest and signalled a likely direction for future immunotherapeutic innovation.

FDA Grants Accelerated Approval to Elahere — First ADC for Platinum-Resistant Ovarian Cancer

On 14 November 2022, the FDA granted accelerated approval to Elahere (mirvetuximab soravtansine-gynx), an antibody-drug conjugate (ADC) developed by ImmunoGen, for the treatment of adults with folate-receptor-alpha-positive, platinum-resistant epithelial ovarian, fallopian-tube, or primary peritoneal cancer who have received one to three prior systemic treatment regimens. The approval was notable as the first ADC specifically indicated for platinum-resistant ovarian cancer — a setting in which standard chemotherapy offers limited benefit and median survival has historically been measured in single-digit months.

Antibody-drug conjugates represent one of the most exciting modalities in modern oncology. They combine the targeting specificity of a monoclonal antibody with the cytotoxic potency of a chemotherapy payload, connected through a carefully-engineered linker. In the case of Elahere, the antibody binds folate receptor alpha (FRα), which is over-expressed on the surface of the majority of epithelial ovarian cancers, and delivers DM4 — a potent microtubule-disrupting agent derived from maytansine — directly into the cancer cell. This targeted delivery spares much of the systemic toxicity associated with conventional chemotherapy.

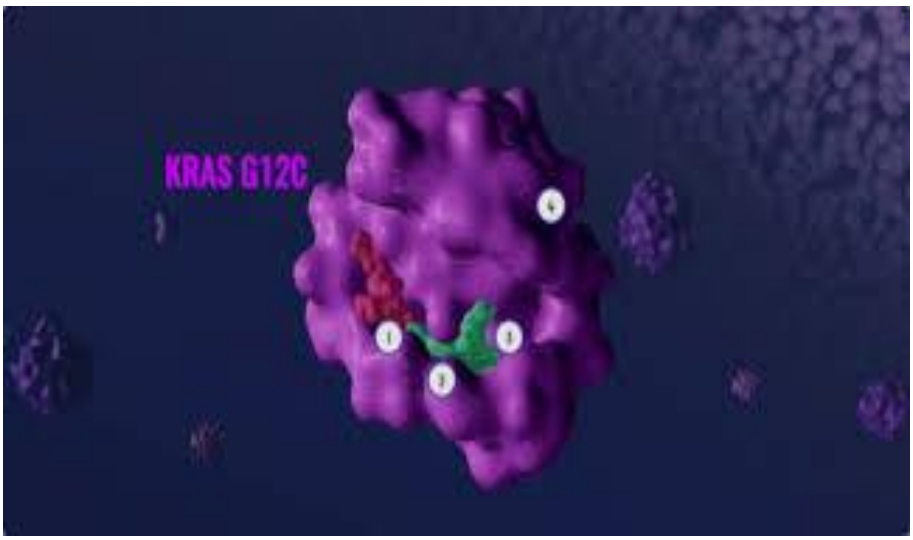
The broader scientific significance of the Elahere approval lies in the maturation of the ADC platform itself. By 2022, ADCs had transitioned from experimental niche to mainstream oncology, with more than a dozen approved agents and hundreds in clinical development. Indian pharmaceutical companies, particularly those with a presence in bioconjugate manufacturing, took note of the growing commercial opportunity. For pharmacy students, Elahere offered a compelling case study in modular drug design — the convergence of biologics, cytotoxic chemistry, and linker chemistry into a single therapeutic product requiring new expertise in pharmacology, handling, and clinical monitoring.

Krazati (Adagrasib) Approved — Second KRAS G12C Inhibitor Broadens Targeted Lung Cancer Therapy

On 12 December 2022, the FDA granted accelerated approval to Krazati (adagrasib), developed by Mirati Therapeutics, for adult patients with KRAS G12C-mutated locally advanced or metastatic non-small cell lung cancer (NSCLC) who have received at least one prior systemic therapy. Krazati became the second KRAS G12C inhibitor to reach the U.S. market, following Amgen's Lumakras (sotorasib) approved in May 2021. Together, these two agents marked the long-awaited clinical drugging of KRAS — a tumour-driver mutation that had eluded pharmacological targeting for nearly four decades and had come to be regarded as the archetypal "undruggable" cancer target.

The KRAS gene is among the most frequently mutated oncogenes across human cancers, with the G12C variant alone present in approximately 13% of lung adenocarcinomas, 3-5% of colorectal cancers, and 1-2% of other solid tumours. The scientific challenge of inhibiting mutant KRAS lay in the protein's small, shallow, and highly dynamic structure, which offered no conventional drug-binding pocket. The breakthrough came with the discovery that the G12C mutation itself creates a reactive cysteine residue to which covalent inhibitors can irreversibly bind, locking the protein in an inactive GDP-bound conformation.

Krazati's approval validated the emerging paradigm of covalent drug design in oncology and energised the development of inhibitors against related KRAS variants (G12D, G12V, G13D) that together account for the majority of KRAS-driven human cancers. For the Indian oncology market, the arrival of targeted KRAS therapy highlighted the increasing role of molecular diagnostics — patients must first be genetically screened for the G12C mutation before becoming eligible for treatment. This cascade of biomarker testing, genetic counselling, and targeted pharmacotherapy became a recurring theme in the 2022-23 period and reinforced the importance of precision-medicine training for pharmacy graduates entering oncology practice.



FDA Grants Accelerated Approval to Leqembi (Lecanemab) — Alzheimer's Breakthrough

On 6 January 2023, the FDA granted accelerated approval to Leqembi (lecanemab-irmb), a humanised IgG1 monoclonal antibody developed by Biogen and Eisai, for the treatment of Alzheimer's disease. The approval was based on the CLARITY-AD clinical trial, which demonstrated a statistically significant 27% reduction in the rate of clinical decline over 18 months in patients with early symptomatic Alzheimer's disease compared to placebo. Leqembi became the second amyloid-targeting antibody to reach the U.S. market after Aduhelm, and crucially the first to show unambiguous clinical benefit on a pre-specified cognitive endpoint.

The scientific significance of Leqembi lay in its validation of the amyloid hypothesis of Alzheimer's disease — the view that accumulation of beta-amyloid peptides in the brain initiates the pathological cascade leading to neurodegeneration. For two decades, the amyloid hypothesis had faced repeated clinical failures that had led some researchers to abandon it entirely. Leqembi's demonstrated slowing of cognitive decline, coupled with clear evidence of amyloid plaque reduction on brain imaging, offered the strongest validation yet that early amyloid-directed intervention could meaningfully modify disease progression.

Full traditional approval followed in July 2023, paving the way for broader Medicare reimbursement in the United States and accelerating clinical adoption worldwide. For Indian pharmacists, the Leqembi approval signalled the arrival of a new era in neurological pharmacotherapy — one in which biomarker-guided, early-intervention, disease-modifying therapies would begin to replace purely symptomatic treatments. The approval also raised complex questions around PET-scan and cerebrospinal-fluid-based diagnostic access, the infrastructure for managing amyloid-related imaging abnormalities (ARIA) — a known class-safety concern — and the long-term cost-effectiveness of antibody therapy in a disease of this prevalence. The global Alzheimer's patient population exceeds 55 million, making Leqembi's commercial and clinical implications among the most significant of the year.

WHO Announces End of COVID-19 Public Health Emergency of International Concern

On 5 May 2023, following the recommendation of its Emergency Committee, the World Health Organization (WHO) Director-General Dr. Tedros Adhanom Ghebreyesus declared an end to the COVID-19 Public Health Emergency of International Concern (PHEIC) — the highest level of alert under the International Health Regulations, first declared on 30 January 2020. The announcement formally closed a chapter of three years and four months during which COVID-19 reshaped every aspect of global healthcare, including pharmaceutical supply chains, vaccine development timelines, regulatory science, and pharmacy practice itself.

The WHO clarified that the end of the PHEIC did not mean that the pandemic was over as a global health concern. SARS-CoV-2 continues to circulate and cause illness and death worldwide. Rather, the end of the emergency designation reflected a transition from an acute pandemic phase to one in which COVID-19 would be managed as an ongoing endemic respiratory virus, akin to seasonal influenza, using established public-health surveillance, seasonal booster programmes, and clinical infrastructure.

For pharmacists and pharmacy educators, the 2023 WHO declaration represented both a moment of reflection and a set of forward-looking challenges. Reflection, because the profession had been central to the global response — running vaccination centres, managing severe drug shortages, adapting to telemedicine, and providing front-line counselling to anxious communities. Forward-looking, because the pandemic had permanently altered how pharmacy students learn, how regulators approve products, how supply chains are managed, and how public-health partnerships are structured. India's role as the "pharmacy of the world" had been spotlighted by its vaccine-manufacturing contributions under the COVAX programme, and Indian pharmacy graduates emerged from the period with new awareness of the geopolitical and public-health dimensions of their profession.

Respiratory Syncytial Virus (RSV) Vaccines Approved for First Time — Protecting Older Adults and Infants

In May 2023, the FDA approved the world's first vaccines against respiratory syncytial virus (RSV), ending a sixty-year quest that had frustrated generations of vaccine developers. GSK's Arexvy (approved 3 May 2023) and Pfizer's Abrysvo (approved 31 May 2023) were both authorised to prevent lower respiratory tract disease caused by RSV in adults aged 60 years and older. In August 2023, Abrysvo received an additional indication for maternal immunisation during pregnancy, passing protective antibodies to newborns during their most vulnerable early months of life.

RSV is a major cause of respiratory illness globally, causing an estimated 177,000 hospitalisations and 14,000 deaths annually among U.S. adults over 65, and representing one of the leading causes of infant hospitalisation worldwide. Earlier attempts to develop an RSV vaccine had foundered on a tragic early trial in the 1960s in which a formalin-inactivated RSV vaccine actually worsened disease upon subsequent natural infection — an outcome termed enhanced respiratory disease. For decades, the mechanism of this failure was poorly understood, and the field remained in a state of vaccine paralysis.

The 2023 breakthrough rested on a combination of structural biology, protein engineering, and the adjuvant and manufacturing platforms refined during COVID-19 vaccine development. Both Arexvy and Abrysvo use a stabilised prefusion form of the viral F protein — a design innovation stemming from academic work in the mid-2010s — which presents the immune system with the viral antigen in the conformation it adopts prior to cell entry. For pharmacy students and practitioners, the RSV vaccine approvals opened a new chapter in adult immunisation. Alongside influenza, pneumococcal, shingles, and COVID-19 boosters, pharmacists are increasingly called upon to counsel older adults on complex vaccination schedules — a responsibility that will only grow as the population ages.

Digital Therapeutics Gain Regulatory Traction — FDA Authorises First Prescription Video Game for ADHD in Adults

The 2022-23 academic year marked a decisive turning point for digital therapeutics (DTx) — software-based medical products that deliver evidence-based clinical interventions through smartphones, tablets, or other digital platforms. Building on earlier authorisations including EndeavorRx (the first FDA-cleared video-game therapeutic, approved in 2020 for paediatric ADHD), the category expanded significantly during this period with new clearances across mental health, insomnia, substance use disorder, and chronic disease management.

The conceptual case for digital therapeutics rests on the observation that many conditions — anxiety, depression, insomnia, chronic pain, diabetes self-management — respond strongly to behavioural interventions that are difficult to scale through conventional face-to-face care. A validated, clinician-prescribed software product can deliver cognitive-behavioural therapy, attention-training exercises, or insomnia protocols to millions of patients simultaneously at modest incremental cost. Rigorous clinical trial data supporting efficacy and safety now accompanies an increasing number of such products, earning them status as legitimate prescribable medical interventions.

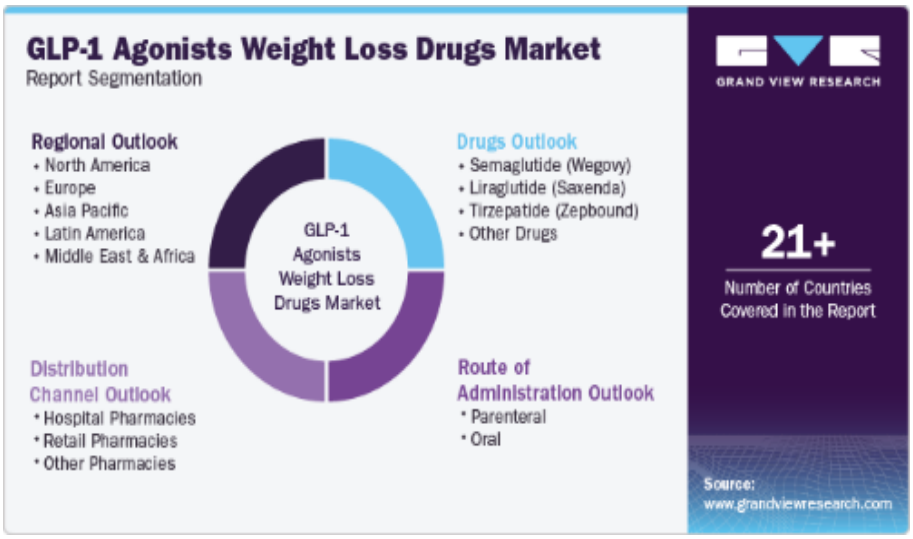
For pharmacy practice, the rise of digital therapeutics introduces a fundamental new product category. Pharmacists increasingly play roles in patient onboarding, engagement monitoring, combination use with conventional pharmacotherapy, and navigation of the reimbursement complexities that distinguish DTx from traditional drugs. Indian regulators have been watching developments in the U.S. and Europe closely, and the 2022-23 period saw the first meaningful local discussion of a regulatory framework for software-as-medical-device in the Indian context. For students at pharmacy institutions, digital therapeutics represents the leading edge of a broader convergence between pharmaceutical sciences and digital health — a convergence that will shape practice settings, job roles, and professional identity over the coming decade.

GLP-1 Revolution Accelerates — Semaglutide Reshapes Obesity and Diabetes Markets Globally

Although the GLP-1 receptor agonist class had existed since the 2005 approval of exenatide, it was during the 2022-23 academic year that semaglutide (Ozempic for type 2 diabetes, Wegovy for chronic weight management) crossed into mainstream cultural awareness — triggering an unprecedented surge in prescribing, a persistent global supply shortage, and a fundamental reassessment of obesity as a pharmacologically tractable chronic disease. By mid-2023, semaglutide and the related tirzepatide (Mounjaro) had become the fastest-growing drugs in pharmaceutical history.

The clinical appeal of the new GLP-1 and GLP-1/GIP co-agonist drugs lay in their efficacy. In pivotal trials, semaglutide produced roughly 15% body-weight reduction in people with obesity, and tirzepatide produced up to 22%. These figures approached the efficacy previously seen only with bariatric surgery and represented a step-change from earlier pharmacological options for obesity, most of which had produced modest weight loss accompanied by unacceptable cardiovascular or psychiatric side-effects. Beyond weight, the class demonstrated cardiovascular mortality reduction, improvements in glycaemic control, reduction in the progression of chronic kidney disease, and emerging signals in non-alcoholic steatohepatitis.

The GLP-1 surge fundamentally restructured pharmaceutical competitive dynamics. Novo Nordisk's market capitalisation overtook that of Europe's largest technology companies. Eli Lilly's valuation soared. Dozens of companies — Amgen, Pfizer, AstraZeneca, Roche, and several Chinese biotechs — accelerated their own GLP-1 programmes. Oral formulations, extended-release depots, and combinations with amylin analogues entered clinical trials. For India, the GLP-1 class presented both a massive opportunity — the country carries the world's largest absolute burden of type 2 diabetes — and a complex challenge around affordability, supply, and the regulatory pathway for future biosimilars. For pharmacists, the class introduced new counselling responsibilities around injection technique, dose escalation to manage gastrointestinal side effects, and the psychosocial dimensions of weight-loss pharmacotherapy.

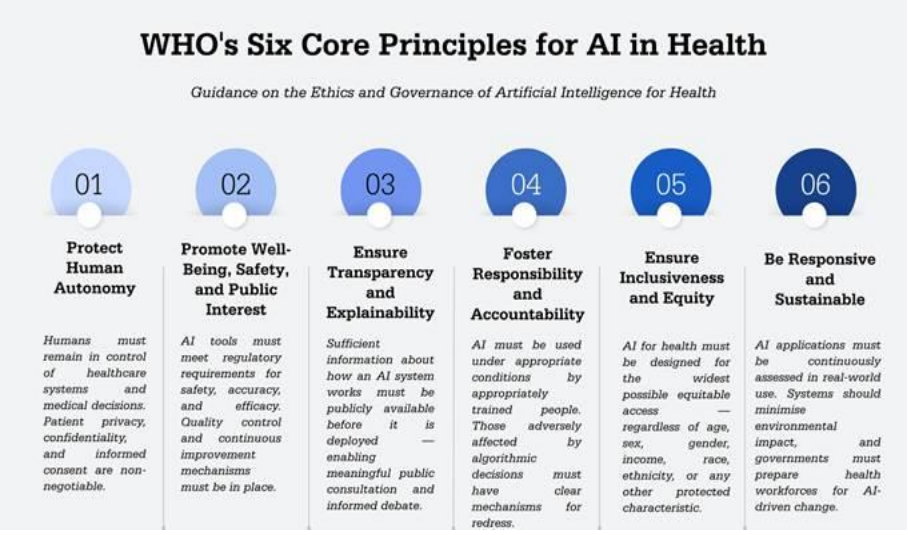


WHO Releases First Global Framework for Regulation of Artificial Intelligence in Health

In early 2023, the World Health Organization released its first comprehensive guidance document on the regulation of artificial intelligence in health — including in drug discovery, clinical decision support, diagnostic imaging, and drug safety pharmacovigilance. The document established six core principles: accountability, transparency, human autonomy, data protection, safety and efficacy, and equity. While non-binding on member states, the framework set the terms of a global conversation that had been intensifying as AI tools migrated from research laboratories into clinical and commercial use.

In the pharmaceutical domain specifically, AI-assisted drug discovery platforms had by early 2023 moved from proof-of-concept to industrial scale. Companies such as Exscientia, Insilico Medicine, Recursion Pharmaceuticals, and Schrödinger had advanced AI-designed molecules into human clinical trials. DeepMind's AlphaFold, publicly released in 2021, had transformed structural biology and by 2023 had become a foundational tool in computational drug design. Generative chemistry models were generating novel drug candidates at rates unimaginable a decade earlier, and machine-learning models were increasingly incorporated into regulatory submissions for bioanalytical method development, clinical trial design, and pharmacovigilance signal detection.

The WHO framework was significant not only for its content but for what it signalled about the coming integration of AI into every layer of the pharmaceutical value chain. Pharmacy education globally began adapting curricula to introduce pharmacy students to the foundational concepts of machine learning, data science, and the ethical dimensions of algorithmic healthcare decision-making. In India, the 2023 framework catalysed discussions within the Indian Council of Medical Research and the Central Drugs Standard Control Organization about domestic regulatory pathways for AI-enabled pharmaceuticals and medical devices. For students and faculty at GNCPS, the framework represented both a challenge — the need to develop AI literacy — and an opportunity to position themselves at the frontier of a rapidly evolving pharmaceutical science.



CAMPUS HIGHLIGHTS RECAP

The Year in Review — Academic Year 2022–23

Across the Academic Year 2022–23, Guru Nanak College of Pharmaceutical Sciences, Dehradun hosted 90 documented events, celebrated 15 student awards won at external competitions, and advanced numerous academic, research, and co-curricular initiatives. Each of these contributed to the rounded education that defines the GNCPS experience — an education in which classroom rigour, laboratory work, cultural celebration, sporting competition, and community service are understood not as separate activities but as integrated components of professional formation.

90	15	100%
EVENTS HELD	AWARDS WON	ENGAGEMENT

The events documented in our two companion newsletters for this academic year — carefully chronicling every seminar, workshop, celebration, sports tournament, cultural festival, award, and research activity — provide a detailed record of the year's institutional life. Highlights included the opening of the Research Club with systematic workshops on methodology and scientific writing, the steady calendar of Entrepreneurship Club events that pushed students toward founder-thinking, the full rhythm of Sports Club tournaments that energised the campus, and the Cultural Club's celebrations of every national and cultural occasion that punctuate the Indian academic calendar.

Beyond the organised calendar, this year was marked by the countless smaller moments that knit together the fabric of campus life — the late-evening laboratory work, the informal faculty-student conversations, the friendships that cross batches, the quiet personal milestones of students who grew into leaders of their clubs and their cohorts. These moments are harder to document but are in many ways the true heart of what makes GNCPS the institution it is.

STUDENT VOICES

Reflections from the GNCPS Student Community

A college newsletter would be incomplete without the voice of its students. In this section we share brief reflections from our students — on what the semester meant to them, on the events that left a mark, and on the friendships and learning that defined their time on campus during this period.

"What I carry away from this semester is not just the knowledge but the confidence. The Research Club workshops taught me to read a scientific paper critically, and I now feel ready to contribute my own research to the literature."

— Final-Year Student, B. Pharm

"The cultural events on campus gave me a chance to discover sides of myself I didn't know existed. I signed up for a dance performance as a dare and ended up helping coordinate three more. GNCPS has a way of drawing the best out of its students."

— Third-Year Student, B. Pharm

"The industry visits and seminars from external experts opened my eyes to the many career paths in pharmacy. I came to college thinking of one profession; I am leaving this semester with awareness of at least five."

— Second-Year Student, B. Pharm

"My induction at GNCPS set the tone for everything that followed. Seniors welcomed us warmly, faculty members were approachable, and by the end of the first week the campus felt like a second home."

— First-Year Student, B. Pharm

"Running the sports calendar this semester taught me more about leadership than any textbook could. Organising a tournament means handling logistics, motivating teammates, resolving disputes, and celebrating every victory as a collective win. I am grateful to the faculty advisors who trusted us with that responsibility."

— Sports Club Coordinator

"The pitch competitions pushed me out of my comfort zone. Standing in front of a panel of judges with just three minutes to sell your idea is terrifying — and exhilarating. Even when I did not win, I walked away with sharper thinking, better slides, and new friendships with fellow founder-students."

— Entrepreneurship Club Member

"Before this semester, publishing a paper felt like something only professors and post-graduates did. The Research Club's systematic workshops demystified the process, and our faculty mentors showed us that student-authored papers in indexed journals are not only possible but expected of serious students."

— Research Club Participant

PUBLICATIONS & RESEARCH OUTPUT

Scholarly Contributions — Academic Year 2022–23

The research output of Guru Nanak College of Pharmaceutical Sciences, Dehradun continues to grow in both volume and scholarly impact. Our faculty and students publish in peer-reviewed journals spanning pharmaceutics, phytochemistry, herbal drug development, water-quality research, nanoparticle science, clinical pharmacy, and pharmacognosy. Over the years, the College has authored or co-authored various research papers and contributed over ninety book chapters to recognised pharmaceutical publications — an output that reflects both individual faculty excellence and the sustained research culture that the institution has built.

Faculty contributions to the Raghav Publication volumes on Pharmacognosy — led by Ms. Kriti Dabral, Ms. Yashika Uniyal, and Dr. Nidhi Chatterjee — have produced thirty-seven authored book chapters, serving as reference material for pharmacy students across India.

CREDITS & ACKNOWLEDGEMENTS

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