



Ruddy Shelduck flying!
-By Shawn D'souza [Research Assistant (Ex - student)]



Flamingos on flight!
-By Shawn D'souza [Research Assistant (Ex - student)]



Keelback Snake devouring a Bull Frog!
-By Mohammed Idris [MSc Part-I]



Calotes shedding it's skin!
-By Shivangi Bendre [MSc Part- I]



Japanese Crown Crane preening!
-By Aparna Rao [TYBSc Zoology]



Changeable Hawk Eagle eating a Khalij Pheasant Male!
-By Jessy Selwyn [TYBSc Zoology]



Visit us :

<http://www.facebook.com/lifenewsletter>
E-mail us : editor.lifenewsletter@gmail.com



FROM THE EDITOR'S DESK

Welcome to the 2nd edition of the year. This Edition is to pay tribute to Dr. Osamu Shimomura, a Nobel Prize winner in Chemistry 2008, who sadly passed away on October 19, 2018. He was awarded for the discovery and development of green Fluorescent Protein (GFP) with other two American scientists.

As we all know that this year's theme is 'ASTROBIOLOGY', we also have an interesting article discussing on 'What life on Meteorites, Asteroids and Comets would be?' And if you are a PhD student or aspire to do PhD; we have something for you as well. Miss Lynn D'Lima, a PhD student from our college shared her experience in PhD and has given a glimpse about her research.

Last but not the least, the theme for photographs is 'Animals in Action'. Every picture has a story to tell. But it needs patience and perfect timing to reflect the same actions and emotions in the photographs. Hope you like this Edition. Happy Reading!

-Krushi Dagha
-SYBSc B

A Green Light For Biology: Making The Invisible Visible!

We all talk about discoveries and projects or research work as students of Biological Sciences. But do we ever think about the people working behind it? Rarely right! Well it's time we talk about one such man who showed us the way towards the light of fluorescence, the man named DR. OSAMU SHIMOMURA.

Dr. Osamu Shimomura was a Japanese Organic Chemist and Marine Biologist. He was awarded the Nobel Prize in Chemistry in 2008 for the discovery and development of Green Fluorescent Protein (GFP) with two American scientists: Martin Chalfie and Roger Tsien.

Osamu Shimomura was born on Aug. 27, 1928, in Kyoto, and his childhood and education were fractured by World War II. With his father serving in the Japanese Army, he and his brother and sister were sent to live with their grandparents near Nagasaki. At 16 he graduated from high school without ceremony or diplomas, at a factory where his class had been sent to repair aircraft engines.

Dr. Shimomura worked in the Department of Biology at Princeton to study the jellyfish *Aequora victoria*. In 1962 their work culminated in the discovery of the proteins 'Aequorin' and 'Green Fluorescent Protein (GFP)' in the organism. The Green Fluorescent Protein (GFP) is a protein composed of 238 amino acid residues that exhibits bright green fluorescence when exposed to light in the blue to ultraviolet range. GFP makes for an excellent tool in many forms of biology due to its ability to form internal chromophore without requiring any accessory cofactors, gene products, or enzymes/substrates other than molecular oxygen.

In cell and molecular biology, the GFP gene is frequently used as a reporter of expression. It has been used in modified forms to make biosensors, and many animals have been created that express GFP, which demonstrates a proof of concept that a

gene can be expressed throughout a given organism, in selected organs, or in cells of interest. GFP can be introduced onto animals or other species through transgenic techniques, and maintained in their genomes and that of their offspring. To date, GFP has been expressed in many species, including bacteria, yeasts, fungi, fish and mammals, including in human cells.

Sadly, Dr. Shimomura, passed away on October 19, 2018. His discovery of GFP will not only pave the way for young scientists, but will also illuminate our science forever! May the soul of the man who gave us fluorescence rest in peace!

-Sheetal S. Shetty
SYBSc B



DR. OSAMU SHIMOMURA

August 27, 1928 – October 19, 2018
Picture credit: NobelPrize.org

PhD: The Path To Self Sculpture

As a child I took great pleasure in Science. I always imagined being a scientist with my head buried in books and microscopes, fleeting through the laboratory wearing a crisp white lab coat and a face largely covered by a pair of big circular spectacles; primarily influenced by the story books I had read or movies I had watched. Madam Curie on her endless work on radioactivity, the contribution of Rosalind Franklin in unearthing the structure of DNA, Barbara Mc Clintock's cytogenetically revolutionizing work on "Jumping Genes" created waves across the globe. Such was my idea of research. An ecstatic mystery solving joyride!!! However, this belief could be quite deceptive.

The journey of my PhD has proven to be quite an interesting one. I bid goodbye to the industry which gave me tremendous knowledge, experience and work ethic, in pursuit of my research.

For the past three years, I have been working on the synthesis of silver nanoparticles using lesser known bacteria and their applications. Nanotechnology is an interdisciplinary science. Nanoparticles range from 1 to 100 nm. Various materials can be reduced to nanoparticles, some examples are silver, gold, albumin, etc. Silver has a reputation for being a lustrous white metal. But as it enters the nano range it would be seen as an assortment of kaleidoscopic colours depending on its shape and size and interactions with the surrounding. So, to view these miniscule nanoparticles sophisticated instruments such as Electron Microscope are used. Apart from the amenities to culture organisms most of the nanoparticle analysis had to be performed in other Institutes.

This proved to be a blessing as I often met fellow PhD students and other eminent scientists. The bidirectional flow of communication resulted in widening of my horizon. Their advice along with my guide's helped refine my research work. Education is a tool to self-sculpture. Attending conferences and referencing would always keep me abreast with the current trends.

At times I would be so consumed with excitement due to the encouragements that I could work relentlessly. The other times, I would work for months with disappointing results. It can be frustrating and infuriating. This is where the support and blessings of family, teachers and friends keeps one motivated. Sometimes, not getting what you desire can also be a great stroke of luck. But perseverance always prevails.

I stood 2nd in the State level "Avishkar" Competition, 1st in West Zone of India "Anveshan" Research Convention, 3rd in the Youth Science Congress of India and a plethora of such awards to my credit. But nothing brings me great joy than sharing ideas with other researchers.

During the course of my PhD, I realized the importance of being disciplined, methodical, perseverance, strong character, patience, communication skills that improved me. If you are excited about your research, you will radiate this excitement. You experience delay or disappointment but time is the best teacher. It's like playing the game of connecting the dots, you will only understand once it's complete. So if you wish to do your PhD, get in touch with your core and bring out the excitement and you will be unstoppable. You never know where life might take you.

-Ms. Lynn D'Lima.
Department of Microbiology

Life On Small Bodies: Meteorites, Asteroids, Comets

At the very beginning of our solar system before the formation of Earth, its moon or Pluto it was just a swirling cloud of dust and then bang! Due to which the colliding dust particles made bigger rocks what we now refer as asteroids or comets. According to theory 'Panspermia' some amount of water and life during the big bang was delivered to earth by asteroids and comets.

NASA's spacecraft allows us to visit nearby asteroids and also enables us to bring back a piece back for further examination. Further studies on the comet dust also discovered presence of Amino acid glycine which is the simplest amino acid used to make proteins. This discovery supports the possibilities of life beyond earth in space. It also support the theory that first the life was formed in space and then came on earth by asteroids.

An ability of organism to survive in space or on smaller bodies include its capabilities to survive in prolonged extreme vacuum, constant exposure to ionising radiations, high temperatures, extreme dryness or cold. Only if the organism is able to overcome these factors it may be able to survive out there.

Although never the less, this space and galaxies still fascinate us; because something somewhere is waiting to be known!

-Mansi Kurkute
S. Y. BSc B