“Nothing could be more unfortunate than to divorce dental research in any way from the rest of scientific and, particularly, medical, research. The solution of the problems relating to dental disease demands more fundamental knowledge than is at present available. The organisation of this knowledge calls for investigations in which ... bacteriologists must participate.”

This quotation comes from what was commonly called the Treviot Committee’s report of 1946. To put the Treviot report into perspective, it was not until 10 years later that Orland showed that dental caries was an infectious disease and not until 1960 that Keys showed the cariogenic and transmissible nature of streptococci. Nearly sixty years have now passed since this report and it is clear that microbiologists have made a major contribution to the study of oral diseases and, in the process, have influenced general scientific exploration in many other areas of microbiology and immunology.

The year 1946 was also important in the Australian context, as it was in this year that The Institute of Dental Research was established in Sydney, mainly due to the foresight of the first Director, Neil Goldsworthy, who recognised the importance of dealing with the uncontrolled ravages of dental caries. This makes the institute the oldest named dental research institute in the world, albeit by only 3 weeks! Oral diseases are now the subject of research in most Australian states, with Victoria currently investing heavily in this area in the hope of achieving benefits from commercialisation of promising preventative strategies.

Like all other fields of scientific endeavour, microbial dental research is linked to the achievements and discoveries of many researchers in laboratories worldwide, particularly in the USA, Canada, UK, Europe, New Zealand and Japan. While the papers presented in this issue of Microbiology Australia are unashamedly highlighting aspects of Australian research, the three papers from authors based overseas give an indication of the broader international flavour by showcasing concepts of oral infections that have implications for our understanding other polymicrobial diseases.

It is the polymicrobial nature of dental caries and periodontal diseases that has, for the most part, made it difficult to target putative pathogens and selectively eradicate them. Total removal of dental plaque is not the answer, as these biofilms play a protective role in the oral cavity, not only by preventing the establishment and proliferation of potential life-threatening pathogens, but, in the case of teeth, by limiting enamel dissolution by acidic foods. New tools, including confocal microscopy, full cycle rRNA analysis and a growing awareness of the importance of differences in the phenotype of bacteria living in the planktonic and biofilm state, are giving rise to novel ideas for disease prevention while, at the same time, totally reshaping the way in which we view dental plaque and the species of bacteria associated with the onset and progression of disease.

On a more sombre note, it is one of the unfortunate aspects of Australian society that dental services do not come under the umbrella of Medicare. People very rarely die from dental caries and periodontal diseases, despite these diseases remaining the two most prevalent pandemic diseases of mankind with a high rate of morbidity. There is a general perception in many developed countries that dental caries has been eliminated. This is far from the truth, with the majority of disease being associated with a minority of the population. In Australia, comprehensive epidemiological data on disease status is lacking as most studies do not even include adults, despite an aging population. The current state of dental services and the aging of the dental profession has recently brought these issues to a head, with one Sydney newspaper making it headline news. Partly as a response to negative publicity and the concerns raised by The...
Association for the Promotion of Oral Health (APOH), the Standing Committee on Social Issues in the Legislative Council of NSW is currently holding an inquiry into dental services in NSW. It is due to table its report by March 2006. It remains a fact, however, that dental diseases are costly for the Australian community with poor oral health being Australia’s fifth largest health issue with $3 billion currently spent on dental health each year, over half of which is used to treat the consequences of tooth decay. Furthermore, recent research has suggested a link between poor dental health and other diseases such as cardiovascular disease, pre-term labour and strokes.

“There is a serious lack of research workers with dental qualifications, a state of affairs which cannot be attributed solely to the present unusual demand for dental practitioners in the community, but is almost certainly related to lack of funds... Coupled with this dearth of graduates imbued with a willingness and desire to devote themselves to research is the even more disconcerting disinclination on the part of the public, the healing professions in general, and those in authority, to admit, or perhaps even to recognise, either the alarming proportions of the problem of dental disease in the nation or the need for intensive and large scale investigations to help solve the problem.”

The irony is that this statement is as legitimate now as it was when Neil Goldsworthy penned it in 1947.

References
7. The Director’s Second Annual Report 1947-1948, The Institute of Dental Research, The United Dental Hospital of Sydney, Australia.