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"Develop success from failures. Discouragement and failure are two of the surest stepping stones to success."
-- Dale Carnegie



UNSUNG HERO OF BIOTECHNOLOGY



A graduate student in Biochemistry/ Biophysics/ Molecular Biology does not need any introduction to the **"Ramachandran Plot"** or Map named after **Gopalasamudram Narayana Iyer Ramachandran** (G.N Ramachandran, 1922-2001). Ramachandran started thinking of the problems in Biological research and on the advice of J.D Bernal, he took up structural studies on the collagen (Collagen is the most abundant protein in humans and animals that gives strength to skin and bones). It was the peak time in structural studies in Biology where legendary scientists like Linus Pauling (elucidated α -helix structure of proteins), Kendrew (who elucidated structures Mb by X ray crystallography, the first protein to be crystallized) and Max Perutz (who elucidated structures Hb by X ray crystallography) were extensively using X-rays for determining structures of various proteins. His good relation with Dr.Nayudamma, a research scientist in Central Leather Research Institute (CLRI), Chennai, helped him in getting plentiful of collagen (after all leather is made of collagen) required for crystallization and subsequent studies.

In short span of 2 years, Ramachandran and his post doctoral fellow Gopinath Kartha published the work on triple helical nature of collagen in prestigious journal **Nature** shocking the whole scientific fraternity in the west as they have never heard of Ramachandran or such work being carried out in India which is relatively backward in advanced science at that time. Before this the two landmark discoveries in structural biology are Linus Pauling's discovery of the single α -helix and Watson & Crick discovery of the double helix. Alexander Rich and Francis Crick were the other two along with Ramachandran independently published comparable results in the same year. To his bad luck, Ramachandran was never given the credit for his discovery as of Crick and Rich

ACHIEVER'S TALK

"I think the biggest innovations of the 21st century will be at the intersection of biology and technology. a new era is beginning."

- Steve jobs



Instrument idea



The Tintometer Limited was founded in 1885 by Joseph Williams Lovibond, the son of a prominent brewery owner in Greenwich, London. J.W. Lovibond developed the world's first practical colorimeter as a means of ensuring the high quality of his beer. By the time of his death in 1918 he had established himself as a pioneer in the field of color science and his company.

The Tintometer Limited, was already known throughout the world for its range of instrumentation and expertise in the field of colorimetry. The company continued to grow in strength and as advances were made both in color science research and in instrument development Lovibond standards became specific for many products worldwide .

What's new in BT???

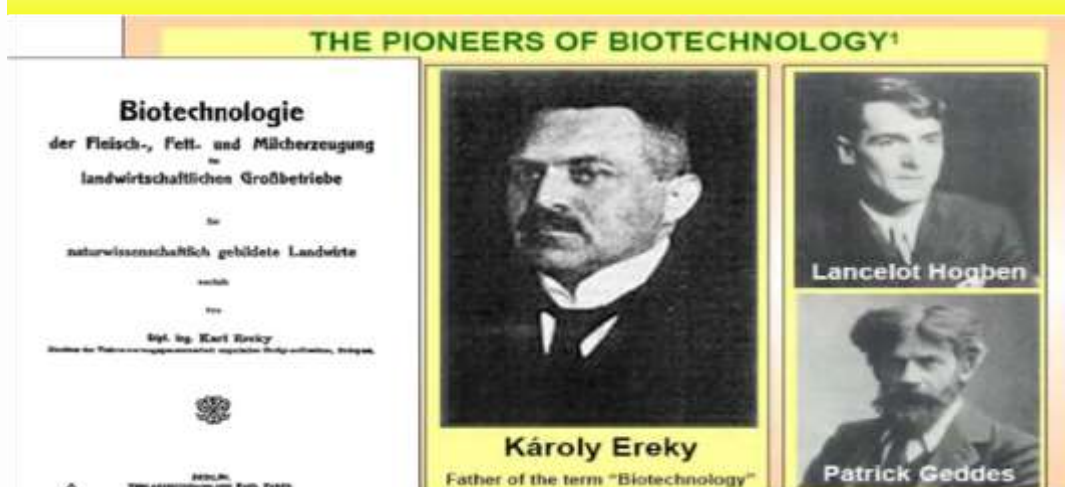
It's Alive!

One of the biggest obstacles in the field of organ regeneration is scaling up production from tiny samples in a petri dish to full-fledged organs. One of the limiting factors is constructing a working vascular system to transport blood and nutrients throughout the developing tissues. Current bioengineering methods, such as advanced 3D-printing techniques, aren't refined enough to build the complex, branching network of capillaries that can narrow to the width of a single blood cell.

But Glenn Gaudette, a biomedical engineer at Worcester Polytechnic Institute, and colleagues turned to another source for circulatory scaffolding: spinach leaves. Researchers used a process called decellularization to strip plant cells from the spinach using detergent, which left behind the scaffolding of its vascular channels. Then, researchers embedded human heart cells to the framework where they grew and started pumping. The nutrient transport system in the spinach life was small and sturdy enough to transport micro beads, which the researchers used as mock blood cells, through layers of developing cardiac cells.



THE BIRTH OF BIOTECHNOLOGY



Biotechnology now being a far fledged field got its name in 1919 by Karoly Ereky who was a Hungarian agricultural engineer . He published a book titled “**Biotechnologie der Fleisch-, Fett- und Milcherzeugung im landwirtschaftlichen Grossbetriebe**” which means Biotechnology of Meat, Fat and Milk Production in an Agricultural Large-Scale Farm was the first documented record where the term biotechnology was coined. So he is also called as the “father of bio-technology”.

In addition to their successes with spinach leaves, researchers also performed the same renovation with parsley, wormwood and peanut roots, all of which produced viable tissue specimens. Researchers are confident that this technique could one day be used to grow healthy human organs or regenerate damaged body tissue. Aside from the clear health implications, stripping plants to grow organs would also prove cost effective, as it would eliminate reliance on expensive regeneration processes and the associated synthetic materials.

Fun Facts

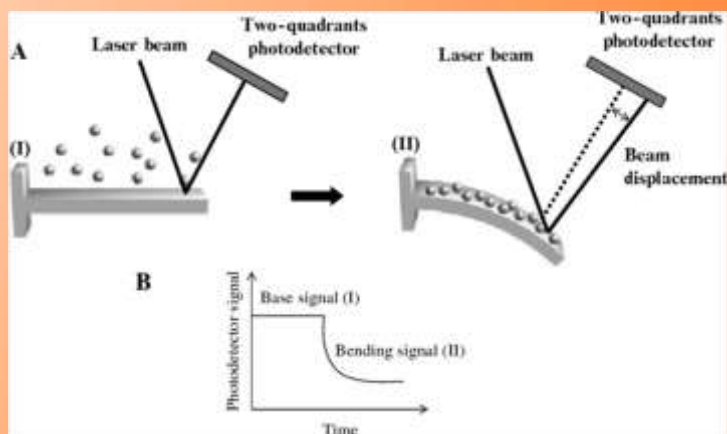
- The human heart creates enough pressure when it pumps out to the body to squirt blood 30 feet.
- The only 15 letter word that can be spelled without repeating a letter is “uncopyrightable”.
- Stewardesses’ is the longest word that is typed with only the left hand.
- No word in the English language rhymes with month, orange, silver, and purple.
- “I am” is the shortest complete sentence in the English language.
- The Hawaiian alphabet has 12 letters.
- $111,111,111 \times 111,111,111 = 12,345,678,987,654,321$

STUDENT'S CORNER

Be cautious...the air you exhale is a spy !!!

Do you believe that you could be diagnosed for diabetes from the air you breathe.....if not please read this.

Generally in patients with diabetes, the body metabolizes fats for the production of energy as it can't use glucose efficiently. This metabolic process paves the way for production of acetone by non-enzymatic decarboxylation and this acetone is eliminated by exhalation. In 1977 Crofford and team published a paper titled "acetone in breath and blood" where they explained this process and by utilization of GC-MS they were able to analyze the amount of acetone in the air exhaled. Now the recent advances in nanotechnology have simplified the process of quantification of acetone by utilization of activated cantilever biosensor. The principle of this process is that when a molecule comes and binds to the surface of cantilever, there is a nanoscale bend in the cantilever and thereby the concentration of acetone bound is directly proportional to displacement. So by measuring the displacement of the sensor, diabetes could be diagnosed.



- Jagannath J (7th sem)

"EVER THOUGHT OF WRITING WITH SMOKE"



INDIAN engineers invented a device that recycles diesel exhaust to ink. Diesel exhaust is one of the major pollutant in India. According to the world health organization (WHO), India is one of the 15 countries with worst air pollution. Its fumes can cause cancer, damage lungs as its exhaust releases mixture of particulates like Benzene, Oxygen, Nitrogen dioxide etc.

A team of Indian engineers from "Chakr Innovation Private Ltd, New Delhi" has figured out how to capture generated exhaust and turn it into ink, making atmosphere free of pollutants. The device is designed to reduce 90% CO emission in atmosphere caused by diesel power generator.

How does the device work?

Device will be attached to generators to capture diesel exhaust to ink-dust particles from cooled diesel exhaust. Once soot particles are accumulated they are sold to manufacturers that process them to become ink. The 'cnkr innovation' has already installed 53 devices in government offices and real estate firms. The installation collected 500kg of soot which is then makes more than 20000 liters of ink.

Another company 'Gaviky labs' in Southern city of Bangalore use similar technology. At present the company is in process of recycling soot from exhaust to ink.

-Mayuri,
(rewritten from Biotechnika
newspaper by Preeti suman)

CAN I BE A SUPERMAN??!!



Almost everyone loves to do magic tricks, super stunts just as a Superman!!

Imagine you woke up one morning and realize that you had superhuman abilities that were waiting to be unleashed. That once you activated these abilities, you could manifest anything you desired in your life, live a life without drama, create your ideal physical body, become immune to all diseases and REVERSE the ag-

ing process.. HOW???!?! 😊

There is now a process which will allow you to do all these things and more, and it is called

DNA ACTIVATION!!!! 😊

Most of the important things in the world have been accomplished by people who have kept on trying when there seemed to be no hope at all.

- Dale Carnegie

DNA Activation:

Most people know that DNA is the **blueprint of life** and is located in every cell of the human body. In addition to each chromosome 2 strand double helix of DNA, there are additional 10 strands of DNA available to each human, which have been dormant since the beginning of recorded history. Scientists acknowledge that we are currently using only 3% of our current 2 strand DNA. Thus we live in a society where people are sick, unhappy, stressed out, create wars etc...

Imagine activating **100%** of your 2 strand DNA, PLUS 10 additional strands!! 😊

Humans are supposed to have 12 chemical nucleotide bases. This would allow us to have 144 physical chemical chromosomes as well, whereas we have only 46. Most people only have 3 strands active, which only allows 3 dimensions of consciousness and thus they are stuck in 3D..!

HOW DNA IS ACTIVATED??

The activations are all done remotely so it doesn't matter where in the world you live..

Using the biotechnology applications, most of the junk DNAs are recoded and the nucleotides are manipulated so as to set the physical conditions of the being. Hence researches are going on.

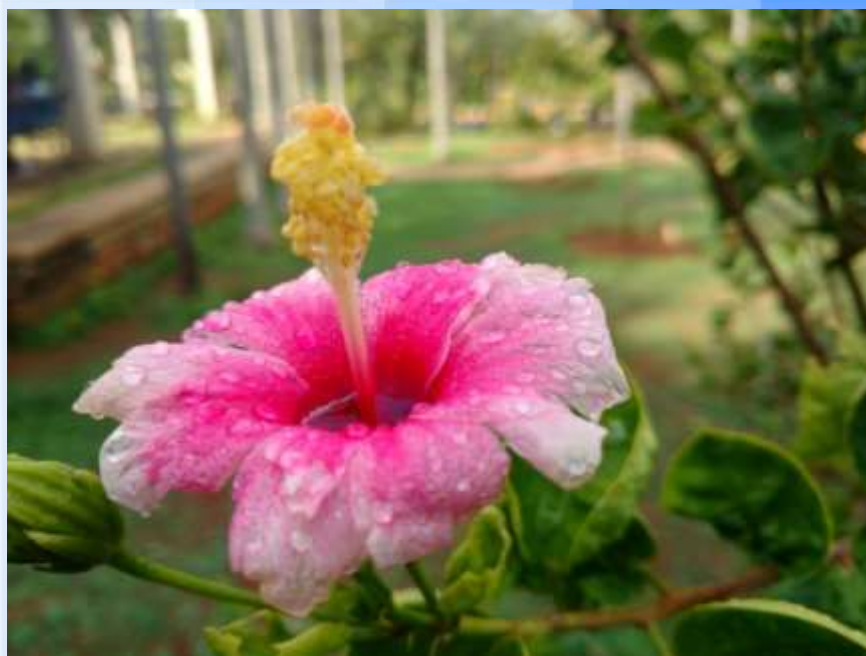
So to activate our DNA, the 12 strands should be fully unblocked and must be activated. All distortions within our DNA should be removed. It is known that our DNA has 98% Junk DNA which all should be discarded. Then your DNA practitioner will reprogram your DNA and the strands of DNA will be unlocked, hence reviving the hereditary information from our ancestors that can be

used for good deeds. 😊

SO ARE YOU READY TO BE A SUPERMAN???!?

-Harshitha J.Y. 3rd sem

PHOTOGRAPHY



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