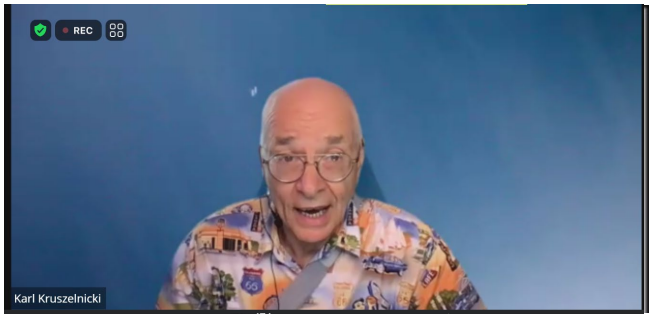
My NYSF Experience

“Just because the holidays start, doesn’t mean the science stops…” – Albert Einstein, probably.

From January 10th to 25th, I was privileged to be a part of this year’s ‘Year 12 NYSF Program’.

An exciting 12 days of amazing presenters, hands on practical activities, and scientific career advice, and each day finishing with a night of activities together with fellow students and student staff members.

(Below: guest presenters Dr Karl Kruszelnicki, and Australian Nobel Laureates Peter Doherty and Brian Schmidt)

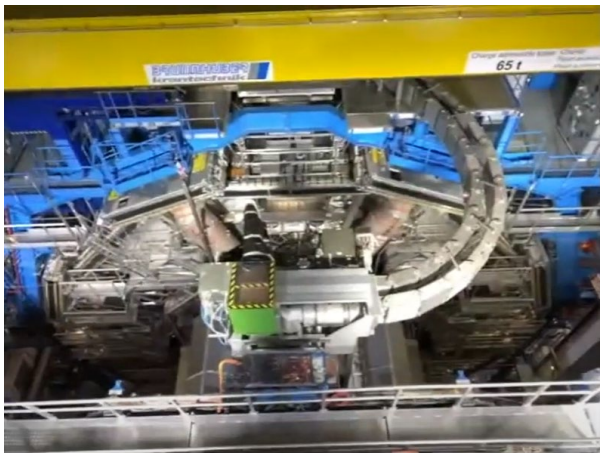


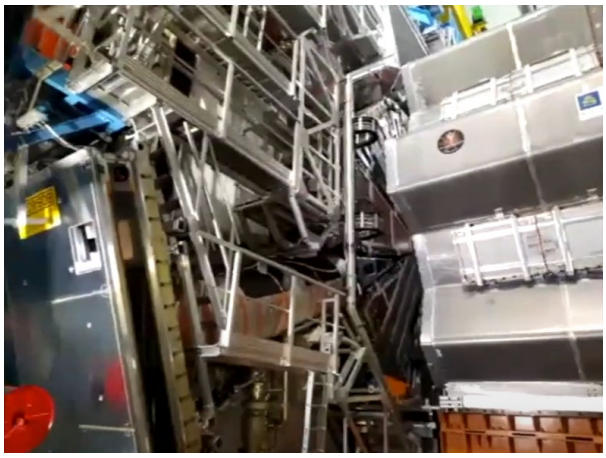
The opening session had AI evaluating the percentage probability that this was a cat:

We had pracs with 30L garbage bags,

I got my virtual passport ready, as the program sent us all across the world, including Antarctica, the Natural History Museum in London, and the Large Hadron Collider in Switzerland.

Collider:





NHM:

(An 8.67m squid, only one of the 80 million artefacts in the museum!)

Antarctica:

We were also given a variety of STEM challenges to complete throughout the program. One from the Department of Agriculture, called Ag2030, involved students developing a pitch, proposing a new method, and creating an innovative idea for how we can increase our farmgate production across Australia to $100 billion a year by 2030. Another was a STEM communication activity, where we were asked to submit a short communication piece covering something we observed during the Program. Even Brian Schmidt had one: a 100-word idea of where Australia should invest money to help reach its goal of net-zero emissions by 2050.

We've also been able to use some of the sessions as complementary resources to our class work, for example, our Biology class watched a practical session which saw the genetic modification of E. Coli cultures, as well doing a PCR test to amplify (multiply) the affected bacteria fragment which we re-isolated. Certainly very relevant to science nowadays…

After many interesting presentations, careers sessions, and late night games of skribbl.io, it was time to farewell the program these holidays. However, with in-person visits to universities and institutions being postponed to later in the year, the program is just beginning!

To finish, I'll share some tips and words from Peter Doherty to the many aspiring scientists of Pius:

Keys to a Scientific Breakthrough

1. Curiosity
2. Put aside false information, despite who's saying it
3. Build upon and use the information in front of you

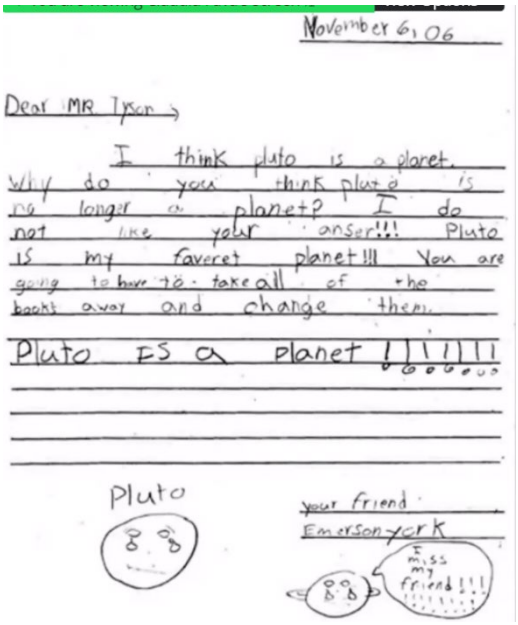
"You're only as good as your next experiment!"

A thrilling and worthwhile experience for any Year 11 Science students this year.

For any questions or general inquires about the program, feel free to contact me at guer20@stpiusx.nsw.edu.au

Andrew Guerrera, Year 12

Some memorable highlights on the next page…



November 6, 06

Dear MR Tyson,

I think pluto is a planet. Why do you think pluto is no longer a planet? I do not like your answer!!! Pluto is my faveret planet!!! You are going to have to take all of the books away and change them.

Pluto IS a planet !!!!!!

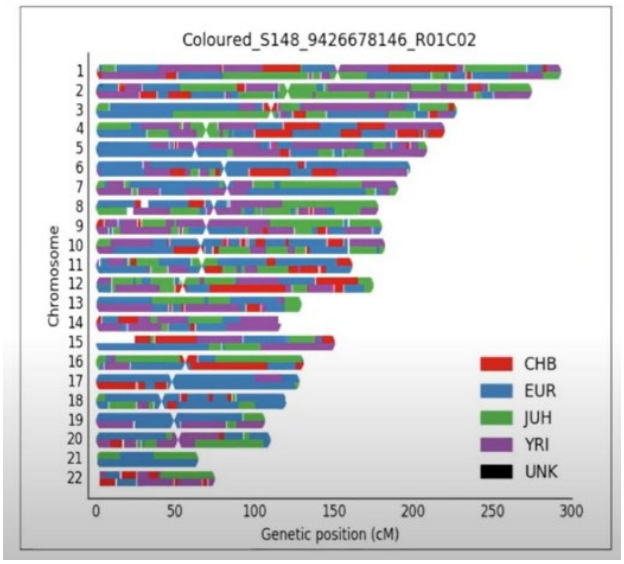
Pluto

your friend
Emerson York

I miss my friend!!!

NYSF participants and Macquarie University sharing a collective hatred of Pluto's demotion to dwarf planet.

Slightly disturbing image of a cancerous lung resulting from smoking.



The late Desmond Tutu's Karyotype, with information about his gene ancestry.

Red is genes of Asian lineage, Blue is European, Green is Khoisan (indigenous peoples of Southern Africa, people whose genes reflect those of the oldest living Homosapien populations) and Purple is Africa in general. Black is unknown.

```
//Sequence

s = Synth()
s.note.seq(['a3','b3','c3','d3','e3','f3'],1/4)
s.note.seq.stop()

//Chords or two sequences at the same time
s = Synth()
s2 = Synth({attack: ms(1)})
s3 = Synth({attack: ms(1)}).fx.add(Reverb())

s.note.seq(['a3','b3','c3','d3','e3','f3'],1/6)
s.note.seq.stop()

s2.note.seq(['a3','b3','c3','d3','e3','f3'],1/6)
s2.note.seq.stop()

//Various Instruments
p = SoundFont( 'piano' )
p.note.seq( [0,1,2,3],[1/8])
k = Kick()
k.note.seq(90, 1/4)
h = Hat()
h.note.seq(Rndi(1000,5000),1/16)
g = SoundFont( 'guitar' )
g.note.seq( [0,1,2,3],1/8 )
b = FM('bass')
b.note.seq(90, 1/4)


p.note.seq.stop()
k.note.seq.stop()
h.note.seq.stop()
g.note.seq.stop()
b.note.seq.stop()
```

A bit of music coding I completed in one of the sessions.

What surgery looks like in Antarctica.