Ladies and Gentlemen – I want to start by posing the question - What makes someone a great scientist? By todays standards we'd say they'd need a PhD and be highly published, we even assign a single number, an H—index, to every scientist in order to rank them, the higher the number the greater the scientist.

But what we fail to capture in these metrics, are the characteristics that separate a great scientist from a bad ass scientist. The person I will be presenting today ticks the first box and defines what it takes to be a bad arse. And that person is the computer scientist Dr Grace Brewster Murry Hopper.

 Dr Hopper said f*** you to the system and pushed scientific boundaries and social norms in the name of progress. Because of this I am certain Dr Hopper has earned the right to win your vote today as the unsung hero of science.

Now firstly, let me convince you that Dr Hopper was indeed a great scientist:

Every scientist being presented to you today has a defining discovery that makes them a great scientist. Dr Hopper, in that respect, is no different.

Dr Hopper was told in 1944 that computers were incapable of anything other than mathematics. Being a great scientist, with a hint of oppositional defiance, she developed a universal computer language that read words instead of numbers. The language is called common business-oriented language or COBOL. This language is still used today 70% of all active code is based on this language. It services 60 million people a day in our health care system, it accounts for more than 90 % of ATM transactions and the next time my opponent Paul Willis books a trip to Bali to work on his bikini tan he should thank Dr Hopper for making it so easy.

So, unlike the other scientists being presented tonight who all have defining scientific discoveries Dr Hopper has a scientific creation.

Now that we have established Dr Hopper is a great scientist. I promised you a bad arse. Not only was Dr Hopper an influential scientist but she was also living a double life like our modern day superheros batman and iron man. Like these characters, Dr Hopper was weaponised. Not in the metaphorical sense, either, she literally had thousands of guns and missiles at her disposal as she rose to the rank of Captain in the US Navy alongside her job at Harvard University. Now you'd think that access to the full force of the US Navy could go to someone's head, but she was also a really nice person. Not once, after receiving a bad review form a journal, did Dr Hopper use that force to invade or bomb anyone. I wouldn't thing twice…

In my opinion, the most bad arse thing that Dr Hopper achieved was when recognised in 1971 for her scientific greatness, she was awarded the first ever Computer Science Man-of-the-Year Award.

A true hero not only demonstrates greatness to the world but also inspires the world to be great and as in the case of Grace Brewster Murry Hopper, she inspired the world to say a big fuck you to gender bias.

Ladies and gentlemen, if I was in your position I'd be thinking "that guy that's speaking now. He is very attractive and I like that he hasn't tried to keep his hair when he is quite obviously receding. For that, I respect him. But why should he tell us about an unsung hero? He's just a guy with a pointy nose."

Well, in 2015 I was awarded the South Australian unsung hero of science communication and Dr Grace Hopper also did her fair bit of science communication. She was known for a visual demonstration of a nanosecond – after her retirement she even did it on the late show with David Letterman, and in honour of Dr Hopper, tonight I will do the same.

A nanosecond is 1 *billionth of a second* and even the scientists in this room like to think they have a grasp of what a billion is. Even billionaires don't know what a billion is. So as Grace Hopper's story goes: she called up the navy's engineering department and asked for then to send over a nanosecond and they sent back this 11.8 inches of wire – one billion of these together is how far night travels in one second. The maximum distance light will travel in 1 nanosecond. Bringing an abstract concept into something everyone could see and touch – she was a science communicator for everyone.

She'd give out nanoseconds at her science communication outreach and tonight, in honour of Dr Hopper, I have nanoseconds for you too.

This is a fun fact: you have probably familiar with one of Dr Hoppers turns of phrase without even realising it. In 1946 she used the term bug while describing a problem with her computer. A moth had flown into one of the relay circuits and in her lab book she recalled the incident:

"Things were going badly," she later said, "there was something wrong in one of the circuits of the long, glass-enclosed computer. Finally, someone located the trouble spot and, using ordinary tweezers, removed the problem, a two-inch moth." She continues "From then on, when anything went wrong with a computer, we said it had bugs in it,"

It looks like you guys are ready for another bad ass fact about Dr Hopper. In recognition of her contribution to science and the US navy they named a fricken missile after her. The U.S. Navy Arleigh Burke class guided-missile destroyer USS Hopper (DDG-70). Now I don't know about you but this is the definition of bad arse.

Dr Grace Hopper became better known later in her life and at 85 was still visiting schools and talking publically about science. While all of her friends were recounting the past. She talked about the future of computing and the personalisation of computers in order to excite the next generation of scientists and engineers.

Dr Hopper is proof that not all super heroes wear capes. Some wear panty hose and a captain's hat.

Getting to this point in the debate you clearly don't need much more convincing of how inspiring and revolutionary Dr Grace Hopper was. But I will summarise for you her greatest achievements.

1. Her scientific creation, a universal computer language based on English-like syntax, now accounts for 70 % of the readable code today, across health care, banking and business.
2. She won computer science man of the year award in 1971 at a time were sexism was rife throughout academia as well as the military.
3. She rose to rear admiral and eventually captain alongside her scientific endeavours
4. She had a missile named after her.
5. She was an expert science communicator and renowned for her demonstration of a nanosecond.
6. She is rumoured to have coined the term bug from programming problems after finding a moth in her relay circuits.
7. Dr Hopper said f*** you to the system by pushing against scientific boundaries and social norms in the name of progress.

Today we were here to talk about an unsung hero - a person that hasn't gained the recognition they deserve. Dr Grace Brewster Murry Hopper may sound like a hipster brewery in Melbourne but her achievements and attitude should be taught in school alongside those of Alan Turing and Andrew Stapleton.

She *is* an unsung hero and I thank you for listening.

NOTES: