

SSN ENERGY



DEPARTMENT OF
BIOMEDICAL ENGINEERING

SSN COLLEGE OF
ENGINEERING

DEPT QUATERLY
MAGAZINE

JULY- AUG- SEPT, 2013

EDITORIAL

Somebody once said, “Just know, when you truly want success, you’ll never give up on it. No matter what the situation is.” This is what we strive to achieve with every issue of Synergy.

This issue of the Biomedical Newsletter is as it has always been the proof of the accomplishments and the progress shown by this ever-evolving department. A diverse mix of medicine with engineering, this department shows its versatility with a string of accomplishments. It is not our goal to just bring to you the laurels of our department but to show the plethora of opportunities that the department can provide. The highlight of this issue is our National Level Technical Symposium, Srishti 2k13. The central theme for this year’s Symposium was chosen as Cognition. The unveiling of our magazine ‘SAMHITA’ was a moment of pride for the editorial team.

We bring to you the fruit of our persistent efforts and hope you synergize with this issue.

- **The Editorial Team**

IN THIS ISSUE

- **Workshops** 3
- **Faculty corner** 6
- **Lymphoma gene identified** 8
- **Alumni talk** 9
- **Student’s corner** 10
- **Srishti V6** 15
- **What’s next in medical innovation?** 17

WORKSHOPS

TWO DAYS NATIONAL LEVEL SEMINAR ON TRANSFORMS IN SIGNAL AND IMAGE PROCESSING – JULY 25-26, 2013

The National level Seminar on “Transforms in Signal and Image processing” was held at the Central Seminar Hall, Department of Electronic Communication Engineering, SSN College of Engineering, Chennai on 25th and 26th July, 2013. The seminar was sponsored by the All India Council of Technical Education (AICTE) and it was organised by M.Dhanaklshmi & R.Nithya (AP/BME). The event consisted of 5 keynote lectures delivered by eminent research and academic professionals. There were around 45 participants including faculty members from various colleges and research scholars.

The first day kicked off with a short inaugural session with our Chief Guest Dr.U.S.Raghupathy, Professor, Dept. of Electronics & Instrumentation Engg. Kongu Engineering College, Erode. The first session was delivered by Dr.U.S Raghupathy, on the “Applications of wavelets in image processing”. The next session was handled expertly by a member of our SSN family, Dr,N.Padmapriya, Department of Mathematics. She gave a very highly research talk on “DCT and its applications” which was very informative. She illustrated the origin of cosine transform and its development with her own doctoral research experience.

The second day (26.7.13) started with the third lecture delivered by Dr. Caroline Viola Stella Mary, Dept. of Computer Science Engg., Francis Xavier College of Engineering, Tirunelveli. She handled the latest development of “Curvelets and Ridgelets in DIP”. The next session was presented by Dr. Ravindra Dhuli, Associate Professor, DSP division, SENSE, VIT university, Vellore. The talk started with simple arithmetic manipulations and went on to explain the most advanced topics like “Hilbert and Radon transforms”.

The final session was by Dr. N.Venkateswaran, Prof, Dept. of ECE, SSN College of Engg, who delivered his lecture on “Applications on transforms in

real-time images”. The talk related the importance of transforms on a sample image and then extended it to real-time acquired medical images. The talk threw light on the practical difficulties of medical image processing and the ability of transforms to help eliminate most of the problems.

The seminar also threw open a plethora of opportunities for our faculty and students to work upon and learn. We are now, inspired by the response and would like to conduct similar seminars which would be useful stepping stones for researchers on the highway to knowledge.



A Peek into the Biomedical Industry

The final years and pre final years of the Biomedical Dept., attended a seminar presented by Mr. K. Vijayan, Human Resource Department, CURA Healthcare on the 10th of September, 2013.



The objective of the presentation was to bring out the difference between academic life and corporate life and thereby help the graduating students to approach the corporate life with the right mindset.

He introduced us to the opportunities available which we were unaware of otherwise. He effectively brought out the importance of creating networks, acquiring skills, building up profiles and how they always help in the long run. He enlightened us of the formal working relationships, vested groups and the competition in the corporate circle and briefed us on how to be more organized, well-equipped and the willingness to adapt.

He also gave us a brief insight on corporate jargons that are used regularly and on how to use them effectively as a tool to respond in the corporate life. The list of buzzwords included ASAP, FYI, EOD, COB, etc..,

He concluded his seminar with a Q & A session. The students, who were taken back by the hostility in corporate life, posed many questions. It was an enlightening experience and many unfamiliar information about corporate life was touched upon.



Initiative for Promoting Affordable & Quality TB Tests (I-PAQT) is an initiative of private laboratories and stakeholders working towards combating TB in India to ensure quality TB diagnostics tests are made available at access pricing to accredited laboratories that will in turn ensure these tests are made available to the general public at affordable prices.

Member laboratories under this initiative will be offered the GeneXpert PCR systems and kits at highly subsidized rates. Membership to this I-PAQT initiative is restricted to NABL, CAP or RNTCP accredited laboratories only. The subsidized rates of TB PCR test is Rs 1700. This rapid PCR test provides simultaneous detection of both MTB and Rifampicin resistance, a surrogate marker for MDR strains.

The initiative was launched by Clinton Health Access Initiative (CHAI) along with other partners, McGill International TB Centre, International Union Against Tuberculosis and Lung Diseases REACH, St. John's Research Institute and LabIndia Healthcare Pvt.Ltd.

Source: <http://www.ipaqt.org>

FACULTY CORNER

Seminars/Workshops participated

- **Mr. P. Manoj Niranjana**, AP attended a PCB ROAD Show On PCB DESIGN -Mentor Forum PCB 2013 India conducted by Mentor Graphics, coordinated by TECH labs at Hotel TAJ Club House, Chennai on July 12th, 2013.
- **Dr. S. Pravin Kumar**, Associate Professor attended "Workshop on Latest Technology in Autonomic Research" conducted by AD Instruments, at Department of Physiology, Apollo Institute of Medical Sciences & Research, Hyderabad, Andhra Pradesh on 14th August, 2013.
- **Mr. P. Manoj Niranjana**, AP, attended a two day workshop on "Trends and Developments in Signal Processing and its Applications" at ECE Department, SSN College of Engineering on 18th and 19th of August 2013.
- **Dr. V. Mahesh**, Associate Professor and **Mrs. B. Geethanjali**, AP attended the 12th annual Educators day conducted by National Instruments at Hotel ITC Grand Chola, Chennai on 2-9-2013.
- **Mr. P. Manoj Niranjana**, AP, attended a seminar on "User Conference on Effective Utilization of NPTEL" (National Level) organized by IIT Madras on the 20th of September, 2013.

PAPER PRESENTATION

- Dr. K.Vijaimohan and **Dr. Mallika Jainu**, AP, presented a paper titled 'Down Regulation Of VDAC1 And GRP78 By Carvedilol And Tocotreniol In Doxorubin Mediated Cardiotoxicity' at **American College of Clinical Pharmacology** held at **Bethesda, USA** between the 22nd and 24th of September, 2013.

PROJECT PROPOSALS

- **Dr. Mallika Jainu** submitted a project proposal titled “**Adverse reaction study of hypoglycemic drug in diabetes mellitus**” to Department of Science & Technology for Rs. 21.05 lakhs (5-7-2013).
- **Dr. S. Pravinkumar, Dr. V. Mahesh**, Mr. Logeshwaran and Mr. Pragadheeswaran submitted a project proposal titled ‘**A smart low cost solar powered wrist type blood pressure device with all advanced features**’ to Indo-US Grand Challenge for Rs.14.0 lakhs (28-8-2013).
- **Dr. A. Kavitha** and **Dr. S. Pravin kumar** submitted a project proposal titled “**Analysis of Synaptic plasticity and Cognitive processes using EEG**” to internal funding for Rs. 9.00 lakhs.
- **Dr. S. Guruprakash** and **Dr. R. Subashini** submitted a project proposal titled “**Strategies to Target Orthopedic Implant Associated Infections (In Vitro Evaluation)**” to internal funding for Rs. 7.00 lakhs.

PAPER PUBLICATION

- S. Ganapathi, S.T. Premkumar, T. Malaikannu, **A. Kavitha**, “**Musculoskeletal Modeling of Hip Joint and Fracture Analysis for Surgical Planning Using FEM**” European Journal of Biomedical Informatics 2013, Vol. 9, No. 1, pp. 27-37.

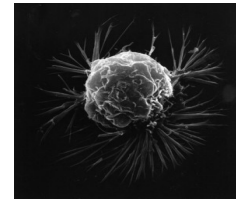
Dr. Anthony S. Fauci, Director, National Institute of Allergy and Infectious Diseases, NIH, Maryland, USA receives the Robert Koch Gold Medal 2013 for his outstanding scientific contributions to HIV research. The Robert Koch Award, presented annually, is one of the most prestigious and renowned scientific commendations in Germany.



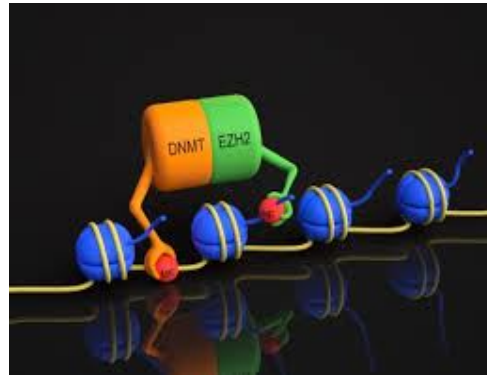
Key B cell lymphoma gene identified

The first step to finding a new treatment for cancer is to identify pivotal factors, such as genes, that the disease cannot survive without. For the majority of B cell lymphomas, one such gene: identified is EZH2. EZH2 is a master gene regulator used by B cells- the immune cells in charge of making antibodies. Master regulators like EZH2 simultaneously switch many genes on or off, and by doing so they coordinate the actions of multiple genes to achieve a common function. In the case of EZH2, this is the promotion of the division of B cells. In normal B cells, EZH2 is only active during an immune response against invading foreign microbes, where many fully-fledged antibody producing B cells are needed.

However, this ability of EZH2 to drive division also means that it is utilized by the majority of lymphoma cells to promote their accelerated division. In addition, EZH2 often cooperates with another gene, the survival-promoting BCL2, to enable lymphomas to thrive further.



As the majority of B cell lymphomas depend on these genes for the vital functions of growth and survival, blocking the activity of both genes simultaneously will cripple the disease on both fronts.



This combined approach therefore constitutes a potentially powerful treatment. Accordingly, the EZH2 and BCL2 inhibitors had a much stronger effect when applied together than individually in tests on cells and mouse models. This research has provided a strong foundation for the further development of this therapeutic approach against B cell lymphomas.

- Dr. Mallika Jainu,
AP

ALUMNI ACTIVITIES

Alumni Talk

I'm a 2010 graduate from the department of Biomedical Engineering at SSN College of Engineering. Right from the time I joined SSN, I knew that I was going to study further and I always wanted to do my graduate studies in the US. I went through the usual process of GRE, TOEFL, writing a statement of purpose, getting recommendation letters from professors, and applying to universities. The most stressful time was to actually wait for an admit. Of the admits I got, I chose to go to Arizona State University for my masters.



I loved my grad school classes. The approach to teaching and learning was very different, and it was a nice experience to interact with people of different nationalities. I knew I wanted to eventually get a Ph.D and I had the opportunity of transferring to the Ph.D program within a year of my masters. I work on computational and experimental fluid dynamics in cerebral aneurysms, where I study how different endovascular treatments affect aneurysm hemodynamics. I thoroughly enjoy my research, and alongside I get to take some really amazing classes.

There are lots of universities in India, Europe and America which offer great bioengineering/biomedical engineering programs and do exceptional research. However, higher studies are not the only option after undergrad though. Working on some really cool projects and collaborating with research laboratories throughout the country during your undergrad will help you build a good resume, which in turn will help you to work in a R&D industry.

I really hope that each and everyone of us make a difference in improving the quality of healthcare. My wishes to all of you in making your dreams come true!

-Priya Nair

STUDENT'S CORNER

PAPER PUBLICATION

- Hari Krishna S.V, Muthukaruppan M S, Paruthi P (Passed out 2010) and Mahesh Veezhinathan, "**Performance Evaluation of PPG Signal using Time-Frequency Features**", Journal of Engineering Research and Technology, Vol. 2, Issue. 8, pp.988-992.
- R. Ramya, N. Sneha (Passed out 2013) and Mahesh Veezhinathan , '**Design of respiration monitor using impedance pneumography and LabVIEW**', Proc. of INCAM 2013, IITM, pp.272-273.
- Prasanna V., Preethi D., Rama C., (Passed out 2013) Manojniranjan P and Mahesh Veezhinathan, '**Performance Analysis of MEMS Based Wearable Sensors in GAIT**', Proc. of INCAM 2013, IITM, pp.274-275.
- Harshitha R, Swetha S (Passed out 2013) and Mahesh Veezhinathan (2013), '**Non-Invasive analysis of respiratory rate from ECG & PPG**', Proc. of INCAM 2013, IITM, pp.276-277.
- Akshaya H., Anjana V. (Passed out 2013) and Mahesh Veezhinathan, '**Design of a thermal biofeedback device for the treatment of digital ischemia**', Proc. of INCAM 2013, IITM, pp.278-279.
- T. Monica, Soundarya.S (IV year) and Dr. Mallika Jainu (AP/BME), presented a paper "**Study of growth factor and VEGF-mRNA expression in ascorbic acid isolated from Cissus quadrangularis treated NSAID induced gastric toxicity**" published in the proceedings of an International conference on Biotechnology for innovative application by **Elsevier Publication** Vol. 5; Pp 243-244.
- R. Subashini, V. Mahesh, A. Kavitha, B. Geethanjali, S.U. Rakshitha (Passed out 2012) "**Comparative Evaluation of Antimicrobial Activity of Selected Three Herbal Plants Extract with Digital Image Processing Technique**" European Journal of Biomedical Informatics 2013, Vol. 9, No. 1, pp. 14-19.

STUDENT'S ACHIEVEMENTS



Suryakumar.A, Rajesh.R and Abigail Lutherine, (IV year) presented a paper “Silence speed system using Electrogluttogram” at VIT university and won the **Best paper award**.



A. Suryakumar R. Rajesh Abigail Lutherine

Sarah Rajtha and T.S. Ranjani, (III yr) presented a paper on “Role Of Fish Oil On Oxidants And Lipid Metabolism In Hepatic Fibrosis” at Sri Venkateswara College of Engineering, and won the **Best paper award**.



T.S. Ranjani



Sarah Rajtha

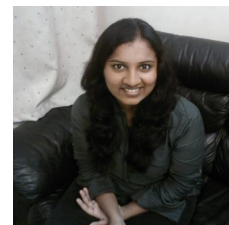
A. Hemapraha, Sarah Rajitha, S. Vinutha and T.S. Ranjani (III year) project titled “ Study of growth factor on hepatic fibrosis-role of flax seed oil” sanctioned for students internal funding under the guidance of **Dr.Mallika Jainu**

S. Karthick, J.C. Jackson (Mech), Swathi.S and Bhattaram Snehapriya (III year) project titled “ PDMS based microfluidic device for Biomedical application” sanctioned for students internal funding under the guidance of **Dr.S. Guruprakash** and **Dr. V.E. Anna malai**

C.Pooja, Saravana Prakash, C.R. Imayan (II Year) and Vyshnavi Parthasarathy (IV year) project titled “Acquisition, Analysis and Transmission of lung sounds” sanctioned for students internal funding under the guidance of **Dr.S.Pravin kumar** and **Dr.V.Mahesh**.



Vaishali Ramkumar (III yr) was runners up in the Anna University Table Tennis tournament held at the Meenakshi College of Engg, Chennai on 17th Sept, 2013 besides finishing Winners in the Anna University Zonals at the Abdul hakeem College of Engg ,Vellore on the 24th Sep,2013 and at IIT Madras on 26th Sept,2013.



Visalatchi Sindhuja (III yr) participated in the Chess tournament at PITS, Tanjore and at MIT, Pune to bag the first place (5-9-2013 to 7-9-2013) and second place respectively.



Subash Raja (III yr) participated in the basketball zonals held at IIT Madras.

Prasanth .K (III yr) participated in the volleyball zonals at the Mohammed Sathak College.

C.R Imaiyan (II yr) won the third place in the Squash Tournament held at IIT-M, Sep 2013.



- **Aishwariya Moorthy** (III yr) won the 1st place in Street battle held as a part of Intra College Culturals of SSNCE and 3rd place for the events "ADAPTUNE" and group dance.

- **Mareeswari .K** (III yr) came 3rd in the poetry writing competition held as a part of Intra College Culturals by the Saaral Tamil Mandram.
- **Sneha Nair** and **Vallabhi Venkatesh** (II yr) took part in the Intra College Culturals, SSNCE and bagged the second place in group dance.
- **P.A Shilpa** (II yr) was a member of the crew of the Drama Club "Lights Out Please" which won the first place held at NIT Trichy.



Appointment of Biomedical Engineers in Government Medical Colleges and Hospitals

Appointment to the post of Bio Medical Engineers in the Government Medical Colleges and its attached institutions under the control of Director of Medical Education and also in the Hospitals under the control of the Director of Medical and Rural Health Services and Primary Health Centres under the control of Director of Public Health and Preventive Medicine.

Qualification

Bachelor in Engineering in one of the following technical streams – Biomedical, Mechanical, Instrumentation, Electrical or Electronics.

Candidates who have done B.E with Bio Medical Engineering as one of the subjects shall be considered.

Two years experience as Bio Medical Engineer in a Hospital or Firm or Candidates who have undergone special training in equipment maintenance from reputed institutions shall be preferred.

Salary - Contract pay of Rs.22,000/- per month

Contact person

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Placements

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Wipro

Arun.E, Asna Anjoom, Deepa Rohini, Eswari R, Kavitha J, Lavanya Jagannathan, Poojya R, Rasikha Ramanand, Sadhani L, Shajana R, Vaishnai R, Vibha S



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CTS

Akshaya Kumari, Poojya R, Vennila V, Renuga Devi, Santhini Devi



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Abisekh B, Arun E, Asna Anjoom, Bhavani J, Deepika D, Eswari R, Kavitha J, Meher Mridula, Sailaja N, Rajashree J, Renuga Devi, Sadhani L, Sanjay Romero D'Sami, Saranya A, Sasikala T, Sathurya R, Shajana R, Shamala G, Sruthi.S, Thirumagal.K, Vaishnavi.R, Vibha.S

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Srishti V6- The Intellectual Synapse

Mankind has always met challenges and succeeded primarily due to their knowledge of the art of auxiliary creation – Srishti. One date was on the calendar of every biomedical student in Chennai, September 3rd, 2013. The day marked the 6th instance of Srishti, SSN's very own biomedical symposium. The national technical symposium had students hovering around the department in pursuit of knowledge. The central theme was cognition, a physiological phenomenon which enabled man to understand the world around him and connect the dots perfectly. The theme was chosen keeping in mind the recent advancements in cognition enhancement, cognitive feedback, control and communication, which have tremendously influenced the way we perceive, control and live our lives.



Srishti started off on a high note at the Main auditorium with the inaugural ceremony. The guests of the day were Arjun Sooraj, Chairman, AKAS biomedical and Kush Tripathi, Founder, Biomedikal.in. Arjun delivered the special address in which he encouraged the student fraternity to embrace entrepreneurship and innovation, which he termed as propellers of the biomedical revolution. Then, Samhita 2K13, the official annual magazine of the

department was released by the principal and first copies were received by the guests.



The events, both technical and non-technical then started, attracting huge crowds. Events like gaming, treasure hunt, circuit debugging, coding, technical quiz, paper presentation and poster presentation were the core of the day and saw overwhelming response. New events like problem solving and cognitive testing were also crowd pullers and were certified fresh and innovative. Free IQ tests and reports were offered to students who participated in the MindRobics, the exclusive event for cognition. Around 321 participants from 23 colleges took part in the different events.

The afternoon session saw the biggest success of the day, the workshop on Matlab and Arduino. The workshop which saw a huge turnout of 487 participants was helmed by the final year students of the department and was an eye opener for many. At the end of our course, the day will remain etched in our memories along with one quote,

“Aim for Japanese quality, German engineering, American service-marketing, Chinese pricing and Indian brand and beat the world leaders in their own lands.” -Arjun Sooraj, AKAS Biomedical.

What's next in medical innovation?

A British healthcare design firm has come out with a new drug-delivery device: an auto-injector for rheumatoid arthritis patients. The company claims the device reduces pain, allows for smaller needles and shorter injection time, plus has an easy-to-hold handle.

Cambridge Consultants Director of Drug-Delivery Matthew D. Allen designed this autoinjector “AIRA”.



The Aira is also reusable, while most like-devices are single-use. The syringe is loaded into the device with the cap on—making it safer and less frightening for the patient. The cap is only removed immediately prior to injection, with the needle out of sight within the device. The major usability feature, though, is that the base of the device heats the drug to human temperature in less than a minute.

Rheumatoid arthritis drugs are often stored in the refrigerator and can be viscous (thick), too. Patients are asked to remove the drug from the fridge and let it rise to room temperature before injecting; however, because of impatience, forgetfulness, quicker need for the medication and a host of other reasons, they sometimes don't. This means they're injecting cold, thick medicine into their veins with a thicker needle. Oh yeah, since it's cold and thick, it takes longer to inject.

With the Aira, a patient drops his syringe in the device, the device warms the drug up to body temperature and maintains it at that temperature. This makes the drug warmer, yes, but also less viscous, which means a smaller needle can be used and the drug can be injected more quickly. For patients who suffer from rheumatoid arthritis, that means less stress and time spent gripping a device.

- Muthu Vij ay, IInd yr

EDITORIAL TEAM

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Dr. Mallika Jainu

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Sanjana Siva (III yr)

Santhosh G (IV yr)

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