

**OCCASIONAL ADDRESS**  
by Doctor of Science (*honoris causa*) recipient

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Chancellor Brennan, Vice Chancellor Milbourne, distinguished faculty and guests, UTS graduates of 2004, ladies and gentlemen, I am most pleased to accept the honor of DSc, UTS, and look forward to fulfilling your expectations on the responsibility for leadership in the Life Sciences that this honor confers.

To start, congratulations to the 2004 science graduates of UTS! The Blood, Sweat, and Tears of University are behind you. You deserve all the compliments lavished on you over the next few days, but what next?

You may never again need to sit through a formal test or exam, you will not be studying what others define as important. You will chart your life course with no set curriculum or course recommendations.

I will keep my comments brief, as I well recall the ennui of being in my 20s and listening to helpful advice from someone 3 social generations removed.

Rather than advice, I offer two predictions for your futures.

First

At least 80% of you will devote yourselves to careers completely different to what you think they will be today.

Today you are not what you will become! Only you can discover who you really are and what you are capable of.

Over the next 10-15 years you alone will identify personal strengths and weaknesses.

If you follow your heart, not just your head, you will, I predict, end up with careers very different to what you envision today. This aspect of following your heart and intuition I will return to.

My Second prediction

About half of your careers will be in areas that do not exist today, with exciting jobs that no-one in this room could write a job specification for, much less name, today.

Careers in genomics or proteomics, careers in bioinformatics, careers in nano-materials science did not exist 10 years ago. The science you learn in class is by definition old, it

may be true, even true forever, but it won't be the cutting edge and assumed knowledge of your future.

In other words, many of you have not been trained specifically, nor could you be trained specifically, for what you will actually end up doing

As Prof Milbourne just described, my career started in pure Scientific research, developed through science management and most recently evolved into business leadership of a biotechnology company.

It was impossible for me to imagine during my career that there might be something different coming up, that the something different would be so different, that I would enjoy the next pursuit even more than the last.

In just the same way, your paths will emerge with wonderful idiosyncratic opportunities that defy your best planning and forward predictions.

I will also add that without fail, each step in my career path was catalyzed by a single conversation ----- not by an exam, and not once by a formal job interview applying to a job that was nicely circumscribed for competitive hiring.

My career history over 30 years is punctuated by just 9 conversations, from 5 minutes to 2 hours --- conversations that marked my jumps from one area to another.

Interestingly, 2 of those profoundly important conversations were with my wife Maureen now of nearly 30 years, and another 2 conversations occurred only because she appropriately urged me to chase people I didn't know at all.

So going forward, listen to at least some of what your partner says.

I have been asked whether a particular person, place or thing sowed the seed of my career path in malaria and then in biotechnology. I cannot identify one initiating event.

As a socially inept, inquisitive 13 year old, one day it simply occurred to me that I wanted to dedicate my life to understanding the inner biochemical workings of just a single cell, say yeast or a beautiful algal cell like Euglena. This goal seemed feasible but only if I spent a lifetime focused on it.

I have no idea where this inspiration came from, especially since I came from a blue-collar family without any professional relatives to advise me on any sort of career. No one in my family had ever been to University. That inspiration to study a single cell and the comfortable dream of one day being a University professor in Australia studying one thing my entire life kept me passionately hungry to learn as much as possible from age 13 through my degree in chemistry and biochemistry at University.

My selection of a PhD project at Melbourne University was not at all practical, and certainly didn't represent a plan for eventually earning gainful employment. I chose it because the hypothesis to be tested was most unusual and the Professor really enthusiastic to chase the idea.

I studied the metabolism of an unusual marine seaweed that only grows in Port Philip Bay Victoria, a seaweed that has no commercial, nutritional or medical significance and likely never will have. I completed my PhD with several scientific publications to be read only by the miniscule scientific community interested in algal esoterica.

More importantly than publications, I learnt during my PhD how to take calculated risks chasing funding for esoteric research that others said could not be funded. I learnt how not to listen to established doubting wisdom, a lesson that was invaluable later.

At my wife's urging, I decided to move into medical research despite my training as a plant guy. (Being ever the realist, my wife recognized that people docs might be more employable than plant docs, and I was ready for anything exciting and different after 3 years of diving off a boat into the cold Southern Oceans to collect algae).

Perhaps as an early indicator of nascent negotiating skills and the ability to sell ice to Inuits, I somehow managed in a 15 minute interview to convince Gus Nossal, Director of the Walter and Eliza Hall Institute in Melbourne that with my unique training in plants, I was brilliantly suited to work with protozoan parasites like malaria.

The venerable professor knew nothing about plants and I knew nothing about malaria, immunology and the human body. We had a lot in common.

Strangely, I got the postdoctoral award and jumped from algal esoterica to my first studies in malaria.

So began a 20 year career in malaria research at 4 institutions, 3 in the USA.

A career dedicated to the molecular understanding of how malaria infected red cells cause pathology and cerebral malaria in children.

I began a lifelong obsession with one of the most devastating human diseases of the tropics, a relationship that was cemented the first time I held a perfect weight-for-age infant dying in front of me because anti-malarial drugs are no longer effective and a vaccine does not yet exist.

I will relate the improbable events around one of my 9 critical career conversations to illustrate that good things cannot be planned.

I had traveled from Australia to present a poster at a scientific conference on malaria at a ski resort in Colorado. After being entranced watching a young girl skating figure 8s on a beautiful frozen lake, I seized the opportunity to attempt figure-8-ice-skating, an activity

which looked remarkably simple and elegant. Let me add I had never been near an ice-rink in my life and had never seen or worn skates of any kind.

I did do figure 8s after an hour of uninhibited and fearless skating, but then my luck turned. A fall at high speed, 4 hours unconscious, an emergency helicopter ride unconscious to Denver Hospital Emergency Room, I have no memories of that exciting 12 hours. I discharged myself from emergency the next morning, against doctors advice, grabbed a bus back up into the mountains and slumped in a chair next to my poster with blurred vision and a fist sized bruise on my forehead, determined that I would not miss giving my poster.

A curiously disheveled guy read my poster, pulled up a chair and insisted on quizzing me for two hours. I have no recollection at all of what we talked about. After the annoying interrogation, he offered me a research position at the NIH and only then did I ask who he was. To my amazement, he was perhaps the world's leading malaria researcher. I took the job on the spot without any discussion of salary, timing, what the work might be. Thus began 9 years at the National Institutes of Health in Maryland and a most productive malaria research phase of my career.

The lesson: Don't skate before you learn what the brake is designed for on the front of the skate, and baring death, never put off an appointment for medical reasons.

Woven through my research career in malaria I began to lead larger teams of scientists. The catalyst out of so-called pure research into the biotech business was another one of my 9 conversations

Somewhat frustrated with the difficulty of raising government funding in a country where no-one contracted malaria, the disease I was studying, I approached an entrepreneur and venture capitalist for general advice on my career.

This person had created several successful biotech companies in the San Francisco area and was someone I had never spoken to alone before. My goal entering the room was to describe what I was seeking in managerial growth, while continuing my malaria studies, and to seek advice on where to move to so I could achieve this.

I did not get very far with my carefully prepared spiel. To my astonishment, after 5 minutes I was offered a job in a field where I knew next to nothing, in a company totally unknown to me. Apparently the entrepreneur had been quietly watching me over 5 years when every second year he had occasion to review my malaria research program.

Equally astonishingly, I accepted the position within another 5 minutes. I had just two questions for him "can I continue my malaria research with total control of this work in all aspects? Yes. Note that he knew nothing about malaria and no-one in the company worked or cared about infectious diseases. And "can I have the title of VP and whatever goes with this in salary and stock options?" Yes.

I immediately agreed and so I made the jump from only doing malaria research, to also leading research on high throughput screening of novel receptors to discover small organic molecule drug leads from combinatorial libraries for various diseases of the major world markets.

I had never looked at this field, I had no formal training or experience but clearly someone who mattered had complete trust in my ability to learn what was needed. I learnt fast, the years of chemistry at University all coming back to me with serious study, study of necessity now, not just to pass exams.

From Vice President to Company President and Scientific Director followed in months.

Through all this, my malaria lab continued with our biggest discoveries, the fruits of 13 years chasing one goal, published in this period.

After 5 years, another 10 minute conversation and an instant decision led to me founding a spin off company, Maxygen, the one that I now lead as CEO.

Maxygen is a public biotechnology company in the USA.

I am personally responsible for our interface with Investors, meeting the banking community, guiding and reporting to my Board of Directors, and for the performance of my executive management, all of whom are gifted individuals with stellar talents in areas very different to my own.

And still, at Maxygen we continue the malaria vaccine chase using philanthropic funds and our proprietary technology to try to engineer the best vaccine properties of the antigen that my team discovered years ago.

The science nerd or geek who once dreamed of only knowing everything about Euglena, who sported clothes from the opportunity shop that were soon marked with acid holes and chemical stains now routinely dresses up in an Armani suit to speak to investors on Wall Street New York, and works hard to not sound at all scientific.

I would never have imagined, and certainly my family and friends through my school years could never imagine, that one day I would lead a biotechnology company in the USA. Your paths will, as I have predicted, be impossible to chart today. For those of you interested in pursuing a scientific career, your training will not only allow you to enter multiple fields that use science and scientific thinking, but you will actually create new fields of scientific exploration yourselves. As you discover, so you will change. The path of a scientist's career is thus one not only of discovery and creation of things that improve our world, but one of important self-discovery.

Some characteristics that have certainly suited my own path are the following. Some of these may work for you.

Do what you love doing, do it intensely and you will unavoidably be one of the best worldwide at doing it;

if you are one of the best, Lady luck or serendipity will work for you;

be unafraid to be excited about what you do, if you don't, how can you expect others to share your excitement;

let chance events and those critical conversations that cannot be planned provide new avenues;

always have your private list of mental fantasies----some day someone will ask you what you want and you may actually get it;

and finally, although I am trained as a scientist and thus in careful analytical thinking, use your intuition, your feelings to guide you when you take a job. You must live with your feelings, not just the logic and analytics of what is calculated to be right

So, as you go forward into careers that I have predicted you cannot imagine today, into fields of science and business that do not even exist today, remember that from now on it is you alone who determines your fate and that you all have what it takes to achieve success as you will define it. As a wise man once said

Do not follow a path  
Follow your own footprints  
Your path will create itself

Thank you and good luck graduates.