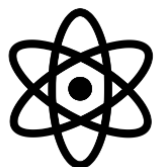


ISSUE 1

September 2020

Shivanshi Bhatt



INSIDE THIS ISSUE

PG. 2

Mitochondria & Mental Health

The Maths of Penguins

PG. 3

Hydrogen as a metal within planets

NASA gallery top pics

PG. 4

Media recommendations



NASA (Bill Ingalls) A nearly Full Moon sets aas the space Shuttle Discovery sits atop Launch pad 39A at the Kennedy Space Center in Cape Canaveral, Florida, Wednesday, March 11, 2009.

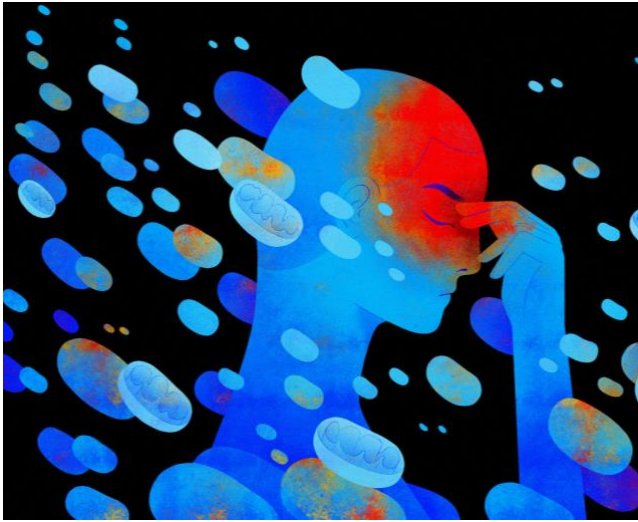
CAFÉ SCIENTIFIQUE: THE NEWSLETTER

THE LAUNCH

Welcome to the launch of the Café Scientifique newsletter, a place for anyone who has a passion for the Sciences, Maths, Technology and much more. Each Month I'll be collating some of the most interesting and intriguing events and discoveries in science that are happening today, along with some of my own research into my favourite topics. This is a great place to get ideas for EPQ and other research projects, and for general enjoyment and enrichment. Every Month I'll also put together a list of the books, TV shows, movies and other media related to science which I have particularly enjoyed, which will be a great place to look for some wider reading- these will be on page 4 every month.

That's all from me and I hope you enjoy!

-Shivanshi ☺

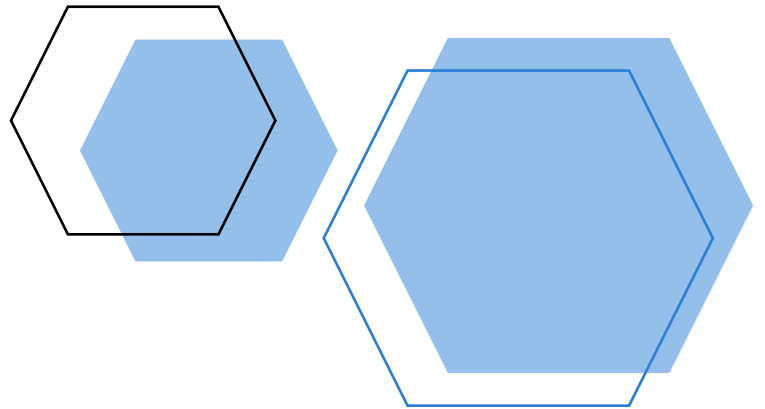


MITOCHONDRIA AND MENTAL HEALTH

[CLICK HERE TO READ THE FULL ARTICLE](#)

Mitochondria might be fundamental not only our physical well-being, but maybe to our mental health too. Although there is currently limited evidence, there is a substantial connection; mitochondria seem to be at the centre to the existence of stress response, some researchers even believe that the stress response is a kind of coordinated action by the mitochondria throughout the body that interacts with the neurological processing.

[Maggie Chiang](#)



THE MATHS OF PENGUINS

[CLICK HERE TO READ THE FULL ARTICLE](#)

Animals have evolved in many ways to protect against the cold; emperor penguins huddle to survive Antarctica's subzero temperatures. Although each penguin acts as a individual, the end results shows an equitable heat distribution for the whole community, and it turns out that penguins execute their huddles with a high degree of mathematical efficiency. Investigating these mathematical behaviors may also reveal secrets about a particular colony's health over time.

Penguins seem to understand that the densest packing of shapes on a plane is a hexagonal grid, and 'huddle' accordingly. Without even thinking about it, the birds stumble into an almost perfect arrangement.



Dafna Ben nun

[National Geographic](#)

HYDROGEN BECOMING A METAL

[CLICK HERE TO READ THE FULL ARTICLE](#)

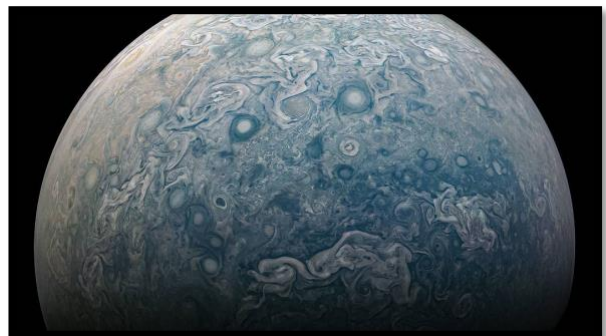
Within the interior of giant planets, due to the extreme pressure conditions, a new phase of hydrogen is seen – dense **metallic** hydrogen. This phase had been poorly understood, however by combining Artificial intelligence and Quantum Mechanics, we have been able to mimic interactions between hydrogen atoms and explore this fascinating phase.

On the surfaces of these planets, hydrogen is very much still a molecular gas, however deep into the surface, under the immense pressure; the covalent bonds inside the hydrogen molecules break, and the gas becomes a metal which conducts electricity.

Lerra Erceg, Lycee Francais de
Toronto/NASA/SwRI/MSSS

NASA GALLERY TOP PICS

A COLLATION OF MY FAVOUTE PICTURES FROM THE [NASA GALLERY](#)





MEDIA RECOMMENDATIONS

SOME OF MY FAVOURITES ☺

Uncle Petros and Goldbach's Conjecture, -Apostolos Doxiadis (*book*) – An easy yet captivating read; tender and charming. About Maths, life, philosophy. A story about people.

Daniel and Jorge Explain the Universe (*podcast*) – An informative and entertaining listen which introduces all the big questions about the universe; presents from the basics of modern physics, to the cutting edge of technology.

The Best of All Possible Worlds -Karen Lord (*book*) – A love story, science fiction, and Anthropology all under one cover. A captivating read with an innovative story.



