



## KSRCT IEEE-EMBS Student Chapter Newsletter

(K.S.Rangasamy College of Technology  
Institute of Electrical & Electronics Engineers  
Engineering in Medicine and Biology Society)



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### Editors Desk

It gives us immense pleasure to present the first issue of KSRCT IEEE-EMBS Newsletter, the measure of progress. We, the editorial board members of the KSRCT IEEE-EMBS Student Chapter are rejoiced to present the Newsletter published by the Department of Biotechnology, KSRCT.



We owe our special thanks to our Chairman Lion Dr.K.S. Rangasamy MJF, Principal Dr.K.Thyagarajah and the members of the various committees for their whole-hearted support .We also thank Shri.R.Srinivashaan, Secretary and Smt.Kavitha Srinivashaan, Assistant Secretary, K.S.R. Educational and Charitable Trust, Tiruchengode for their excellent support and constant encouragement in brining out this magazine successfully every semester.

### Department Activities

#### Jawaharlal Nehru Memorial Fund.

The Jawaharlal Nehru Memorial Fund formally came into being when a National Committee consisting of 110 members was convened in New Delhi on 17 August 1964 under the Chairmanship of Dr S. Radhakrishnan, then President of India. In Dr S. Radhakrishnan's words "The Jawaharlal Nehru Memorial Fund is a symbol of our determination to keep burning the torch that he has left to us. Let us make it a symbol worthy both of our regard and affection for him and of all that he has so generously bequeathed to us." During the last 45 years of its existence the Fund has undertaken a number of activities, all aimed at protecting and propagating the memory and message of the life of one of India's greatest sons.

Ms.K. Manjukarunambika, Full-time-Ph.D., Scholar has received "Jawaharlal Nehru Memorial Fund Scholarship" during the academic year 2009-2010. For which, she has attended an interview at New Delhi on 03-12-2009. She has performed well in the interview



and full-filled all the selection criteria. She is undertaking her research programme entitled "Evaluation of *Pseudomonas* spp. for plant growth promoting and biocontrol of diseases in tea plants". She is getting a stipend of Rs 9,000 /- for two years duration plus Rs. 24,000 /- allotted for contingency grant and travel expenses.

We consider it is an important Scholarship for the research scholars those who are doing research on social relevance. Further we place a record that our department is standing first among the self-financing colleges in Tamil Nadu to receive such a fellowship from the Government of India. Therefore anyone who seeks for JNMF can undertake the research with social implementation.

#### Research Forum - A New Initiative!

A group of staff members including research scholars belonging to the Department of Biotechnology, KSRCT planned to organize a forum to enhance the research activity among them and was named as the Research forum. The idea behind the research forum was kindled by Dr.P.Ponmurugan, Head, Department of Biotechnology, K.S.R.C.T with his sparkling spirit a team of twenty members who are interested and engaged in research were united together to bring out the

success of the forum. Mrs. B.Mythili Gnanamangai, Full time Research scholar, Department of Biotechnology, KSRCT was cordially elected as the Co-ordinator for conducting the forum meeting.

It was decided to have the Research forum meeting at every fortnight interval from the date of 14/10/2009 at 10.00am in Bioinformatics lab. A tentative schedule was prepared by lot system. As an inauguration of the Research forum, first presentation was effectively delivered by Dr.P.Ponmurugan on a topic entitled “Plant Architectural studies and its scope”. Moreover, as a token of honour and appreciation, the forum has planned to issue the certificates to the resource persons for their credible presentations. As per the schedule framed earlier four more meetings and discussions are yet to be conducted.

#### ***A New R&D Project!***

A major project was sanctioned from National Tea Research Foundation (NTRF), Kolkata very recently on 20<sup>th</sup> December 2009 to Dr.P.Ponmurugan, Professor & Head of Biotechnology Department as a Principal Investigator. The project entitled “Evaluation of *Streptomyces* spp. for the biological control of stem and root diseases of Tea (*Camellia sinensis* (L.) O.Kuntze)”. A

total outlay of Rs.4,66,488/- was sanctioned for two years duration.

NTRF was set up in 1988, is an independent interactive functional body, funded and set up by Indian Tea Industry and National Bank for Agricultural and Rural Development (NABARD). In liaison with the Tea Board India, NTRF supports innovative research on all aspects of tea, particularly of non-conventional approaches, rather than traditional research, in such areas as plant physiology, plant protection and pesticide management, quality improvement, biotechnology, human health aspects of tea, and tea economics and management. National Tea Research Foundation (NTRF) has been recognized as research body by the Department of Scientific & Industrial Research, Ministry of Science and Technology, Government of India (DSIR) under the scheme on recognition of Scientific and Industrial Research Organizations (SIROs).

The project envisages exploiting actinomycetes in controlling the stem disease like *Phomopsis* canker and root disease like red root disease. Efforts will be made to isolate actinomycetes from rhizosphere soil samples collected from various agroclimatic zones of the tea plantations of southern India. The isolated

actinomycete cultures will be identified based on morphological, biochemical and molecular characterization from which an efficient isolate will be selected based on various bioassays. Efficiency of the secondary metabolites of the actinomycete isolates in suppressing the pathogens will be tested. The mass production of secondary metabolites will be carried out using Biofermenter and further characterized the antifungal compounds contained in it.

Bioformulations of indigenous actinomycetes in suitable carriers will be tested for their efficacy against tea diseases under greenhouse and field conditions. Treatments will be imposed soon after pruning (rejuvenation and cut across) in the case of stem disease, while root disease experiments will be carried out in diseased patches with suitable treatments. Observations on casualty will be made after planting the areas. Recovery of the diseased tea bushes after treatments will be monitored by observing morphological, physiological and biochemical parameters. Soil samples will be collected periodically from the experimental plots for the enumeration of actinomycetes to know their survival. Based on the present investigation, an effective management strategy for the stem and root diseases using actinomycetes will

be prepared and made available to the tea planters.

### ***National Conference on “Current Scenario in Microbial Biotechnology”***

A Two day National Conference on “Current Scenario in Microbial Biotechnology” is organized by the Department of Biotechnology, KSRCT during 10<sup>th</sup> & 11<sup>th</sup> March 2010. One of the objectives of this Conference is to provide a platform for Biotechnology students and research scholars to interact and share their knowledge with their counterparts from other Institutions. This is a unique opportunity and will be a great enriching experience for the student community. There is no abstract book for the conference.

However, proceeding book is made available to the delegates which will be published by a reputed publishing company at New Delhi with ISBN number. The accepted papers both oral and poster presentations will be published in the form of proceedings. The manuscript must contain title, authors name, address, abstract, introduction, materials & methods, results & discussion and references. The delegates should follow the style of Journal of Biotechnology (Elsevier) format for preparing the manuscript. This conference will be conducted once in two years. The

following topics are covered in the Conference.

- **Protein and enzyme engineering**
- **Nano biotechnology and biosensors**
- **Plant and animal tissue culture**
- **Recombinant dna technology**
- **Industrial and food biotechnology**
- **Environmental biotechnology**
- **Bioprocess chemical technology**
- **Down stream processing technology.**

#### IEEE-EMBS News.

#### Upcoming Events

- **IEEE EMBS Conference on Biomedical Engineering & Sciences - IECBES 2010 2010**  
Kuala Lumpur, Malaysia *From* 30-Nov-2010 *to* 2-Dec-2010  
*Paper submission deadline:* 13-Aug-2010  
*Person:* Fatimah Ibrahim  
*Web:* <http://www.asprg.net/iecbes2010/>  
*Email:* [a\\_maghsoudi@ee.sharif.ir](mailto:a_maghsoudi@ee.sharif.ir)
- **IEEE Professional Communication Society 2010 conference**  
Enschede, the Netherlands *From* 7-Jul-2010 *to* 9-Jul-2010

*Person:* Sandy Bartell

*Phone:* +425-681-1508 (USA)

*Web:* <http://ewh.ieee.org/soc/pcs/index.php?q=node/843>.

*Email:* [sandy.bartell@boeing.com](mailto:sandy.bartell@boeing.com)

- **Beyond Brain Machine Interface: From Senses to Cognition Workshop**

Long Beach Convention Ctr, Long Beach, CA. *From* 20-Jun-2010 *to* 20-Jun-2010

*Person:* Nitish Thakor and EMBC Exec Office

*Phone:* 732-981-3451

*Web:* <http://tnsre.bme.jhu.edu>

- **IEEE R8 First CS/RAS/EMB/IES/IAS/PELS Chapter Chairs Meeting and Workshop on “Move from Research to Business”**

Instituto Superior Técnico - TagusPark, Lisbon,

Portugal *From* 29-May-2010 *to* 29-May-2010

*Person:* Carlos Fortunato

*Phone:* (+351) 939 060 939

*Web:* <http://workshop2010.ieee-pt.org/>

*Email:* [workshop@ieee-pt.org](mailto:workshop@ieee-pt.org)

- **Brain Machine Interfaces**  
Universidade Católica Portuguesa

in Tagus Park, Lisbon,  
Portugal *From 28-May-2010 to 28-*  
*May-2010*

*Person:* Carlos Fortunato

*Web:* <http://go.ieee-pt.org/embs/>

*Email:* [cfortunato@ieee-pt.org](mailto:cfortunato@ieee-pt.org)

### General Articles.

#### Yawning and tears.

#### **Why does yawning cause tears in he eyes?**

Tears are secreted by the lachrymal glands. Tear fluid coats the surface of the eye and protects the eye by its washing action and by the fact that it contains antimicrobial molecules. Tears also are necessary for clear vision as in the absence or reduction of tears the cornea will become dry resulting in poor vision.

Tears are continuously produced and they drain through small openings in the inner part of the lids called punctum. From there they drain into the nose (that is why when there is excess tear production as in crying one also notices a runny nose) The drainage mechanism is to some extent controlled by the facial muscles.

Contraction of the facial muscles can increase the drainage depending on which set of facial muscles are contracted. The facial muscles which contract during the process of yawning temporarily

reduces the tear drainage and at the same time there is an increase of tear production due to a reflex action. Increased production of tears and a temporary reduction of our flow causes the tear over flow we notice during yawning.

#### Artificial Plasmids

Scientists at the University of North Carolina Chapel Hill announced this week that they have successfully inserted an artificial plasmid into a cultured human cell. Plasmids are small, circular pieces of DNA. This announcement is significant because this plasmid was approximately 20 times larger than previously used plasmids. Scientists hope this research will lead to a successful in vivo procedure.

The genes transferred were responsible for the production of Beta-globin, a component of hemoglobin. The transplanted genes also replicated when the constituent cell replicated. The DNA plasmids went from double-stranded DNA to single-stranded RNA, which indicated that the traditional protein production model was being followed.

Scientists indicated that the genes were stable and replicable for more than a year, an indication that the plasmid was well integrated into the cellular apparatus.

Using bacteria to replicate portions of DNA produced the genes. The portion was inserted into a harmless part of the Epstein-Barr virus. Epstein-Barr was used because it can sustain itself in a human cell without degrading. Thus the virus served as a vector.

Interestingly enough, the plasmids didn't insert themselves into existing chromosomes. Instead, they functioned independently, hence the moniker "artificial chromosome." Each time the regular chromosomes in the cell were replicated, the plasmids were replicated.

Assuming a similar procedure works in the human body, independent chromosomes offer several advantages. They are inherently more stable than insertions, and scientists don't have to worry about a gene attaching to a chromosome and not functioning due to the location of the attachment.

### **Heart-to-Heart Tool**

We all know the statistics: millions suffer from heart disease, and many suffer heart attacks. Even more alarming is the fact that by some estimates more than 350,000 people die from so-called "sudden death" after a heart attack. Researchers have been baffled by the exact nature and cause of these deaths. Last week, scientists

at the University of North Carolina Chapel Hill unveiled a promising new modeling procedure which may shed some light on the mechanisms associated with heart attacks and sudden death.

This new system involved cultured heart cells. In a heart attack, some cells become deprived of oxygen while others continue to receive sufficient oxygen. The region between these two types of cells, called the border zone, is simulated in the cultured model. Since the culture focuses on the interactions in the border zone, it could be very helpful in studying arrhythmias. Arrhythmias are irregularities in the heartbeat usually associated with decreased blood flow in the coronary arteries.

The complex interactions within a particular organism and the size of the actual zone have made animal models particularly difficult in studying the border zone. Likewise, single cells don't display the border irregularities. By using a culture of cells, the research team was able to overcome both limitations. The border zone can be produced and the interactions are essentially isolated for practical purposes.

The cultures appear to be stable for a couple of hours, thus allowing the team to do basic time-based studies.

Since the causes and mechanisms associated with sudden death are so poorly understood, researchers are optimistic that this new modeling system will shed some light on sudden death. By focusing on the internal changes associated with cells and the resulting interactions, the team believes that the culture model will be successful.

### **Honey has antibiotic properties!**

In a study published in the July 2010 print edition of the Federation of American Societies for Experimental Biology Journal, researchers have uncovered the secret to the antimicrobial properties of honey. Honey has been known to heal wounds, reduce inflammation, and fight germs. The key to the antibiotic properties of honey lies in the presence of a honey bee immune system protein called defensin-1. This protein could one day be used to treat skin infections, burns and even to develop drugs against antibiotic-resistant bacteria.



In the study, the researchers used medical-grade honey to test its effectiveness against antibiotic-resistant bacteria. They were able to isolate the defensin-1 protein and to determine that this protein was responsible for the antimicrobial properties of honey. With

this information at hand, the task now becomes developing new ways to boost its effectiveness against germs. The results could lead to healthier honey bees and new methods for combating antibiotic-resistant germs.

### **Dark chocolates reduces blood pressure**

For people with hypertension, eating dark chocolate can significantly reduce blood pressure. Researchers found that effects of flavanols, the compounds in chocolate can cause dilation of blood vessels, on blood pressure.

"Flavanols have been shown to increase the formation of endothelial nitric oxide, which promotes vasodilation and consequently may lower blood pressure. There have, however, been conflicting results as to the real-life effects of eating chocolate. It is found that consumption can significantly reduce blood pressure for people with high blood pressure but not for people with normal blood pressure".

The pressure reduction seen in the combined results for people with hypertension, 5mm Hg systolic, may be clinically relevant – it is comparable to the known effects of 30 daily minutes of physical activity (4-9mm Hg) and could theoretically reduce the risk of a cardiovascular event by about 20% over five years. The researchers are cautious, however, "The practicability of chocolate



or cocoa drinks as long-term treatment is questionable".

**Do you know?**

- An ant can lift fifty times of its own weight.
- The smallest bird in the world is the Hummingbird. It weighs 1oz.
- Unlike all other insects, flies have five eyes. They have two large eyes and three smaller eyes between them.
- The actual function of mosquito repellents is of blocking the mosquito's sensors and that way they wouldn't be able to know your whereabouts.
- A chameleon's tongue is twice the length of its body.
- A chimpanzee can learn to recognize itself in a mirror, but monkeys can't.
- A rat can last longer without water than a camel can.
- About 10% of the world's population is left-handed.
- A typical bed usually houses over 6 billion dust mites.
- A person afflicted with hexadactylism has six fingers or six toes on one or both hands and feet



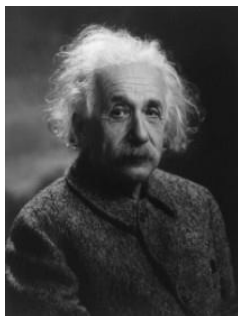
- Dolphins sleep with one eye open .
- While sleeping, one man in eight snores, and one in ten grinds his teeth.
- At 188 decibels, the whistle of the blue whale is the loudest sound produced by any animal.
- At birth, a panda is smaller than a mouse and weighs about four ounces.
- A giraffe can clean its ears with its 21-inch tongue!
- An ostrich's eye is bigger than its brain.
- The brain of an average adult male weighs 1,375 gm (55 oz).
- The brain of Russian novelist Turgenev weighed 2021 gm (81 oz), Bismark's weighed 1807 gm (72 oz), while that of French statesman Gambetta was only 1294 gm (51 oz). Einstein's brain was of average size.
- A person can live without food for about a month, but only about a week without water.
- If the amount of water in your body is reduced by just 1%, you'll feel thirsty. If it's reduced by 10%, you'll die.
- It has remained unsolved but a duck's quack does not echo.
- Sailor, Dead Leaf, Paper Kite, Blue

Striped Crow, Julia and Great Egg Fly are all names of BUTTERFLIES

- The original name for the butterfly was 'flutterby'!
- An Astronaut can be up to 2 inches taller returning from space. The cartilage disks in the spine expand in the absence of gravity.
- Each inch of DNA can store twenty-five GB of information.
- On average, people fear spiders more than they do death.
- Our DNA is ninety-eight percent the same as chimpanzees' and even fifty percent the same as bananas.

### Albert Einstein Facts

Albert Einstein is perhaps the most famous scientist of all time. Both his image and brilliant work on theoretical physics live on today and he serves as an inspiration to young scientists around the world.



April 1955.

- Born in Germany to a Jewish family, Einstein made many contributions to the field of theoretical physics.
- Even when very young, Einstein showed great ability in both math's and science. He was naturally curious and had a brilliant analytical mind.
- Einstein worked in a patent office evaluating patents for electromagnetic devices not long after he graduated.
- He produced perhaps one of the most famous equations ever:  $E = mc^2$  (energy equals mass multiplied by the speed of light squared).
- He is also well known for his theory of relativity. Special relativity being introduced in his 1905 paper "On the Electrodynamics of Moving Bodies" before Einstein developed the theory of general relativity between the years of 1907 and 1915.
- Einstein won the 1921 Nobel Prize in Physics for his work on theoretical physics.
- He worked on many other influential theories and projects including: the deflection of light by gravity, the quantum theory of atomic motion in solids, Brownian

motion, an explanation for capillary action and much more.

- Famous Albert Einstein quotes include: "Whether you can observe a thing or not depends on the theory which you use. It is the theory which decides what can be observed."
- "If I were not a physicist, I would probably be a musician. I often think in music. I live my daydreams in music. I see my life in terms of music.... I do know that I get most joy in life out of my violin."
- "Physical concepts are free creations of the human mind, and are not, however it may seem, uniquely determined by the external world."
- "I am enough of an artist to draw freely upon my imagination. Imagination is more important than knowledge. Knowledge is limited. Imagination encircles the world."

### **Amazing Science Jokes!**

- What do you call a fish with no eyes? A fsh
- Why do seagulls live near the sea? Because if they lived near the bay, they'd be bagels.

- What did one lab rat say to the other? "I've got my scientist so well trained that every time I push that buzzer, he brings me a snack!"
- How does a rabbit make gold soup? He starts with 24 carrots.
- What did the fish say when he hit a concrete wall? "Dam!"
- How do you know there are elephants in your fridge? Because the door won't close.
- Two fish in a tank, one says to the other, "So how do you drive this thing?"
- Where do fish put their money? In riverbanks.
- What do you call a brainy insect? A spelling bee.
- Does a radioactive cat have 18 half-lives?
- What do you call a cat that does tricks? A magic kit.
- What do you call the leader of a biology gang? The nucleus.
- Why are frogs so happy? Because they can eat whatever bugs them!

