

Issue 05 | Jan-Mar 2018

Syed Babar Ali School of Science & Engineering

Newsletter



sbasse.lums.edu.pk

A photograph of the Syed Babar Ali School of Science & Engineering building at LUMS. The building is a modern, multi-story structure with a facade of light-colored stone and red brick panels. It has a prominent entrance with several columns. The foreground shows a paved walkway and some greenery with red flowers.

SBASSE CELEBRATES 10 YEARS OF ITS ESTABLISHMENT 2008-2018

**ADVISORY
BOARD MEETING**

Ten years roundup & achievements

**ABDUS SALAM
MEMORIAL LECTURE**

By Prof. Robert L. Jaffe

**MICROWAVE ANTENNA
AND CIRCUITS RESEARCH
LAB (MAC)**

A state of the art facility

INSIDE



Prof. Shahid Masud, Dean SBASSE, receiving ACATA GNEISS rock from Prof. Bob Jaffe. The Acata Gneiss was found in Northwest Territories, Canada. It is earth's oldest known intact crustal fragment and about 3.58 - 4.03 billion years old.



Syed Babar Ali School of Science & Engineering Celebrates 10 years of its establishment

SBASSE organised round table on Infectious Diseases

Major Day - A Career Information session at Karachi & Islamabad



Inauguration of first NMR facility in the region - NMR at SBASSE

Abdus Salam Memorial Lecture

Lahore Science Mela 2018

SPADES - 9th PSIFI Science Olympiad

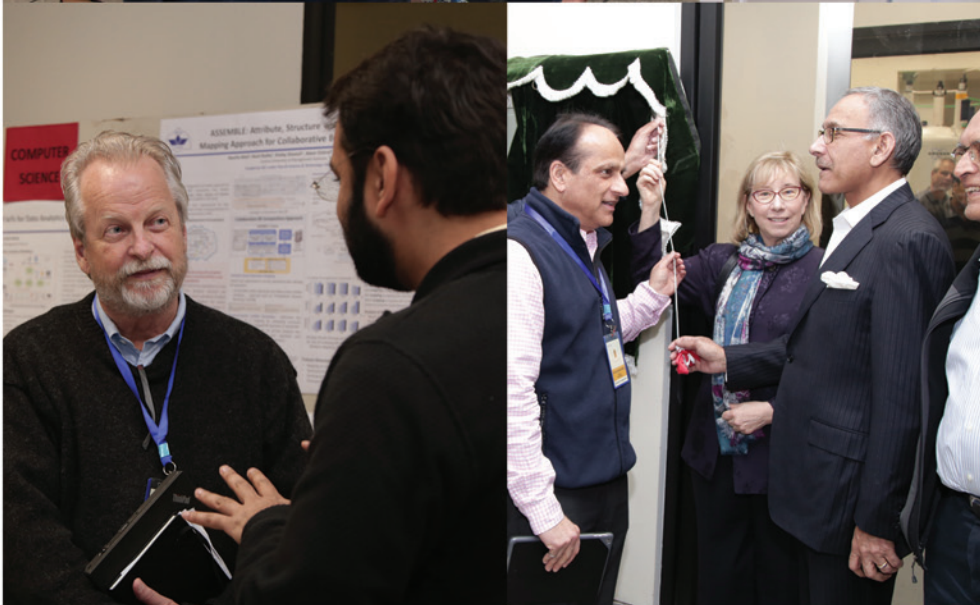
Enhancing the road user facility in collaboration with National Highway and Motorway Police

Achievements

Workshops

Community

Labs at SBASSE - MAC Research Lab



SYED BABAR ALI SCHOOL OF SCIENCE AND ENGINEERING CELEBRATES 10 YEARS OF ITS ESTABLISHMENT

Syed Babar Ali School of Science and Engineering (SBASSE) successfully completed a decade of its establishment on January 29, 2018. The 10 years celebrations of the School were held during the 18th Annual Advisory Board Meeting of the School which took place from January 29 to February 1, 2018.

The 18th Annual Advisory Board Meeting of the Syed Babar Ali School of Science and Engineering (SBASSE) was opened by the Vice Chancellor LUMS, Prof. Dr. S. Sohail H. Naqvi sharing an update on the latest developments at LUMS, followed by Dean SBASSE, Dr. Shahid Masud presenting a response to last year's Advisory Board Report. The Department Chairs of SBASSE shared the vision, research and achievements of their respective faculty members and students.

Chairperson of the SBASSE Advisory Board, Prof. Sally Benson led the session, 'Ten-years round up' and achievements of SBASSE and planning for the next ten years. The Advisory Board also met with the students, faculty, administrative and lab staff of SBASSE.

An update on the new engineering programmes was shared by the Department Chair of the Chemistry and Chemical Engineering department, Dr. Basit

Yameen. A report on promotion and tenure cases of the faculty of SBASSE was given by the convener of the School Appointment, Promotion and Tenure Committee, Prof. Robert Jaffe.

Dr. Muhammad Abubakr, Director of the Centre for Water Informatics and Technology presented an update on the Centre's activities and its future direction. A proposal for the new Centre of Energy was presented by Dr. Naveed Arshad, Associate Professor and Chair, Department of Computer Science.

The Advisory Board Members also met the Deans of the other schools at LUMS: Dr. Jawad Syed, Dean, SulemanDawood School of Business (SDSB); Dr. Kamran Asdar Ali, Dean, Mushtaq Ahmad Gurmani School of Humanities and Social Sciences (MGHSS) and Dr. Martin Lau, Dean, Shaikh Ahmad Hassan School of Law (SAHSOL). Prof. Robert Jaffe delivered the Salam Memorial Lecture, 'The Time of Your Life (and other times)'.

PhD and MS students of SBASSE networked with the Advisory Board members and presented their ongoing research in the areas of Biology, Computer Science, Chemistry and Chemical Engineering, Mathematics, Electrical Engineering and Physics.

A new lab resource, the Nuclear Magnetic Resonance (NMR) was inaugurated by the Advisory Board Members. This long sought fundamental facility for LUMS will boost research in diverse areas of science and is the latest example of Syed Babar Ali's continued support for research and education at LUMS. This facility will help in improving the education standards and establishing research in areas of structural biology, drug discovery, vaccine development, metabolomics and synthetic chemistry.

During the Advisory Board Meeting, an industry academia roundtable on infectious diseases, 'Advancement of Clinical, Translational and Basic Research on Infectious Diseases to Improve Public Health in Pakistan' was held on January 31, 2018. The discussion, which identified several areas of potential collaboration between academia and industry, and academia and government sector to improve the situation of dealing with infectious diseases in Pakistan, was attended by a number of thought leaders from the Punjab government, pharmaceutical industry, and local hospitals in addition to LUMS SBASSE faculty and Advisory Board members.



Participants of the 18th Advisory Board Meeting
29, Jan 2018 - 01, Feb 2018

SBASSE ORGANISED ROUND TABLE ON INFECTIOUS DISEASES

A round table titled *“Advancement of Clinical, Translational and Basic Research on Infectious Diseases to Improve Public Health in Pakistan”* was organised by Syed Babar Ali School of Science and Engineering (SBASEE) in partnership with Pakistan Kidney and Liver Institute (PKLI) on January 31, 2018.

The round table was attended by a number of thought leaders from the Punjab government, pharmaceutical industry, and local hospitals in addition to LUMS SBASSE faculty and Advisory Board members. Dr. Shabnum Sarfaraz (Chief Executive Officer Punjab Public Health Agency, Punjab Primary and Secondary Healthcare Department), Dr. Sabira Tehseen (Director, National Reference Laboratory for the diagnosis of Tuberculosis), Dr. Faisal Sultan (Chief Executive Officer, Shaukat Khanum Hospital), and the Chief Executive Officer and President, Pakistan Kidney and Liver Institute (PKLI) presented a holistic view of the current situation of infectious diseases in Pakistan and highlighted gaps in knowledge regarding prevalence and treatment of infectious

diseases. During the round table, the participants stressed on the need to develop novel methods to combat drug resistance in Pakistan and to establish platforms for data recording and data sharing between different stakeholders.

The discussion identified several areas of potential collaboration between academia and industry, and academia and government sector to improve the situation of dealing with infectious diseases in Pakistan.



SBASSE CONDUCTED ‘MAJOR DAY’ - A CAREER INFORMATION SESSION AT KARACHI & ISLAMABAD

Syed Babar Ali School of Science & Engineering (SBASSE) conducted Major Day events in Movenpick Hotel Karachi on March 4, 2018 and Islamabad Hotel Islamabad on March 17, 2018 respectively. The events comprised of an informed overview of the SBASSE curriculum by the Dean, followed by an extended Q&A session in which parents had their queries and concerns addressed.

Audience really appreciated the idea and shown keen interest in participating in all such activities conducted by the school in future as well. A feedback survey was also conducted through which, the school received important input about various concerns i.e. quality of instruction, academic workload and feedback regarding facilities provided by the University.



Session held at Karachi



Session held at Islamabad

LUMS INAUGURATES FIRST NMR FACILITY IN THE REGION - NMR AT SBASSE

Nuclear Magnetic Resonance (NMR) is a state of the art technology to study the structural aspects of molecules. It had been a long sought fundamental facility for LUMS to boost research in diverse areas of science and is the latest example of Syed Babar Ali's continued support for research and education at

LUMS. On January 31st respected Syed Babar Ali and members of the SBASSE Advisory Board inaugurated the establishment of NMR facility in the central lab of SBASSE. This facility will help in improving the education standard and establishing research in areas of structural biology, drug discovery, vaccine

development, metabolomics and synthetic chemistry. Establishment of such facility at SBASSE will significantly contribute towards the vision of LUMS to become an internationally acclaimed research university that serves society through excellence in education and research.



ABDUS SALAM MEMORIAL LECTURE - THE TIME OF YOUR LIFE AND OTHER TIMES

by Prof. Robert L. Jaffe

SBASSE organized Abdus Salam Memorial Lecture on the topic of **'The Time of Your Life and Other Times'** by Prof. Robert L. Jaffe. Dr. Jaffe explored how the revolution in the scientific perception of time took place and how the landscape of time in physics returned at the end to explore the origins of the time scales with which our lives are governed.

Bob Jaffe is Morningstar Professor of Physics at Massachusetts Institute of Technology (MIT), USA and he is also emeritus member of SBASSE Advisory board. It is a great honor and privilege that Dr. Jaffe accepted our invitation as the speaker for this session.



DEPARTMENT OF PHYSICS ORGANISED LAHORE SCIENCE MELA 2018

A team of science enthusiasts, led by renowned scientist Dr. Muhammad Sabieh Anwar from the Department of Physics, SBASSE, LUMS organized the second "Lahore Science Mela", the great annual festival of science in Lahore, at the Ali Institute of Education on 27th and 28th January 2018. The project is a joint initiative of Khwarizmi Science Society and the Ali Institute of Education. The event was sponsored by the Syed Babar Ali Foundation.

It was an open-for-all temporary science museum of sorts which welcomed the people of Lahore to explore the scientific discoveries and milestones in Pakistan. At this grand celebration of science, around 80 exhibits of various government and non-government based organizations were showcased.

Different organizations such as Pakistan Science Club, PCSIR, JF Labs, Makeistan, Robokids, EjaadTech, Lahore Astronomical Society, The Planetary Society, Allama Iqbal Medical College, Government College, Lahore, F.C. College, Usman Institute of Technology, Robokids, Interdisciplinary Research Centre in Biomedical Materials and CECOS University,

Peshawar were a part of the event. A team of mathematicians from the famed House of Mathematics, Isfahan (Iran) also participated in the Mela and excited young curious minds to delve into the scientific wonders of the natural world. Numerous schools and universities also exhibited

their brilliant inventions at this mega celebration of science and technology. The footfall for this festival was around fifteen thousand people while a music video produced by Dr. Sabieh Anwar, inviting masses for this science festival, time enjoyed round half a million views on social media.



SOCIETY FOR THE PROMOTION OF ENGINEERING AND SCIENCES (SPADES) ORGANISED 9TH PSIFI SCIENCE OLYMPIAD

9th PsiFi, Science Olympiad was held at LUMS from Jan 13 to 16, 2018. The Lahore University of Management Sciences (LUMS) holds the distinction of being the pioneer of Science Olympiads in Pakistan. Students from highly prestigious institutes across the country eagerly await PsiFi, a flagship LUMS event hosted by the University's Society for the Promotion of Engineering and Sciences (SPADES).

This year, SPADES was committed to making it bigger and better than before. Building on the fundamental structure, 16 academic events challenged delegates'

knowledge, skill and creativity in a wide variety of scientific disciplines and scenarios. Alongside these, PsiFi hosted four highly attended and anticipated social events to complement delegates' learning experiences at the Olympiad with the opportunity and encouragement to form a meaningful, lasting network of like-minded individuals. SPADES aspires through PsiFi IX to further its commitment to the mission of becoming a leading student-run organisation promoting increased participation, collaboration and openness in the sciences in Pakistan.



ENHANCING THE ROAD USER FACILITY IN COLLABORATION WITH NATIONAL HIGHWAY & MOTORWAY POLICE

National Highway & Motorway Police (NH & MP) and Lahore University of Management Sciences (LUMS) signed a Memorandum of Understanding (MoU) on February 14, 2018. Through the MoU, which was signed between Kamran Adil, SSP NH & MP and Vice Chancellor LUMS, Prof. Dr. S. Sohail H. Naqvi, NH & MP will collaborate with LUMS to explore opportunities of research and development with Dr. Zubair Khalid, Assistant Professor, Electrical Engineering and Co-Director, Smart Data, Systems and Applications (SDSA) Lab, Syed Babar Ali School of Science and Engineering, LUMS.

Both stakeholders will work in collaboration for the development of an application and systems to facilitate road users on national motorways and highways and improve the technology for law enforcement on them.

Dr. Naqvi expressed his delight at being a part of the project and said that he sees it as a technology gateway into LUMS. *“Technology can present many solutions for the issues we face in Pakistan. We are very excited and privileged that NH & MP has chosen to collaborate with us. You can expect international standards and delivery on quality that is the best in the world,”* said Dr. Naqvi.

Sharing his views, SSP Kamran Adil said, *“I would especially like to thank Dr. Zubair Khalid because he is the one who took the burden of taking this initiative. He reached out to us and together we identified the requirements and started off on a small scale. The motorway is expanding rapidly with CPEC so it is a challenge to provide quality services. We look forward to working with LUMS on a number of projects in the future namely road safety, developing education material for all segments of society, collaborations in training projects, legal framework and HR aspects. We believe there is great potential in this collaboration and this is only a starting point. We have had an overwhelming response with this application and we look forward to working with LUMS.”*

During the ceremony, the mobile application, NH & MP Rahbar, developed by LUMS in collaboration with NH & MP, was also launched. This application will facilitate commuters on national motorways and enable them to seek efficient assistance from NH & MP through Live Chat, Roadside Assistance, Travel Alerts and Traffic Advisory features of the application.

The NH & MP, regarded as one of the best national institutions serving road users across Pakistan, is committed to ensuring a safe and secure driving environment on the national motorways and highways and serving commuters by providing them with prompt assistance. The primary objectives of the NH & MP include regulating and controlling traffic on motorways and highways, enforcement of traffic rules, providing roadside assistance to the commuters and educating road users on road safety.

“Technology can present many solutions for the issues we face in Pakistan. We are very excited and privileged that NH & MP has chosen to collaborate with us. You can expect international standards and delivery on quality that is the best in the world.”
Dr. Naqvi



Dr. Zubair Khalid, Assistant Professor, Electrical Engineering & Co-Director, Smart Data, Systems and Applications (SDSA) Lab

DR. SALMAN NOSHEAR ARSHAD VISITS MIDDLESEX UNIVERSITY, UK

Dr. Salman Noshear Arshad, Assistant Professor, Department of Chemistry and Chemical Engineering at the Syed Babar Ali School of Science and Engineering (SBASSE) recently taught at Middlesex University, London, United Kingdom for eight hours from February 19 to 23, 2018. The visit was supported by Erasmus+ International Credit Mobility (ICM) grant which is meant to promote exchange of students, staff and faculty between the European countries and the partner countries. Dr. Arshad's activities during the visit included:

An open public lecture on "Introduction to Materials Science and Nanotechnology" was attended by students, staff and faculty from diverse backgrounds. The lecture revolved around the principles of materials science, physics and chemistry of materials, modern applications of advanced materials, nanoscience and nanotechnology and the future.

Two lectures were delivered for the second year undergraduate students of Bio-engineering as part of the module on the design of medical devices and implants. The topics covered were "Mechanical

Properties of Materials" and "Dynamic Mechanical Analysis". These lectures covered the basis of the relationship between the structure and mechanical properties of metals, ceramics, polymers and composites and also introduced the dynamic mechanical response of viscoelastic materials such as polymers and rubbers.

A research seminar on "Functional Nanofibers" was given, where Dr. Arshad described the current research activities of his research group at LUMS.



RESEARCH PAPER PUBLISHED IN **BIOORGANIC MEDICAL CHEMISTRY LETTERS** BY SBASSE FACULTY

Dr. Rahman Shah Zaib Saleem, Assistant Professor, Department of Chemistry and Chemical Engineering and Dr. Amir Faisal, Associate Professor, Department of Biology have published research paper titled "**Synthesis and evaluation of modified chalcone based p53 stabilizing agents**", in *Bioorganic Medicinal Chemistry Letters*.

p53 is an important cellular protein that prevents the development of cancer by halting division and inducing death in faulty cells. Many cancer cells, therefore, learn to directly or indirectly inactivate this protein. Such cancers show resistance towards the chemo- and radiotherapeutic agents. Cells, where p53 is indirectly inactivated, can be killed by re-activation of p53.

The research groups of Dr. Saleem and Dr. Faisal are working in close collaboration to identify next generation cancer drugs. Drugs that can reactivate p53 have the promise to improve the efficiency of the current chemotherapeutics. In this paper, the authors have identified novel compounds that can

stabilize p53 in colon and breast cancer cells lines. "We are working towards improving the activity and selectivity of these compounds towards specific cellular targets for further probing of cellular mechanism of action of these compounds" commented Dr. Saleem.



The paper can be read at: <http://www.sciencedirect.com/science/article/pii/S0960894X17307382>

FACULTY OF CHEMISTRY AND BIOLOGY PUBLISHED RESEARCH WORK IN 'NATURE PUBLISHING GROUP'S SCIENTIFIC REPORTS'

"Identification and characterization of SSE15206, a microtubule depolymerizing agent that overcomes multidrug resistance" has been accepted for publication in Nature Publishing Group's Scientific Reports. This is collaborative research work between Dr. Rahman Shah Zaib Saleem, Department of Chemistry and Dr. Amir Faisal's laboratory at the Department of Biology at Syed Babar Ali School of Science and Engineering (SBASSE).

The research work has spanned more than two and a half years and involved two MS students (Safia Manzoor and Sunniya Iftikhar), two lab instructors (Sardraz Khan and Aishah Bilal) and a PhD student (Rahim Ullah) who worked together under the supervision of Dr. Faisal and Dr. Saleem.

Cancer is one of the leading causes of deaths worldwide, and there are more than 100,000 cancer-related deaths in Pakistan every year. Increased understanding of cancer biology during the last few decades has resulted in improved treatment options. Some of the current treatments, however, become ineffective due to development of multidrug resistance, where cancer cells stop responding to many types of drugs.

"We have been interested in discovering new compounds that could kill multidrug-resistant cancer cells. In this regard, we have identified and characterised a new molecule named SSE15206 that overcomes such multidrug resistance in different types of cancers. The ability of SSE15206 to overcome multidrug resistance makes this class of molecules promising precursors for the development of drugs that can overcome cancer multidrug resistance," elaborated Dr. Faisal.

The compound, SSE15206 is a promising hit for developing a drug to overcome multidrug resistance in cancer. However, this is only the first step. "We need to carry out more work to optimise several of

its properties including potency, efficacy, and pharmacokinetics need to be optimised to have a candidate drug. So immediately, this may not impact the common man, but in the long run, it will pave the way for the development of new drugs that can benefit people suffering from drug-resistant cancers," added Dr. Faisal.

The labs plan to pursue this hit compound further to develop the lead compound for further studies. Additionally, they are planning lead optimisation studies to improve SSE15206 so it is closer to a drug like molecule and can be evaluated in xenograft mouse models for efficacy against tumours. The timeline for such studies is usually 3-4 years and depends on whether funding can be secured or not for further studies and in-house facilities for in vivo experiments.

Talking about the collaborative achievement, Dr. Faisal commented, "This study is a collaborative effort between my lab in Biology and Dr. Rahman Shah Zaib Saleem's lab at the Department of Chemistry and Chemical Engineering and is a perfect example of SBASSE's no boundaries vision. One of the most important aspects of the publication is that most of the work was done at LUMS by students and research staff from both labs. Our students and research staff work together on many different projects and this is the second publication that has come out of our collaborative effort. This publication is one of the rare examples of such studies coming out of Pakistan. Dr. Saleem and I are both confident that our labs can produce great quality research in drug discovery here at LUMS. We would like to thank LUMS for providing funding in the form of Faculty Initiative Fund to complete this research. We would also like to thank our respective departments for providing excellent facilities and support to carry out this research."

Vice Chancellor LUMS, Prof. Dr. S. Sohail H. Naqvi

congratulated the faculty and said, "Great to see faculty reaching for the stars at LUMS. They are pushing new boundaries, working on a problem that is internationally significant and locally relevant, collaborating with each other, working with graduate students, collaborating internationally and carrying out the great research work at LUMS."



DR. NAVEED UL HASSAN WINS THE RESEARCH PRODUCTIVITY AWARD (RPA) 2017

Dr. Naveed Ul Hassan, Associate Professor, Department of Electrical Engineering at the Syed Babar Ali School of Science and Engineering (SBASSE) has won the Research Productivity Award (RPA) 2017. Receiving a score of 13.69, Dr. Hassan has won the award in Category B.

Reflecting on his achievement, Dr. Hassan said, *"Research productivity of scientists in Pakistan is increasing and the criterion is getting tough each year. I feel really happy at winning this award for the second consecutive year."*

Dr. Hassan's research interests include cross-layer

design and resource optimisation in wireless communication systems, demand response management and integration of renewable energy resources in smart power grids, indoor localisation, and Internet of Things (IoT). He has authored/co-authored more than 55 research publications. He has successfully published research articles in prestigious journals, including IEEE Transactions on Wireless Communications, IEEE Transactions on Communications, IEEE Transactions on Vehicular Technology, IEEE Transactions on Smart Grids, IEEE Transactions on Industrial Electronics, and IEEE Communications Surveys & Tutorials.



SYED BABAR ALI SCHOOL OF SCIENCE AND ENGINEERING RESEARCH AND PUBLICATIONS 2011-2017



Publications By Type:



LUMS CENTRE FOR ADVANCED STUDIES IN MATHEMATICS HOSTED A WORKSHOP ON 'TOPICS IN TOPOLOGY'

The Centre for Advanced Studies in Mathematics (CASM) in collaboration with Abdus Salam School of Mathematical Sciences and National Centre for Mathematics organised a workshop on Topics in Topology from February 22-24, 2018. The main speakers at the event included Alberto Arabia (Senior Researcher, Université Paris Diderot, IMJ-PRG, CNRS, France), Barbu Berceanu (Professor, IMAR – Romania & AS-SMS-Pakistan), Christian Blanchet (Professor, Université Paris Diderot, IMJ-PRG, France) and Haniya Azam (LUMS, Pakistan).

Topological spaces arise naturally in almost every branch of mathematics. This has made topology one of the great unifying ideas in mathematics. In addition to this, the field of topology has found numerous applications in Biology, Physics, Computer Science and Robotics.

This three-day workshop was aimed at graduate students and young researchers, with lectures starting from an elementary level. Three mini lecture series on selected topics from lower dimensional topology, Morse theory and algebraic topology were held. These were followed by short tutorials. We hope to present invariants of braids and links, Morse homology leading to Floer theory, and cohomology of generalised configuration spaces.

The workshop was focused towards an audience with little background in topology and some interest in its application, and was a great opportunity for graduate students and young researchers from a budding community of pure mathematicians in Pakistan. The participants especially, the international faculty members were pleased with the scientific level and coherence of the programme.

DEPARTMENT OF MATHEMATICS OFFERED INTERNATIONAL FEATFLOW SUMMER SCHOOL

LUMS Department of Mathematics and the Institute for Applied Mathematics created an opportunity for the post graduate students and invited applications in month of February of Msc/MPhil students, from across Pakistan for three months' participation in the Summer School 2018 offered at TU Dortmund, Germany.

Selected students will attend the innovative courses, language course and FeatFlow lab in which use of pre/post processing tools will be taught along with the simulation tool, FeatFlow. The students will write a progress report at the end of the programme.

This opportunity will benefit students in getting familiar with open source CFD simulation code FeatFlow. They can also include a write up in their thesis or report. This completely sponsored programme includes travelling and living expenses.



DEPARTMENT OF BIOLOGY HOSTED A WORKSHOP ON POSTTRANSLATIONAL MODIFICATIONS OF TUMOUR SUPPRESSOR PROTEIN FBW7 - CRISES COMES WITH OPPORTUNITY

A one-day workshop was conducted by Department of Biology on Posttranslational Modifications of Tumour Suppressor Protein FBW7, Crises Comes with Opportunity on Feb 6, 2018.

Dr. Omar Khan was the resource person for the workshop and Dr. Aziz Mithani, Department Chair, hosted the event.

The area covered in the workshop was about FBW7, a potent tumour suppressor with genetic mutations in many different cancers. Dr. Omar shared the objective of his research that is to understand the mechanisms regulating the FBW7 activity. He employed two approaches to address this issue. 1) FBW7 immunoprecipitation followed by Mass spectrometric analysis of FBW7 interacting proteins. 2) Pooled shRNA library screen to screen for modulators of FBW7 stability in an FBW7-GFP reporter cell line.

Dr. Omar Khan Completed his MSc in Biochemistry in 2003 from the University of Karachi. Later he moved to Sweden and did an MSc in Cell Biology in 2006 from the Uppsala University. Dr. Khan got his PhD in Molecular Medicine from Gothenburg University, Sweden in 2012. From 2013 onwards, he has been working as a postdoctoral scientist at the Francis Crick Institute, London at Dr. Axel Behren's Lab.

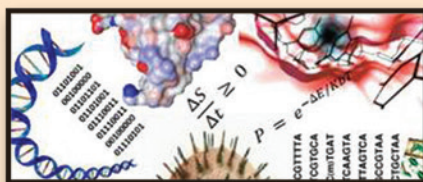
BIOLOGY TALK: IDENTIFICATION OF CHRNAS GENE EXPRESSION NETWORK IN BREAST CANCER

Department of Biology held a talk on identification of CHRNAS gene expression network in breast cancer, by Dr. Huma Shehwana on March 14, 2018.

Dr. Huma shared her research about CHRNAS, that is a subunit of cholinergic receptors and its role in breast cancer has not been studied before. During her PhD, role of CHRNAS in breast cancer was studied for its association with epithelial-to-mesenchymal transition (EMT), epithelial differentiation, estrogen (E2) signaling and patient survival. Meta-analysis and network analysis of in-vitro and in-vivo gene expression datasets revealed that CHRNAS, itself, and its positively co-expressed gene neighbours were likely secondary targets of E2-signaling; overexpressed in ER- breast cancer patients; associated with proliferation and indicators of worse prognosis. Based on meta-analysis of multiple independent cohorts processed in the study, an online web tool E2S (Estrogen (E2) to Survival) was developed to evaluate effect of estrogen signaling, prognosis and co-expression module on any queried gene.

About the Speaker:

Dr. Huma Shehwana completed her BS in Bioinformatics from International Islamic University, Islamabad in 2011. She was awarded with an HEC fellowship and obtained a Master's leading to a PhD degree from Bilkent University, Ankara, Turkey (September 2012 to August 2017). During her PhD, she has worked as a Bioinformatician and in some cases complemented the finding with a wet-lab validation.



BIOLOGY TALK: IMPACT OF METABOLIC STRESS ON LIPID METABOLISM AND LIPIDOMIC PROFILES IN CANCER CELLS

Department of Biology held a talk on Impact of metabolic stress on lipid metabolism and lipidomic profiles in cancer cells, by Dr. Nousheen Zaidi on March 9, 2018.

Dr. Nausheen shared her research and covered key aspects. She shared that Lipid metabolism has emerged as an important aspect of cancer cell metabolism and it is widely shown to be associated with various malignant processes. Cancer cells within solid tumors are exposed to oxygen- and nutrient-gradients depending on their distance from the nearest blood vessels. She said that her research group is focused on studying the complex interplay between metabolic stress –induced by oxygen and nutrient deprivation– and lipid metabolism in cancer cells. The data indicates that cancer cells differentially activate and thrive on de novo lipid synthesis pathways under metabolic stress.

About the Speaker:

In 2008, Dr. Nousheen Zaidi received her doctoral degree in biochemistry from Tubingen, Germany. After completing her PhD she moved to Albert Einstein College of Medicine, NY for postdoctoral research. In early 2011, Dr. Zaidi joined the Drug Discovery Group, Oncology, Johnson and Johnson, Belgium as a postdoctoral research associate. There she worked on a project related to tumor metabolism. In late 2012, Dr. Zaidi moved to Lahore to join the faculty of the Department of Microbiology and Molecular Genetics, Punjab University. Her lab continues to focus on tumor metabolism. Currently, she is also a Humboldt Fellow at Molecular Cancer Research Centre, Charité, Berlin.

SOCIETY OF PHOTO - OPTICAL INSTRUMENTS ENGINEERS SPIE STUDENT CHAPTER AT LUMS

SPIE has approved the setting up of a student chapter at LUMS. The student chapter will help LUMS students in networking with international scientists and students working in optics and photonics. The SPIE will provide support for outreach activities, students' training, and travel support for optics education and research.

The current office bearers of the chapter are:

1. Chapter advisor: Dr. Muhammad Faryad (Physics)
2. President: Muhammad Kamran (PhD Student, EE)
3. Vice President: Aamir Hayat (PhD Student, Physics)
4. Secretary: Ali Raza Mirza (PhD Student, Physics)
5. Treasurer: Ubaid Ullah (PhD Student, EE).

SPIE is an international society of photo-optical instrumentation engineers and is a non-profit organization. It provides generous support to students throughout the world for optics and photonics education and research.



SPIE. STUDENT CHAPTER
LAHORE UNIVERSITY
OF MANAGEMENT
SCIENCES (LUMS)

DEPARTMENT OF BIOLOGY ORGANIZED SECOND BIOSYMPIOSIUM & HANDS ON WORKSHOP 'ADVANCEMENTS IN VACCINE DESIGN AND DRUG DISCOVERY'

The Biology Department at the Syed Babar Ali School of Science and Engineering (SBASSE) organised its Biosymposium 2018 on March 19, 2018. This year the focus of the event was hands-on training on 'Advancements in Drug Discovery and Vaccine Design.' Over 40 people including around 25 faculty members from different universities attended the symposium.

Professor Thomas Peters from the University of Lübeck, Germany had a plenary talk through a video call. Three faculty members of the SBASSE Biology Department including Dr. Amir Faisal, Dr. Shaper Mirza and Dr. Shahzad-ul-Hussan gave scientific lectures and delivered hands-on trainings on state-of-the-art techniques related to drug discovery and vaccine research



LUMS CENTRE FOR WATER INFORMATICS & TECHNOLOGY (WIT) HOSTED A SEMINAR ON WATER & ENVIRONMENT EDUCATION IN PAKISTANI UNIVERSITIES

The center for Water informatics & technology (WIT) hosted a seminar on 'Water & Environment education in Pakistani Universities' on Feb 9th, 2018.

Dean SBASSE, Dr. Shahid Masud, gave the welcome speech in which he highlighted the importance of water and its impact on our environment. The seminar was divided into two sessions, in the first session, the role of water research centers in different universities was addressed and in the second session, emphasis on the development of curricula in water & environment education was discussed.

The aim of this seminar was to develop knowledge and skill base for water related disciplines. This will help to bring together counsels and expertise from all respective Universities in addressing water issues through a multidisciplinary approach. The gap between academic community and other relevant institutions for building capacity in innovation and technology for water management was also highlighted.

Dr. Abubakr Muhammad, Director Water Informatics & Technology (WIT), shared his closing remarks at the end by thanking the participants.



DEPARTMENT OF CHEMISTRY & CHEMICAL ENGINEERING ORGANISED AN OPEN DAY

To create awareness about MS and PhD programmes, the Department of Chemistry and Chemical Engineering organised an Open Day on March 12, 2018 at the Syed Babar Ali School of Science and Engineering (SBASSE). The Marketing Office started off the event, attended by over 40 participants, with a presentation about the University. Dr. Basit Yameen, Chair of the Department of Chemistry and Chemical Engineering, gave an overview of the department and shared the latest the academic and research activities taking place. This was followed by an interactive session by the representatives of the Admissions Office.

The participants got the opportunity to interact with the faculty of the department and the University staff during the informal session, where refreshments were also served. The eager participants also asked various questions related to admission, the curriculum and research.

The participants were given a tour of the Department and shown various facilities there. The informative session was concluded with a tour of the entire campus.



STAFF NEWS

- Ms. Iqra Manzoor Qadir has been promoted to Deputy Manager in the Department of Biology.
- Mr. Yawar Abbas Bokharee has joined as Assistant Manager Quality Assurance in SBASSE Dean's Office.
- Dr. Muhammad Adil Raees has joined as Nuclear Magnetic Resonance Lab Manager at SBASSE.
- Ms. Sobia Anwar has joined as Lab Engineer in the Department of Chemistry & Chemical Engineering.
- Mr. Hashir Mamoon Ghauri has joined as Lab Engineer in the Department of Chemistry & Chemical Engineering.

FACULTY NEWS FACULTY PROMOTION



Dr. Habib Ur Rehman has been promoted to Associate Professor on Tenure Track in the Department of Chemistry and Chemical Engineering.

WELCOME ON BOARD

- Dr. Fiaz A Choudhry has been appointed as Werner-von-Siemens Chair and also as a part time Professor of Practice in the Department of Electrical Engineering.
- Dr. Usman Khan has joined Assistant Professor in the Department of Chemistry and Chemical Engineering.
- Dr. Hassan Mohy-ud-Din has joined as Assistant Professor on Tenure Track in the Department of Electrical Engineering.

- Dr. Mobin Javed has joined as Assistant Professor on Tenure Track in the Department of Computer Science.
- Dr. Zafar Ayyub Qazi has joined as Assistant Professor on Tenure Track in the Department of Computer Science.
- Dr. Haroon I. Sheikh has joined as Visiting Assistant Professor in the Department of Biology.

RETURNED FROM SABBATICAL



• Dr. Ihsan Ayyub Qazi, Associate Professor of Department of Computer Sciences, took his sabbatical leaves during Fall semester 2017. He went to University of California, USA, where he completed his research work on *'Design and development of next-generation networked systems for measuring Internet censorship at global-scale.'*



• Dr. Muhammad Abubakr, Associate Professor of Department of Electrical Engineering, took his one year sabbatical leaves for an extensive research work. He went to USA, UK and KSA for completing research on *'Interface of systems analysis and water informatics,' 'Socio technical systems, game theory and distributed control'* and he also received fellowship to engage with the Oxford Mobile Robotics Group, Oxford Water Network and other resident departments.



• Dr. Muhammad Sabieh Anwar, Associate Professor of Department of Physics, went to USA during Fall semester 2017 for doing research work on *'New techniques in the area of Nano magnetism and Spintronic'*. He spent his time at Lawrence Berkeley National Laboratory at California, USA.



• Dr. Adnan Khan, Assistant Professor of Department of Mathematics, was on his sabbatical leave during the year 2017. He spent his time in University of Western Ontario, Canada and completed his research on *'Quantitative Finance, Energy derivatives'*. Afterwards he went to USA, where he completed his research on *'Mathematical Epidemiology'* at School of Mathematical and Statistical Sciences, Arizona State University, USA.

STUDENT NEWS PHD THESIS DEFENCE

We are glad to share the news of successful Phd defence of the following students and wish them all the best in their future endeavors.

- Mr. Talha Manzoor, PhD in Electrical Engineering from EE Department.
- Mr. Kamran Nishat, PhD in Computer Science from CS Department.
- Mr. Aamir Zaheer, PhD in Computer Science from CS Department.

MICROWAVE ANTENNAS & CIRCUITS (MAC) RESEARCH LAB

Microwave Antennas and Circuits (MAC) Research Lab, was established at SBASSE, LUMS by Dr. Wasif Tanveer Khan, Assistant Professor in Department of Electrical Engineering, in year 2015.

MAC research lab is capable of developing complete products. This capability will be greatly enhanced (in terms of fabrication, testing, assembling and measurement) with the establishment of Pakistan' first Maker Lab worth Rs. 55 Million sponsored by Fatima Group and SPEL Group. This Maker Lab will be available to all LUMS community. At a nominal membership fee, this will also be open to entrepreneurs/students, individuals outside LUMS, and small companies to realize their product ideas into reality and bring them to the market. It is step forward towards starting Maker Movement in Pakistan. This Maker Lab will also greatly help faculty in their research.

MAC RESEARCH LAB PROJECTS

Following are MAC research lab's major accomplishments over the last three years:

- Number of Publications over the last three years: 27 published, 6 papers submitted and 6 papers to be submitted soon (Total Published Papers: 54)
- Total Funding/Support Research Equipment and Grants: \$1.8 Million. (LUMS internal grants and external grants from HEC and different industry partners)
- Total Patents filed over last three years: 7 Patents Filed and 3 patent applications to be submitted soon
- MAC Research Lab Group Members: 5 Research Engineers, 3 MS Students, 2 PhD students
- Collaborators and Funding Agencies: Ignite National Technology Fund (Old ICT R&D Fund) HEC, RWR, PAF, Public Sector Organizations, Sony GmbH, EBE GmbH, Michigan State University, CARE, Fatima Group, SPEL Group, College of Aeronautical Engineering, Georgia Tech
- IEEE MTT Undergraduate Students Award: One of my students won for the first time in Pakistan IEEE Microwave Theory and Techniques (MTT) undergraduate Students Award in 2016. This award

RF Microwave and Antennas (MAC) Research Lab has the following equipment that is used for R&D:

1. Vector Network Analyzer (10MHz-40GHz)
2. Spectrum Analyzer (6 GHz)
3. ESD protected Electronics Assembling setup
4. Basic PCB fabrication equipment, rapid prototyping milling machine. LPKF S103 Protomat capable to fabricate trace width and spacing of 100um
5. Computers with high computing power
6. Vector Signal Generator (3.2 GHz)
7. 100 W PA Design and testing setup
8. Vector Signal Analyzer capable to do measurements up to 30 GHz is in the process of procurement
9. Rs 55 Million Pakistan' first Maker Lab (will be operational soon) that comprises of six different Labs (A) CNC Machining Lab, (B) Metal Lab (C) Wood Lab (D) PCB Fabrication and Assembling Lab (E) 3D Printing and Scanning Lab (F) Textile Design Corner

was featured in IEEE Microwave Magazine July/Aug 2017

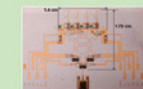
- (<http://ieeexplore.ieee.org/stamp/stamp.jsp?arnumber=7942254>)
- Establishment of Rs 55 Million Pakistan' first Maker Lab in collaboration with National Incubation Center, Lahore at LUMS
- Collaborated with National Incubation Center, Lahore to establish Pakistan's second Maker Lab at National Incubation Center, Quetta at BUIEMS. Through an HEC Grant, MAC research Lab would also be getting soon a FujiFilm Inkjet printer especially designed for printed electronics. This printer will enable us to develop products using nanotechnology based conductive and polymer inks to develop innovative RF packaging and sensors, low cost organic solar cells and various other interesting printed electronics based circuits and systems. This would be the first of its own kind printer in Pakistan that would start printed electronics research in Pakistan.

The members of MAC Research lab are fully committed to perform cutting-edge research.

About Dr. Wasif Tanveer



Dr. Wasif, received the B.Sc. degree in electrical engineering from the University of Engineering and Technology, Lahore, Pakistan, in 2005. From January 2006 to December 2008, he was a Lecturer with the National University of Computer and Emerging Sciences-FAST, Lahore, Pakistan. He was awarded M.S. Leading to Ph.D. Fulbright scholarship, in 2008. In 2009, he joined the Georgia Institute of Technology to pursue his graduate studies. He received his M.S. and Ph.D. degrees in electrical and computer engineering from the Georgia Institute of Technology, Atlanta, USA in 2010 and 2014, respectively. His Research Interests are: RF and microwave system design, Millimeter wave Circuit and Package design on Organic substrates, Radar Circuits and System Design, mm-wave and sub-Mm-wave Interconnects, Characterization of Dielectric Materials, on-chip and off-chip Antenna Design, Wireless Power Transfer, and Wireless Energy Harvesting, Inkjet and 3D printed Electronics. Chip less RFIDs.



60 GHz Switch Beam Array



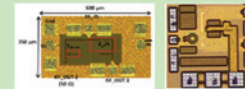
2-10 GHz Power Amplifier



24 GHz Radar Antenna



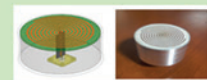
24 GHz Radar



RFICs At 94 GHz, 170 GHz, 300 GHz



100W S Band PA



Ultra Wideband Spiral Antenna 2-18 GHz

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