



# GNIPST BULLETIN 2014

18<sup>th</sup> July, 2014 Volume No.: 35 Issue No.: 03

## Vision

TO REACH THE PINNACLE OF GLORY AS A CENTRE OF EXCELLENCE IN THE FIELD OF PHARMACEUTICAL AND BIOLOGICAL SCIENCES BY KNOWLEDGE BASED LEARNING AND PRACTICE

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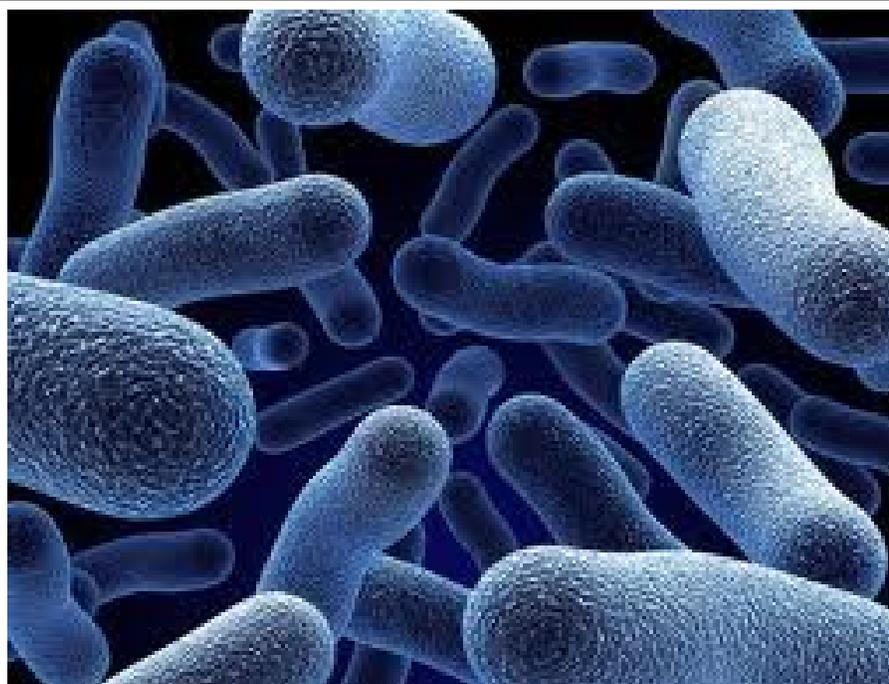
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**<mailto:gnipstbulletin@gmail.com>**



**GURU NANAK INSTITUTE OF PHARMACEUTICAL  
SCIENCE AND TECHNOLOGY**

**Website: <http://gnipst.ac.in>**



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## MESSAGE FROM PRINCIPAL



*"It can happen. It does happen.  
But it can't happen if you quit."* Lauren Dane.

*'We are what we repeatedly do.  
Excellence then is not an act, but a habit.'* Aristotle

It gives me immense pleasure to pen a few words for our e-bulletin. At the onset I would like to thank the last year's editors and congratulate the newly selected editors for the current year.

Our first consideration is always in the best interest of the students. Our goal is to promote academic excellence and continuous improvement.

I believe that excellence in education is aided by creating a learning environment in which all learners are supported in maximizing their potential and talents. Education needs to focus on personalized learning and instruction, while promoting an education system that is impartial, universally accessible, and meeting the needs of all students.

It is of paramount importance that our learners have sufficient motivation and encouragement in order to achieve their aims. We are all very proud of you, our students, and your accomplishments and look forward to watching as you put your mark on the profession in the years ahead.

The call of the time is to progress, not merely to move ahead. Our progressive Management is looking forward and wants our Institute to flourish as a Post Graduate Institute of Excellence. Steps are taken in this direction and fruits of these efforts will be received by our students in the near future. Our Teachers are committed and dedicated for the development of the institution by imparting their knowledge and play the role of facilitator as well as role model to our students.

The Pharmacy profession is thriving with a multitude of possibilities, opportunities and positive challenges. At Guru Nanak Institute of Pharmaceutical Science and Technology, our focus is on holistic needs of our students.

I am confident that the students of GNIPST will recognize all the possibilities, take full advantage of the opportunities and meet the challenges with purpose and determination.

Excellence in Education is not a final destination, it is a continuous walk. I welcome you to join us on this path.

My best wishes to all.

Dr. A. Sengupta

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EDITOR	MS. JEENATARA BEGUM
ASSOCIATE EDITOR	MR. DIPANJAN MANDAL

## HISTORICAL ARTICLE

### **Pharmacy in Ancient Babylonia:**

From beginnings as remote and simple as these came the proud profession of Pharmacy. Its development parallels that of man. Ancient man learned from instinct, from observation of birds and beasts. Cool water, a leaf, dirt, or mud was his first soothing application. By trial, he learned which served him best. Eventually, he applied his knowledge for the benefit of others.

Babylon, jewel of ancient Mesopotamia, often called the cradle of civilization, provides the earliest known record of practice of the art of the apothecary. Practitioners of healing of this era (about 2600 B.C.) were priest, pharmacist and physician, all in one. Medical texts on clay tablets record first the symptoms of illness, the prescription and directions for compounding, then an invocation to the gods. Ancient Babylonian methods find counterpart in today's modern pharmaceutical, medical, and spiritual care of the sick.

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## NEWS UPDATE

### △ **Immune systems fails to kill HIV: (18<sup>th</sup> July, 2014)**

Our immune system contains CD8<sup>+</sup> T cells which protect us from various diseases such as cancer and viruses. Some of them are specifically tasked with killing cells infected with the HIV virus – and researchers have for the first time identified a key explanation for why these cells are unsuccessful in their task. In simple terms, the immune system's ignition keys have not been turned all the way to the start position, which would enable the CD8<sup>+</sup> T cells to kill the cells infected with HIV.

### △ **Measuring the number of protein molecules inside cells: (18<sup>th</sup> July, 2014)**

The identification of the genes and proteins involved in a biological process, as well as the way they interact, are essential for the understanding of that process. However, often little is known about the dimensions of molecular biological structures. Knowing how many molecules make up a structure and are required for its function are essential for our understanding of biological mechanisms, yet poses a difficult challenge. Now, in a breakthrough study, researchers were able to measure the amount of protein molecules in living human cells required to form the centromere.

### △ **Weight management program also reduces depression among black women: (18<sup>th</sup> July, 2014)**

An intervention program aimed at helping obese women maintain their weight without adding pounds also significantly reduced

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depression in nearly half the participants, according to a new study. The study cites past research showing that women are twice as likely as men to suffer from depression, and more than one in seven black women will suffer major depression.

△ **'Support' cells in brain play important role in Down syndrome: (18<sup>th</sup> July, 2014)**

A group of cells in the brain has been identified by researchers who say that it plays an important role in the abnormal neuron development in Down syndrome. After developing a new model for studying the syndrome using patient-derived stem cells, the scientists also found that applying an inexpensive antibiotic to the cells appears to correct many abnormalities in the interaction between the cells and developing neurons.

△ **Random nature of metastasis revealed by physicists: (17<sup>th</sup> July, 2014)**

The spreading of a cancerous tumor from one part of the body to another may occur through pure chance instead of key genetic mutations, a new study has shown. Physicists have used a statistical model to show that the formation of a new secondary tumor -- commonly known as a metastasis -- could just as likely derive from "common" cancer cells that circulate in the bloodstream, as from "specialist" cancer cells.

△ **Bowel cancer breakthrough may benefit thousands of patients: (17<sup>th</sup> July, 2014)**

A significant breakthrough has been made that may benefit patients with bowel cancer. Researchers have discovered how two genes cause bowel cancer cells to become resistant to treatments used against the disease. The activity of the two genes, called MEK

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and MET, was uncovered when the researchers looked at all the different pathways and interactions taking place in bowel cancer cells.

### △ **Causes of death shifting in people with HIV: (17<sup>th</sup> July, 2014)**

HIV-positive adults in high income countries face a substantially reduced risk of death from AIDS-related causes, cardiovascular disease, and liver disease compared with a decade ago, according to a large international study. Although deaths from most causes declined over the study period, there was no reduction in death rates from non-AIDS cancers which remained stable over time (1.6 deaths per 1000 years 1999-2000 to 2.1 in 2009-2011). Non-AIDS cancers are now the leading cause of non-AIDS deaths in people with HIV, accounting for 23% of all deaths.

### △ **Microbial communities in cheese: (17<sup>th</sup> July, 2014)**

After studying 137 varieties of cheese collected in 10 different countries, researchers have been able to identify three general types of microbial communities that live on cheese, opening the door to using each as a 'model' community for the study of whether and how various microbes and fungi compete or cooperate as they form communities, what molecules may be involved in the process and what mechanisms may be involved.

### △ **Discovery may make it easier to develop life-saving stem cells: (17<sup>th</sup> July, 2014)**

Not unlike looking for the proverbial needle in a haystack, a team of researchers has found a gene that could be key to the development of stem cells -- cells that can potentially save millions

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of lives by morphing into practically any cell in the body. The gene, known as ASF1A, is at least one of the genes responsible for the mechanism of cellular reprogramming, a phenomenon that can turn one cell type into another, which is key to the making of stem cells.

### △ **Personalized approach enhances communication skills in children with autism: (17<sup>th</sup> July, 2014)**

The communication skills of minimally verbal children with autism can be greatly improved through personalized interventions that are combined with the use of computer tablets, researchers report. The three-year study examined different approaches to improving communication abilities among children with autism spectrum disorder and minimal verbal skills. Approximately 30 percent of children with ASD overall remain minimally verbal even after years of intervention.

For detail mail to [editor](#)

### **KNOWLEDGE BASED ARTICLE**

### **BIOFILM**

A biofilm is an assemblage of microbial cells that is irreversibly associated (not removed by gentle rinsing) with a surface and enclosed in a matrix of primarily polysaccharide material. Noncellular materials such as mineral crystals, corrosion particles, clay or silt particles, or blood components, depending on the environment in which the biofilm has developed, may also be found in the biofilm matrix. Biofilm-associated organisms also differ from their planktonic (freely suspended) counterparts with respect to the genes that are transcribed. Biofilms may form on a

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wide variety of surfaces, including living tissues, indwelling medical devices, industrial or potable water system piping, or natural aquatic systems.

**Biofilm structure:**

### **Extracellular Polymeric Substances**

Biofilms are composed primarily of microbial cells and extracellular polymeric substances or EPS. EPS may account for 50% to 90% of the total organic carbon of biofilms and can be considered the primary matrix material of the biofilm. EPS may vary in chemical and physical properties, but it is primarily composed of polysaccharides. Some of these polysaccharides are neutral or polyanionic, as is the case for the EPS of gram-negative bacteria. The presence of uronic acids (such as D-glucuronic, D-galacturonic, and mannuronic acids) or ketal-linked pyruvates confers the anionic property. This property is important because it allows association of divalent cations such as calcium and magnesium, which have been shown to cross-link with the polymer strands and provide greater binding force in a developed biofilm. In the case of some gram-positive bacteria, such as the staphylococci, the chemical composition of EPS may be quite different and may be primarily cationic. EPS is also highly hydrated because it can incorporate large amounts of water into its structure by hydrogen bonding. EPS may be hydrophobic, although most types of EPS are both hydrophilic and hydrophobic. EPS may also vary in its solubility. Sutherland noted two important properties of EPS that may have a marked effect on the biofilm. First, the composition and structure of the polysaccharides determine their primary conformation. For example, many bacterial EPS possess backbone structures that contain 1,3- or 1,4- $\beta$ -linked hexose residues and tend to be more rigid, less deformable, and in certain cases poorly soluble or insoluble. Other EPS molecules may be readily soluble in water. Second, the EPS of biofilms is not generally uniform but may vary

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spatially and temporally. Different organisms produce differing amounts of EPS and that the amount of EPS increases with age of the biofilm. EPS may associate with metal ions, divalent cations, other macromolecules (such as proteins, DNA, lipids, and even humic substances). EPS production is known to be affected by nutrient status of the growth medium; excess available carbon and limitation of nitrogen, potassium, or phosphate promote EPS synthesis. Slow bacterial growth will also enhance EPS production. Because EPS is highly hydrated, it prevents desiccation in some natural biofilms. EPS may also contribute to the antimicrobial resistance properties of biofilms by impeding the mass transport of antibiotics through the biofilm, probably by binding directly to these agents.

The basic structural unit of the biofilm is the microcolony. Proximity of cells within the microcolony (or between microcolonies) provides an ideal environment for creation of nutrient gradients, exchange of genes, and quorum sensing. Since microcolonies may be composed of multiple species, the cycling of various nutrients (e.g., nitrogen, sulfur, and carbon) through redox reactions can readily occur in aquatic and soil biofilms.

### Gene Transfer

Biofilms provide an ideal niche for the exchange of extrachromosomal DNA (plasmids). Conjugation (the mechanism of plasmid transfer) occurs at a greater rate between cells in biofilms than between planktonic cells. Plasmid-carrying strains have also been shown to transfer plasmids to recipient organisms, resulting in biofilm formation; without plasmids these same organisms produce only microcolonies without any further development. The probable reason for enhanced conjugation is that the biofilm environment provides minimal shear and closer cell-to-cell contact. Since plasmids may encode for resistance to multiple antimicrobial agents, biofilm association also provides a mechanism for selecting for, and promoting the spread of, bacterial resistance to antimicrobial agents.

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## Quorum Sensing

Cell-to-cell signaling has recently been demonstrated to play a role in cell attachment and detachment from biofilms. At sufficient population densities, these signals reach concentrations required for activation of genes involved in biofilm differentiation. Mutants unable to produce both signals (double mutant) were able to produce a biofilm, but unlike the wild type, their biofilms were much thinner, cells were more densely packed, and the typical biofilm architecture was lacking. In addition, these mutant biofilms were much more easily removed from surfaces by a surfactant treatment. Addition of homoserine lactone to the medium containing the mutant biofilms resulted in biofilms similar to the wild type with respect to structure and thickness.

## Interactions of Pathogenic Organisms

Several frank bacterial pathogens have been shown to associate with, and in some cases, actually grow in biofilms, including *Legionella pneumophila*, *S. aureus*, *Listeria monocytogenes*, *Campylobacter* spp., *Salmonella typhimurium*, *Vibrio cholerae*, and *Helicobacter pylori*. Although all these organisms have the ability to attach to surfaces and existing biofilms, most if not all appear incapable of extensive growth in the biofilm. This may be because of their fastidious growth requirements or because of their inability to compete with indigenous organisms. The mechanism of interaction and growth apparently varies with the pathogen, and at least for *L. pneumophila*, appears to require the presence of free-living protozoa to grow in the biofilm. Survival and growth of pathogenic organisms within biofilms might also be enhanced by the association and metabolic interactions with indigenous organisms. The picture of biofilms increasingly is one in which there is both heterogeneity and a constant flux, as this biological community adapts to changing environmental conditions and the composition of the community.

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## Prospectus of future research:

Research on microbial biofilms is proceeding on many fronts, with particular emphasis on elucidation of the genes specifically expressed by biofilm-associated organisms, evaluation of various control strategies (including medical devices treated with antimicrobial agents and antimicrobial locks) for either preventing or remediating biofilm colonization of medical devices, and development of new methods for assessing the efficacy of these treatments. Research should also focus on the role of biofilms in antimicrobial resistance, biofilms as a reservoir for pathogenic organisms, and the role of biofilms in chronic diseases. The field of microbiology has come to accept the universality of the biofilm phenotype. Researchers in the fields of clinical, food and water, and environmental microbiology have begun to investigate microbiologic processes from a biofilm perspective. As the pharmaceutical and health-care industries embrace this approach, novel strategies for biofilm prevention and control will undoubtedly emerge. The key to success may hinge upon a more complete understanding of what makes the biofilm phenotype so different from the planktonic phenotype.

### **DISEASE RELATED BREAKING NEWS**

#### **△ Polio in Equatorial Guinea: (17<sup>th</sup> July, 2014)**

As of 16 July 2014, Equatorial Guinea has reported a total of 5 wild poliovirus type 1 (WPV1) cases, with onset of paralysis between 28 January 2014 (first case) and 3 May 2014 (most recent case). Genetic sequencing indicated that the cases are linked to the ongoing outbreak in Cameroon. The country is therefore working to ensure that all residents and long-term visitors (of more than 4 weeks) who travel internationally receive a supplementary dose of

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polio vaccine between 4 weeks and 12 months prior to departure  
[.Read more](#)

### UPCOMING EVENTS

5<sup>th</sup> International Conference on Stem Cells and Cancer 2014,  
JNU Convention Centre, New Delhi, India from 8-10  
November.2014

### DRUGS UPDATES

**△ FDA approves Ruconest for Hereditary  
Angioedema: (17<sup>th</sup> July, 2014)**

The U.S. Food and Drug Administration yesterday approved Ruconest, the first recombinant C1-Esterase Inhibitor product for the treatment of acute attacks in adult and adolescent patients with hereditary angioedema (HAE). [Read more](#)

### CAMPUS NEWS

△ We congratulate the following M.Pharm. final year students who have made their positions in different pharmaceutical companies.

Anirban Banerjee (Emami Ltd.)

Mahender Roy (Stadmed private Ltd.)

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△ We congratulate the following B.Pharm. final year students for their success.

**Samadrita Mukherjee (Abbott India Ltd.)**

**Suman Sarkar (Tata Medical Centre-Apollo Pharmacy)**

**Satarupa Bhattacharya (admission in M.Pharm, Pharmaceutics, Jadavpur University)**

**Sandipan Sarkar (admission in M.Pharm, Bharati Vidyapeeth University, Pune)**

△ The following B.Pharm. final year students have qualified, GPAT-2014. We congratulate them all.

**Utsha Singha**

**Satarupa Bhattacharya**

**Sandipan Sarkar**

**Purbali Chakraborty**

△ Reminiscence, 2014(GNIPST Reunion) was held in College campus on 2<sup>nd</sup> February,2014.

△ 1<sup>st</sup> Annual Sports of GNIPST was held on 3<sup>rd</sup> February,2014 in College campus ground.

△ An industrial tour and biodiversity tour was conducted in Sikkim for B.Pharm and B.Sc. students under the supervision of Mr. Asis Bala, Ms. Jeentara Begum and Ms. Moumita Chowdhury.

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△ B.Pharm 3<sup>rd</sup> year won the GNIPST Football Champions trophy, 2013. B.Pharm 3<sup>rd</sup> year won the final match 1-0 against B.Pharm 2<sup>nd</sup> year. Deep Chakraborty was the only scorer of the final.

## STUDENTS' SECTION

### ❖ WHO CAN ANSWER FIRST????

- ✓ *'Journeys Are Made by the People You Travel With' is the slogan of which company?*
- ✓ *Which academic scoring tool was derived from red or red ink?*

#### Answer of Previous Issue's Questions:

A) Marcana stadium

B) Fear of pain

### *Identify the personality*



#### Answer of Previous Issue's Image:

Jules rimet

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- *Send your thoughts/ Quiz/Puzzles/games/write-ups or any other contributions for Students' Section & answers of this Section at [gnipstbulletin@gmail.com](mailto:gnipstbulletin@gmail.com)*

#### EDITOR'S NOTE

It is a great pleasure for me to publish the 3<sup>rd</sup> issue of 35<sup>th</sup> Volume of **GNIPST BULLETIN**. All the followers of GNIPST BULLETIN are able to avail the bulletin through *facebook account 'GNIPST bulletin'*

I am very much thankful to all the GNIPST members and readers who are giving their valuable comments, encouragements and supports.

I am also thankful to **Dr. Abhijit Sengupta**, Director of GNIPST for his valuable advice and encouragement. Special thanks to **Dr. Prerona Saha**, **Mr. Debabrata Ghosh Dastidar** and **Mr. Soumya Bhattacharya** for their kind co-operation and technical supports. Thank you **Mr. Soumya Bhattacharya** for the questionnaires of the student section. An important part of the improvement of the bulletin is the contribution of the readers. You are invited to send in your write ups, notes, critiques or any kind of contribution for the forthcoming special and regular issue.

#### ARCHIVE

△ Students of GNIPST organized pre puja celebration programme, '**Saaranya**' on 7<sup>th</sup> October, 2013 in college Auditorium.

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△ GNIPST organized a **garment distribution programme** on 28<sup>th</sup> September, 2013 at Dakshineswar Kali Temple and Adyapith, Kolkata. On this remarkable event about hundred people have received garments. More than hundred students and most of the faculties participated on that day with lot of enthusiasm.

△ GNIPST celebrated **World Heart Day (29<sup>th</sup> September)** and **Pharmacist's Day (25<sup>th</sup> September)** on 25<sup>th</sup> and 26<sup>th</sup> September, 2013 in GNIPST Auditorium. A seminar on 'Violence against woman' and 'female foeticide' was held on GNIPST Auditorium on 25<sup>th</sup> September organized by JABALA Action Research Organization. On 26<sup>th</sup> September an intra-college Oral and Poster presentation competition related to World Pharmacist's day and Heart day was held in GNIPST. Ms. Purbali Chakraborty of B.Pharm 4<sup>th</sup> year won the first prize in Oral Presentation. The winner of Poster presentation was the group of Ms. Utsa Sinha, Mr. Koushik Saha and Mr. Niladri Banerjee (B.Pharm 4<sup>th</sup> year). A good number of students have participated in both the competition with their valuable views.

△ **Teacher's day** was celebrated on 5<sup>th</sup> September, 2013 by the students of GNIPST in GNIPST Auditorium.

△ ***Azalea (exotic flower)*** , the fresher welcome programme for newcomers of GNIPST in the session 2013-14 was held on 8<sup>th</sup> August in GNIPST Auditorium.

△ One day seminar cum teachers' development programme for school teachers on the theme of "Recent Trends of Life Sciences in Higher Education" organized by GNIPST held on

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29<sup>th</sup> June, 2013 at GNIPST auditorium. The programme was inaugurated by Prof . Asit Guha, Director of JIS Group, Mr. U.S. Mukherjee, Dy Director of JIS Group and Dr. Abhijit Sengupta, Director cum Principal of GNIPST with lamp lighting. The programme started with an opening song performed by the B.Pharm students of this institute. The seminar consists of a series of lectures, video presentations and poster session. On the pre lunch session 4 lectures were given by Dr. Lopamudra Dutta, Mr. Debabrata Ghosh Dastidar, Ms. Swati Nandy and Ms. Tamalika Chakraborty respectively. On their presentation the speakers enlighten the recent development of Pharmacy, Genetics and Microbiology and their correlation with Life Sciences. On the post lunch session, Ms. Saini Setua and Ms. Sanchari Bhattacharjee explained the recent development and career opportunities in Biotechnology and Hospital Management. The programme was concluded with valedictory session and certificate distribution.

About 50 Higher secondary school teachers from different schools of Kolkata and North& South 24 Parganas district of West Bengal participated in this programme. A good interactive session between participants and speakers was observed in the seminar. The seminar was a great success with the effort of faculties, staffs and students of our Institute. It was a unique discussion platform for school teachers and professional of the emerging and newer branches of Life Science.

- The general body meeting of APTI, Bengal Branch has been conducted at GNIPST on 15<sup>th</sup> June, 2012. The program started with a nice presentation by Dr. Pulok Kr. Mukherjee, School of

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Natural Products, JU on the skill to write a good manuscript for publication in impact journals. It was followed by nearly two hour long discussion among more than thirty participants on different aspects of pharmacy education. Five nonmember participants applied for membership on that very day.

- GNIPST is now approved by AICTE and affiliated to WBUT for conducting the two years' post graduate course (M.Pharm) in PHARMACOLOGY. The approved number of seat is 18.
- The number of seats in B.Pharm. has been increased from 60 to 120.
- AICTE has sanctioned a release of grant under Research Promotion Scheme (RPS) during the financial year 2012-13 to GNIPST as per the details below:
  - a. *Beneficiary Institution:* Guru Nanak Institution of Pharmaceutical Science & Technology.
  - b. *Principal Investigator:* Dr. Lopamudra Dutta.
  - c. *Grant-in-aid sanctioned:* Rs. 16,25000/- only
  - d. *Approved duration:* 3 years
  - e. *Title of the project:* Screening and identification of potential medicinal plant of Purulia & Bankura districts of West Bengal with respect to diseases such as diabetes, rheumatism, Jaundice, hypertension and developing biotechnological tools for enhancing bioactive molecules in these plants.