GATEWAYS
The BRAINWAVES Club

Term 3 2021: Neutrinos – Years 5 and 6
Venue: Bondi Public School
Term Fee: $285.00

SCIENCE ALL AROUND US

We do science every day, whether we know it or not. Science can be the way to find answers to the many questions we have about how humans work, as well as the world. A combination of genetics, polymer chemistry, food science and physics lead Neutrinos with a start to a well-rounded understanding of the science behind everyday activities and observations. Neutrinos will discover the genome found in cells, sound waves produced by playing an instrument, and how our senses work to detect stimulus all around us. Together they will get the chance to investigate and experiment with polymers that make up plastics we use every day, and challenge the world with biodegradable alternatives! After all, we would love to make the world a better place.

31 July
Meeting 1: We Are Related!
Focus: Genetics, Biochemistry

This meeting we are looking closer at genes! Not the jeans you wear, but genes that make up you. How do we have a specific eye colour, hair type and height all coded in everyone that makes us so unique, yet related? We will explore the structure, base pairing, and replication of deoxyribonucleic acid (DNA): the chemical of life! Can you calculate the chances of colour-blindness being passed on through generations and the likelihood of crossbreeding different coloured flowers together? We will see DNA right in front of our eyes by extracting it from fruit – believe it or not, we can!

14 August
Meeting 2: Real or Fake Snow?
Focus: Polymer Chemistry, Environmental Science

Did you know the plastic polymers that make your lunch boxes, PVA glue, playground toys and chairs did not exist 120 years ago? We will explore how synthetic plastics were accidentally invented by Leo Baekeland in 1907 in New York, which introduced us to the world of polymers. Different chemical bonding and molecular interactions affect properties of various household polymers we use today. We will perform a series of experiments to discover the beautiful usages of polymers like making fake snow in movies and the environmental problems they can sometimes pose. Can we degrade the plastics that are exhausting landfill and polluting the Earth? We will try and make an environmentally friendly and biodegradable alternative to plastics. It is time to get to work!

28 August
Meeting 3: The Kitchen Lab
Focus: Food Science
Being a chef can be a bit like playing with science! We will put our chemical senses to the test to understand how our sense of taste works. What things determine whether someone likes or dislikes a food? How do the tastebuds on our tongue coordinate with food molecules? Can I make ice-cream without an ice-cream maker? These are all questions we might be wondering when we feel like playing with our food - the answers can be found with science. Neutrinos explore all the way down to the molecular level on what is happening to food when we cook it, freeze it, and eat it!

11 September
Meeting 4: Listen to My Waves
Focus: Physics
How does sound travel? Why can I still hear you under water when you shout? It is essential to understand how sound energy is transmitted and funnelled into our ears and then to our brains to interpret what we hear. We will explore how sound can have enough energy to blow out flames! Musical instruments are good at making different pitch and range of sounds. With our newfound knowledge gained from this meeting, we will be able to build our own acoustics to take home and understand how to control sound vibrations, pitch, amplitudes, and wave frequencies.

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: Sandy Wong is a chemist and science communicator with a keen interest in making science accessible and interesting to a diverse range of audience. She has a degree in Medicinal Chemistry and recently completed a Doctor in Philosophy (PhD) in Chemistry. Sandy has enjoyed 8 years of teaching science and curriculum development at both secondary and tertiary levels, bringing how things work in labs and everyday life into the classroom.