

The GATEWAYS BRAINWAVES Club

Term 3 2021: Neutrinos – Year 5 and 6

Venue: North Curl Curl Public School

Term Fee: \$285.00

Science on Earth and Beyond

Neutrinos! Prepare to expand your science knowledge beyond what you thought was possible - starting from the tiniest organisms on our planet and soaring up and out to the wide-open spaces of our universe. While you're delving into this mind-melding matter, don't be afraid to question the phenomena you observe – and in the spirit of the best scientists throughout history, be critical of the conclusions you come to about them! Be challenged over four meetings as you investigate DNA and microbes, learn about our universe and solar system and see how critical photosynthesis is for life on earth.

31 July

Meeting 1: What are the building blocks for life?

Focus: Biology

Did you know that 99.9 percent of the DNA of every person on the planet is the same? Then why are we all so different – inside and out? What better way to kick off the term than for the Neutrinos to be introduced to the building blocks of life (Deoxyribonucleic acid or DNA)! We will examine what this fascinating little entity is made of, how it works and its unique characteristics in different lifeforms. We'll also explore the amazing functions of DNA and how it is sequenced. Perhaps most surprising of all, though - by the end of the meeting the Neutrinos will be able to describe just how closely their DNA is related to fruit and animals!

14 August

Meeting 1: Microbes, are they too small to see?

Focus: Microbiology

Microbes are the most abundant organisms on the planet. They live on us, in us and all around us – and yet, one of the questions that will be posed this afternoon is whether or not something SO prolific can be seen with the naked eye! What are the different types of microbes and what roles do they play? How do they evolve and effect our lives? This meeting, Neutrinos will have the opportunity to examine microbes through the process of fermentation, see the microbes they carry in their bodies and compare them with other microbes that are in our environment.

28 August

Meeting 3: Photosynthesis - We would not be here without it!

Focus: Biochemistry

Once upon a (very ancient) time, life formed as we know it thanks to photosynthesis - a critical function for life on earth. Without this process we would not be here today. But wait up, I hear you ask – isn't photosynthesis something that only plants do? Aha! You might be onto something there. This afternoon, the Neutrinos will investigate the superpowers of photosynthetic microbes. They will have the opportunity to extract chlorophyll and separate the different pigments to examine these amazing organisms and see how they have influenced life on this planet as we know it – right from the very beginning!

11 September

Meeting 4: How did the universe and solar system form?

Focus: Astrophysics

Humans have been exploring space up close since 1957 when Sputnik, the first artificial satellite, circled the Earth. Since then, astronauts have landed on the moon, rovers have been sent to Mars and probes have been sent gigantic distances to discover new planets. And yet, we still have so many questions that remain unanswered! How big is our solar system and how big is our galaxy really? What are some of the important laws of physics that enable the universe to be what it is? Perhaps the Neutrinos will discover the answers to the ancient mysteries of the enormous space above us this afternoon - and maybe examine the fascinating notion of chaos theory along the way!

What to Bring:

Each week please bring an A4 notebook and a well-stocked pencil case. Please also bring a hat, drink and snack for the break (no nuts please).

About the Club Leader: *Trent Haydon spent 10 years abroad where he learnt to speak French and discovered his passion for science and the ocean. Following this discovery, he returned to Australia and completed his Bachelor Degree in Marine Biology and later completed his honours in microbiology. Trent is currently working as a scientific researcher in the Climate Change Cluster at the University of Technology Sydney, while simultaneously completing his PhD in marine microbiology. His PhD specifically is detailing the important roles of microbes in maintaining healthy coral reefs. Trent is excited to begin this new scientific adventure with the Neutrinos.*