

Crossing divides - an ADRF perspective



In Australia and countries culturally close to us, the professions of dentistry and medicine have each evolved similarly, but separately. In other places, dentistry has grown as an off-shoot of medical education and practice. Each approach has had its advantages and disadvantages. In our case, professional education and organization rate highly; but a possible flaw manifests a general public mostly failing to grasp that the oral cavity relates in dynamic fashion with the rest of our being, from top to toe and from psyche to sex drive.

Paradoxically, the high success rates and spectacular results achievable in dentistry have reinforced a perception that this is the work of artisans rather than medical scientists. Expectations can be unrealistic, with unsuccessful outcomes regarded as evidence of fault or negligence. This contrasts with the public's attitudes to medical practice, where prescriptions for drugs, therapies or operations do not carry the same expectation of infallibility.

There are, however, two areas where medicine and dentistry intermingle seamlessly, having crossed the pseudo-divide. The first is oral and maxillofacial surgery; the other is dental research. A significant part of the work undertaken by Australian dental researchers spans basic fields that are common to all investigations of the human condition: molecular biology, immunochemistry, microbiology, genomics, proteomics and sundry 'ics' and 'ologies'. Many findings extrapolate into domains other than 'dental'. The oral cavity, because it encompasses similar tissue types, cellular responses and activities to other bodily organs, but is much more accessible than most, provides a convenient 'laboratory' for investigations having extended relevance.

ADRF GRANTS

In the grants to be supported this year by the Australian Dental Research Foundation, there are studies into mechanisms of tumour invasion, production of auto-antibodies, proteomic assessment of fibroblasts and osteoclasts, cell death mechanisms,

the influence of periodontal pathogens on atherosclerosis and rheumatoid arthritis, transcription regulation of phenotypes, macrophage gene activation, gene expression profiles in Type-2 diabetes, and immunochemical factors involved in dysplasia and squamous cell carcinoma. Each year brings forth projects that, like the above assemblage, have potentially widespread implications.

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More numerous, though, are studies that focus squarely on the dental arena. This does not mean that they are less sophisticated. For example: unraveling mysteries of the relationship between pathogens, periodontal tissues and host immune systems is a 'grail search' pursuit of the dental research community. ADRF supports many knights in shining laboratories. An intricate pattern is gradually becoming evident, and Australian researchers are very much at the forefront of the quest. Eventually these endeavours will shape the *modus operandi* for periodontal treatment. They will cross the divide between the possible and the improbable in present practice.

ADIA RESEARCH AWARD

However, results that can be applied in the clinical domain do not always entail long waits. Many ADRF-supported projects give promise of having immediate relevance. In this category are the two most recent winners of the ADIA Research Award, a prize given each year to the primary applicant of the top-ranked research project. In 2004, this went to Dr David Manton at the School of Dental Science in the University of Melbourne.

He is undertaking an *in vivo* investigation into the remineralization of 'white spot lesions' following orthodontic band removal, with a casein phosphopeptide – amorphous calcium phosphate (CPP-ACP) and sodium fluoride combination. His ingenious technique will employ quantitative light induced fluorescence and digital photography in order to avoid need for enamel biopsy. The prospect in view here is validation of an effective, quick-acting, easy-to-use, non-invasive treatment, utilizing existing equipment and having comparatively low cost. CPP-ACP is the active ingredient of Recaldent™ and Tooth Mousse™ and also features in several other current research studies.

The ADIA Research Award winner for 2005 is Dr Annetta Tsang. Her study examines a colourimetric test for plaque fermentation and its correlation with other risk factors. It takes into account the demineralizing effects of acid production by cariogenic bacteria as well as the buffering capacity of saliva and products of other plaque bacteria. The test is rapid, inexpensive and simple, thus portending a cost-effective chairside aid to caries risk assessment and patient education. Dr Tsang is currently a lecturer in the School of Dentistry at the University of Queensland. As additional biographical information, it can be noted that in the course of her academic journey she has crossed multiple divides. From 1996-1998 she took up ADRF undergraduate research grants (of which there are 16 available each year), so she has travelled from undergraduate to senior researcher – a source of considerable satisfaction to ADRF. She has also progressed from a primary to a postgraduate degree with the conferring of her PhD in 2002.

If these two award-winning programmes fulfil their early promise, is there a clinician in the land who would not wish to have them at his or her disposal? There are also many other auspicious studies currently being undertaken. Dental research in Australia is very active and of high quality. Practitioners everywhere will reap the benefit of innovations that come on-stream,

probably without realizing their source. ADRF is the largest and most consistent provider in Australia of funds for dental research, and the most ecumenical in their distribution.

"...an open invitation for persons from any walk of life to become Supporting Members of the Foundation..."

A QUIET ACHIEVER

The Foundation (a joint enterprise between the profession and industry) has been a quiet achiever, entirely self-sufficient for 35 years. That era must shortly come to an end due to an escalating pressure for grant money that outstrips available resources. This is evidenced in the sequence of 87 applications this year, 77 last year, 66 the previous year, and never more than 48 prior to that. It has made ADRF realize that it needs to become more widely known; no more hiding the light under a bushel. Besides, why should the Foundation's Directors be the only

ones to enjoy the pleasure and pride that comes with the ADRF territory, as has been the case until very recently? Changes to former statutory restrictions have made it possible to issue an open invitation for persons from any walk of life to become Supporting Members of the Foundation, though it is anticipated that the main response will come from within the ranks of dentistry itself. Already some members of the profession and of the industry have grasped the opportunity.

It is hoped that many other readers of the *News Bulletin* will be prompted to follow - by crossing the divide into what was previously unavailable. For details, please refer to the leaflet accompanying this issue. Note that, whilst proposing one variety of crossing, the Foundation is at the same time practising another: crossing fingers. Thus science meets superstition - in a good cause.

**Fred Widdop
Chairman
Australian Dental Research
Foundation**

See flyer enclosed with this issue for further details on becoming a supporting member of ADRF.

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