



Universitas 21: Dental Deans Meeting

Glasgow, 4-5 September 2003

Five Priority Research Areas

Eric Reynolds
Head, School of Dental Science
Faculty of Medicine, Dentistry and Health Sciences
The University of Melbourne



Respondents:

- **The University of Melbourne**
- **National University of Singapore**
- **University of Glasgow**
- **University of Queensland**

National University of Singapore

Five Priority Research Areas



<i>Not in order of priority</i> →	Priority Area 1	Priority Area 2	Priority Area 3	Priority Area 4	Priority Area 5
Topic	Regenerative Biology – Tissue Engineering	Laser Caries Prevention	Orofacial Pain Biology	Characterisation and Development of Biomaterials	3D Craniofacial Imaging and Visualisation
Description	Guided regeneration of skeletal tissues, periodontal ligament and pulpal tissues, and production of bone cells from stem cells.	Prevention of enamel and dentinal caries through non-invasive laser treatment of tooth surfaces.	Electron microscopic and immuno-histochemical study of pain biology for the development of pharmacotherapy of orofacial pain.	Characterisation and development of dental biomaterials for restorative dentistry and craniofacial rehabilitation.	Utilisation of computer vision technology to develop 3D imaging applications for morphometrics and simulations in clinical diagnosis, treatment, and education.
Key Words	Stem Cells Cell / Tissue Culture Scaffolds Biomimetics Osteogenesis Pulp Regeneration Angiogenesis	Biomodulation Biophotonics Caries prevention Laser-induction Organic matrix	Orofacial Pain control Synaptology Neuro-connectivity Neuro-transmission	Glass Ionomer cements Dental Composites Ceramics Textile composites Characterisation of material properties	3D medical imaging Image processing Image visualization Computed Tomography Surface Laser scanning MRI and X-Rays Image database
Key Researchers	Dr Cao Tong dencaot@nus.edu.sg Dr Varawan Sae-Lim rsdvs1@nus.edu.sg Dr Winston Tan omstanw@nus.edu.sg Dr Chay Siew Han pndcsh@nus.edu.sg	A/P Stephen Hsu pndhsus@nus.edu.sg	A/P Yeo Jin Fei omshead@nus.edu.sg	A/P Adrian Yap rsdvapuj@nus.edu.sg	A/P Kelvin Foong kelvinfoong@nus.edu.sg

University of Glasgow

Five Priority Research Areas



1. Three dimensional imaging for facial deformity - **Dr Ashraf Ayoub**
2. Prion diseases and dental instrument decontamination – **Dr Andrew Smith**
3. Oral infection and systemic disease – **Prof Jeremy Bagg**
4. Oral health care delivery for disadvantaged and special needs patient groups – **Dr Lorna MacPherson**
5. Dental sedation – **Dr Nigel Robb**

University of Queensland Five Priority Research Areas



Periodontal diseases

- Immunopathogenesis - **Prof GJ Seymour** (g.seymour@uq.edu.au)
- Relationship with periodontal disease and systemic diseases - **Prof GJ Seymour** (g.seymour@uq.edu.au)
- Clinical trials – natural history and epidemiology - **Dr MP Cullinan** (m.cullinal@uq.edu.au)

Craniofacial biology

- Odontogenesis, tooth eruption - **A/Prof AL Symons** (a.symons@uq.edu.au)

Candida

- Immunopathology - **A/Prof RB Ashman** (r.ashman@uq.edu.au)
- Clinical trials - **Dr CS Farah** (c.farah@uq.edu.au)

Dental biomaterials

- Advanced clinical technologies - **Prof LJ Walsh** (l.walsh@uq.edu.au), **Prof IA Meyers** (ian.meyers@uq.edu.au)

The University of Melbourne Five Priority Research Areas

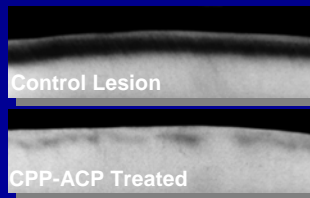
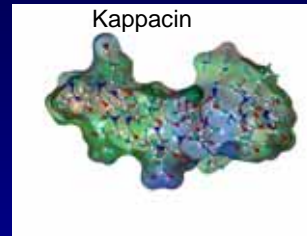


1. Oral Health Informatics and Clinical Trials - **Prof Mike Morgan** (m.morgan@unimelb.edu.au)
2. Periodontal Disease
- Microbial Pathogenicity - **Prof Eric Reynolds** (e.reynolds@unimelb.edu.au)
3. Cariology and Biomineralization - **Prof Eric Reynolds** (e.reynolds@unimelb.edu.au)
4. Dental Materials - **Prof Martin Tyas** (m.tyas@unimelb.edu.au), **Prof Harold Messer** (hbm@unimelb.edu.au)
5. 3D-Imaging Technologies - **Prof John Clement** (johngc@unimelb.edu.au)

Priority Area 3 - Cariology and Biomineralization



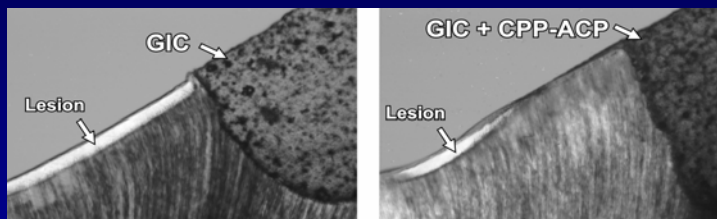
- CPP-ACP (Recaldent™)
- CPP-ACP + fluoride
- Antimicrobial peptide (Kappacin™)



Priority Area 4 - Dental Materials



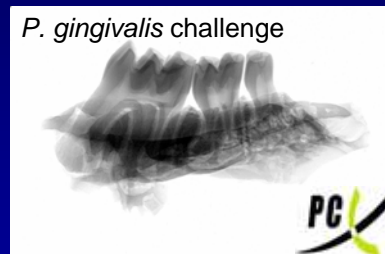
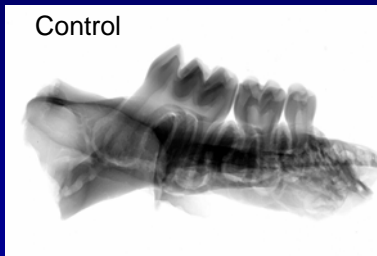
Novel restorative materials



Priority Area 5 – 3D-Imaging Technologies



Phase contrast X-ray imaging



List of Specialized Equipment



- GM animal facility
- Mass spectrometers
- Microarray technology
- Fiore 3D imaging

