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EQUINE RESEARCH ... what you need to know

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THE EQUINE RESEARCH CENTRE NOTCHES ANOTHER PhD GRADUATE UNDER ITS BELT

By Nora-Jean Freeman

On 7th April 2017, Dr Camilla Weyer-Mehtar graduated with her PhD through the Department of Veterinary Tropical Diseases under the supervision of Prof Alan Guthrie (University of Pretoria) and Prof Jim MacLachlan (University of California), a milestone she didn't envisage at the start of her studies.

I caught up with Camilla, and Profs Guthrie and MacLachlan immediately after Camilla had completed her PhD presentation at the Faculty of Veterinary Science, University of Pretoria.



Dr Camilla Weyer flanked by Professors Jim MacLachlan (L) and Alan Guthrie

I asked Camilla about the road she's travelled and her plans for the future.

"It's been quite a long road that I've travelled," she responded, "Definitely not what I expected when I started out. My PhD started with the study of midges, and ended up somewhere else completely, but it's been a good journey and I've learnt a great deal. Even when we started the African horse sickness Epidemiology Project, I thought, well, that's someone else's problem – never did I envisage that it would be my PhD project. The study way exceeded my expectations.

“I haven’t had much time to think about my future, but there are definitely some projects in the pipeline in which I’m very interested, but about which I can’t say too much at this stage. While I am now employed by the Equine Health Fund, I am pleased to be maintaining my academic link with the Faculty of Veterinary Science, and am excited about what the future will hold.”

Prof Alan Guthrie can still remember, back before Camilla did her Masters degree, when he spoke with Cynthia Donnellan on the faculty who recommended Camilla for the AHS Epidemiology Project. He phoned Camilla at 7pm that evening, while driving home and his question to her was “Where do you see yourself in 5 years?” Camilla was a practicing small animal veterinarian at the time, but jumped at the opportunity presented by Prof Guthrie.

Says Guthrie, “The privilege I have is that, as opposed to other academics in this faculty who often have students assigned to them by Heads of Departments, I get to choose students to work on projects I have identified. ”

There have been some key questions raised about African horse sickness, and Camilla’s Masters Thesis was to address the question on how AHS 5 got to Robertson in 2006. Her study showed it was reality to get sub-clinical infections and that a horse that was sub-clinically infected with AHS 5 at the 2006 Horse of the Year show at NASREC took AHS back to Robertson. This sparked an interest in a possible pattern being identified, and following her Masters, the ‘midge had bitten’ (so to speak) and Camilla was keen to find out more.

The Mamre Outbreak started the day before Camilla was to go on holiday in March 2011. Instead of having her holiday, Camilla spent six weeks working on the outbreak, together with Mpho Monyai of ERC, and under the supervision of Prof Guthrie. From this outbreak more questions were raised, and a definite pattern was being identified. Guthrie said, “You need people with very special skills to identify these patterns and to ensure that the data collected is beyond reproach. This was the first time that sequencing had been done to determine the serotype involved, which was in this instance Type 1, and because of this, Bottle I vaccine was used. This was the first outbreak in the Cape where the vaccination campaign was directed at the specific type involved.”

Guthrie goes on, “When you have well collected samples that you know you can bank on, and if you ask the right questions, you can start getting a lot more out of a project. It’s been interesting watching Camilla develop. Initially, she indicated that she would not include molecular data in her thesis, to then using molecular data and producing a paper on the reassortment and reversion to virulence of AHS vaccine virus strains that is probably going to be one of my most cited papers. This is a really nice starting point for Camilla’s career. A stark comparison with the very first paper I authored which was on blood pressure in chickens!”

Going forward, Camilla is critical to efforts in the Cape, and she is well placed there. Now, having achieved her PhD, she is in a position whereby she can supervise students, so she and Prof Guthrie are looking at various ways to ensure her continued involvement and that she gets the academic recognition from being involved, thus creating a win/win situation. Guthrie pointed out that the benefit of the Controlled Area, and having Camilla situated there, is that we have been able to build some incredible data. In fact, if it wasn’t for the Controlled Area, we would never have been able to ask or answer the questions that we have, and this puts us in a unique situation, whereby we have people in the field asking the important questions, and the laboratory investigating and providing the answers.

Professor Jim MacLachlan, who travelled from California to share this achievement with Camilla, said “I’m very proud of Camilla’s achievement. When I started working with Alan (Guthrie), I promised him that there would be no colonial science, and that what happens in SA stays in SA in terms of legacy, so I’m very proud of the legacy that has been created by Camilla’s research. This research is amazing and will have true legacy and it takes very special people to achieve that. I’m a bit of a non-conformist, and I can tell you that many scientists are snobs, but what I see in Camilla is somebody that is incredibly balanced and broadly trained, her focus is not exclusively science as she is

so well versed in veterinary medicine and the South African horse industry – it's easier to work with someone like that because she is willing to listen and you can actually change her thought processes on things through scientific processing, so to me she's the ideal student. This is probably the best thesis I've seen in terms of a veterinarian doing a good combination of field work to support the science – this wouldn't have happened in many places in the world which is sad. This is a very special place, which is why I enjoy coming here."

MacLachlan goes on to say, "So much science is done for the fulfilment of the egos of the scientists, it's not for the common good, it's not the scientific high-ground for public thinking and education. However, in this case, Camilla's thesis is a real tangible example of legacy science – this is paradigm altering stuff! It adds enormous value that the country can make sound decisions based on science conducted in this country, rather than going on the word of 'imported' scientists who likely don't fully understand the South African situation. This activity that Alan has cultivated in SA has created a unique resource."

We congratulate Camilla on her achievement, and look forward to her future outputs.

Publications derived from Camilla's PhD Thesis

1: Weyer CT, Grewar JD, Burger P, Joone C, Lourens C, MacLachlan NJ, Guthrie AJ. **Dynamics of African horse sickness virus nucleic acid and antibody in horses following immunization with a commercial polyvalent live attenuated vaccine. Vaccine. 2017 Apr 25;35(18):2504-2510.**

2: Weyer CT, Grewar JD, Burger P, Rossouw E, Lourens C, Joone C, le Grange M, Coetzee P, Venter E, Martin DP, MacLachlan NJ, Guthrie AJ. **African Horse Sickness Caused by Genome Reassortment and Reversion to Virulence of Live, Attenuated Vaccine Viruses, South Africa, 2004-2014. Emerg Infect Dis. 2016 Dec;22(12):2087-2096.**

3: Weyer CT, Joone C, Lourens CW, Monyai MS, Koekemoer O, Grewar JD, van Schalkwyk A, Majiwa PO, MacLachlan NJ, Guthrie AJ. **Development of three triplex real-time reverse transcription PCR assays for the qualitative molecular typing of the nine serotypes of African horse sickness virus. J Virol Methods. 2015 Oct;223:69-74.**

4: Grewar, J.D., Weyer, C.T., Guthrie, A.J., Koen, P., Davey, S., Quan, M., Visser, D., Russouw, E., Bührmann, G. **The 2011 outbreak of African horse sickness in the African horse sickness controlled area in South Africa (2013) Journal of the South African Veterinary Association, 84 (1), art. no. Article 973.**

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