

The Nest

NURTURING SHARP MINDS



THE CUTTING EDGE EVOLUTION OF PHARMACY

An intelligent mind is like a blade
that lies innocently in its wrapper.
You cannot feel the sharpness
till you expose the edge.

Our Faith

न चौर हार्यम् नच राज हार्यम् ।
न भातृभाज्यम् नच भारकारी ।।
व्यये कृते वर्धते एव नित्यम् ।
विद्याधनं सर्वधन प्रधानम् ।।

Knowledge can neither be stolen by a thief,
nor snatched by a king.
It is indivisible unlike ancestral property,
it never burdens the bearer,
it multiplies manifold when offered to others.
Knowledge is the supreme form of wealth.

Our Vision

To shape professionals, to conquer the present and the future challenges
to the socio economic fabric of our society, by institutionalising search,
development, research and dissemination of relevant knowledge
through structured learning systems.

Our Mission

To evolve, develop and deliver dynamic learning systems
to equip professionals with conscience and commitment
to excellence and courage to face business challenges.

What's Inside

MET League of Colleges	1
MET Institute of Pharmacy	2
From the Chairman's Desk	3
Advantage MET	4
The Director Speaks	5
From the Principal's Desk	5
Our Educators/Non-Teaching Staff	6
From the Cultural In-Charge	7
The Council Talks	7
The Council of the Year	8
IPA Talks	9
Editorial Committee	10
Campus Reporter	11
Delightful Highlights	15
Rx - Voyage	17
Lumiere	18
Luminaries	20
Co-curricular Activities	22
Pharma Evolution	27
Pharma Explorer	34
Expanding Horizons	40
Laughter Therapy	45
Shutterbugs	47
Dream Catchers	52
Paper Works	60
Poetic Souls	63
Our Family	65
Reflections	69
MET Utsav 2017 - A Glimpse	72

MET League of Colleges



Just a stone's throw away from the Arabian Sea is an institution that is creating waves. Because, it is quite simply, a cut above the rest. The MET League of Colleges is a conglomerate of premiere educational institutions, driven by a single-minded focus on imparting quality education, to make students sharp. Training is imparted round-the-clock, seven days a week. Projects and assignments are given utmost importance and students learn on the job. Application-oriented knowledge, garnered in the lecture halls, is applied to industry assignments. The faculty spares no effort to make the students razor sharp, so that they make their mark in the corporate world. No effort has been spared, to create an environment that encourages students, to push the limits of their minds. All this, to help young professionals face the challenges of life. And make their mark in the corporate world.

Bhujbal Knowledge Centre, Mumbai

- Institute of Management
- Institute of Mass Media
- Asian Management Development Centre
- Centre for Insurance Training, Research & Development
- Institute of Pharmacy
- Institute of Medical Sciences
- Institute of Information Technology
- Institute of Software Development and Research
- Institute of Computer Science
- Institute of International Studies

- Institute of Alternative Careers
- Rishikul Vidyalyaya
- Knowledge Explorer - Publishing Division

Bhujbal Knowledge City, Nashik

- Institute of Management
- Institute of Pharmacy
- Institute of Engineering
- Institute of Technology (Polytechnic)
- Institute of Information Technology
- Institute of D. Pharmacy

At MET, over four thousand students and faculty are involved in delivering unique learning systems, through ultra modern infrastructure and academic rigour. MET Institutes are ISO certified, with affiliations to the University of Mumbai, Directorate of Technical Education, All India Council of Technical Education, MSBTE, Pharmacy Council of India, C-DAC - Ministry of Communications and Information Technology, The Chartered Insurance Institute (CII), London, Michigan State University, East Lansing, and Tianjin University, China, Hawaii University in participation with the University of Mumbai. MET also has strategic institutional collaborations with the Association of Chartered Certified Accountants (ACCA), UK, Sprott Shaw College, British Columbia, Canada, Mountbatten Institute, UK, Edith Cowan University, Australia and the Global School of Management for alliances with various Universities in Australia and Canada.

MET Institute of Pharmacy

The MET Institute of Pharmacy (MET IOP) was established in the year 1993 with the two-year Diploma programme in Pharmacy (D.Pharm.) recognised by the Directorate of Technical Education. The four-year Bachelor's programme in Pharmacy (B.Pharm.) affiliated to the University of Mumbai was started in the year 1994. The MET IOP is approved by the Pharmacy Council of India, New Delhi, AICTE, New Delhi, and accredited by NBA.

The Institute pursues the philosophy of perpetual acquisition of knowledge. Apart from academic curriculum, our policy has been to provide value based education and to expose the hidden potential of the students. Our students have free access to the computer facilities and are provided with LCD projector in the class room for their seminar presentation. Our aim is not to make the students mere job-seekers but to make them the architects of their future.

The Institute provides a quasi-corporate ambience for the students. MET has state-of-the-art classrooms, a well-stocked dedicated pharmacy library and fully loaded pharma laboratories. A hi-tech convention centre for seminars and workshops. Recreation areas to unwind. No efforts have been spared to create an environment that encourages students to push the limits of their minds.

Continual exposure to the recent developments in the world of pharmacy through industry interaction programmes keep students at the cutting pharma edge. Unique pedagogy makes them so sharp that they have been consistently making a mark at the University of Mumbai.

Over the years, several distinction holders and University toppers have graduated from our institute. Our students not only excel in academics but they have been champions at various cultural and sports competitions. The average result each year is above 90%. Our alumni are making us proud all over the globe by being leaders in their choice of vocation.

Vision and Mission

- Vision: MET Institute of Pharmacy has the vision to be recognised as one of the leading institutes of pharmacy education in the nation, and envisages to produce world class pharmacists who are equipped to cater to the present and future needs of the profession and the society, at large.
- Mission: MET Institute of Pharmacy pledges to impart quality education in the field of pharmacy and is committed to ensure all-round development of the students, enabling them to make valuable contribution in the various facets of the field of pharmacy and contribute to improving the quality of life.

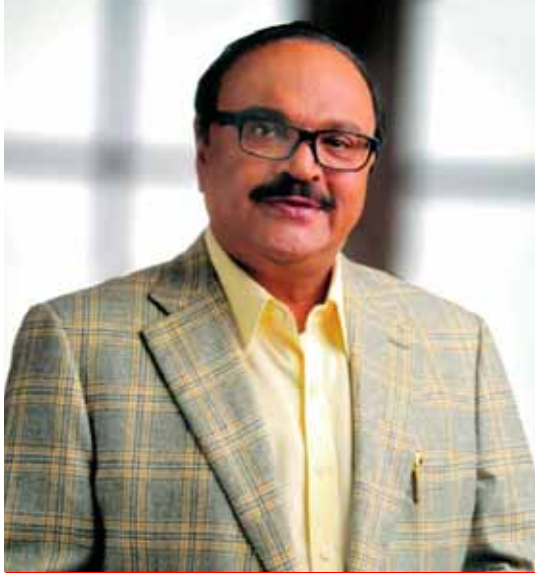
Program Educational Objectives

The pharmacy programme for the under graduate students aims to achieve the following educational objectives:

- Students emerging from the pharmacy programme will excel in their profession.
- The graduates emerging from the pharmacy programme will perform with ethics in the pharma sector.
- The graduates undergoing the pharmacy programme, will pursue higher education.



From the Chairman's Desk



Chhagan Bhujbal

Hon. Founder Chairman, Mumbai Educational Trust

"Our future growth relies on competitiveness and innovation, skills and productivity... and these in turn rely on the education of our people."

-Julia Gillard

The second decade of the twenty first century has witnessed many changes in both expectation and delivery with interdependent economies influencing one another. India has not merely stood strong in this scenario but has also taken varied steps to prepare itself to embrace the future. One among these has been in the field of education, as only by equipping its youth with the right education can we make the most of its demographic value. Among the major changes that it has implemented in this direction is changing the approach to education from imparting knowledge to equipping learners with the desired skills that will help them tackle the professional world running.

To fulfil the demands of the time, the industry is increasingly focused on combating competition and staying a step ahead of the deadlines. For this, they expect the young professionals entering the job market to be prepared to perform not merely from day one, but from the very moment they join. The training they are willing to impart is largely only in organisational culture and the specific demands of the organisation. The rest, whether technical, analytical or soft skills, they are expected to be equipped with, in addition to knowing the subject. The challenge that educational institutions today face is to create individuals, who 'know' as well as who can 'do'.

We at MET, have always anchored ourselves in the present, learnt from the past and set our sights on the future. Our League of Institutes offers training from KG to PG, through a range of courses, across levels. In delivering these, we have incorporated in our style of teaching and training, the requirements of the industry, offering a range of skills, in addition to keeping our syllabi updated to suit the changing demands of the world of work. Our attempt is to offer students the right blend of knowledge, skills and values to create individuals whom India would be proud of. In that we seek the blessings of the industry and citizens to help us achieve our goal.

Chhagan Bhujbal

Hon. Founder Chairman
Mumbai Educational Trust

Advantage MET

- MET is an NGO in Special Consultative Status with the UN (ECOSOC)
- MET has been ranked in platinum category - the highest rating conferred by the AICTE-CII IndPact Survey 2015
- PGDM (e-Business) wins the Indian B School Specialisation Award by Discovery Education Media in 2013
- Ranked 4th Best Marketing Communication & Advertising Management School (All India) and 4th Regional Best Media School (West) by The Edutainment Show 2015
- 6th Best Ad School in India by The Edutainment Show in 2014
- MET is a Ph.D. Research Centre of University of Mumbai & Savitribai Phule Pune University in Management, Engineering and Pharmacy
- MET is an approved Training Partner of the National Skill Development Corporation
- MET has the best e-enabled state of the art infrastructural facilities
- Focus on delivery of lifelong learning skills to build critical professional competencies
- Futuristic e-driven pedagogy and modules deliver e-commerce, IT and digital skills
- Global internship opportunities across USA, UK, China and Dubai
- Strong alumni base of over 15,000 students
- Freeship awards for meritorious students
- Excellent placement opportunities in India & overseas
- Superior intellectual capital armed with knowledge and experience
- Well-networked with the best of corporate in India and abroad
- Global faculty and international knowledge sharing modules
- Sensitising the students towards social causes through MET Seva CSR programmes
- In participation with the Mumbai University, MET has association with the Tianjin University, China and the Hawaii University
- International alliance with the Michigan State University
- Unique partnership with the Chartered Insurance Institute, London
- MET and ACCA (UK) have collaborated to launch eMBA Finance - ACCA (UK)
- MET along with Six Sigma and ValuerHR has set up the Centre of Excellence – Finance
- MET has an academic understanding with Sprott Shaw College, British Columbia, Canada and the Mountbatten Institute, UK
- MET has an MoU with Global School of Management for academic alliances with leading universities and institutes from UK, USA, Canada, Singapore and with Questkonnnect, Australia
- MET has an Institutional linkage with Edith Cowan University, Australia
- MET BKC, Nashik is the Nodal Centre under RETC for State of Maharashtra, a project of IIT Chennai
- Research at MET BKC, Nashik is funded by DST, Govt. of India in quality parameters in MSME's for productivity improvement
- MET BKC, Nashik is the Recognised Centre under NMEICT, a project of MHRD, Govt. of India



Shri Pranab Mukherjee,
Hon'ble President of India



Mukesh Ambani,
Chairman & MD, Reliance



J. Hari Narayan,
Former Chairman, IRDA



Smt. Pratibha Devisingh Patil,
Former President of India



Adi Godrej,
Chairman, Godrej



Rahul Bajaj,
Chairman, Bajaj Auto



MET Chairman Wins Edupreneur Award

Founder Chairman Mr. Chhagan Bhujbal recently won the coveted Edupreneur Award and was featured amongst 11 iconic education-entrepreneurs from Maharashtra by The Times Group.

The Director Speaks



Dr. U. B. Hadkar
Director, MET IOP

On November 8, 2016 the country had a jolt on hearing the announcement of denomination – ₹ 500 & ₹ 1000 notes were withdrawn from circulation. Let us hope that everything will be normalised in the next few days.

Our teaching and Non-teaching staff is busy in preparing files for NBA inspection which is expected in the month of February or March 2017. I highly appreciate the hard work done by the staff members to complete the files in time.

I congratulate Mr. Viraj Khasgiwale for the MET RATNA award he received this year. He should be the source of inspiration to other students. I also congratulate Dr. Rashmi Shrivastav & Mrs. Asavari Hadkar for the Pragnyavant award they received this year.

Our students are encouraged to do small research projects. In this academic year the students have participated in poster presentation, oral paper presentation at Avishkar, Rx and Symphoria at St. John College. Guest lectures, seminar, workshop, alumni lectures are arranged every year for the benefit of students and faculty members.

I take this opportunity to thank our respected Trustees - Mr. Chhagan Bhujbal, Mr. Samir Bhujbal, Mr. Pankaj Bhujbal and also thank Mrs. Shefali Bhujbal and Mrs. Vishakha Bhujbal for their support and active participation in various activities in our MET Institute of Pharmacy. They encourage our students and staff members who publish research papers, by awarding 'MET PRAGNYAVANT' certificates every year. I thank magazine committee members Ms. Mural Quadros, Ms. Sanika Gad and Ms. Shruti Sawant for bringing out copies of magazine 'The Nest' well in time. I also thank Marcom Director Mr. Irani and Deputy General Manager Mr. Ashish Shrivastava for guiding our students in compiling the magazine. Let me remind you all "Nothing is more precious than time." I conclude stating following Sanskrit verses –

क्षणशः कणशः चैव
विद्याम् अर्थम् च साधयेत् !
क्षण त्यागे कुतो विद्या
कण त्यागे कुतो धनम् !!

From the Principal's Desk



Dr. Abha Doshi
Principal,
MET IOP (Degree)

My Dear Students,

It is always a pleasure to address you all through this column where I as a teacher and a guide can share my thoughts and experiences on various fronts.

I would like to express my heartfelt congratulations to all students for participating in various curricular and extracurricular inter-collegiate events. Your efforts have brought laurels to the institute. I am finding a positive shift in the attitude and temperament of the students. I am really very happy to know that you are breaking the block to your intelligence and bringing your creativity and scientific aptitude into research. I congratulate all those who have presented their research at various conferences.

My dear students, growth in life is not determined by only education but should be accompanied by strong perseverance, dedication and an ever trying attitude. To achieve your aim in life, it is first important to set the area of interest, followed by a thorough research in that area and then giving your 100% in achieving that. Unlock your potential by maximising the ability of your mind to break all barriers and use your innate power to change and shape your life.

Last but not the least, I would like to say that a guru can guide you, a guru can wake you, a guru can illuminate you with his/her teachings but only you can light your own lamp of success. Never stop after gaining success because, "You never know what is enough until you know what is MORE THAN ENOUGH."

Our Educators

The environment at MET is extremely homely and a special bond exists between students and teachers. There is a perfect balance between academics and extra-curricular activities. We are proud to be a part of this organization.



First Row: (L-R) Dr. Madhura Vaidya, Mrs. Bhagyashri Joshi, Mrs. Poonam Advani, Dr. Abha Doshi, Dr. U. B. Hadkar, Dr. Vaishali Dixit, Dr. Vijaya Patil, Dr. Rashmi Srivastava, Mrs. Nikita Sanghvi

Second Row: (L-R) Mrs. Sheeja Koliyote, Mrs. Sindhu Menon, Mrs. Priyanka Joshi Jain, Dr. Radhika Raheja, Dr. Sonali Naik, Mrs. Aushima Dasari, Ms. Vrushali Keer

Non-Teaching Staff

Over these years, MET has not only been an institute but has also become our home. The staff and students have always made us feel like a family. The love and warmth has made us feel better. We are glad that issues like lab safety are being made aware of.



First Row: (L to R) Mr. Sanjay Palav, Mrs. Asavari Hadkar, Mrs. Aarti Gore, Mrs. Manasi Vaidya, Dr. Abha Doshi, Dr. U. B. Hadkar, Mrs. Priya Sawant, Mr. Ghanshyam Kambli, Mr. Prashant Rane, Mr. Pradeep Jadhav.

Second Row: (L to R) Mr. Yuvraj Thakre, Mr. Sanjay Katkar, Mr. Pramod Karbhari, Mr. Gurunath Pednekar, Mr. Sunil Mohite, Mr. Mahendra Suve, Mr. Sudhir Ayare, Mr. Dinesh Khanvilkar, Mr. Pramod Pawar, Mr. Ajay Mali.

From the Cultural In-Charge

Over the years, students at MET have not only displayed great academic potential, but have also worked hard to attain dizzying heights in co-curricular and extra-curricular activities. This year was nothing different; students displayed overall excellence in the field of academics, cultural activities and sports!! This magazine is a manifestation of that hard work, vision and optimism exhibited by our students.

On the cultural front, we celebrated various festivals with full zest and fervor, it went from celebrating festivals of Ashadi Ekadashi, Nag Panchami, dancing the Garba Raas and displaying our patriotic passion on 15th August and 26th January.

Teacher's day was celebrated both by teachers and students. The teachers thoroughly enjoyed the handmade personalized cards that were made by the students. Rest of the year the students and staff all participated in the fun days that went by; be it Freshers, Lumiere or traditional and quirky days like black and white, mix and match, superheroes...

Students won at various events and intercollegiate technical festivals like Avishkar, Anveshana, Rx, etc. Like every year students not only participated but won accolades too. We congratulate all the students who actively participated and made our college proud.

We had a successful Blood donation drive organized by Sarvodaya Blood bank like every year.

The most awaited MET UTSAV 2017 also saw full participation from staff and students alike. There is still more to come; the farewell given to the final year students, for which the preparations have already begun. Here's wishing them all the luck for their future endeavours.

We are extremely thankful to our trustees for their support in all our endeavours. We are grateful for the guidance, support and co-operation extended by our Director - Dr. U. B. Hadkar, Principals- Degree, Dr. Abha Doshi and Diploma, Mr. S. D. Bhosale, all faculty members and non-teaching staff.

We would also like to acknowledge the tireless efforts of the council members and the active participation by the students which made each and every event a grand success.



Ms. Vrushali Keer, Dr. Madhura Vaidya

The Council Talks

"Less excuses more results, less distraction more focus, less me more we", this is what describes the council of 2016-17. Our council members are a group of hardworking, creative, enthusiastic individuals who have worked together as a team in making this academic year a grand success.

A heartfelt thanks to our cultural incharges Ms. Vrushali Keer and Dr. Madhura Vaidya. We would also like to thank our director Dr. U. B. Hadkar and our principal Dr. Abha Doshi for their constant support and encouragement.

Lastly we would like to end our tenure by quoting "It is only together that we can make a difference".

The Student Council

The Council of the Year

General Secretaries:

Ms. Sonal Pathak - (T.Y.B.Pharm)

Ms. Tanvi Kamat - (T.Y.B.Pharm)

Cultural Secretaries:

Ms. Rajashree Pawar - (S.Y.B.Pharm)

Mr. Adhyay Pandit - (S.Y.B.Pharm)

Editors:

Ms. Mural Quadros - (T.Y.B.Pharm)

Ms. Shruti Sawant - (S.Y.B.Pharm)

Ms. Sanika Gad - (T.Y.B.Pharm).

Sports Secretaries:

Ms. Priyanka Nijai - (T.Y.B.PHarm)

Mr. Shivam Seth - (S.Y.B.Pharm)

Treasurers:

Ms. Shraddha Patil - (T.Y.B.Pharm)

Ms. Sunaina Saha - (S.Y.B.Pharm)

Class Representatives:

First Year B.Pharm:

Ms. Saili Jagdale

Mr. Sushmit Shetty

Ms. Dishita Mehta

Second Year B.Pharm:

Ms. Vinita Luniya

Ms. Jeenal Jain

Mr. Nayan Dhariwal

Third Year B.Pharm:

Ms. Anita Chando

Ms. Saylee Korgaonkar

Mr. Gaurav Valvi

Final Year B.Pharm:

Ms. Apurva Patil

Mr. Lalit Jain

Mr. Chetan Thingore



First Row: (L-R) Ms. Saili Jagdale, Ms. Mural Quadros, Ms. Priyanka Nijai, Dr. Madhura Vaidya, Dr. Abha Doshi, Dr. U. B. Hadkar, Ms. Vrushali Keer, Mr. Lalit Jain, Ms. Apurva Patil, Mr. Chetan Thingore, Mr. Sushmit Shetty

Second Row: (L-R) Ms. Sonal Pathak, Ms. Shraddha Patil, Ms. Sanika Gad, Ms. Tanvi Kamat, Ms. Anita Chando, Ms. Saylee Korgaonkar, Ms. Sunaina Saha, Ms. Shruti Sawant, Ms. Rajashree Pawar, Ms. Dishita Mehta

Third Row: (L-R) Mr. Gaurav Valvi, Mr. Shivam Seth, Ms. Jeenal Jain, Ms. Vinita Luniya, Mr. Nayan Dhariwal, Mr. Adhyay Pandit

IPA Talks

We live in the era which starves continually to excel in all fields, which includes a variety ranging from sport activities, cultural events and educational events. IPA-SF-MSB has provided a platform for pharmacy students all across Maharashtra to prove their mettle in every field. Our journey through this year started off on a zealous note, with the very successful 'Hepathon'. Pharmacy students got a chance to acquaint themselves with the current pharma world by the numerous educational seminars conducted this year. Sport events such as rink football were a treat for all sport lovers. Fun with learning is our motto; hence we conducted events like the trek, paper quilling workshop, dance workshop and Garba night. Last but not the least Rx Voyage 2K17 raised the bar higher.

Core Council Members

Mr. Aniruddha Daware- Associate Sports Secretary

Ms. Deepashri Rane- Joint General Secretary

Ms. Vyoma Gandhi- Joint Cultural Secretary

Mr. Nitesh Jaiswal- Joint Student Exchange Officer

Ms. Surbhi Shelar- Associate Editor-in-Chief

Cell Members

Ms. Samiksha Satvi- Pharmacy Education Office

Ms. Utkarsha Rane- Public Relation Office

Ms. Jyoti Sharma - Treasury Committee



First Row: (L-R) Ms. Jyoti Sharma, Ms. Surbhi Shelar, Mr. Aniruddha Daware, Mr. Nitesh Jaiswal, Ms. Deepashri Rane

Second Row: (L-R) Ms. Utkarsha Rane, Ms. Vyoma Gandhi, Ms. Samiksha Satvi

Editorial Committee

The name and the fame of an Institute depends on the caliber and achievement of the students and teachers. We are proud and privileged to relaunch our annual magazine "THE NEST". This magazine is a platform to exhibit the literary skills and innovative ideas of teachers and students.

The theme for this year is "PHARMA EVOLUTION" where we have tried to trace the journey of pharmaceuticals from time immemorial to the present while predicting the future advancements in this fast growing Pharma World.

We would like to place on record our gratitude and heartfelt thanks to all those who have contributed to make this effort a success. We profusely thank Mr. J. G. Irani and Mr. Ashish Shrivastava and the entire MET Marcom department for rendering their constant support, encouragement and a free hand in this endeavor. Last but not the least, we are thankful to all the authors who have contributed with their articles



ABOUT THE COVER PAGE:

Progress is the activity of today and assurance of tomorrow. The Pharma World has witnessed a quantum leap in achieving high standards of human healthcare. The cover page highlights the time wheel of therapeutics, one of the numerous facets of pharmacy. It depicts the transition from Apothecary to the Modern age Pharmacy and hence, "Pharma Evolution". It focuses on the ideology of venturing new avenues and embracing Evolution.

Sanika Gad
Shruti Sawant
Mural Quadros

MET IOP has already established itself as one of the best pharmacy colleges in India as well as abroad. It perfectly exemplifies the words MAHATMA GANDHI that education should not only enhance the academic knowledge but also cater to the all-round development of an individual IOP family celebrates various events and conducts different seminars to mould and nurture us in every aspect of life! So, here's a glimpse....

Events

MARATHI BHASHA DIVAS

Though Marathi is the state language of Maharashtra, many of us might not be well acquainted with the language and so to make all the students aware of the richness of this language, the teaching, non-teaching staff as well as the students presented various forms of Marathi folk songs such as bhajans, powadas, etc. Thus, the motive of promoting pride about our state language was well achieved. **(Held on Date: 27/2/2016)**



TREE PLANTATION DRIVE

Being Science students, issues of global warming, air pollution are not new to us. The Maharashtra state Government had launched a Tree plantation drive in July 2016 with a vision to increase the green cover in the state. Inspired by them, MET IOP also conducted a Tree plantation drive taking a step towards restoring the balance between Mother Nature and mankind. **(Held on Date: 7/7/2016)**



AASHADHI EKADASHI

This was the first cultural event for the academic year of 2016-17. The students and teachers wore white clothes like the varkaris who head to Pandharpur on this occasion. A Satyanarayan Pooja was performed in one of the classrooms. The non-teaching staff also sang some devotional songs (bhajans) building up a religious atmosphere. Prasad was distributed to the students and staff who visited throughout the day. The Cultural events for the year thus started off on an auspicious note. **(Held on Date: 15/7/2016)**



NAGPANCHAMI

Nagpanchami, an ancient Indian festival was celebrated in the Hindu month of Shravan, to worship the Snake deities. On this auspicious day, a pooja was performed with all the rituals. The students and teachers offered their prayers to the Naag Devata with great faith and devotion. The artistic students of MET IOP made a richly colored rangoli which added to the aesthetic beauty of this festival. **(Held on Date: 8/8/2016)**



Campus Reporter

The MET IOP folktale

INDEPENDENCE DAY

The 70th year of Independence was celebrated with tremendous splendor and fervor. We dedicated this day to pay homage to our Motherland and the valiant heroes who led the freedom struggle. The day commenced with floral decorations by the IOP students. The Trustees and the Chief Guest unfurled our resplendent tricolor and we sang the National Anthem in unison. Flag hoisting was then followed by a dance skit by MET Rishikul students shedding light on the atrocious act of Female Infanticide. It was a remarkable attempt to bring about awareness of Social Evils in our country.

Long live the Glory of India! **(Held on Date: 15/8/2016)**



BLOOD DONATION CAMP

The finest gesture one can make is to save life by donating Blood. MET IOP organized a blood donation camp to contribute to this priceless act of social benefit. The blood donation camp held in the college premises was in association with Sarvodaya Blood Bank. The camp witnessed active involvement of the students, teaching and the non-teaching staff. MET IOP is grateful for the selfless and generous contributions made to the humanity through this initiative. **(Held on Date: 23/8/2016)**



FRESHERS PARTY

This was the most awaited party for the first year students. A part of the celebration started the day prior with Senior Hunt. The FYs were divided into groups, given some hints about some of their seniors with a task to find and click a selfie with them. The day started with a presentation of the Senior Hunt photographs followed by some quick games for the freshers. The theme decided by the SYs for the Fresher's party this year was Bollywood. The party started with introduction of all the newbies of MET who had dressed up as specific Bollywood characters. The Mr and Miss Fresher competition was then held which was won by Mr. Sushmit Shetty and Ms. Pradnya Deshmukh. Last but not the least were the dance performances by the seniors as well as the freshers. The day concluded with a DJ night and refreshments. Thus, like every year the students of MET offered a warm welcome to their juniors. **(Held on Date: 2/9/2016)**



TEACHER'S DAY

Date: 6th September, 2016

"A teacher takes a hand, opens a mind and touches a heart" The students of MET IOP celebrated Teacher's Day to thank all our professors for helping us not only in academics but also encouraging us to participate in co curricular and extracurricular activities. The Student council had made personalized greeting cards for every teacher and celebrated with a cake. **(Held on Date: 6/9/2016)**



Campus Reporter

The MET IOP folktale

GARBA NIGHT

The nine days festive fever of Navratri was captivated in one day, MET IOPians celebrated it with great zest and zeal. Students were dressed in their colourful traditional attire and danced on the Garba beats with intense energy. The festive spirit was at its peak with everyone grooving with various dance moves on the live and peppy beats. **(Held on Date: 8/10/2016)**



REPUBLIC DAY

Like every year the 68th republic day of India was celebrated at MET with all its solemnity and grandeur. The day started with flag hoisting by the Chief Guest, D.Sivanandan and trustees followed by our national anthem sung by students. The MET Gaurav and MET Bhushan awards were presented to students and faculties who achieved success at state, national or international levels in various fields. Students sang patriotic songs adding to the serenity of the occasion. Speeches were also given by a few students which mentioned the unsung heroes of India. The day was then concluded with refreshments. **(Held on Date: 26/1/2017)**



PHARMACOLOGY PROJECTS

The T.Y students, as a part of their internal assessment made projects on the subject of Pharmacology. Our Pharmacology professors Mrs. Nikita Sanghvi and Dr. Vaishali Dixit assigned topics to pairs of students who then made models and posters to explain their topic effectively. Some of the topics were Placenta Previa, Patient Compliance in TB, Natural home remedies for anemia and so on. The students projected immense creativity in making these projects.



INDUSTRIAL VISIT

It is rightly said that "See & Know" is better than "Read & Learn". An Industrial Visit was organized for the final year students at Pharmax India Pvt. Ltd. located in Ghatkopar. The main objective was to make the students aware of the activities involved in small volume parenteral manufacturing in the industry. It was a great opportunity to get acquainted to the high tech machinery used and the various working areas - like the water sterilisation unit, the air filtering unit, the quarantine area and the packaging units. Students received a golden chance to transfer their theoretical knowledge to practical implication. **(Held on Date: 13/2/2017)**



CAMPUS PLACEMENTS

Campus interview was held for final year students by Quintiles IMS. Mr. Yash Sancheti, Ms. Jyoti Sharma, Ms. Rachita Budharapu, Mr. Parag Betkar, Ms. Anju Pawar, Mr. Rahul Girap, Ms. Siddhi Bambarkar, Ms. Ravina Jain were the students who got placed. **(Held on Date: 23/1/2017)**



Campus Reporter

Seminars and Guest Lectures

BIOPHARMACEUTICS AND PHARMACOKINETICS: BENCH TO BEDSIDE

An enlightening seminar titled Biopharmaceutics and Pharmacokinetics: Bench to Bedside was conducted on 9 December, 2016 at MET Institute of Pharmacy (Degree). Experts from various fields of pharmacy spoke about their area of specialization. Dr Prashant Bode (Consultant, Clinisearch) spoke about the importance of biostatistics focusing on bioequivalence, pk parameters. This was followed up by Dr. Amita Karnik (Director, Technical at Pell Tech Healthcare Pvt Ltd) who spoke about QBD i.e. Quality By Design, she elaborated on how dissolution testing is a major aspect for formulation of tablets and its various quality control parameters. Dr. Krishna Iyer (Professor of Pharmaceutical Chemistry, Bombay College of Pharmacy) explained the 'Basic Pharmacokinetic Concepts in Dosage Regimen Design. Mr. Girish Gudi (Vice President, Drug Metabolism and Pharmacokinetics Glenmark Pharmaceuticals) spoke about the pk/pd modeling and different stages of drug discovery. The seminar concluded with the importance of 'PK/PD Characteristics of Medicine in Intensive Care' by Dr. Abdul Ansari MD, Director, Critical Care, Nanavati Hospital, Mumbai, India. Students from final year B. Pharm. presented posters, which were judged by Dr. Rita Lala and Dr. Rupali Tasgaonkar.



ALUMNI LECTURES

Majority of the students from TY and final year are confused regarding what they should pursue after B. Pharmacy. Hence, seminars by alumni were arranged for the students. The alumni from different fields shared their journey, work experiences and gave an idea about the current trends in the pharmaceutical industry. All in all these lectures helped the students to gain an insight into majority of the career options that are open to them after graduation.



SEMINAR FOR FACULTY MEMBERS

Seminars on diabetes, subject orientation and a fire fighting demo was organised for the faculty members of MET IOP



Delightful Highlights

As Marilyn Monroe stated - "Imperfection is beauty and madness is genius.... It's better to be absolutely ridiculous than absolutely boring." And keeping that in mind, the student council arranged themed celebrations on certain day; from kurta day when everybody switched to an ethnic kurta to mix and match day where students sported the Indo-western fusion of flashing blazers over dhotis, playing with various permutations and combinations of colors, wearing different pairs of shoes and lots more. Rekindling their love for their favorite sport teams was jersey day. Since childhood our life has revolved around DC and Marvel Superheroes. Students wore their favorite superhero T-shirts with great enthusiasm. It was practically, Gotham city as the hallway was filled with Batman and Bat(wo)men! In addition to a few Supermen and Superwomen to add some more color. The 'Traditional Day' celebration was to represent Indian culture. All the students were in different Indian outfits. This is an effort to contribute to remember our culture and celebrate the day with great enthusiasm and gusto. Just as yin needs yang, every positive needs a negative; likewise everything that is white needs a black. Colors bring delight to our lives but on the other hand, black and white show dynamism of our life i.e. Mankind is constantly subjected to phases of peace and despair. On a lighter note, the students of IOP all dressed in black and white combo gave a really tough competition to the zebras on this day.



Delightful Highlights



Rx - Voyage

The Indian Pharmaceutical Association Rx Voyage which is a platform for pharmacy students to showcase their talents in sports, cultural and co-curricular activities. Like every year the students of MET IOP showed active participation and won many prizes.



WINNERS

Sudoku: 1st Place

Mr. Abu Talha Ansari (T. Y. B. Pharm)

Carrom:

Doubles - 1st Place

Ms. Anju Pawar (Final Year)

Singles - 1st Place

Ms. Anju Pawar (Final Year)

Table Tennis:

Doubles - 3rd Place

Mr. Soham Sawant (T. Y. B. Pharm)

Mr. Sumit Gahtori (F. Y. B. Pharm)

Singles - 3rd Place

Mr. Soham Sawant (T. Y. B. Pharm)

Oral Paper Presentation - 3rd Place

Ms. Kinnari Arte (T. Y. B. Pharm)

Ms. Mural Quadros (T. Y. B. Pharm)

Ms. Shreya Sathe (T. Y. B. Pharm)

Face Painting - 3rd Place

Ms. Kajal Bhor (T. Y. B. Pharm)

Ms. Divya Datir (T. Y. B. Pharm)

Comic Strip - 2nd Place

Ms. Siddhi Bambarkar (Final Year)

Ms. Komal Sapkale (Final Year)

Repeat-O-Min - 3rd Place

Ms. Anushka Nadkarni (T. Y. B. Pharm)

Junk Jamming - 2nd Place

Mr. Nilesh Jadhav

Mr. Pritam Kambli

Mr. Viplav Kshirsagar

Mr. Gireedhar Sule

Ms. Komal Sapkale

Ms. Anuja Tikhe

Mr. Sachin Suryavanshi

Lumiere

Festival is what brings people together and that's exactly what the annual festival "Lumiere" did, this festival was organized by the council of MET Institute of Pharmacy and was celebrated on 3rd September, 2016.

The celebrations began with the Khari Kamai, where delicious aromas of food from the four quarters of India replaced the chemical atmosphere of all labs. The profits thus obtained were donated to a good cause.

The cultural events started with a debate followed by the dramatic movie event wherein all students participated and cheered for the various depictions of Bollywood movies. Simple one minute games were organized for teaching and non-teaching staff which revealed their playful personalities. When words fail; music speaks, and so the singing competition began with melodious voices with different festivals as the theme which truly brought out the essence of cultural diversity and rich heritage of the country.

The cultural night began with the lamp lightening ceremony and was attended by our trustee Mr. Pankaj Bhujbal, Dr. U. B. Hadkar (Director), Dr. Abha Doshi (Principal - Degree) and Dr. S. D. Bhosale (Principal - Diploma), faculty and students. The colourful cultural programme started with dance performances from each class. The rich display of colour, music and light had the audience breaking into loud applause very often. Mr. Nilesh Jadhav, a student of final year and his team presented a short film on pharmacy inspired by the well known -Sairat movie which ended with loud applause and praises. All in all "Lumiere" was a grand success and the memories made during this festival will always be cherished.

Lumiere Winners:

Debate:

Final Year B. Pharm

Ms. Apurva Patil
Mr. Yash Sancheti
Ms. Shweta Chavan
Ms. Sheryl Nazareth

Mr and Ms Fresher's:

Mr. Sushmit Shetty
Ms. Pradnya Deshukh.

Movie Event:

T. Y. B. Pharm

Mr. Sumedh Panpatil
Mr. Audumbar Deo
Mr. Nitesh Jaiswal
Ms. Aditi Mane
Ms. Srushti Khadye
Ms. Shraddha Patil
Ms. Rhema Khairnar
Ms. Mural Quadros

Singing:

T. Y. B. Pharm

Mr. Audumbar Deo
Ms. Saylee Koregaonkar
Ms. Vyoma Gandhi
Ms. Ankita Bhambere
Ms. Kajal Bhor
Ms. Anita Chando
Ms. Divya Datir
Ms. Sanika Gad
Ms. Siddhi Gaikwad
Ms. Nitesh Jaiswal
Ms. Tanvi Kamat
Ms. Saili Karande
Ms. Srushti Khadye
Ms. Aditi Mane
Ms. Sonal Pathak
Ms. Shraddha Patil
Ms. Mural Quadros
Ms. Priyanka Solunke
Ms. Tanvi Tambat

Ms. Deepashri Rane
Ms. Manjiri Shinde
Ms. Akanksha Danke
Ms. Supriya Yadav

Mehendi Competition:

S. Y. B. Pharm

Ms Shrusti Doshi

Lumiere



MET Pragnyavant Awards (Institute Level) 2016 From 1st Jan 2016 – 31st Dec 2015

Sr.No	Name of the Institute	Faculty / Student Name	Academic Year	Achievement
1.	IOP (Degree)	Dr. U. B. Hadkar	2016 - 17	Paper publication entitled "Development of method to measure Rat Paw Edema using a Conductivity meter." In Asian Journal of Pharmacy and Technology.
2.	IOP (Degree)	Dr. Abha Doshi	2016 - 17	Paper publication entitled "Prevalence and factors associated with the use of herbal medicines among women receiving antenatal care in hospitals - Mumbai India" Int. J. Phytotherapy.
3.	IOP (Degree)	Dr. Rashmi Srivastava	2016 - 17	Paper publication entitled "Development & Evaluation of Herbal syrup from root extract of <i>N. brachiata</i> and <i>G. celosiodies</i> (Research article). In Int. journal of Res. In Pharmacy & Chemistry.
4.	IOP (Degree)	Mrs. Asavari Hadkar	2016 - 17	Paper publication entitled "Development of method to measure Rat Paw Edema using a Conductivity meter." In Asian Journal of Pharmacy and Technology 2016
5.	IOP (Degree)	Mr. Viraj Khasgiwale	2016 - 17	Indian Pharmaceutical association, Maharashtra State Branch awarded "Third Best Student Award for the year 2016"
6.	IOP (Degree)	Ms. Neerja Chimote	2016 - 17	Paper publication entitled "Development of method to measure Rat Paw Edema using a Conductivity meter." In Asian Journal of Pharmacy and Technology
7.	IOP (Degree)	Ms. Sweta Jagtap	2016 - 17	Paper publication entitled "Development of method to measure Rat Paw Edema using a Conductivity meter." In Asian Journal of Pharmacy and Technology

MET RATNA AWARDS 2016

For achievements (Certificates/medal/ trophy received) during 1st Jan 2016 – 31st December 2016

Sr. No	Name of the Institute	Faculty / Student Name	Program / Course Name	Achievement
1.	IOP	Mr. Viraj Khasgiwale	Bachelor of Pharmacy	Final CGPA 8.05

UNDER GRADUATE RESEARCH

NAME OF STUDENTS	GUIDE	TOPIC	STATUS
Ms. Shraddha Bangar Ms. Surabhi Shelar Ms. Samiksha Satvi Ms. Mihika Shringapure	Dr. Vijaya Patil Dr. Vaishali Dixit	Comparative Evaluation of Antibacterial activity of some marketed formulations on drug resistant bacteria	Complete
Ms. Rhema Khairnar Ms Saylee Korgaonkar Ms Sonal Pathak Ms. Neha Lathiya	Dr. Vijaya Patil	Evaluation of synergistic activity of several plant extracts and oils against drug resistant bacteria	Ongoing
Ms. Anita Chando Ms. Ankita Bhambere Ms. Supriya Yadav	Dr. Vijaya Patil	Study of ageing and production of wine from some fruits by fermentation process	Ongoing
Ms. Naureen Shaikh Ms. Pooja Joshi	Dr. Rashmi Srivastava Dr. Vijaya Patil	To study the antimicrobial activity of <i>Nothosaerva brachiata</i>	Ongoing
Ms. Soni Maurya Ms. Jyoti Tapala	Mrs. Bhagyashri Joshi	Evaluation and study of different penetration enhancers	Ongoing
Mr. Chetan Thingore	Mrs. Bhagyashri Joshi Dr. Vijaya Patil	Formulation of gel of lemon grass oil	Ongoing
Ms. Divya Datir Ms. Kajal Bhor Ms. Priyanka Solunkhe	Mrs. Bhagyashri Joshi	Hydroquinone Cream	Ongoing
Ms. Shraddha Bangar Ms. Surabhi Shelar Ms. Samiksha Satvi Ms. Mihika Shringapure Ms. Saili Karande Ms. Srushti Khadye	Dr. Vijaya Patil	Comparative antibacterial study of various eye drop preparations for antibacterial activity on drug resistant bacteria.	Ongoing

Minor research grant was received from the university of Mumbai for the year 2016-2017 to Ms Vrushali Keer and Dr. Madhura Vaidya for the project titled 'Green solvent vs conventional solvents for the extraction of phytoconstituents'

Lectures Delivered:

1. Dr. Vaishali Dixit gave an Orientation towards writing Clinical Pharmacy papers on 5th April, 2016 at Sterling Institute of Pharmacy.
2. Dr. Vaishali Dixit delivered a lecture on drug discovery process and regulations on 27th March, 2016 at SVKM's NMIMS Institute of Intellectual Property Studies.

TOPPER LIST

FINAL YEAR

- 1) Mr. Viraj Khasgiwale
- 2) Ms. Shrijal Mehta
- 3) Ms. Siddhi Kanakiya

THIRD YEAR

- 1) Mr. Pritam Kamble
- 2) Ms. Monika Lakhani
- 3) Ms. Jyoti Sharma

SECOND YEAR

- 1) Ms. Kinnari Arte
- 2) Ms. Tanvi Kamat
- 3) Ms. Sanika Gad

FIRST YEAR

- 1) Ms. Rajashree Pawar
- 2) Ms. Jeenal Jain
- 3) Ms. Kajal Gupta

Co-curricular Activities

MET IOP has always encouraged students to expand their horizons not only in academics but also in co curricular activities. Here's a glimpse of few events attended by the students

SYMPHORIA

St John Institute Of Pharmacy And Research (Palghar) organised a National Symposium On 21st January, 2017 on the topic of Statistical Methods in Research & Business Analytics-Pharmaceutical Perspective along with the poster presentation competition for B. Pharm students. Principal of the college Dr. Savita Tauro welcomed the speakers and initiated the gathering. The seminar focused on the use of statistical analysis in the field of pharmacy. Poster presentation competition was open to all with no barriers on the choice of topic. Judges of the event were

Dr. Govind S. Asne and Dr. Bharat V. Dokchawle. Participants were judged on the basis of topic chosen, clarity of poster, presentation skills followed by their performance in question answer round. Ms. Mural Quadros and Ms. Kinnari Arte from MET institute of pharmacy presented a poster on FACS (fluorescence activated cell sorting) which is an analytical technique and won first prize in the competition making all METians proud. The event was concluded by distribution of prizes and a vote of thanks.



ANVESHANA

The national level conference on research with innovative ideas was held on 4th February, 2017 at hotel Pancharatna in Pune, the conference was organized by Anveshana educational research foundation. This foundation supports research activities and creates competitive research environment to achieve desired goals.

The programme covered seminars by some eminent speakers, lead talks, interactive sessions and student research presentations. The seminars gave an idea about recent trends in nutraceuticals, about various therapeutically important plants and research work going on with them. The seminars also dealt with certain concepts on gene mapping.

Students from third year attended this one day conference. They presented their research posters which were as follows-

- Evaluation of effect of permeation enhancers for improved percutaneous absorption of diclofenac sodium by Ms. Soni Maurya and Ms. Jyoti Tapala, guided by Mrs Bhagyashri Joshi
 - Formulation and evaluation of anti inflammatory – analgesic gel for neuropathic pain by Ms. Tanvi Kamat and Ms. Shraddha Patil guided by- Dr. Vaishali Dixit
 - Evaluation of antimicrobial activity of plant extracts and volatile oils on multiple drug resistant bacterial strains by Ms. Saylee Korgaonkar, Ms. Sonal Pathak guided by - Dr. Vijaya Patil
- Ms. Saylee Korgaonkar and Ms. Sonal Pathak were awarded as “best presenters” for their poster presentation.



Their work elaborated on coming up with newer antibiotics using natural sources in order to combat the growing problem of increased bacterial resistance towards presently used antibiotics

All the students got their research work published in Anveshana's online journal.

Co-curricular Activities

AVISHKAR

MET IOP is proud to announce that six of our T. Y. B. Pharm student Ms. Jyoti Tapala, Ms. Soni Maurya, Ms. Saylee Korgaonkar, Ms. Sonal Pathak, Ms. Shraddha Patil, Ms. Tanvi Kamat and four of our Final year students Mr. Yash Sancheti, Ms. Naureen Shaikh, Ms Jyoti Sharma and Mr. Chetan Thingore participated in Avishkar a Mumbai University event where students showcased their innovations. Our students presented their research posters which were as follows:



1. Evaluation of effect of permeation enhancers for improved percutaneous absorption of diclofenac sodium by Ms. Soni Maurya and Ms. Jyoti Tapala, guided by Mrs Bhagyashri Joshi.
2. Evaluation of antimicrobial activity of plant extracts and volatile oils on multiple drug resistant bacterial strains by Ms. Saylee Korgaonkar, Ms. Sonal Pathak guided by- Dr Vijaya Patil.
3. Physiological barrier affecting drug distribution by Chetan Thingore.
4. Medication compliance kit from therapy of tuberculosis by Ms. Tanvi Kamat and Ms. Shraddha Patil guided by Dr. Vaishali Dixit
5. Modified Dissolution Rate Apparatus by Mr. Yash Sancheti, Ms. Jyoti Sharma, Ms. Naureen Shaikh.
6. Our faculty member Mrs. Bhagyashree Joshi presented her PhD project on improving drug absorption of poorly permeable drug for oral delivery using permeation enhancers.

The projects presented by Mrs. Bhagyashree Joshi, Ms. Tanvi Kamat and Ms. Shraddha Patil made it to the 3rd round and the project presented by Mr. Yash Sancheti, Ms. Jyoti Sharma and Ms. Naureen Shaikh made it to the final round of the competition.

INSIGHT



An annual pharma conference was held at IES Mannagement college on 16th December, 2016 where many industrialist spoke about Healthcare Industry, also events like Pharma Quiz and Ad-Mad were held, Ms. Kajal Bhor, Ms. Divya Datir and Ms. Vyoma Gandhi won pharma quiz. Admad participants ;Mr. Sumedh Panpatil, Ms Aditi Mane. Ms. Anushka Nadkarni, Mr. Audumbar Deo guided by Ms. Vrushali Keer and Mr. Mandke, Won 1st place, The theme for Ad-Mad was "Social Awareness in Healthcare".

Co-curricular Activities

Some abstracts of poster presentation held on 9th December, 2016 are as follows

PHYSIOLOGY OF CELL MEMBRANE AND PASSAGE OF DRUGS ACROSS THE MEMBRANE

The cell membrane is selectively permeable to ions and organic molecules and controls the movement of substances in and out of cells. The basic function of the cell membrane is to protect the cell from its surroundings. It consists of the phospholipid bilayer with embedded proteins. Only polar molecules can pass across the membrane like water and carbon dioxide, hydrophobic nonpolar molecules like oxygen and lipid soluble molecules such as hydrocarbons. Cell membrane has the ability to regulate the concentration of substances inside the cell.

The structure of the membrane is selectively permeable and allows the substances to move through by two methods: active and passive transport. Passive transport allows the substances to move across the membrane via concentration gradient, simple and facilitated diffusion. Substances which can easily diffuse through the bilayer (carbon dioxide and water) from the site of high concentration to lower concentration generally diffuse via simple diffusion since they are very concentrated outside. Larger, polar molecules which are hydrophilic cannot easily cross the bilayer and thus their movement occurs through protein channels. For example, movement of glucose cannot occur via simple through simple diffusion because of higher molecular weight.

Drugs like tolazamide bind to the sensitive potassium channel receptors on pancreatic cell membrane causing the release of insulin and Phenytoin acts on the sodium channels on neuronal cell membrane thereby stabilizing the hyperexcitability of neurons. Therefore approaches should be developed to target the underlying processes and also towards the transferability of the drugs across the membrane.

Authors : Nilesh Jadhav, Lalit Jain, Leesha Jain, Ravina Jain, Ronak Jain, Pooja Joshi, Pritam Kamble,

DOSAGE FORM FACTORS AFFECTING DRUG DISSOLUTION

Drug dissolution is the single most important factor in the absorption of drugs, especially from the most widely used conventional solid dosage forms, the tablets and capsules.

The dosage form related factors that influence dissolution and hence absorption of a drug from such formulations are:

1. Excipients (formulation ingredients apart from the active principles), and
2. Manufacturing processes
3. Several manufacturing processes influence drug dissolution from solid dosage forms.

Processes of such importance in the manufacture of tablets are:

1. Method of granulation
2. Compression force

Authors: Sheryl Nazareth, Deepika Padate, Apurva Patil, Ashwini Patil, Juhi Parsana, Anju Pawar, Trupti Pokarne

MECHANISM OF DRUG ABSORPTION

Absorption is defined as the process of movement of unchanged drug from the site of administration to systemic circulation. The different mechanisms for drug absorption are divided into 3 main categories transcellular (active, passive), paracellular (permeation, persorption) and vesicular (pinocytosis, phagocytosis) transport. These mechanisms mainly involve absorption with or without energy, ions or carrier molecules. All drugs have different chemical nature and hence get absorbed by different mechanisms of action.

Authors - Aniruddha Daware, Tania D'Cruz, Hemant Divekar, Atul Gajabi, Rahul Girap, Chirag Gohil, Aishwarya Jadhav

Co-curricular Activities

APPLICATIONS OF PHARMACOKINETICS

Drug Delivery System:

With the extensive progress in carrier-based drug delivery systems, pharmacokinetic evaluations have gained much attention from researchers as a central part of the study of these systems. The fulfillment of any therapeutic goal(s) by a novel drug delivery system requires the absorption, distribution, metabolism, and excretion (ADME) be considered from the early stages of the system design to the final clinical evaluations.

The main objectives of the carrier-based drug delivery systems from a pharmacokinetic viewpoint are:

- (1) An improved drug-release profile *in vivo*
- (2) Enhanced drug absorption
- (3) Site-directed drug distribution
- (4) A modified drug metabolism pattern
- (5) Prolonged drug residence time in body (e.g., in blood circulation)
- (6) Delayed and/or decreased renal excretion of the drug.

Dosage Calculations:

The correct calculation of dose is very important in dispensing any kind of medicine as a wrong dose administration can easily lead to a variety of side effects. The pharmacological study of drug dosage is called as “posology”.

Bioequivalence:

Bioequivalence is a term in pharmacokinetics used to assess the expected *in vivo* biological equivalence of two proprietary preparations of a drug.

Dosage Regimen:

The objective of Drug Therapy is to bring the plasma concentration within therapeutic window. The dosage regimen is the modality of Drug administration that is chosen to reach the therapeutic objective

Drug Accumulation:

Accumulation is simply a reflection of how a drug is being added to the body relative to how much is being eliminated from the body during a defined period of time. It represents the relationship between the dosing interval and the rate of elimination the drug

AUTHORS: Kinnari Arte, Ajinkya Bapat , Nitesh Jaiswal, Anushka Nadkarni, Sumedh Panpatil, Shreya Sathe, Mural Quadros.

EFFECT OF CO MORBIDITY ON PHARMACOKINETICS

The term co-morbidity refers to the condition when two disorders or illnesses occur in the same person, simultaneously or sequentially, they are described as comorbid. Comorbidity also implies interactions between the illnesses that affect the course and prognosis of both.

When the drug is administered in the body it undergoes several metabolic pathways in order to convert it to a simpler form so that it can be eliminated from the body after its pharmacological action is achieved. The major site of this metabolism in the body is liver. It contains various enzymes that perform this action, but this action can be altered in case if any type of hepatic or kidney disorders. Similarly in case of geriatric, pediatric population the rate of metabolism differs.

Thus, in order to deal with this change in pk dose adjustment or dose regulation should be done so that the drug is effectively available at the site of action without the drug being toxic.

AUTHORS: Vyoma Gandhi, Jyoti Tapala, Mahesh Gaikwad, Siddhi Gaikwad, Pooja Mallah, Priyanka Sonawne, Krupal Mehta

Co-curricular Activities

INFLUENCE OF PHARMACOGENOMICS ON THERAPEUTICS

Pharmacogenomics is the study of how genes affect a person's response to drugs. A current focus of pharmacogenomics research is to explore the effect of inter-individual genetic differences on the pharmacokinetics, pharmacodynamics, efficacy, and safety of drug treatments. The ultimate goal of these efforts is to develop personalized, genetic-based strategies that will optimize therapeutic outcomes.

Name of the drug	Category	Genetic variant	Adverse effects
Warfarin	Anti- coagulant	Single-nucleotide polymorphisms (SNPs) of genes that encode two proteins: the cytochrome P450 2C9 enzyme and VKORC1 (vitamin K epoxide reductase complex)	Patients who carry CYP 2C9*2 and CYP 2C9*3 alleles tend to require lower warfarin maintenance doses because of their slowed metabolism
Tamoxifen	Selective estrogen receptor modulator	Polymorphic enzyme cytochrome P450 2D6 (CYP2D6)	Conversion to active metabolite inhibited
Isoniazid	Anti-tubercular drug	Genetic polymorphism of N-acetyltransferase	The slow acetylator phenotype often experiences toxicity from isoniazid whereas the fast acetylator phenotype may not respond to isoniazid in the management of tuberculosis
Halothane	General anesthetic	Abnormalities in ryanodine receptor-1 gene	Causes malignant hyperthermia potentially fatal

It can therefore be concluded that pharmacogenomics is a potential tool expected to lead to better ways of therapeutics.

Authors: Audumbar Deo, Sanika Gad, Tanvi Kamat, Saili Karande, Srushti Khadye, Aditi Mane, Shraddha Patil

Pharma Evolution: A Key for Navigating the Future

Man is a product of evolution, the journey 'from amoeba to Man' hasn't been a simple or a sudden change. In the same way... Pharmacy had evolved in so many different aspects, you no longer need to search the jungle for specific herbs then grind it in a mortar pestle and consume it irrespective of its bitter taste, now all you have to do is pop in a pill. There are hundreds of drugs that are launched in the market every year, previously the ratio wasn't the same...although the active ingredient was known, the incorporation of that drug into a formulation was very difficult. And now it is practically possible to formulate any drug (even the most incompatible one)...all you have to do is search for the suitable excipients in research books or in the pharmacopeia which is like a dictionary with all chemical and physical data of the various excipients and with little (I mean most) physiochemical knowledge of your API you can formulate a drug using various permutations and combinations and boom! Your product is ready, but how did life become so easy? It is a result of years and years of research and constant failure, to EVOLVE from your latter stage.

Evolution not only plays a part in formulation but also in various other aspects like pharmaceutical analysis for example, the evolution from using a simple litmus paper to check the acidity or basicity to using a pH meter to quantify the precise value.

The introduction of biotechnology has given a major boost to the pharma industry providing vast opportunities where one's imagination is the only limit.

The changes in cosmetics have made it possible to use something as simple as eyeliner. In the 1800s you couldn't just swing by the corner drugstore to get a pencil of kohl. Instead, you would have had to make your own. The most common preparation was lamp black, made by burning a candle and putting a dish close to the flame. The black soot left behind was used with a little bit of oil to darken the lashes or brows.

So to conclude all in all as man has evolved so has pharmacy making life easy for you and me. Not far away is the day when you will be able to grow vaccines in your backyard or maybe there will be one super pill for many different diseases in a way kill, not two but many birds with one stone and just like candy bars, medicines will be dispensed at automatic kiosks and virtual pharmacist will be available at the tip of your fingers.

Mural Quadros
T. Y. B. Pharm

QUORUM SENSING – DECODING THE MICROBIAL CHATTER

“Communication is an art which leads a community”. We imagine bacteria as a unicellular and omnipresent organism sustaining a very asocial, secluded life. But surprisingly, bacteria are more social than previously thought. Bacteria communicate in their chemical language and this process is known as Quorum sensing.

This phenomenon was first discovered in a marine bacterium *Vibrio harveyi* which possesses an amazing trait of bioluminescence. Individual bacteria secrete chemical messengers called autoinducers into the environment. With the growth of bacterial colony, the concentration of these signaling molecules increases and the bacteria glows intensely. Bacteria never act as individuals but, always in communities. It is intriguing how they follow the All or None principle. Bacteria are multilingual – they not only communicate with their own species but also, with many other species by releasing different autoinducers.

Quorum Sensing – the group behavior of the bacteria is a determinant of its virulence. Antibiotics are used to curb the rising tide of bacteria but, antibiotic resistance crisis is plaguing the efficacy of these magic bullets. Quorum sensing

inhibition i.e. Quorum quenching is now directed to disrupt the bacterial communication, prevent the release of toxins and combat virulence.

Quorum sensing inhibitors serve as a new weapon to the drug resistant superbugs. It is a new avenue to venture in the field of therapeutics. Quorum sensing has exciting implications for medicine, the pharmaceutical industries and understanding of ourselves. This fascinating theory of Quorum sensing sheds light on the fact that – Unity is strength, Division is weakness.

Shruti Sawant
S.Y.B.Pharm

PHARMA EVOLUTION

We all are aware of the fundamental mechanism of Darwinian evolution: some species are better suited in the environment and thus replicate more. It is a substantial explanation of how biological systems change over time. And in the word 'system' lies the clue how a theory of biological origin be used in the domain of management science. The question now is how is this theory applied to pharma? Well, we pick up ideas from one situation and transplant them into other context. And that is basically what pharmacy is. It is a health profession that links health sciences with chemical sciences and aims to ensure the safe and effective use of drugs. With changing times and needs, evolves the pharma sector.

When people think of a community pharmacist they often think of a person putting pills from a big bottle into a small bottle, putting a label on the bottle and giving it to a pharmacy technician to hand to a patient. However things have changed. Required education for a pharmacist has gone from a 4 year Bachelor of Science degree to a doctor of pharmacy (PharmD) degree that requires 6 to 8 years to complete. The increase in education has resulted in a greater emphasis on learning about the appropriate application of drug use in various disease states and practical application through clinical experiences in healthcare settings. That means that pharmacists are equipped to, review patients' medication regimens, teach individuals how to use their medicines safely and effectively, and collaborate with the patients' other healthcare providers to prevent harmful drug interactions. Some pharmacists operate clinics that address special medication issues, such as how to safely use anticoagulation drugs, and offer advice on how to manage chronic medical conditions, such as congestive heart failure and diabetes. Community pharmacists also take part in health promotion campaigns in their communities on a wide range of topics, including tobacco use, alcohol and drug abuse, drug use during pregnancy and poison prevention.

Thus with this pace of changes it won't be wrong to say that over the next 40 years pharmacists will not only dispense medications but will also provide patient-centred, individualized pharmaceutical services. With more available time, pharmacists will have to prove their value within the setting, and provider status will allow for payment to occur. Pharmacists will perform medication therapy management (MTM) services, and hold anticoagulation clinics and diabetes clinics.

Lastly, I would conclude by saying that, with the snowballing demand for health care services by the increasing population and shortage of physicians, something will have to change. Pharmacists could be that defining factor for many companies and patients; however, we need to make our services and value known. We have a vast array of knowledge that needs to be used at the "top of our degree." How will pharmacy practice evolve to meet the needs of the 21st-century health care system? That is up to us, and if we don't take measures to define it in our terms, somebody may define it for us. So let's start contributing to the present to make a better future.

Kinnari Arte
T. Y. B. Pharm

THE DECREASING ART OF APOTHECARY

What is Apothecary ?

It is an archaic word for pharmacist who formulates and dispenses drug upon written order (prescription) from a licensed practitioner such as physician, dentist or advanced practice nurse

History

It is hard to say when it started exactly; it existed in a rudimentary form long before the word existed. Combining different agents (compounds) was considered an art form by priests and doctors

Decline in Apothecary

Pharmacists fulfilled the role of apothecary preparing drug products (according to the art) for medicinal use.

Industrial revolution had an impact of every aspect of pharmacy.

By the 1950's large-scale manufacturing of medicinal products by pharmaceutical industry and the introduction of prescription-only legal status for most therapeutic agents, limited the role of pharmacists to compounding, dispensing and labeling products.

The growth of commercial drug manufacturers marked a sharp decline in the need for compounding and apothecary

Facts on apothecary

> The first apothecary shops appeared in Baghdad. These Street market shops sold medicines along with syrups, perfumes and wines.

> The apothecary-pharmacist still compounded approximately 60 percent of all medications in the 1930's and 1940's

Shreyas Singh
F. Y. B. Pharm

APPLICATIONS OF HUMAN STEM CELLS

Stem cells were first discovered in 1978 in Human cord blood and after this date, advancements in human stem cell research have been continuously taking place. Stem Cells are body's natural reservoir – replenishing the stocks of specialized cells that have been used up or damaged. We all have stem cells at work inside us and right now inside your bone marrow , stem cells are busy making the 100,000 million new blood cells that you need every single day!

Stem cells are unspecialized cells that have this unique ability to produce both types of cells, copies of themselves (aka self-renewal) and other specialized cell types (aka differentiation). Stem cells, therefore, are essential for the maintenance of tissues such as blood, skin and gut that undergo continuous turnover (cell replacement), and muscle, which can be built up according to the body's needs and is often damaged during physical exertion. Unlike other cell, stem cells do not have specialized physiological properties.

Recently, human stem cells are being used in researches and clinics. The primary goal of these researches is to find how the undifferentiated human stem cells differentiate into different cell types and form tissues and organs. Thanks to these researchers, some human stem cell applications are now possible while some potential applications will enhance pharmaceutical, biological and genetic fields, resulting in betterment of human life.

Applications of Human Stem Cells:

1) To study development

Stem cells may help us understand how a complex organism develops from a fertilized egg. In laboratory, scientists can follow stem cells as they divide and become increasingly specialized. Identifying the signals and mechanisms that determine whether a stem cell chooses to carry on replicating itself or differentiate into a specialized cell type, will help us understand what controls the normal development. A better understanding of stem cells will help scientists understand how these diseases like cancer, or genetic birth defects arise and how to tackle them, eventually eradicating them.

2) Exploitation of stem cell's ability to replace damaged cells and treat diseases by stem cell therapy

This application is already being used in treatment of extensive burns, and to restore the blood system in patients with leukemia and other blood disorders. Stem cells hold the key to replacing cells which are lost in many other devastating diseases for which there are currently no sustainable cures. In today's world, donated organ is used to replace the damaged organ. But the need for such transplantable tissues is exceeding the supply. We can direct the stem cells to differentiate and produce cardiac tissue or the entire heart and use it to treat a patient suffering from heart diseases. More recently, stem cells from the blood stream and umbilical cord stem cells have been used to treat some of the variety of blood and bone marrow diseases, blood cancers, and immune disorders.

3) To study diseases

In many cases, it is difficult to obtain cells that are damaged in a disease and to study them in detail. Understand the pathophysiology. But stem cells which are carrying a disease or are engineered to carry a disease can offer a variable alternative. Scientists can use stem cells to model disease processes in the laboratory, and to understand better about what goes wrong and how to prevent the disease's proliferation.

4) Stem cells provide a resource for testing new medical treatments

It is difficult to obtain infected cells for checking the potential and activity of the new treatment, nor can one test new medical treatments directly on live humans or animals. Such new medications can be tested on specialized cells generated in large number from stem cell lines. This provides an alternative for clinical trials.

Stem cell research has now progressed dramatically and there are countless research studies published each year in scientific journals. Researchers still have a long way to go before they completely control the regulation of stem cells. The potential is overwhelmingly positive and with continued support and research, scientists will ideally be able to harness the full power of stem cells to treat diseases that you or a loved one may suffer from one day. Human stem cells are considered to be the next big thing which will revolutionize mankind's fight with diseases.

Amey Revdekar
F. Y. B. Pharm

LAB ON A CHIP AND BIOMEMS

LAB ON A CHIP (LOC) is a device that integrates one or several laboratory functions on a single chip of only few millimeters to achieve automation and high throughput screening.

BioMEMS can be defined in general as "devices or systems constructed using techniques inspired from micro fabrication that are used for processing, delivery, manipulation, analysis, or construction of biological and chemical entities.

BioMEMS devices are similar to LOC, typically focusing on MEMS (Micro–Electro-Mechanical systems) with biological applications.

LAB ON A CHIP

(Also known as micro total analytical systems or microTAS) designed to miniaturize analytical or bioanalytical

techniques and integrates them into a micro fabricated format.

Techniques such as chemical separation (electrophoresis, chromatography) etc or immunoassays are incorporated into micro fabricated systems (typically glass, silicon or polymer) with a goal of increasing performance, minimizing reagent requirement, and decreasing cost.

LOC device is use to capture, sort, culture, or study cells, study interfacial phenomena & produce Pharmaceuticals. Advantages such as reduced costs, low sample volumes, and ease of use allow LOC Technology to be used extensively in point- of – care diagnostics in less – developed countries.

.BIOMEMS

(Biological microelectromechanical systems)

Application of BioMEMS: Micro and nano systems for genomics, proteomics, drug – delivery analysis, molecular assembly, tissue engineering, biosensor development , nanoscale imaging, etc diagnostics to micro-fluidics, systems for drug delivery, tissue engineering, and implantable systems.

Biological samples can be analyzed in a very small area with considerably reduced cost and time, by forming micro-fluidic channels on silicon substrate and combining them with on chip electronics.

Some examples for such applications include on-chip electrophoresis systems, polymerized-chain reaction (PCR) units, DNA sequencing chips, and complex lab-on-a-chip devices.

There are currently various BioMEMS related projects going on at METU-MEMS, including DNA electrophoresis systems, dielectrophoresis chips for cell separation, gravimetric sensors for cancer cell detection, microvalves and pumps for lab-on-a-chip systems, and electrochemical sensors for bacteria

Health Applications Of Loc Technology Are Given Below :

1. Diagnosis of Infectious Diseases: The disposable enterics card (DEC) is an LOC-based application that helps detect enteric infections caused by organisms such as *Escherichia coli* , *Shigella dysenteriae*, Salmonella, and Shiga Toxin-producing *Escherichia coli*. These organisms can be detected from a small amount of fecal sample on a microchip.
2. Handheld Diagnostics: Handheld diagnostic devices using LOC can rapidly analyze blood samples of patients and precisely detect various strains of HIV, thus allowing tailored treatment plans which are more effective and also helping to minimize drug wastage and drug resistance.
3. Detection of Analytes: Detection of analytes such as electrolytes in blood samples e.g. the iSTAT from Abbott Diagnostics.
4. Diagnostic chips for bipolar disorder, cancer, and male fertility: LOC device used for monitoring blood lithium levels of patients suffering from bipolar disorder and urinary sodium levels in patients with kidney dysfunction.

It can be estimated that over a decade, biotechnological, medical and chemical analysis will move from room-sized laboratories to microchip based laboratories, housed in hand-held, portable readout devices.

Jyoti Sharma
Final Year

ADVANCED MEDICAL DEVICES

Technology is rapidly creating new ways by which the medical industry can enhance our lives and save billions of dollars in health care costs.

Researchers use 3D printers to cheaply create medical devices that can be directly implanted into the human body. Already, doctors have fashioned 3D-printed splints to help children with rare breathing disorders and have successfully implanted a 3D-printed titanium sternum and ribs into a cancer patient.

Wearable technologies can likewise aid in improving proactive healthcare. Sophisticated wearable health devices can remind users to take medications or contact medical professionals as necessary and eventually help users track and even diagnose various conditions before advising a course of action. Other experiments with implantable hearable devices, smart contact lenses and glasses, and even tactile networked patches and fabrics seek to cheaply and seamlessly monitor other health vitals like blood glucose levels, blood pressure, brain activity and stress.

Priyanka Solunkhe
T. Y. B. Pharm

AUTOMATED DRUG DELIVERY SYSTEM

AUTOMATED SYSTEM:

An automated drug delivery system is a computerized version of the unit-dose system. A pharmacist fills an electronic drug-dispensing unit and keeps it locked. The unit then delivers individually wrapped and labelled medications when you request them. A computer records all drug transaction on electronic tape and furnishes requested printouts.

To avoid the possibly disastrous effects of computer down-time, facilities that use automated dispensing systems must have a backup plan for dispensing medications and documenting their delivery.

ADDs are of two types: Open and Closed loop control system.

A fully automated drug delivery system has 3 major components:

1. The transducers and associated electronics to device the variables.
2. The logic unit which computes the degree of control to be applied.
3. The activating mechanisms which delivers the control.

USES OF ADDS :

Pharmacy services

Emergency pharmaceutical supply

Short cycle dispensing

Example of ADDS: Aethon's TUG

SIGNIFICANCE OF ADDS: It helps in maintaining the records of patients because the computer can monitor and track drugs from the original inventory to patient billing. It saves staff time and may allow you to spend more time consulting with patients.

Aaditi Amberkar
S. Y. B. Pharm

HORMESIS

Hormesis is basically biological responses to low exposures to toxins and other stressors. A pollutant or toxin showing hormesis thus has opposite effect in small doses as in large doses.

Pharmacologist Hugo Schulz first described such a phenomenon in 1888 following his own observations that the growth of yeast could be stimulated by small doses of poisons.

Alcohol is believed to be hermetic in preventing heart disease and stroke, although the benefits of light drinking may have been exaggerated. In 2012 researchers found that tiny amount of ethanol doubled the life span of *Caenorhabditis elegans*, a round worm frequently used in biological studies, that were starved of other nutrients.

Whether hormesis is common or important is controversial – The idea that low dose effect is positive is questionable.

Regulatory agencies such as the Environmental Protection Agency (EPA), the Food and Drug Administration (FDA), and the Nuclear Regulatory Commission (NRC), traditionally use a linear model for carcinogens. In the linear model, the assumption is that there is no dosage that has no risk of causing cancer.

Manjiri Shinde
T. Y. B. Pharm

PHARMA ETHICS

Our lives mainly revolve around two things – Either 'Yes' or 'No'. The choices we make, or the path we choose for our self is determined by where we choose 'The Yes' or 'The No'. Sounds pretty simple, but these two words are the most challenging and complex to choose from and at the same time, the most critical.

Our Ethics come in the focus here. The choice of Yes and No is determined by our Ethics. What is right and what is wrong? What is fair and what is unjust? This cannot always be judged by written rules and regulations. There is a world outside the bondage of rules and regulations. A world where the decision of right and wrong lies in every individual's hand, separately and independently. Here the task is to choose the path which is right for oneself, but not at the expense of others.

The core role of a Pharmacist in the society is to make/provide the best for human health. At the same time, due to the changing times, success and personal gains are also very important. As Future Pharmacists, while we aim to bring about new evolutions and revolutions in this field, it is our responsibility to not forget our core role. To cheat our consumers would be to risk their lives. Maybe the short term personal gains seem a rosy picture, but when looked upon with a broader perspective, not only the consumers are cheated but we would be cheating ourselves too by not fulfilling our duties as healthcare professionals.

It is therefore rightly said, that rightfully earned is only what is rightfully ours.

"Education without values, as useful as it is, seems rather to make man a more clever devil"- C.S.Lewis

Yash Sancheti
Final Year

AUTOBIOGRAPHY OF A WONDER DRUG

Headache? Fever? Muscle pain? "Take two aspirin and call me in the morning."is a common phrase used by you people isn't it?. Hello! I am aspirin some of you know me by the name ecosprin, aspirin, disprin and many more .While I have been one of the most popular pharmaceutical agents of the past one hundred years, I am actually a synthetic derivative of the natural substance salicylic acid. So here is my journey so far.

My name aspirin, comes from the combination of acetyl; and the in Latin Spiraea, a biological genus of shrubs which is my origin and -in, which was a common ending for drug names at the time. I was discovered in 400 BC. In Greece, Hippocrates would recommend women Willow leaf tea to relieve the pain of childbirth. It wasn't until thousands of years later that people began to isolate me from the Willow trees. I was then known as salicylic acid. In 1763 Reverend Edward Stone of the Royal Society of London studied the effects of Willow-bark powder by treating patients suffering from ague fever, and approximately 100 years later the Scottish physician Thomas Maclagan studied the effects of Willow powder on patients suffering from acute rheumatism, demonstrating that it could relieve fever and joint inflammation. There was a boom in chemical synthesis in the nineteenth century, Friedrich Bayer and Company, a dye-manufacturing firm in Germany, began to shift its focus from the dye industry to pharmaceutical production and later, succeeded in making me in pure quantities. This quickly made me the most widely used drugs in the world. But soon health issues related to prolonged use of large doses surfaced like GI irritation, which could in turn lead to nausea, vomiting, bleeding, and ulcers. In 1895, to counteract such problems, Arthur Eichengrün, the head of chemical research at Bayer, assigned the task of developing a "better" version of me to one of the company's chemists, Felix Hoffmann ,he approached this task with personal interest: his father suffered from rheumatism and was taking salicylic acid form for it, but he could no longer ingest me without vomiting and hence he modified hydroxyl group on me so that your body could absorb me without significant gastrointestinal distress. Once ingested, I would be converted back to my original form in the body giving therapeutic benefits. My first tablet form appeared in 1900,

Pharma Explorer

creating an ease of use that quickly expanded my recognition among professionals, coupled with the fact that I was considerably safer and comparably less toxic. In 1915, I was available to the public without a prescription, making me arguably the first modern, synthetic, mass-market medicine and a household name around the world.

In the 1930s Bayer's patent expired making me a generic drug. My popularity declined after the development of my rivals paracetamol in 1956 and ibuprofen in 1962. John Vane along with others discovered my basic mechanism winning the Nobel Prize in medicine stating that I inhibit production of hormones called prostaglandins which are responsible for the formation of clots that leads to heart attacks and strokes, preventing that clotting from happening. While clinical trials and other studies from the 1960s to the 1980s established me as an anti-clotting agent that reduces the risk of clotting diseases thereby reviving my sales considerably in the last decades of the twentieth century, and they still remain strong in the twenty-first with widespread use as a preventive treatment for heart attacks and strokes. Not to brag about myself but lately people do consider me as a "wonder drug," as I have been useful in the treatment of a variety of conditions beyond fever and pain, including prevention of coronary artery disease, heart attack, and stroke. Recent studies suggest that I may also limit the rate of growth and the occurrence of certain types of cancer, including prostate, colon, pancreatic, and lung cancer.

While new drugs will continue to treat these and other diseases, I believe I am a timeless superstar with an aura, elegance and humility that no other drug can match.

Mural Quadros
T. Y. B. Pharm

BIOLOGICS ENTER TOP SELLING DRUGS LIST

The global pecking order of blockbuster drugs has undergone a huge shift with seven out of 10 top selling drugs now being biologics. Even the top selling drugs, Humira for rheumatoid arthritis, is a biologic therapy, having toppled Pfizer anti-cholesterol drug Lipitor, the top grossing blockbuster drug for many years. Biologics, also called biopharmaceuticals, have revolutionized treatment in chronic and serious illness like rheumatoid arthritis, cancers and diabetes, and nudged traditional drugs out of the top slots, with sales increasing year on year. As against these drugs which are chemically synthesized have witnessed plunging sales with only Gilead's Harvoni. Being the lone drug to have bettered sales over the last two years. Biologicals are complex molecules manufactured using live organisms as against conventional medicines which are based on chemical composition.

Product	2015 (\$m)
Humira	14,012
Enbrel	13,864
Remicade	8,697
Mabthera	7,115
Lantus	7,029
Avastin	6,751

The shift has been witnessed gradually over a decade reflecting the growing commercial dominance of injectable biotech drugs. Over a decade ago biologics comprised only 6% of the market with 40% of them being in various stages of clinical development. Earlier in 2010 Pfizer's anti-cholesterol drug Lipitor with global sales of nearly \$12 billion was the largest selling drug but sales started to drop after it lost patent protection. The same year five biologics had also entered the list of top selling drugs.

India too, the biosimilar market across various players is valued at \$300- \$400 million growing at a CAGR (Compound Annual Growth Rate) of 14%. Several biosimilars by DRL, Intqas, Biocon, Zydus and Emcure are

in the local market with therapies addressing oncology anti-inflammatory, anti-virus, while a small portion is exported. Domestic companies have fast tracked research in biosimilars to tap into the growing potential of biotech drugs globally. With the introduction of a new regulatory policy in India and increased affordability that biosimilars offer the domestic market is expected to grow at an accelerated pace and reach the target of \$40 billion by 2030 to command over 20% share in the global market a recent report.

Siddhi Naik
S. Y. B. Pharm

ETHICS IN BIOTECHNOLOGY

Ethics are set of rules or standards each individual has, to govern their behaviour and to help them take decisions to do 'the right thing'. Different people with different values have different ideas about 'the right thing' for the society. There is no clear right or wrong position in ethics, as a person's individual experience and view of the world often guides the way they make ethical choices. A person with a strong environmental outlook might see the use of genetically modified (GM) plants as unnatural and a person with a strong scientific-based view of the world will see this as an extension of the traditional plant breeding technology.

Modern biotechnology is focused to make a better future for humans but in this process many scientists fear that the humanity may be gaining too much power to handle or too little choice over its destiny. As the biotechnological revolution continues, the associated ethical issues need to be identified, analysed and imported into the policy-making responsibilities of government.

Biotechnology has grown from the simple beer making process to what it is now. Since the birth of dolly the cloned sheep, the public has raised concerns related to the limit of biotechnology. The mantra of 'if we can, we inevitably will' places troubling limits on our critical thinking and moral obligations. As the biotechnology research is moving ahead at a rapid pace both the scientists and the common man has had the opportunity of asking the ethical unwelcomed consequences of future fields of biotechnology.

The science of ethics requires us to justify our intentions and actions. Ethics is all about asking questions. After a new innovation in biotechnology along with being excited about it many questions are raised like, What are the social and personal impacts of this technology?, How is this going to affect humanity in the future?, Does a particular application of biotechnology protect or endanger human or individual rights? Are the benefits and burdens distributed fairly? Does biotechnology advance or prevent the common good? What are the risks, burdens, and benefits? On whom do they fall? How are they distributed? What is an acceptable way to achieve a given benefit? May we do anything, as long as the outcome is good on balance? Or are there limits on what we do, even in the name of human health? And, what—or whom—have we not thought about?

So how do we set a standard to help us identify what is ethical?

With the end of an experiment we get the results which are in the form of facts, we can use these facts in a variety of ways. So the application of these facts is governed by ethics. The route from facts to ethics can be travelled by using following approach.

Utilitarianism- Utilitarianism is an ethical theory that states that the best action is the one that maximizes utility. In the utilitarian view, an ethical action is the one that produces the balance of good over harm or measures the good effects created by the technology and compare it to the bad effects. The utilitarian might argue that the potential benefit of relieving human suffering outweighs the possible dangers and side effects of manipulating human genes and evolution.

Pharma Explorer

Rights- What makes human being more than just organism is the rights they can exercise freely. Human beings have the right to be not treated as just a mean to reach another end, even though the end is a very good one. Human beings have the right to be told the truth, the right to privacy, and the right not to be harmed. In this approach, actions that violate individual or human rights are wrong.

Justice- This approach revolves around the principle of "treating equals equally and unequals unequally." Consider two people running a 100 meter race. If both the runners reach the finish line at the same time then it is not fair that u honour one runner the gold medal unless the second runner has cheated.

The common good- In this approach we consider the benefit and interest of the whole society. This approach to ethics assumes a society comprising individuals whose own good is inextricably linked to the good of the community. Community members are bound by the pursuit of common values and goals.

A consideration of virtue- This approach considers the value of virtue each individual has. It assumes that certain ideals allow for the full development of our humanity. A person, who has inculcated these core ideals, or virtues, will do what is right when faced with an ethical choice.

These approaches and ideal questions that are supposed to be asked do not offer an easy and automatic solution to all ethical dilemmas. This framework of ethical approach helps us understand what is expected from us. Each of these approaches gives us key information about ethical options in a given situation but in the end we need to consider all the facts and options to take an appropriate decision in a given dilemma.

Maithili S. Pokle
F.Y.B.Pharm

FIXED DOSE COMBINATIONS

What are fixed dose Combinations?

A combination drug is a fixed dose combination (FDC) that includes two or more active pharmaceutical ingredients combined in a single dosage form, which is manufactured and distributed in fixed doses.

Advantages of fixed dose combinations:

Improved medication compliance by reducing the pill burden of patients .Note that pill burden is not only the number of pills needing to be taken, but also the associated burdens such as keeping track of several medications, understanding their various instructions

Disadvantages of fixed dose combinations:

If an adverse drug reaction occurs from using an FDC, it may be difficult to identify the active ingredient responsible for causing the reaction. This problem might be alleviated by starting the medications individually and monitoring for reactions, and then switching to an FDC when no problems have been observed

Why are FDCs banned in India?

1. Patient may not actually need those many drugs, thus he is subjected to additional side effects.
2. Some drug doses have to be individualized based on patient's response. You cannot do that if you're using FDCs.
3. Some companies have been selling FDCs in India under this pretext without consulting the central government, like the cefixime-azithromycin combination, which has already been banned in the UK.
4. These non-essential FDCs thus do more harm than good by encouraging irrational and indiscriminate prescribing of more drugs than needed.

How were the drugs banned?

1. On March 10, 2016, the Indian Government banned around 330 "irrational" fixed-dose combination drugs (FDCs) with immediate effect. FDCs are products that contain two or more active drugs in a fixed-dose ratio, and are

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useful for minimizing pill burden and lowering cost. However, FDCs should ideally contain constituents that act via different mechanisms and do not cause additive toxic effects. An FDC is described as irrational if these conditions are not met

2.63 (19%) of the 330 banned FDCs are antibiotics. Antibiotic resistance is of increasing concern worldwide, but initiatives to curtail inappropriate use have had little success. Studies of several antibiotic combinations, such as meropenem and sulbactam, have reported no additional advantage over their individual constituents, and have been reported to cause toxic reactions and promote resistance. 118 antibiotic FDCs are available in the Indian market, 80 (68%) of which are not registered with the Central Drugs Standard Control Organization.

Why was the ban wrong?

Justice Rajiv Sahai Endlaw allowed 454 petitions moved by various pharma and healthcare majors such as Pfizer, Glenmark, Procter and Gamble and Cipla, who challenged the government's ban on FDCs, saying the decision was taken by the Centre without following procedure prescribed in the Drugs and Cosmetics Act. The bench noted that the government had not consulted the Drugs Technical Advisory Board or the Drugs Consultative Committee but had acted on the advice of a 'technical committee', which, they said, violated the provisions of the Drugs and Cosmetics Act.

Companies against the ban:

In its argument, Pfizer said that its Corex syrup had been granted approval by the Drug Controller in 1995, which implied that there was “therapeutic justification” for the ingredients, and said that a non-statutory committee could not have withdrawn the approval without even conducting tests. The pharma companies also argued that the ban order was passed without considering clinical data and was termed as “absurd”. The government claimed that it took the decision to ban FDCs on the ground that safer alternatives were available.

Government defense:

The government said that the lack of approval for FDCs were a secondary issue and the primary focus was that they “lacked safety and efficacy” and thus, “ban was the only answer”. It also argued that these FDC medicines are “new drugs” and require licenses from the Drugs Controller General of India (DCGI), not the state drugs licensing authorities.

Past references:

Independent studies across the world have pointed out that many of these combinations do not have any advantage over the individual drugs. A study in the Indian Journal of Pharmacology in 2010 found that the “nimesulide and paracetamol combination offers no advantage over nimesulide alone or paracetamol alone, either in terms of degree of analgesia or onset of action.” There was also a parliamentary Standing Committee report that called for a “clear, transparent policy” for approving FDCs.

What happens now?

The quashing of the notification does not imply that the drugs will now be available in the market. The Centre may challenge the judgment in the Supreme Court or take the steps prescribed under the Drugs Act. Also, the Supreme Court is in the process of hearing a plea filed by the Central government to transfer all cases challenging the March 10 notification before itself — pharma companies had challenged the ban before the Delhi, Chennai and Bangalore high courts.

Examples (Banned fixed dose combination)-

- 1) fixed dose combination of Aceclofenac + Paracetamol + Rabepazole
- 2) fixed dose combination of Nimesulide + Diclofenac
- 3) fixed dose combination of Nimesulide + Cetirizine + Caffeine

Sahjesh Soni
F. Y. B. Pharm

SERENDIPITY STUPENDOUSLY

Serendipity is the occurrence and development of events by chance in a happy and beneficial way. Some of the greatest discoveries were unexpected. Serendipity makes you to think beyond expectations. Not everything is a work execution. Many of the house hold products to life changing innovations were unintended but advantageous outcomes. It is not merely stumbling on things but it is the ability to see significance to see and find value in it. Who doesn't know the discovery of gravity? It was indeed an incident of serendipity.

Like every story, a drug development success story isn't one where $2 + 2 = 4$. The common ingredients in successful drug development are a confluence of timing, knowledge, experience, hard work, access to capital and sheer luck. Pacemakers were not made because there was increase in the number of people suffering from heart diseases but it was made by the mis-assembly of a device. Wilson greatbatch was an American engineer and a lifelong inventor, was attempting to make a device that could record heartbeats but ending making a device which was sending out heartbeat like pulse. He realized it could be used as a pacemaker but smaller in size than the other models available. Antabuse also known as disulfuram, medication was approved by USFDA in 1951 for the treatment of alcoholism. It was discovered by accident in 1947 at The Royal Danish school of Pharmacy in Denmark by two researchers Eric Jacobsen and Jens Hald who were studying the compound for the possible use of parasitic infections in the stomach. They decided to take a small dose of disulfuram for the possible side effects. After several days they went to a cocktail party, Jacobsen and Hald became very sick after taking a few drinks. Each man experienced the same symptoms and concluded that the disulfuram, triggered by alcohol was responsible for the illness. They conducted a study and confirmed their findings.

Luck does not play a part in every discovery but that does not necessarily mean it doesn't have a part in it. It is about being curious and having a keen eye to see the different possibilities around you.

“One sometimes finds what one is not looking for.” – Sir Alexander Fleming

Leesha Jain
Sheryl Nazareth
Final Year

THE JOURNEY OF VACCINES

“Prevention is better than cure”, the sole concept of vaccination is based on this idea. Many deadly diseases like Small pox, Polio have already been eradicated by administering these wonder products. The first vaccine against small pox came into existence long back in 1796 when Edward Jenner followed up his observations that milkmaids who had previously caught cowpox (caused by a virus similar to smallpox) were never affected by smallpox. Thus, the smallpox vaccine was a live vaccine made from Vaccinia virus and was administered in lyophilized form using a bifurcated needle.

How often do we see bifurcated needles these days? Majority of the vaccines are administered using injections and some orally (e.g. Polio). They are either killed or attenuated to prevent any severe immunological reactions. Apart from these, we also have subunit vaccines which contains only the antigenic protein responsible for causing the infection. Owing to the advancements in the chimeric DNA technology, DNA and RNA vaccines have been developed in which the infectious gene containing plasmids are given as vaccines.

So yes, definitely vaccines have come a long way from the time they first came into being. But there's more to come. Scientists are carrying out research to develop Edible vaccines, the procedure being similar to that of producing transgenic plants using *Agrobacterium tumefaciens*. Well, maybe the day is not far when eating your favorite vegetable would immunize you against a dreadful disease!

Sanika Gad
T. Y. B. Pharm

EKADASI UPAVASAM AND NOBEL PRIZE

“Ekadasi upavasam” and this year's Nobel prize..
What is the connection?

This year's Nobel prize for medicine has gone to a Japanese scientist Dr. Yoshinori Ohsumi for his research on autophagy.

Autophagy means to “self eat”. In other words, the process by which the human body eats its own damaged cells and unused proteins. Autophagy is a natural process and also one which occurs in cases of starvation. The failure of autophagy is one of the main reasons for accumulation of damaged cells which eventually leads to various diseases in the body.

Autophagy is important to prevent/fight cancer and also plays a vital role in degrading and 'consuming' cells infected by bacteria and viruses.

We have to observe here that ancient India had recommended a practice of fasting ('Ekadasi upavasam') one day in a fortnight.

Many of us religiously follow this practice to this day as a penance for spiritual progress without any idea of the biological and therapeutic benefits of this practice.

Through this process of fasting induced autophagy, our body repairs its damaged and degenerated cells or use up the proteins of the damaged cells for its survival.

Whenever modern science conquers a frontier in any field, it somehow relates back to a quaint spiritual practice followed in India for generations.

A day in a fortnight spent in prayer and divine contemplation was a tonic for the mind and soul while the practice of fasting ensured that the body would heal and rejuvenate itself.

Clearly, our ancients believed in a process of holistic healing of both the body and the mind. They were able to connect, quite remarkably, the yearning for spiritual progress in a human being with the biological necessity of the human body.

Priyanka Solunkhe
T. Y. B. Pharm

A VENOMOUS HELP

Deadly predators are usually linked with strength, speed, time and power. But what if you are still a humbler predator, in search of fresh meat, without hands or feet, slow as a snail, small and crushable, fragile as a blob? You'll have to resort to subtler means like a chemical warfare - venoms!

Where did venoms come from, how did the killing delivery system develop, what happens inside the body of a venom victim, now investigators are in search of the world's most deadliest venomous animals, sampling their deadly venom, in a surprising quest, not just to see how they can kill us; but also how they can save us.

Toxins are actually proteins just like the proteins inside our body that guide our cells what to do, when to do it, how to do; except for the fact that they are mutated proteins. These mutated proteins demand our cells to do wrong things.

Antivenoms can cure venom infected victims. Production of antivenoms is similar to production of vaccines. Small amount of venom is injected in the body of an animal. Antibody produced by the animals are extracted, purified and injected in human body. They bind to the toxins and neutralize them.

Many venomous animals have been a boon for mankind. One among the many is Sydney's brown snake whose venom has been used in many cases of accident to stop the blood flow, by clotting the blood. The next in the long list of utilitarian venomous animals, is the Hila monster. The venom of this animal, belonging to the lizard family, has been

Expanding Horizons

said to heal the most talked – of disease – diabetes. Speaking of the Sydney's next famous noxious, but noteful arthropod—the Australian Funnel web spider, is famous for its ability to cure diabetes as well.

On the whimsical, sunny coasts of Sydney, under the crystal clear tempting caressing water, resides the aquatic animal whose venom can kill you in minutes. The two most dangerous aquatic animals, that release a venom 1,00,000 times more powerful than Morphine are the Porcupine Puffer fish and the Blue ringed Octopus. The incurable, smothering pain caused by Sphinxes disease can be only be reduced by these venoms.

Even the most modest and seemingly unharmed animals like frogs have the ability to kill adult human. Poisons of frogs like the Golden poison Frog and the Giant monkey frog have been associated with treatment of diseases.

Arizona houses a variety of scorpions. In the calm deserts of Arizona, lurking proudly in the darks, are the two most venomous scorpions the Hadari scorpion and the Death Stalker Scorpion. The venom of these arthropods is used for cleaning up cancer cells. Researcher from Alabama say that the cholortoxin poison when injected in brain, stops Bluma brain cancer.

Slow, helpless and weak; the only defense that the conshell textile has is, its sharp needle like beak. But don't let yourself be fooled by the gestures of this shell its venom can be the last thing you wanted to deal with. The strong venom is used to reduce cancer pain.

This field provides a array of research in pharmaceutical world. So next time you encounter these animals make sure you back off, but with all due respect.....!

Deepashri Rane
T. Y. B. Pharm

देवकण, हिगज बोसॉन

हिगज बोसॉन (गॉड पार्टिकल देवकण) नावाच्या कणांचे अस्तित्व शास्त्रज्ञ पीटर हिगज व एनग्लर्ट हयांनी १९६४ वर्तविले होते .हया कणांचे अस्तित्व सिद्ध करण्यासाठी फ्रान्स येथे एक प्रयोग करण्यात आला .त्यासाठी "LARGE HADRON COLLOIDER" तयार करण्यात आला . अनेक देशातील शास्त्रज्ञांना हया प्रयोगात सहभागी करून घेण्यात आले होते . भारतीयांना अभिमान वाटावा अशी बातमी म्हणजे या प्रयोगात टी .आय .एफ .आर .मधील दोन शास्त्रज्ञांनी भाग घेतला होता .हिगज कणांचे अस्तित्व सिद्ध करण्यासाठी जो डिटेक्टर तयार केला त्यात त्यांचे मोलाचे योगदान होते .हया दोन्ही शास्त्रज्ञांनी मराठी माध्यमांतून शिक्षण झाले होते . त्यांचे हया प्रयोगावरील मराठीतून केलेले व्याख्यान ऐकण्याचे भाग्य मला लाभले . त्या प्रयोगासाठी तयार करण्यात आलेल्या L.H.C. मध्ये प्रोटॉन्सना (धनभारीत कणांना) फार मोठी गती देण्यात येऊन ते एकमेकांवर विरुद्ध वाजूने आढळले गेले . यातून फार मोठी उर्जा निर्माण झाली व असंख्य अणू उर्जा कण (प्रोटॉनच्या विभाजनाने तयार झालेले कण) तयार झाले . हिगज बोसॉन कण हे यापैकी एक होत . त्यांचे अस्तित्व केवळ एक दशलक्ष सेकंद किंवा त्याहून कमी होते व त्यांच्या जीवन कालावधीत ते डिटेक्ट (नोंद करणे) आवश्यक होते . हयात शास्त्रज्ञांना ४ जुलै २०१२ व नंतर १३ मार्च २०१३ मधील प्रयोगात यश प्राप्त झाले व त्यांच्या आनंदाला पारावर राहिला नाही . अशाप्रकारे सुमारे ५० वर्षांपूर्वी घोषित केलेल्या बोसॉन हिगज हया कणाचा शोध लागला त्यांचे अस्तित्व सिद्ध झाले ते हि पीटर हिगज हे जिवंत असताना सिद्ध झाले आणि हया वददल पदार्थ विज्ञानाचे नोबल पारितोषिक पीटर हिगज व एनग्लर्ट हयांना ८ ऑक्टोबर २०१३ मध्ये देण्यात आले . हया प्रयोगाद्वारे सिद्ध झाले की प्रोटॉन (धनभारीत कण) हा तीन क्वार्क हया कणाचा बनला आहे . म्हणजेच प्रोटॉनचे हि विभाजन होऊ शकते सारांश क्वार्क हा पदार्थाचा मुलभूत घटक कण आहे . क्वार्क एकत्र येवून संयुक्त कण तयार होतात त्यांना हॅड्रॉन म्हणतात त्यामधील प्रोटॉन व न्युट्रॉन हे सर्वाधिक स्थिर असतात व हे अणू केंद्राचे घटक आहेत .

डॉ .उल्हास हडकर

NATIONALISM –ISSUES AND CHALLENGES

“BUT YOU KNOW AS WELL AS I, PATRIOTISM IS A WORD, AND ONE THAT GENERALLY COMES TO MEAN EITHER MY COUNTRY, RIGHT OR WRONG, WHICH IS INFAMOUS, OR MY COUNTRY IS ALWAYS RIGHT, WHICH IS IMBECILE”

Although nationalism is unique to the modern world, some of its elements can be traced throughout history. The roots of nationalism are probably to be found in the ancient Hebrews, who conceived of themselves as both a chosen people, i.e. a people as a whole superior to all other people and a people with a common cultural history. These feelings of ethnocentrism with are similar to nationalism gave way to much more universal identifications under the Roman Empire where a strong centralized monarchies were built and regional languages and art forms were evolved. The religious wars set nation against nation. Later through the theories of French Revolution it was been concluded that people should establish governments of equality to everyone and for the first time in history people would create a government in accordance with the nation's general will and nationalism found its first political expression.

Nations are formed as a medium between city-states and empires, and often assumes statehood in order to protect themselves. A nation is simply a particular type of society. Nationalism on the other hand is the possession of belief about nation, particularly the belief that the 'nation' is the only goal worthy of pursuit. In India, in the process of their struggle with colonialism people began discovering their unity, the growth of modern nationalism is intimately connected to the anti-colonial movement. The revival of glorious Indian heritage helped in regenerating a sense of self confidence and patriotism among the people. In India, nationalism was not the hand maid of a particular class, but the result of a consciousness among all the classes, which ultimately brought independence. This is however a better perspective in terms of nationalism but the actual problems faced are because nationalism rejects ethnic minorities, strives to racial segregation and is reluctant when it comes to relations with neighboring countries, in the twenty first century the concept of nationalism is based on Darwinism, where struggle is mandatory and there is only survival of the fittest. The world economic forum annually produces it list of its threats the world faces and the top of the list was state conflict. Nationalism directly results in an increase in international tensions and unpromising background for efforts at multilateral co operations on taxes and trade. Nationalism is also sometimes used to get a population to support wars where pride leads to wars. Nationalism is also known to be the significant cause of World War I. Also during World War II, British, French and American troops were also inspired by nationalism where they used nationalism as a toll to get whichever resources and help they required. The end of World War I saw the establishment of many independent nations. Most of the dangers arise when a charismatic leader misuses people in the name of nationalism. In the present state United States have issues regarding the Mexican border and the arrival of illegal immigrants. When Brexit and Donald Trump victory were observed it strengthened nationalism, which has resulted in rise in racism. The fear that immigrants are stealing jobs is growing in many countries. Nationalism gives rise to the feeling of superiority among the people of a particular nation over others. Discrimination, inequality go hand in hand when extreme nationalism is observed.

The growing amount of nationalism in today's world will have a damaging effect on humanity. The idea that people are created equal has significantly dissipated. It is truly said, that 'Manpower without unity is a not a strength unless it is harmonized and united properly, then it becomes a spiritual power.' Humans have formed kingship to aid the inheritance of genes, but these also enable cultural inheritance and also promote vitality. The ideas of nationalism are becoming tools in the hands of forces advocating capitalist development and striving to hinder the growth of political consciousness among the masses. Tendencies towards national egoism, National superiority and national exclusiveness are beginning to have a greater effect, both nationally and internationally. A point of consent is that people of different nations can perfectly cohabit, if one nation is not putting oneself over the other, if the national identity of a human is not emphasized as the key attribute and if the cultures of every nation can develop without impediment. But in the new millennium, nations and nationalism are here to stay.

Expanding Horizons

Did you know?

- Sphenopalatineganglioneuralgia is the scientific word for brain freeze.
- A new scientific method called toxineering turns venoms into pain killers.
- Scientists have developed a way of charging mobile phones using urine.
- Rain water contains Vitamin B12
- Sunflowers can be used to clean up radioactive waste
- There are 10 times more bacterial cells in your body than body cells.
- The smell of rain is caused by Actinomyces bacteria
- De-extinction is scientifically possible. Several viruses have been brought back.
- Continents split up at the same speed as finger nails grow
- The gene that gives you six fingers is a dominant trait
- Coca-Cola was originally invented by a Pharmacist named John Pemberton to give pain relief.
- The benefits of acupuncture were discovered when a soldier suffering from stiff shoulder was cured when an enemy arrow hit him
- As a result of captivity a shark switched to asexual reproduction giving birth without a mate.
- A new human organ called mesentery has been discovered in 2016
- The human brain (when awake) produces enough electricity to power a 40 watt light bulb for 24 hours
- Cockroaches can survive several weeks without a head

Inspirational Short Stories

A POUND OF BUTTER

There was a farmer who sold a pound of butter to the baker. One day the baker decided to weigh the butter to see if he was getting a pound and he found that he was not. This angered him and he took the farmer to court. The judge asked the farmer if he was using any measure. The farmer replied, "Your Honor, I am primitive. I don't have a proper measure, but I do have a scale." The judge asked, "Then how do you weigh the butter?" The farmer replied "Your Honor, long before the baker started buying butter from me, I have been buying a pound loaf of bread from him. Every day when the baker brings the bread, I put it on the scale and give him the same weight in butter. If anyone is to be blamed, it is the baker."

What is the moral of the story? We get back in life what we give to others. Whenever you take an action, ask yourself this question: Am I giving fair value for the wages or money I hope to make? Honesty and dishonesty become a habit. Some people practice dishonesty and can lie with a straight face. Others lie so much that they don't even know what the truth is anymore. But who are they deceiving? Themselves

BANK ACCOUNT

Imagine there is a bank, which credits your account each morning with Rs 86,400, carries over no balance from day to day, allows you to keep no cash balance, and every evening cancels whatever part of the amount you had failed to use during the day. What would you do? Draw out every penny, of course! Well, everyone has such a bank. Its name is Time.

Every morning, it credits you with 86,400 seconds. Every night it writes off, as lost, whatever of this you have failed to invest to good purpose. It carries over no balance. It allows no overdraft. Each day it opens a new account for you. Each night it burns the records of the day. If you fail to use the day's deposits, the loss is yours. There is no going back. There is no drawing against the "tomorrow."

Expanding Horizons

Therefore, there is never not enough time or too much time. Time management is decided by us alone and nobody else. It is never the case of us not having enough time to do things, but the case of whether we want to do it.

EVERYONE HAS A STORY IN LIFE

A 24 year old boy seeing out from the train's window shouted... "Dad, look the trees are going behind!" Dad smiled and a young couple sitting nearby, looked at the 24 year old's childish behavior with pity, suddenly he again exclaimed "Dad, look the clouds are running with us!" The couple couldn't resist and said to the old man "Why don't you take your son to a good doctor?" The old man smiled and said "I did and we are just coming from the hospital, my son was blind from birth, he just got his eyes today. Every single person on the planet has a story. Don't judge people before you truly know them. The truth might surprise you.

A DISH OF ICE CREAM

In the days when an ice cream sundae cost much less, a 10 year old boy entered a hotel coffee shop and sat at a table. A waitress put a glass of water in front of him. "How much is an ice cream sundae?" "50 cents," replied the waitress. The little boy pulled his hand out of his pocket and studied a number of coins in it. "How much is a dish of plain ice cream?" he inquired. Some people were now waiting for a table and the waitress was a bit impatient. "35 cents," she said brusquely. The little boy again counted the coins. "I'll have the plain ice cream," he said. The waitress brought the ice cream, put the bill on the table and walked away. The boy finished the ice cream, paid the cashier and departed. When the waitress came back, she began wiping down the table and then swallowed hard at what she saw. There, placed neatly beside the empty dish, were 15 cents – her tip.

Compiled by Editors

Laughter Therapy

Funny Chemistry Jokes

Making bad chemistry jokes because all the good ones Argon.

Biology - The only science where multiplication and division mean the same thing.

A Chemist's favourite chocolate? Ester eggs!

A Chemist's favourite plant? Stoichome-tree

When life gives you mold, make penicillin.

Bacteria: The only culture some people have

What do you call an acid with an attitude? A-mean-oh-acid

GUESS THE METIZEN

- 1) Mithaiwala of Final year
- 2) Teacher who knows Chemistry of Marathi
- 3) Bhai bhai of SY
- 4) Bahubali of Final Year
- 5) The Microscope Expert lab Assistant
- 6) Sultan of PJs from FY
- 7) The Snake Charmer final year
- 8) Forever unstable atom of TY
- 9) The Florescent Queen
- 10) Mr Photoshop of FY
- 11) The Stick Man
- 12) Laughing buddha of TY
- 13) Jadoo of FY
- 14) The one whose notes are always colourful



Answers
1) Rizwan Khan 2) Dr. Sonali Naik 3) Asavari Thakur 4) Aniket Narkar 5) Karbhari Sir
6) Sushmit Shetty 7) Nilesh Jadhav 8) Ashwini More 9) Shifa Surti 10) Vaidik Vora 11) Pranay Luniya
12) Shreya Sathe 13) Mahesh Sargar 14) Audumbar Deo

Laughter Therapy

CROSSWORD

P	A	R	A	C	E	T	A	M	O	L	A	C	E	G	I	K	M	O	Q	S	U	W	Y
O	M	K	I	G	T	E	C	A	Z	X	L	V	T	R	P	N	L	J	H	F	D	A	B
Q	S	U	W	Y	H	B	D	F	H	J	L	E	R	I	V	A	N	I	U	Q	A	S	P
S	L	K	M	N	A	H	N	B	G	T	R	F	V	C	D	E	W	S	X	Z	A	P	Q
T	O	P	U	L	M	D	Y	U	H	R	N	G	K	O	H	J	P	Y	J	G	J	I	T
R	P	O	I	U	B	Y	R	T	E	I	W	Q	N	Y	C	O	J	Y	F	J	I	R	I
E	L	K	J	H	U	G	P	F	M	F	D	I	S	A	Z	I	X	C	V	B	N	I	T
P	O	B	E	B	T	B	E	R	B	I	R	U	R	B	E	F	T	A	N	E	B	N	A
T	B	T	H	U	O	M	O	M	O	A	R	A	M	Y	R	A	U	R	A	R	M	Q	M
O	S	N	B	Y	L	F	T	E	F	P	Y	M	E	R	U	G	D	E	I	J	E	W	O
M	G	S	E	R	T	C	P	R	L	L	R	A	B	C	J	D	O	D	E	Z	T	E	X
Y	T	H	O	E	E	E	A	E	O	R	A	A	E	H	E	I	X	R	S	P	I	R	I
C	A	R	M	R	D	W	E	S	X	O	S	N	N	A	N	G	Y	I	D	F	O	N	F
I	G	C	E	B	O	N	R	T	A	S	E	A	D	O	U	I	C	D	H	O	D	T	E
N	Y	H	T	M	V	R	O	S	C	U	T	B	A	P	L	T	Y	I	G	I	I	Y	N
O	D	L	B	I	E	E	C	U	I	V	Y	E	Z	T	J	O	C	N	Z	Y	M	U	A
P	H	O	G	J	N	B	T	G	N	A	J	L	O	R	Y	X	L	A	P	E	E	I	L
E	B	R	Y	F	F	O	O	U	L	S	K	T	L	I	A	I	I	T	R	O	T	O	A
Y	T	O	F	F	G	R	M	A	Y	T	O	O	E	L	M	N	N	X	O	Y	H	P	P
F	H	Q	G	T	G	E	W	Y	A	A	L	M	H	Z	O	Y	E	P	O	C	I	L	R
Q	W	U	D	D	F	D	F	F	C	T	P	N	G	S	A	M	U	S	H	R	C	K	I
S	S	I	S	D	D	F	G	G	H	I	H	T	I	S	X	C	V	B	N	M	O	J	L
P	E	N	I	C	I	L	I	N	G	N	N	A	S	D	F	G	H	J	K	L	N	H	Q
V	C	X	Z	A	S	D	F	G	H	J	L	D	P	O	I	U	T	E	E	Q	E	H	W

1. PARACETAMOL
2. PROPRANOLOL
3. OFLOXACIN
4. MEBENDAZOLE
5. CHLOROQUIN
6. SAQUINAVIR
7. PENICILIN G

8. WARFARIN
9. DIGITOXIN
10. ISONIAZID
11. DIMETHICONE
12. ACTINOMYCIN D
13. ROSUVASTATIN
14. LEVOCITRIZINE

15. DOXYCYCLINE
16. METFORMIN
17. STREPTOMYCIN
18. ETHAMBUTOL
19. ASPIRIN
20. TAMOXIFEN
21. ENALAPRIL



Aniket Narkar (Final Year)



Aniket Narkar (Final Year)



Aniket Narkar (Final Year)



Aniket Narkar (Final Year)



Aniket Narkar (Final Year)

Shutterbugs



Kinnari Arte (T. Y. B. Pharm)



Ms.Vrushali Keer



Mohammed Asif (T. Y. B. Pharm)



Ashwini More (T. Y. B. Pharm)



Leesha Jain (Final Year)



Hemant Divekar (Final Year)

Shutterbugs



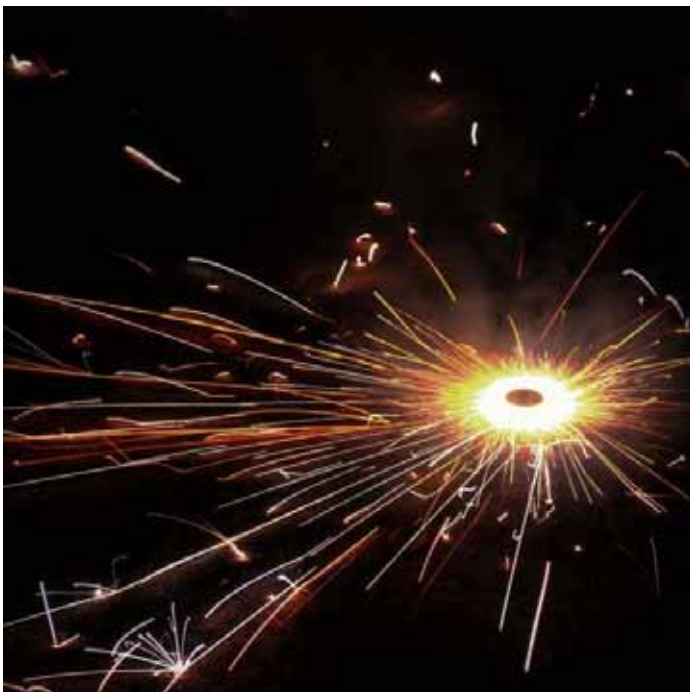
Samruddhi Kolapkar (Final Year)



Samruddhi Kolapkar (Final Year)



Samruddhi Kolapkar (Final Year)



Sanika Gad (T. Y. B. Pharm)



Nitesh Jaiswal (T. Y. B. Pharm)

Shutterbugs



Sushmit Shetty (F. Y. B. Pharm)



Priya Murugesan (S. Y. B. Pharm)

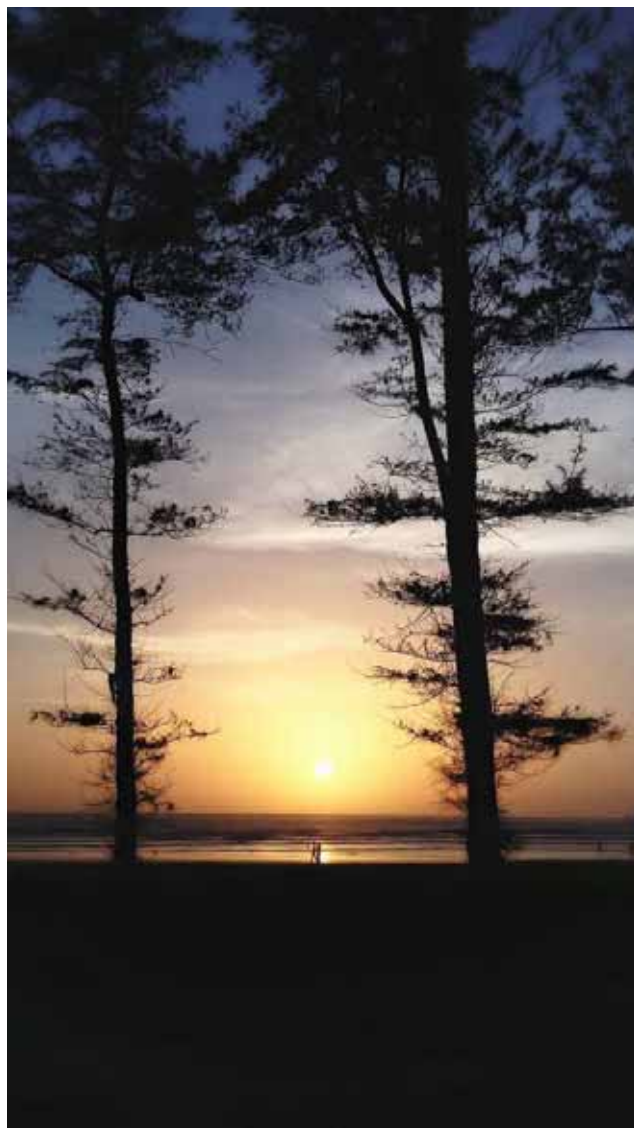


Priya Murugesan (S. Y. B. Pharm)

Shutterbugs



Yash Sancheti (Final Year)



Priyanka Todankar (T. Y. B. Pharm)

Dream Catchers



Ashwini More (T. Y. B. Pharm)



Ashwini More (T. Y. B. Pharm)



Ashwini More (T. Y. B. Pharm)

Dream Catchers



Dishita Mehta (F. Y. B. Pharm)



Chetna Gaikwad (F. Y. B. Pharm)

Dream Catchers



Divyata Gaikwad (S. Y. B. Pharm)



Divyata Gaikwad (S. Y. B. Pharm)



Divyata Gaikwad (S. Y. B. Pharm)

Dream Catchers



Rashmi Rathod (F. Y. B. Pharm)



Girija Pawge (S. Y. B. Pharm)

Dream Catchers



Kimaya Joshi (T. Y. B. Pharm)



Girija Pawge (S. Y. B. Pharm)



Kimaya Joshi (T. Y. B. Pharm)



Kajal Bhor (T. Y. B. Pharm)

Dream Catchers



Priyanka Todankar (T. Y. B. Pharm)



Sunaina Saha (S. Y. B. Pharm)



Samiksha Satvi (T. Y. B. Pharm)

Dream Catchers



Tanvi Tambat (T. Y. B. Pharm)



Tanvi Tambat (T. Y. B. Pharm)

Dream Catchers



Vyoma Gandhi (T. Y. B. Pharm)



Vyoma Gandhi (T. Y. B. Pharm)



Vyoma Gandhi (T. Y. B. Pharm)



Vinita Luniya (S. Y. B. Pharm)



Anita Chando (T. Y. B. Pharm)



Anita Chando (T. Y. B. Pharm)



Tanvi Tambat (T. Y. B. Pharm)

PaperWorks



T. Y. B. Pharm



T. Y. B. Pharm

PaperWorks



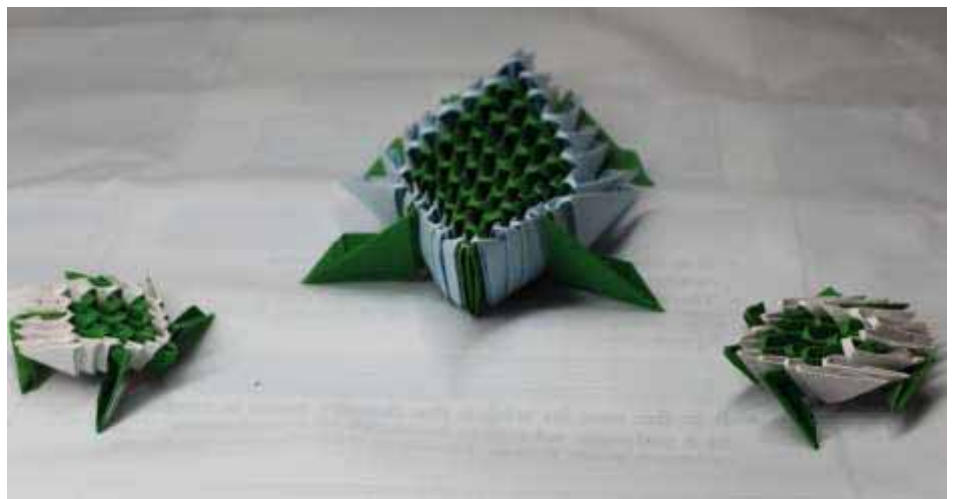
Mohammed Asif (T. Y. B. Pharm)



Mohammed Asif (T. Y. B. Pharm)



Mohammed Asif (T. Y. B. Pharm)



Mohammed Asif (T. Y. B. Pharm)

रंग |

रंग भिन्न भिन्न से

गुण भी भिन्न भिन्न से ॥१॥

लाल रंग दिल में जोश जगा जाता है |

नई उर्जा, नई शक्ति, प्रेम का अहसास लाता है ॥२॥

पीला रंग ताजगी, स्फूर्ति, उल्लास लाता है

सुरजमुखी और सरसों के फूल सा खिलखिलाता है ॥३॥

केसरिया रंग मंदीर की घंटी- सा झंकृत कर देता है

हमारा परमात्मा से एकता करा देता है ॥४॥

नीला रंग पानी और आकाश का प्रतिबिम्ब होता है

मन में गहराई और अनन्त आशाओं का प्रतिक होता है ॥५॥

जामुनी और बैंगनी बहुत सुन्दर रंग होते हैं

माहोल में उत्सव और हर्ष की निशानी होत है ॥६॥

पर, जब ये सारे रंग मिला दिए जाते हैं

सब अपनी प्रकृति छोड़ काले बन जाते हैं ॥७॥

काले की प्रकृति है वो प्रकाश को सोख लेता है

खुद भी अंधकार में और दूसरों को भी अंधकार देता है ॥८॥

हमको भी यदि दूसरे रंग, दूसरे व्यक्तित्व से मिलना है

अपना अस्तित्व और व्यक्तित्व बचाकर रखना है ॥९॥

सफेद रंग स्वच्छ, पवित्र प्रकाशमय होता है

दूसरों को भी पवित्र और प्रकाशित कर देता है ॥१०॥

सफेद रंग देखकर दिल को चैन आता है

मन अन्दर से शान्त और निर्मल हो जाता है ॥११॥

Dr. Abha Doshi

Principal - MET Institute of Pharmacy

“70^{mm} थिएटरात”

सूर्याच्या अंगणात आपण काळवंडलेले राहिलो

अंधारी फूले वेंवीत रोवून निर्वासित झालो ॥१॥

दगडी देवांची श्लाघ्यता करता शिव्या- शाप देता

आपलाच जीव विरघळून गेला ॥२॥

सनातनी दुःखे येऊन ठेपले आपल्यापर्यंत

70^{mm} थिएटरात आवडा गिळून गहिवरलो तोपर्यंत ॥३॥

ज्या पिढीचे आपण साक्षीदार आहोत

आजही डोळयातील अगणित पुरांचे दरवाजे बंदीस्तच आहेत ॥४॥

Bhushan Bansode (T. Y. B. Pharm)

अभ्यास

मनात येते दुपारी

अभ्यास करू रात्री

रात्री आपण अभ्यास करू

आता थोडी झोप घेऊ ॥१॥

जेवण करून पोट भरताच

डोळ्यांवर येते झोप

मग वाटते सकाळी उठून

अभ्यास करू खूप ॥२॥

डोळे चोळत सकाळी उठतोच

न्यूजपेपर हातात येतो

चहा विस्कीट खाईपर्यंत

अभ्यासावदल विसरून जातो ॥३॥

Divya Datir (T. Y. B. Pharm)

पिंजरा

संस्कृतीच्या पिंज-यातून उडून जा चिऊ

परंपरेच्या बंधनाला नको तू भिऊ

तुझेच हे आकाश आहे रे माऊली

तुच दिली जगा मायेची साऊली ॥१॥

भाकर बनवताना हाती तुझ्या लागले हजार चटके

तरी सुध्दा खात राहिलीस तू समाजाचे फटके

तुच दुर्गा, तुच काली, अन तुच आहेस सरस्वती

तुझ्याच पायी माथा टेकुनी जन पूढे येती ॥२॥

परक्याचे धन म्हटले जाते तुला स्वतःच्याच घरात
मग काम करायला पाठवतात तुला दुस-याच्या दारात

कोमल नाजुक स्वप्नांची वाग होते नष्ट

का, स्त्री च्या आयुष्यात जीवनभर कष्ट ॥३॥

परंपरेच्या पिंज-यातून सुटशील कशी

या रूढी परंपरांना आई तु पडशील फशी

तुझ्या दारी बांधले बंधनांचे तोरण

काम केवळ तुझे नाही मुले, नवरा, भात आणि वरण ॥४॥

लहानपणापासून तू आमुचे हात झालीस

कधी आमच्यासाठी दिव्यातली वात झालीस

तलवार घेऊन हाती केलेस देशाचे रक्षण

आता तरी जाग माते होतेय तुझे भक्षण ॥५॥

Deepashri Rane (T. Y. B. Pharm)

Poetic Souls

आई माझी

वास्तल्याचा सागर अन्मायेचा पाझर ||१||

आई माझी...

मन जेवढे मऊकष्ट तेवढेच अटळ

माझ्या भविष्यासाठी तिची धडपडण्याची तळमळ ||२||

आई माझी...

नसते कधी दुःख तिच्या चेह-यावर

तिच्यामुळे ताजेपणा माझ्या मनावर ||३||

आई माझी...

शक नाही, शंका नाही ती नाही करत गजर

पण माझ्यावर असते तिची करडी नजर ||४||

आई माझी...

शिस्तीबाबत असते ती खुप दक्ष

माझ्या कामांवर असते तिचे कडक लक्ष ||५||

आई माझी...

मला कसे जपावे याचे आहे तिच्याकडे तंत्र

ती आहे माझ्यासाठी यशाचा गुरुमंत्र ||६||

आई माझी...

Divya Datir (T. Y. B. Pharm)

Lost and found...

The past is a memory,

The present is a surprise,

The future is a mystery,

Of an unsolved calvary,

The days of past were a gift of togetherness,

The days of present are a gift of loneliness,

The days of future are what we beg for,

A heart skips a beat in the desert of emptiness,

Long searching for the voice of togetherness,

Lost in the reminiscence,

The search continues forever in hollowness,

Hoping to find a light in the darkness...

Aniket Narkar (Final Year)

A Beauty From The Past...

A beauty from the past,

Fading as the shadows cast,

The eyes searching down the path,

A journey filled with dark,

A soul so pure to shed the light,

As the darkness falls,

In a life so blind and deaf,

A walk down the road of pain,

Waits a soul searching for the light of yours...

Aniket Narkar (Final Year)

The Way Unknown...

The waves shall perish all the dreams I hold,

Into the misty galaxy lies a way unknown,

Holding deep secrets in my heart I walk,

Reaching the far corners where lies my destiny untold,

Walk of solitude it will be,

Journeys of millenia,

Towards that mystic voice I heard,

The voice of oneness where my dreams hold,

Lies inside me is a person who waits to be awakened,

To walk the path which has been foretold...

Aniket Narkar (Final Year)

THE PAW STORY

Do you know I have four feet??

But still, you're the only one I need.

I might be annoying at times,

And I know I commit innumerable juvenile crimes.

But I shamelessly expect you to forgive me,

Since my god gifted puppy face helps me.

One thing you must never forget though,

You always have a personal crying pillow.

Anushka Nadkarni (T. Y. B. Pharm)

Our Family

First Year B.Pharm.

College is a place where an individual truly becomes an adult. And at MET, the focus is not only on curricular but also on co and extracurricular activities. And improving personalities too. When teachers are vastly experienced, seniors are helpful and friends are loving, college isn't just a college. It's called a second home. And that is what has happened at MET. Teaching staff teaches you with passion when it comes to studies. Encourages and pushes you to participate in activities. And tries to make you a winner wherever possible. This has made our approach to our teachers very open and hesitation free. Lab assistants, library, store members, office members and other staff members have also been a helping hand. MET has been impressive when it comes to extracurricular activities, celebrating different days, etc. With our FY experience, we are looking forward to the next 3 years.



Second Year B.Pharm.



Our Family

Third Year B. Pharm.



Final Year B. Pharm.

A Journey of ups and downs. A Journey with great life lessons. A Journey to remember. This describes our time at M.E.T. Institute Of Pharmacy. This Journey might have reached its final destination, but the memories it has provided us with, will remain with us forever. Goodbyes are never easy, but they don't necessarily mean the end, it's just a new step into a new world. We hope to reach the zenith in whatever we choose to do and make this Institute proud.



Alumni

Home is not a place, it's a feeling. In many ways my experience at Mumbai Education Trust Institute Of Pharmacy relate to that proverb. As the work atmosphere created by all staff members and students is equivalent. Even as an alumna today, I have had the opportunity to discuss and learn industrial application with our professors and fellow alumnus. As a student, all four years brought in a lot of value addition alongside developing me into a competent professional. The best part about MET is the relation the professors share with the students. They haven't only taught me during lectures and practicals, but they have played a significant role in helping me discover and nurture my talent. I will forever and always be extremely grateful to have had an opportunity to call myself as a METIZEN.

- Munira Loliwala

In 2014 -15-16 our students went to

Purdue university
Columbia university
University of California Los Angeles
Carnegie Mellon university
Georgia institute of technology
University of California, Davis
University of California, Irvine
University of Colorado Boulder
University of Michigan Ann Arbor
University of Southern California
University of Texas at Austin



INDIA'S FIRST

GRE®

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750/800

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Our Achievers



Ashwini Nene
GRE Score : 340/340



Pranav Kundra
GRE Score : 338/340



Shreyas Mundhra
GRE Score : 336/340



Karan Lala
GRE Score : 332/340



Vignesh Venugopal
GRE Score : 330/340



Akanshi Mody
GRE Score : 330/340



Founded in 1997 by Prof. Ganesh Kohli, KIC Education offers counseling (admission counseling for graduate and undergraduate programs) and coaching programs **SAT®**, **ACT®**, **PSAT®**, **GRE®**, **GMAT®**, **TOEFL®**, **IELTS®** to students aspiring to study abroad. By training over 5000 students, in the past two decades, KIC Education has enabled them to realize their dream to study abroad in recognized International universities.

India's Premier GRE Coaching Institute
offering a personalized **Blended-Learning** program to students



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19+ Years of Successful Coaching & Admission Counselling Experience!

Our **GRE Program** is designed to help the student crack the test. We follow a unique blended approach to teaching by combining the goodness of classroom-based, instructor-led teaching with the flexibility and personalization of online support and counselor availability for every student.

The Gold Standard - GRE

"Survey finds that 70% of American universities pinpoint a low GRE score as "the biggest application killer," confirming that applicants still need to submit a strong score overall." The Graduate Record Examination (GRE) is a standardized examination that is used by American and many other international universities, to assess applicants around the world for a Masters or a Ph.d program.

Admissions Committees place a high value on GRE scores as it provides an easy benchmark to compare candidates against one another and against the school's student profile. GRE's validation assessments are shared with universities directly by ETS (the governing body)

When to Take GRE

A lot of time, students do not take into account the time required to prepare for the test. It is recommended that Masters and PhD. program hopefuls take the GRE about a year before they plan to enroll and begin preparing for the same about five to six months beforehand. 2nd and 3rd years of engineering are apt times to prepare and take this test as the scores are valid for 5 years.

It is suggested that you take the longest, most comprehensive course available with good instructors. A good teacher can reveal subtleties about the test that aren't written into any book, and just having the structure of a class will force you to work harder than you would if you chose to study on your own.

Reflections

Nostalgic Memories



Reflections



Reflections



MET UTSAV 2017 - A GLIMPSE



MET UTSAV 2017 - A GLIMPSE



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THE MET LEAGUE OF COLLEGES
MET
AS SHARP AS YOU CAN GET