



MANIPAL SCHOOL OF LIFE SCIENCES

MANIPAL

(A constituent unit of MAHE, Manipal)

Vivus

Vol 6 Issue 2



Dear Readers,

We hope that this magazine finds you in the best of health and happiness.

Well, aren't we in a situation that we couldn't possibly have predicted, eh? The quarantine has been inconvenient to say the least, and downright debilitating to many students across the country. And yet, we've somehow persevered: there were students who were stuck in just the worst situations, including being caught in a massive cyclone threat. Yet, their enterprising spirit made sure that they aced the entire semester. You guys yourself are the best sources of inspiration you could possibly need! :D

Vivus takes special note of exactly that: we have accounts from three students across the country recollecting their experiences so far during the lockdown. They talk about their best efforts to make being cooped up at home less of an ordeal – a must read, simply because all of us can definitely relate. The rest is of course standard fare – Vivus takes pride in yet again being a repository for MSLS' best talents. Bringing some intriguing science to light, spectacular artwork and spellbinding prose and poetry – this issue's got it all, and then more. Head over to Creative Corner and check the beautiful pieces of art out.

The main feature of this issue is also undoubtedly special. This time, we're putting a spotlight on the International Symposium on Genome Instability: from Bench to Bedside, held in January 2020. The landmark event played host to a delegation of noted professors, who waxed eloquent on the most advanced aspects of their chosen fields. Apart from a brief summary of the event early on, scroll down to get to the Interviews Section - we've got a bunch of conversations with some very learned people who've got some very wise things to say.

We are immensely grateful to our Director, **Dr. K Satyamoorthy** who has been a constant support and has guided us through every step in bringing out this new volume of Vivus. We would also like to thank our faculty advisors, **Dr. T. G. Vasudevan**, **Dr. Vidhu Sankar Babu** and **Dr. Saadi Abdul Vahab** for their reviews and advice. We also extend our thanks to the various committee heads for their help and to all the students who represented us at the interviews.

All in all, we're confident that this issue of Vivus is bound to be a complete package - it's got a little bit of everything for everyone. Most of all though, we can't wait to have all of you back here at MSLS - the institution just isn't the same without the people who make it what it is.

Designing and Cover page design by – Shalon Pinto

Presenting Vivus – Volume 6, Issue 2
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Editorial Board 2019-2020
Manipal School of Life Sciences
MAHE, Manipal

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Somewhere inside all of us is the power to change the world

-Roald Dahl

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What's up MSLS?

Inauguration of MAHE Erasmus MC Center (MECGS) and International Symposium on Genome Instability at Manipal

MAHE-Erasmus MC Center on Genome Stability (MECGS) and “International Symposium on Genome Instability: from bench to bedside” was inaugurated at Manipal School of Life Sciences (MSLS) Auditorium, MAHE at Manipal on January 28, 2020 by the Pro-Chancellor of Manipal Academy of Higher Education (MAHE), Dr. H.S. Ballal, in the presence of Dr. Roland Kanaar (Head, Molecular Genetics, Erasmus Medical Center, the Netherlands), Dr. K Satyamoorthy (Director, MSLS, MAHE), Dr. Arnab Ray Chaudhuri (Assistant Professor, Molecular Genetics, Erasmus MC, the Netherlands) and Dr. Sanjiban Chakrabarty (Assistant Professor, MSLS, Manipal). The symposium organized by Manipal School of Life Sciences ran from January 28th to 29th, 2020 and had eminent researchers in the field of DNA repair and genome instability, Dr. Roland Kanaar, Dr. Jan Hoeijmakers, Dr. Wim Vermeulen, Dr. Jurgen Martijn, Dr. Dik van Gent, Dr. Arnab Ray Chaudhuri, Dr. Nitika Taneja, Dr. Arjan Theil (from Erasmus Medical Center), Dr. V. Nagaraja, IISc, Dr. Ganesh Nagaraju, IISc, Dr. Sagar Sengupta, NII, Dr. Birija Sankar Patro, BARC, Dr. Manas Kumar Santra, NCCS, Dr. Arshdeep Sidhu, NITTE, Dr. Aprotim Mazumdar, TIFR, Hyderabad, Dr. Asima Mukhopadhyay, Chittaranjan National Cancer Institute Kolkata who attended the symposium and delivered lectures.

Inaugurating the symposium, Dr. Ballal spoke of the genesis of the Manipal School of Life Sciences based on the need to develop a new scientific knowledge, as part of the university’s goal to be ranked higher among world universities. He lauded the team at MSLS for bringing together the renowned delegates for this two-day symposium and inauguration of MAHE-Erasmus MC Center on Genome Stability (MECGS). In his presidential address, Dr. Roland Kanaar listed the specific goals of the MECGS and more importantly the aim of the symposium – to promote networking among the delegates from India and the Netherlands. This, he said, will improve collaborations of complementary nature. Dr. Sanjiban Chakrabarty (Assistant Professor, MSLS) welcomed the gathering and Dr. Arnab Ray Chaudhuri (Erasmus MC) gave an overview on the genesis of MECGS. Dr. Shama Prasada K (Associate Professor, MSLS) delivered the vote of thanks. Speakers from India and the Netherlands presented their work in the area of genome stability during the symposium, which also included oral and poster presentations by young researchers. The symposium was sponsored by Department of Science and Technology (DST), Department of Biotechnology (DBT), Board of Research in Nuclear Sciences (BRNS), Council of Scientific and Industrial Research (CSIR) Government of India, and MAHE, Manipal, and funding from ThermoFisher Scientific, Eppendorf, Tarsons, Sri Mahalasa Agencies and Sri Durga Laboratory.



Workshop on Foundational Open Science Skills Primer (FOSSP) 2020



On January 30, 2020, the Department of Bioinformatics, Manipal School of Life Sciences, MSLS and The CyVerse, University of Arizona, jointly organized a one-day workshop titled 'Foundational Open Science Skills Primer (FOSSP)'. The purpose of the workshop was to provide an opportunity for students and researchers to learn about biological big data analysis using various openly accessible tools and using the CyVerse platform. More than 30 participants from various institutes of Manipal Academy of Higher Education as well as from other institutes/universities actively participated in the workshop. Inaugurating the workshop Dr. K. Satyamoorthy, Director, MSLS, addressed the participants and briefed the advancement in Bioinformatics and importance of cloud computing in big data analysis and life sciences research.

The sessions were planned and led by our alumnus Mr. Sateesh Peri (BSc Biotech 2006-2009; MSc-MBH 2009-2011) currently a graduate student in the Lyons Lab at CyVerse headquarters at the University of Arizona along with Dr. Bobby Paul and Mr. Sandeep Mallya from the Department of Bioinformatics, MSLS. The one-day workshop introduced participants to hands-on experience working on CyVerse, a cyber-infrastructure that offers an interconnected series of platforms, tools, and services for managing the entire data life cycle. The workshop demonstrated some open source approaches such as UNIX, cloud computing and Docker as well as an introduction to GitHub.



Sports Week 2020

The second edition of Sports Week was conducted from February 5 to February 29, 2020. The week consisted of various fun filled events which saw the participation of eager young adults.

Chess and Carrom competitions were held on the first two days of Sports Week. The event saw active participation from a lot of individuals. Mr. Shankar SR won the chess championship against Dr Arun. The students as well as the staff and research scholars took part in the Carrom Singles and Doubles. Carrom Singles was won by Ms. Rekha KN and the Doubles was won by Dr Murali TS and Dr Bobby Paul.

Table tennis competition was held on February 6 and 7, 2020. The audience witnessed and cheered for all the participants. Mr. Shawn Jaison Miranda won the Men's Singles and the Men's Doubles was won by Mr. Subhro Das and Mr. Shawn Miranda. Women's singles was won by Ms. Mridula and Women's doubles was won by Ms. Mridula and Ms. Prathvi. The Womens' Throwball event was held on February 10, 2020 at the MIT grounds. The finals were played between first year M.Sc. and the staff-research students team which ended in a tie. The tie breaker was won by the staff-research students team.

The Football matches were played on 10 and 11 of February at the MIT grounds. This lively event saw participation from B.Sc. and M.Sc., Research Scholars and Staff. All the players were enthusiastic and played with good spirit. The finals were played by between second year B.Sc. team and a combined first and third year B.Sc. team. The 2nd year BSc students emerged as winners.

The badminton event was conducted on 12th February. This event saw a large number of participants. Everyone sweated it out on the court and showed their energetic side. The Men's Singles title was won by Mr. Sandesh Salvankar. The Men's Doubles event was won by Mr. Sharath and Mr. Harshith.. The Women's Singles was won by Ms. Nivedita Rangadhol and Women's doubles was won by Ms. Gauri and Ms. Hacienda.

The last event for the sports week was the Cricket tournament which was played at the MIT grounds on February 15 and 16, 2020. There were eleven members in each team consisting of the B.Sc., M.Sc., Staff and the Ph.D. scholars. The Ph.D. Scholars emerged as the champions of the event.

-By Carol Felcita Lobo (M.Sc. BI)





Matribhasha Diwas 2020

Manipal School of Life Sciences celebrated the Matribhasha Diwas on February 21, 2020. The program commenced with a rendition of “Vande Mataram” by the Research Students accompanied by a flute performance by Ms. Jhanvi, a BiSEP student. Dr. T.G. Vasudevan, a faculty member of MSLS, stressed the significance of dialects and their extinction. He prompted the audience, notably the young generation to preserve their lingual heritage. Ms Nivedita, a postgraduate student, rendered a beautiful song in Tulu, and her performance was followed by a medley of Malayalam songs by Mr. Vengidesh, Ms. Ashwathy, Ms. Abeegayil and Mr. Akhil, which portrayed a blend of ragas as well as dulcet tones depicting the essence of love, compassion, youthful frolics and childhood nostalgia. Ms Supriti, a research scholar, serenaded the crowd with a Bengali melody which articulated a woman’s emotion wanting to reach out to the rainbow implying her visions.

Dr. Nirmal Mazumder showcased his multilingual talents by narrating poems in both Bengali and Assamese. The Bengali poem named "Sonar Tori" by Rabindranath Tagore symbolises the fact that Time carries the deeds and preserves it, but it does not want to save the doer. The Assamese poem “Bishwa Shilpi” portrays man as the “World Artist” who harnesses the past, present and future. This was followed by a Tamil song depicting the generosity and beauty of flowers sung by Ms. Kaavya, an undergraduate student.

The event of nostalgic songs and reminders of our home and mother-tongue ended with a group performance of the famous ‘Mile Sur Mera Tumhara’ by Mr. Dinesh, Ms. Ipsita, Ms. Poonam, Mr. Vengidesh, Ms. Rekha, Ms. Varijakshi, Ms. Sindhoora, Ms. Pooja, Ms. Ashwathy and Mr. Manish, Research Scholars of MSLS. The audience enthusiastically joined them and a brief vote of thanks by Ms. Shruti and Ms. Gayatri, MSc students, on behalf of the Student Council, MSLS brought the eventful occasion to an end. Dr. K Satyamoorthy, staff and students graced the occasion with their presence.

-By Ashwini Uchil (M.Sc. MBT)



Annual Athletic Meet 2019-20

The Annual Athletic Meet of Manipal School of Life Sciences garnered the entire student body, faculty and staff in full attendance at the MIT cricket grounds on February 11, 2020. Dr. K. Satyamoorthy, Director, MSLS; Mr H. Sridhar, Director of Physical Education Education, MAHE, Manipal and and Mr. Stephen Pinto, Chief Official, Milagres College, Mangalore as well as other officials from Alva's College, Moodbidri graced the event.

The event began with all the athletes (staff and students) lining up for the oath-taking, led by Gayatri Vadlamani, Head of the Sports Committee, MSLS. With words of encouragement, Dr. Satyamoorthy then declared the Meet open.

The individual 400m track race for men and women was the first event, with separate categories for students and staff. The field events (shotput, discus throw, javelin throw, long jump) were conducted simultaneously along with the track events.

The much-awaited star events of the day - the 200m, 100m, 4x100m relay - for men and women were then conducted. In the Men's relay (students), the BSc. 1st year and 2nd year relay team (Shawn, Kaushik, Ranga, and Sohid) came first, followed by the BSc. 3rd-year team (Abhimanyu, Arbaaz, Osborn, Anish) who emerged a close second.

In the women's relay (students), the MSc. 1st year team (Prathvi Shenoy, Ankita Suresh, Mridula Sunder, Gayatri Vadlamani) bagged the first prize while the BSc. 1st year team (Nourin Abha, Megha Shankhar, Mehreen Saigal, Greeshma Joy) bagged the 2nd prize.

The energy bursting through the crowd was evident with the choice of popular music playing and their constant cheering, exhibiting their incredible support for classmates and faculty. Although the fastest races take the limelight, the event to bring the crowd onto their feet was the tug of war between students and staff. In the Men's category, the team of Staff & Research Scholars emerged the winners, while the Students claimed the prize in the Women's category.

-By Sports Committee, MSLS



Words of Wisdom

Namanpreet

Ms. Akanksha Sharma



Akanksha Sharma is a Senior Policy Advisor in Holland Innovation Network, Consulate General of the Netherlands, Bangalore

What kind of work is done at Holland Innovation Network?

Holland Innovation Network is an organization that is under the Ministry of Economic Affairs, the Netherlands, which has been created so that people are deputed all over the globe especially in countries that the Netherlands considers as strategically important, including India. It also has innovation offices deployed in countries like Japan, Brazil, European countries and China. So with all countries wherever the Netherlands is active in the field of innovation, technology and science, there you have officers like us mix up Dutch colleagues, as well as locals who work together with the local counterparts, government, as well as Dutch stakeholders to make sure that the stakeholders get connected to counterparts in their respective fields. We work across a number of sectors. Life Sciences and healthcare is definitely one of the priority sectors for the Netherlands. But then there are also other sectors like High tech systems, IT, ICT agriculture and water management systems. So, our job is essentially to connect Dutch universities, Dutch companies and the Dutch government, who are interested in cooperation with India in the field of innovation, technology and science. I am part of the trade network. We have the embassy in Delhi. There is a consulate in Mumbai and I am part of the consulate in Bangalore.

What kind of opportunity is provided by Holland Innovative Network for Masters' students as well as for researchers?

We have some programs for students, which are under the education department called Nuffic NESO. Nuffic's Netherlands Education Support Office (NESO)-India, is the official representative of Dutch Higher Education Institutions in India. It specifically caters to the needs of prospective Indian students who are planning to study abroad by providing credible and accurate information about studying in Holland. Based out of Bangalore, they help the student mobility; they help attract Indian students who are interested in studying abroad, especially going to the Netherlands. So, they have a lot of schemes. One recent scholarship program that has been launched is the Orange Tulip Scholarship (OTS). A number of universities provide scholarships to students. There is a certain mark that is also fixed for Indian students.

Does Holland Innovative Network provide scholarships to a researcher to work in the Netherlands?

Though we do not directly provide scholarships, we do facilitate by coordinating with the funding agency.

Why is the Netherlands an attractive place for young students and budding researchers to pursue their education career?

The Netherlands is a very open country and is true with culture as well. A lot of Indian students are studying there and they don't usually find it difficult to adjust to the atmosphere; public infrastructure is also very good. The train, bus and transport service are very nicely organized; it makes it easy for students to explore nearby areas. Of course, there are some cultural differences that you have to get used to. The climate can also get quite cold in winters. Most of the Master's courses are offered in English, so that makes it easy and majority of the Dutch population speaks English. So language is not a barrier - that makes it easy for students.

What is your impression about MAHE?

I want to say that Manipal is doing excellent work, especially in research. The university is really going out and is already very internationally oriented. In the last three years, there have been some three visits to the Netherlands alone. So, it shows that there is a lot of interest in international cooperation. That is very positive and heartening for us to see. So, we at Holland Innovation Network would like to help the university realize some of their international missions and support them in whatever capacity we can.

How do you see "Erasmus-MAHE DNA repair clinic" coming up in the next five years?

There is a lot of positive energy amongst both groups and there is a lot of complementarity in terms of what the strengths here are in Manipal and what the strengths in the Netherlands are. So that means it was a very good fit for the two organizations to work together in the area and there's some initial commitment also from both universities to even some of their own funds. And in order to scale up you need support from external funding agencies and that's where we like to come in and help Erasmus get access to some of the funds and have them take it to the next level.

How do you see collaborations between India and Netherlands going in the field of Basic and Health research?

I have now been working with the Netherlands for almost seven years. In the beginning, we had to put a lot of effort into bringing the Netherlands government, universities and stakeholders here. In the last 10 years, we have had to put a lot of effort and focus because in the Netherlands, a lot of people don't really know what India has to offer - the kind of opportunities that we have, especially in the area of Life Sciences. But those efforts and hard work are beginning to show some results. There is some steady interest from the Netherlands almost every year. In the last 3 years, four to five delegations in the area of healthcare visited India. Universities like Erasmus, Maastricht have collaborations with many universities here. Fifty or so Dutch companies are investing here. So, there is much interest from both sides to work together and I think we are moving in the right direction.

Dr. Arshdeep Sidhu



Dr. Arshdeep Sidhu is an Assistant Professor at NITTE University Centre of Science Education and Research (NUCSER), Mangalore, India. She is a meticulous and experienced researcher with a demonstrated history of topical research. She did her Bachelors in Botany, Zoology, Chemistry & English and Masters in Human Genomics and Ph.D. in Nano biophysics in the University of Twente, Netherlands & Post-Doctoral degree at Erasmus Medical Centre.

What research are you currently working on?

I am working on relatively new kinds of proteins that have a disordered and a structured part. In the last few years, it has been figured out that proteins undergo a process known as phase separation. Ever since I was a student, I was fascinated on how the proteins communicate in a crowded cell. The concentration of protein in a cell is about 300 pg, how does one protein find another protein? The prevailing idea of diffusion of proteins was never convincing for me. There was a nano genetics book, "A Cell A Gel" in which the concept of protein diffusion in a crowded cell based on the protein's diffusion co-efficient was explained. Around 2009, scientists worked on experiments on phase separation using *Xenopus* oocytes. They found that there were proteins which would do their work and then just phase separate. So far, it was believed that the organelles are compartmentalized in a cell but now they were finding out that the proteins would just come together in a mass and then disperse. This process of proteins and bio machinery coming together is known as phase separation.

How has your journey been from your Bachelor's to NITTE University?

It has not been conventional. Usually you see people who pick up one subject and carry on. I have changed my subjects every two or so years. I did Botany, Zoology, Chemistry and then moved on to Human Genomics and then I did my Ph.D. at NII (National Institute of Immunology) on NMR science. I wasn't interested in the project I was working on. So, I quit NII and joined Ph.D. at University of Twente, Netherlands where the Science subject is very dynamic. It was very wonderful and changed my life. I think it really helps moving to new places to meet new people and experience new things, you invariably become more political and start analysing things.

What do you consider as your best paper or work? Why? What is the most innovative work, which you personally liked?

I have one paper from my first Ph.D. and four first author papers from my second Ph.D. Those papers have a special place in my heart in their own way. The most exciting study - a technical project which no one thought would work, was making nanowires with proteins. I put a lot of heart and brain in that project. Then we tried to see the conductivity of wires and then we realised this microscopic world is a lot

different from the nano scale world. This work is included in the thesis but it was not published because we did not have any concrete results. But working on that project meant a lot to me.

Would you like to tell us about your upcoming research work?

I will be working on phase separation. It is a completely new way on how proteins regulate and function that gives diversity to the proteins. You can also simply categorize proteins into certain categories like metabolic proteins, which are the most structural proteins, signalling proteins, which are at the heart of any organism's diversity or responding to any chemical. The behaviour of protein in its disordered part is different in different environments. If one variable is added, it behaves in a completely different manner.

What are the applications of your research work in clinical field?

If you look at the most pressing medical needs of the hour, it is diseases like cancer, Parkinson's disease, autoimmune disorders, neurodegenerative disorders, which all involve signalling proteins. It is difficult to understand these diseases because they are multifactorial. Eighty percent of cancers are associated with proteins that have disordered regions. Once we start understanding how disordered proteins function and the processes where phase separation takes place inside the cell, there are stress granules inside the cell. Under stress signals this phase separation occurs which are hotspots for translation. Because of its localization of high concentration of proteins, it should be dispersed. When dispersion goes wrong, it is when the proteins start aggregating, which then leads to formation of inclusion bodies in the cells. For normal functioning they should be able to come together and for the prevention of disease the proteins should be able to disperse when the process is done. I think the most exciting part of science, at least for me, is that you can write anything on paper. When you take it to the bench, you do the experiment and you find something else more exciting and then you are on another direction. It depends on where you are in the spectrum of science; for clinicians, talking about therapeutics makes more sense; for the microbiologist, talking about therapeutics is an over stretch. I can find molecular mechanisms which are going wrong to find a way to engineer the pathway or mechanism to manage the disease better. For multifactorial diseases it is better to manage the disease rather than cure. For example, curing cancer is a far reached thing, you can see how something will make the life of the patient better. It could be suppressing the side effects of the medicines, elevating discomfort or restoring function.

Current or upcoming research work to combat cancer?

Being a fundamental science person, if I find something which has therapeutic potential to combat cancer then I would like to work on it. I have been working on a material science project where amyloid protein with melanin are combined to make a stronger UV protectant.

What is your source of inspiration and motivation to work every day?

I have experience of two Ph.D.s. I quit the first Ph.D. after 3 years and 10 months and (my) second Ph.D., I completed in 3 years and 5 months, and then took 2 months to write the thesis. It depends on the environment surrounding you. You have to find the purpose of doing your Ph.D. I am a curious person by nature. Ph.D. is a dense phase of learning, and it helps to build personality. Figure out yourself on what you want and what kind of a scientist do you want to be. You don't have to rely on what other people talk about.

Any advice for the young generation?

Find your strengths, find it in your own way and do not follow others. Science is a creative process and if you over saturate yourself, you stop being creative. Being an organised person, I was very clear from the beginning not to work till late nights in the lab. Over the years, I loved reading pop science books and have a reference where a neuroscientist said that when you actively start thinking of solving a problem then you don't get that eureka moment. When you let it go and you do something else and your brain is still calculating that's when your brain finds a way to solve it. Actively focusing on something is called Attentional Blindness, it is when you focus too much and you become blind to it and stress yourself that shuts down the creative part of the brain. Take everybody's suggestion but you have to find out whether it is right for you or not.

What advice would you give for the students who are not sure of what specialization or field of science to pick?

When I was at the stage where I have to choose a stream for Ph.D., I loved Neurobiology and Chronobiology. In India, research in chronobiology had just started in NBRC (National Brain Research Centre) where I was selected for interaction but it did not work for me. I ended up in NII (National Institute of Immunology) where I wasn't sure what to choose. I was in an immunology institute but I was interested in structure biology, which made it difficult for me to adjust. It is important to choose the field in which you can put your heart and soul. Not knowing what you like is ok till the time you know what you don't like to make sure you don't go for those things. The more exposure you have to make an independent choice, the better you become. Making choice is also an art; for that you need to have an ambience to make choices. I was given a specific project during my second Ph.D., which was super exciting to me but I had no experience. I assured my guide that I will put my heart and soul into it and I got selected there. I worked on that project and made an observation, which no one did before me that was interesting and got praised by my co-guide. Out of these observations, I wrote four papers in my Ph.D. Once you start investing your ideas that is when that project becomes yours. Circumstances can put you in a place to do things, and at a certain point of time, you have to make choices.

**-Interviewed by Varijakshi Gutthedhar (Ph.D. Scholar),
Parth Shah, Sanjana S Bhat (B.Sc. Students)**

Dr. Jan Hoeijmakers



Dr. Jan Hoeijmakers is currently a professor and principal investigator at the Department of Molecular Genetics, Erasmus Medical Centre, Rotterdam, The Netherlands.

Good evening, sir. Can you please tell our readers about your recent research work?

I have worked for a long time on DNA damage and very rare diseases where children are born with a defect in repairing DNA damage. Some of these children have cancer at a young age because of this specific repair defect - they have problems with UV-induced DNA damage. That is one rare disease. The other rare disease, which was puzzling, was very different. Even though they had a defect in the same repair system, the diseases were characterised by an absence of cancer and instead these children developed many neurological and developmental problems. They do not grow; have neurodegeneration and many other very severe clinical features. To understand this, we first need to understand the mechanisms of DNA damage and repair. So, that's what we first did. To understand repair, we cloned many genes that are involved in repair system and when we learnt more about the function, we started to realise that you can repair DNA damage that is protecting you from mutations. If you have a defect in that repair system then you may get cancer. But if you have a defect in the other systems that are more protecting, then cells die from damage and that accelerates ageing. We found a new connection between DNA repair and protection from ageing.

We studied that very extensively in mouse models that were very similar to the patients. Patients of course are very rare. You cannot investigate them at any moment in time so you have to be very careful but we have no medication. So, then we studied these mice that have the same phenotype and we discovered that if you have too much DNA damage that you cannot handle because you have a repair defect and/or other stress conditions like chemotherapy, you also get a lot of damage and this damage causes accelerated ageing. But at the same time, it triggers a protective response that the cells and the body in the end wants to protect itself from the damage. This happens by suppressing growth and by upregulating all kinds of defence mechanisms like antioxidant defence, immune responses, stress resistance, etc. They (stress responses) were all up so when you are or the body is confronted with too much DNA damage that accelerates ageing or can get cancer, then the body responds like "Oh, stop! I want to invest now into growth and resilience mechanisms to protect myself!".

That was a very intriguing response because it looked also similar to dietary restriction. So, when you have less food, the body too is very clever. It does not waste this food in growth; it now uses this small amount of food to try to make yourself much more resilient to starvation and to disease. If you do that constantly, that is the only universal intervention that delays ageing in yeast, in worms, flies, even up to primates.

So, dietary restriction delays ageing! Then we wondered, we have mice that show accelerated ageing and children who stay very small and have all kinds of ageing-related phenotypes, but the body responds by protecting itself. We thought what might happen if these mice, and hopefully children later, were given less food instead of normal amounts. And we found indeed that there is tremendous synergism. If you put mice that show accelerated ageing, stay very small and have all kinds of ageing phenotypes on a diet, they get less food, and now they are amazingly protected. They live longer by three times. Then we have applied it to the first patient which was always our aim because we did not want to cure mice, we wanted to cure the patients. The first patient also had spectacular protection and now we think that the very same mechanism is important for not only these very rare children, whom we can help by simply giving less food.

It is a very cheap kind of medicine and maybe we can use it in a very different context. For chemotherapy and radiotherapy in cancer patients, which causes DNA damage and ageing, maybe dietary restriction can prevent these (effects), at the moment of therapy. During surgery and organ transplantations ischemia perfusion damage and unavailability of oxygen occurs at certain parts of the body. When you re-install oxygen supply through blood, then at that very moment there is a lot of radical formation and so you create a lot of damage in a very short period of time and that causes accelerated ageing locally in the organ that has been organ transplanted or locally where you do the surgery. So, paradoxically again, before surgery implementation of dietary restriction and period of fasting may provide enhanced protection. We think also for ageing related diseases and particularly dementia, Alzheimer's, Parkinson's it is exactly the same mechanism. These very rare children have opened our eyes for something that is very relevant for all of us and that relates to ageing and ageing-related diseases and many other clinical applications.

Do you think because the stress related pathways are already activated because of diet restriction, individuals are more resistant to any other kind of damage?

Exactly. It is a very wide protective response that protects you in case of starvation, where you invest into resilience and survive the period of starvation. If you do not do that, you will never get offspring. So, in evolution this is immediately punished. In evolution, there was a very strong force. In case of stress, you have to mount a response that protects you and it in turn, protects from many types of stresses.

We would like to know what got you interested in this field. What inspired you?

I was fascinated by ageing and very severe diseases like cancer, even when I was a very young boy, since the age of four. I still recall that I saw my great-grandmother. She was very old and I was very impressed by her appearance; very tiny, with wrinkles, had kyphosis. And I thought, "Oh gosh! Is this the end of life?" So, I wanted to understand what ageing is and how to prevent it. Of course, you first have to know how. Then may be find a way to try to intervene. Of course, that is the ultimate hope and I am really surprised that in my lifetime I have reached a stage that is really a prospect where we can improve health span not so much lifespan but "health span" and the quality of life of many people.

How would you like to apply your research further in the clinical aspect?

So, yeah. We have contact with family and organizations for children with Cockayne syndrome. There is an organization called "Amy and Friends". They have been very active for a few years. They have meetings of the families, the parents, children, doctors and scientists. Normally, these children get extra food because they are tiny, and they hardly have any appetite but now we changed that policy. So, we will

reduce their food intake. I hope that it will translate and improve quality of life of any of these children and future children. And of course, we are now also interested in applying it (dietary restriction) to other diseases and surgery. We have just started clinical investigation for surgery to see how fasting prior to surgery can protect you from surgery-related damage and their clinical consequences. I also hope that it will also lead to something that is very important and I would like to start with Alzheimer and Parkinson's (disease) patients.

What was the biggest challenge in your research work, if any?

The biggest challenge... One of the biggest (challenges) is when you enter a new field; like we were working in DNA damage and repair and then we had an interaction with transcription, which is not our field. In the beginning the people working on transcription did not believe our findings. We found that a repair factor was also a transcription factor. Then, we entered the field of ageing. We were not working on ageing before that. So, the people did not know us and when we published that we think, you know, that mice can age in 3 to 5 weeks, people did not believe it. So, we had a great difficulty in publishing. They rejected a paper 10 times! And our grant applications were also difficult. Now people realize "Oh yeah! DNA damage is the main cause of ageing". We think most of the ageing originates from DNA damages. So, trying to convince other people when you enter a new field, is challenging.

Now we entered the field of Alzheimer's; exactly the same! We have submitted 10 grant applications. The first nine were rejected! Because this I think is new and somebody comes from another field and enters your field, you better be alert because may be that person has found something that nobody was looking for in your field, particularly if in that field, like in case of Alzheimer's, over the 20 years, there hasn't been any success. Enormous investments, 28 billion dollars have been wasted on Alzheimer's research and then when you come with a new idea, which I think will make a lot of sense, then people in the beginning are very reluctant to believe it. So, that is I think, even though scientists have to be open-minded all the time, is the biggest challenge. If you want to be a good scientist you have to be open-minded, you have to be creative, you have to be flexible. What I experience in the fields often is that people are very dogmatic, people are almost always unable or unwilling to accept new ideas that come from another direction. That's my, I think the biggest stumble. Yeah.

Describe the day, how you felt, when you found that the diet restriction helped Emma recover?

I was very happy. Of course, I had predicted on the basis of what we know from the mice study that this would work, that the patient would at least not suffer at all, if not benefit. But the doctors were extremely unsupportive. My ideas were criminal according to many. "These children should not be put on a diet", they said. It took me three years to show the data and talk about them and then they said "No, the mice are not good models". I said, "The mice are very good models!" But, they did not believe it. Then these parents came to me because they were desperate that Emma would further deteriorate. One doctor was very much in favour of our idea. He knows us very well and he is from the DNA repair field. So, with that doctor and those parents we decided, to try it carefully, 100 kilo calories at a time. Because we can always go back, if needed. But I was indeed surprised by the fact that she was doing so well. Unbelievable! I had never anticipated it would be so much reversible! I had always thought, you know these neurons have died. So, yeah you have lost them forever. But now, we have ideas as to why they recovered and that is the next challenge for us to try and find out. Alzheimer's and Parkinson's diseases these days are so devastating and there is no medication. Even though major pharmaceutical industries have spent a lot of money, more than thousand clinical trials, all have failed! I think hopefully, we can give them some better perspective.

What is your source of inspiration and motivation to work every day?

Believing in Science! I believe if you understand a problem in a scientific manner and if it is rigorous and solid, then maybe we have a possibility to prevent or cure a disease. The most serious diseases are cancer and ageing-related diseases for all developed countries in the world. So, if we can improve quality of life at old age then people can live longer, remain active and contribute to science or society and to their families. That would be a tremendous advance and reward! So, that's my motivation.

What are the possible/expected outcomes from the MAHE-ERASMUS collaboration?

We are a small country, The Netherlands, but the impact can be much wider. For instance, India has tremendous resources, a country that is really upcoming, the people are very eager, willing and motivated. They also invest into research because they believe for the future, for the problems that we, as mankind, face; we have to find solutions and it can only be provided by solid science. So, I think that's one reason and Manipal is doing outstanding research. I am impressed by the vision of Dr. T.M.A Pai to start this campus and to invest into science. I also believe in the talents of the people in this country. I also very much like the way this (Centre) was setup and the high level of research, science and clinical work. I think we can work together to try and see whether genome stability and DNA damage can be merged and if our knowledge about that can help us to improve the quality of life and well-being of human beings.

Are there any research opportunities for young researchers in your laboratory?

Yes, of course. But we are a small lab and we have limited resources. We have several talented people from India, some of them from here (Manipal). There are very good scientists from India in other parts of the world, too. So, yes. I am very much open to students. Not only me, but I think the whole department, to see whether we can help each other in terms of making progress towards a common goal which is a goal for mankind. It is not for the Dutch people or Western Europe or the Western society, but for the whole world. That is at least my philosophy and I believe in that.

On a final note, what advice would you like to give the readers of Vivus, mostly the young students and researchers?

Believe in science and be motivated. Because science is the only solution tomorrow for the problems of today. It is very rewarding because you can enrich yourself and learn from nature. In the end, biology and medicine are the most important aspects of life. If you ask people, very rich and famous people, "What do you think is the most important in your life?" the answer is always "Health!". Health and well-being, both mentally and physically, are most important. You cannot devote your life in a better way than doing science to ultimately improve the quality of life.

-Interviewed by Melisa J Andrade and Keshava Prasad (Ph.D. Scholars)

Dr. Dik van Gent



Dr. Dik van Gent is currently a principal investigator at the Department of Molecular Genetics, Erasmus Medical Centre, Rotterdam, The Netherlands. His focus area is DNA Repair Research for Optimized Tumor Treatment.

Can you tell us about the work you do at the Erasmus University Medical Centre, Rotterdam?

Our work at the EMC mainly concentrates on research related to DNA repair and DNA damage responses and DNA damage response-related effects such as cancer and ageing. My research mainly concentrates on DNA double strand break repair. In recent years, my research has concentrated on applying our knowledge with regards to DNA repair to make better more personalized treatment options available to patients suffering from cancer.

This is your second visit to MSLS and on your previous visit, you spoke about ex-vivo tumour tissue culture systems and cancer on chip systems, so could you shed a little light on that as well?

We want to use our knowledge of DNA repair mechanisms to improve treatment options and to do this, we need to know where exactly the defects in a specific tumour are, and so we decided to use small tumour tissue pieces to develop these ex-vivo tumour tissue culture systems and develop assays to report on the DNA repair capacity of the tumour tissue, and we did this by collecting tumour tissue material from surgery and later from biopsies taking very thin slices and growing them in culture. This enabled us to study metastatic tumours as well, which are treated by chemotherapy and this enables us to make it clearer as to which treatments would be effective and which wouldn't, in case of specific tumours with the help of our assays.

Professor, on this topic we'd like to know your opinion regarding cancer cell lines, which with constant use in research for several decades, have lost their markers and so the ex-vivo tumour tissues could provide a better image and better replicate what is actually happening in patients? Do you think using cancer cell lines in research could be a problem moving forward?

Well I think we have learnt a lot from cancer cell lines, and they have been instrumental in many breakthroughs. However, I do not think they may be the best models in cancer research because they

are growing in culture media in lab conditions and moreover tumours are heterogenous in nature and cell lines represent only one cell from that heterogenous tumour micro-environment. Certainly, ex-vivo tumour tissue culture systems are a good step forward to developing better tumour models for research.

Do you think this could be a reason for the lagging behind when it comes to development of newer drugs for cancer treatment?

I do not think we can completely rule out cell line-based work. But, yes, the gap between cell lines and real tumours and the many differences between them mean that very often drugs that show promising results in lab experiments and pre-clinical trials phase fail at the clinical trial stage. So, I think we need better tumour models and the pharmaceutical industry is certainly very interested in these ex-vivo tumour tissue models and even cancer on chip models.


The EMC, as you earlier mentioned, is focusing on the development of more personalized medicine approaches. What are some of the challenges along this path to make personalized medicine treatment more feasible?

We are now at a stage where we are carrying out clinical trials for some of the assays we have developed using biopsy tumour tissue collected from patients to first prepare ex-vivo tumour tissue systems and then carry out assays on them, and try to find correlations between the ex-vivo slices and the whole tumours. In the long run we would like to do these tests for a larger number of patients. There are still many challenges ahead as there are ever-growing number of cancer patients and we would need a greater workforce and more logistical organization to make the tests possible at a fast rate while simultaneously keeping them affordable.

What are the some of the values you think aspiring researchers need to inculcate?

I think it is always good to follow your interests. Do what you think is the most interesting thing no matter whether it may not seem useful at the time. Sometimes basic research carried out on topics that do not seem very important suddenly become the basis for massive scientific discoveries. A good example of this is the protein PARP based on which PARP inhibitor-based treatments are now developed. A lot of the basic research was done in the 1960s and 70s, and it was only much later that Thomas Lindahl pointed out a possible role in DNA repair, and back then we did not even know about BRCA1 and BRCA2. It was only in the late 1990s and early 2000s that the role became clear. So yes, following your interests is something that I believe is very important.

-Interviewed by Prabodh and Satyajit Dey Pereira (Ph.D. Scholars)



The World of Science



Fact or Fiction

Around 1795–96, Elisha Perkins, a United States physician created a medical device known as “tractors” which consisted of two 3-inch metal rods with a pointed end. Perkins claimed that they were made of unusual metal alloys (were made of steel and brass). Perkins used this device to cure inflammation, rheumatism and pain in the head and the face. He would run the tractor over the aching body part and claimed they could “draw off the noxious electrical fluid that lay at the root of suffering”. Moreover, the patients would tell that it worked.



Figure : *Cartoon of Elisha Perkins using Metallic Tractors by James Gillray*
Source : <https://www.founderoftheday.com/founder-of-the-day/perkins>

The word was spreading around the western world. In the city of Bath, a British physician named John Haygarth was puzzled about the efficacy of this instrument which was sold at a high price. The device was fraudulent according to him as a medical practitioner, so he decided to conduct an experiment at the Bath general hospital. He created a fake tractor using wood pieces of the same shape as the metallic one and painted to resemble them in color. He went to five patients suffering from chronic rheumatism and explained them that he had the famous Perkins wand which would relieve their pain. All the patients had been ill for several months. He employed his wooden tractor and ran over them. All the patients except one, claimed to be relieved of the pain. Five distinguished doctors were also there during the experiment as witnesses. Next day he used the true metallic tractors of Perkins exactly like he did the previous day. He was surprised to see that he got the same response from them, with the same degree of warmth as the patients felt the previous day. A patient who was suffering from unbearable pain and could not even stand longer, started to walk freely and showed it to the doctors.



Figure : *A very rare set of 1790s antique Perkins tractors with original case*
Source : <https://www.jameslindlibrary.org/haygarth-j-1800/>



Figure : *The portrait of Dr. John Haygarth*

Source:<https://www.jameslindlibrary.org/haygarth-j-1800/>

Dr. Haygarth, in order to obtain more decisive results asked his two medical friends Sir William Watson of London, and Dr Moncrieffe of Bristol. Shortly his friend from Bristol wrote him back explaining that he got the same results. One of his patients Rober Thomson, 43 years old has a bad rheumatic pain in his shoulder that he hadn't been able to lift his hand for years and after the eight days of treatment with false tractor he was able to move his arm and could raise it to several inches. Haygarth realized the story you tell your patient is as important as the drug.

This is known as placebo effect. A placebo is something that seems to be a real treatment but is a fake one. They contain sugar pills or saline injections. The placebo effect means the person will respond to the treatment (could be positive or negative) even though those are just sugar pills. For instance, person's symptoms might be improved too. In the two centuries, the scientific evidence has shown placebos to be effective in conditions like depression, pain, irritable bowel syndrome and sleep disorders.

In 1955, Henry K. Beecher was the first scientist to quantify placebo effect and published "The Powerful Placebo". Since then, placebo effect has been considered a scientific fact.

Irving Krisch, Associate Director of the Program in Placebo Studies, did an experiment, during 1990s along with his graduate student, Guy Sapirstein. Guy wanted to investigate how much a drug could have placebo effect and he thought antidepressants were an interesting place to figure out. They split the people into three groups, the first group was given a chemical antidepressant, the real one; the second group was given a placebo, a sugar pill but were told that they were receiving the actual medicine; the third group wasn't given anything but just followed over time. The third group is the critical one. Sometimes patients may recover in sometime on their own, to leave out this factor, third group was necessary. They concluded that 75% was a placebo response and 25% was the true drug effect. This meant that for a patient, 75% of the benefit could be obtained from the drug as well as the inactive placebo.

In clinical research, placebos are used in clinical trials of drugs. But some studies have shown placebo effect to be real in terms of brain activity, or actual release of endorphins in case of pain. The idea that mind affects the body has been around for thousand years and the placebo effect is one of the examples. The effect depends upon the expectation of the patients whether they expect their treatment to be effective or not.

The bottom line is placebo is not a cure. But the placebos can affect patients depending upon the story they are being told and what they expect from their treatment. The strongest effects are seen when the patient does not know they are receiving placebos, but this is an ethical concern for many doctors and scientists. But still after so much research, the placebo effect is an unresolved mechanism.



Source : <https://www.zmescience.com/medicine/explaining-placebo-effect/>

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-By Namanpreet Kaur (M.Sc. MBHG)

Mummification in Ancient Egypt

Lying on the banks of the Nile is the Valley of the Kings - a virtual haven for those who spend their lives immersed in the pursuit of archaeological sciences and Egyptology. It is here that studies into the rich past of the Egyptian pharaohs are conducted, the tombs navigated and combed through inch by inch for information that can be gleaned about the lives of those that lived during the early dynastic periods. Most archaeological excavations these days in the valley of the kings are in the smaller settlements around the region. Every inch of the main burial grounds has been scoured - not much is left to excavate per se- and most work now relies on research and academic studies into the artefacts and mummies already discovered with new technology helping these tasks become more and more detailed. In fact, at the moment, there is only one site where an active excavation is taking place, a far cry from the days of the discovery of Tutankhamun.

The most valuable information about the lifestyle of these ancient Egyptians comes not only from the study of their possible lifestyle, but also their attitude towards death. By far the ancient Egyptians are renowned to have an advanced knowledge of human anatomy and its biochemical properties and have been found to merge this immense expertise into the near-perfect embalming of their dead.

New advances in scanning technology, as well as a better understanding of hieroglyphs, has led to researchers having more and more information about the mummification process. Contrary to popular belief, it was not only the pharaohs that were subject to the embalming process. Most nobles and 'middle class' were offered this treatment - albeit to varying levels of efficiency or quality. Even some outlaws seem to have been given partial embalming, highlighted by the discoveries of the 'screaming mummies'. Some of the earliest references to the embalming process (although there isn't any singular guide book-mummification was a constantly evolving process and science) describe the creation of 3 types of wooden models of the dead and the choice given to the family to choose one. It was upon this choice that the embalmers would 'reference' the corpse on. Think of this as the modern-day equivalent of selecting burial caskets when a range of caskets is displayed with differing costs and quality. A morbid decision indeed and similar to what is now the case, one would only choose what one could afford. Once the selection is complete (although one would presume for a Pharaoh only the best would do), the embalmers would then begin to work with their knowledge of the human body.

Rituals that would complement this process are multiple and diverse, and perhaps far too intricate to cover in a single article. However, the actual process with regards to the embalming itself would always begin with the use of an iron rod which is turned and twisted- just so to carefully extract the brains of the unfortunate individual through its nose. The remaining bits and brain fluid were extracted with a quick rinse of water, sometimes even mixed with some clarifying drugs. A sharp obsidian stone was then used to make an incision on the flank - creating an entryway for the embalmers to access the internal organs. Each organ was taken out with care and washed thoroughly with palm wine as dictated in the books written by Herodotus and Diodorus, although there is a distinct lack of evidence of the use of the wine as it does not leave traces after time. The organs, except for the kidney which was given the same treatment as the brain and discarded, were dipped in resins obtained from the Mediterranean through trees grown in Aleppo and Lebanon. Most historians agree that the disposal of the kidney and the brain were to do with the lack of understanding of their functions in those times and were hence considered as 'extra unnecessary baggage' for the journey into the afterlife. The heart, however, was kept intact - a sign that the Egyptians believed in the absolute necessity of the organ for the wellbeing of the body.

The extracted organs, which also included the lungs, were then wrapped and packed into special pottery - should the soul require them in the afterlife. The body cavity itself was then washed with palm wine and filled with a myriad of aromatic compounds. These included cassia, dried lichen (especially in the 22nd dynasty), myrrh, sawdust, and wood pitch and tar which were frequently used to fill the skull. These compounds had benefits of not only being aromatic, but also discouraged bacterial or fungal growth. They also served their main purpose by taking up body volume and preventing later shrinkage during the dehydration period. Some surprising additions to this embalming process included the use of onions which have been observed even from the 13th dynasty era where they were filled in the ears and pelvis of the body. Most lower-class mummification processes, however, were less detailed - they just included the insertion of a strong oil like cedar oil into the body cavity, and an appropriate waiting period after which the internal organs having been dissolved in the oil would be extracted through the same incision. Incisions were frequently packed sealed with beeswax.



Natron, the salt used to dehydrate the bodies

Source: <https://images.app.goo.gl/9wfjcDz1eG1QFDmA7>

Now came perhaps the most integral part of the mummification process - the drying. This process is reminiscent of what we as students often carry out in a routine histology lab. The main focus of the embalming is to preserve the body. And this, the ancient Egyptians found through years of trial and error, could only be assured if there was no remaining moisture in the body. Early efforts of leaving bodies out in the open sand under the sun proved to be ineffective. By the time the sun could dehydrate the outer layers of the body, a vast array of microorganisms would encroach upon the rotting insides of the organs and begin to disintegrate the body structure. This is why the removal of organs and their subsequent safe storage in external vessels was so necessary. The

most efficient form of drying the body to achieve a stable body composition was found to be by using a compound called natrum. Many sources claim that most bodies were left to dehydrate in natron - a sodium compound mixture- from 40 to 70 days by which time the water content of the body would be close to negligible. Natron was ideal as it did not darken the skin while also working as an excellent purifier as it chemically degraded grease. The body was then emptied of the aromatic compounds present in the internal cavities as their work of maintaining the volume of the cavity was complete. Instead the cavities were now filled with resins and linens which would fill the body to give it a more lifelike visage. The aromatic resins like frankincense and myrrh along with various oils were also used to anoint the external body after the incisions were carefully sewed up. The body was then covered with bandages made of good quality linen. The individual body parts were first wrapped after which the whole body was wrapped again. The main glue of this bandaging process was obtained through hot resins. This bandaging process ensured that the body and its parts would remain in their correct place instead of abruptly falling apart due to likely desiccation. A semi-liquid ointment composed partly of resins was sometimes poured over the bandaged form. This completed a basic embalming procedure. The body was placed in a rigid canopic box and had - depending upon the status of the individual - a funerary mask attached to the head. The Suet or a casket then housed the final body where it would lie in for eternity. This casket would range from a simple wooden one to a bejewelled one made of precious metals and painted with bright colours like the one we know to be King Tut's.



An illustration of what a typical day in the life of the mummification priests and workers would look like
Source: <https://images.app.goo.gl/guTQQdEkpMciC6Sn7>

This whole process would take months - higher levels of detail requiring more time. However, it is the record of these intricate procedures that have been found to have been continually evolving through the various dynasties that show the expanse of scientific understanding of these ancient embalmers. As more and more evidence come to light regarding the mummies and the other preservation techniques that the ancient Egyptians used, one thing is for certain; the construction of the pyramids is not the only wonder that Egypt can be credited for. Finding ways to chemically alter the natural process of decomposition is where their ability to understand the human body truly shines through.

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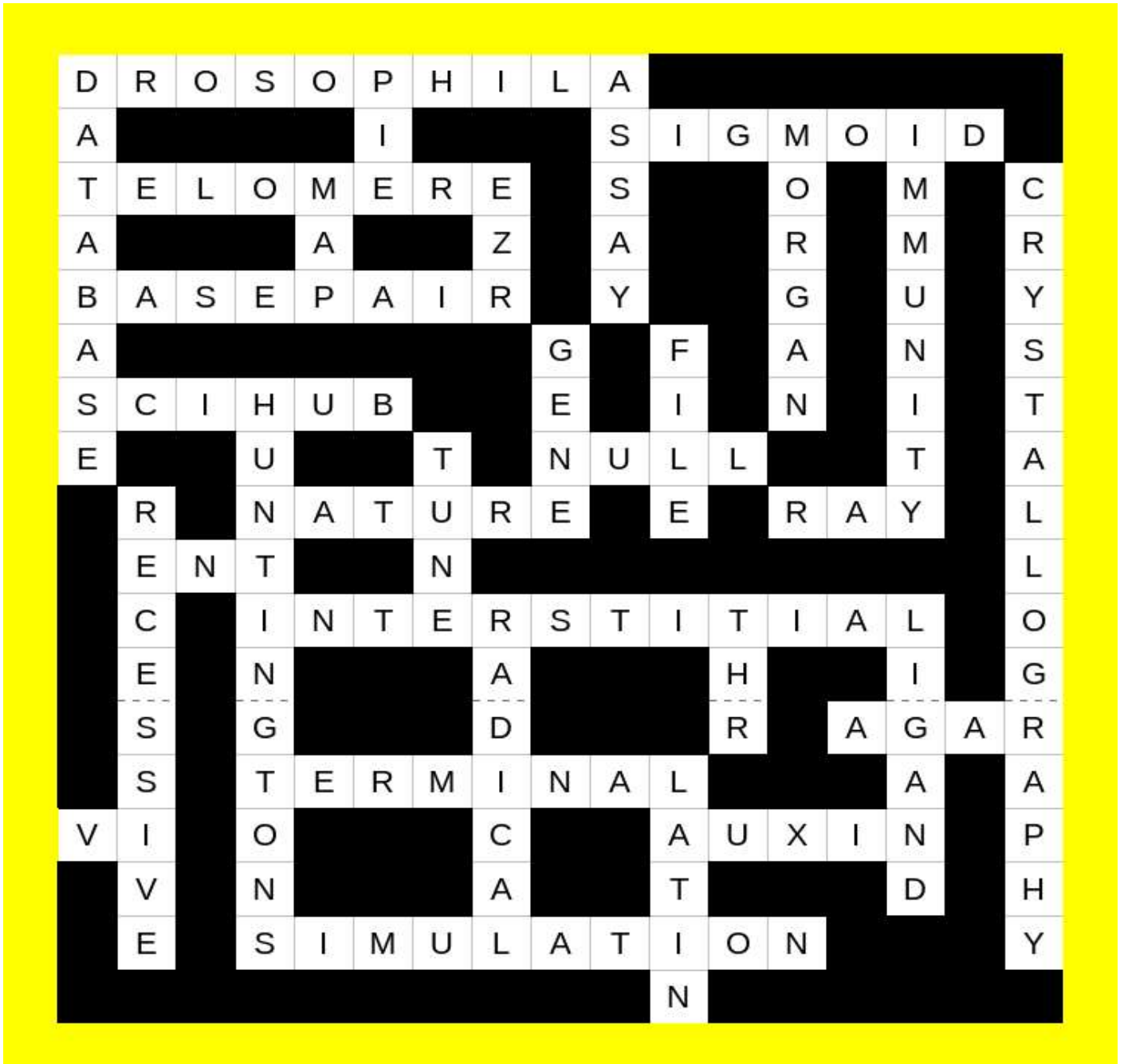
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Egyptian Mummies. Smithsonian Institution

-By Ashwini Uchil (M.Sc. MBT)

Answer to the crossword in Vivus 6.1



-By Kanaya Bhattacharya (M.Sc. by Research) and
Vishnu Karthik (M.Sc. BI)



Creative Corner

Cost of Peace

The foundation of any nation is built by the common man and the fate of a nation lies in the hands of the common man. The predicament of wars is also borne by the common man - the one who shed tears when Jesus was crucified; the one who walked out to garden in Hiroshima on the 6th of August, 1945; the one who raced to work in Nagasaki on the 9th of August, 1945; the one in Syria selling dates to earn enough money to feed the child at home, who is probably already dead. It would take one hours to turn through the red and ragged pages of history to calculate the grave cost that the common man had to pay for peace. It is time that the world realizes that a war to end all wars is not an answer.

Peace is a topic, which is in the center of many discussions but ironically, those discussions are not always peaceful. The bombing in Hiroshima and Nagasaki alone killed a hundred and fifty thousand common men within seconds. Those hundred and fifty thousand common men know the cost of peace.

Peace cannot be measured in any monetary terms. Any history book will tell us that peace is only emphasized after a war, after every war. Wars fought between egos and powers result in destruction and devastation, not only of the people or soldiers, but also of dreams and hopes, of empathy and sympathy, or love and togetherness, of survival and the craving to survive, and that is the cost of peace. The peace this globe has not yet witnessed.

One of the most prominent days in Indian history was August 15, 1947 - the Indian Independence Day. On this day, every year, every Indian in every part of the world displays their patriotism, their love for their homeland. On this day, every year, the Prime Minister delivers a speech, which gives people goosebumps and hope. On this day, every year, we recall the sacrifice of our leaders; we recall the bravery of our soldiers; we recall the patriotism of millions of Indians who would do anything for the land they call home. We recall the events that happened seventy years ago and get lost in the flamboyance of it. Jawaharlal Nehru, the first Prime Minister of India, gave the first speech in independent India. He spoke elegantly about the future of 'independent India'. His speeches were converted into a book, 'Tryst with Destiny'. While he was painting a beautiful picture of what the future held, the present was presented greater challenges') People in Western India were being forced to leave their homes; people were being killed in all parts for the sole reason that they had different religious beliefs. The partition of India was done in order to maintain harmony. Jinnah, along with several other leaders, insisted that the formation of Pakistan was necessary to preserve peace, but the road taken to achieve that peace was not very peaceful. Several paid a price for that. The price was bloodshed, hunger, homelessness, and death, not just of people, but of humanity. Those people who died for their country, their families, and the common men, who migrated from one nation to another, know the cost of peace.

The establishment of freedom does not demand the establishment of destruction as a condition. The fire hoses and growling dogs barking at the children crying for peace; those children know the cost of peace. The widow crying over her husband's limp body on the road - she knows the cost of peace. An annihilation war is a cost of peace.

There must not be any more dreams destroyed to satisfy one's greed. There must not be any other human being denied the right to live based on gender, race, birth, status, orientation etc. There must not be any other 'common man' who has to pay, because recalling history, it is just a group of civilians, whose names never made the headlines, paying the cost of peace nor were memorials dug for them. The common men, who sacrificed their lives with the dream and hope that they would be the last ones needed for peace and that their coming generations would live a life where no drop of blood is shed in exchange of stopping war and misery, they know the cost of peace.

Forgive and forget. It is good advice, but it is not very practical. When someone hurts us, we want to hurt them back. When someone wrongs us, we want to be right. This is just human nature. As a wise man once said, an eye for an eye makes the whole world blind. Love is the ultimate truth.

-By Anoushka Borthakur (B.Sc. BT)

One of My Random Thoughts

*It is like a knitting ball,
All connected, tangled
No clear vision.*

*Just like for a brilliant crystal, each face
Having a dazzling path
for it to pass.*

*The real dilemma is , which one to choose?
Which one to look through?
Ain't all same?*

*Vision differs, independent they are
For her, has taken no efforts to judge.
All pleasant.*

*Resting on her puffy quilt,
Her working mind indulged in faint fantasy.
Forgetting all the sins and duties and
simply recalling hand-picked snaps again and
again*

*soothing her, settling her at the bottom
like a floating feather in air...*

*It has been long,
the hand revisiting its route, completing
every time.*

*Dusk and dawn, circling around
Perpetual and persistent.
The mirror will, for sure
Scream at her one day*



Lockdown Experiences

Namanpreet

My Lockdown Experience

-By Saradindu Banerjee (M.Sc. MBT)

Lockdown is a new experience to me, and I think it is new to all. The new things always bring some new expectations. Rather it's better to say it brings a change, that could be lifestyle, behavior, education system and what not. As the COVID-19 cases have been increasing day by day around India as well as the world, lockdown is the only option to control its outburst. So, here we are at home. As I'm going to share my perspective and experiences of lockdown, I should say some words about me, I'm an introvert, I like to spend time with myself, like to be alone, like to talk to myself and all the features that easily define what an introvert is. When I heard that lockdown was going to happen, I decided to come back to my home. So, when I landed at Kolkata airport, I got the relief because I wanted a vacation badly and within a few hours I would meet my parents again. This lockdown did give me the chance though the purpose of getting a vacation was quite unfair. As an introvert it is not a big deal to spend time during lockdown. Lockdown obviously gave me and is still giving me the opportunity to explore myself more. I am a book-lover so I love to collect as well as to read novels. The literature makes you perfect and brings the best you in its own way. As I always have had a passion for Indian Classical Music, I'm getting time to study music. Certainly, this is a hard time. But what can we do? So, we should do something useful in this time rather than killing it meaninglessly. I'm an introvert so all the introverts can easily find out the similarities with them, but if you are extrovert, want to spend more time with your friends, do not like to stay at home all the time then next some lines are for you; Don't waste the time thinking what is going to happen next because no one knows. So do some meaningful work besides your educational studies. Do whatever you want but stay at your home. It may be singing a song, dancing, reading, anything that makes your mind calm because this time we should remain quiet to fight against the situation. Try to explore yourself, try to figure out the words hidden behind the night sky, listen to your heart what it wants to say, try to pick up the positive vibes from the universe, try to build up a connection to inner you and finally try to be what you want to be. No, it's not easy but you know all the good things demand the toughest ways. And one of the best ways I would like to suggest is reading books. There are so many books that help you to choose the right things in life. Don't waste your time guys, go and pick those up and go ahead one step to be a right person.

*“Always try to represent yourself as ‘happy’
Because initially it becomes your ‘look’
Gradually it becomes your ‘habit’
and one day, it becomes your ‘personality’”.*

(From the book “Her Last Wish” by Ajay K Pandey)

My Lockdown Experience

-By Preksha Mandlecha (M.Sc. MBT)

It has been almost 5 months now that I am at home because of the lockdown due to Covid-19 pandemic and I am not complaining at all. Surely, being at college, studying and being with friends is a different feeling but when you stay at home for such a long time after 4 years is a completely different and amazing feeling. Until I finished my Class 12, I had never been away from my family and studying away from them for 4 years now has been a roller coaster ride of feeling happy, sad, scared, excited and what not.

Having a long break like this has made me and my family very happy because we were able to spend quality time together after what felt like ages. This lockdown period also brought us closer as a family. Earlier, we would hardly get to spend time with Paa, but since the lockdown, we have spent a lot of time together cooking, playing, talking. Paa even taught my younger sister and me a few card games and now we play every night.

Having a sweet tooth, I always wanted to learn to cook my favourite Indian delicacies like jalebi, milk cake, halwa, Gulab jamun, and many more! This period helped me to unleash the chef in me. I made and ate to my heart's content. Apart from this, I also cooked burgers, pasta, falafel, pizza, baby corn manchurian and different chaats. I also helped Maa in cleaning, washing and other household chores and that made me realise that a mother's job is very difficult and needs a lot of hard work. This has only made my love and respect increase for her for everything she does for us and our happiness.

Bharatanatyam is my passion. Having learnt this Indian classical dance form for almost 14 years now, I feel rejuvenated and happy when I used to dance every day. Academics had made it impossible for me to practice every day, but now I had this golden opportunity which I seized right away. My sister and I perform on Bollywood songs and thus keep the family entertained. We have taken it upon ourselves to teach Paa ball dance and salsa and it is fun to teach him. I connected to my family and friends through video calls and we played different kinds of Bollywood games virtually.

My sister and I have grown quite close too because now we talk more and fight less than we used to. She has also been very helpful in designing the issues of Vivus and being tech savvy, she has also introduced and taught me how to use new applications and softwares. For me, this lockdown has been very helpful and eventful.

In the beginning of the lockdown, my life had become monotonous because of online classes, turning in assignments, and writing exams. But, later on, I got time to introspect and honestly assess myself, my strengths, my weaknesses, my goals. I have resolved to overcome my weaknesses and thrash all hindrances that come my way to reach my goal. Faith, prayer, and meditation have helped me a great deal. In these times of uncertainties, they have helped me to stay strong, positive, focused, and happy at all times. Dreams should not be seen with closed eyes, instead we must live our dream each day. Every day should be a step closer to our dreams. And I am happy that I have begun my journey.

If there was no Covid-19 pandemic, there wouldn't be any lockdown. We would have continued racing along in our lives without giving much thought to the things which make us happy. Anything in excess is bad, and maybe somewhere along the way we had caused a lot of destruction to mother nature. We were beginning to become insensitive to others' suffering. Maybe it was time for love and compassion to engulf us. Maybe this was the time that we put others before self. Maybe it was time for us to understand where we stood, what we did and how we did. This lockdown was the key which opened different doors of possibilities, of different avenues for us to explore.

My Lockdown Experience

-By Anaswara Sugathan (M.Sc. MBHG)

The lockdown due to COVID-19 was unprecedented and it brought everyone's life and daily routines to a halt. Although for some, the lockdown may have been disadvantageous, for privileged people like myself it served as a good time to get in touch with the creative side that was buried deep inside – using lack of time as an excuse.

The first few days of lockdown went incredibly normal and I was happy that I will be spending time with my family at home. This was also the one time my Dad could stay home with us and not go to work. We spent time playing board games, cooking together and binge-watching movies and TV shows. We bonded greatly during this time. Previously, everyone's hectic schedules had prevented us from spending quality time together, but lockdown changed this. It really was a stressbuster and I could take my mind off academics for a while.

In a few days, once online classes commenced, I was mostly confined to my room. Days went by just attending classes, turning in assignments, and writing exams. After a point, life became too monotonous and this was precisely when I pondered how my dog must have felt all his life staying home – other than the routine walks at the park.

I thought I should utilize the time left to hone my artistic skills and learn new skills that are worthwhile and that could come in handy in the future.

I started practicing sketching and painting – both traditional and digital. I am a self-taught artist and getting a specific idea or concept onto a canvas requires incredible practice and patience. I tried out different approaches and techniques in digital illustration. I also practiced frame-by-frame animation.

I started practicing Yoga every day. It was a great way to relieve stress and free the mind and body of any ailments. Practicing all the Asanas and perfecting them proved to be a challenge. During this time, my biggest accomplishment was perfecting the headstand (Sirsasana) and the handstand (Adho Mukha Vrksasana).

I had always wanted to get back to dancing – something that I stopped doing after my school years. I learnt different dance routines through YouTube tutorials and practiced them every day. It felt great – dancing really does free one's soul.

As I mentioned earlier, I was also cooking with my family. Apart from eating like there is no tomorrow, I decided to experiment with my culinary skills and try new recipes. It was a joyful and rewarding experience – especially watching your family enjoy the food that you cooked.

I also picked up gardening and planted my own avocado, lemon and brinjal plants. Taking care of plants brings out a whole new perspective on life and its delicateness.

I also decided to delve into the world of books and novels – finally - and I made a list of books to finish reading during this lockdown period, including but not limited to the age old classics like The Time Machine by H. G. Wells, Jane Eyre by Charlotte Brontë and To Kill a Mockingbird by Harper Lee; enriching my knowledge about several aspects of life.

Lockdown Experiences

As I am also keen on learning about different cultures as well as new languages, I decided to add on to my stash of spoken languages. I am in the process of slowly learning Japanese, Korean and ASL (American Sign Language). I figured it would also be cool to learn the Morse Code – for when there is a crisis probably?

In the words of Maya Angelou – *“I’ve learned that I still have a lot to learn.”* The lockdown period was a great opportunity for me to explore new creative horizons.

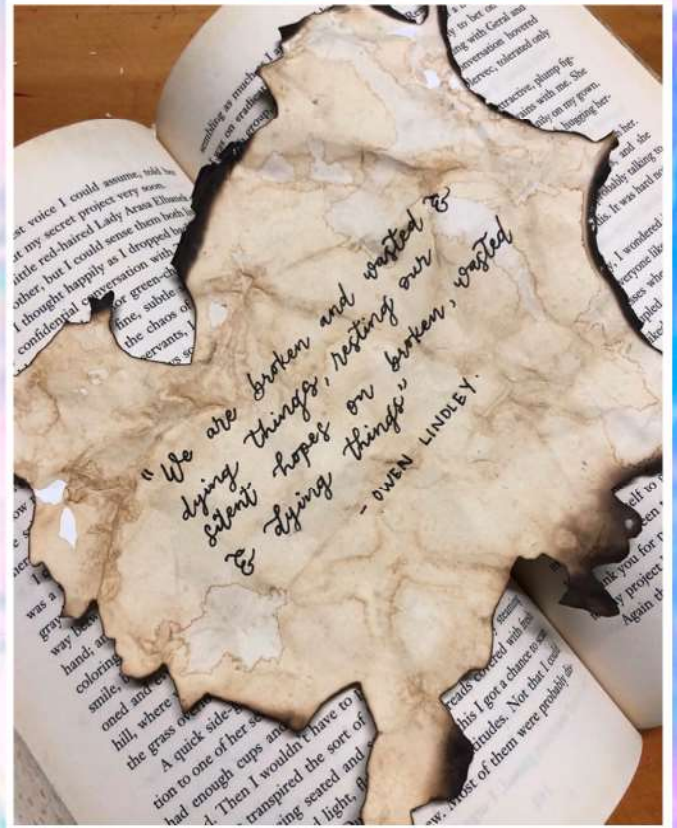
Needless to add, the world is going through tough and trying times and the sad reality often dawns on me. With everything that is going on during this time, it is only natural for negativity and anxiety to creep in. Engaging self in fun and productive activities is a great way to deal with it.

While I did miss Manipal days, friends and the usual buzz and zeal of our college and I cannot wait to get back to MSLS, the extended lockdown period has helped me improve myself in many areas. This period has helped me re-evaluate myself and polish my skills. I sure had my share of gloomy and lazy days, but in the end, what matters is the all-round mental and physical wellness. Hopefully, we defeat the coronavirus soon and get back to our normal days – but as better versions of ourselves, keen on learning and creating.

Snapshots, sketches and artwork

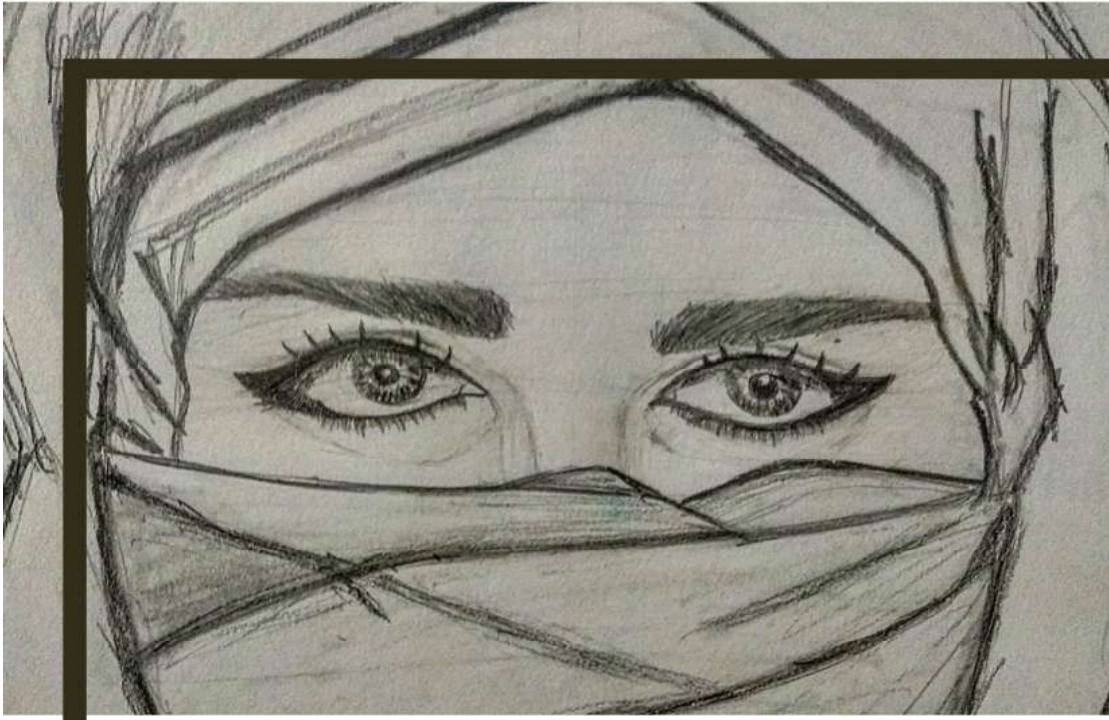


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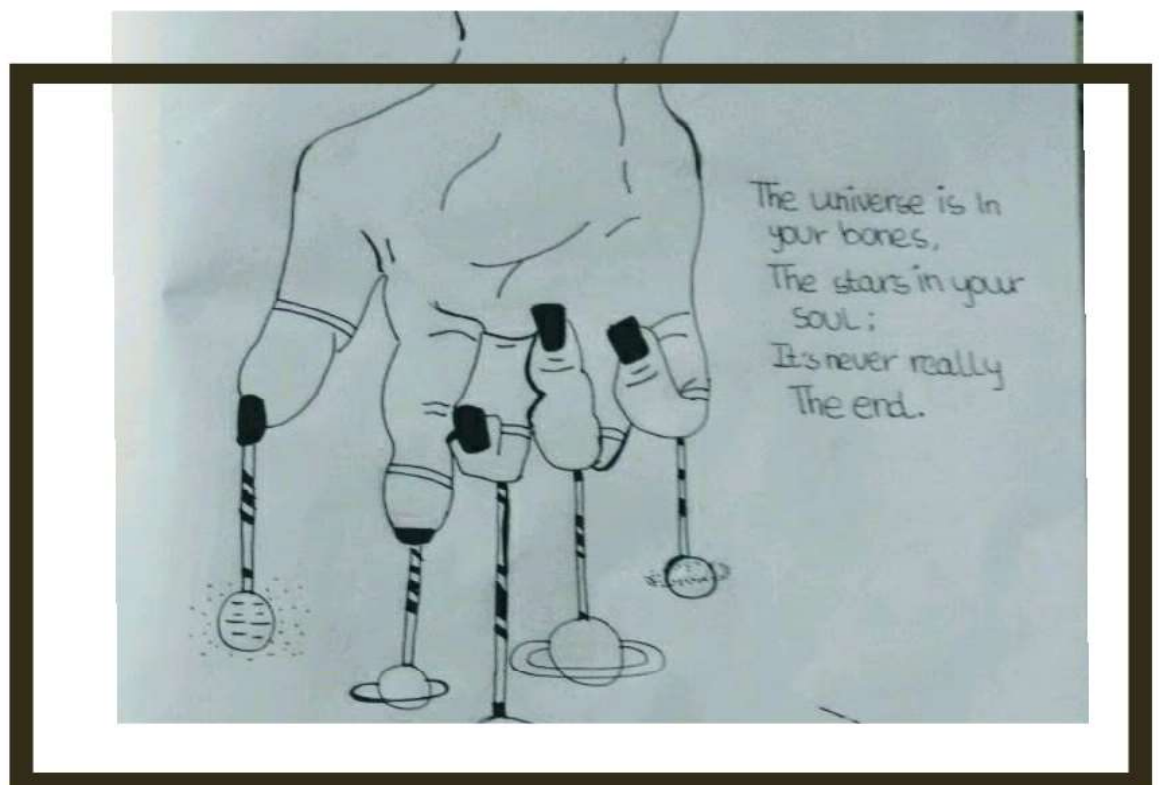


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It's never really the end









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