Microbial diseases and products that shaped world history

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Typhus, with its brothers and sisters: plague, cholera, typhoid, dysentery, has decided more campaigns than Caesar, Hannibal, Napoleon and all the inspector generals of history. Hans Zinsser 1935[1,2]

The 25 April 2015 will commemorate the 100th anniversary of the Gallipoli landing honouring the memories of those who lost their lives at the shores of Gallipoli: **The legendary ANZACs and the Mustafa Kemal's Soldiers**. Heroic battles fought in a dignified fashion later in the peace times brought the three nations together and paved the way towards establishment of ever lasting friendships with deep respect for each other (Figure 1). To be part of the remembrance we have decided to produce a special issue bringing together contributions from Australia, New Zealand and Turkey.

Figure 1. Turkish soldier with an ANZAC prisoner.

I would like to thank the current and past presidents of the three Microbiological Societies: Prof. Paul Young (Australia), Prof. Steve Flint (New Zealand) and Prof. Nezahat Gürler (Turkey), and the Editor, Prof. Ian Macreadie together with the Editorial Board members of *Microbiology Australia* for their support from concept to the production of this issue.

Epidemics played a significant role in the outcomes of most conflicts resulting either in defeat or victory for either parties and subsequently shaped the World's history[2]. Examples include the Yellow fever (in Haiti) and Typhus (in Russia) that sealed the fate of Napoleon's army[2]. Microbial products also came to the aid of the mankind in the 20th Century and even Churchill's life was saved by then a new sulphonamide when he had pneumonia on his return from Cairo after meeting with Roosevelt[3]. This special issue will present examples of such infectious diseases and microbially derived drugs/therapeutic agents with historical importance for Australia, New Zealand and Turkey. Prof. Ian Gust will review one of those miracle drugs: the **penicillin** that saved millions of lives and resulted in the eradication of many infectious agents. Without Australian scientist Howard Florey and his co-workers such a miracle could not have eventuated. Similarly, achievements of Florence Nightingale who established the guidelines of modern sanitary practices and played a significant role in saving the lives of wounded soldiers during the Crimean War will be reviewed by Prof. B. Gürler.

Overviews of the historical developments of the discipline of microbiology and their respective Microbiology societies will be provided by Prof. Paul Young for Australia, Emeritus Prof. Tagg, Dr Austin, Dr Maguire (first PhD graduate of University of Otago) and Dr Smith (who sadly passed away in 2007) for New Zealand and Prof. N. Gürler for Turkey.

Infectious diseases with devastating effects throughout the centuries of human history will be overviewed: (i) Smallpox by Prof. Sadi Yenen, incredible efforts of late Prof. Frank Fenner towards global eradication of the disease by Dr George and Prof. Rawlinson; (ii) Malaria by Dr Taki and Prof. Smooker; (iii) Plague by Prof. Whitehall; and (iv) tuberculosis by Prof. Çavuşoḡlu.

Influenza with its different emerging forms (e.g. bird flu, swine flu) can still be deadly today. Prof. Mackenzie, Dr Kelso and Prof. Hampson will provide an overview on the disease. Assoc. Prof. Wilson, Dr Summers and Prof. Baker will discuss the effect of the

1918–1919 pandemic and the persisting lessons gained for pandemic control. Prof. Flint, Prof. Harper and Assoc. Prof. Wilson will tell us NZ Army's efforts in dealing with dysentery on the 'Fringes of Hell'. Similarly, Prof. Ahmet Başustaoğlu and Mr Sadık Emre Karakuş will provide information on the deaths related to infectious diseases in the WWI and Turkish War of Independence as well as the incredible efforts of then under-resourced Turkish medical personnel to fight against Typhus during these wars. Readers might note that Turkish articles will cover both the Ottoman Empire (1299–1923) and the Republican era (29 October 1923 onwards) of Turkey. Following the 1918 defeat of the Ottoman Empire, the Turkish War of Independence took place on the Anatolian plain ultimately resulting in the declaration of The Republic of Turkey under the leadership of Mustafa Kemal (29 October 1923). Following the establishment of the Republic, Turkey underwent a significant number of reforms for secularism and modernisation. One of these reforms included adaptation of surnames[4]. Distinguished medical expert of that era Emeritus Professor Tevfik Salim adapted the surname 'Sağlam' after the reforms (see Başustaoğlu and Karakuş and Karakuş and Başustaoğlu articles). Similarly Mustafa Kemal was given the surname 'Atatürk' by the Turkish Parliament (1934). Some of the Turkish articles will also cover instances of Ottoman script that was replaced by the Latin alphabet following the reforms.

Current global trends such as the (i) mobilisation of people, (ii) environmental changes such as temperature increase resulting in the subsequent vector expansions, or (iii) co-infection with HIV are resulting in transmission and re-emergence of long forgotten diseases (e.g. *Leishmania*)[5]. Although we have overwhelming information on the past and current infectious agents, yet to emerge infectious agents may manifest differently (e.g. first encounter with the Ebola virus). However, with the lessons learned from past epidemics and armed with the latest molecular advances and bioinformatics tools, we can now develop combat strategies against the global challenge of emerging and re-emerging infections such as tuberculosis.

My arrival in Australia coincided with the 75th Anniversary of the Gallipoli landing in 1990. The same year surviving veterans paid a pilgrimage to the shores of Gallipoli where they lost many of their mates. I had the honour of meeting few of them on their return at the ANZAC Parade (1991, Perth, Western Australia). **LEST WE FORGET** and foster collaboration between Australia, New Zealand and Turkey and take microbiology to new horizons for discovery of new and potent microbial products as arsenals against emerging and yet to emerge infectious diseases.

References

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Biography

Dr Kurtböke is a graduate of Middle East Technical University in Ankara, Turkey (BSc, 1982) and University of Liverpool, UK (PhD, 1990). She has been working in the field of biodiscovery and has been an active member of the international actinomycete research community since 1982 including conducting postgraduate studies at the University of Milan in Italy (1983–1986). She currently teaches in the fields of applied, industrial and environmental microbiology and biotechnology at the University of the Sunshine Coast, Queensland, Australia. She is also an active member of the World Federation of Culture Collections including serving as the Vice-President of the Federation from 2009 to 2012.