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Just Quietly

Australia's Chief Scientist
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My PhD topic was the communication between neurons in *helix aspersa*. In layman's terms, I wired up garden snails to measure whatever stimulating electrical activity takes place in their primitive brains. (For the record, it's enough to give us some clues to how human brains might work.) In practical terms, I sat in a laboratory while my class-mates made good money in "real" jobs.

I did it for years. And I chose it in the full knowledge that it was the last thing a well-meaning career counsellor would encourage me to do.

Got the marks to study medicine, and he picks a doctorate in snail brains instead? How more obvious could a garden path to unemployment be?

In the years that followed I built and ran a biotech company – the first Silicon Valley based business to list on the Australian Stock Exchange. I pursued a newfound love of science publishing. I shook over 54,000 graduate hands as Chancellor of Monash University, and developed education programs at every level from high school to early career research.

I participated with enthusiasm in public policy debates. I have the privilege today of representing science to Australians, and Australian science to the world.

I do so in the company of many remarkable people who have made their success along every conceivable path – except the one that conventional wisdom would have led them to pursue.

I contend that wiring up snail brains was excellent preparation.

My garden path did not simply put me in the midst of one of the hottest topics in global science: the quest to map and reconstruct the human brain. (Try

tackling the 90 billion neurons in the human brain without cracking the basic techniques on a creature with just 5 thousand first.)

It was a challenge to accomplish something I was almost convinced I could never do.

Anyone who thinks life was meant to be easy wasn't meant to attempt an Australian PhD. To me, that line on the CV is proof of the qualities that every capable CEO demands: initiative, resilience, communication, teamwork, self-reliance.

It also signals mastery of the hard skills demanded by the graduate's chosen discipline, to the academic community's demanding standards. The disciplines I know best, often grouped together as STEM (science, technology, engineering and mathematics), all foster skills with applications right across the economy. Quantitative analysis. Data gathering and mining. Prototyping and experimentation. In my case, instrument design and optimisation.

Combine these, and more, with an eye to the possibilities on the technology horizon, an understanding of the way the science community works, and a passion for the pursuit of new ideas, and I see a person well-prepared for life.

Surely, in a knowledge-led economy we want people with strong STEM backgrounds designing cities, planning infrastructure, sitting on corporate boards, and protecting our industries from every risk from climate change to cyberattack – just like every other nation that has made the choice to excel in these fields.

So I am concerned when I hear commentators solemnly pronounce that we now have more than enough people with STEM PhDs to fill some preconceived notion of 'suitable' STEM PhD jobs. And I despair when I hear of students opting out of STEM subjects altogether, in the belief that they are 'risky', 'career-limiting' or simply 'too hard'.

Any degree is career-limiting if we pursue it in the belief that it's an express route to a pre-determined job – and ignore the opportunities in the unexpected places along the way.

My advice to students is to study science and pursue a PhD if they enjoy it. Choose a rigorous program, in the knowledge that it will foster the rarer – and hence more valuable – lifetime skills. Remember that chance comes to the prepared mind. Be open to opportunity, and don't be deterred from seeking it in unconventional forms.

And remember that career counsellors who hold out the promise of 'safe jobs' are holding up a fragment of a fig leaf. Ask a graduate lawyer, or doctor, or accountant if they feel safe in the face of new technology – where it hasn't displaced the available jobs in these professions, it has fundamentally reshaped the expectations on the humans who fill them, and it will do so ever more rapidly in future years.

Aspiring to be safe is perhaps the riskiest thing the young jobseeker could do. The trick is to work out new ways to be useful.

I should know. After all, I'm an expert on snail brains.