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(PHARMACY INSTITUTE)

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Pharmacy Institute
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PRESENTS

PHARMAINNOVATIONS

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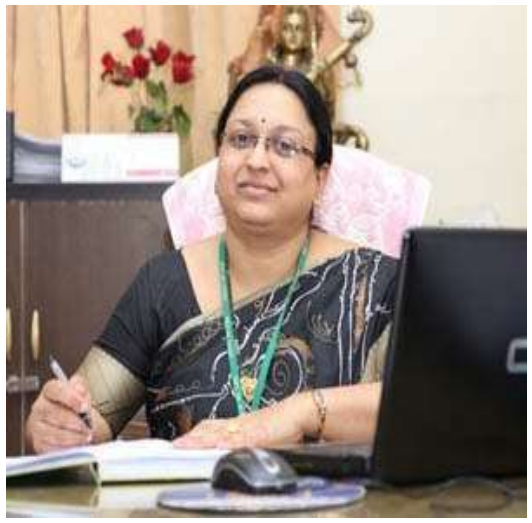

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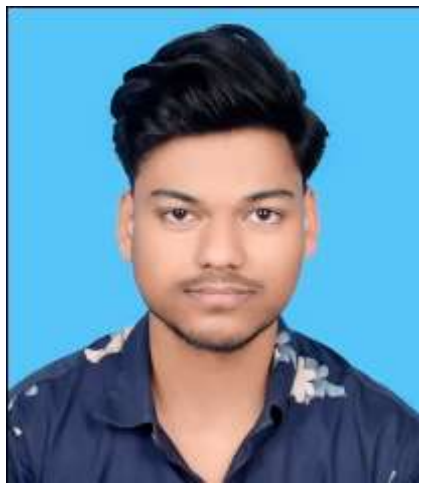

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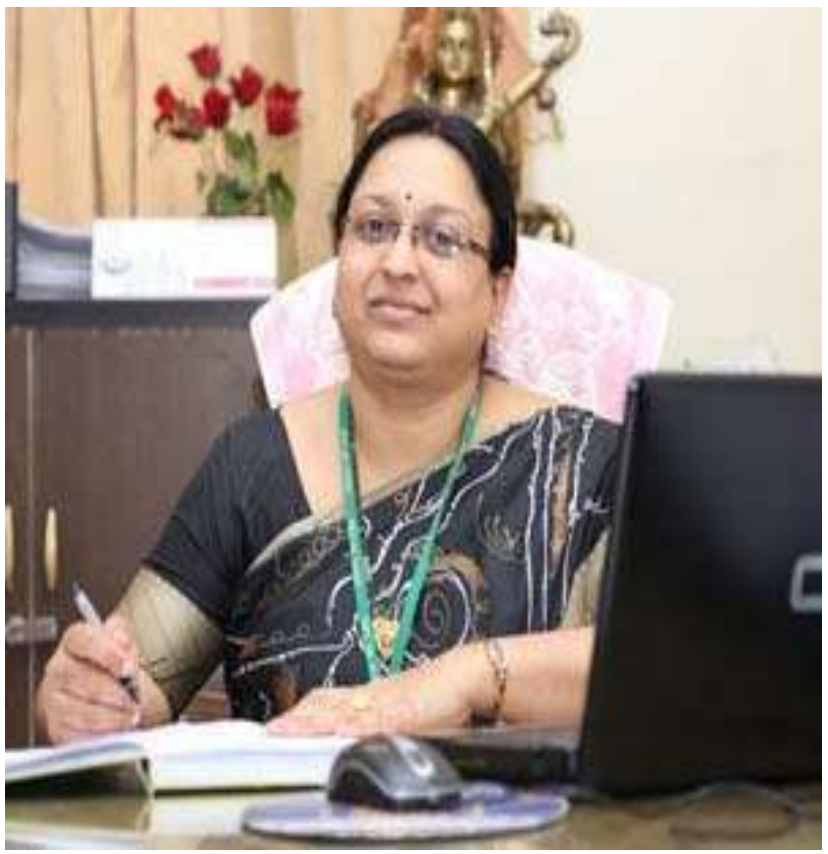

It gives us immense joy and satisfaction to introduce the second issue of 2025 of the magazine 'Pharma Innovations'. I hope you will enjoy reading the magazine, which will be beneficial to enrich your knowledge in Pharmacy, medicines, and health. As always, this issue is also an attempt to bring out the knowledge concealed within the students and faculty. Before looking ahead, however, I would like to offer a word of thanks to our readers, our contributors, and our editorial board for their support of the journal and its mission I hope you enjoy reading this issue as much as we have enjoyed making it.

DR. R. MAZUMDER
PROFESSOR AND DEAN
NOIDA INSTITUTE OF ENGINEERING & TECHNOLOGY (PHARMACY INSTITUTE)
GREATER NOIDA

Messages from the desk of the Associate Editor

On behalf of the editorial board members, it is announced that the second issue of 2025 “Pharma Innovations”. has been published. “Pharma Innovations” is a magazine that sturdily focuses on inspiring the faculty and students to gain knowledge and actively driving the mind toward research in health, medicines, and pharmacy. This unprejudiced attitude toward the scope of the magazine allows the reader to have a divergent and convergent aspect on different topics. Enables budding researchers to think in a rational way to make the scientific pavement.

DR. SWARUPANJALI PADHI
ASSOCIATE PROFESSOR
DEPARTMENT OF PHARMACEUTICS
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LARGE ISCHEMIC STROKE AND ENDOVASCULAR THROMBECTOMY: A THERAPEUTIC PERSPECTIVE

Dr. Chandana Majee
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Noida Institute of Engineering and Technology (Pharmacy Institute)

Large ischemic stroke, typically resulting from occlusion of major cerebral arteries, is associated with substantial morbidity and mortality. Historically, patients with large infarct cores were considered poor candidates for reperfusion therapies due to the increased risk of hemorrhagic transformation and limited expected benefit. However, recent advances in imaging techniques and endovascular interventions have challenged this paradigm. Endovascular thrombectomy has emerged as a promising therapeutic approach, even in patients with extensive ischemic damage. This review explores the evolving role of endovascular thrombectomy in the management of large ischemic stroke, highlighting key clinical trials, patient selection criteria, procedural considerations, and outcomes. Particular emphasis is placed on the use of advanced neuroimaging modalities, such as perfusion imaging, to identify salvageable brain tissue and guide treatment decisions. Emerging evidence suggests that, when carefully selected, patients with large infarct cores may still benefit from thrombectomy, with improved functional outcomes and acceptable safety profiles.

LARGE ISCHEMIC STROKE AND ENDOVASCULAR THROMBECTOMY: A THERAPEUTIC PERSPECTIVE

Furthermore, this paper discusses current challenges, including optimal time windows, risk stratification, and post-procedural care, as well as future directions in stroke management. In conclusion, endovascular thrombectomy represents a paradigm shift in the treatment of large ischemic stroke, expanding therapeutic opportunities and offering hope for improved patient outcomes in a population previously considered beyond the scope of intervention..

STUDENTS' FORUM

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AI REVOLUTION IN DRUG DISCOVERY

KASHVI RAWAT

V Semester 3rd Year, B. Pharm

Noida Institute of Engineering and Technology (Pharmacy Institute)

·Drug development is a demanding discipline characterized by high expenses, protracted timeframes, and uncertain results that deals with the invention of formulas inferred from diverse abstracts through creativity. In the past, creating a new medication could take ten to fifteen years and cost billions of dollars. However, artificial intelligence (AI) is revolutionizing the discovery process by making it possible to make decisions more quickly, intelligently, and confidently. Early drug discovery is greatly accelerated by AI's ability to efficiently examine large chemical and biological databases. Tasks like lead optimization and target identification that previously took years can now be completed in a matter of months. Research indicates that AI can shorten early discovery times by as much as 70%. Notably, in almost 18 months, businesses such as Insilico Medicine have progressed from target discovery to preclinical candidates

AI REVOLUTION IN DRUG DISCOVERY

AI is particularly good at identifying intricate patterns in molecular interactions, protein structures, and genomic data. Before laboratory synthesis, machine learning algorithms can predict target binding, evaluate toxicity risks, and create novel therapeutic compounds. By reducing trial-and-error experimentation, these in-silico methods save time and money. The success rate of Phase I clinical trials has significantly improved with AI-designed drug candidates, reaching roughly 80–90% as opposed to 40–65% with traditional techniques. Increased early success rates lower attrition and free up researchers to concentrate on the most promising treatments. AI can reduce early R&D expenses by 40–50% by getting rid of ineffective studies and late-stage failures. According to industrial analysis, each successfully created medication might result in savings of more than $1 billion.

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AI REVOLUTION IN DRUG DISCOVERY

. AI's crucial significance in contemporary medical research is highlighted by significant investments and partnerships between biotech companies and pharmaceutical executives. One well-known example is the 45-million-dollar cooperation that GSK and Relations made with AI-focused biotech Relations to find new targets for fibrotic disorders. Because AI is now a driving force behind a significant scientific revolution rather than merely a tool, its involvement in pharmaceuticals, particularly in drug development, is much more than just a noteworthy aspect.

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TRANSDERMAL PATCHES WITH MICRONEEDLES

Jagriti Tiwari
Vth Semester 3rd Year, B. Pharm
Noida Institute of Engineering and Technology (Pharmacy Institute)

Transdermal drug delivery systems (TDDS) are becoming an increasingly popular alternative to oral medicines and injections because they allow drugs to be delivered through the skin in a controlled, painless, and sustained way. However, the biggest challenge in transdermal delivery is the outermost layer of the skin, known as the stratum corneum. This layer acts as a strong barrier and limits the entry of many drugs, especially large or water-soluble molecules. To overcome this limitation, microneedle-based transdermal patches have been developed as an innovative solution. Microneedles are extremely small needlelike projections that can gently pierce the outer layer of the skin to create tiny temporary channels. These channels help drugs pass through more easily without reaching deeper nerves or blood vessels, which makes the process nearly painless and safe.

TRANSDERMAL PATCHES WITH MICRONEEDLES

Microneedle patches are generally classified into different types such as solid, coated, dissolving, hollow, and hydrogel-forming microneedles. Each type works in a slightly different way to deliver drugs. Among these, dissolving microneedles are especially promising because they are made from biodegradable polymers that safely dissolve in the skin after use. This reduces the risk of sharp waste and improves overall safety. These systems have shown strong potential in delivering vaccines, insulin, and several other therapeutic agents. In addition, microneedle patches improve drug bioavailability, increase patient comfort, and allow easy self-administration.

Recent advancements are focused on developing smart microneedle systems that combine controlled drug release and biosensor integration for more precise dosing. Despite these benefits, some challenges still exist, such as large-scale manufacturing, limited drug-loading capacity, regulatory approval processes, and long-term stability. Even so, growing clinical evidence and continuous technological progress suggest that microneedle patches could play a major role in future vaccination programs, chronic disease treatment, and personalized medicine.

PERSONALIZED MEDICINE: ONE DRUG DOES NOT FIT ALL

Ms Mahima
V semester 3rd Year, B. Pharm
Noida Institute of Engineering and Technology (Pharmacy Institute)

Personalized medicine, also known as precision medicine, is a new approach to healthcare that aims to customize medical treatment according to the individual characteristics of each patient. Unlike conventional therapeutic strategies that apply uniform treatments to broad patient populations, personalized medicine joins genetic information, environmental influences, and lifestyle factors to guide clinical decision-making. This approach enables more accurate prediction of disease susceptibility, early diagnosis, and selection of the most effective and safest therapeutic interventions. Recent advances in pharmacogenomics have significantly contributed to the development of personalized medicine. Genetic testing allows us to predict patient response to specific drugs, thereby reducing trial-and-error prescribing and minimizing adverse drug reactions. Pharmacogenomics plays a crucial role in optimizing drug selection and dosage based on individual genetic variations, leading to improved treatment efficacy.

PERSONALIZED MEDICINE: ONE DRUG DOES NOT FIT ALL

Ms Mahima
V semester 3rd Year, B. Pharm
Noida Institute of Engineering and Technology (Pharmacy Institute)

Personalized medicine has shown remarkable success in oncology, where targeted therapies and immunotherapies are designed based on tumour-specific genetic modifications. Similar progress is being observed in cardiology, neurology, and the management of chronic and rare genetic diseases. Despite its substantial benefits, the execution of personalized medicine faces several challenges. High costs associated with genetic testing and advanced technologies, lack of standardized clinical guidelines, ethical issues related to genetic data usage, and concerns regarding data privacy and security limit its prevalent adoption. Additionally, unequal access to personalized healthcare services may contribute to discrepancies in treatment outcomes, especially in developing regions. To overcome these barriers, continued investment in research, technological innovation, healthcare infrastructure, and professional training is essential. Supportive regulatory frameworks and public awareness are also critical for successful integration into routine clinical practice. In conclusion, personalized medicine holds immense potential to revolutionize healthcare by shifting the focus from reactive treatment to predictive and preventive care, ultimately improving patient outcomes and advancing the future of modern medicine. Personalized medicine can be the future of a better and healthier world.

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COMPUTER AIDED DRUG DESIGN

Ms KEERTI KIRAN ARYA
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Computer-Aided Drug Design, which is also known as CADD, is a way that computers help us find drugs. This process uses computers to make and look at drug molecules. It helps people who study drugs see how new drugs will work with things in our body, like enzymes, receptors, and proteins. Computer-Aided Drug Design does this by guessing how these drugs will interact before we even start doing experiments in a lab. This way, it saves us time and money when we are making drugs. Computer-Aided Drug Design is really important when it comes to finding drugs. It helps at different stages, like when scientists are trying to figure out what to target, or when they are picking the best compounds to work with, or when they are trying to make these compounds work better.

It lets scientists change drug molecules on the computer to make them work better, be more specific, and be safer for people to take. This way of doing things is smarter and faster than trying a lot of different things to see what works.

COMPUTER AIDED DRUG DESIGN

The way we design drugs depends on what we know about the target. If we know what the target looks like, we can use that information to design a drug. This is called structure-based drug design. We use computers to see how a drug will fit into the target. We do this by using things like docking and molecular dynamics simulations. If we do not know what the target looks like, we use an approach. This is called ligand-based drug design. We look at drugs that we know work and try to figure out what makes them work. We use methods like structure-activity relationship analysis and pharmacophore modelling to predict if a new drug will work. We use CADD to do all of this. It is classified into these two types: structure-based and ligand-based drug design. CADD is very important for drug design, and both structure-based and ligand-based drug design are used to make drugs.

COMPUTER AIDED DRUG DESIGN

Virtual screening is really useful for CADD, because it helps us quickly look at a lot of chemicals to find the ones that might make drugs.

It is also helpful because it uses computer programs to predict how a drug will be absorbed, distributed, broken down, and removed by the body, and if it will be toxic.

This helps us figure out if a drug is going to work and be safe to use before we spend a lot of time and money on it, so we do not have problems with the drug later on.

We use Computer-Aided Drug Design to find out about the properties of a drug, like how it's absorbed, distributed, broken down, and removed by the body, and if it will be toxic, which is really important. It is a way to make new medicines. It helps us find better treatments. This approach is good because it saves money and time. It is a help in making sure that the medicines we take are safe and work well. It is used a lot in research.

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NANO-PHARMACEUTICALS: TRANSFORMING DRUG DELIVERY FOR FUTURE HEALTHCARE

Mr. Mohd. Farhan Khan
III semester 2nd Year, B. Pharm
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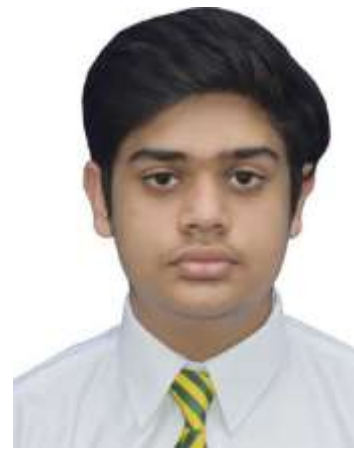

The pharmacy field is experiencing a significant change due to the merging of nanotechnology and pharmaceutical sciences. A key development is the rise of nano-pharmaceuticals—drug formulations designed at the nanometre level to improve therapeutic effectiveness, bioavailability, and patient adherence. This abstract examines how nano-pharmaceuticals can overcome the challenges of traditional drug delivery systems, such as low solubility, quick metabolism, and non-targeted delivery.

Nano-pharmaceuticals use various nanocarriers, like liposomes, dendrimers, polymeric nanoparticles, and solid lipid nanoparticles, to encapsulate and deliver active pharmaceutical ingredients. These carriers shield the drug from degradation, enable controlled release, and can be modified to target specific tissues or cells, thereby reducing side effects and enhancing treatment results. For instance, in cancer treatment, nanoparticles can be designed to release anticancer drugs exclusively in the tumour area, protecting healthy tissues and reducing toxicity.

NANO-PHARMACEUTICALS: TRANSFORMING DRUG DELIVERY FOR FUTURE HEALTHCARE

Beyond therapeutic uses, nano-pharmaceuticals have great potential in diagnostics and theragnostic—integrating therapy and diagnostics into one platform. This creates new opportunities in personalized medicine, allowing treatments to be customized based on individual patient requirements and real-time feedback.

From a first-year viewpoint, grasping the basics of nanotechnology, colloidal systems, and fundamental pharmacokinetics is essential for understanding how these technologies are transforming modern pharmacy. As research progresses, regulatory hurdles, cost-effectiveness, and large-scale production will be crucial factors in making nano-based therapies available to the public.

This new development not only offers a future with safer and more effective medicines but also highlights the changing role of pharmacists as key players in advanced healthcare solutions. Fostering curiosity, cross-disciplinary learning, and innovation in pharmacy education will enable the upcoming generation of pharmacists to take charge in the age of smart medicine.

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National GLP Compliance Monitoring Authority (NGCMA) was established by the **Department of Science & Technology (DST)**, **Government of India**, with the approval of the Union Cabinet on April 24, 2002.

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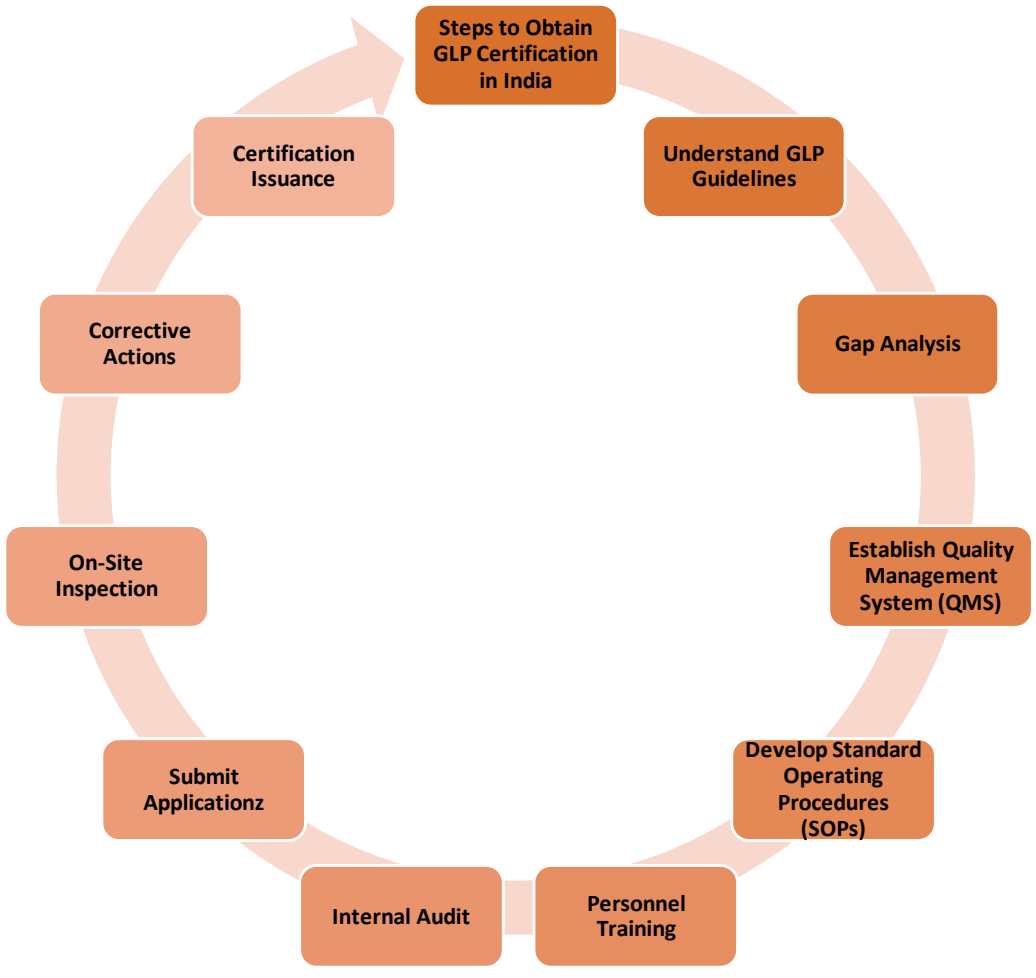

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CENTRAL DRUGS STANDARD CONTROL ORGANISATION
GUIDANCE ON
DISPOSAL OF EXPIRED/ UNUSED DRUGS

DISPOSAL OF EXPIRED/ UNUSED DRUGS

- All recalled and sub-standard products
- All unsealed products (expired or unexpired)
- All cold chain damaged unexpired pharmaceuticals
- All bulk or loose tablets and capsules
- An individual's condition improved and no longer requiring medication
- Change in treatment plan or medication regimen
- A person discontinuing medication due to side effects or lack of efficacy.

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CENTRAL DRUGS STANDARD CONTROL ORGANISATION
GUIDANCE ON
DISPOSAL OF EXPIRED/ UNUSED DRUGS

METHODS FOR DISPOSAL OF EXPIRED/ UNUSED MEDICINES

- Landfill
- Waste immobilization: encapsulation
- Waste immobilization: inertization
- Chemical decomposition
- Novel high temperature incineration
- Medium temperature incineration
- Burning in open containers
- Sewer
- Open uncontrolled non-engineered dump
- Engineered landfill

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LIST OF NEW DRUG CANDIDATES APPROVED BY FDA (Jan-June 2025)

Drug Name	Active Ingredient	Approval Date	FDA approved use
Nereus	tradipitant	12/30/2025	To treat vomiting associated with motion
Yartemlea	narsoplimab-wuug	12/23/2025	To treat hematopoietic stem cell transplant-associated thrombotic microangiopathy
Myqorzo	aficamten	12/19/2025	To treat symptomatic obstructive hypertrophic cardiomyopathy
Exdensur	depemokimab-ulaa	12/16/2025	To treat severe asthma characterized by an eosinophilic phenotype as a Komzifti add-on maintenance therapy
Cardamyst	etripamil	12/12/2025	To treat episodes of paroxysmal supraventricular tachycardia
Nuzolvence	zoliflodacin	12/12/2025	To treat uncomplicated urogenital gonorrhea due to Neisseria gonorrhoeae
Lerochol	lerodalcibep-liga	12/12/2025	To reduce low-density lipoprotein cholesterol in adults with hypercholesterolemia, including heterozygous familial hypercholesterolemia, as an adjunct to diet and exercise

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Drug name	Active ingredient	Approval date	FDA approved use
Voyxact	sibeprenlimab-szsi	11/25/2025	To reduce proteinuria in primary immunoglobulin A nephropathy in adults at risk for disease progression
Hyrnuo	sevabertinib	11/19/2025	To treat locally advanced or metastatic non-squamous non-small cell lung cancer with tumors that have activating HER2 tyrosine kinase domain activating mutations in patients who received a systemic therapy
Redemplo	plozasiran	11/18/2025	To reduce triglycerides in adults with familial chylomicronemia syndrome
Komzifti	ziftomenib	11/13/2025	To treat adults with relapsed or refractory acute myeloid leukemia with a susceptible nucleophosmin 1 mutation who have no satisfactory alternative treatment options
Kygevvi	doxecitine and doxribtimine	11/3/2025	To treat thymidine kinase 2 deficiency in patients who start to show symptoms when they are 12 years old or younger

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Drug name	Active ingredient	Approval date	FDA approved use
Lynkuet	elinzanetant	10/24/2025	To treat moderate-to-severe vasomotor symptoms due to menopause
Jascayd	nerandomilast	10/7/2025	To treat idiopathic pulmonary fibrosis
Rhapsido	remibrutinib	9/30/2025	To treat chronic spontaneous urticaria in adults who remain symptomatic despite H1 antihistamine treatment
Palsonify	paltusotine	9/25/2025	To treat acromegaly in adults who had an inadequate response to surgery and/or for whom surgery is not an option
Inluriyo	imlunestrant	9/25/2025	To treat estrogen receptor-positive, human epidermal growth factor receptor 2-negative, estrogen receptor-1-mutated advanced or metastatic breast cancer with disease progression following at least one line of endocrine therapy
Forzinity	elamipretide	9/19/2025	To improve muscle strength in patients with Barth syndrome weighing at least 30 kg

Drug name	Active ingredient	Approval date	FDA approved use
Keytruda Qlex	pembrolizumab and berahyaluronidase alfa-pmph	9/19/2025	To treat adult and pediatric (12 years and older) solid tumor indications approved for the intravenous formulation of pembrolizumab
Wayrilz	rilzabrutinib	8/29/2025	To treat persistent or chronic immune thrombocytopenia that has not sufficiently responded to immunoglobulins, anti-D therapy, or corticosteroids
Dawnzera	donidalorsen	8/21/2025	To prevent attacks of hereditary angioedema
Brinsupri	brensocatib	8/12/2025	To treat non-cystic fibrosis bronchiectasis
Hernexeos	zongertinib	8/8/2025	To treat adults with unresectable or metastatic non-squamous non-small cell lung cancer whose tumors have HER2 tyrosine kinase domain activating mutations, as detected by an FDA-approved test, and who have received prior systemic therapy

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Drug name	Active ingredient	Approval date	FDA approved use
Modeyso	dordaviprone	8/6/2025	To treat diffuse midline glioma harboring an H3 K27M mutation with progressive disease following prior therapy
Vizz	aceclidine	7/31/2025	To treat presbyopia
Sephience	sepiapterin	7/28/2025	To treat hyperphenylalaninemia in patients with sepiapterin-responsive phenylketonuria, in conjunction with a phenylalanine-restricted diet
Anzupgo	delgocitinib	7/23/2025	To treat moderate-to-severe chronic hand eczema when topical corticosteroids are not advisable or produce an inadequate response
Ekterly	sebetralstat	7/3/2025	To treat acute attacks of hereditary angioedema
Zegfrovy	sunvozertinib	7/2/2025	To treat locally advanced or metastatic non-small cell lung cancer with epidermal growth factor

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Drug name	Active ingredient	Approval date	FDA approved use
Lynozyfic	linvoseltamab-gcpt	7/2/2025	To treat relapsed or refractory multiple myeloma after at least four prior lines of therapy, including a proteasome inhibitor, an immunomodulatory agent, and an anti CD38 monoclonal antibody
Andembry	garadacimab-gxii	6/16/2025	To prevent attacks of hereditary angioedema
Ibtrozi	taletrectinib	6/11/2025	To treat locally advanced or metastatic ROS1-positive non-small cell lung cancer

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and
Keep Learning

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