

An appreciation

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Adrian Lee is an unsung Australian academic hero. Warren and Marshall could not have got the Nobel Prize without him. Tom Borody told us clinicians what to do with the information that the helicobacter story revealed. So we are, all of us, particularly those in the trade, indebted to them both.

When the Nobel Prize was conferred, Adrian Lee was there in Stockholm. The recipients of the Prize recognized his vital role in what they did. He was an honoured guest of the Swedish Government for that whole week. It is true that Deakin University recognised his contribution with an honorary degree, but, for most Australian scientists, his name is not known as it should be.

Our university offices were only one floor apart. When the cryptosporidium scare was rampant in Sydney, he advised me against worrying too much. After all, kangaroos and wallabies were living in the water catchments and were depositing *cryptosporidia* every day — and no-one was ailing. However, his good advice did not satisfy my daughter, who continued to boil drinking water for her baby.

Peptic ulcers were an enormous problem sixty years ago. Our medical and surgical wards were full of ulcer disease. Our patients were suffering. Our surgical lists were full of the ill effects of peptic ulcers, sometimes urgent, sometimes elective. And we worked to a wrong paradigm — we believed that

peptic ulcers were the result of an imbalance between acid and protective gastric mucus.

We were wrong. Warren and Marshall got the Nobel Prize for proving us wrong. They could not have done what they did had Adrian Lee not been there to help. Today there are few peptic ulcers and Tom Borody's treatment fixes those.

As you all know, a strong statistical correlation does not, of itself, establish a causal relationship. Robert Koch put out his famous postulates in the second half of the nineteenth century to relate diseases to the organisms which caused the diseases, and his postulates guided scientists, like those described tonight, throughout the twentieth century. Today we use nucleic-acid-based microbiological detection methods, and Fredericks and Relman have suggested seven new criteria for establishing microbiological causation.

But Warren and Marshall had to satisfy Koch's postulates. It might be worthwhile just reminding ourselves of what they were. First, the microorganisms had to be found in organisms with the disease but not in healthy organisms. Later this condition was dropped because of the existence of carrier states. Second, the microorganisms had to be isolated and grown in culture. Third, the cultured organisms had to cause the disease when introduced into a healthy organism. Fourth, the microorganisms had to be re-isolated from the inoculated diseased host and identified as being identical to the original

organism. As many of you know, Marshall himself drank *Helicobacter pylori* to satisfy those last two tests.¹

Over time there were many problems with Koch's postulates — for instance, with viral diseases — but, at the time, they worked, and Warren and Marshall wanted to satisfy all Koch's postulates, not least to convince hostile adherents to the older paradigm.

You will recall that the second Koch postulate required them to grow and isolate the microorganism in culture, while the fourth postulate required the organism to be regrown from the host in which it had caused disease. These two postulates were where Lee was critical. Here was he, an Eastern Stater to those two West Australians, but an Eastern Stater who possessed the techniques they needed for their work. So, there developed this wonderful association between Warren and Marshall and the University of New South Wales.

¹ As Adrian Lee has put it (pers. comm.): "Koch's postulates could not be covered in the early days as there was no animal model. But then of course Barry in his unique way did it by swallowing the bug. Fulfilled the postulates exactly. Given the bug, got the disease — gastritis — and then recovered the bug in culture. New Zealander Arthur Morris did it too, with more severe circumstances Arthur was pretty sick and could not get rid of the bug!!"

Thomas Borody is famous for developing the Triple Therapy for peptic ulcers. He did this in 1987. Prior to this time ulcers were cured by drastically different methods.

To have heard them both speak tonight has been wonderful and we want to thank them for what they have told us and we want to honour them for what they helped give to us all.

References

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