



LLOYD INSTITUTE OF
MANAGEMENT & TECHNOLOGY

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NBA Accredited

B. Pharm. from 2018

Promoting international quality standards for technical education in India

REFLECTIONS

5th Edition, Nov. '19





Message from PRESIDENT

Manohar Thairani
President, Lloyd

I am pleased to release the 5th edition of our pharmacy newsletter "Lloyd Reflections on the eve of our 5th Annual National Pharmacy Conference, PharmaSpeak-2019.

The pharmacy program of our group is setting new benchmarks with the passage of each day and I feel immense pride in that. This has been made possible by the excellent and dedicated team of faculty members who are our prized assets. The industry focused pedagogical approach adopted by the Institute some years back is paying us huge dividends today. It led to a massive upheaval of the complete academic environment, introduction of industrial training programs, extensive industrial connect, corporate readiness classes, all finally converging into increased placement indices and improved student progression.

Accreditation by National Board of Accreditation, hosting the biggest job fest of its kind in north India (if not the whole of India), introduction of LIF program have been the highlights till now this year.

We, at Lloyd, are focused to support our students in every way as "your success is our goal".

This issue is an effort to bring to you a glimpse of what our students and faculty accomplished in the past few months. I hope you will enjoy the insights of activities at Lloyd in the current session as you go through this newsletter.

The Institute

In the year 2004, Lloyd group established its sprawling campus in the lush green environment in Greater Noida, 25 kms from Delhi. The Institute offers multi-disciplinary industry oriented programs. It is one of the best private institutes in the North India. From business management programs to programs in pharmaceutical technologies and from legal studies to education programmes, Lloyd is a veritable profusion of educational services.

Vision of the Institution

"To become a globally recognized, education and research organization in the field of pharmaceutical sciences and produce quality professionals to contribute to the well being of society and growth of Pharmaceutical Industry."

Mission of the Institution

- ★ To produce high quality professionals with quality education, technical training, sensitive to the ever changing needs of the profession, society, industry and country.
- ★ To create an environment of continuous upgradation and higher studies to meet professional, economic and social standards.
- ★ To promote innovation, research, entrepreneurship to meet challenges and foster an environment of collaborations.
- ★ To inculcate high morals, professional and ethical values amongst our students, transforming them to quality service providers.

Inside this Issue

Articles

- Clinical Trials for Dummies
- Herbal Medicine: Alternative Treatment for Cancer Therapy
- Stem Cell Therapy- Hope, Not A Hype
- Artificial Intelligence in Pharma

Placement Cell Updates

- Niyukti: A Unique Job Fest
- Report on Job Fest 2019
- Academic Achievers of 2018-19 Even Semester

Campus Updates

- Lloyd Industry Focussed Training (LIFT)
- World Pharmacists' Day Celebration-2019
- Pharmaria, Annual Convention of IPA
- Invited Extramural Lecture
- MoUs Signed by Lloyd in 2019
- Fresher's Carnival- Cloudburst 2019
- Orientation & Induction Program 2019
- Lloyd in News

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Message from GROUP DIRECTOR

Dr. Vandana Arora Sethi
Group Director

I am extremely pleased to welcome you to the Annual Pharmacy Conference of Lloyd, PharmaSpeak-2019. This is our 5th Conference and this year we are organizing it in collaboration with Delhi Pharmaceutical Sciences & Research University (DPSRU) and Indian Pharmacy Graduates' Association (IPGA).

It is highly gratifying to see the scope and reach of PharmaSpeak increasing with each year. This year we have more than 400 delegates from 60+ Institutes. The response from the academic fraternity has been overwhelming and I thank all the luminaries of pharmacy field for extending their support and encouragement so generously.

We are constantly trying to improve the absolute experience of the students choosing us for their higher education in pharmacy. The driving force for this is the sense of responsibility that we owe to the youth of our nation who put faith in us to lead them towards a gainful career.

We are ensuring that the excellence is created in the nuts and bolts of academics like classrooms, laboratories, projects etc. At the same time, value is created by placing our students in settings where they have liberal access to the persons, facilities and resources outside the realm of the Institute and they can engage with them to enhance their knowledge and skills. This

happens both outside the Institute on visits to laboratories and production facilities; as well as inside the Institute by inviting experts from various spheres of pharmacy for close-range interaction with students or organizing large-scale events like this Conference.

This newsletter will share with you the accomplishments of the Pharmacy Department of the past 6 months and we are hopeful that you will appreciate them and let us know what more can be done towards realizing the mission of shaping our young into a knowledgeable, skilled professional who contributes towards nation building equipped with these elements.



Message from PRINCIPAL

Prof. Abdul Wadood Siddiqui
Principal

Dear Reader

I proudly present the 5th edition of the pharmacy newsletter of my Institute, LLOYD REFLECTIONS, to you.

In the period between the last issue and the present issue we have continued our march towards realizing our institution's vision, i.e., to become a globally recognized, education and research organization in the field of pharmaceutical sciences and produce quality professionals to contribute to the well being of society and growth of Pharmaceutical Industry.

We realize that our responsibility has increased manifold as we find ourselves in the select few Institutes of the country whose B. Pharm. program is accredited by National Board of Accreditation (NBA).

While you will have a glimpse of all the developments that took place since we last met in the following pages, I would like to draw your attention towards one special event that stands out not just in Lloyd but perhaps in the whole North India.

Niyukti-2019, the 4th Annual Job Fest of Lloyd was organized in a highly successful manner on 7th April, 2019. It was organized in association with the Delhi Chapter of Indian Pharmaceutical Association (IPA) and with the support and blessings of Dr. Eswara Reddy (then DCGI).

I am proud to share that 1700 students from 230 Institutions utilized this unique opportunity to get a job from the 50 companies that came to our campus that day.

As always, no student was charged a single penny to participate.

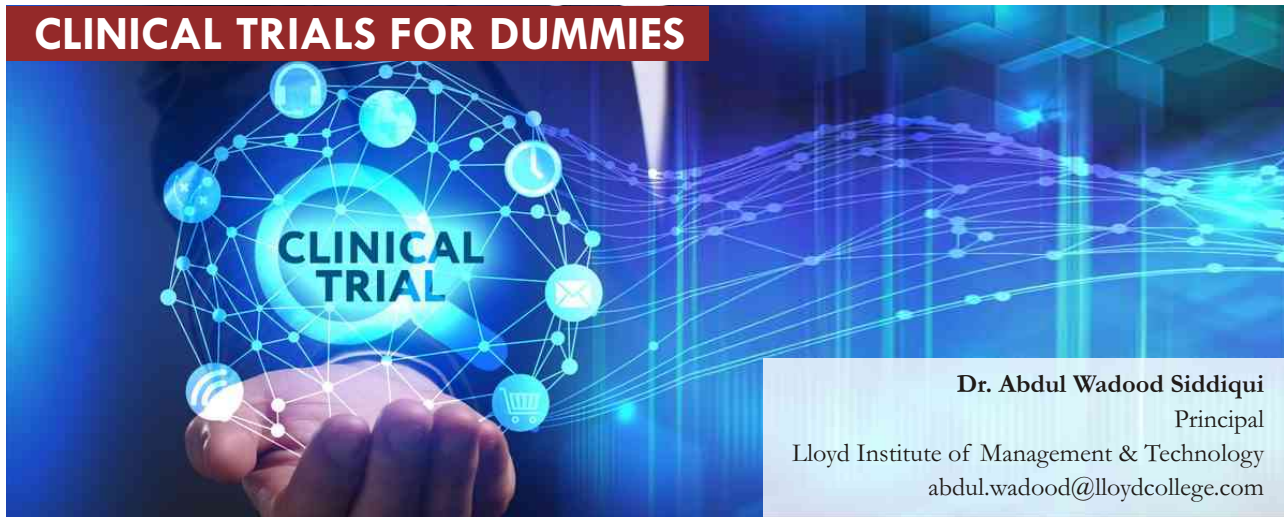
Since its inception in 2016, Lloyd's Job Fest-Niyukti has helped about 1700 students in finding their first job and start the journey of their career.

Another remarkable feat was that as part of our constant efforts to give our students a broad based learning experience and delivering a gainful "Beyond-Curriculum" experience, we have developed **Skill Development Program in Pharmacy** for Improved Orientation towards Industry Practices. The program was developed after extensive consultations with industry experts and is named **LLOYD INDUSTRY FOCUSED TRAINING (LIFT)**.

The edition in your hand is being released with PharmaSpeak-2019, the 5th Annual National Pharmacy Conference of Lloyd. It is being organized in collaboration with Delhi Pharmaceutical Sciences & Research University (DPSRU) and sponsored by Indian Pharmacy Graduates' Association (IPGA).

I request you to kindly browse through the issue in your hands and let us know of your views, suggestions to help us improve on lloydreflections@lloydcollege.in

CLINICAL TRIALS FOR DUMMIES



Dr. Abdul Wadood Siddiqui
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Clinical trials are a series of research studies to investigate how effective a new medication, a combination of medications, or new ways to use current treatments is for treating a disease. They are also conducted to evaluate new tests, equipment, and procedures for diagnosing and detecting health conditions and to find vaccines to prevent illnesses. Every drug currently available in market was once available only in a clinical trial.

What kinds of trials are there?

Observational Trials:

- * Allow researchers to follow a patient's health to learn more about a condition.
- * Patients generally continue their current treatment.
- * An example of an observational trial would be a patient tracking their symptoms daily in a journal.

Interventional Trials:

- * These test new treatments or devices, or new ways of using existing treatments.
- * Interventional trials offer patients the opportunity to access treatments not yet available through standard care.

Before an experimental treatment can be tested in a clinical trial, it must have shown benefit in laboratory testing, animal research studies, or research in a small group of humans. Clinical trials are required to follow the same ethical and legal guidelines as standard medical practice to protect the safety of participants.

Every clinical trial has guidelines and requirements about who can participate. Some clinical trials may look only for people of a certain age, gender, race, ethnicity, or people with a specific disease, stage of disease, or treatment history. Other clinical trials may be looking for people without serious health conditions.

Two important terms in Clinical Trials:

Placebo: A placebo is an inactive pill, liquid or powder that looks like the experimental treatment but has no effect on the body. In some clinical trials, experimental treatments are compared with placebos to evaluate the effectiveness of the experimental treatment.

Control group: A control group consists of participants who receive either standard treatment or a placebo and serves as a comparison group to measure the effectiveness of the experimental treatment other participants are receiving. Participants are randomly assigned to control or non-control groups.

Clinical Trial Process

The process for a clinical trial depends on the type of clinical trial. Generally, at the beginning of the clinical trial, each participant's health is checked and the team provides instructions to the participants. The team will then monitor participants closely during the clinical trial and will follow up with participants after the clinical trial is completed.

Clinical Trials Phases

Clinical trials are conducted in phases. Each phase of the clinical trial has a different purpose.



Phase 1: experimental treatment is given to a small group of people (20-80) for the first time to evaluate its safety, dosage range, and side effects | **Phase 2:** experimental treatment is given to a larger group of people (100-300) to evaluate its safety and effectiveness | **Phase 3:** experimental treatment is given to large groups of people (1,000 -3,000) to confirm its

effectiveness, monitor side effects, compare to current treatments | In some cases, research continues even after the FDA has approved a treatment. The FDA can ask researchers to conduct a Phase 4 trial. | **Phase 4:** collect information on experimental treatment's long term safety and effectiveness.

	Phase 1	Phase 2	Phase 3	Phase 4
Participants needed	1 person icon	2 people icon	3 people icon	4 people icon
Time Taken	A few months	2 years	Many years	Several years
Aims to test	Dose Safety (pill and first aid kit icons)	Treatment efficacy (heart rate icon)	Efficacy of treatment versus Standard of care (pill and syringe icons)	Safety and quality of life over time (glasses and clock icons)

Regulatory Bodies, Framework and Procedures in India

In India, the Central Drugs Standard Control Organization (CDSCO) which comes under the Ministry of Health and Family Welfare is the main body which works on development of regulatory procedures and standards for drugs, cosmetics, diagnostics and devices. It regulates new drug approval process. Its main objective is to standardize clinical research and bring safer drugs to the Indian market.

The Drug Controller General of India DCG(I) is responsible for giving regulatory permissions for the conduct of clinical trials and is responsible for approval of marketing licenses for drugs in India.

The required time for clinical trial application approval depends on the trial's regulatory status in other countries. The DCG(I) office has divided all applications into two categories: A and B. Category A includes clinical trials whose protocols

have been approved by EMEA or regulatory agencies in the US, UK, Switzerland Australia, Canada, Germany, South Africa or Japan. For such studies, permission is granted, accepting the protocol approval of those countries. For category A applications, review and approval are projected to take two to four weeks.

The category B clinical trial applications, are reviewed following the regular approval system by an expert committee. This process usually takes eight-twelve weeks for approval of application. Along with the application, summarized information in the form of an Investigators' Brochure comprising detailed pharmacology, toxicology and clinical experience data, if any, is submitted. The DCG(I) at times also requests guidance from other independent government agencies viz., ICMR or Department of Biotechnology (for biotech products) on a case-by-case basis, thus extending the review period.

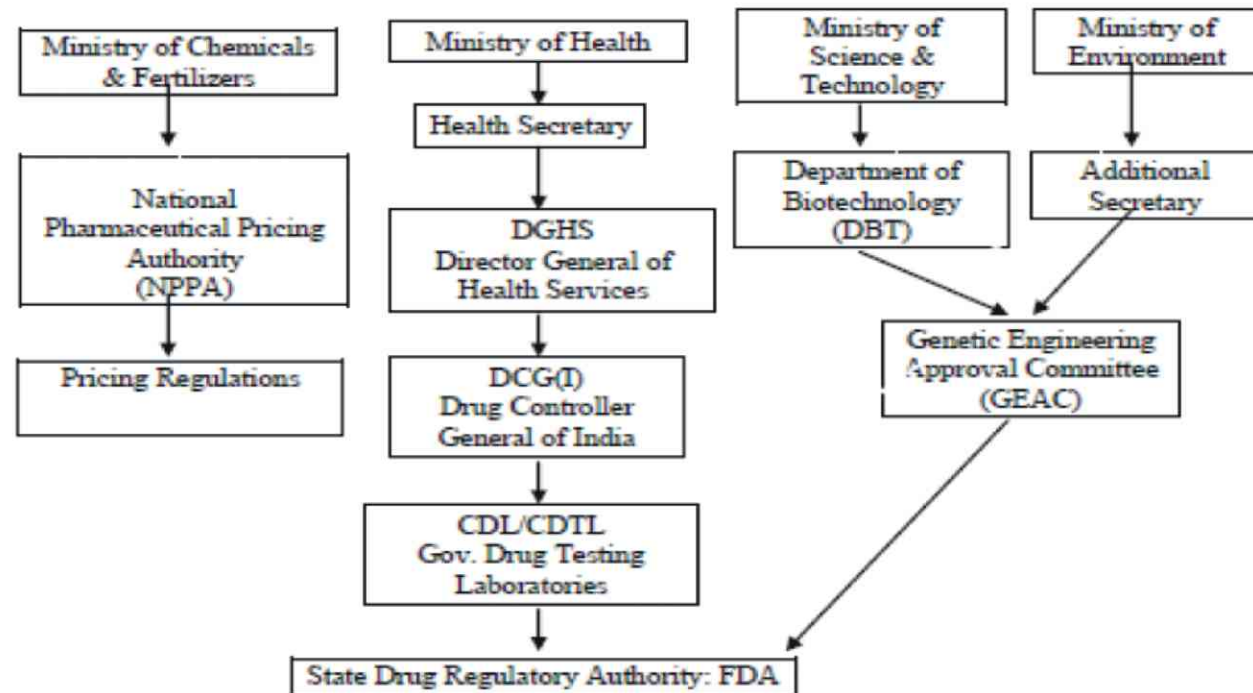


Figure 1: Regulatory bodies in India involved in pharmaceutical regulations.

Clinical Trial Regulation

Status of the new drug would define the procedure for applying for marketing approval. It can be largely classified into following categories:

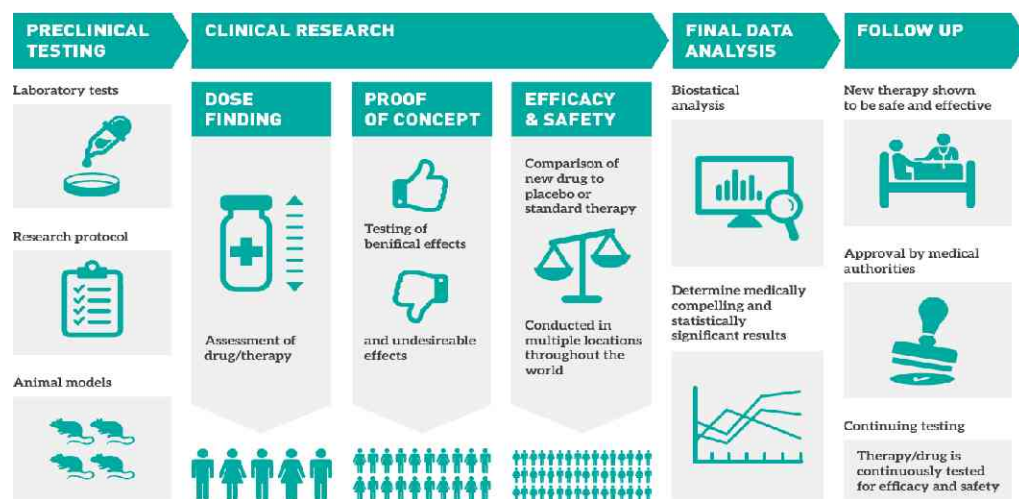
- new drug substances discovered that are already approved/marketed in other countries;
- new drug substances discovered that are not approved/marketed in other countries; and
- new drug substances discovered in India.

In case of the A category, it is sufficient if Phase III (therapeutic confirmatory) trials are conducted in a large number of patients with multiple site and compared with a standard drug, to confirm efficacy and safety.

For the category B, permission for clinical trials is given with a “phase lag”. For example, phase I study for a new drug is allowed only if the drug has completed phase I in other country and moved to the next phase.

In the case of new drug substances discovered in India i.e. category C, phase I clinical trials need to be carried out in India. The phase I trials are carried out on healthy, adult human volunteers to assess the safety profile and adverse drug reactions, etc.

However, this has been recently revised, and now in the case of new drug substances not yet approved or marketed in other countries, Schedule Y now allows clinical trials to be carried out in India, concurrently with the trials abroad.



HERBAL MEDICINE: ALTERNATIVE TREATMENT FOR CANCER THERAPY



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Cancer is a class of diseases caused by uncontrolled growth of cells. This is very common type of disease. Cancer harms the body when damaged cells divide uncontrollably to form lumps of tissue called tumors and is a leading cause of death worldwide. There are a lot of cancer causing agents which are divided as **physical carcinogens, chemical carcinogens and biological carcinogens**. But most of the carcinogens or causes of cancer are related to our lifestyle like **diet, habit, occupation, radiation and some infection, etc.**

Cancers are primarily an environmental disease with 90-95% of cases due environmental factors and 5-10% directly due to heredity. Common environmental factors leading to cancer include: tobacco, diet and obesity infections, , lack of physical activity, and environmental pollutants. These environmental factors cause or enhance abnormalities in the genetic material of cells. Hereditary or acquired abnormalities in these regulatory genes can lead to uncontrolled cell growth, and the development of cancer.

Herbal cancer therapy comprises a number of alternative treatments in the fight against cancer. Herbal remedies are clearly a complementary and alternative modality used frequently by patients and has been used widely in Japan, Korea, India, and South East Asia countries since long time ago.

General Types of Cancer:

- Bladder cancer
- Breast cancer
- Colon cancer
- Endometrial cancer
- Kidney cancer (renal cell)
- Leukemia
- Pancreatic cancer
- Prostate cancer
- Thyroid cancer
- Melanoma

Bladder cancer:

Bladder cancer is a cancerous tumor in the bladder. The bladder is the organ in the center of the lower abdomen that holds urine. Bladder cancer is a very common type of cancer. More than 10,000 cases are diagnosed each year in the UK. Mostly these are diagnosed in men; one man in thirty will get bladder cancer at some time in life.

Breast Cancer:

Breast cancer is a common type of cancer mainly affects women and much less, men. More than 200,000 women are diagnosed with breast cancer in each year.

Colon cancer:

Colon cancer is cancer that occurs in the cells of the colon. It is quite common, being the third most common cancer in men and women in the U.S. About more than 110,000 people in the U.S. are diagnosed with colon cancer each year.

Endometrial cancer:

Endometrial cancer refers to several types of malignancies that arise from the endometrial, or lining, of the uterus. It is most common gynaecologic cancers in the United States, with over 35,000 women diagnosed each year.

Kidney cancer:

In this, tumor is produce in kidney. These are also called renal cell carcinoma. More than 208,500 cases of kidney cancer are diagnosed in the world each year.

Leukemia cancer:

This type of cancer that starts in the stem cells of the bone marrow makes blood cells. Bone marrow is the very soft, spongy material that fills the middle of the bones. These are mainly two types:

Acute (rapidly developing)

Chronic (slowly developing)

About 98% of leukemia is acute.

Lung cancer:

In the lung cancer cells of lungs tissues grow uncontrollably and form tumors. It is caused by smoking tobacco or by indirect exposure to tobacco smoke (passive smoking).

Pancreatic cancer:

Pancreatic cancer is a malignant neoplasm of the pancreas. It is estimated that by the end of 2010 more than 43,000 individuals in the United States will be diagnosed with this condition, and 36,800 will die from the disease in every years. Pancreatic cancer is also called as silent killer cancer. The symptoms are usually nonspecific and varied.

ALTERNATIVE CANCER THERAPIES

Bring structure to the wide and fast changing universe of alternative therapies; the Office of Alternative Medicine groups them into seven categories.

- 1) Diet and nutrition,
- 2) Mind-body techniques,
- 3) Bio electromagnetic,
- 4) Alternative systems of medical practice (or traditional and folk remedies),
- 5) Pharmacologic and biologic treatments,
- 6) Manual healing methods,
- 7) Herbal medicine.

HERBAL MEDICINE:

Herbal plants are topically used in cancer treatment. Herbs come from Asia, Europe, Africa, and North America; some form of herbal medicine is found in most areas of the world. All part of plants is used commonly such as: stems, roots, leaves, seeds, flowers, fruits etc. Herbal medicines can be classified into various basic types: Traditional Chinese Herbalism, which is part of Traditional Oriental Medicine, Ayurvedic herbalism, which is derived from Ayurveda, and Western Herbalism, which originally came from Greece and Rome to Europe and then spread to north and South America. Chinese and Ayurvedic Herbalism have developed into highly complex systems of diagnosis and treatment over the centuries. Western Herbalism is today primarily a system of folk medicine. No medicine cures all types of cancer. But the best selected brings the best results. Here, we will find the best or good selected herbal drugs from Traditional Chinese Medicine (TCM).

HERBAL PLANTS USED IN CANCER THERAPY:

The various plants are used in the cancer therapy are shown in Table 1. These plants are very effective and give less side effects behalf of cancer.

TABLE 1: VARIOUS PLANTS USED IN CANCER THERAPY

S. NO.	NAME OF PLANTS	BOTANICAL NAME	PARTS USED	ACTIVE CONSTITUENTS
1.	Podophyllum (Papri)	Podophyllum hexandrum	Roots and rhizomes	Podphyllotoxin
2.	Podophyllum	Podophyllum peltatum L.	Roots and rhizomes	Etoposide, Teniposide
3.	Camptotheca (happy tree)	Camptotheca acuminata	Bark, leaves and stem	Camptothecin, Topotecan, Irinotecan
4.	Taxus	Taxus brevifolia	Bark	Taxol, Docetaxol
5.	Vinca	Catharanthus roseus	Leaves and flowers	Vinblastin, Vincristin
6.	Japanese Plum Yew	Bleekeria vitensis	Roots and rhizomes	Elliptinium
7.	Cephalotaxus tree	Cephalotaxus harringtonia var. drupacea	Roots and rhizomes	Homoharringtonine
8.	Bush willow	Combretum caffrum	Barks	Combretastatin A-4
9.	Downy Birch	Betula pubescens	Barks, flowers, leaves and fruits	Betulinic acid
10.	Erythroxyllum	Erythroxyllum pervillei	Leaves, flowers and fruits	Pervilleine A

SOME IMPORTANT PLANTS USED IN CANCER THERAPY:



Figure 1a: Podophyllum hexandrum

PODOPHYLLUM:

Podophyllum is belonging to Berberidaceae family and its roots or rhizomes are used for cancer therapy. Podphyllotoxin is the main constituent of that plant which is responsible for cancer treatment. In Fig. 1a and b, podophyllum flower and leaves are shown. It has acquired importance in recent years for its possible use in controlling skin cancer.



Fig. 1b: Podophyllum peltatum L.



Fig. 2: Camptotheca acuminata (Cancer tree)

CAMPTOTHECA:

Camptotheca are belonging to Nyssaceae family and are also known as happy tree, cancer tree, or tree of life. Cancer tree are shown in fig. 2. Researcher shows that topotecan and irinotecan hydrochloride are useful in treating breast cancers, ovarian cancer, colon cancer, malignant melanoma, small cell lung cancer, thyroid cancers, lymphomas and leukemia's .



Fig. 3: Taxus brevifolia



Fig. 5: Bleekeria vitensis



Fig. 7: Bush Willow (Combretum caffrum)



Fig. 9a: Erythroxyllum Leaves

TAXUS:

Taxol, Docetaxol are the active constituents of Taxus brevifolia (Fig.3) which belong to Taxaceae and are useful for treatment of breast cancer, after combination anthracycline and cytoxan therapy.

VINCA:

Vinca (Catharanthus roseus) is belong to Apocynaceae family shown in Fig. 4. Vinblastin and Vincristin are used in breast cancer which is obtained from Catharanthus roseus.

JAPANESE PLUM YEW:

Elliptinium acetate is the main constituent of Japanese Plum Yew (Bleekeria vitensis) belongs to the Ellipticine Family shown in Fig. 5 and Elliptinium acetate showed modest antitumor activity in previously treated patients with metastatic breast cancer.

CEPHALOTAXUS TREE:

Homoharringtonine is an alkaloid extracted from the branches and leaves of the Cephalotaxus tree (Fig. 6). It is useful for treatment of acute myeloid leukaemia.

BUSH WILLOW:

Combretastatin A-4 phosphate and its disodium salt was extracted from Bush Willow (Combretum caffrum) shown in Fig. 7. Combretastatin A-4 is a microtubule destabilizing drug, vascular-targeting agent and a drug designed to damage the vasculature (blood vessels) cancer tumors causing central necrosis.

DOWNY BIRCH:

Downy Birch (Betula pubescens) is belonging to Dilleniaceae (Fig. 8). Betulinic acid is the main constituent of that plant which is responsible for cancer treatment such as: breast carcinoma, colon carcinoma, small cell lung carcinoma and renal cell carcinoma as well as T-cell leukemia.

ERYTHROXYLUM:

Erythroxyllum is belonging to Erythroxyllaceae family. Pervilleine A is an active constituent of Erythroxyllum shown in Fig. 9a and b. Pervilleine A, a novel tropane alkaloid obtained from chloroform extract of Erythroxyllum pervillei which are shows anti cancer activity.



Fig. 4: Catharanthus roseus



Fig. 6: Cephalotaxus tree

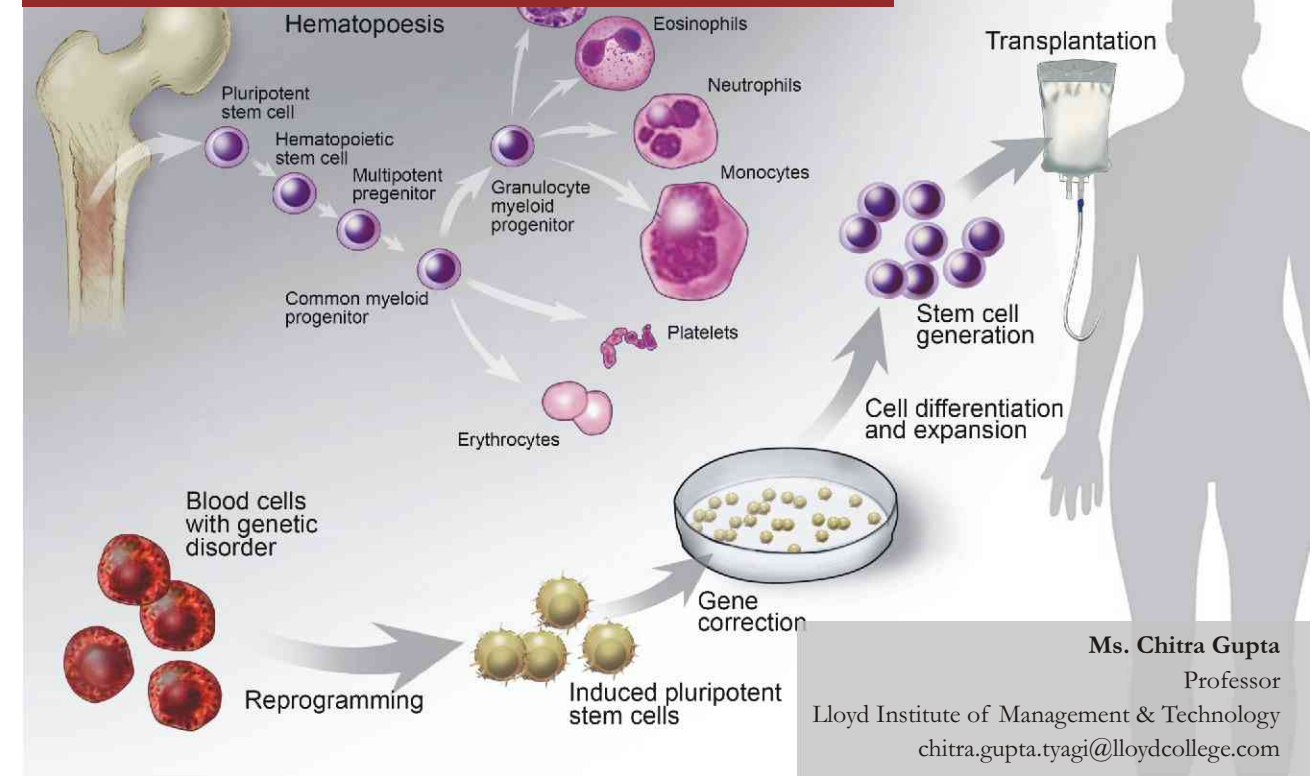


Fig. 8: Downy Birch (Betula pubescens)



Fig. 9b: Erythroxyllum Seeds

STEM CELL THERAPY- HOPE, NOT A HYPE



The secret of life lies in the “DNA”. Scientific discoveries in cellular, developmental and molecular biology have revolutionized the understanding of the biological processes that could greatly impact and dramatically change our lives in the future.

In the new millennium, biology and biotechnology have replaced chemistry. Owing to the extraordinary advances in the field of cellular and molecular biology “biological solutions to biological problems” are being sought after. Stem cell therapy is one such area of molecular biology.

The regenerative capability of a living creature was recorded as early as 330 before Christ (BC), when Aristotle observed that a lizard could grow back the lost tip of its tail. Since then, there have been slow but steady attempts at understanding the regenerative capabilities of human being and it is only in the last decade that stem cell research has come up.

Stem cells are likely to revolutionize the entire health care delivery.

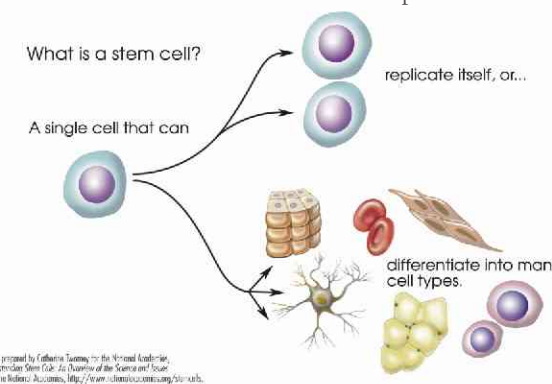
Stem cells are unspecialized cells with an extraordinary ability to self-renew, capable of differentiating into one or more specialized cell types playing a crucial role in homeostasis and tissue repair.

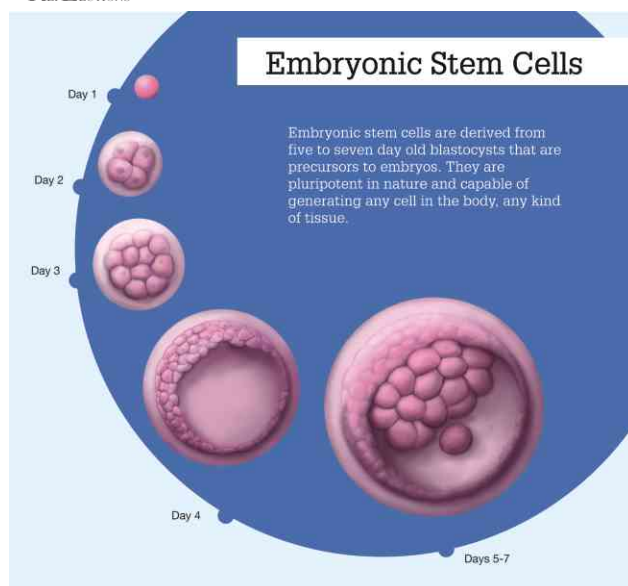
When called into action following an injury, a stem cell self-renews – undergoes cell division and gives rise to one daughter stem cell and one progenitor cell. A progenitor cell is an intermediate cell type formed before it achieves a fully differentiated state.

Stem cell Stem cell + Progenitor cell Differentiated cell

Based on their origin, stem cells are categorized either as embryonic stem cells (ESCs) or as postnatal stem cells/somatic stem cells/adult stem cells (ASCs).

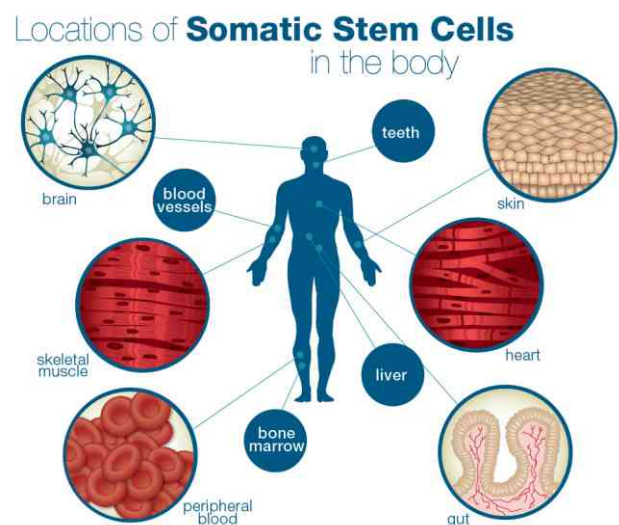
Embryonic stem cells (ESCs) are derived from embryos that are 2–11 days old called blastocysts. They are best grown from supernumerary embryos obtained from in vitro fertilization centers. They are totipotent–cells virtually capable of differentiating into any type of cell including the germ cell. ESCs are considered immortal as they can be propagated and maintained in an undifferentiated state indefinitely. These stem cells have the highest potential to regenerate and repair diseased tissue and organs in the body. However, the therapeutic benefit of ESCs is bogged by a controversy owing to the belief that the process of extraction of stem cells from an embryo destroys the embryo itself and some view this as





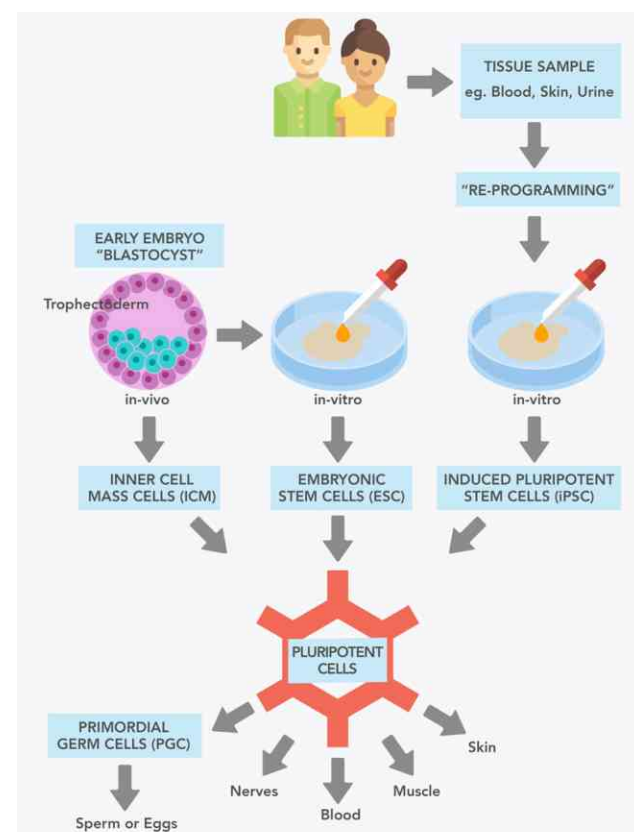
taking life, thereby, raising moral and ethical concerns. Further, it is difficult to control the growth and differentiation of the embryonic stem cell posing risk of tumorigenicity and teratoma formation. While research is on to overcome some of these shortfalls as of now, ESCs are not so far used therapeutically and have only remained an excellent platform for research.

Adult stem cells are found in most adult tissues. They are multipotent – capable of differentiating into more than one cell type but not all cell types. The plasticity of an adult stem cell is described as its ability to expand beyond its potential irrespective of the parent cell from which it is derived. For example, dental pulp stem cells not only develop into tooth tissue but also have the ability to differentiate into neuronal tissue.



Depending on their origin, adult stem cells can be further classified as hemopoietic stem cells (HSCs) and mesenchymal stem cells (MSCs). HSCs are obtained either from cord blood or peripheral blood. MSCs are those that originate from the

mesoderm layer of the fetus and in the adult reside in a variety of tissues such as the bone marrow stem cells (BMSCc), limbal stem cells, hepatic stem cells, dermal stem cells, etc. Stem cells have also been isolated from orofacial tissues which include adult tooth pulp tissue, pulp tissue of deciduous teeth, periodontal ligament, apical papilla, and buccal mucosa. Stem cells derived from either peripheral blood, cord blood, bone marrow, or any adult tissue transported in the right medium to the laboratory is centrifuged, trypsinized, and propagated under ideal conditions and stored in the master cell bank (MCB). The MCB is further passaged to yield colonies of stem cells, given the right inductive signals using appropriate growth factors to allow them to differentiate into required cell types. These are injected or implanted into a patient as cell-based therapy.



Stem cells find wide applications in medicine and dentistry. Various therapeutic programs are exploring the role of cell replacement therapy for Parkinson's disease, spinal cord injury, heart failure, hematological disease, cancer, arthritis, diabetes, and peripheral vascular disease.

In dentistry they are being explored for regeneration of damaged coronal dentin and pulp, periodontal regeneration, repair and replacement of bone in craniofacial defects and whole tooth regeneration.

Stem cell therapy is no longer a science fiction and has brought in a lot of optimistic hope amongst researchers, doctors, and above all the patients who are the chief beneficiary of this innovation.

ARTIFICIAL INTELLIGENCE IN PHARMA

Broadly, AI is defined as computer systems able to perform tasks that normally require human intelligence. It comprises three distinct types: human-created algorithms, machine-learning, and deep learning.

HUMAN-CREATED ALGORITHMS

Currently, most computer-generated solutions emerging in healthcare are based on human-created algorithms. For example, in oncology, using consensus algorithms combined with each individual patient's clinicodemographic data and medical history, the computer can review the available treatment alternatives and recommend the most appropriate drug combination.

This a future not too far off from reality.

MACHINE LEARNING



Machine learning relies on so-called neural networks. These are a computer system modeled based on the human brain, which allows them to simulate the data processing of the human mind. Thus, even the programmers cannot tell how the computer derives the final solutions. So far, the use of machine learning by pharma has been limited. However, its potential applications are numerous and potentially game-changing.

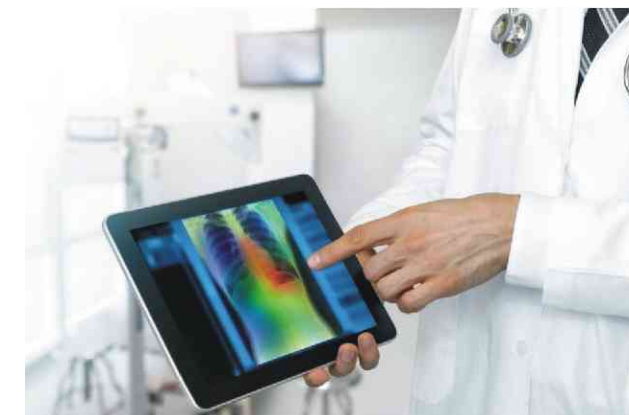
Among other applications, machine learning can be used for:

Disease identification and diagnosis

Berg, a US biopharma company, is using AI to research and develop diagnostics and therapeutics in the fields of oncology, endocrinology, and neurology. Their AI-based platform combines patient biology and AI-based analytics to identify differences between healthy and disease environments.

Radiology and radiotherapy planning

Google's DeepMind Health is working on machine learning algorithms to detect differences between healthy and cancerous tissues. The goal is to improve the accuracy of radiotherapy planning while minimizing damage to healthy organs at risk.



Clinical trial research

Advanced predictive analytics can analyze genetic information to identify the appropriate patient population for a trial. Machine learning can also determine the optimal sample sizes for increased efficiency and reduce data errors such as duplicate entries.

Personalized medicine and rare disease identification

IBM Watson for Oncology is currently the leader in AI for personalized treatment decisions in the oncology space. It uses each patient's medical information and history to optimize the treatment decision-making.

Drug discovery

Machine learning has many potential uses from initial screening of drug compounds to prediction of the success rate of a drug. AI may play a role in drug target identification and validation; target-based, phenotypic, and multitarget drug discoveries; drug repurposing; and biomarker identification. AI implementation for drug trials could reduce the time it takes a drug to get approval and reach the market, consequently reducing the overall cost. Even a 5–10% cost reduction could save pharma millions of dollars.

DEEPLARNING

The third type of AI is deep learning. Similar to machine learning, deep learning is based on artificial neural networks. However there are multiple distinct, but hidden, layers between the input signal and the result. Each neural network layer operates both independently and together.

Deep learning hold great promise for diagnostic purposes as it can be used to accurately analyze pathology, dermatology, phthalmology, and radiology images. In fact, right now, deep learning is about 5–10% more accurate than the average physician and this gap is expected to widen further.

CURRENT APPLICATIONS OF AI IN PHARMA AND HEALTHCARE

Conducting repetitive tasks such as data entry and lab test analyses.

Data management, including of medical records.



Natural-language processing.

Medical consultations. AI-based apps such as Babylon have been designed to provide medical advice based on database analysis of a patient's symptoms and medical history. Medication management. Using a sensor or mobile application such as AiCure, a patient's medication use can be monitored in real-time by AI.

HOW PHARMA CAN ADOPT AI, AND WHY THEY SHOULD

With today's high standard of care, it is becoming more and more difficult for pharma to improve it even further. Accordingly, overall revenues are generally down and many companies are looking for innovative treatment solutions to combat this. To get out of this situation, more efficient and automated processes, data-driven decisions, and better predictive analytics tools are needed to increase R&D success and develop new drugs. This is where AI comes in.

To facilitate adoption there are several approaches to consider: **Collaboration with, or acquisition of, AI startups and tech companies.** Some pharma companies are reaching out to startups focusing on AI-driven drug discovery. This allows tapping into their expertise and tools to create promising drug candidates based on existing hypotheses and experience. Examples include collaborations between Berg and AstraZeneca, Roche, and Sanofi Pasteur. Further, Pfizer partnered with IBM Watson for Drug Discovery recently, and Novartis and Johnson & Johnson have both partnered with IBM Watson Health.

Collaboration with academia. Industry-academia partnerships are expected to keep growing as pharma is starting to embrace AI.

Developing internal expertise and granting employees with the needed resources.

Open Science Projects and R&D challenges. This is a valuable tactic of AI adoption for drug discovery, with less financial risk involved compared to other tactics.

NEXT STEPS

Other than changing attitudes of R&D operations, there are other barriers to artificial intelligence becoming mainstream in healthcare. One of the biggest challenges is overcoming the medical culture that values physician intuition over evidence-

based solutions. Getting physicians, especially more conservative ones, comfortable with the idea of a machine telling them what to do or analyzing their behaviors will take time. Without question, the role of the physician will change in the not-so-distant future. However, it is unlikely that AI will ever completely replace human doctors.

In order for AI to positively impact patients and healthcare professionals, pharma needs to become invested in the conversation by championing the advantages of AI technology. This could start by encouraging collaborations between the industry and academia, and between medical and engineering faculties at universities. Medical schools could include an AI elective in their curriculum and fellowship programs focusing on AI could be created. Further, governments can help by investing in the development of AI infrastructures. Once all stakeholders develop a deeper understanding of AI and partnerships are strengthened, patient care and outcomes will ultimately improve.



Along with big data, AI is doubtless the next big thing for pharma. However, the transformation will not happen overnight. AI is expected to be integrated into most, if not all, pharma R&D operations. This should theoretically improve the drug development success rate and streamline R&D efforts.

TAKE HOME MESSAGE

There is no telling to what degree artificial intelligence will transform the pharmaceutical industry in the years to come. Although still an imperfect technology, it is clear that AI is here to stay, and pharmaceutical companies will doubtless benefit from adopting and investing in this technology if they want to stay ahead of the competition. This is an area that is worth closely following.

NIYUKTI: A UNIQUE JOB FEST

Niyukti is an apt name for an event which brings hundreds of job aspirants and scores of recruiting companies together under one roof and gives them an opportunity to seek out the best match for each other, from each other. In the four years since its inception, Niyukti, the Annual Job Fest of the Lloyd Group of Institutions, Greater Noida, has hosted more than 4000 students and 150 recruiters (some of them choosing to come again and again every year!) on its campus in the month of April every year. About 1700 students have found their first job in the Lloyd's Job Fest-Niyukti and started the journey of their career.

The Lloyd Job Fest started in 2016 out of a discussion between the Group Chairman, Shri Manohar Thairani, the then Drug Controller General (India), Dr. G N Singh, Sh. S L Nasa (Registrar, Delhi Pharmacy Council and President, Indian Hospital Pharmacists' Association) and the personality bringing them all together, Lloyd Group Director, Prof. (Dr.) Vandana Arora Sethi. The dream "sab ko shiksha, sab ko rozgaar" of our Honorable Prime Minister could be realized only if some socially responsible organizations took it upon themselves for this noble cause. Dr. G N Singh and Sh. Nasa assured their full and unconditional support if the Lloyd

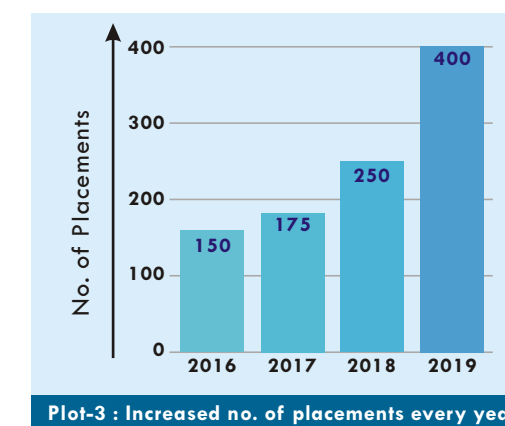
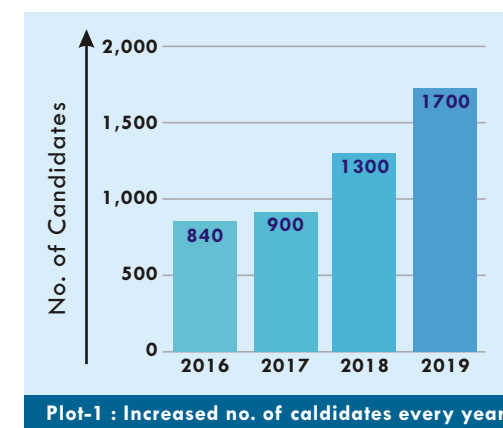
Group was ready to make the efforts call multiple companies and provide them a large pool of candidates by inviting students from other colleges.

The Lloyd Group took it upon itself to organize an event where not just its own students but students from other colleges, so called competitors, as well. The single most defining feature of Niyukti is that *no student is charged a single penny to participate* and meet several recruiters in one single day. The Lloyd Group can safely claim today that their Annual Job Fest has grown from "Delhi-NCR's much awaited Job-Fest" to "India's much awaited Job-Fest".

The event's sole purpose is to "connect the right candidate with the right company for a bright career" and provide job opportunities for the soon-to-be-graduates as well as struggling-experienced students.

In the past the event has received the patronage of Mr. K. L. Sharma (Joint Secretary, Ministry of Health and Family welfare); Prof. Virendra Pathak (Vice Chancellor, AKTU); Sh. Atul Nasa (Licensing authority, Assistant Drug Controller); Mr. N. P. Singh (District Magistrate Gautam Buddha Nagar, U.P.); and Mr. Rajiv Gulati (Ex- President, Ranbaxy).

Job Fest Progression from 2016 to 2019



REPORT ON JOB FEST 2019

Date: Sunday, 7th April'19

Venue: Lloyd Campus

Associate Partner: IPA Delhi

Participating Recruiters: Cipla, GlaxoSmithKline, Torrent Pharmaceuticals, Apollo Hospitals, AIMIL, Akums, Alembic, Alkem Laboratories, Arbro Pharmaceuticals, Belco Pharma, Blueocean, Florencia Healthcare, Florencia Healthcare, Hetro Drugs, Intas, Knoll Healthcare, Mascot Healthseries, Nutrilife, ORN Remedies, Raptakos, Sastasunder Healthbuddy, Systopic, Turacoz, Vissco, Zuche Pharmacciticals, Axis Bank, Varahi Ltd., Big Basket, 10times, Spectrum Talent Management, Art Housing Finance, Myndtree Business Service Pvt Ltd., Team Lease, Yo Multinational, Qualtechpro, Vishwa Laxmi Food & Beverages Pvt Ltd, Acuité, Petpooja, Paytm & Nerdy-turtles

Participating Institutes: like Delhi University (DIPSAR), Jamia Hamdard, AIIMS, Amity University, BHU Institute of Medical Sciences, Banasthali Vidyapeeth, BITS, Chitkara University, DPSRU, Guru Jambheshwar University (Hisar), DIT (Dehradun), Dr. Harisingh Gour Central University Sagar, GLA University, Galgotia's University, GD Goenka University, Jaipur National University, JSS College of Pharmacy, K R Mangalam University, KIET (Muradnagar), Kurukshetra University, MIET (Meerut), NIPER, RKGIT

(Ghaziabad), Sharda University, Uttrakhand Technical university, Subharti University and Teerthankar Mahaveer University

Prominent Guests: Dr. S. Eswara Reddy, Drug Controller General (India), Dr. G N Singh (Secretary-cum-Scientific Director, Indian Pharmacopoeia Commission) Prof. R K Goyal (Vice Chancellor, DPSRU), Sh. S L Nasa (Registrar, Delhi Pharmacy Council), Prof. Roop K Khar, (Former President, Indian Pharmaceutical Association), Dr. Raman Dang (Registrar, DPSRU), Dr. Farhan Jalees (Jamia Hamdard), Shri Bhaskar Nath (Director, Vishwa Lakshmi Food & Beverages Pvt. Ltd.), Sh. Dhiraj Nanda (Director, Nutrilife), Dr. Gaurav Jain (Secretary, IPA)

Highlights:

- 1700+ students
 - 230+ Institutes
 - 50+ companies
 - 400+ placements
- Employers get connected with a very large pool of potential candidates
Students got the chance to explore new sectors as entry level options.

GLIMPSES OF LLOYD JOB FEST 2019



Training & Internship

Our Students undergo mandatory training in 3rd year to gain real insight of working procedures of an industry.

Duration of training & internship:

- December & January (Winter training)
- May, June & July (Summer training)

Major industries providing training & internship in year 2018 & 2019



Sectors of training & internship



ACADEMIC ACHIEVERS OF 2018-19 EVEN SEMESTER

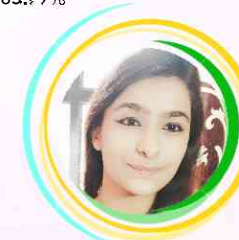
2ND SEMESTER



AKHIL CHAUDHARY
622/725 | 85.79%



VISHNU AGGARWAL
590/725 | 81.37



NANDINI YADAV
579/725 | 79.86

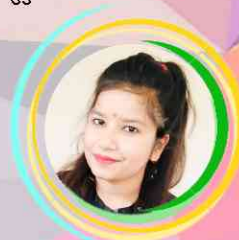
4TH SEMESTER



PAWAN KALRA
581/700 | 83



MITTAL KUMARI
576/700 | 82.2



ASHU UPADHYAY
545/700 | 77.85

6TH SEMESTER



PRIYANKA DUA
794/1000 | 79.4



PRIYANKA GOLA
783/1000 | 78.3



NANCY
770/1000 | 77

8TH SEMESTER



SAKSHI SHARMA
804/1000 | 80.4

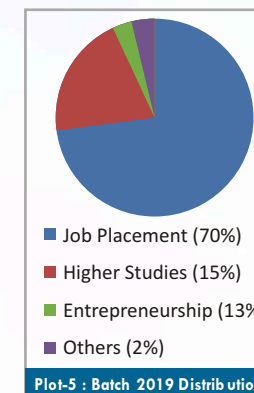


NILAY KUMAR NANDI
799/1000 | 79.9

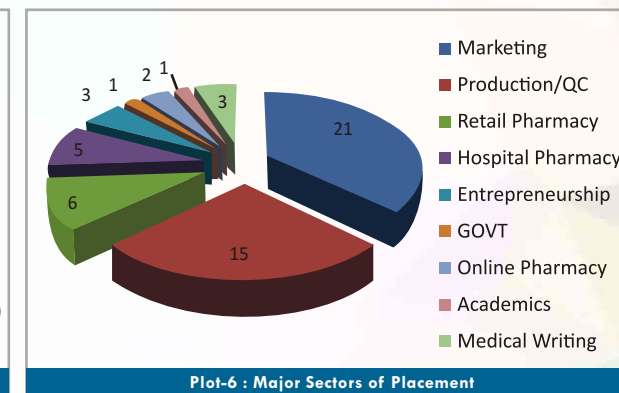


NEHA
769/1000 | 76.9

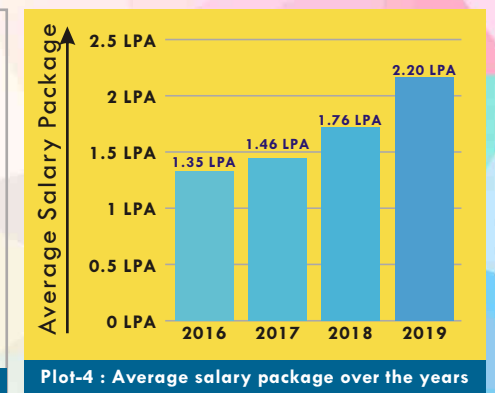
Student's Progression 2019



Plot-5 : Batch 2019 Distribution



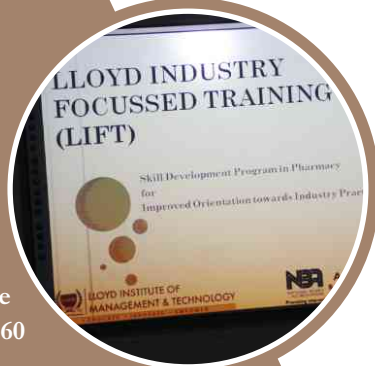
Plot-6 : Major Sectors of Placement



Plot-4 : Average salary package over the years



Lloyd Industry Focussed Training (LIFT)



As part of our constant efforts to give our students a broad based learning experience and delivering a gainful “Beyond- Curriculum” experience, we have developed a Skill Development Program in Pharmacy for Improved Orientation towards Industry Practices. The program is named LLOYD INDUSTRY FOCUSED TRAINING (LIFT).
Duration: The training is divided in to 5 modules. Each module shall be of 12 hours duration. Total duration of the program is 60 hours.

Contents of the Program: The training program shall comprise of 5 modules. Evaluation for certification will be done on the basis of Evaluative Modules. 1st Module shall be non-evaluative, introductory in nature.

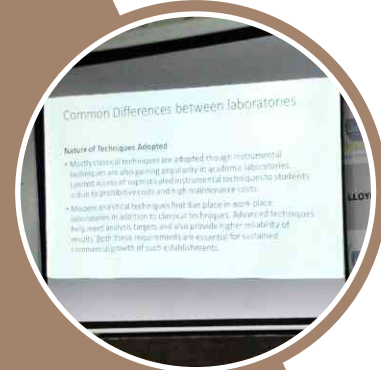
- Module 1: Professional Laboratory Operational Requirements
- Module 2: Safe Laboratory Operations and Environmental Controls
- Module 3: Sample Handling and Minimization of Analytical Errors
- Module 4: Laboratory Standards and Reference Materials
- Module 5: Assurance of Quality to Internal and External Customers

Target Audience:

- B. Pharm. 3rd Year
- B. Pharm. 4th Year
- M. Pharm. students

Fees: NIL (no fee is being charged from Lloyd students)

Certification
 All students will be awarded with a certificate upon successful completion of the program.



World Pharmacists' Day Celebration-2019



Date: 24th Sept '19 The event was organized in Associate Partner: Indian Pharmaceutical Association (IPA).
Theme: “Safe and Effective Medicine for All”.
Chief Guest: Shri S L Nasa, Registrar of Delhi Pharmacy Council

Guest of Honour: Dr. Neeraj Kumar, Treasurer, IPA
Highlight of the Day: Launch of Lloyd Industry Focussed Training (LIFT). This is a special Skill Development Program in Pharmacy developed by Lloyd itself in consultation with industry experts. The objective of the LIFT program is improved orientation towards Industry Practices.

Lab Coat ceremony where Shri Nasa presented Lab Coats to young pharmacists as a symbol of the responsibility and authority of pharmacy profession.

Other Activities:
 An intercollege quiz and declamation competition was also organized on this day where students from 8 other Institutes participated.

Winners:
Declamation Competition
 1st Position: Shashank Jain from Rameesh
 2nd Position: Akhil Choudhary from Lloyd
 3rd Position: Kritika from United

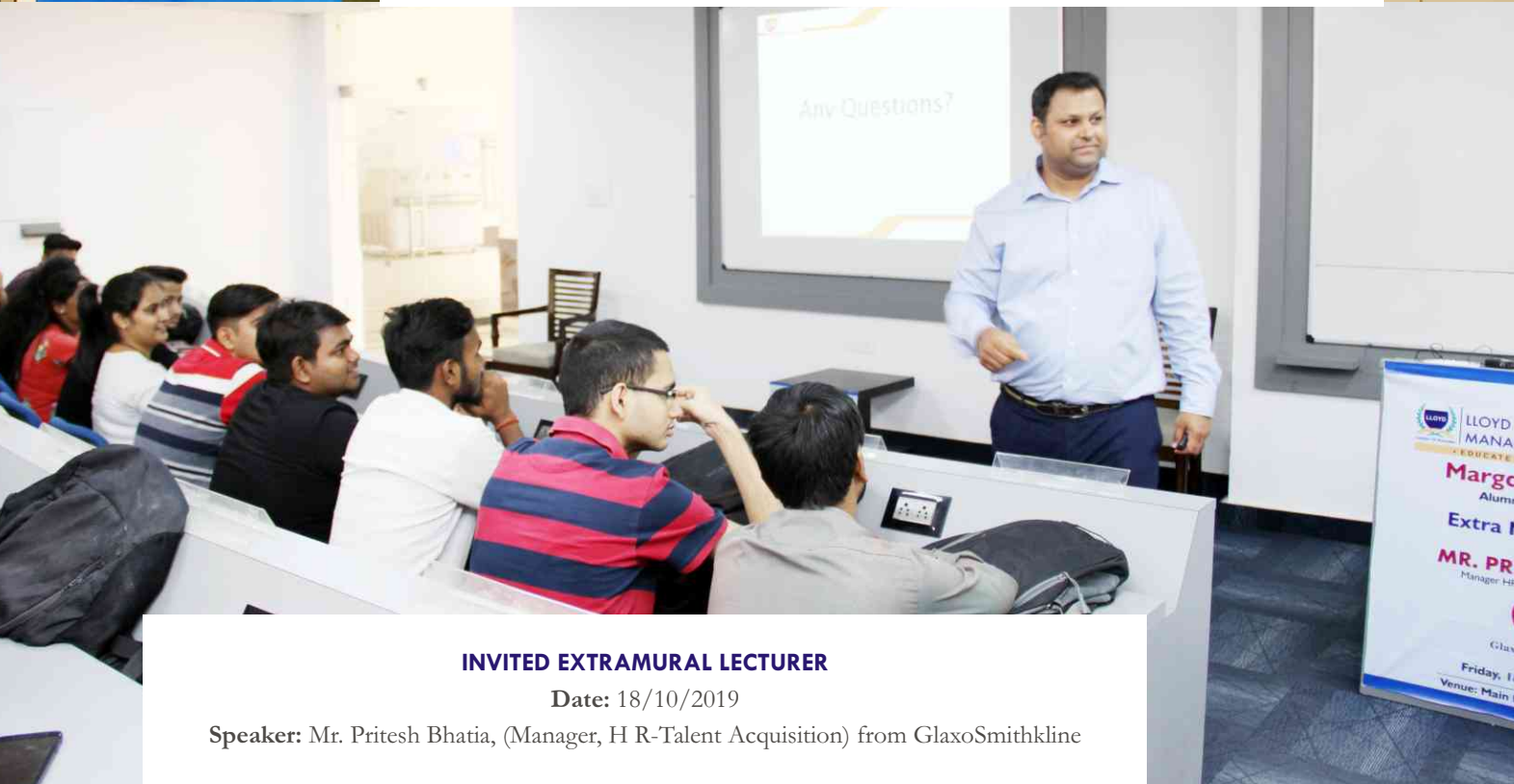
Quiz competition
 1st Position: Jessica & Kailash from Lloyd
 2nd Position: Nitish Kr. Gupta & Rubi Prajapati
 3rd Position: Jatin & Abbas Sayeda



PHARMARIA, THE ANNUAL CONVENTION OF INDIAN PHARMACEUTICAL ASSOCIATION
 Date: 11-12 September, 2019
Highlight:
 Lloyd was one of the two Academic Partners of the Convention along with Jamia Hamdard
 More than 100 students from Lloyd attended the event in Vigyan Bhawan
 Lloyd organized a session on Artificial Intelligence in Pharmacy with IBM resource persons

MoUs Signed By Lloyd in 2019

- * PRANAB MUKHERJEE FOUNDATION
- * IPER, Pune
- * Rubicon Skill Development Pvt. Ltd.
- * Preserve Creativity Pvt. Ltd.
- * Vee Excel Drugs & Pharmaceuticals Pvt. Ltd.
- * Healthbuddy MDS Pharmacy
- * CATALYST CLINICAL SERVICES PRIVATE LIMITED



INVITED EXTRAMURAL LECTURER
 Date: 18/10/2019
 Speaker: Mr. Pritesh Bhatia, (Manager, H R-Talent Acquisition) from GlaxoSmithkline



Fresher's Carnival- CLOUDBURST 2019



Date: 31st August, 2019
 Programs: Pharmacy, Management, PGDM and Education
 The motif of the event was strongly inspired by the colors of rainbow VIBGYOR, which represented students from different cultures & different parts of the nation uniting as a part of LLOYD. The exquisite monsoon décor was accompanied by the weather hence giving a perfect meaning to our event CLOUDBURST- Fresher's Carnival 2019. The event commenced under the strategic guidance of Dr. Alka Jyoti and Coordinator of the Cultural-club of Lloyd "Squad-Up", Prof. Soumya Signhal, and the event owners- Ms. Mamta, Ms. Monica, Ms. Akanksha, Ms. Renuka & Ms. Kirti

THE MR. AND MS. FRESHER WERE –
 Kuber & Soumya from B.PHARM
 Pravesh & Nikita from D.PHARM
 Rishi & Tanya from BBA
 Aniket & Urvashi from MBA
 Ayush & Harshit from PGDM
 Anil & Tanya from B.Ed.

Mr. Heart stealing smile-Talha from D.Pharm 1st year
 Miss chand ka tukda-Smriti from PGDM 1st year
 Show-stopper of the day- Hitesh from B.Pharm 4th year
 Show-stopper of the day- Yogesh from MBA 2nd year
 Show-stopper of the day- Priyanka from Bed. 2nd year
 Mr. Crowd puller-Nikita & Group from D.Pharm 1st year
 Artistic eyes-Priyanka Singh from B.Ed 2nd year
 Singing sensation-Deepika Gupta from D.Pharm 2nd year
 Spark of the eve-Yogesh & Nitin from MBA 2nd year

Orientation & Induction Program 2019



The Institute organized a 4 day Orientation & Induction Program for the new students of D. Pharm. & B. Pharm. programs from 29th July to 1st August, 2019. The objective of the Orientation program was to develop a gradual and confident understanding of the Pharmacy profession, its academic requirements and related skills.

Day 1: The students were given kits with a book on career opportunities in Pharmacy Practice and a Handbook comprising Lloyd's academic calendar, norms and syllabus. The students visited classrooms, laboratories, library, computer centre, placements office etc. Day 1 ended with an interactive session with the respective subject teachers who explained the subjects the students shall be studying in their respective courses.

Day 2: The students were taken to the Zumba dance sessions to instill a passion in them for maintaining fitness. The formal ceremony started with a Lamp-lightening ceremony by the students, their parents, President – Shri Manohar Thairani and Group Director- Dr. Vandana Arora. Dr Vandana Arora.

The Career Guidance & Training and Placement Cell gave a presentation on the placements records and the processes involved. In the post lunch session, Ms. Jyoti Saran (Manager-HR) from KNOLL Healthcare Pvt. Ltd. interacted with the students to help them understand an employer's perspective and expectations.

After this some very senior and well placed alumni of Lloyd, Mr.Bhanu Pratap (Area manager- Eli Lilly, Batch 2008-2012), Mr. Amit Kumar Yadav (Area Manager, J B Chemicals, Batch 2008-2012) & Mr. Pawan Kumar Yadav (Area Manager, Lupin, Batch 2008-2012), conducted a very interesting interactive session with the new students.

The last session of the day included a set of games for team bonding & for the students to break out of their shells & make friends.

Day 3: It started with Zumba session, followed by discussion over light study material with Class teachers.

Mr. Nischal Mahajan, PDP coordinator, delivered a talk on Study Planning and Time Management.

Dr. Gaurav Jain, Jamia Hamdard, gave a presentation on Scope of Pharmacy

The day ended with allotment of mentors to each student and mentor-mentee interaction in the mentors' offices.

Day 4: Aptitude Diagnostic test was conducted by the CGTP Cell.

Sports events were organized for all the new students.

PharmaSpeak-2019
Honouring the
Pharma Professionals
and students
for outstanding
accomplishments



LIFETIME ACHIEVEMENT AWARD
Dr. HARVINDER POPLI



STAR PERFORMER 2019
SAKSHI SHARMA



MASTER BLASTER
NILAY KUMAR NANDI



FOOTPRINTS OF LLOYD
SANDEEP KUMAR MISHRA