

# ANVESHNA NEWSLETTER



## EDITORIAL

BY RAKSHIKA RAVEENDRAN

Hello, friends and faculty!

A new year had dawned and brought along with it a whole new semester. A lot of you may be still in the blues from the previous semester's and cycle test 1's results and yet some of you may still be wanting to paint the town red, reminiscent of MILAN 2018!

As I once heard being said somewhere, last year had begun with PETA and ended with NOTA for Tamil Nadu.

Whatever may be the case, the year had rolled around just the same and we get yet another 365 days to accomplish goals that we set on a regular basis. We must buckle up and refocus to create a better world.

Let's begin by being thankful for each day. Let's set short-term, achievable goals for ourselves. Believe me; once it is complete, the sense of accomplishment is unparalleled. Let us treat each failure, each bad day as a chance to complete the task once again, only better.

Do not be disheartened, there are no complete failures, only learning experiences. Think of it this way: your record for overcoming the most daunting tasks you have faced to date is 100%

Remember, you cannot change the world, but together, WE CAN!

### VISION:

Anveshna aims to bring out the skills and talents students possess, channel their creative energies and be an outlet for expression and discussion.

By enhancing interaction among students through department activities, we aim to improve the learning atmosphere and knowledge about current trends in the field of Biotechnology.

### Editor:

Rakshika Raveendran (Biotechnology; 3rd Year)

### Co-editors-

Trishla Adhikari (Biotechnology; 2nd Year)

Akshaya Rajan (Biotechnology; 2nd Year)

Aayushi Arora (Biotechnology; 2nd Year)

### Faculty Editors:

Dr Oindrilla Mukherjee (Research Asst.  
Professor)

Dr Suvankar Ghorai (Research Asst. Professor)



# Kudos Korner:

## COMPILED BY :

- MATHANGI LAKSHMIPATHI(BIOTECHNOLOGY,4TH YEAR)
- GLANCIS LUZEENA RAJA (BIOTECHNOLOGY,4TH YEAR)
- RAKSHIKA RAVEENDRAN(BIOTECHNOLOGY,3RD YEAR)
- NIKILA RAMAN (BIOTECHNOLOGY, 3RD YEAR)

Last year was a great year for many of our friends. Here are a few mentions that give us a glimpse of the cornucopia of talent that our fellow students are. Anveshna team congratulates them all on their successful venture.

## Global Study Program – UCDavis

Krishna Kumar (Biotechnology, III year) has been selected to be a part of the Global Study Program offered by University of California, Davis. Having been introduced to the Semester Abroad Program (SAP) at SRM University by Dr Vinoth Kumar, he took to vigorous preparation to clear the eligibility test at the University and the final screening test conducted by UC, Davis to be able to bag a place in the prestigious program.

His advice to fellow aspiring students is to be diligent in their preparation and their grasp of basic concepts. He also believes that proper networking among faculty, seniors and research into the kind of opportunities out there for students to participate in research can come in handy at the most unexpected times.

## Harvard Medical School Program 2018:

Six students from the Department of Biotechnology have been selected for the Harvard Medical School for a period of six months. After clearing the screening tests at SRM and an interview with Dean (School of Bioengineering), and the Heads of Departments of Genetics, Chemical Engineering and Biotechnology, the students were then interviewed by faculty from Harvard. The following students were selected for the program and assigned faculty, under whose guidance they will be working at the Brigham and Women's Hospital, Boston.

|   |                |        |                           |
|---|----------------|--------|---------------------------|
| 1 | Mahak Samdaria | M.Tech | Prof. Ashish Kulkarni     |
| 2 | Mathangi L     | B.Tech | Prof. Ashish Kulkarni     |
| 3 | Anugna Addula  | B.Tech | Prof. Hadi Shafiee        |
| 4 | Niraj Yadav    | B.Tech | Prof. V Sabbisetti        |
| 5 | Jayanta Mondal | B.Tech | Prof. Shiladitya Sengupta |
| 6 | Arushi Mithal  | B.Tech | Prof. V Sabbisetti        |

*"Success usually comes to those who are too busy to be looking for it."*

*-- Henry David Thoreau*

## Canada conference:

The 18th International Congress of Comparative Endocrinology (ICCE18) was jointly held by the North American Society for Comparative Endocrinology (NASCE) with the 9th International Symposium on Amphibian and Reptilian Endocrinology and Neurobiology (ISAREN) at Lake Louise, Alberta, Canada from 4-9th June 2017.

The local Organizing Committee comprised of Dr Hamid Habibi and a team from the University of Calgary. Glancis Luzeena Raja from the Endocrine Disruption and Reproductive Toxicology (EDART) Laboratory, SRM University, was invited as an undergraduate student delegate to present a poster titled- "Prenatal exposure to Bisphenol-A reprograms the expression of microRNA-378 and microRNA-224 involved in ovarian granulosa cell estrogen biosynthesis and targets novel ovarian transcripts".

## INSA

One of our final year B.Tech students, Ms Glancis Luzeena Raja was selected for the IASc - INSA - NASI Summer Research Fellowship Program 2017 for a duration of 56 days (June-August,2017) to train under the guidance of Dr Manas Kumar Santra at the Cancer Biology Laboratory, National Centre for Cell Science, Pune. This program was jointly sponsored by Indian Academy of Science (IASc) - Bangalore, Indian National Science Academy (INSA) - New Delhi and National Academy of Science, India (NASI) - Allahabad. Her project titled 'Molecular Cloning, Expression and Functional Characterization of F-box protein SKP2' improved her proficiency in molecular techniques. SKP2 or the S-phase kinase-associated protein 2 is an enzyme that forms a stable complex with the cyclin A-CDK2 S-phase kinase and hence plays a vital role in cell cycle regulation. She believes that the internship helped boost her skills in the laboratory and apply the theoretical knowledge gained in college in a practical setting.



**Krithika Sonali** (B.Tech Biotechnology, III year) was a recipient of the JNCASR Summer Research Fellowship, which required her to undergo two months of intensive training under the guidance of Dr.Ravi Manjithaya in the topic of “Study of Xenophagy” at the JNCASR, Jakkur campus. She spent her training period in the Autophagy lab associated with the Molecular biology and Genetics Lab. The techniques she learnt included a study of the autophagic capture of Salmonella typhimurium in HeLa cells. As a part of her research, she had the opportunities to present papers on a weekly basis.

### Best Scientific Paper – CTSE

The 4th National Conference on Recent Trends in Clean Technology for Sustainable Environment (CTSE), organized by Department of Chemical Engineering, SSN College of Engineering invited students of various streams like Chemical, Civil, Environmental, Mechanical and Biotechnology engineering to present innovative and novel methods of clean technology. The conference aimed to bring about a discussion of ideas and knowledge across various disciplines towards a more sustainable environment. The central role of scientific principles and their application in clean technologies to resolve social, economic and environmental issues were the main focus of the conference. Four teams comprising of students pursuing B.Tech, M.Tech and PhD from the Applied Bioprocess Laboratory, Department of Biotechnology, SRM presented their scientific papers at the conference. All four teams bagged the ‘Best Scientific Paper Award’ in their respective categories.

The teams comprised of the following students–

**K. Abiram** (PhD) and Shobana Ravi (B.Tech Biotech., IV year)

**Akash Francis** (B.Tech Biotech., IV year) and **Nimisha Ravi** (B.Tech Biotech., IV year)

**Saumyadeep Dutta** (B. Tech Biotech., IV year) and

**Kalyani Ananthakrishnan** (B.Tech Biotech, IV year)

**Anusha** (M.Tech) and **Renuka** (B. Tech Biotech., IV year)

## 10 Biotechnology Companies in Focus:

– **Rakshika Raveendran** (3rd year, Biotechnology)

– **Nikila Raman** (3rd year, Biotechnology)

### 1. AMGEN :

([www.amgen.com](http://www.amgen.com))

Amgen is an American multinational biopharmaceutical company headquartered in Thousand Oaks, California. Amgen is the world's largest independent biotechnology firm. In 2013, the company's largest selling product lines were Neulasta/Neupogen, two closely related drugs used to prevent infections in patients undergoing cancer chemotherapy; and Enbrel, a tumour necrosis factor blocker used in the treatment of rheumatoid arthritis and other autoimmune diseases.

### 2. NOVO NORDISK:

([www.novonordisk.co.in](http://www.novonordisk.co.in))

Novo Nordisk is a Danish multinational pharmaceutical company headquartered in Bagsværd, Denmark, with production facilities in eight countries, and affiliates or offices in 75 countries. Novo Nordisk manufactures and markets pharmaceutical products and services. Key products include diabetes care medications and devices. Novo Nordisk is also involved with haemostasis management, growth hormone therapy and hormone replacement therapy. The company makes several drugs under various brand names, including Levemir, NovoLog, Novolin R, NovoSeven, NovoEight and Victoza.

### 3. GILEAD SCIENCES:

(<http://www.gilead.com/>)

Gilead Sciences, Inc. is an American research-based biopharmaceutical company that discovers, develops and commercializes innovative medicines in areas of unmet medical need. , the company concentrates primarily on antiviral drugs used in the treatment of HIV, hepatitis B, hepatitis C, and influenza, including Harvoni and Sovaldi. Headquartered and founded in Foster City, California, Gilead is a member of the NASDAQ Biotechnology Index and the S&P 500

### 4. ALLERGAN:

([www.allergan.com](http://www.allergan.com))

Allergan headquartered in Dublin, Ireland, is a global pharmaceutical company and a leader in a new industry model – Growth Pharma. Allergan is focused on developing, manufacturing and commercializing branded pharmaceuticals, devices and biologic products for patients around the world. Allergan markets a portfolio of leading brands and best-in-class products for the central nervous system, eye care, medical aesthetics and dermatology, gastroenterology, women's health, urology and anti-infective therapeutic categories.



## 5. CELGENE CORPORATION:

([www.celgene.com](http://www.celgene.com))

Celgene Corporation is an American biotechnology company that discovers, develops and commercializes medicines for cancer and inflammatory disorders. It is incorporated in Delaware and headquartered in Summit, New Jersey. The company's major product is Revlimid (lenalidomide), in combination with dexamethasone for the treatment of multiple myeloma patients.

## 6. BIOGEN INCORPORATED:

([www.biogen.com](http://www.biogen.com))

Biogen Inc. Is a multinational Biotechnology company founded in the year 1978 by several prominent scientists, including the Nobel Prize winner Walter Gilbert of Harvard University and Phillip Allen Sharp of Massachusetts Institute of Technology. It is based in Cambridge, Massachusetts. Biogen today, has the leading portfolio of medicines to treat multiple sclerosis (MS), has the first and only approved treatment for spinal muscular atrophy (SMA) and is at the forefront of research into new medicines for neurological and neurodegenerative conditions. The success story of this biotechnological pioneer has remained leading researchers, cutting-edge technology and the drive to contribute to the world of Neuroscience.

## 7. SHIRE PLC:

([www.shire.com](http://www.shire.com))

Shire PLC is a Jersey-registered; Irish based, global speciality Biopharmaceutical Company that originated in the United Kingdom. Its brands and products include Vyvanse, Lialda, and Adderall XR. They have a leading research team, highly focused on rare diseases and highly specialised conditions.

## 8. TEVA PHARMACEUTICALS INDUSTRIES:

([www.tevapharm.com](http://www.tevapharm.com))

Teva Pharmaceuticals Industries. Ltd is an Israeli multinational company that specialises in generic drug production. Its other focus includes active pharmaceutical ingredients, and, to a lesser extent, proprietary pharmaceuticals. The company is a member of Pharmaceutical Research and Manufacturers of America (PhrMA)

## 9. REGENERON PHARMACEUTICALS :

([www.regeneron.com](http://www.regeneron.com))

Regeneron Pharmaceuticals Inc is a Biotechnological company founded in 1988, headquartered in New York. It was initially focused on neurotrophic factors and its regenerative properties hence, giving its namesake. Later it branched on to study of Cytokine and Tyrosine Kinase. Regeneron has developed aflibercept, a VEGF inhibitor, and rilonacept, an interleukin-1 blocker. VEGF is a protein that normally stimulates the growth of blood vessels, and interleukin-1 is a protein that is normally involved in inflammation.

## 10. CSL LIMITED:

([www.csl.com](http://www.csl.com))

CSL Limited is a global Biotechnology Company based in Melbourne, Australia. It researches, develops, manufactures and markets products to treat and prevent serious human medical conditions. CSL's product areas include blood plasma derivatives, vaccines, anti-venom, and cell culture reagents used in various medical and genetic researchers and manufacturing applications. It was founded in 1966 under William Penfold as the 'Commonwealth Serum Laboratories', focused on vaccine manufacturing. a little bit of body text

# Source:

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# Experience Galore:

## 1. MITACS EXPERIENCE:

Hello everyone! I am **Anindhita Meena Muralidharan**, a fourth-year B.Tech student in the Department of Biotechnology, SRM University. In October 2016, an opportunity to do a three-month internship in Canada on a full scholarship was brought to my notice.

MITACS, an NGO Organization, was selecting students from seven countries across the world based on the interests of the students applying and the requirements of the host professors from different universities along the length and breadth of Canada. We were allowed to pick up seven projects from a long list of nearly 1200, in varying fields like the plant or medical or animal biotechnology or cancer biology and so on. Our profiles which included our resumes, LOR's and SOP's shared with the professors of our choice. The applicants were then filtered and the shortlisted applicants were called for a skype interview with the host professors'. I was one of the lucky few who got through the final selection process.

By February 2017, the process of visa application and booking tickets and finding accommodation began. I must say the timely reminders and clear-cut instructions from MITACS made the whole process simple and organized. My project was at McGill University, Montreal, Quebec. The title was "Genetic analyses of known or proposed cancer susceptibility genes in a Canadian Ovarian Cancer Cohort" under my supervisor, Dr. Patricia Tonin. Prior to my arrival in Montreal, I was sent reading material on the ongoing project work in order to be prepared.

### June 3rd, 2017- A day to remember:

Downtown Montreal.

My very own apartment was in the midst of a buzzing town which is a home to 50,000 new students every single year. I met other interns, all from Mexico and my guide Rola Hamed, an Egyptian Canadian and a student at McGill. A city tour and orientation was organized to familiarize ourselves with the city left us buzzing with excitement wondering what else the city had in store for us.

Early Monday morning, I left on the metro (Note: All signposting was in French and I didn't understand a word!) and luckily found my way to the Royal Victoria Hospital, Glen site. This houses The Cancer Research Program (CRP) of the Research Institute - McGill University Health Centre (RI-MUHC) and would be my workplace for the next three months. My colleagues at the lab were absolutely friendly and we hit it off from day one. A PhD graduate, a Masters student, a Bachelor's intern, a Research assistant, a genetic counsellor and my supervisor of course- all women, together we made the dream team!

Over the next three months, I worked on this project and my gene of interest was BRCA1. My supervisor had worked on the original Human Genome Project and had loads of interesting things to share. During my stay here, I learnt a lot about the numerous databases that annotate and predict the outcomes of genetic mutations in various genes. For determination of these mutations, sequencing of DNA from both peripheral blood and fallopian tube tissue of the patients was carried out. The sequencing data were annotated using the above-mentioned databases and the founder mutations were identified. Other new mutations of interest were confirmed in the patient samples by designing primers for these mutations and carrying out Sanger sequencing and TaqMan assay in both blood and tumour samples. Allelic imbalances and loss of heterozygosity were identified by comparison. Finally, an attempt was made to establish the carrier frequency of the mutations in the Canadian ovarian cancer cohort.

The experience was further enriched by interesting guest lectures given by experienced researchers from different parts of the country and the world. A field trip to the Genome Quebec Innovation Centre gave insight into varied sequencing techniques. Also, the use of robotics in automating assay methodologies was an intriguing sight.

A weekly lab meeting was conducted where we all presented our progress in the week and discussed possible solutions to problems and new courses the project may take. Towards the end of the three months, we were asked to present our project work in the Summer Undergraduate Student Research Day. I presented my work in the form of a poster and it was well accepted by all those who attended the program.

The trip was however not only about the academics. A fun trip to a jazz festival, a trek up the mountain Mont Royal, listening to live tribal music called the Tam-Tams in the plateau, visiting the animal museum to see the stuffed tigers and rare bird species, participating in the parade for Canada's 150th anniversary, admiring fireworks from the Jacques Cartier bridge, watching the world-famous Cirque du Soleil- an acrobatic show, a solo road trip to the quaint Quebec City, tasting new cuisines, Oh the adventures were endless!

Further MITACS had also arranged various programs and workshops which the interns could attend. They had also provided online workshops to help us prepare for what was a multicultural experience which required cooperation between colleagues and a skill to share our combined knowledge.

Overall, it was a never-to-miss opportunity which I had the good fortune to experience. It not only increased my knowledge of the subject but boosted my self-confidence. It gave me a taste of what it's like, out there in the big beautiful world and gave me an idea of where I stand on the global student platform. It was an eye-opener on my weaknesses and a pointer on the ways in which I needed to improve in order to compete in the race towards success.

I would like to thank the the liaison Dr Vinothkumar and Dr.S.Rupachandra my mentor, who made me aware of this internship scholarship and guided me throughout the application process, for without them this dream would have never become a reality.

## 2. M S Swaminathan Research Foundation:

-**Krishnakumar Ramachandran (3rd year, B Tech Biotechnology)**

My fall internship, at the M S Swaminathan Research Foundation, was a fruitful experience, aimed at increasing my knowledge, skillset, practical aptitude and exposure to the field.

This journey started when I had the opportunity to meet with Prof. M. S. Swaminathan, the father of India's Green Revolution. When he learnt of my desire to interact and be mentored by him, he invited me over to his residence. After talking to me about my interests, inclinations, and ideas for the future, he recommended that I do an internship at the M.S. Swaminathan Research Foundation (MSSRF). The opportunity to learn at the institute, established by one of the foremost experts in the field was the one I did not want to miss.

Thus, under his auspices, I was advised to consult with Dr G. N. Hariharan, the Director of Biotechnology at MSSRF, to whom I submitted a formal application, via email. After reviewing my credentials, meeting him for a one-on-one session, I was delighted to hear that I had been assigned to the Plant Molecular Biology Laboratory, under Dr Gayatri Venkataraman, to help out the scholars with their projects, carry out experiments and learn new techniques.



I started my internship on 01 December 2016. The scholar designated as my supervisor was Ms Kumkum Singh, who was pursuing a PhD in the field. The project we worked on is related to the introduction of salinity-stress resistance genes in the model crop tobacco.

The aim of the project is to introduce salinity-stress resistance genes to the model crop Tobacco. With climate change rapidly depleting polar ice-caps, coastal areas across the world run the risk of being affected by rising sea-levels, one of whose effects is increased salinity in coastal soils and water-tables. Increased salinity levels are undesirable for agriculture, as it results in ion imbalances in plants, leading to many problems, culminating in lesser yields. Thus, if certain traits can be introduced in crop plants to make them less susceptible to increased salinity, if not immune to it, agricultural yield will not be very adversely affected in the future.

Such a gene of interest is found in *Avicennia marina*, which is colloquially called the white mangrove or grey mangrove. It belongs to the family Acanthaceae and is found, like most mangrove species, in intertidal estuarine regions. In India, *A. marina* is found in river deltas such as the Sundarbans and the Pitchavaram delta.

The objective of the project is to introduce this gene of interest into a vector, pCambia1319z, and transforming this plasmid into the Tobacco plant through *Agrobacterium*-mediated methods. Once introduced, the plants are to be grown and the subsequent generations are to be checked for tolerance to lack of salinity, low salinity-stress and high salinity-stress.

During the course of this internship, I gained knowledge and experience in a variety of techniques, from casting agarose gels for electrophoresis and running samples through electrophoresis, to a variety of molecular techniques, including transformation of plasmids into plants through *Agrobacterium*-mediated processes, isolation of plasmids from bacterial cells, extraction of genomic DNA from plant cells, Polymerase Chain Reaction, r-DNA formation and etc.

By taking up this internship, not only did I become confident about the basics of molecular techniques, but I also learnt a lot about project management, scientific reporting, and good laboratory practices. It also helped me understand a lot about the machinery involved, and helped give my thought process clarity and direction, for which I sincerely thank Prof. M. S. Swaminathan, Dr G. N. Hariharan, Dr Gayatri Venkataraman, Ms Kumkum Singh, and other scholars and support staff at the MSSRF, who made this internship an immersive and informative experience.

## Aurigene Discovery Technologies Limited

(A subsidiary of Dr Reddy's Laboratory)

Cell and molecular biology department

Biochemistry division

Hyderabad

- Kommajosyula Varsha (4th year, Biotechnology)

Aurigene is a specialized biotech company committed to the vision of being the most respected and valued biotech in India.

The company has pioneered a unique model of drug discovery collaborations with large-pharmaceutical, mid-pharmaceutical companies and Biotech Industries.

The internship was based on "in-vitro biochemical assays". The techniques taught and observed were:

1. Adsorption assay
2. USP Assay
3. Western blot
4. Fluorescent Protein Assay

The biochemical assay performed is an analytical in vitro procedure used to detect, quantify and/or study the binding or activity of a biological molecule, such as an enzyme.

The main aim of this assay was to determine the IC50 (Inhibitor Concentration) for inhibitors. This type of analysis is performed for structure activity relationship measurements for compounds of interest.

The concentration of compound that results in 50% inhibition of maximal activity is termed the IC50.

The criteria for reporting IC50 are:

1. The maximum percentage inhibition should be greater than 50%
2. Top and bottom values should be within 15% of theory
3. The 95% confidence limits for the IC50- should be within 2-5 fold range.

The instruments that I had hands-on experience with were:

- 1) Nano drop: It can measure the quantity that is, the concentration of bio-macromolecule (DNA, RNA and protein) present in the given sample.
- 2) Western blot apparatus
- 3) Fluorescence detecting spectrophotometer (Victor X 5): This instrument comes with software containing pre-installed protocols for specific assays with settings based on the type of plate chosen (96 well plate, 384 well plate etc.)
- 4) Bio TLK plate reader: This is mainly used in adsorption assays where in, software Gen5 is used to take the readings of the plate. This is similar to the UV spectrophotometer but, instead of a cuvette the plate (96 well etc.) is read.

Interning at an industry as reputed as Aurigene was an invaluable opportunity to receive hands on training in the use of instruments and software commonly employed at industries.

An internship in the industry has led me to realise that molecular biology is a subject that I'd like to pursue further as a specialisation in the near future.



# SCIENTIFIC WRITING – PART 2

Ever wondered why people enjoy reading fiction over scientific articles? I'm sure there would be many different answers, but I believe that the keystone of all is good storytelling. Even the most interesting characters or plots can be empty shells when they are built around misdirected and unsatisfying stories. We should all indeed be good storytellers. How did it come to be the way it is? How does it work? How do we fix it? Are there other options? How do I, as a scientist, share this story with my peers and public? Here's the sequel to "Scientific writing" with a couple of tips that one must remember while writing a scientific article.

## Personal or Impersonal?

Most scientific articles are written in the third person to avoid sounding like a narcissistic author and to sound impartial and formal. Though it is acceptable to use the first person, it should be used sparingly. Generally, the first person is reserved for things that you would want to emphasize that "you" uniquely did. However, it is better to say "It is possible to..." than to say "One could..." The use of the impersonal pronoun "One" often seems dry and informal.

Ensure that the writing is clear and unambiguous when using impersonal and personal expressions

The following sentences have been written with both first and third person to highlight the contrast between the writing styles:

Impersonal: The explanation for this phenomenon may be found in...

Personal: We/I believe that the explanation for this phenomenon may be found in...

However, when used extensively impersonal writing may result in clumsy statements that might lead to ambiguity or inaccuracy in your article.

**Impersonal & passive:** It was decided that the pH should be slightly acidic gives absolutely no information about the identity of the people who made the decision.

**Personal & active:** We decided that the pH should be slightly acidic avoids the ambiguity and makes the sentence sound rather direct.

**Impersonal & active:** The researchers decided that the pH should be slightly acidic is unambiguous and formal.

## Avoiding Plagiarism:

This is a legitimate and an essential part of academic study and research where your thoughts and ideas are inevitably built on those of other researchers. The Oxford English Dictionary defines plagiarism as taking and using as one's own thoughts or writing. Deliberate plagiarism, otherwise called academic cheating, where the writer has intentionally copied the work of others as if they were his own is severely penalized. Deliberate plagiarism is however less common than the plagiarism committed through carelessness when one incorporates the words of others into his own writing by simply stringing together the ideas or facts put forth by others without presenting one's own viewpoint.

**-Mathangi Lakshmipathi,  
(Biotechnology, 4th year.)**

Most students when they first start writing find it hard to develop their own style of writing. An easy way to rectify this is to use your own words along with your own ideas when jotting down points to summarize your reading. This will help you become more confident about expressing your own thoughts and ideas as you establish your own writing style.

## Referencing and bibliographies:

When writing any form of a scientific article, your own line of thoughts are inevitably built on those of other writers or researchers. While the abstract and conclusions to your article might be based on your ideas, the body of your report or the dissertation are from other research articles. It is crucial that you acknowledge your debt to the source of data and ideas by including references to the same. Referencing allows your reader to distinguish your own results from the source work of the others and to follow up in detail to the facts that you have referred.

Citing the source of the text:

Citation within the text normally includes the surnames of the author(s) and the year of publication. This information is included in brackets at the most appropriate point in the text.

**Example:** The seminars that are often a part of humanities course can provide opportunities for students to develop the communication and interpersonal skills that are valued by employers (Lyon, 1992).

Similarly, when a publication has several authors, it is usually given by the surname of the first author followed by "et al." which is an abbreviation for "and the others" in Latin. A reference must be added to the source of any tables or diagrams or graphical representations as well.

## Reference lists:

When using the "author, date" format of referencing, it must be followed up with the complete publication details in an alphabetical order and the end of your piece of work called the bibliography. In case of references taken from books, surnames of all the authors, date of publication, book's name, the name of the publisher must be included. But this will be based on the type of citation format used. Generally, it is advisable to stick



Example: Knapper, C.K. and Cropley, A. 1991: Lifelong Learning and Higher Education. London: Croom Helm.

When the data is obtained from journal articles, name and volume of the journal along with the first and last pages of the article must also be mentioned.

Example: Pask, G. 1979: Styles and strategies of learning. British Journal of Educational Psychology, 46, pp. 128-148. The art of scientific writing comprises more than just the discovery or recording of results. It extends crucially to include the act of interpretation of the data obtained. The scientific document might seem incomplete without the interpretation of the writer. But, that document cannot exist without the interpretation of the reader.

While recording or articulating data, however haphazard they are, each word resides in distinct structural locations, that significantly influences the reader during the act of interpretation. The structure of the prose becomes the structure of the scientific argument. Thus, improving either one will improve the other and understanding this difference is essential in the art of scientific writing.



Photo by Thought Catalog on  
Unsplash

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The real purpose of the  
scientific method is to  
ensure  
Nature hasn't misled you  
into thinking  
You know something you  
don't actually know!  
-Robert Pirsig



# The Happened, Happenings, and Will Happens:

- Compiled by Rakshika Raveendran  
(3rd year, Biotechnology)



## 1. Rariora '17 summary

- Jocelyn Cleta (4th year, Biotechnology)

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Rariora '17, the technical fest, was organized by Anveshna- the biotech student association for the fourth time after its success in the last three years. This year, it was themed "Biotechnology- Inception to Futurity", which follows the central dogma of discovery, manipulation and re-creation.

The two major objectives of this event are:

1. To spread scientific awareness and social responsibility to school and college students.
2. To provide an opportunity to our students to develop their organization and managerial skills.

The 3-day event started on 27th July with workshops for school students. 33 students from various schools were trained in basic biochemistry, microbiology and molecular biology techniques.

• Mr. Jacob Antony Alappatt

He worked in National Brain Research Centre as a Project Assistant in a project that involved the use of fMRI to understand how music can evoke certain emotions and to understand how the brain processes acoustic features. He is currently employed as a data analyst in a lab in University of Pennsylvania, to help in data curating and optimization of existing techniques.

He spoke about his passion for music and how he wanted to integrate it with his career in biotechnology. He explained how he stumbled upon an article on how brain waves differ with different pitch, timbre, etc. and how it provoked his interest in the field of cognitive neuroscience of music. He encouraged the current students to follow their dreams and explore various fields to find out what is best for them.



On day 2, we had an inspiring talk by Dr. Sudha Nair, vice chairperson of Golden Jubilee Biotechnology park for women society, who discussed the scope of the biotech field in India and entrepreneurship opportunities. We had also organized various technical events like quizzes and debates. Also, blood donation and stem cell registry camps were organized.

On 29th July, we had non-technical events including a treasure hunt across the SRM campus. In total we had about 70 participants.

This edition of Rariora 2K17 brought participants from other colleges Rajalakshmi Engineering College and Sri Venkateshwara College of Engineering. Many bagged prizes in various events and returned home with happy smiles.

A special thank you is extended on behalf to the Anveshna Newsletter team extended to all the participants, organisers and supportive members of the faculty for making this event a great success.

## 2. Alumni talk

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On 11th July of 2017, we had three of our alumni from the batch 2011-15 who talked about their experiences to the current students.

• Mr. Vineethkrishna Chandrasekar

He was recently awarded with the Cancer Research UK Oxford center D.Phil. Prize Studentship and the Nuffield Department of Medicine Prize studentship to carry out his doctoral studies in Clinical medicine at the University of Oxford, the UK with complete funding. He will commence his studies in October 2017 and his thesis will focus on pharmacogenomics and tumour immunology.

He talked in depth about doing his final year project at Harvard University (SAP) followed by his experience as a Research Assistant in Harvard for two years after completion of his B.Tech. He gave an insight into the importance of good networking skills and taking well-informed risks after weighing out the pros and cons. He also pointed out how commitment and perseverance can help on a long run. He mentioned that one must be willing to learn new things and make the best out of every moment and opportunity presented to them. • Mr Jacob Antony Alappatt

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## 3. Biotech Student Fellow

Conceptualized by the members of Anveshna, the 'Biotech Student Fellow' program is aimed at helping freshers make the transition from school to college life. When entering a research oriented field as intensive as biotechnology, students require the right guidance and support, which the members of this program will work towards providing.

Student volunteers from 3rd & 4th year were selected to facilitate the freshers during the orientation program and with any queries or issues in the forthcoming semesters. It provides the freshers with a wide spectrum of information about the academic system, faculty and courses. This program mainly aims at establishing a more interactive atmosphere for the freshers where they can approach seniors with more ease when they arrive.

## 4. Orchid Pharmaceuticals

The Department of Biotechnology, School of Bioengineering, recently organised an Institute-Industry interaction session, in association with 'Orchid Chemicals and Pharmaceuticals Pvt. Ltd.'

Offered to students pursuing their pre-final year of undergraduate studies on the basis of their cumulative grade point average as a 1 credit-short term training program, the session took place over the course of three consecutive Saturdays, (9th, 16th and 23rd, September, 2017). It was convened by an industrial resource person, Dr.S.SamGunasekar, Dy.General Manager - Environment Management, Orchid Chemicals & Pharmaceuticals Limited, Chennai.

It included theory on the various sectors in manufacturing, effluent treatment and the usage green technologies, displaying their Corporate Social Responsibility. The students were also taken for an industrial visit onsite Orchid Chemicals and Pharmaceuticals in the last session.

Dr. Sam Gunasekaran found the interest of the students contagious and found that it helped him share more of his experiences and knowledge. He was also offered a position of 'visiting professor' by the department. Anveshna also thanks Dr. Ramani and Dr. Samuel Jacob for their dedicated contribution towards this session.

For students considering a career in the pharmaceutical industry, this course proved to be a valuable experience.



# Because all work and no play made Jack a dull boy: LOL Corner

- Source: Anonymous

- Compiled by Rakshika Raveendran (3rd year, Biotechnology)

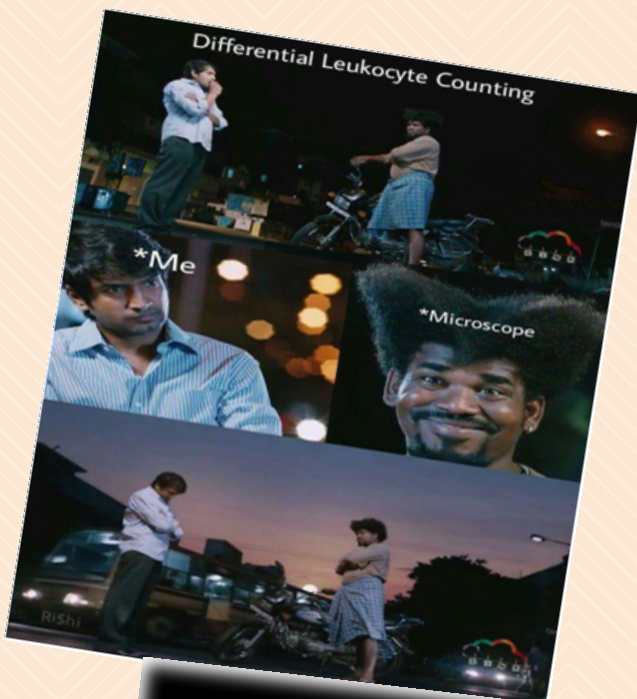
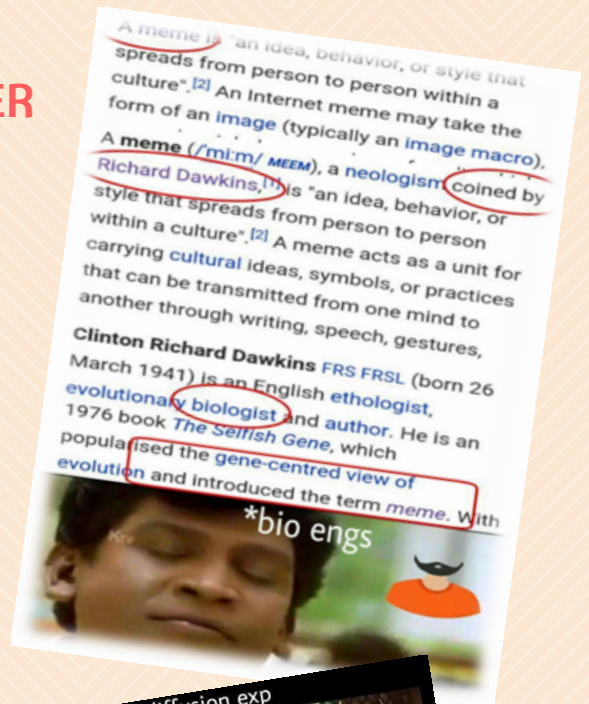
2K17 also saw the meteoric rise of meme creators. They became the reason we look down at our phones and let out a guffaw. This became a major stress buster. Anveshna brings you a few memes created by a fellow Biotechie. Live and Laugh folks!



“A smile starts on the lips, a grin spreads to the eyes, a chuckle comes from the belly; but a good laugh bursts forth from the soul, overflows, and bubbles all around”

— Carolyn  
Birmingham

IT'S RIGHT UNDER  
YOUR NOSE..  
LET'S  
SMILE!!!







A message for our readers -  
 Your brain literally heats up when you are stressed. Smiling can cool it  
 down.  
 Keep smiling !