

Reception for the Opening of the Australian Biosecurity
Cooperative Research Centre National Workshop 2009
SPEECH by His Honour Mr Tom Pauling AO QC
Administrator of the Northern Territory
Government House –19 May 2009

Ladies and Gentlemen, I welcome you all to the Top End, to Darwin and to Government House. Despite the recent H1N1 influenza outbreak, I have resisted instructing the staff to serve you raw garlic and mangosteen juice as possible preventatives.

You will be aware that on 12th February this year we celebrated the 200th anniversary of Charles Darwin's birth. He did not visit these northern shores but did disembark in Sydney in 1836 and ventured 120 miles inland to Bathurst to *get a general idea of the country*. In his 1839 *Journal* Darwin noted: *It is remarkable how the same disease is modified in different climates... In some countries, foreigners and natives are as differently affected by certain contagious disorders, as if they had been different animals.... The varieties of man seem to act on each other: in the same way as different species of animals – the stronger always extirpating the weaker.*

Darwin certainly had an inkling of the need for biosecurity even though nothing was then known about the role of micro-organisms. He gave an example: *...the inhabitants of Pitcairn Island are firmly convinced after the arrival of every ship they suffer cutaneous and other disorders*. And, Darwin added: *sheep, which have been imported from vessels, although themselves in a healthy condition, if placed in the same fold with others, frequently produce sickness in the flock.*

Darwin's most renowned words came from his publication *On the origin of the Species by means of natural selection or the preservation of favoured races in the struggle for life*. In this he stated: *As many more individuals of each species are born than can possibly survive; and as, consequently, there is a frequently recurring struggle for existence, it follows that any being, if it may vary however slightly in any manner profitable to itself, under the complex and sometimes varying conditions of life, will have a better chance of surviving, and*

thus be naturally selected. From the strong principle of inheritance, any selected variety will tend to propagate its new and modified form.

Pallbearers at Darwin's funeral on 20 April 1882 included three of his friends who had also contributed greatly to science: Bachelor of Medicine and biologist Thomas Huxley, botanist Sir Joseph Hooker and evolutionist and naturalist Alfred Wallace who defined the key natural boundary between faunal regions of Asia and Australia – Wallace's Line.

Tonight I stand in the distinguished company of scientists of the 21st century, rather than the 19th. Scientists faced with modern-day challenges which, because the world is now so easy to traverse, are daunting, if not terrifying in the potential scale and speed of proliferation.

The scope of your forthcoming sessions underlines the vital importance of your role. There is now a better general understanding of the need for early detection to ensure the health and well-being of our nation's livestock. Or as an American veterinarian described it "*keeping the bad bugs off the farm*". Species from sand flies and mosquitoes to bats and birds infecting humans; pathogens and parasites transferring from pigs; health risks from outbreaks of horse flu, all require preparedness, vigilance and maintenance of best-management practices.

As far as influenza is concerned, the 1918-1919 virus killed more Americans in three months, 600,000 of them, than World War I, World War II, the Korean War, and Vietnam combined, but most know nothing about it. When Australians commemorated Anzac Day recently, how many were aware that flu was one of the biggest killers of that era? An estimated 21 million people worldwide died and many brought the infection back with them from Europe.

Here, along Australia's northern borders, we are a priority area for surveillance, risk assessment and identification. Strong regional partnerships are important, as is sound research. An island continent we may be, isolated from risk we certainly are not. In the northern hemisphere, the island nation of Great Britain has over the past two years witnessed airborne drift of infected midges bringing blue tongue disease across the Channel to infect ruminants.

Eight years ago it was a case of human instigated tragedy when pigs in Essex were most likely fed inadequately processed waste food products contaminated with Foot and Mouth Disease. European borders were urgently closed and animals vaccinated in an attempt to create a firebreak against the virus spreading.

Biosecurity equals constant protection of the economy, environment, and living things. But I think we should finish on a positive Northern Territory note.

Your program includes a field trip to Crocosaurus Cove to see the creatures that evolved millions of years before humans. Exciting work has been done by Dr Adam Britton here in the Top End and the Texan biochemist, Mark Merchant, on the excellent antimicrobial properties of crocodile blood which could protect humans in the future.

As Adam explains: *The crocodile has an immune system which attaches to bacteria and tears it apart and it explodes. It's like putting a gun to the head of the bacteria and pulling the trigger.* This even includes penicillin-resistant bacteria such as *Staphylococcus aureus*, Golden Staph.

Dr Britton and Dr Merchant have been carefully collecting blood from wild and captive crocodiles, both saltwater and freshwater species. After capturing a crocodile and strapping its jaws closed, the scientists extract blood from a large vein behind the head. *It's called a sinus, right behind the head, and it's very easy just to put a needle in the back of the neck and hit this sinus and then you can take a large volume of blood very simply,"* said Dr Britton.

I suppose that depends on what you personally rate as a simple scientific procedure. However, initial studies showed that the croc is a potential powerful killer of the HIV virus. Now if only we could only find an influenza resistant crocodile