



# BioTrek

THE IBB BULLETIN

VOLUME 2 ISSUE 1, 2013

**IBB** Institute of  
Bioinformatics & Biotechnology

## INSIDE THIS ISSUE

- ◆ List of Publications
- ◆ Achievements
- ◆ Science articles
- ◆ Sciencetoon
- ◆ Events

## EDITORIAL BOARD

Dr. Dhara Sachdev

Dr. Bharat Joshi

Dr. Geetanjali Tomar

Dr. Aarti Dhepe

Dr. Navanath  
Kumbhar

““Reading, after a certain age, diverts the mind too much from its creative pursuits. Any man who reads too much and uses his own brain too little falls into lazy habits of thinking.”

– Albert Einstein

NANOSCIENOTOONS		SCIENTOON	
<p>Nanotechnology is likely to be particularly important in the developing world, because it involves little labour, land and maintenance. It is highly productive and inexpensive. It requires modest amount of materials and energy.</p>	<p>"Take it Sir! What ever you like. Veg.. Nonveg. Italian, Thai, Continental! Everything is in plenty. See carefully! It is NANOFOOD Sir."</p>	<p>The ORION is expected to carry 6 Astronauts and also carry Cargo to the Moon by 2020 A.D.</p>	<p>2220 A.D.</p> <p>"Oh! God, Men from Earth are coming with huge Cargo to make home here and to pollute me also."</p>

FRANCOIS KANDOLA

### Adaptive Immunity to Tumours

### SCIENTOON

Scientists in the USA have succeeded in developing the first synthetic cell entirely controlled by synthetic DNA. The researchers constructed bacterium genetic software and transplanted it into the host cell. The resulting microbe, looked and behaved like the species dictated by synthetic DNA. The paper published in Science, was hailed as scientific landmark but critics say that there are dangers posed by synthetic organisms.

"Hey! Get out of here. Only pure natural cells are allowed in this petri dish."

### SCIENTOON

#### Parasitology

Plants or animals which live in or on others and draw nutrients from them for their survival, are called Parasites and study of parasites is known as Parasitology

Department of PARASITOLOGY

"See these Scientist! They exploit us for publishing research papers, getting Ph.D., attending seminars, visiting abroad and still they call us parasite?"

# **CONTENT**

- 1. Publications by the IBB faculty (Jul. 2012- Feb. 2013)*
- 2. Student achievements*
- 3. Science articles by IBB students*
- 4. Scientoons by IBB students*
- 5. Events (Jul. 2012- Feb. 2013)*
- 6. Members of IBB*

**PUBLICATIONS BY**

**IBB FACULTY**

**(JUL. 2012- FEB. 2013)**

## Reviews

1. Sachdev D.P. and Cameotra S.S. (2013) Biosurfactants in Agriculture. *Applied Microbiology and Biotechnology* 97:1005–1016.
2. Ponnusamy S., Zinjarde S., Bhargava S., Kumar A.R. (2012) Role of *Curcuma longa*, a traditional ayurvedic medicinal plant, in diabetes. *TANG e-TANG* 2/ e31.

## Research Papers

1. Apte M., Girme G., Nair R., Bankar A., Kumar A.R., Zinjarde S. (2013) 3,4-dihydroxy-L-phenylalanine-derived melanin from *Yarrowia lipolytica* mediates the synthesis of silver and gold nanostructures. *Journal of Nanobiotechnology* 11:2.
2. Apte M., Girme G., Nair R., Bankar A., Kumar A.R., Zinjarde S. (2013) Melanin mediated synthesis of gold nanoparticles by *Yarrowia lipolytica*. *Materials Letters* 95:149–152.
3. Kamat S., Khot M., Zinjarde S, Kumar A.R., Gade W.N. (2013) Coupled production of single cell oil as a biodiesel feedstock, xylitol and xylanase from sugar cane bagasse in a biorefinery concept using fungi from the tropical mangrove wetlands. *Bioresource Technology* (<http://dx.doi.org/10.1016/j.biortech.2012.11.059>).
4. Rao A, Bankar A., Kumar A.R., Gosavi S., Zinjarde S. (2013) Yeast-Fe<sup>0</sup>/Fe<sub>3</sub>O<sub>4</sub> composite mediated removal of Cr (VI) from aqueous solutions. *J. Contaminant Hydrology* 146:63–73.
5. Rao A, Shinde A. Bankar A., Kumar A.R., Gosavi S., Zinjarde S. (2013) Phytofabrication of Fe<sup>0</sup>/Fe<sub>3</sub>O<sub>4</sub> composites for the removal of hexavalent chromium *Journal of Nanoengineering and Nanomanufacturing*. 3:1–7.
6. Rao A., Mahajan K., Bankar A., Rapole S., Kumar A.R., Gosavi S., Zinjarde S. (2013) Facile synthesis of size-tunable gold nanoparticles by pomegranate (*Punica granatum*) leaf extract: applications in arsenate sensing. *Materials Research Bulletin* 48: 1166–1173.
7. Nair V., Sambre D., Joshi S., Bankar A., Kumar A.R., Zinjarde S. (2013) Yeast-derived melanin mediated synthesis of gold nanoparticles. *Journal of Bionanoscience* 07:1–10.
8. Bankar A., Winey M., Prakash D., Kumar A.R., Gosavi S., Kapadnis B., Zinjarde S. Bioleaching of fly ash by the tropical marine yeast, *Yarrowia lipolytica* NCIM 3589. *Applied Biochemistry and Biotechnology Part A: Enzyme Engineering and Biotechnology*. 168:2205-2217.
9. Devendra H. Dusane, Sushovan Dam, Y. V. Nancharaiyah, Ameeta Ravi Kumar, Vayalam P. Venugopalan, Smita S. Zinjarde. (2012) Disruption of *Yarrowia lipolytica* biofilms by rhamnolipid biosurfactant. *Aquatic Biosystems*. 8:17.
10. Ghosh, S; Patil, S; Ahire, M; Kitture, R; Gurav, D,D; Jabgunde, A. M; Kale, S; Pardesi, K; Shinde, R; Bellare, J; Dhavale, D.D. and Chopade, B.A. (2012). *Gnidia glauca* flower extract mediated synthesis of gold nanoparticles and evaluation of its chemocatalytic potential. *Journal of Nanobiotechnology* 10:17.

11. Gouri Katre, Chirantan Joshi, Mahesh Khot, Smita Zinjarde and Ameeta Ravi Kumar (2012) Evaluation of Single Cell Oil (SCO) from a tropical marine yeast *Yarrowia lipolytica* 3589 as a potential feedstock for biodiesel. *AMB Express* 2:36.
12. Kitture, R; Ghosh, S; Kulkarni, P; Liu, X.L; Maity D; Patil, S; Jun, D; Dushing. Yogesh; Laware, S; Chopade, B.A. and Kale, S. N. (2012). Fe<sub>3</sub>O<sub>4</sub>-citrate-curcumin : Promising conjugates for superoxide scavenging, tumor suppression and cancer hyperthermia. *Journal of Applied Physics*. (doi : 10.1063/1.3696001).
13. Ponnusamy S, Zinjarde S., Bhargava S., Kumar A.R. (2012) Discovering Bisdemethoxycurcumin from *Curcuma longa* rhizome as a potent small molecule inhibitor of human pancreatic alpha-amylase, a target for type-2 diabetes. *Food Chemistry*. *Food Chemistry* 135:2638–2642.
14. Ponnusamy S., Zinjarde S., Bhargava S., Kulkarni-Kale U., Sawant S., Kumar A.R. (2012) Deciphering the inactivation of human pancreatic  $\alpha$ -amylase, an anti-diabetic target, by Bisdemethoxycurcumin, a small molecule inhibitor, isolated from *Curcuma longa*. *The Natural Product Journal* (In Press)
15. Sarate PJ, Tamhane VA, Kotkar HM, Ratnakaran N, Susan N, Gupta VS, Giri AP (2012) Developmental and digestive flexibilities in the midgut of a polyphagous pest, the cotton bollworm, *Helicoverpa armigera*. *Journal of Insect Science*12:42.
16. Tamhane VA, Dhaware D, Khandelwal N, Gupta VS, Giri AP, Panchagnula V (2012) Direct delivery of proteinase inhibitor incorporated in microemulsion for plant protection against insect pests. *Journal of Colloid and Interface Science*. 383: 177–183.

## **Book Chapter**

Tamhane VA, Mishra M, Mahajan N, Gupta VS and Giri AP (2012) Pin-II family Plant Proteinase Inhibitors: Structural and Functional Diversity .*Functional Plant Science and Biotechnology* 6 (Special Issue 1): 42-58 Global Science Books, Japan

**STUDENT**

**ACHIEVEMENTS**

**(JUL. 2012-FEB. 2013)**

### **Khurana Fellowship - 2012**

*Kaivalya Shevade* (VIII Sem)

### **CSIR- LS/JRF - June 2012**

*Swapnil Bhalke*- LS (X Sem)

*Anubhab Khan*- JRF (X Sem)

*Neha Kachewar*-LS (X Sem)

### **GATE (Life Science) - 2012**

*Paranjape Pradyumna*- First rank (X Sem)

### **Firodiya Karandak- Feb 2013**

*Revati Jadhav*- (II Sem) First Prize in Music category (Violin Playing)

**SCIENCE ARTICLES**

**BY**

**IBB STUDENTS**



# ARTICLE 1

*Designing Life: Should Babies Be Genetically Engineered?*

*-Jayendra Shinde (4<sup>th</sup> Year)*



The increasing power and accessibility of genetic technology may one day give parents the option of modifying their unborn children, in order to spare offspring from disease or, conceivably, make them tall, well muscled, intelligent or otherwise blessed with desirable traits.

Would this change mean empowering parents to give their children the best start possible? Or would it mean designer babies who could face unforeseen genetic problems? Experts debated on Wednesday evening (Feb. 13) whether prenatal engineering should be banned in the United States.

Humans have already genetically modified animals and crops, said Sheldon Krimsky, a philosopher at Tufts University, who argued in favor of a ban on the same for human babies. "But in the hundreds of thousands of trials that failed, we simply discarded the results of the unwanted crop or animal."

### **Unknown consequences**

Is this a model that society wants to apply to humans, making pinpoint genetic modifications, only to "discard the results when they don't work out?" Krinsky asked during an Intelligence Squared Debate held in Manhattan. He added that assuming no mistakes will occur would be sheer hubris. He and fellow ban proponent Lord Robert Winston, a professor of science and society and a fertility expert at Imperial College in London, focused on the uncertainty associated with the genetic underpinnings of traits. The two also addressed the consequences of manipulating genes.

"Even [for] height, one of the most heritable traits known, scientists have found at least 50 genes that account for only 2 to 3 percent of the variance in the samples," Krinsky said. "If you want a tall child, marry tall."

### **Mother Nature doesn't care**

Meanwhile, their opponents, who opposed the ban, talked of empowering parents to give their children a healthy life, even if it meant giving their offspring traits they themselves could not pass down. Lee Silver, a professor of molecular biology and public policy at Princeton University, urged the audience members to look at someone sitting next to them.

"That person and you differ at over 1 million locations in your DNA [deoxyribonucleic acid]. Most [of these variations] don't do anything," Silver said. "[But] even if you are a healthy adult, 100 [of these] can cause deadly childhood disease in your children or grandchildren."

"Mother Nature is a metaphor," he continued. "And it is a bad metaphor; because in reality inheritance is a game of craps ... It won't have to be that way in the future."

His fellow ban opponent, Nita Farahany, a professor of law and of genome sciences and policy at Duke University, attacked the idea that uncertainty should prevent the use of the technology, pointing out that reproduction, completely unaided by technology, involves much uncertainty.

"We are not going to ban natural sex," Farahany said.

### **Already possible**

A significant portion of the debate focused on a particular technology known as mitochondrial transfer. While the majority of DNA resides in a cell's nucleus, a small amount is contained in the cell's energy factories, called mitochondria. This mitochondrial DNA is passed from mother to child. In rare cases, women have mitochondrial defects they can pass down to their children, causing devastating problems or even death.

Mitochondrial transfer can replace such defective mitochondrial DNA with that from a donor, allowing affected mothers to avoid passing these defects on to their children, who then carry genetic material from three parents (the father and two mothers, including the donor).

Opponents of a ban argued it would prevent women with mitochondrial disorders from having healthy children of their own.

"I am not here to defend every type of genetic engineering. I don't think we are ready as a society to embrace it all," Farahany said. Rather than an outright ban, she and Silver argued for a middle ground, which would allow for certain procedures once they had been shown to be safe and effective. An emerging scientific consensus says mitochondrial transfer would fit into this category, she said.

Winston disagreed. "We know fiddling with mitochondrial DNA may make a massive difference to what happens to nuclear DNA. ... Abnormal children have been born as result of mitochondrial transfer," he said. "I think, in preventing one genetic disease, you are likely to cause another genetic disease."

Society should instead focus on the enormous importance of environmental influences in health, Winston said. "What we should be trying to do, rather than risk making abnormal babies, is to improve the environment so the DNA functions in the best possible ways."

Neither Farahany nor Silver argued in favor of allowing parents to modify their children to ensure other traits that are less medically necessary, but nevertheless desirable, such as higher intelligence or blue eyes.

"What I think parents care about most is promoting the health of their children," Silver said.

### **Leading to eugenics?**

Both sides referred to the specter of eugenics, an idea embraced by the Nazis, which holds that selective breeding can be used to improve the human race.

Winston and Krinsky pointed out that genetically modifying child to choose desirable traits evoked this approach. Meanwhile, Farahany noted that some of the worst abuses of government in recent history involved attempts to control reproduction. How would a ban on the genetic modification of children be enforced, she asked, would all babies be forcibly tested?

## ARTICLE 2

### “Embryology”: Bhagwata Uvach

- *Soham Jagtap, Ketakee Mahajan, Richa Yeshvekar, Pranjali Lokhande, Sayli Dongre (4<sup>th</sup> year)*

Indian philosophers have always asserted the wealth of Indian scientific knowledge without any convincing evidence. Over the last few years, revelations about advances in the field of surgery from Suhsrut Samhita and Charaka Samhita have astounded the world of modern medicine. In this article, we attempt to confirm the findings of Dr. Padmakar Vishnu Vartak from the Bhagwata Purana (approximately 3600 years old) with current knowledge in developmental biology.

०३३१००१० श्रीभगवानुवाच

०३३१००११ कर्मणा दैवनेत्रेण जन्तुर्देहोपपत्तये

०३३१००१२ स्त्रियाः प्रविष्ट उदरं पुंसो रेतःकणाश्रयः

One fine particle of Shukra conjugates with that of Shonit during copulation. The fine particles are sperm and ovum.

०३३१००२१ कललं त्वेकरात्रेण पञ्चरात्रेण बुद्बुदम्

०३३१००२२ दशाहेन तु कर्कन्धूः पेश्यण्डं वा ततः परम्

They termed the conjugate product as „Kalala“, modern science terms it as „Zygote“ or fertilized ovum. Bhagawata states that only in one night, which means 12 hours“ time, from the coitus, Kalala forms. The Mahabharata states that Kalala converts into a Budbuda, and according to the Bhagawata it happens in five nights. Budbuda means a bubble. Bhagawata mentions that after ten days Karkandhu is formed. Karkandhu means mulberry.

०३३१००३१ मासेन तु शिरो द्वाभ्यां बाह्वङ्ग्याद्यङ्गविग्रहः

The Bhagawata further states that at the end of one month the embryo develops head. Bhagawata says further that in the second month of pregnancy the upper and lower extremities and other parts of body develop. In the third month of pregnancy, Bhagawata says that nails, hairs, bones, and skin develop.

०३३१००३२ नखलोमास्थिचर्माणि लिङ्गच्छिद्रोद्भवस्त्रिभिः

In the Bhagawata that the Linga i.e. external genitalia are formed in the third month. According to science male genitalia take their final form at the end of the 3rd month and Utero-vaginal canal also forms by the third month. Anus is formed some time after the genitals.

०३३१००४१ चतुर्भिर्धातवः सप्त पञ्चभिः क्षुत्तृडुद्भवः

Bhagawata states that all the seven Dhatus are formed in the 4<sup>th</sup> month. Dhatus means the various tissues. Seven Dhatus are Rasa (tissue fluids), Rakta (blood), Snayu (muscles), Medha (fatty tissue), Asthi (bones), Majja (nervous tissue) and Shukra (reproductive tissue).

०३३१००४२ षड्भिर्जरायुणा वीतः कुक्षौ भ्राम्यति दक्षिणे

Bhagawata says that in the 6th month, the foetus goes on rotating in the womb, being surrounded by many coverings.

०३३१००५१ मातुर्जग्धान्नपानाद्यैरेधद्वातुरसम्मते

The Bhagawata states that the foetus grows by the nourishment taken from its mother.

०३३१००८२ आस्ते कृत्वा शिरः कुक्षौ भुग्नपृष्ठशिरोधरः

In the 8th stanza, Kapil Muni describes that the foetus lies with complete flexion of its back and head.

०३३१०२२० कपिल उवाच

०३३१०२२१ एवं कृतमतिर्गर्भे दशमास्यः स्तुवन्नृषिः

०३३१०२२२ सद्यः क्षिपत्यवाचीनं प्रसूत्यै सूतिमारुतः

In the 22<sup>nd</sup> stanza Kapil Muni states that in the 10th month (after the foetus has completed its “kruti”) the foetus is forced down by Prasooti Vayu, through the maternal passage.

०३३१०२३२ विनिष्क्रामति कृच्छ्रेण निरुच्छ्वासो हतस्मृतिः

During this process of delivery, the foetus gets lot of troubles and loses its past memory. during delivery foetal head is compressed to a great extent. It may compress the brain, which in turn, may cause loss of memory. It is a proved fact that compression and concussion of brain causes loss of memory.

It is indeed astonishing that Bhagwata written approximately 3600 years ago describes the developmental stages to such a meticulous accurate extent. It further kindles the curiosity regarding the research methodologies implemented by the sages of that era. Detailed research of other scriptures such as Mahabharata and Upanishadas might reveal more science hidden within spirituality.

**“Detailed knowledge about the past is necessary for predicting the future”**

# ARTICLE 3

## PERMACULTURE

- Ajinkya Deshpande (1<sup>st</sup> year)

The word permaculture stands for perma (nent agri) culture. The concept is based on research and observations from experiments conducted from 1920's to 1960's by ecologists such as Joseph Russell Smith, Stewart Brand, Masanobu Fukuoka, etc. In 1970's Bill Mollison and David Holmgren seeing the rapid deterioration of the Tasmanian agriculture systems due to industrialization, developed methods for agriculture which would amplify nature's produce. Holmgren explains this concept as "the primary agenda of the permaculture movement is to assist people to become more self-reliant through the design and development of productive and sustainable gardens and farms."

Permaculture is a lifestyle with a set of principles for design and ecology with a view for sustainable living. It is a concept which emphasizes on maximizing the output of the surroundings. The theory is developed on the concept that each and every element of nature has a specific place that would yield better results and nothing is allowed to go waste. Symbiotic relationships are encouraged. The end result is that instead of two plus two equals four, permaculture helps you in making two plus two equals five. Guidelines for the lifestyle include the permaculture Flower, the 3 Ethics and the 12 Principles. The scientifically specified designs are called as Guilds, Zones and the EDGE effect.

The guiding philosophy of permaculture includes the Ethics and the Principles. The Principles are like the pathway through a forest leading us forward while the Ethics are like the Sun providing us light and giving direction and purpose.

Ethics form the foundation on which the design system is based. They form the core of this lifestyle and what a permaculturist should always keep in mind.

1. **Earth Care** – The value of the resources we obtain from nature is directly dependant on the well being of the soil and water resources. The best way to know the fertility of the soil is by seeing the number and type of plants growing in that soil. For ensuring the well being of the plants and

optimizing the yield from nature healthiness of the soil and water source is extremely important.

2. **People Care** – Taking care of ourselves and others is the focus of this ethic. Self-reliance is an important part of developing nature based resource bounty. It is developed through helping oneself and others by fulfilling one's non-materialistic desires and lessening the hurt we cause on nature so as to maintain the ecological balance.
3. **Fair Share** – When a tree fruits, it provides more fruits than one single person can consume, suggesting that what nature gives is not for a single individual and should be shared with others. Or else, we should „harvest“ the resources only barely necessary for us.

The twelve Principles of permaculture are :-

1. Observe and Interact
2. Catch and Store Energy
3. Obtain a yield
4. Apply self-regulation and accept feedback
5. Use and value renewable resources and services
6. Produce no waste
7. Design from patterns to details
8. Integrate rather than segregate
9. Use small and slow solutions
10. Use and Value diversity
11. Use edges and value the marginal
12. Creatively use and respond to change

Based on these Ethics and Principles some design concepts have been developed by observing nature, research and use of science. Also these are further refined to give an aesthetic feel. They include Patterns, Guilds, Layers and Zones. This fusion of the Ethics, Principle and the design concepts forms the permaculture Flower.



The Patterning means that in all forms of nature there exists a pattern, e.g. the waves in the sea, the way wind flows. This aspect is used for planning the locations of the plants in a way that helps in creating micro-climatic sectors with the help of natural features such as topography or using larger plants to shield smaller ones.

Permaculture also relies on symbiosis. Rather than symbiosis of only two species, permaculture is based on mutual assistance of multiple species. This design concept is called Guilding. Guilds are also designed considering the fact that trees have various morphologies and special characteristics. They are categorized into taller trees, shrubs, soil surface plants, fungi, sub-surface plants, climbers and microorganisms. This concept is called Layering.

Another important design concept is dividing the land resource into hypothetical “Zones”. They are numbered from 0-5. Zones are set according to the frequency of need to attend to. They are explained by Mollison as:-

1. Zone 0 – The area where one lives. The area should be having optimum sunlight, and water resources should be available without disrupting the natural order of things.
2. Zone 1 – The things one needs most often and which his attention is required regularly. Soft fruits, domesticated animals, etc
3. Zone 2 – Perennial plants, Vermicompost, Biogas plant
4. Zone 3 – Staple food crops as wheat
5. Zone 4 – Semi-wild plants. Foraging and timber wood source
6. Zone 5 – Wild plants, used as research grounds.

It has observed through research that species of two different ecologies interact and perform better symbiosis than those of the same ecology. E.g. a tundra plant will form a more fruitful symbiotic association with, say, a temperate plant than a tundra plant. This is called the EDGE effect.

There are various scientific applications included in permaculture such as -

- Agroforestry.
- Hügelkultur includes burying dead logs of wood to increase the water-retention capacity of soil and also provide fertility to soil in longer run.
- Rain-water harvesting is also an excellent method as a water source in water scarce parts of the land. E.g. In an uphill terrain a water harvesting

tank should be installed in the upper region if the natural water resource is located downhill.

- Living quarters can be constructed using recycled matter.

Permaculture is a research based field. As a biotechnology student, it is easier to relate to the hardcore aspects of this subject and develop them. Like biotechnology, permaculture is a science which has roots everywhere, in botany, geography, architecture, environmental science and of course biotechnology. This subject also helps us to interact with nature and relearn the concepts of Indian ayurveda which is not just about medicinal plants but also about the human beings' relationship with Mother Nature.

Considering the effect of Global Warming, it is necessary for us to apply this to everyday aspects of our lives. It need not be applied on a large scale. One can follow the simple ethics laid down and be a permaculturist!

References and special thanks to –

1. Jimmy Wales, Founder of Wikipedia
2. Permacultureprinciples.com
3. Rajesh Mahajan, on inputs as he is the founder of a permaculture operation called as "Gaia's Farm"
4. Shashikant Deshpande, for refining the article and solidifying my concepts.

# ARTICLE 4

## “The Berlin Patient”- The Rare Case of HIV Cure

- *Yogendra Ramtirtha (4<sup>th</sup> year)*

Cure for infection caused by human immunodeficiency virus (HIV) commonly known as AIDS or Acquired Immunodeficiency Syndrome is very rare due to very high mutation rate and antigenic drift associated with the virus. The virus infects T-helper cells of the adaptive immune system by recognizing the CD4 receptor present on the surface of these cells.



Timothy Brown and Gero Hütter (Photo: Ralfka Gonzalez)

A patient of HIV infection by the name, Timothy Brown (also known as Berlin Patient), was subsequently also found to be suffering from acute myeloid leukemia. The doctor treating him, Gero Hütter- a hematologist with no special experience in treating HIV- found a donor who was a genetic match as well as had an uncommon mutation known as CCR5-delta32 that made CD4 cells resistant to HIV.

Over the last 5 years Brown has endured multiple high-volume blood draws, leukapheresis, flexible sigmoidoscopy with 30 biopsies from the rectum, and a lumbar puncture for this study. His blood plasma, peripheral blood mononuclear cells (PBMCs), and gut and cerebrospinal fluid (CSF) samples were sent to several labs with expertise in detecting extremely small amounts of virus. Researchers including Tae-Wook Chun from the National Institute of Allergy and Infectious Diseases, Douglas Richman from the University of California San Diego, and Robert Siliciano from Johns Hopkins used a variety of different measurements and techniques.

The results showed that Brown's CD4 T-cell counts remained fairly stable and were within the normal range. HIV genetic material was found in plasma by 2 of 4 labs at 3 different time points, and once in a rectal sample, but it was barely detectable by the most sensitive assays and was lower than levels typically seen in patients with viral suppression on antiretroviral therapy.

No HIV RNA or DNA was detected in Brown's CSF, and 2 labs with co-culture experience could detect no replication-competent virus in 9 billion PBMCs obtained through leukapheresis. HIV-specific antibody levels were detectable, but tended to decrease over time.

Furthermore, cloned HIV sequences bore little resemblance to each other or to pre-transplant virus. Even stranger, 2 sequences were almost the same as a common lab strain, suggesting possible contamination.

Like looking for a needle in a haystack, this intensive analysis provided a collection of evidence that investigators hoped would provoke discussion about what tests are useful in people with extremely low-level virus, thereby advancing cure research.

Some of the unresolved issues include-

- 1) It is not well understood that whether Brown can infect other individuals during unsafe intercourse.
- 2) HIV can infect many different cell types but can replicate in only a few and Mr. Brown did not replace each cell of his body, so it won't be a surprise if the viral genetic material is detected.

The important aspect is that although the disease may or may not have been fully eradicated of every replicating virus, it is definitely under control considering the fact that without any medication Mr. Brown shows no symptoms of infection or rather the infection is under control. While considering the data of the tests conducted, it is important to consider the accuracy of the test and also the false positives obtained during the test.

## **An Idea**

If T- helper cells having CCR5- delta32 mutation can effectively slow down the rate of viral replication, then in case of HIV+ patients, using gene therapy approach, progenitor or stem cells of the patient can be treated ex- vivo such that they too start expressing the mutation. These treated cells of the patient can be re-introduced in the patient such that these engineered cells when differentiated to give rise to T- helper cells become resistant to the infection and their population clonally expands whereas the population of susceptible wild type cells becomes a minority because they will be killed by the viral infection. So, after some period of time, majority of cells are resistant because of the mutation. Thus the infection can be brought under control.

## **Reference**

The Berlin Patient- The HIV Cure Case Report With a Name,

Details Category: Search for a Cure. Published on Friday, 15 June 2012 00:00

Written by Matt Sharp, HIV and Hepatitis.com

# ARTICLE 5

## THE BUG PARLIAMENT

-KRISHNA L. (3<sup>RD</sup> YEAR)

My fellow homo sapiens,

I am one of the last few surviving members of this species, here on earth. We were once the species that singularly dominated the earth and held an uncontested control over all of earth's natural resources. Today we have to fight to live another day, in a world that is ruled by the insects and upheld by the insect parliament. The purpose of my writing this letter is to enlighten the future generations (if any) of the mistakes we have made over the ages.

Our first and gravest mistake was to take the other life forms for granted and abuse their very existence. For years we experimented with them and exploited them to meet our needs. A child born in this age will find it hard to believe that the fruit fly, an active food warlord today, was once upon a time a favorite lab rat!

To get on with the story, while humans were trying to uncover the secrets of life and replicate the very miracle of life itself, the insects were gaining experience to deal with humans and our activities. The war was silent at first, they simply attacked all our food resources and by the time we figured out the causative agents, it was far too late. The spiders and other venomous bugs were the first to poison any household food, the bees handled all the honey, fruit flies silently multiplied to create more possibilities of a pathogenic attack and let's not forget the vengeful mosquitoes.

Aiding and abetting all this were the lab insects, who did not need to understand the complexities of science but just their function in the human world and negate it. Once they all had established a line of communication between all of them, it was an easy job to take over our civilization.

It was along the time that the world realized what the insects were upto that I came into this world. My generation was brought up with a gas mask instead of a bib and playtime meant crushing any bug in sight. Exterminators had become the most populated profession and everyday had turned into a war even in the richest of households. The bug sprays and chemicals were now affecting humans more than the insects they killed. The most aggressive soldiers were the cockroaches, who were not only difficult to kill, they grew on barely nothing and breed the fastest of them all. The ants, wasps and bees turned generals in this war as they understood the functioning of a society best. The most surprising aspect was that the lab insects turned altruist after passing on the information. Hence their motto was to suicide if captured, making it very difficult for us to figure out their weakness.

By my early twenties we humans were forced to go into hiding in the few jungles that exist today (we again have only ourselves to blame for rampant deforestation). Here the insects are few in number and having grown in the wild, have more tolerance for our species. You may wonder what happened to the other animals. Those who lived with humans died as casualties of the war or live a peaceful coexistence with the insects.

To a man born in the 20<sup>th</sup> century this may seem like a joke, but having lived in the 22<sup>nd</sup> century, I won't be surprised any more, to hear an insect speaking in the human tongue. We have lived till date

as a selfish and destructive species, and we now reaping the rewards. To the future propagators of our race, my advice would be that WE MUST NEVER under-estimate the other life forms down to the very single celled ones!

Yours truly,

Sci.fi\_hatke.

# ARTICLE 5

## Bio-Accidents

-Rahul Nitnavare, Piyush More 94<sup>th</sup> year)

Biological material and living organisms are neither intrinsically dangerous, nor intrinsically safe. Any danger will depend on the characteristics of the material or the organisms. Pathogens all have their own route of infection, by which they spread from one host-organism to another.

Route of infection	Example
Skin Contact	Fungi
Through air or aerosols	Flu
Through pricking (insects or needles)	Malaria
Blood-blood contact	HIV, Hepatitis B
Through wounds	staphylococci
Through faecal material	Typhoid

One of the routes of infection that deserves special attention is infection through aerosols. Aerosols are very small droplets of fluid that can spread through the air. They are formed during activities such as opening bottles containing fluids and having a wet cap, vortexing, blending, emptying a pipette by blowing, or heating a wet inoculation needle in a flame. Following are some examples of lab accidents history:

### August 1994

On August 8, 1994, a 46-year-old used a high-speed centrifuge to clarify a harvest of infected Vero cells containing Sabia virus. The centrifuge was run at 10,000 rpm for 10 minutes at a temperature setting of 4°C. The virologist observed no indication of a problem during the centrifugation process. On opening the lid of the rotor to remove the centrifuge bottles, he noted that the outside of one bottle was wet and that fluid had leaked into the bottom of the rotor. No obvious break was identified at the time, and the virologist was wearing a surgical mask, a disposable solid-front gown, and gloves. He had no abrasions or scratches on his hands. The virologist used a second pair of gloves during the



decontamination of the rotor, but did not wear a positive air-purifying respirator, although it was available. He decontaminated the spillage by pouring a concentrated solution of sodium hypochlorite (5.25%) directly into the rotor bucket as well as inside and outside the bottle that had leaked. The combined bleach and liquid in the rotor were then absorbed with paper towels. After the incident, the virologist continued working in the laboratory for another three to four hours. Initially, he did not report the incident because he believed that no exposure to virus had occurred.

On August 16, 1994, the virologist noted myalgias, a mild headache, a stiff neck, and fever. He treated himself with ibuprofen for two days before seeking medical care. On questioning, he described recrudescences of *Plasmodium vivax* infection that had never been treated with primaquine. He was concerned that this fever could represent a relapse of malaria. He initially did not recall any serious laboratory exposures. On physical examination he appeared mildly ill, with a temperature of 37.6°C (99.8°F), a pulse of 89 beats per minute, and a blood pressure of 130/80 mm Hg. The only remarkable features were mild conjunctival injection and shotty cervical nodes in the anterior chain. Laboratory studies performed that afternoon revealed a hematocrit of 42%, a white-cell count of 2600 per cubic mm, a platelet count of 138,000 per cubic mm, and an alanine aminotransferase level of 63 U per litre; urinalysis revealed moderate proteinuria (2+). After a smear proved negative for malaria, further review of possible infectious exposures led the patient to recall the August 8 laboratory incident with Sabia virus.

The patient was immediately hospitalized and treated with intravenous ribavirin at a dosage used by the Centers for Disease Control and Prevention (CDC) for other arenavirus infections. Pretreatment blood samples were sent for viral culture and examination by the polymerase chain reaction (PCR) for the presence of Sabia virus RNA. PCR testing for Sabia virus was reported to be positive on hospital day 2. The reverse-transcription PCR technique produces a fragment of 180 base pairs by using one primer specific for arenavirus in combination with one specific for Sabia virus.

### **January, 1998**

Three weeks after a researcher died of a herpes B virus contracted when a monkey splashed fluid in her eye, a co-worker may have been exposed in the same way, even though she was wearing goggles. Macaque monkeys, the type used for research, are common carriers of

herpes B virus. Though it is usually harmless to monkeys, the virus is fatal to 70% of humans who contract it.

Although monkey-to-human herpes B infections are extremely rare, it was second time this month that a lab worker has been hospitalized after being hit in the eye by body fluids. Elizabeth Griffin, 22, died of herpes B complications on Dec. 10, six weeks after a rhesus monkey, a type of macaque, infected her as she was moving its cage. It was unclear what the fluid was. Researchers are supposed to wear goggles when there is a chance that bodily fluids containing the virus - saliva and sometimes urine - might be swept up into the air, such as when a cage is being cleaned, but not when they move the animals. Only 40 cases of monkey-to-human herpes B infections have been recorded since 1933.

#### **April, 2002**

An employee at the U.S. Army biological lab at Fort Detrick, Maryland, has tested positive for exposure to anthrax. The employee, who had been previously immunized, is not sick but was put on precautionary antibiotics. Low levels of anthrax spores were found in an administrative room and a service hallway outside a laboratory in one building. Medical assessments of employees were started after a scientist noticed a deposit on a flask in a laboratory where general anthrax research is conducted. It appears any release of anthrax was accidental and was not related to terrorism. The deposit was not found in the area where tests are being done on the anthrax-laced letter that was sent to Sen. Patrick Leahy last year.

#### **March, 2003**

A package containing the West Nile virus exploded on Tuesday night at a Federal Express building. Fifty workers were evacuated. Dry ice used to preserve tissue samples with live virus might have caused the package to burst. The package held brain and kidney tissue from a bird that had tested positive for the virus. The virus was live but the samples were frozen and unlikely to become airborne.

## **February, 2004**

A civilian Army researcher at Fort Detrick, Maryland, was in isolation after possibly being exposed to the Ebola virus. The researcher accidentally pricked herself with a needle that contained a weakened form of the Ebola virus last week while she was injecting mice with the virus as part of a research effort. The woman has shown no signs of the fatal illness, but will remain at Fort Detrick for up to 30 days of isolation. According to the Centers for Disease Control and Prevention, the incubation period is between two and 21 days, but a small number of people who have been exposed have been found not susceptible to serious effects. In addition to exposure through a cut, scrape, or injection, it can be passed person-to-person through body secretions. Fort Detrick, about 30 miles from Washington, traditionally has been known for its germ warfare research. In recent years, the facility's biomedical mission has included a role in the investigation of anthrax bioterror attacks on the U.S. Capitol in October 2001.

## **December, 2008**

Sangji, a 23-year-old staff research assistant, was severely burned when air-sensitive chemicals burst into flames and ignited her clothing. She died 18 days after the fire. The summary makes it clear that there were at least four very significant violations of protocol during the experiment that Sangji was performing. These included:

1. Not wearing a lab coat and other appropriate safety gear.
2. Using a plastic syringe that by definition cannot be oven-baked to remove traces of moisture.
3. Using a syringe with a 2-inch needle that was about an order of magnitude shorter than the recommended length (1-2 ft.). This was a very significant safety breach since it would have required Sangji to tilt the bottle to extract the liquid, thus not only increasing the chances of a spill but also diminishing her general degree of control over the whole procedure.
4. Actually pulling the plunger back rather than let it be pushed by the inert nitrogen pressure from the bottle.

2009

Malcom Casadaban, a professor at University of Chicago, died from an infection by an attenuated strain of a BSL-2 bacteria, *Yersinia pestis*. He was known to not use gloves when handling cultures and dermal exposure may have been the preventable route of entry.

These reports show that even standard lab materials such as liquid nitrogen are still a threat if simple safety measures aren't respected. Biosafety is about the intrinsic hazards of living organisms and how to handle them safely. Genetic material as such (naked DNA) can be dangerous as well. Before starting to work with pathogens or genetically modified organisms (GMOs) in a laboratory, one should stop and think about the possible hazards of these organisms and take proportionate measures to minimise any risks for human health and the environment.....SAFETY FIRST...!

### Source:

Barry, M. et al.(1995). "Treatment of Laboratory acquired Sabia virus infection". NEJM. 333:294-296.

<http://www.cdc.gov/mmwr/preview/mmwrhtml/00056008.htm>

Shapiro, D. S. and D. R. Schwartz.(2002). "Exposure of Laboratory Workers to *Francisellatularensis* despite a Bioterrorism Procedure".JCM. 40(6):2278-2281.

<http://www.nytimes.com/2003/03/20/us/virus-box-explodes-at-ohio-fedex-site.html>

[http://articles.cnn.com/2004-02-19/health/ebola.exposure\\_1\\_ebola-virus-army-medical-research-institute-fort-detrick?\\_s=PM:HEALTH](http://articles.cnn.com/2004-02-19/health/ebola.exposure_1_ebola-virus-army-medical-research-institute-fort-detrick?_s=PM:HEALTH)

<http://www.dailymail.co.uk/sciencetech/article-1360783/Malcolm-Casadaban-U-S-scientist-die-plague-50-years.html>

# **SCIENTOONS**

**- BY (3<sup>RD</sup> YEAR STUDENT GROUP)**

**KRISHAN L**

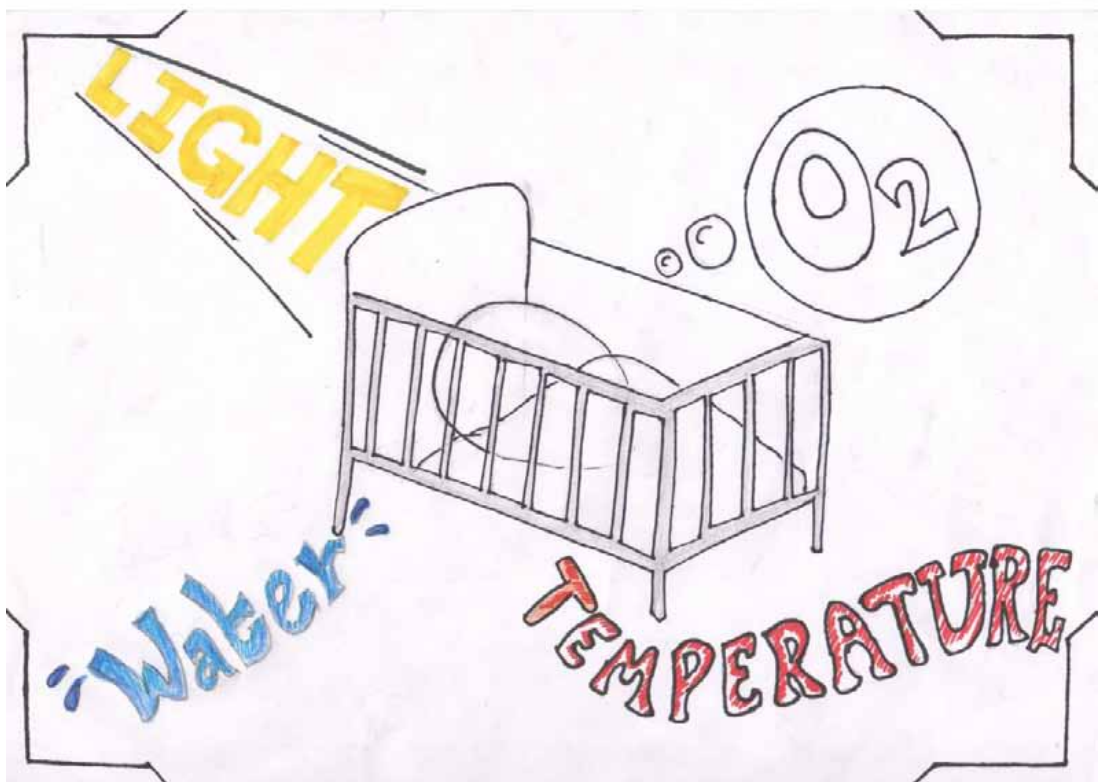
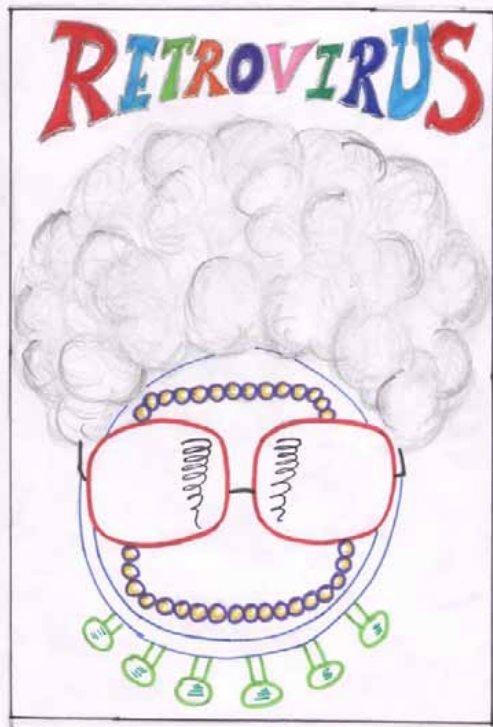
**RUCH DUGGE**

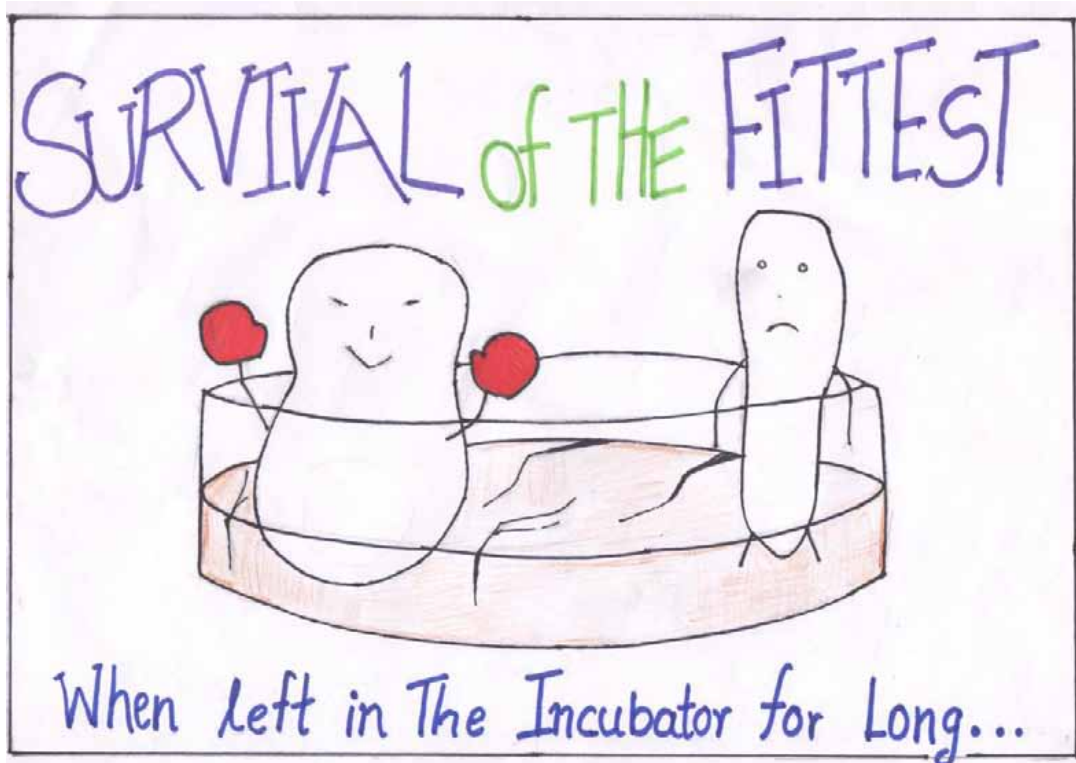
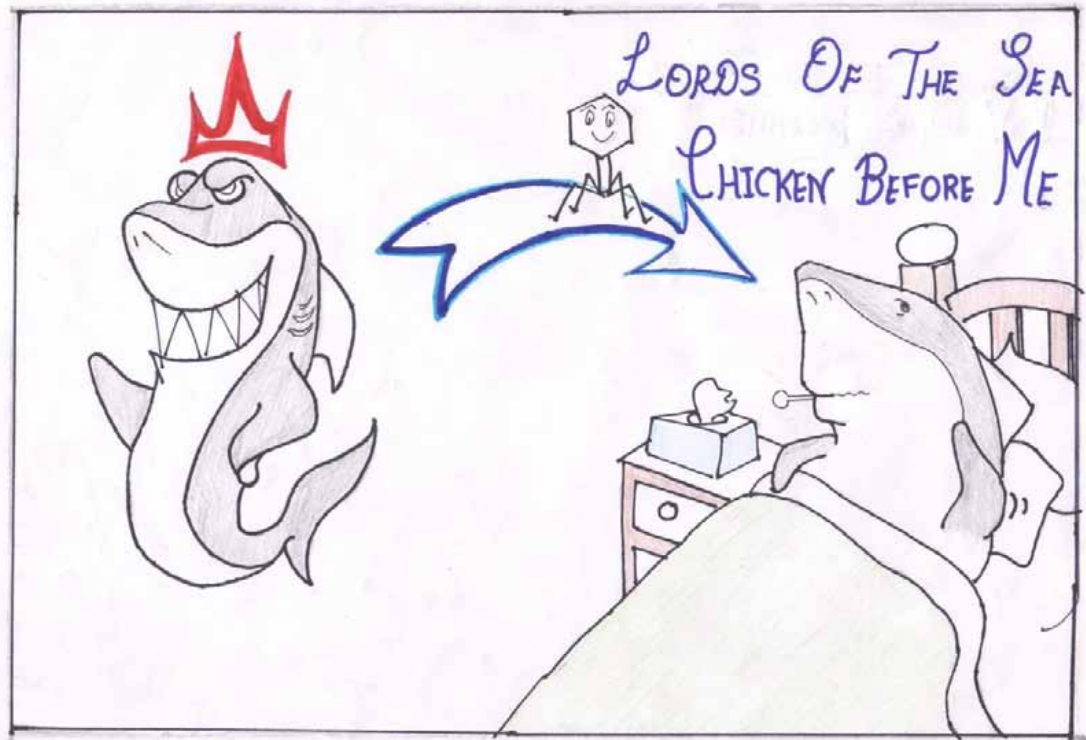
**MONICA JEKATE**

**YUGA DHIMATE**

**JAHNAVI KULKARNI**

**AMINA MAKANDAR**







# **EVENTS**

**(JUL. 2012 - FEB. 2013)**

- 1. Induction Programme- for first year students - 24<sup>th</sup> Jul 2012**
- 2. IBB Parent Meet - 13<sup>th</sup> Oct 2012**
- 3. IBB Safety Symposium - 3<sup>rd</sup> Nov 2012**
- 4. Maharashtra Biotechnology Day - 21<sup>st</sup> Nov 2012**
- 5. Blood Donation Camp - 23<sup>rd</sup> Feb 2013**

**Report on  
Induction Programme**

July 24, 2012

The induction program was conducted at IBB on 24<sup>th</sup> July 2013 for the new first year batch. The new students along with their parents attended the program. Honorable Vice Chancellor of University of Pune, Professor W. N. Gade was the guest of honor. The parents and the students were addressed by the Professor W. N. Gade followed by Professor B. A. Chopade, Director, IBB. Professor Ameeta Ravi Kumar elaborated on the credit system and the IBB syllabus. The students were introduced to the biosafety by Dr. Dhara Sachdev. The second issue of the IBB bulletin was released by the Honorable Vice Chancellor of University of Pune, Professor W. N. Gade. The top ranker from each year were felicitated by the Honorable Vice Chancellor

## Glimpses of Induction program



**Report on  
IBB- Parents Meet**

October 13, 2012

A meeting with parents of IBB students was arranged on Saturday, 13<sup>th</sup> October 2012. The parents were invited for the meeting through emails and postal mails. The entire program was organised with the help of other member of IBB by Ms. Shalaka Gaikwad, IBB Faculty. The parents were welcomed with high tea. A total of 42 parents representing 1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup>, 4<sup>th</sup>, 5<sup>th</sup> years and M.tech. students were present for the first IBB-Parent Meet 2012. The event started with blessing Lordess Saraswati followed by lighting of lamp by few parents. We all being proud about University of Pune and IBB recited Vidyapeeth geet and IBB song. Professor Ameeta Ravi Kumar, Director addressed all the parents present for the meet. She stated the importance of such a meeting and also mentioned about the bright students of IBB. She welcomed that parents and thanked them for assembling for the IBB Parent Meet. She made a very important note to the parents about the use of social networking like facebook by their wards should be restricted and that students should contribute for the registration of in house conferences and symposiums. She mentioned that she is proud Yatin Devakkar, a IBB past student who is presently working for betterment of rural area at Chhattisgarh. Professor B. A. Chopade, the Former Director of the institute also addressed the parents. He mentioned in his talk about the dedicated students like Pravitra Iyer and Divya Singh. He encouraged the parents to be part of IBB Parent Association. He stated that IBB students after completion of the 5 year course can perform independent research are preferred over other students at several research institutes and universities at national and international level. They publish papers in research journals from projects conducted at 3<sup>rd</sup>, 5<sup>th</sup> and M.tech year. IBB offers M.tech program which is only by research for just one year as compared to other institutes where the program is for at least 2 years. The meritorious students of IBB were felicitated by the hands of IBB faculties with a merit certificate. The following students received the merit certificate for their rank in last semester examination May 2012 :

Year	Name of the student	Rank	GPA (out of 6)
1 <sup>st</sup>	Shivangi Shukla	1 <sup>st</sup>	5.5
1 <sup>st</sup>	Annupallavi Mani	2 <sup>nd</sup>	5.4
1 <sup>st</sup>	Urvi Shroff	2 <sup>nd</sup>	5.4
1 <sup>st</sup>	Sharvari Tendulkar	2 <sup>nd</sup>	5.4
2 <sup>nd</sup>	Aishwarya Sivakumar	1 <sup>st</sup>	5.8
2 <sup>nd</sup>	Pragya Shah	2 <sup>nd</sup>	5.64
3 <sup>rd</sup>	Divya Singh	1 <sup>st</sup>	5.72
3 <sup>rd</sup>	Shruti Menon	1 <sup>st</sup>	5.72
4 <sup>th</sup>	Rutija Patwardhan	1 <sup>st</sup>	5.33
4 <sup>th</sup>	Devashree Sambre	2 <sup>nd</sup>	5.25
4 <sup>th</sup>	Prajakta Vishe	2 <sup>nd</sup>	5.25
5 <sup>th</sup>	Pavithra Iyer	1 <sup>st</sup>	5.64
5 <sup>th</sup>	Sumit Pawar	2 <sup>nd</sup>	5.54

The IBB students (Salil, Neelay, Soumitra and Katkee) who composed the IBB song were also appreciated with a certificate. Followed by the felicitation program, the faculty

coordinators of the respective year commented on the performances of that semester students. The faculty coordinator pointed out that that students should make the parents aware about the dates for the internal and final examinations and the marks obtained in all the examinations. It's the duty of the parents to notice that their ward is well equipped with a clean neat lab coat and dissection box for the practical course work. The students should be on time for the morning lectures and should not go on long leaves during festivals. It was also brought to the notice to the parents of the 4<sup>th</sup> year students about their one day trip they had gone for without the permission on 5<sup>th</sup> Sep. 2012, which was being celebrated as teachers day by other students at IBB. It was also conveyed to the parents of M.tech student that they work late in the institute and their parents need out worry for the same. Ms. Rohini Gaikwad, Academic coordinator also addressed the parents point-wise the rules and regulation of the IBB such as 75% attendance is compulsory, internal examinations holds 50% weight-age etc. The parents were invited to put forward their opinion; four parents came forward with their suggestions and comments. Mr. Mulund Kulkarni father of Tajesh Kulkarni, 2<sup>nd</sup> year student suggested that the course of IBB should be industry oriented , the students should be taken for industrial visits and there should be development of partnership with industries. The suggestions were taken very positively and they were addressed by Professor Ameeta and Professor Chopade. Mr. Dhananjay Kumar, father of Monica Kumar 4th year student mentioned the importance of discipline and ethics in education, the students should be encouraged for research and also should meet the requirements of rural villagers through various activities and research developments. His comments were well appreciated by all the IBB faculties. Mr. Mistry, father of Nitin Mistry, 3rd year student demanded for placement cell at IBB and the parents should also be informed about the conferences and symposiums being held at IBB for the students. Professor Chopade answered that Bicon, a biotechnology company had conducted interviews for the first batch student's and 15 students of IBB were selected but none of them joined industry as they were interested in continuing their career in research and thus such placement in house interviews are not conducted at IBB. IBB is developing students more for career in scientific research. Professor Ameeta added and said that the M.tech program we are planning to conduct in collaboration with industries but industries ask for a year bond which the students are not willing to accept. The parents came forward and appreciated the teachers at IBB and the corporation of teachers. The parents were asked to fill a feedback form which is attached to this report. The comments were very positive by all the parents about the functioning of IBB and vision of IBB. Professor Ameeta Ravi Kumar officially declared the opening of IBB Parent Association and asked for contact details of two representative parents from each year for the IBB Parent Association and declared that there parent members will meet once in a year. The details of the representative parents are enclosed to the report. The vote of thanks for presented by Professor Smita Zinjarde and the program ended with prayer (Pasaydan).

## IBB Parents Association

Name of the Parent	Contact Number	E-Mail Id
<b>First year:</b>		
Mrs. Hita Ajmera	9890644444	hita2909@hotmail.com
Mrs. Seemantini Chaphalkar	9422460832	seemantac@gamil.com
<b>Second Year:</b>		
Mr. Mukund Kulkarni	0240-2327230	shrungil@yahoo.com
Mrs. Manisha Chaudhary	9370118787	-
<b>Third Year:</b>		
Mrs. Asha Mehendale	9425582667	divyank@vsnl.com
Mr. Bharat Dhimate	9665916918	dhimate@gmail.com
<b>Fourth Year:</b>		
Mr. Dhananjay Kumar	9939140835	kmrddk@gmail.com
Mrs. Nikita Patel	9860933799 25806441	niki6907@yahoo.co.in
<b>M.Tech:</b>		
Mrs. Tejaswini Purandhare	9423009585	teja.purandare@gmail.com
Mrs. Neeta Kakkad	9890048665	neetak8@rediffmail.com



## Glimpses of IBB-Parent Meet



**Report on  
IBB Safety Symposium**

November 3, 2012

IBB safety symposium was held on 3rd November 2012 for all IBB students and staff.

The program started with lighting of lamps by invited speakers and students. Followed by this was a Pune Vidhyapeeth Geet performed by 1<sup>st</sup> year students Maitraee, Sajal, Aseem and 3<sup>rd</sup> year student Neelay.

Dr. Vaijayanti Tamhane compared the program and briefed every one about the objectives and purpose of the safety symposium.

Prof. Ameeta RaviKumar informed all the participants about the importance of practicing safety in laboratories.

The program was divided into 3 sessions with lectures by 7 eminent speakers and a panel discussion.

The first session was chaired by Dr. Vaijayanti Tamhane. There were 4 lectures in this session on different aspects of safety.

Dr. Grover in a very special way primed students about importance of safety. He talked about chemical and general safety. Various signs and symbols used for safety.

Dr. Paresh Shah talked about levels or categories for viruses and dangers associated while handling viruses and viral vectors.

Dr. Pal talked about history of biosafety and also gave an important message that safety practices have to come from within and followed by each individual. Practicing safety has a global significance.

Dr K. V. Krishnamurti highlighted the importance of GM plants in industry today. He also guided about the safety practices and disposal of chemicals used in plant transgenic research.

The second session was chaired by Dr. Dhara Sachdev. There were three talks in this session.

Dr. Wani briefed about the biosafety regulations for teaching and research set by IBSC and RCGM. He also talked about the biosafety levels, containment facilities and disposal recommendations.

Dr Vaishali Shinde's talk was focused on chemical safety. She discussed about the routes through which chemicals could be taken up by our body and the allergic/hazardous effect they may cause either instantly or eventually. She emphasized on appropriate labeling of chemicals, faithfully following the guidelines for usage/handling and wearing of self protective gadgets.

Dr Ayesha Khan talked about safe use of instruments and equipments in the laboratories. This included safety practices while handling glassware, electrical

gadgets, transilluminators, centrifuge, autoclave, vacuum pumps and laminar air flow.

The third session – A panel discussion was chaired by Dr. Rashmi Nair and Dr. Ameeta RaviKumar, Dr. K.V. Krishnamurti, Dr. Wani, Dr. Ayesha Khan and Dr. Vaishali Shinde constituted the panel. Questions were raised by the faculty and students. Some of the questions raised were as follows;

1. Is there any method/system to detect escape of GMOs from laboratories? Is IBSC, University of Pune making any inspections for the same? - Surprise inspections are possible and they may be made in the near future.
2. While immunizing animals what precautions need to be taken? - Protective gadgets must be worn, training is essential.
3. Is student insurance and medical check up provided by the UoP? - Many schemes are available with insurance companies for students. Students have to go for the same and cover themselves. Through projects some research students may be covered.
4. Can cancer cell lines if releases inappropriately cause cancers? - May be, they may also contain viral components which may have unforeseen consequences. Safe disposal is therefore necessary.
5. Any facility available with UOP for safe disposal of chemical waste and reuse of solvents? – Not yet, needs to be established at the Institute level and in the University as well.
6. Where are the samples for incineration submitted in UoP? – In the health centre. The samples for incineration are collected on a weekly basis and any department from the UoP can submit the wastes for incineration to the health centre after requesting for the same.

The panel also discussed about installing safety gadgets like eye wash, safety showers in the Institute. Experiments need to be planned carefully and guidelines for usage of chemicals and processes must be followed thoroughly.

## Glimpses of IBB Safety Symposium



**Report on  
Maharashtra Biotechnology Day**

November 21, 2012

The scientists at various levels should take up as societal responsibility to formulate projects keeping in mind the welfare of common man in Maharashtra based on technical expertise. Integrated efforts by academicians and industry to carry out various activities that would ultimately benefit the society were the key issues highlighted during the celebration of Maharashtra Biotechnology Day on 21<sup>st</sup> November 2012 by Professor W. N. Gade , Vice-Chancellor University of Pune. The event was jointly organized by the Institute of Bioinformatics & Biotechnology, Department of Biotechnology and the Bioinformatics Centre, University of Pune. The need of the hour is to review the education system in collaboration with industries to strengthen the teaching program at university level to generate efficient man-power. A brain storming with the Directors of Biotechnology Industry and Academic heads is also very crucial as mentioned by Professor J. K. Pal, Head Department of Biotechnology, during his welcome address. The program was held at the PUMBA auditorium with enthusiastic students, faculty, research associates and staff as audiences from all the three departments.

The “Therapeutic Protein Process Development Strategy” was addressed by the plenary speaker Dr. M. K. Sahib, Director Genomics & Research, Wockhardt Limited. Strategies involving the development of small and large molecules as drug substances were explained by him. 16 products termed as “Biosimilar molecules” are already in the market. Quality attributes i.e Quality by design approach (QbD) was mainly followed in the Protein therapeutics. The concept of mathematical epidemiology was explained to the students by Dr. Shekhar Mande Director National Centre for Cell Sciences, Pune. The aspect of integrating different aspects of science was put forth by Sir Ronald Ross in the earlier 19<sup>th</sup> century. Sir Ross being born in Almora, India his brief journey of identifying the life cycle of plasmodium species and completing its life cycle in the anopheles mosquito was explicitly explained to the students by Dr. Mande. Dr. Shambunath De’s whose contribution are rarely discussed in such forums for identifying the cholera toxin viz. enterotoxin and the current development in this research was also discussed by him.

The main three challenges to ponder for the new generation scientists in Biotechnological developments are i) Malnutrition ii) Non-scientific beliefs and iii) Changing lifestyles were also discussed by Dr. Mande. The session ended with a brief vote of thanks by Professor Deepti Deobagkar, Director Bioinformatics Centre. Professor Ameeta Ravikumar, Director Institute of Bioinformatics & Biotechnology and Professor Smita Zinjarde, Institute of Bioinformatics & Biotechnology were involved in organizing this meeting.

From right to left : Dr. M K Sahib, Director of Biotechnology R&D in Wockhardt Limited; Honourable VC Professor Gade, University of Pune; Professor J.K. Pal, Head Department of Biotechnology University of Pune; Professor Deepti Deobagkar, Director Bioinformatics Centre University of Pune and Professor Ameeta Ravi Kumar Director Institute of Bioinformatics and Biotechnology University of Pune



**Report on  
Blood Donation Day**

February 23, 2013



Institute of Bioinformatics and Biotechnology (IBB) in collaboration with Rotary Club Pune Downtown and Ruby Hall Clinic organized Blood Donation Camp on 23<sup>rd</sup> February 2013 at the premises of IBB.

There was an overwhelming response from Pune University campus from students, faculty members & staff who turned out in big numbers to contribute to the social cause. The doctors and nursing staff from Ruby Hall Clinic's blood bank guided and advised the volunteers and donors.

Refreshments were provided to the donors. They were also given a certificate of appreciation

80 units of blood were collected (40 from IBB and 40 from outside). We hope that even in the future our institute continues to render its name and support to such social causes and help humanity in all the ways we can.

#### **FINAL OUTCOME: A HUGE SUCCESS**

80 units of blood were collected which would serve more than 300 patients in need.

## Glimpses of Blood Donation Day



