

Professor Marelyn Wintour—A woman with passion



NOT MUCH deters Marelyn Wintour-Coghlan. After all, she counts among her ancestors a man who captained the *Vanguard* against the Spanish Armada in 1588, and two of those hanged for hatching the Gunpowder Plot with Guy Fawkes.

When faced with a long trip from the other side of the Brisbane River to attend the University of Queensland in the 1950s, the young Marelyn simply hitched up her skirts, planted her hat firmly on her head, and rowed across each day. To those who know her, the only unusual thing in this was that she didn't make the journey part of her compulsory daily swim.

So perhaps it's no surprise that she has spent more than 46 continuous years as a pioneering physiologist, forging an international reputation and publishing over 160 journal articles. In addition to the many notable advances in knowledge for which she is responsible, she has earned herself a DSc, been among the first to apply the techniques of molecular biology to her chosen field, and in 2004 became only the 20th woman in 50 years to be elected a fellow of the Australian Academy of Science.

In the tradition of pioneers, she has helped revolutionise our ideas. During her long career, the understanding of her chosen object of research, the mammalian foetus, has changed dramatically.

Originally considered to be an essentially passive body, accumulating cells and developing quietly inside the mother, it has now been shown to be independently active, in constant flux and dialogue with its developmental environment. And that interaction can have lifelong consequences. Prof Wintour-Coghlan made key contributions to this change in views.

She was the first to show that foetal adrenal glands were active both early and late in development, underlining—because of the role of the hormonal compounds made in those glands for the maturation of virtually all foetal organs and systems—the significance of cortisol treatment for premature babies. She also demonstrated the importance of foetal membranes in the regulation of foetal and amniotic fluids, particularly the role of aquaporins in pursuing this function.

Marelyn Wintour-Coghlan proved that the urine of unstressed mammalian foetuses was normally dilute. This finding allowed concentration of foetal urine to be used as a measure of stress, and also led to further studies which have unravelled some of the hormonal mechanisms behind foetal salt regulation. And she has also provided a seminal and important example supporting the Barker Hypothesis that unfavourable conditions experienced by the foetus can lead to changes that alter development and may affect adult health. She found that when sheep foetuses were exposed to an excess of the stress hormone cortisol very early in development, they grew into adults with high blood pressure—in effect, that the diet, health and environment of a mother could affect the future wellbeing of her children.



Marelyn's first international conference in 1967. Marelyn's first duty was to pin the Congress badge on President Marcos of the Philippines at Malacanang Palace.



Marelyn and baby Mark, 1964

As if that wasn't enough, Wintour-Coghlan achieved all this while raising four children, at a time when married women were actively discouraged from working, and when childcare barely existed.

In fact, she and her husband Prof John Coghlan, an eminent researcher in his own right, were instrumental in establishing the first childcare facilities at the University of Melbourne, some of the first at any academic institution in Australia.

Marelyn Wintour-Coghlan was born in Queensland the eldest of six children, and grew up in Brisbane within sight of the university on the other side of the river. She attended All Hallows Catholic Girls School, an unusually academic environment for young women at the time. "There were about 35 girls in my class," she says. "All but three gained tertiary qualifications."

On the basis of what she now admits was a limited knowledge of doctors, she decided not to go into medicine at university. As she had no wish to become a teacher, a straight science degree was the only possible alternative for someone of her interests.

“I don't care
I'll take my
chances”

Wintour-Coghlan now takes great delight in recounting how she was warned off physiology as a major, because there were no jobs in the area. "I don't care. I'll take my chances," she said at the time. And from 1959, when she was employed as a demonstrator at the University of Queensland, to 2004, when she was a Senior Principal Research



PhD Graduation 1972

Fellow at Monash University she was paid full-time as a physiologist. In all that period, she never took time off work, not even for the birth of her children, which she conveniently managed to confine to her holidays. Her ability to balance her work and family was an inspiration to many women students and colleagues. "Seeing her example, I have never ever doubted I could have a career and a family," says Dr Karen Moritz, a former research assistant, student and now a colleague and research fellow in the School of Biomedical Sciences at the University of Queensland.

"It just meant I tended to do things backwards," says Wintour-Coghlan. "For instance, I never went on sabbatical when I was young. I only took study leave when I had already reached the top, so I first went to work abroad as a collaborator, not as a student."



Off to Uni! Marelyn's preferred method of transport during her days at The University of Queensland

But no-one has ever doubted the seriousness of her research. Her results were always founded on rock solid methodology. Her approach is a fortuitous blend of being able to embrace new technologies, while maintaining an almost pedantic old-style rigour. "There was no cutting corners either in time or resources," Moritz says.

So, when others in her field were switching to using cheaper and more flexible rodents for their research, Wintour-Coghlan doggedly stuck with sheep—an animal whose foetus was of similar size and developmental trajectory to humans. The result has been that the bulk of her findings have now been shown to apply to the human foetus.

She also insisted on pursuing her studies in unstressed animals. Her sheep, for instance, would often have a cannula permanently implanted, so that samples could be taken at will while they were conscious and without disturbing them.

She was introduced early to the techniques of molecular biology, partly through her husband, who became head of the Howard Florey Institute of Experimental Physiology and Medicine at the University of Melbourne where she also worked for 13 years. And she was able to embrace and develop techniques appropriate to her work which traced gene expression in the development of foetal organs.

Students and colleagues alike admire, and to some extent fear, her incisive mind. "She is a first-class scientist," says Prof Kandiah Jeyaseelan of the National University of Singapore. "She works towards perfection, and she will tell you outright if you are wrong. There's no nonsense."



Marelyn and John with daughters Karen and Johanna, and grandson Jack, at the University of New South Wales, February, 1995--when John Coghlan was admitted to the degree of Doctor of Medicine, Honoris Causa

Moritz agrees. "People quake in their boots when she stands up to ask a question in a seminar. But she is

fair and insightful, and her colleagues treat her with the utmost respect. In fact, she is inspiring. She has a passion for research. Science is truly exciting for her. She celebrates finding out something new."



Marelyn's last lecture overseas, Guangzhou with former student Dr Kathy Liu, September 2007

This infectious delight in science is something she has passed on in her teaching role, which she has always taken very seriously. Not only has Wintour-Coghlan shepherded 45 of her own students, including 40 PhDs, through their graduate studies, but she also served as convenor of honours and graduate students at the Howard Florey Institute for 13 years.

Her example to and care for her students, many of whom were from abroad, extended far beyond their studies. Jeyaseelan tells of several instances where Wintour-Coghlan and her husband John opened up their own home to students who needed stability in their lives. Such generosity and her practical advice have saved research careers, he says.

Children, and now grandchildren, have always been a focus. Research collaborator Prof Eugenie Lumbers of the University of New South Wales first met Wintour-Coghlan not as a scientific colleague, but as someone with whom to consult when she was trying to establish the first childcare at the University of Adelaide.

Wintour-Coghlan has been able to extend that interest in children through her research, particularly with respect to her findings on the pre-natal origins of adult disease. Her elucidation of the key role that early foetal kidney development can play in the onset of high blood pressure in adults has led to significant pragmatic advice on stress and nutrition to women of child-bearing age, particularly in developing countries.

Wintour-Coghlan has developed her own fascination with many of these countries. She has been active in encouraging physiological research in Africa and South America, particularly in Chile which, by her own admission, has become her second home. She has even taken the time to learn Spanish, and has pursued research on llamas there.

Away from the laboratory, two major interests have always been swimming and history. She is particularly interested in the indigenous history of China and the Americas, and has made many visits to museums and excavations important to the narrative of both regions.



Marelyn with two youngest grandchildren Hannah (7) and Sonny Joe (10months) at wedding (Daniel and Michelle), March 2007

As far as swimming goes, no day is complete without it. Wintour-Coghlan claims her sister learned to swim before walking. And Moritz says she has never ever seen Marelyn so devastated as the day the University of Melbourne closed its pool for maintenance.

Marelyn is also an inveterate and intrepid walker. But none of her close colleagues can seriously imagine that the lady in the big floppy hat and sunglasses will ever walk off into the sunset.

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