

# VIVUS

Vol. 5 Issue 2

“Hidden women”

Because history needs to be remembered

National Science Day

*Can science be fun?*



MANIPAL SCHOOL OF LIFE SCIENCES

MANIPAL

(A constituent unit of MAHE, Manipal)

**Dear Readers,**

*"I am among those who think that Science has great beauty." - Marie Curie.*

And beautiful it was. The awe on the young faces as they painted with light, met the likes of Janaki Ammal and Jahangir, solved their way out of an escape room and tested their scientific knowledge against a game of "science and ladders." was the highlight of the **National Science Day** celebration at MSLS. Read our cover article for more on the Science Day celebration on page 11. *Revisit some fond memories* with a little bit of nostalgia in our Events section called "What's up MSLS?".

Our history is what keeps us grounded in our future conquests. As society progresses, we see places like our college with a female:male student ratio tipping heavily in favour of females. But society wasn't always so kind to women who were fascinated by the sciences. Move to the "Get Scientific" section to discover five women who have made incredible contributions to the sciences to mark the **International Day of Women in Science**, celebrated on February 11.

Remember that time when our OSA Student Chapter did us proud? It was months of sweat, a little bit of tears and a whole lot of energy for an extremely rewarding four days of **IONS, Manipal**. While the speakers enlightened everyone on stage, they were unsurprisingly no less delightful to speak to off-stage. Who said it's over though? Check out the feature in the interviews section labelled "Words of Wisdom". For those who want more, listen to the podcasts of our interviews on our website <https://sites.google.com/site/everythingatls/editorial> (or scan the QR on the back cover!).

There is nothing like taking advice from someone who has been in that boat. Which is why one of our **alumni** has agreed to do her bit for us. While she tells you about her work and what we need to build a career, remember to find out what her best memories of MSLS are. Maybe you'll realise how much you would cherish yours when it's all over.

*"There is a less discussed side of traveling too".* Our travelogue "Wanderlust" this time features how travel changes you to be better and how it teaches you life lessons. Make sure you don't miss the story of **the Hope farm!** Finally (but not really), tickle your funny bone with our very own columnist's humour piece!

We thank our Director, **Dr. K. Satyamoorthy** for his guidance and support. We are also grateful to our faculty advisors - **Dr. T.G. Vasudevan, Dr. Vidhu Sankar Babu** and **Dr. Saadi Abdul Vahab** for sharing their wisdom. We would also like to acknowledge all the support from the Student Council and the various committees. But the biggest thank you is for all those who contributed their writing and to all of you read it and give us feedback, a huge shoutout!

Front cover picture credits to the Photography Committee, MSLS, MAHE and the back cover picture is credited to Mr. Soumyabrata Banik.

Proudly presenting Vivus 5.2,

Mayukha Bathini, Swetha Stanley and Nicole Mary Swer

Editorial Board 2018-'19

Manipal School of Life Sciences

MAHE, Manipal

*In our last issue we asked our readers to tell us what they thought of Vivus...*

"Vivus this time is really well polished and looks really great."

"Beautifully done! Love the new sections and style."

"The interviews are very helpful and as for everything else... could it BE more lit!"

"Has been adequately written up. Good job. It's a good read."

"Well I for one loved it. I think you guys did an amazing job. And put a lot of hard work into it. More people should see this."

I really appreciate the effort you all have put into it. I would share this with my friends I'm sure they will love it. Best of luck for your future releases. I would love to see them."

*- A mitochondrion*

## OPINION BOARD!

*The last issue had us asking you two questions -*

- 1. Where do we draw the line in genetic engineering, and how? Till where can we go before we lose ourselves?*
- 2. Do we need to diversify our research subjects? Are we too captured with any one issue alone?*

*We can probably go on till we start affecting too many lives. And fundamental characteristics such as intelligence and probably body type.*

*Knowledge is good but this is probably not a good idea to implement.*

*Drawing a line, especially in genetic engineering highly depends upon the type of research/experiment done and mainly on the person itself. If it interferes with their personal ethics and causes more harm than help, then it is time to draw the line.*

*I personally think that genetic engineering should be limited to animal models. Human embryos shouldn't be engineered because it is ethically incorrect.*

*Children aren't meant to be "customised toys".*

*Plus, we never know how the changes we make will affect us later.*

*Research subjects have been diversified a lot already.*

*Being captured with only one issue is not necessarily a bad thing. I mean, you know never know what's useful*

*I think more research is required in the field of ethics, laws, and social impact as much as the science itself.*

*Yes, we need to diversify our research subjects but this (AIDS; in relation to the article, 'The "Queen" Disease') is also an important issue that needs to be dealt with so as to make sure it doesn't repeat in the future.*

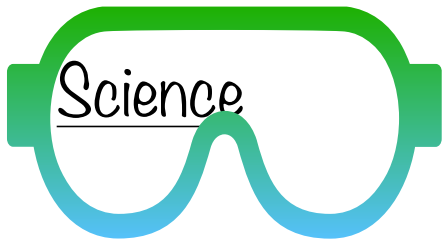
# In This Issue..

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Travel to find a purpose, explore to meet a new side of yourself, test your limits and surpass them. Take a glimpse into the HOPE farm in China.

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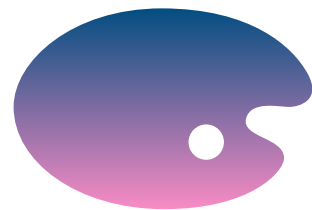
What can the mad scientist be upto now? obviously nothing good can come out of this. There's only one way to find out..



## Creative Corner

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Splashes of color, budding poets and pictures that hold a thousand words.



What's up  
MSLS?

# INTERNATIONAL MOTHER LANGUAGE DAY

A special kind of beauty exists, that which is born in language, of language and for language. Thus, to celebrate the rich diversity of India's native languages MSLS celebrated 'Matrubhasha Diwas' on February 21, 2019. The idea to celebrate International Mother Language Day was the initiative of Bangladesh. In Bangladesh February 21 was the day when Bangladeshis fought for recognition of the Bangla language and thus, it was declared to be the International Mother Language Day by UNESCO in 1999. As a tribute, a short program was organized in the auditorium, MSLS annex. The event was inaugurated by our Director, Dr. K. Satyamoorthy. Ms. Kshipra (III B.Sc.) hosted the event, which started with a talk by Ms. Chandini (I M.Sc.) on 'Declining value of mother tongue in our country where there are 243 different languages spoken'.

This was followed by a speech by Dr. T. G. Vasudevan on one of the oldest surviving languages in the world, Tamil. He spoke about the interesting poems and tongue twisters in Tamil, displaying the richness of the language. He also quoted a verse from a famous King Athi Veerarama Pandian, which states that learning/education is good even if one has to beg for it. He also highlighted the presence of women poets in ancient Tamil literature.

This was followed by two recitations, in Bengali (poem titled 'Lost Dreams') and in Assamese, by Dr. Nirmal Mazumder. Ms. Priyanka (Ph.D. scholar) spoke about the essence of Marathi language, its history and diverse culture. Next in sequence was a

group song 'Ae Watan' presented by the students of I M.Sc., as a tribute to our motherland, displaying that even though we are divided by multilinguism; we are united at heart. This was followed by an Urdu poem 'lab pe aati hai' written by an Urdu poet, Allama Iqbal that was recited by Ms. Sadiya (M.Sc., I year). Ms. Blossom (M.Sc., I year) spoke about her mother language, Konkani which is the only language written in 5 different scripts.

The audience was mesmerized by the Malayalam song 'Shyam sundara' and the Tamil song sung by groups of research scholars. Ms. Pallavi (I M.Sc.) performed a classical dance on *Durga stotra*, as a contribution to the warrior Goddess known as Adi Parashakti in Bengali culture. This was followed by a talk on Telugu language by Ms. Eswari (I M.Sc.). The emotional piece recited by Ms. Poonam (Ph.D. scholar) that was written in Garhwali by a son in the army to his mother, in her blessed voice left the



***The Director addressing the student gathering.***

crowd spell bound. Ms. Deepika (Ph.D. scholar) and her team recited a Sanskrit poem that united all languages. This was followed by a Kannada song sung by a team of research scholars. Mr. Akhil (III B.Sc.) awed everyone by his voice with a beautiful Malayalam song. The Odiya video album depicting the culture of Sambalpur, played by Ms. Ipsita (Ph.D. Scholar) made everyone dance to its beats. She also spoke about the origin of Odiya, the sixth classical language of the country and also her native language. She also reminded us the importance of sticking to our roots. The program ended with Mr. Satadal (II M.Sc.) reciting a famous comical narrative written by Rabindranath Tagore in his book 'Kalpana' which ended the show on a happy note.



*Ms. Pallavi Kundu performing the dance of the Goddess.*



*A Kannada group song performed by the Research Scholars.*

**- Swetha Stanley (I M.Sc. MBT)**

# SPORTS WEEK EDITION 2

In February this year, the second edition of Sports Week, 2019 of Manipal School of Life Sciences witnessed amazing participation from students of all classes, staff and research scholars.

The sports events held included chess, carrom, table tennis, badminton, cricket and football. The competitions were tough and nail-bitingly close with many of the timed-events being decided in the last few minutes!

Despite the competitiveness of the each of the events, the fun the participants experienced was a key highlight. Players of each sport were introduced to others who shared the same interests and wielded similar skills. Fresh faces with potential talent in the sports events conducted were discovered and encouraged to step up their game to take it to the higher level – the Inter-MAHE competitions!



*Chasing the ball has never been easy.*



*Thinking in progress.*

**- Sports Committee, MSLS, MAHE**



# ARMED FORCES FLAG DAY

The Armed Forces Flag Day or the Flag Day of India is a day dedicated towards the collection of funds from people of India for the welfare of the Indian Armed Forces personnel. It has been observed annually in India on December 7 since 1949.

Over the years, it has become a tradition to commemorate this day by honouring the soldiers, sailors and airmen of India. Manipal School of Life Sciences organized a program on occasion of The Armed Forces Flag day on December 7, 2018.

The program was hosted by the Vice President of the Student Council, Ms. Shannen Fortes (I M.Sc.) and began with a song rendered by Ms. Srilakshmi (I PGD) that ignited the patriotism in everyone. The chief guest of the day was Air Commodore Shri. Harindra Kumar Dhiman, Chief-Warden, MAHE Hostels, MAHE, Manipal. Born in the erstwhile Allahabad, Uttar Pradesh, he did his postgraduation in Mathematics from Allahabad University and his M.Phil. in Political Sciences (Defence and Strategic studies) from Osmania University. He is pursuing Ph.D. in Social Sciences from Osmania University.

Air Commodore Dhiman started his career in the IAF in the operational branch. During the span of 35 years of service, he also served as Chief Administrative Officer of a VIP station and as Director Personnel Services at Command Head Quarters.

His most illustrious assignment has been as Instructor in the Tactics Development



*Welcoming the Chief Guest Air Commodore H. K. Dhiman.*

Establishment, responsible for training and development of tactics in preparation for war and President of the Airmen Selection Board, responsible for the recruitment for the Air Force, pan India. For his illustrious and distinguished service, Air Commodore Dhiman was commended by the Chief of Air Staff and is also a recipient of the Presidential award of Vishisht Seva Medal (VSM).



*Air Commodore Dhiman narrating his life story.*

He spoke about his life experiences in the Indian Air Force. His story was a compilation of struggles and peacekeeping. He also spoke about the living conditions of the soldiers who fell out of duty, their widows and children. The session was very interactive, thanks to the staff and students. He mentioned the difficulties faced by soldiers during their service and also touched upon the lack of rehabilitation programs. He also said that the battle is the toughest thing a soldier could face.



*The audience listening in awe.*

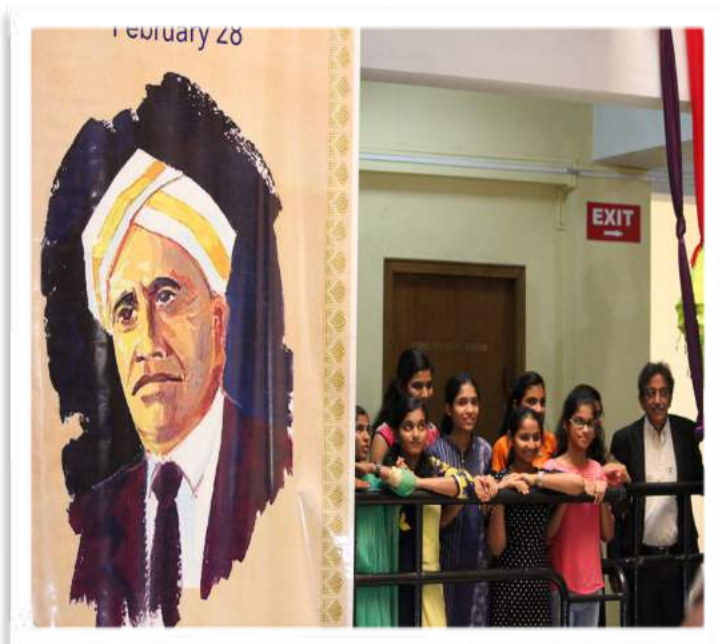
**- Swetha Stanley (I M.Sc. MBT)**

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# National Science Day

The buzz in the air at MSLS was unmistakable as Science Day approached. National Science Day, celebrated in India commemorate the discovery of the Raman effect by Sir C.V. Raman is a particularly important event for the Manipal School of Life Sciences. On the day before National Science Day, posters of C.V. Raman were hung up and colourful hangings covered the hallways of the buildings of MSLS. Exhibition tables and boards were set up, starting from the entrance of the building and continued into the building. The exhibition was inaugurated by Dr. Narayana Sabhahit, Registrar, Manipal Academy of Higher Education (MAHE) in the presence of Mr. Seshadri Chari, eminent journalist and politician, and Dr. K Satyamoorthy, Director, MSLS.

Scientific exhibits made and manned by the students were put up everywhere. These ranged from plasma globes to vertical gardens. Each door opened up to a new discovery for the students, teachers and parents who had come to visit the school. Inside one, students and faculty alike could be seen performing experiments that baffled the mind. The zoology lab held specimens like the model *Drosophila* fly that students could observe under microscope. Vertical gardens and plasma globes on one side, and rabbits, mice and rats on the other, visitors were amazed. Students had the



*The Director and Students witnessing the inauguration.*

chance to perform DNA isolation and even observe their own pulse on an ECG machine.

To show how fun science is, a game room called science and ladders was set up, which followed the basic rules of the classic snakes and ladders game but instead of the classic snake and ladder pictures, cut-outs of colourful bacteria (the snakes) and chromosomes (ladders) were placed. Each player had to answer a question related to science to proceed to the next step. Both young and old alike participated in this game which made it all the more fun to play.

The escape room, another main attraction was milling with people the whole day, unfortunately for some students (it was so popular that the waiting line only got more stretched out). It was a classic solve-the-mystery kind of puzzle. What more fun way to spend your day

than searching for a mad scientist right? The OSA also contributed immensely to the success of Science Day. Mind boggling displays were put up which bought out the curious side of the students. Not to forget one of the most innovative exhibit - 'the human museum' which showcased famous scientists from across timelines, role-played by the students of MSLS. You name it, we had it.

Of course, during all these activities, one is bound to get tired, so what better way to take a break than to retire to a chilly auditorium to sit in and watch some animal documentaries?

When people say science is fun, this was what they meant. Science day truly lived up to everyone's expectations and even surpassed them.



*Seed art: by Ms. Ipsita Pujari (Ph.D. Scholar, Department of Plant Sciences) and Ms. Pragathi. P (III B.Sc.)*



*A museum portraying natural history scientists in history*



*Mr. Chari observing the various exhibits*

**- Nicole Mary Swer (I B.Sc.)**

**Get  
Scientific!**

# Hidden Women

The problem with history is that it is usually written by people in power. The others are ignored, hidden and forgotten. It turns out a lot of these ‘hidden figures’ are women. This applies for women in science as well. Initially when women were not allowed to work, their work was hidden behind mens’ names. Later, their appearances were hidden behind mens’ clothing. Then their achievements were hidden behind their male counterparts’ work. And finally their efforts were hidden to the acknowledgment sections of research articles.

An article published in the journal *Genetics*, titled “Illuminating Women’s Hidden Contribution to Historical Theoretical Population Genetics” on 1 February this year showed that programmers who were women were acknowledged in 42% of research articles between 1970 and 1990 but only authored 7% of the research papers.

Maybe these women did not contribute much? That does not seem to be the case because many of these women were acknowledged for performing all the computational work for the project or for making tools that are still being used today.

This history we made, filled with male researchers has a huge impact on the young girls who do not have role models to look up to. To change a bit of this skewed history, we have featured five incredible women who have done remarkable work in their respective fields of science.

Read on about 5 incredible women who have done remarkable work in the fields of science.



"According to an article in *Genetics*, programmers who were women were acknowledged in 42% of research articles between 1970 and 1990 but only authored 7% of the research papers."

## James Barry: A woman in a man's clothing -

"I open the door to my east chamber,  
I sit on my couch in the west room,  
I take off my wartime gown  
And put on my old-time clothes."

Facing the window she fixes her cloud like  
hair,

Hanging up a mirror she dabs on yellow  
flower powder

She goes out the door and sees her  
comrades.

Her comrades are all amazed and  
perplexed.

Travelling together for twelve years  
They didn't know Mulan was a girl.

~ The Ballad of Mulan



Reactions of Dr. James Barry's friends were probably similar to reactions of Mulan's comrades' after they found that Dr Barry was born Margaret Ann Bulkley. Margaret Bulkley was born in Cork, Northern Ireland in late 1780s. During those times women were not allowed to pursue medicine and hence Margaret Bulkley took her maternal uncle's (a famous Irish painter) name, dressed as a man and registered into the University of Edinburgh. Her application was almost blocked due to the university senate thinking that Barry was a prepubescent boy due to her short stature, unbroken voice and smooth skin. Connections to the Earl of Buchan made it possible for her to enter Medical school.

Three years after coming to Edinburgh, Barry qualified as Medicinæ Doctor (MD) and passed the examination by the Royal College of Surgeons of England. As soon as she finished her examinations, she was recruited as Hospital assistant to the British army. She served in many countries such as South Africa and other parts of the British empire. She had such remarkable skill in surgery that she was quickly promoted to higher orders and finally posted as Inspector General of hospitals. She, most likely, was the first European known to have performed a Caesarean section in which both the mother and the child survived. Even though she was famous for fierceness (she almost killed a man in a duel), she was also known for her

"She is most likely, the first European known to have performed a Caesarean section in which both the mother and the child survived."

efforts to improve nutrition, sanitation and living conditions of prisoners, lepers, soldiers and their families in the multiple places she worked in.

It was only after her death that her identity was revealed by a charwoman who buried the body and this caused such a scandal that all of Dr. James Barry's records were sealed by the British army for 100 years.

She was, perhaps, the coolest female surgeon ever witnessed in history.

## *Ada Lovelace: Enchantress of numbers*

Ada Lovelace was born as the only legitimate child of the great poet Lord Byron. Her mother separated from the poet a month after her birth. She remained bitter towards him and ensured Ada was steered away from the arts at a very young age as she did not want her to be influenced by her father's background in any way. She was brought up with a strict regime, focusing mainly on science, logic and mathematics. From a very young age, she had developed an adoration for machines, designing fancy boats and steam flying machines and immersing herself in all the new inventions she read about in the scientific magazines of her time. By nineteen years of age she was married off to an aristocrat, William King, and thus became Ada King, Countess of Lovelace (but is more commonly known as Ada Lovelace).





“Understand well as I may, my comprehension can only be an infinitesimal fraction of all I want to understand.”

In 1833, Ada's mentor, the scientist and polymath Mary Somerville, introduced her to Charles Babbage, the Lucasian Professor of Mathematics who had already attained considerable fame for his unfinished plans for gigantic clockwork calculating machines. Charles Babbage and Ada Lovelace, through their mutual interest and unconventional personalities, became lifelong friends. Babbage described her as “the Enchantress who has thrown her magical spell around the most abstract of Sciences and has grasped it with a force which few masculine intellects could have exerted over it”.

Babbage at the time was working on a complicated device he called the Analytical Engine, which was an evolved plan from his earlier invention the Difference Engine. It was never built, but the design had all the essential elements of a modern computer. In 1842, Lovelace translated a short article describing the Analytical Engine by the Italian mathematician Luigi Menabrea, for a publication in England. Babbage asked her to expand on the article, “as she understood the machine so well”. The final article Ada produced was over three times the length of the original and contained several early ‘computer programs,’ as well as some striking observations on the potential uses of the machine, including the manipulation of symbols and creation of music. Although Babbage and his assistants had sketched out programs for his engine before, Ada's were the most elaborate and complete as well as the first to be published. This gave her the title “*the first computer programmer*”.

Ada died a few years later, at the young age of 36 due to cancer. But her publication: “Sketch of the Analytical Engine, with Notes from the Translator” was one of the critical documents that inspired Alan Turing's work on the first modern computer in the 1940s. Her spirit, passion and vision for technology have made her an inspiration for women in technology today.

## *Lise Meitner: The German Marie Curie*

Did you hear of Auger effect, named after a French Physicist Pierre Victor Auger?  
Or did you know that a woman played a significant role in discovering nuclear fission  
but was not part of the Nobel Prize received for the same?

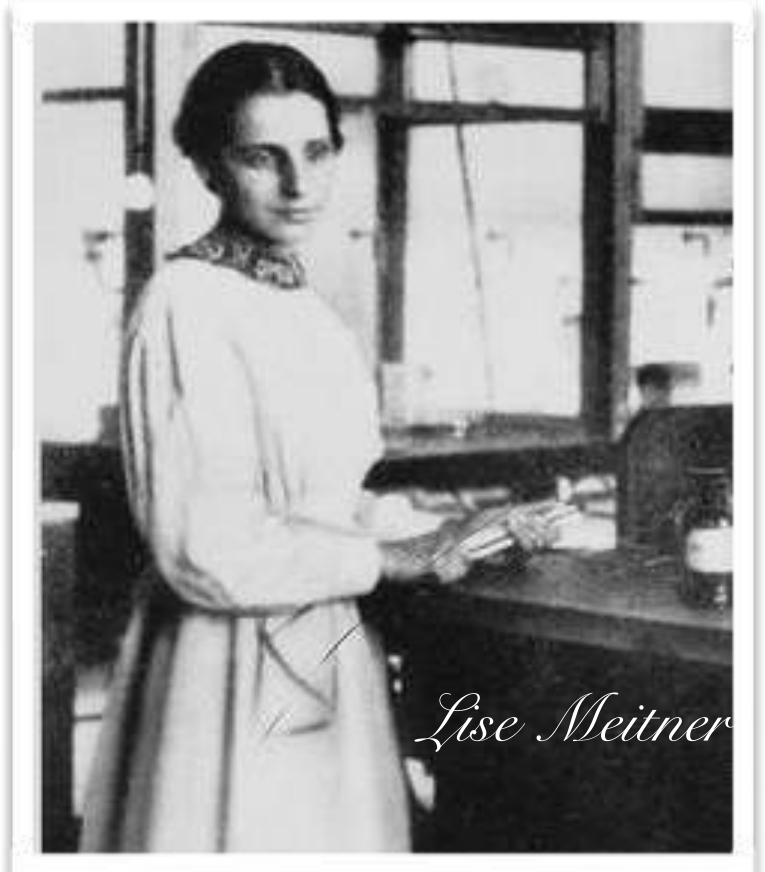
Lise Meitner was an Austrian-Swedish Physicist who worked on radioactive elements and nuclear physics. She was born on 17 November 1878 in a Jewish upper-middle-class family in Vienna. Her family's financial background and support allowed her to have private education in mathematics and physics as women were not allowed to attend public institutions in Vienna. She was the second woman to receive her doctorate in Physics from the University of Vienna. Making a decision between mathematics and physics was a hard choice for Meitner too and she attended lectures in both the disciplines to make a decision. Her decision was

made when she attended a lecture series by Max Planck, who previously did not allow any women to attend his lectures. After a year, she became an assistant at Max Planck's lab and started working with Chemist Otto Hahn, with whom she later discovered a stable isotope Protactinium and the process of nuclear fission. In 1917, after being given a physics section at the Kaiser Wilhelm Institute for Chemistry, she started looking at the reason for the emission of an electron from atoms with signature energies. Within the next 5 years, she had an answer to the question. When an electron is removed from the inner shells of an atom, the electron from a higher shell jumps to the inner shell. This movement of an electron from the outer layer releases energy. Most of the times, this energy is emitted in the form of radiation. But

sometimes, the released energy can remove an electron from its shell. This stray electron is now popularly called as Auger electron and the theory is called Auger effect, after Pierre Auger who discovered it a year after Meitner published her results. Apparently, the Auger effect sounded much better than the Meitner effect to physicists back then - who knew?!

Meitner was present during both the world wars, she took the position of a nurse during the first world war and had to flee from Germany during second world war because she was a Jew. During the Hiroshima nuclear bombing, she was very upset that such weapons were built from discoveries she made. She died at the age of 89 due to multiple heart attacks in Cambridge.

The inscription on her headstone reads, "***Lise Meitner: a physicist who never lost her humanity***".



## *Hedy Lamarr: Brain and Beauty*

Believe it or not, Hedy Lamarr was a beauty in big screen movies. What people seem to forget is that she was a wonderful inventor, who pioneered the technology that would one day form the basis for today's WiFi, GPS, and Bluetooth communication systems. Lamarr was born in Vienna, Austria in 1914. She was encouraged from childhood by her father to observe and learn from the world around her. He would often take her on a long walk

where he would discuss the inner-workings of different machines, like the printing press or street cars. This ignited a flame within Hedy, and at the young age of five, she was taking apart music boxes to understand how the machine worked.

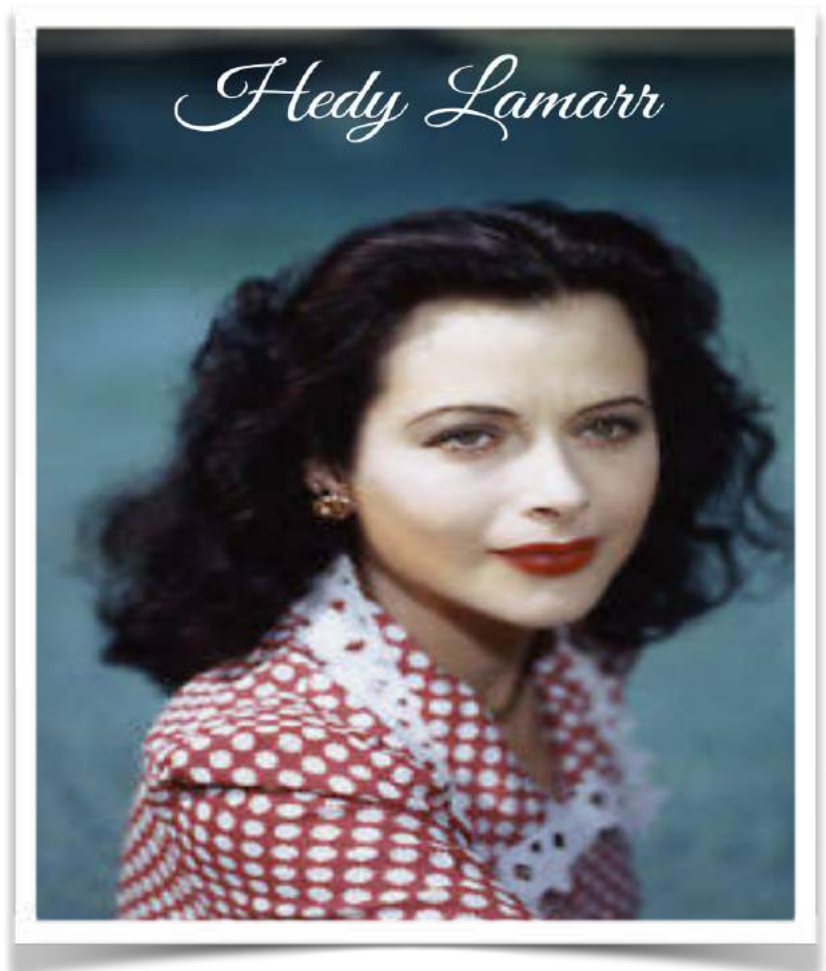
Lamarr's beauty was discovered when she was sixteen years old by director Max Reinhardt. This led her to study acting and later on gain recognition as an actress, especially after the controversial movie 'Ecstasy'. In 1933, Lamarr married an adoring fan, Fritz Mandl, but it was short-lived. She was very unhappy and felt like a doll, not being allowed to have a mind or life of her own. She escaped from Mandl's grasp in 1937 by fleeing to London. Her luck changed abruptly and soon she was mystifying American audiences with her grace, beauty, and accent.

Through her popularity, Lamarr was able to meet many new personalities. One of them was a pilot, Howard Hughes. A romance soon sparked between the two, and Lamarr loved his interest in innovation. Her scientific mind had been buried deep by the fascination for Hollywood but Hughes helped in finding the innovator in Lamarr, giving her a small set of equipment to use in her trailer on set. She started to work on small experiments using the equipment Hughes had given her, between takes on the sets of her movies.

Hughes had the ambition to create faster planes that could be sold to the US military. To help with this, Lamarr read books on fish and birds and examined the fastest of each kind. She then put together the fins of the fastest fish and the wings of the fastest bird to sketch a new wing design for Hughes' planes. "You're a genius", Hughes said to her.

This was only the beginning of Lamarr's inventions. She went on to create an upgraded stoplight and a tablet that dissolved in water to make a

soda similar to Coca-Cola. Her most significant work, however, happened just on the brink of World War 2. In 1940, Lamarr met George Antheil, another innovative spirit. They talked about a lot of things, the main concern was their shared worry about the looming war. Antheil recalls, "Hedy said that she did not feel very comfortable, sitting there in Hollywood and making lots of money when things were in such a state."



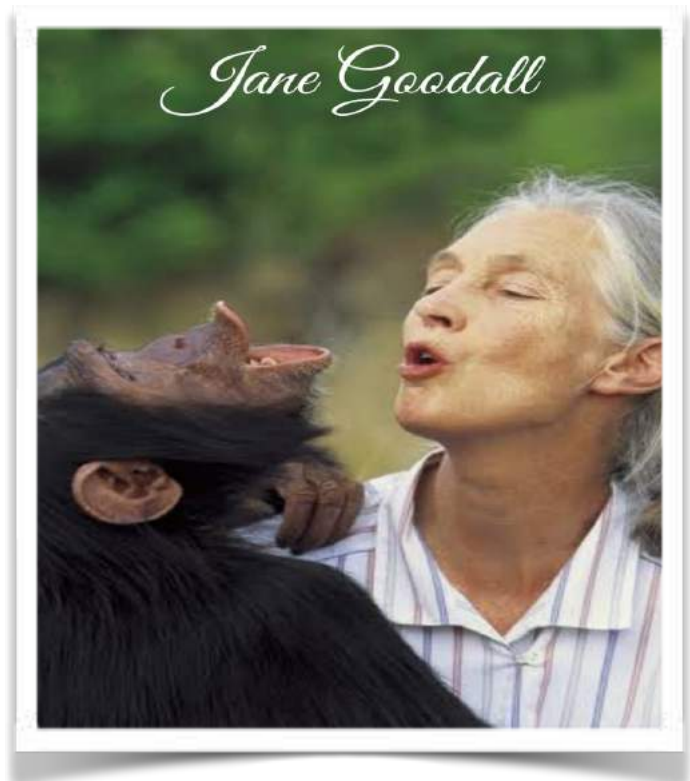
The two came up with an extraordinary new communication system with the intention of guiding torpedoes to their targets in war. Torpedoes are self-propelled weapons with an explosive warhead. The system involved the use of “frequency hopping” amongst radio waves, with both transmitter and receiver hopping to new frequencies together. Doing so prevented the interception of the radio waves, thereby allowing the torpedo to find its intended target. They were awarded U.S. Patent No. 2,292,387 in August 1942 for their creation. The Navy however decided against the implementation of the system and the patent expired before they ever saw a penny from it.

Lamarr continued to accumulate credits in films until 1958. However, her inventive genius was yet to be recognized by the public. It wasn't until Lamarr's later years that she received any awards for her invention. The Electronic Frontier Foundation jointly awarded Lamarr and Antheil with the 'Pioneer Award' in 1997. Lamarr also became the first woman to receive the Invention Convention's Bulbie Gnass Spirit of Achievement Award.

Although Lamarr passed away in 2000, she was inducted into the National Inventors Hall of Fame for the development of her frequency hopping technology in 2014. This technology is believed to be the mother of Wi-Fi, Bluetooth and other GPS communication systems. Hedy Lamarr was the portrait of perfection and proved even in such a time where women were just considered or respected for their pretty faces, that there is so much more women can do.

## *Jane Goodall: The Chimpanzee lady*

Jane Goodall is an English primatologist who went on to study the behaviour of chimpanzees at Gombe Stream National Park, Africa. She was born in 1934 in Hampstead, London and as a young girl was much fascinated by nature and always dreamt of working very close to nature and animals. Her mother recounts of incidences where she would disappear from the house only to find her in a barn observing a hen lay its eggs. As a kid, watching Dr. Dolittle ignited in her the desire to go to Africa to study animals. Jane one day received a letter that invited her to visit her family farm in Kenya, where she met the famous



“ When I was a little girl, I used to dream as a man, because I wanted to do things that women didn't do back then such as travelling to Africa, living with wild animals and writing books. I didn't have any female explorers or scientists to look up to but I was inspired by Dr. Dolittle, Tarzan and Mowgli in The Jungle Book — all male characters”.

primatologist and anthropologist Louis Leakey in order to discuss animals. Leakey believed that studying apes can help humans for a better understanding of our own evolution and hence influenced Jane to study chimpanzees at Gombe as his own secretary. Jane went to Gombe with her mother as in those days women were not allowed to travel alone.

In Gombe, she soon befriended a chimp named David Greybeard, which led other chimps to be comfortable with Jane. Her keen observational skills made her the first person to discover that chimpanzees were omnivore creatures along with their ability to make and use tools, as they were trying to use twigs to catch termites. This challenged the earlier view that only humans were the tool makers.

Jane also observed chimp societies and their wars, where she saw some instances of cannibalism. After about 21 years of being at Gombe National Park in Tanzania, she founded the 'Jane Goodall Institute' which worked towards the protection of chimpanzees and the implementation of strong environmental practices. She later decided to leave Gombe. Following her passion, she founded various foundations such as Roots and Shoots and TACARE to spread awareness and educate people.

Jane is now appointed to serve as a messenger of peace for the UN and continues with the legacy of learning and protecting nature.

***Want to read about more women in research?***

- <https://www.beyondcurie.com/>
- <https://www.britannica.com/topic/Women-in-Science-2100321>
- <https://royalsociety.org/topics-policy/diversity-in-science/influential-british-women-science/>
- <http://www.genetics.org/content/211/2/363>
- [https://en.wikipedia.org/wiki/James\\_Barry\\_\(surgeon\)](https://en.wikipedia.org/wiki/James_Barry_(surgeon))
- <https://www.beyondcurie.com/margaret-ann-bulkley>
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## TEENS NEED MORE SLEEP THAN YOU THINK!

The first thing to understand is that teenagers are still growing and their brains are still developing—so they need more sleep than adults.

They also have different sleep-wake rhythms and release melatonin (a natural hormone to prepare for sleep) later (melatonin release occurs later in the evening; usually around 11 p.m.) and drops later in the morning, which means evening sleepiness takes longer to occur and they have a tendency to go to bed later and to sleep later in the morning. During adolescence, teens experience a biological shift to a later sleep-wake cycle. This biological shift to a wolf-like chronotype explains why teenagers are full of energy and enthusiasm later in the day and evening, but can barely mumble a greeting or match their own socks first thing in the morning.

So what are the optimal sleep times to support adolescent health? Experts reviewed 864 papers examining relationships between children's sleep duration and health. They suggested that those between 13 and 18 years of age should sleep eight to 10 hours per 24 hours on a regular basis to promote optimal health.

It is common for children to develop inconsistent sleep schedules during adolescence. Up late at night and up early



during the school week, many teens sleep late on weekends as a way to recover from the sleep debt they have accrued. But sleeping late on weekends only reinforces and enhances the delay in their biological clock, making it more difficult for them to fall asleep at a reasonable hour during the week. This erratic sleep schedule puts teens in a vicious cycle, in which they spend the week coping with a growing sleep debt, struggling to stay alert during the day, growing more and more tired as the week goes along. By the weekend they are exhausted and ready to sleep in—and the cycle begins all over again.

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- Shiksha Saraogi (II B.Sc.)

# Vaccinations and why not to be a leftist for this one

Anti-vaxxers are not new. The news is.



In 1867, the United Kingdom made vaccination mandatory. Although there was some anti-vaccine sentiment before the 1867 legislation, when the state intervened in the name of public health, it resulted in the formation of several anti-vaccine journals and mass protests, with childhood vaccination rates dropping to a mere 3% in the UK.

The anti-vaccine word spread to other parts of Europe, resulting in a major smallpox epidemic in Stockholm. This continued into the twentieth century causing outbreaks of whooping cough in the UK, Sweden and Japan due to a misleading paper on DTP.

## The autism connect

In 1998, the publication of a paper in *"The Lancet"* linking the MMR vaccine to autism favoured the rise of anti-vaxxers. Although the paper was later retracted, due to major flaws and the finding that Andrew Wakefield (an author) had financial interest in the autism-MMR link, the damage to public opinion was already done, starting a new anti-vaccine era.

Most people skip the influenza vaccination every year because of myths that they will never get the flu, the flu is not dangerous, the vaccination causes the flu, they will not get very sick from the flu if infected. Of all

these reasons, only the last one may be true and it applies only to a certain group of people, where there is less likelihood of the flu being deadly or dangerous enough to get hospitalized.

But there is an extremely good reason to get vaccinated: receiving the flu vaccine does more than provide a very high rate of immunity to the individual. The people around that person and the entire community have reduced chances of getting the flu. If a book would define herd immunity it would go something like this - "The process of conferring immunity to those within a highly immunized population is called herd immunity." For the same reason, it is also called community immunity. The principle of community immunity applies to control of a variety of contagious diseases, including Influenza, Measles, Mumps, Polio, and Pneumococcal disease.

Even the statistical and epidemiological evidences affirm the fact that these diseases have been contained remarkably over the century, an appreciable accomplishment of mankind.

Anti-vaccine campaigners are no longer confined to the fringes of society. We find ourselves in a period of pseudoscientific prevalence. With declining rates of vaccine use, whooping cough has been welcomed back in the US and cases of measles has tripled in Europe within the past year. History appears to be repeating itself.

**- Madhuri Srinivasan (I M.Sc. MBHG)**

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# **Words of Wisdom**

**First of all, it was quite a pleasure to have you as the Chief Guest for our Science Day celebrations sir. We would love to have your views on the event.**

I am highly impressed with the organisation and also with the kind of importance that MSLS is giving to reaching out to school children. Because they are the ones who will grow up to be the future science faculty and research scholars. And some of them might even turn out to be the next Sir C.V. Raman. As they say, we have to catch them young and that is exactly what MAHE is doing. And some of the students who were part of the training programmes in the previous years now happen to be students in the engineering and science departments. So that is proof enough that we are on the right track.

**Talking about school students sir, do you think that the education system in India is apt enough or do we need any major changes?**

Higher education in India does require changes, no doubt. We need systemic and administrative changes in curriculum

**Do you have anything to say on how far education truly is free from politics currently?**

The current or past is hardly any issue or matter. Politics and education should not be under the same head. There should not be any such intervention in the propagation and acquisition of knowledge. This fight has been a subject of debate in this country since a long time. Some of the greatest empires like the empire of Krishnadevaraya or Magadh fought on this issue and it was the teachers who fought against the then prevailing controls on education. For example, Dhananand was a king who wanted total control on gurukuls and said that he would decide what the gurukuls will teach. But Janakya disagreed said that it should be the educational institutes which decide what is good or bad for the society.

**How do you think the scientific research done at our institute or other similar institutes affect the lower classes of society. Are we at a stage where it has come down to the lower classes and if not how do we get it to there?**

## Mr. Seshadri Chari

Mr. Chari is a journalist, politician and author. He is the Secretary General of Forum for Integrated National Security (FINS) and Foreign Policy, Strategy and Security analyst. Mr. Seshadri Chari has also been a consultant on governance with the United Nations Development Program (UNDP), posted at Juba, South Sudan. He is also a member of the Planning and Monitoring Board of MAHE, Manipal

Mr. Chari was a guest for the National Science Day celebrations at Manipal School of Life Sciences.

and in teaching methodology. We also need to look into the area of creating more avenues in research and applications of research. In addition, a lot of homework is required as far as the implementation of the interdisciplinary approach towards education is concerned. For example, we start creating pigeon holes in 11 and 12. So a student who is not very comfortable with, say, math goes into, say, biology when he or she is not meant for that. We end up disallowing the intrinsic ability of the student in physics at the later stage. Why should we do this? So the interdisciplinary approach is required. Yes there have to be filtering mechanisms but then these interdisciplinary systems should also be used.

Unfortunately we also have a very archaic problem of political string pullings. In my personal opinion, education should be totally free from politics especially higher education.

You see there is a very wrong perception that anything we do in science like innovation and scientific education should be correlated with what we do for the people. For example, if a person is doing research in political science, we don't ask that person how their research is going to help the poor but when it comes to science we always ask this question. It does not necessarily help the poor. The application of these research findings will help the people. So it is necessary for scholars to come out with solutions and also envisage probable future problems and study into those but it should not be confined to finding solutions to problems. Any advancement is going to benefit society in some way.

**What are the gaps that you think lie between the government and the scientific community ?**

The most important gap is the question of the understanding. Political establishment has its own priorities and agenda so it is necessary for the scientific community to propagate their ideas

even further which unfortunately doesn't seem to be happening. In general many of these institutions are seen as degree-producing machines. So I think there must be more bridges between the government and educational institutes imparting scientific knowledge.

**Is there any advice you would like to give to students?**

I think we are doing very well, especially places like MAHE and MSLS. We are in very safe hands, very good hands and we are doing really well but we should not stop at that. Our direction is very clear. All we have to do is increase our speed and set targets to achieve higher goals.



*Mr. Seshadri Chari observing the various exhibits put up by the residential trainees as well as students and research scholars of MSLS, MAHE*

**- Mayukha Bathini (II B.Sc.), Yash Goel (II B.Sc.)**

# INTERNATIONAL OSA NETWORK OF STUDENTS

- Manipal OSA Student Chapter and EdBoard



The Manipal OSA Student Chapter organized the International OSA Network of Students (IONS) from January 11 to January 14, 2019 at the Manipal School of Life Sciences, MAHE, Manipal. The conference was held in collaboration with the OSA Student Chapter of National Yang-Ming University, Taiwan.

The focus of the conference was on the areas of Optics and Photonics with many interdisciplinary talks on Biophotonics as well.

IONS is a unique initiative by the Optical Society of America, a scientific society which aims to bring students who are an active part of student chapters, from all over the world, together to connect and network with their counterparts.

The EdBoard team and our representatives were lucky enough to interact with some of the speakers. Here's some moments of reminiscence!

We chatted with Dr. Alex Vitkin on a range of subjects. Being from the Biotechnology background which is more interdisciplinary than basic, we wanted to know his opinion of the long standing debate on basic vs. interdisciplinary approach. *“Somebody like me I imagine is similar to what you guys are. I do biophysics, medical physics, and medical biophysics. The danger, of course, is that you sound like a good physicist and*

Dr. Alex Vitkin is a professor of Medical Biophysics and Radiation Oncology at the University of Toronto, a senior scientist at the University Health Network, and a board-certified clinical medical physicist at Princess Margaret Cancer Centre (all in Toronto, Ontario, Canada).

He has published 180+ papers and book chapters on biophotonics.

He is the recipient of the 2017 Michael S. Patterson Publication Impact Prize in Medical Physics, awarded by the Canadian Organization of Medical Physicists.

*even a good biologist. But when you talk to a purely physicist, they might say that that is not real physics or a biologist may call it just baby stuff. I think it presents a certain set of challenges and you have to enjoy, basically, being ignorant. There's no way you can be an expert in depth in two very different fields. So, I think it is more about the type of learning you enjoy. If you're at the interphase, there will always be somebody who knows the depths better than you but then they might not know anything about the second field. So, to some extent there is a danger of being the 'jack of all trades, master of none'. But the fact that you are in the middle gives you great opportunities, not only exciting ones but also for learning. With what you guys do and what I do, there's not many people doing that."*

When asked about what he looks forward to as a medical physicist, his answer reminded us that the most important thing when choosing a path is to follow what makes you get out of bed every morning. *"A lot of my research is clinical. You're doing what has already been done before but in a very tangible way even if your brain doesn't hurt. You can say I've been here 9 to 5 and we've treated two patients, discussed treatment plan of the third and so on. But sometimes in research, you've been there for a week but you don't know what you've really done."*

IONS Manipal focused on biophysics and its applications in medicine. Biomedical optics has unexplored applications in medicine, both therapeutic and diagnostic. Dr. Asima Pradhan's work was based on detecting early changes that indicate tumorigenesis. Changes such as an increase in nuclear size, increased metabolic activity, vascular growth and increased perfusion can be detected by various optical techniques including fluorescence spectroscopy. We wanted to know how far we are from applying such in vivo techniques to routine cancer screening. According to her, we are still in the stage of collecting and analysing data. Dr. Kevin W. Eliceiri spoke about multiphoton nonlinear optical microscopy with applications in cancer wherein changes in collagen and ECM can be monitored in cancers like that of the breast to detect tumour formation early. Are we going to see multiphoton microscopy in the clinic soon? *"Multiphoton microscopy is still relatively unusual. But as far as screening goes, there is still more to be done to allow that to be put in the clinic. There*



*Mesmerising performances at the Cultural Night*



Since 2000, Dr. Kevin Eliceiri has been at the Laboratory for Optical and Computational Instrumentation (LOCI) at the University of Wisconsin at Madison. He is currently director of the LOCI and a Principal Investigator in the Laboratory of Molecular Biology at the University of Wisconsin in Madison Graduate School.

His current research focuses on the development of novel optical imaging methods for investigating cell signalling and cancer progression, and the development of software for multidimensional image analysis.

*are trials going on but it uses wavelengths that are very high energy. Right now, it's far from clinical practice but it could happen as more trials are done".*

*"Placed in the right environment, we'd all be glowing."*

*- Dr. Asima Pradhan*

With all that optimism, we cannot forget where the limitations lie. Dr. Asima Pradhan pointed out where we need improvement. *"In the West, you will see that things go better because of the huge team. We tend to do everything ourselves, but we need more diverse groups. In the US, they have huge teams, collaborating with lot of different people in different places, each working on different parts like while one would be working on the algorithm, others work on other things. We need to divide responsibility that way. Also in the US, anyone doing graduate studies is doing so because they want to do that and nothing else. Here we want to finish it for survival. This doesn't work out. We need more motivated students. It should not be a race to the finish line. Another limitation is the dialogue between us and the medical community. They are unable to spend enough time with us. It would help if we have extremely close collaborations. It would work out if the medical institutions have teams focused only on research. We need to come together to really get something to the finish."*

On the other hand, Dr. Dan Christensen enlightened the students on professional development. He spoke about



*Dr. Dan Christensen demonstrating interview skills.*

Dr. Dan Christensen, product manager at TOPTICA, has broad experience in laser applications, optical technologies, sales, and business development. He received his Ph.D. from the The Institute of Optics, University of Rochester while developing novel laser scanning microscopy techniques at the University of Rochester Medical Center. In addition, he holds many years of hands-on experience in experimental biophotonics and atomic physics applications.

good CVs and what they should contain, also how to know what field suits you better. In our interview, he gave us additional tips on how to convince hiring managers that you indeed are the right person for

*"Throw everything at the wall and see what sticks."*

- Dr. Dan Christensen

the job. *"Generally, at least in industry, I think most hiring managers would agree with me when I say that we really hire for personality. We can train people technically to a certain extent but you can't train personality. Particularly for small companies, the personality is really important. Even in a bigger company, you usually work in a group of five to ten people. And you can disrupt the whole group if the personality is not right. So if you are indeed a person*



Dr. Asima Pradhan is a Professor at the Department of Physics, IIT Kanpur.

Her research interests have been in the area of Biophotonics, attempting to understand tissue fluorescence and light scattering in human tissue environment and to evaluate its use for diagnosis of disease.

*who can really work hard and if you can convey this in the interview then a lack of opportunity in the past should not affect your opportunities in the future."*

Finally we asked them for what advice they would like to give us and all the readers and listeners. *"If you have an interest in a subject, there are no boundaries in the research field"* said Dr. Pritam Deb who was recently awarded the National Bioscience Award by DBT, being a physicist. Dr. Deb spoke about the numerous applications of nanotechnology in medicine such as drug delivery systems consisting of surface-engineered nanoplates and using magneto-fluorescent multifunctional probes for molecular imaging.

Dr. Pritam Deb is a Professor at the Department of Physics, Tezpur University. His areas of research includes Mesoscopic physics, Magnetism in low dimension, Molecular Imaging, Surface Science, Electronic Structure Calculation. He has been a faculty member of the department of physics since 2004.

His research group focuses on both experimental and ab initio theoretical aspects of low dimensional quantum structures and their assemblies.



IONS Manipal was a huge success thanks to the cumulative efforts of the members of the Manipal OSA Student Chapter and the faculty advisors. As rightly said by Dr. Asima Pradhan, *"The stress is high but one needs to stay motivated. Look at your work like a story you are building, don't race to finish it."*



*That one last picture...*

*"Look at your work like a story you are building, don't race to finish it."*

*- Dr. Asima Pradhan*

#### Interviews by:

1. Dr. Alex Vitkin - Mayukha Bathini (II B.Sc.), Harsh Ranawat (alumnus)
2. Dr. Pritam Deb - Tanaaz M. Khan (III B.Sc.), Anoushka Borthakur (I B.Sc.)
3. Dr. Asima Pradhan - Mayukha Bathini (II B.Sc.), Tanaaz M. Khan (III B.Sc.), Yash Goel (II B.Sc.)
4. Dr. Dan Christensen - Malika Pyarali (II B.Sc.), Mayukha Bathini (II B.Sc.)
5. Dr. Kevin W. Eliceiri - Anoushka Borthakur (I B.Sc.), Mayukha Bathini (II B.Sc.), Thyagarajan (III B.Sc.)



# ALUMNI TESTIMONIAL

Ms. Mallika BN (M.Sc. MBHG 2006-2009 batch at Manipal School of Life Sciences, MAHE, Manipal), is currently Associate Scientist at Syngene International Limited. She began working as molecular biologist at Syngene and later transitioned towards protein expression and purification. Her technical expertise lies in the field of antibody discovery and engineering. She has won several awards - for downscaling transfection volumes and standardizing an exclusive technique in 2017 and for standardizing the expression for a novel antibody format in 2018.

## **What has your career path been like so far and what is your current work and its scope?**

My career path has been quite an ardent one where I got to start my career in one of the top contract research organizations in India and carry out challenging work for some wonderful clients. I started off as a molecular biologist at Syngene and later transitioned towards protein expression and purification. I never hopped around to other companies since my current company offered me good professional growth and helped me balance my personal life as well, thereby summing it to 8 fulfilled and goal-driven years. This shows in the awards I have won including a Best Team Award in 2014 and another for developing the in-house newsletter in 2016.

I lend my technical expertise to the field of antibody discovery and engineering. As far as the scope is concerned, it is an upcoming field and is very farsighted. In fact, antibody therapeutics is a growing class in the drug discovery program, becoming an important option for cancer and autoimmune disease treatment. There are already 44 clinically approved monoclonal antibodies in the market and 10 more were approved in 2017. While antibody discovery is one side of the coin, the other side is antibody engineering, which is targeted towards discovering novel antibody formats like bi-specifics, DARTs etc using the existing ones for better pharmacokinetic abilities. Both these fields hold remarkable potential and both have different challenges in their own way.

**Is there anything we should know about building a career? What do you think current students should do differently to guarantee themselves success?**



*Ms. Mallika B. Nataraj, alumna*

Well, I do have a few suggestions for students on how to build their career. But, I believe it is completely dependent on their choice and circumstances, wherein my suggestions may not hold true for everyone. However, one should plan and prioritise their career paths according to what they prefer and believe would suit them.

For someone who is willing to pursue an ambitious career, be it science or non-science, the person must design their resume based on their strengths and market themselves accordingly. If one is interested in pursuing a career in the industry, then they must ensure that their resume is customised and suited to

the position they apply. I often find resumes in which data such as publications, research summary etc. are highlighted in the beginning, instead of their work experience or technical expertise.

Another point I would like to mention is the soft skill development. We find candidates who have the right technical expertise but display poor soft skills. Do know that a company is an amalgamation of research, business and people management. So if any of you are planning a career in a company, then it's important that you develop the other two skills as well alongside technical experience. Since it is a competitive era, the one who brings in unique concept always survives and thrives to succeed.

It is a very competitive time, wherein, the one who brings in unique concepts always survives and thrives to succeed. In that case, one should also learn to continually evolve and bring in fresh ideas for executing a project and also improve oneself.

### **How did Manipal School of Life Sciences and/or MAHE help you after graduating?**

I still bear the flag of a proud alumni of MSLS / MAHE. I am really glad that I completed my Master's there as it was well equipped from the laboratory to the library. The curriculum that I studied during my course played to my advantage when I joined the antibody discovery process. Since I was already introduced to different concepts of signalling pathways, disease models, antibody structure etc., it didn't take much effort to understand the field I work in.

Another aspect was the exceptional design of the practical curriculum. I still remember all my practical classes, be it the cloning experiment or the cell culture work. If I am adept in my cell culture work which I currently do, then it's because of the strong foundation I gained back then.

Also, SOLS ensures that you are updated on the current research ideologies thereby making you stand out in your scientific grooming in comparison to other colleges. SOLS also taught me a major

career lesson which is to be tough and resilient in every kind of situation.

### **Can you share a fond memory from your days at MSLS?**

There are many fond memories that I have at MSLS, and one in particular was during the molecular biology practical. In the beginning I was a little shy and non-participative in the experiments. But over a period of time, I started paying attention. During one practical class (Western blot, to be precise) I came prepared with a protocol gaining my teacher's delight and appreciation. That's when the seeds of planning and preparation were sown in my life. In a fast paced contract research organization, there is not much time for human error or failure. Hence it needs in-depth planning and prioritization. Today these are the factors that have helped me grow in a challenging industry.

Another one of my memory is definitely my first day at SOLS. I joined a little late and was ushered into an ongoing class which left the professor confused and clueless. He ended up asking me as to who I was and why I barged in like that! (Laughs!) That memory still brings a smile to my face.

*"MSLS taught me to be tough  
and resilient in every kind of  
situation."*

Other fond memories would be the fun times I had with my classmates - when we together put up a comedy play on the Annual Day, my clinical genetics class, my first presentation wherein the topic was the 'genetics of sex and sexual behaviour' etc. Well, as I mentioned, there is not just one fond memory and maybe I can go on for pages about it.

### **What advice would you like to give to current students of MSLS?**

Dear Students of MSLS, make the best use of facilities provided. Improvise on all your skill sets.

You have the best teachers to help you come up. Make sure you grasp all the techniques that are taught to you and see if you can further improvise on them when time allows you to do so.

Also, each one of us are built differently. So decide on what you plan to do in your career. Its okay if some things don't go as planned, the trick is to know when to stress yourself and when not to.

#### **Any message for the other alumni?**

Ahoy there! Hope you are doing well! Would love to hear from you all. Keep in touch.

*"I am highly thankful to my teachers at MSLS for all the support and nurture I received while I studied there. They were the ones to boost my morale and self-confidence during my difficult times and their encouragement meant a lot to me. I thank them for everything they have done for me and know that they will continue to nourish and encourage many a students to come".*



*Ms. Mallika with her batchmates*

"One lesson I learnt in my life and would like you all to know as well is - 'there is nothing called a free lunch'. And life, including the universe is about give and take. So think of how you can play your part in contributing to the system rather than expecting others to do it for you."

**WANDERLUST**

# The HOPE Farm, China





Everything that could possibly go wrong, did go wrong at the beginning of the trip. Let's just say I had a rough start to the trip. The only thing that got me through all the challenges was my inner voice which said, *"The more difficult it will be to reach China, as a compensation, greater will be your whole experience"*. And so it was! It was the most life-changing, all consuming, eye opening and rejuvenating experience I've had so far in my life. I wasn't expecting it to be so many things, since I've had a good share of adventures before this but it was in all ways a mind blowing experience!

It all started when I was a young girl in school and I saw my sister go to Russia, alone, for an internship. I wanted to go to another country alone. As soon as I came to college I started looking for an appropriate internship for myself. Mine was more of a volunteering thing. I found a project where I would be doing organic farming and teaching English to physically challenged students. So that was it, I applied, got cleared and booked my tickets.

Cut to June 1, 2018. I landed in Xian, China, after flying for almost 13 hours, took a train and then a bus to finally reach Yun Qui Mountain. It was a small village hidden in between mountains. It was a basically a tourist spot which saw a good number of people coming and going, with barely a few locals living there permanently. We were warmly welcomed by the people and it took them a total of 15 seconds to make us their family. Everybody would smile at us, give us food, click photos with us, talk to us, and they would just do anything to make us feel comfortable. I fell in love with the Chinese people instantly. Everybody - people at the airport, workers at my hotel, students of the organization



that I went through, my teachers at the farm, other workers in the mountain, my co-volunteers, priests there, chefs, tourists, absolutely every person that I met in that foreign country gave me the love of a family member. We started working 2 days later. The farm was a beautiful place, surrounded by mountains and trees. But the most special thing about the farm was, the Kids! Now they weren't really kids, they were all our age, of about 20-26 years of age. We called them special kids because they were super special. They were born with certain disabilities but they didn't let that hold them back, There they were, working in a farm and earning for their families. They were very disciplined, hard-working and extremely kind-hearted. That farm wasn't just any farm. It was hope in the form of a farm. By starting that farm, they hoped that our tomorrow will be better than our today. That while we're busy building our future, we don't forget to include those who are a little different from us.

It was all started by the vision of an extraordinary man, Uncle Soho. He has been selflessly working towards making this world a better place. He has started farms where he teaches people with special needs and makes them self-sustainable. I was so inspired to see Uncle Soho work, to see how he executes all his plans and how generous and humble he is with everyone around him, from small kids to the elderly.

The whole project turned out to be so much more than I had expected. When I left India, I was excited to see the new country, meet new



*Travel changes you. Travel makes you realise things. Travel heals you. It makes you realise how small you or your problems are in this huge world.*



*Travel changes you. Travel makes you realise things. Travel heals you. It makes you realise how small you or your problems are in this huge world.*

people, probably click a few photos and share on Instagram. I had hoped to see Shanghai, The Great Wall of China and so much more. But once I got into the routine of working at the farm, I was only excited about waking up each day to see how much my plants had grown. I would get excited to work with Ya Pung, my partner there. I would also get excited about the school children we got to meet and teach. I would get excited about the trip we took to a small burger shop in a nearby town. I would forever be excited about going to the supermarket so I could pick out a new flavour of soup noodle to try. It was like I stopped thinking after going there. I didn't want to think about what I wanted from the trip. Instead, I just went with the flow and enjoyed all the things they had planned for us. In the end it worked out pretty great for me. I tried bungee-jumping, sat on a swing which was at the edge of a cliff, walked on a glass bridge, saw the Great Wall of Xian, ate super delicious soup noodles and made friends who have already been invited to my wedding.

This experience changed a lot of things for me. I had always seen people talk about how life-changing a travel experience had been for them but when I got to experience it first hand, I've realised how magical traveling can be. Traveling, for a lot of people, can be going to Times Square and clicking a selfie. Well that has its perks too. But there's a less explored or let's say less discussed side of traveling too. Travel changes you. Travel makes you realise things. Travel heals you. It makes you realise how small you or your problems are in this huge world. So every once in a while we should switch off our phone, climb a mountain and sit in silence for a few minutes. It's then that the magic happens. It's then when we get the confidence that life might just not be as tough as we thought.

AIESEC is an International organisation which carries out cross-cultural exchanges - Global Volunteering and Global Internships for leadership development.

For more information visit the local office of AIESEC in Manipal or [www.aiesec.org](http://www.aiesec.org).

**- Nivedita Rathore (II B.Sc.)**



**Creativity  
beyond this  
page!**

## RADIANT SOUL RIDES



*Who knows where the roads lead to,*

*What's important is we should feel that, these are the paths that love guides.*

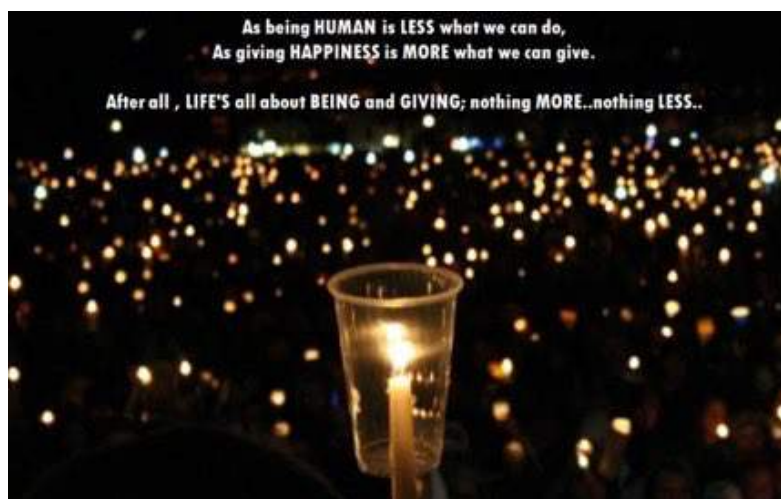
*In this journey of life, routes may be short or long, rough or smooth*

*Sometimes they may be dispirited, nonetheless they make our hearts soothe*

*Who knows at the end, what the destinations bring about,*

*What's important is we should perceive that, all the steps are radiant soul rides.*

## BEING HUMAN



## A "TEACHER", AN "AWAKENER"

*A Teacher is someone; who teaches you for the first time how to utter words from your mouth and how to express them, when you were born (Your Parents).*

*A Teacher is someone; who teaches you the fundamental knowledge, which shapes your career with professional achievement and success, on which you lay the foundation of your livelihood (Your Teachers).*

*A Teacher is someone; who introduces the meaning of sharing and caring mixed with generous love in your life, despite thousands of conflicts (Your Siblings).*

*A Teacher is someone; who scolds you for all your foolishness, who stays with you when the entire world vanishes after a mess, who advises you and makes you see, feel and utilize your strength during any battles of life (Your True Friends).*

*A Teacher is someone; who teaches you the strong morals and values of life, some of which are innate and some of which you acquire as you embark on this unfolding journey of life with your own share of struggles and experiences (Your Divine Lord).*

*A Teacher is you, YOURSELF; when you discover your original version with no filters, through an awakening or a turning point in life, a journey that only you are aware of.*

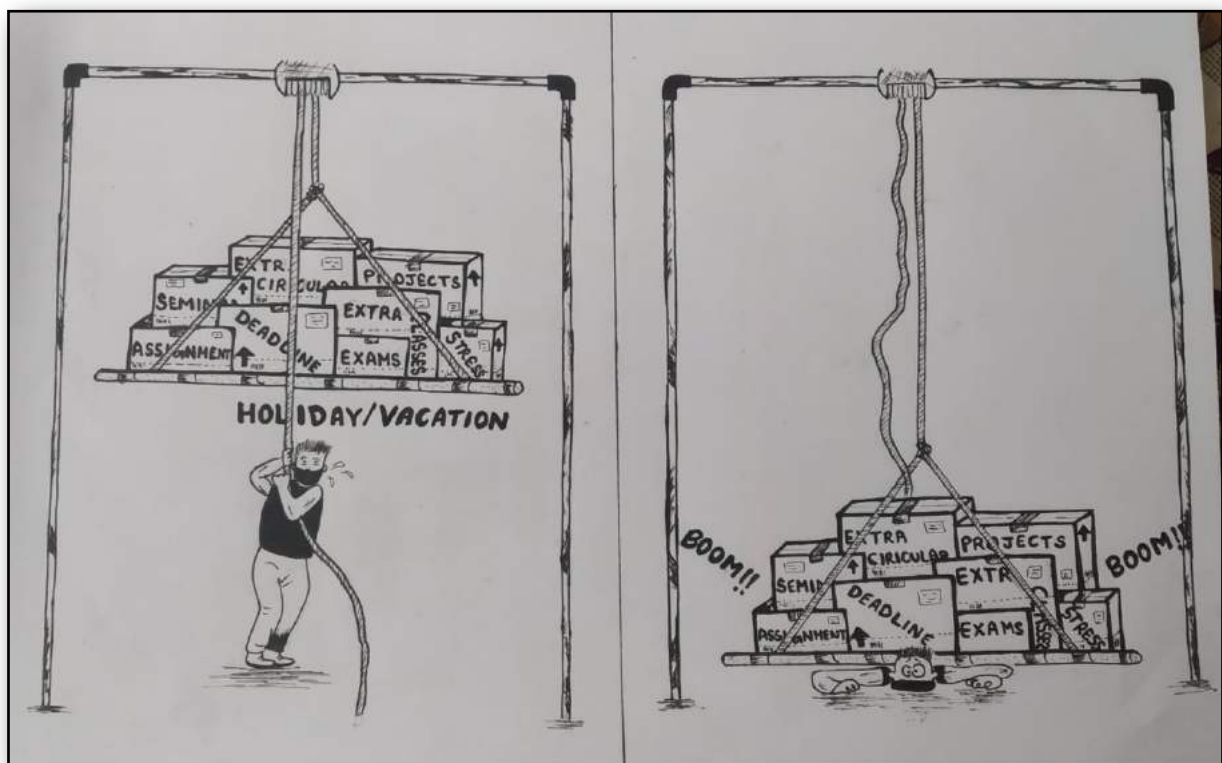
**- Ipsita Pujari  
(Structured Ph.D. Research Scholar, Department of Plant Sciences)**

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# Operation: StealthyComic

**Funknown** is a self-declared comedian whose identity is unknown. Additional information is yet to be found concerning Funknown

**Alfred Kettleman:** "That's it! I've had it with this idiotic scientist! Not only did this tyrant ban chocolates from the laboratory, the lunatic ceased my POKEMON CARD COLLECTION saying it'll distract me. Pulled the last straw. Now it's payback time. This time not only will I leak the journal but also make hideous caricatures of the "mad scientist" and paste them all over the school. Revenge is a wild emotion and I will avenge the loss of my Pokemon cards."



...(contd.)

**Day 165:** Hello Journal, I'm back to your dark abyss and I apologize for not keeping you updated with my current status. The reason I wasn't able to make my entries regular is because I was "supposed" to be on a vacation. How would I describe a vacation? Well it's like you're a worker at a construction site working for a bare minimum carrying loads far beyond

your capacity until one day a magical hook picks it off your head only to thrust it with thrice as much force right back onto your head. That brief moment where you're carrying no load, basically afloat, THAT is your vacation! Everything that comes after a vacation is just to make your already monotonous life more miserable. Unfortunately for me, my getaway from a hectic life didn't quite turn out to be all I expected it to be.

Most of the time, miscommunication leads to so much chaos! Something that should've gone as smooth and calm as rowing a boat peacefully in a lake with soothing music in the background becomes more like river-rafting up a waterfall with death metal blasted through the speakers. Everyone knows how parents work. There's an unspoken rule that's been in practice for centuries - if your parents repeatedly ask you to do something and you **STILL** fail to complete the task they'll do it themselves. It's one of their credentials as parents. I wonder why my parents thought right before the family vacation, "what if we don't do all of our irresponsible child's work and leave it be till the last minute? What if?". I mean I trusted them to fully take responsibility for everything and I wouldn't have to work even for a single minute.

At the last minute they question me about the luggage and miscellaneous items I'm carrying! Can you believe this?! Guess who got punished to carry most of the luggage? (Hint: starts with M ends with E) I mean anyone could tell who was at fault here, right?

**Day 170:** The places we went to were really great and man do people demand respect from their tourists or what? Little did I know that placing your camera into a meditating Buddhist's face is considered disrespectful! Funnily enough a news channel was reporting about a monk whose thirty-year-meditation was broken by some ditzy kid taking a selfie, wonder what that was about? Well kids these days, what will we do about it? Never seem to care that their actions may have consequences that affect others!

Another issue that comes with vacations is the hotels and lodges. Most rooms always have this one

problem that they're not big enough to accommodate over two people. You check in and everyone's arguing as to who'll sleep on the bed within the first two minutes! Now as a scientist I consider myself to be the smarter one in the family. I analyse the situation in my mind before taking action, observe the people involved, study them to get a brief idea of how they work and



draw an inference accordingly. Relying on these skills of mine I came up with a perfectly calculated solution to get a side on the bed. I **CRIED AND SCREECHED** at the top of my voice until my parents gave up the whole bed for me to sleep! It's that simple! I observed a bed and I inferred that I'd sleep on it, **HA!** Also any other way of negotiation would require me to use my brain which is hard.

**Day 194:** **ISN'T IT GREAT WHEN YOUR COLLEGE REOPENS MUCH AGAINST YOUR WILL?!** So much for democracy eh? I'll let you know about one place where democracy is seen at it's finest. It's a classroom full of students

determined to bunk a class. Planning a mass bunk is no child's play. It's never initiated by a group. It's one of those days when everyone's out of their element. None of them want to attend the class. Maybe after a tedious exam, maybe just a tiring day for everyone. One can look in the students eyes and see flickering bulbs reading "Please get me out of here!" While that's on everyone's mind, there's one hero who musters up the courage to take initiative and ask a room full of worn out students about mass-bunking a class. That person is of course met with a lot of backlash initially but ultimately the rest of the class retires and agrees because deep down that's what they would've wanted too! In that moment we are the rulers who govern our actions, not any alien powers. By a simple method of elimination, we choose an option to provide us with an excuse we least disagree upon, the one whose outcome would be collectively bearable by the whole class. It's an obvious agreement to never rat out the classmates. (no one likes a snitch, I found out the hard way). In this micro-democratic nation we aren't just observers but participants as well!

**Day 213:** It's just been a few days since college began and I can see people lose their zeal and enthusiasm to continue, because it's physically and mentally stressful as each day goes by. Partially one could say it's the schedules and the burden carried by students that makes their college life stressful. But we know it's mostly the stress of examination. You'll see all varieties of people during the examinations. Rarest of them are the ones who managed their time well enough to complete their portions and studied and revised on time (sadly I'm not one of them) and then there's the group that crams the entire syllabus into their brains just

enough to spill it out on the paper the next day. Then there's the lot who leave their paper to God, hoping it'll be taken care of. It's in the examination hall where everyone is everyone's friend. I've met people whom I have never seen in a class before approach me like we've been best buds for years! The unity displayed is impeccable! It's a monarchical system. There's one person who studied the topics and is confident enough to give the paper and then a whole lot who believe in that one person. There's other people who've studied as well but they might not have a say in the decision taken for the final answer. It's all power bestowed upon one person! That one person could be dim-witted, completely wrong and could sabotage everyone else's chance of passing the exam, but is trusted and has the power. For all we know that one person could have studied the wrong subject. From this one idiot, everyone takes the answers and vomits them during the exam with little knowledge of what they're writing or the fact that teachers would read these answers and get a direct insight of their mind! I guess by now the teachers would have figured out that there's no better xerox machine than a student in desperate need to pass an examination.

**Day 348:** "In my time.." Want to know how many times I've heard this? 22/7. Our seniors keep on pestering us about their prehistoric life and times. NEWS FLASH: We know you're ancient! Always rubbing their caveman behaviour in our faces. For example this other day I was studying in the library crying and pulling my hair out just like any other casual day of the week when this senior walks up to me and hands me a bottle of water ordering me to calm down and take a deep breath and then she grabbed my book to mark important questions yapping about how it'll help me out. What's all that about?! It was almost impossible to understand their

hieroglyphics, although interactions with seniors is far different from what is imagined. I thought it'd be a daunting experience to even go up to them or greet them, let alone hold an entire conversation. But they've made themselves more approachable I guess. They always seem hyped to see me! They even make this face ( ͡° ͜ʖ ͡° ) when I show up to college! Always thrilled to see me! Actually, in an unforeseen turn of events, it's the seniors that are bullied by their juniors. But then there are these really sweet seniors; one in particular who's a doll! So sweet that I can't believe I don't have diabetes yet. Always ready to help someone in need. Quite participative in all the college events and urges others to participate as well, always keeps the pot stirring. I wonder sometimes if this person looks at the ones who're not as sorted out or even remotely functional in college and thinks "What a peasant". I aspire to be like this one day!

**Day...**



*Miscommunication leads to so much chaos! Something that should've gone as smooth and calm as rowing a boat peacefully in a lake with soothing music in the background becomes more like river-rafting up a waterfall with death metal blasted through the speakers.*

**- leaked from the not so private journal of  
the mad scientist (by Alfred Kettleman)**



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The most effective way to do it, is to do it.

- Amelia Earhart

