IADR

International Association for Dental Research

52nd Annual Meeting of the Australian and New Zealand Division of the International Association of Dental Research

Sofitel Resort, Nadi, Fiji.

Organizing Committee

Welcome to the 52nd Annual Meeting

of the Australian and New Zealand Division of the International Association for the Dental Research at Denarau, Fiji

The Organizing Committee for the 52nd Annual Meeting Comprises:
(in alphabetical order)

Anumala Ram

Arpana Devi

Bernadette Pushpaangaeli (Chair, Scientific Committee)

Leenu Raju Maimanuku (Federal Councilor - Oceania Section of the ANZ Division of the IADR)

Mark Cumberbatch (Chair, Local Organizing Committee)

Seema Lal

Tevita Naivalu

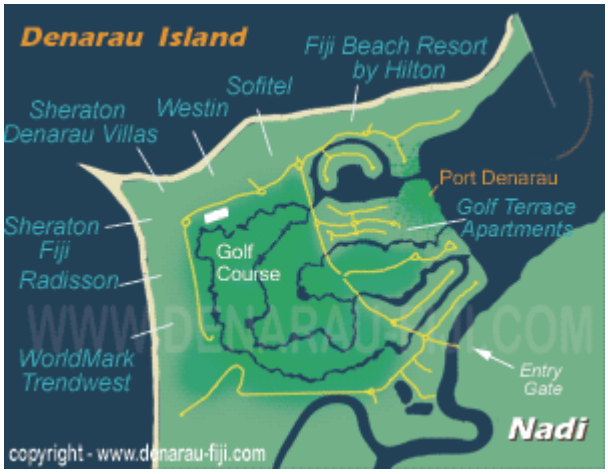
Colgate World of Care

We would like to thank Colgate as the major supporter for the meeting.

General Information

Location

Sofitel Spa and Resort is located on Denarau Island, Fiji's only integrated island resort , and is situated just 20 minutes from the Nadi International Airport on the



Western Coast of Viti Levu. The five star resort is set along absolute beachfront, adjacent to the world class Denarau Golf and Racquet Club. Known as the Gateway to the Mananuca Islands, it provides direct transit and access to many other international brand name resorts, day cruises and other activities such as game fishing, island hopping and dinner cruises whilst enjoying the tranquility of the Pacific sun set.

Port Denarau

Port Denarau Marina is a popular attraction on the island, as it is the starting point to take ferries and cruises to the breathtaking offshore island groups of Mamanuca and Yasawa. The transfer boats and catamaran ferries offer a number of tours and trips departing daily from the marina to the outer islands.

Enquire at the IADR registration desk at the Sofitel for tours for accompanying persons.

Meals and Dining

You will find lots of cafes and restaurants facing the waterfront in Port Denarau. Martintar, between the International airport and Nadi town, is home to a wide range of local and international culinary delights.

Transport

All Resorts and Port Denarau are connected by Denarau Shuttle Buses, Taxis and Tours and other means of transport that can be arranged at the hotel desk. Denarau's thatched bus better known as the "Bula Bus" regularly connects between the hotels and Port Denarau.

Table of Contents

President's Report

52nd Annual General Meeting Agenda

Registration and General Information

Meeting Schedule Sunday 23rd September

Opening Program

Scientific Program

- Program at a Glance
- Monday 24th September
- Tuesday 25th September
- Wednesday 26th September

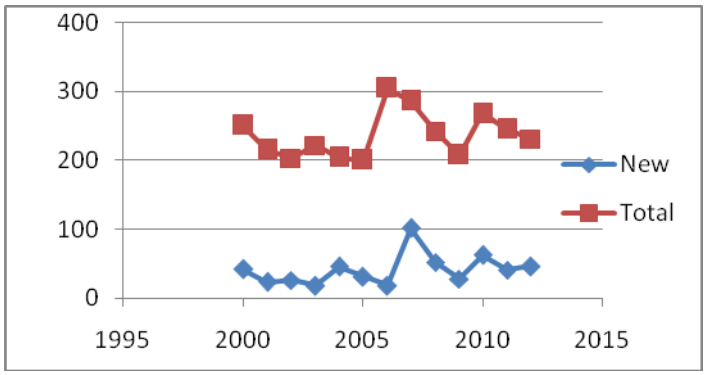
Abstracts

Report of President and Councillor	September 2012

As we meet for our 52nd Annual meeting the Division continues to work toward the global goals of the IADR which are: to advance research and increase knowledge for the improvement of oral health worldwide; to support and represent the oral health research community; and to facilitate the communication and application of research findings. Our Division has an enviable record of achievement in these areas but we face challenges arising from globalization, professional workloads, funding challenges and competing interests and demands.

To address these challenges, over the last few years the Council has worked on defining new strategic directions for the Division involving:

- Communication. This initially involved a regular Newsletter and more recently has included the launch of our website (iadranz.org.au)
- Providing support for our Sections. From 2013 this initiative will involve ensuring that funding from meeting profits and membership is passed on to Sections to ensure that local IADR activities can be held around the Division.
- Advocacy on behalf of oral health researchers. This is a responsibility which Council has been considering for some time. Direct representations to groups like the NHMRC has not always been fruitful but the for the first time our 2011 Council meeting included a joint session the Heads of Dental Schools (ACODS) to discuss common interests and strategies for ensuring that dental research is "on the agenda" at every level. This initiative will continue in 2012 and new opportunities will also be explored.
- Growing our membership. In recent times our membership has varied between 200 and 300 depending mostly on the location of the General Session.



Membership has increased significantly when the international meeting is held in Australia (eg 2006) or in an attractive location (eg Barcelona 2010.) Otherwise membership fluctuations involve an annual turnover of less than 50 members who tend to be either students or residents of the region in which the Division meeting is being held. Maintaining these members is a challenge which the Council intends to address with support from the central IADR staff.

- Meetings. The addition of more remote meetings (2013 – Bangkok, 2016 – Seoul) as part of our Regional commitment presents some challenges. Regional meetings could be more expensive to attend than the General Session and the increase in the time between the Divisional meetings being held in each of the local Section also removes an opportunity for Sections to attract attention to their activities. The Division Council and the Regional Board are both addressing these issues.
- History. The 50th Annual Meeting in Kiama drew our attention to the need to maintain records of the activities and achievements of the Division. Council is currently collecting information which will, in time, be available on the website.

To facilitate our endeavours, the role of the Division Executive has been more clearly defined with the Vice President taking responsibility for liaising with the Local Organizers of the Annual Meeting and for the website, the Secretary having responsibility for communication and the Treasurer dealing with budget and finance issues. The Executive has held regular "Skype" meetings to manage its business.

In addition, the President and Vice President have the privilege of representing the Division on the **IADR Council**. The business of the Council is transacted at a half-day meeting prior to the General Session. A large part of the 300-plus page agenda is formalities such as receiving reports from the 25 Divisions, 14 non-divisional sections, and 21 research groups but there was also some significant business which included:

- selection of **San Francisco** as the site for the **2017 General Session and Exhibition**
- the formation of the **Tunisian** and **Lebanese** Sections within the Africa Middle East Region of IADR and approving the Constitution and Bylaws for the Latin American and North American Regions.
- Establishing one new Scientific Group (**Pediatric Oral Health Research Scientific Group)** and two new networks, the **Global Oral Health Inequalities Research Network (GOHIRN) and the Clinical and Translational Science Network (CTSN). These networks are intended to compliment to work of the discipline-based groups by providing a focus for interdisciplinary activates.**

- endorsing nominations for IADR Vice-president (2013-2014):
  - · Ana Maria Acevedo – Central University of Venezuela, Caracas, Venezuela
  - · Marc Heft – University of Florida, Gainesville, USA
  - · Mariano Sanz – Universidad Complutense de Madrid, Madrid, Spain
- Considering membership which has grown from 9868 in 2000 to 11527 in June 2012. The biggest growth in membership has been in the Latin American Region where the Brazilian Division, for example, has grown from 310 members to 2477 over the last decade. Over a similar time the American Division has reduced in size from 4440 in 2002 to 3349 in 2012 and the Division has reduced from 733 to 409 members. Our Asia Pacific Region has 2841 members (ANZ – 245, China - 200, India – 150, Japan – 1555, Korea – 114, Mongolia – 10, Pakistan – 41, SE Asia – 519) is the second largest after the North American Region which has 4085 members.
- Approving the IADR Budget for 2013 which appears to have recovered from the impact of the global financial crisis and is largely influenced by meeting profits.
- Acknowledgment of the work of ANZ Past President Wendell Evans, who was completing his term as a Regional Board Member representing the Asia-Pacific Region. Prof Byong-Moo Min from Korea will take over in this role.

Of these establishing the **Global Oral Health Inequalities Research Network (GOHIRN) represents the culmination of several years work guided by Past-President David Williams and involving Wendell Evan and others, aimed at establishing research directed at establishing the need for or actually addressing Oral Health Inequality as an international priority.**

Finally I should take the opportunity to congratulate and thank the Local Organizing Committee for their efforts in arranging our 52nd Annual meeting and to express the appreciation of all members to the Executive (Camile Farah, Linda Slack-Smith and Matthew Hopcraft) for their hard work and Section Councillors for the contribution that they make to the Division.

Lindsay Richards
President

The ANZ Section Executive Committee:

Secretary	Professor Linda Slack-Smith
Treasurer	Associate Professor Matt Hopcraft
Vice President	Associate Professor Camile Farah
President	Professor Lindsay Richards
Councillors:	
Adelaide	Dr Toby Hughes
Brisbane	Dr Pauline Ford
Melbourne	Professor David Manton
New Zealand	Associate Professor Karl Lyons
Oceania	Dr Leenu Maimanuku
Perth	Associate Professor Jaafar Abduo
Sydney	Associate Professor Wendell Evans

Registration

Registration will take place on Sunday 23rd September from 6.00p.m. preceding the Colgate Reception at 6.30pm, and at specified times each day prior to the commencement of the scientific program.

Meals

Morning teas, lunches and afternoon teas on Monday and Tuesday, and morning tea and lunch on Wednesday will be provided and is included in your registration. Sunday night welcome cocktail and the Tuesday evening conference dinner is also included in your registration.

Tuesday night dinner is at the School of Catering, Fiji National University, Queen's Road, Namaka campus, Nadi.

Speakers

All presenters must ensure that their presentations have been loaded onto the computer for data projection prior to the commencement of the respective sessions.

Format of Presentations

For the benefit of those wishing to switch between concurrent presentations, the program schedule times will be strictly adhered to.

Oral Presentations

Presenter will have 10 minutes to deliver their presentations to be followed by up to 5 minutes for questions.

Poster Presentation

Posters will be displayed on scheduled days from 9.00a.m. to 5p.m.

The poster size will be a maximum of 1.75 metre tall and maximum 1.00 metre wide.

Scientific Program

IADR ANZ Division 2012

Denarau, Fiji

23 – 26th September

Time	SUNDAY 23 September	MONDAY 24 September			TUESDAY 25 September		WEDNESDAY 26 September	
8.00-8.30		Registration			Registration		Registration	
8.30-9.30		**Conference opening** Opening address: Professor Ian Rouse			**9.00am-10.00am** **Colgate Imminent Speaker:** **Professor Gregory Seymour** "Understanding periodontal disease: 40 years of immunology".		**9.00am-10.00am** Keynote: **Gloria Mejia** A population approach to Oral Health	
9.30-10.30		Keynote: **Professor Mary J MacDougall** Global Approaches to dental and Craniofacial Disorders						
10.30-11.00		Morning Tea			10.00am Morning Tea/ Poster Display		10.00am Morning Tea/ Poster Display	
11.00-12.30		**Traditional Welcome Performance:** **Dental Students from Oceania Section** **Garlanding: IADR executive councilors** **IADR- ANZ Annual General Meeting** **Mid-AGM: Cultural Item** **AGM closed session**			**10.30am** **Symposium** *A population approach to Oral health (ARCPOH)*	**10.30am** **Oral session 3** Periodontology **Oral session 4** Microbiology and Implantology	**10.30am** **Oral session 8** Dental Public Health	**10.30am** **Oral Session 9** Peadiatric, Education and Fear
		Lunch 12.30-1.30			Lunch 12.30am-1.30pm		Lunch 12.00noon – 1.00pm	
1.30-3.00	**Colgate Award** **Junior** **Closed judging starts 2.20pm**	**Symposium** Craniofacial Biology	**Oral session 1** Preventive and Restorative	**Colgate Award** **Senior** **Closed judging**	**Oral session 5** Public Health	**Oral session 6** Oral cancer	**Symposium** **Education: Learning Experiences of Students (FNU)**	
		Afternoon Tea 3.00-3.30			Afternoon Tea 2.30pm-3.00pm			
3.30-5.00	**Colgate Award** **Junior** **Closed judging**	**Symposium** Craniofacial Biology	**Oral session 2** Endodontics	**Colgate Award** **Senior** **Closed judging**	**Symposium** The Future of Dental Education including the role of Research (ACODS)	**Oral session 7** Information Technology and Jaw Function		
	6.00 Registration 6.30: Cocktail				7.00- Conference Dinner			

Sunday, 23rd September, 2012

Time	Program
10.00am -4pm	Australasian Council of Dental Schools - closed session
1.00pm-4.00pm	IADR ANZ Division Council meeting - closed session
1.00pm-5.00pm	Colgate Competition Junior Category – closed judging
10.00am to 12noon	Are you interested in oral health research methods?

Researchers from the University of Adelaide's Australian Research Centre for Population Oral Health (ARPOH) are inviting researchers from all fields of dentistry – basic, clinical, and population - to become involved in creating a special interest group in Oral Health Research Methods.

The purpose of the special interest group meeting is to enhance communication between oral health researchers interested in methodological issues and to plan group strategies for the continued improvement of the design, conduct and analysis of oral health research.

If you are unable to attend the meeting and/or would like further information, please contact:

Gloria C. Mejia

Research Fellow
Australian Research Centre for Population Oral Health (ARCPOH)
School of Dentistry, The University of Adelaide
Adelaide, Australia

Tel: +61 8 8313 3778

Email: gloria.mejia@adelaide.edu.au

Sunday 23th September, 2012

Colgate Award Poster Session (Junior) Time: **2.30 – 5.00 p.m**

Closed Judging Session Coordinator: Suneil Nath

Time:	Paper/ Presenter	Abstract No.
2.30pm	**Epigenetics of Dental Development** **S.D. WILLIAMS**, T. HUGHES, and G. TOWNSEND, School of Dentistry, University of Adelaide, Adelaide, Australia	**169901**
2.45pm	**From Babies to Retirement: What microbes lurk in our mouths?** **P.D. SUNDARESAN**[1], C.M. MURRAY[1], K.J. WADE[1], M.P. CULLINAN[1], B.K. DRUMMOND[1], J.L. STANTON[2], G.J. SEYMOUR[1], and N.C.K. HENG[1], [1]Sir John Walsh Research Institute, University of Otago, Dunedin, New Zealand, [2]Anatomy, University of Otago, Dunedin, New Zealand	**169898**
3.00pm	**Over Expression of BMI-1 and ABCG2 in Oral Cancer** **A. MAJOR**[1], A.J. DALLEY[2], and C.S. FARAH[2], [1]School of Dentistry, University of Queensland, Brisbane, Australia, [2]Oral Cancer Research Program, University of Queensland Centre for Clinical Research, Herston, Australia	**169893**
3.15pm	**How readable are Australian Paediatric Oral Health Education Materials?** **A.S.F. LAM**, Faculty of Dentistry, University of Sydney, Westmead, Australia, Z. KARAMI, Faculty of Dentistry, University of Sydney, Surry Hills, NSW, Australia, and A. ARORA, Population Oral Health, University of Sydney, Westmead, Australia	**169808**
3.30pm	**Flow Cytometric Co-expression of Bmi-1 & ABCG2 Identifies OSCC** **L.P. PITTY**[1], A.J. DALLEY[2], and C.S. FARAH[2], [1]School of Dentistry, University of Queensland, Brisbane, Australia, [2]Oral Cancer Research Program, University of Queensland Centre for Clinical Research, Brisbane, Australia	**169892**
3.45pm	**Regulation of Immune Cells in Oral Lichen Planus** **F.A. FIRTH**, L. FRIEDLANDER, V. PARACHURU, T. KARDOS, A. RICH, and G. SEYMOUR, University of Otago, Dunedin, New Zealand	**169862**

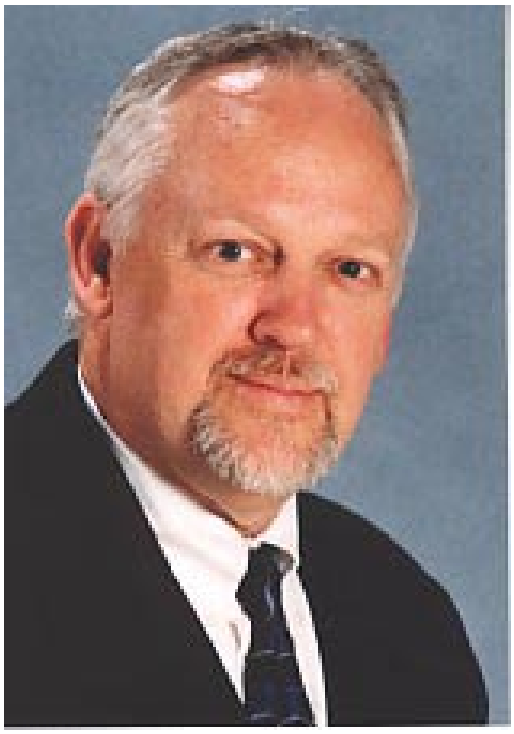
Time:	Paper/ Presenter	Abstract No.
4.00pm	**Chemical compositions of enamel associated with early erosion and remineralisation** **E.D. PORTS**[1], S. RANJITKAR[1], C. HALL[2], J. DENMAN[3], J. KAIDONIS[1], and G. TOWNSEND[1], [1]School of Dentistry, University of Adelaide, Adelaide, Australia, [2]Mawson Institute, University of South Australia, Mawson Lakes, Australia, [3]Ian Wark Research Institute, University of South Australia, Mawson Lakes, Australia	**169891**
4.15pm	**Early detection of oral cancer by oral health practitioners** **K.R. ALLEN**, School of Dentistry, The University of Queensland, Brisbane, Australia, P.J. FORD, School of Dentistry, University of Queensland, Brisbane, Australia, and C.S. FARAH, UQ Centre for Clinical Research, The University of Queensland, Herston, Australia	**169887**
4.30pm	**Identifying individual Possums using their oral bacteria** **C. BENN**[1], J. KIESER[1], J. UPRITCHARD[1], G. TOMPKINS[1], J. ROSS[2], and N. HENG[1], [1]Sir John Walsh Research Institute, University of Otago, Dunedin, New Zealand, [2]Faculty of Agriculture and LIfe Sciences, Lincoln University, Lincoln, New Zealand	**169857**
4.45pm	**The Association Between *Fusobacterium nucleatum* subspecies and Adverse Pregnancy Outcomes** **S. STOCKHAM**[1], C. ROBERTS[2], C. MARCHANT[3], and P. ZILM[1], [1]School of Dentistry, University of Adelaide, Adelaide. South Australia, Australia, [2]Obstetrics & Gynaecology, University of Adelaide, Adelaide. South Australia, Australia, [3]Colgate Australian Clinical Dental Research Centre, University of Adelaide, Adelaide. South Australia, Australia	**169807**
5.00pm	**Exploring the relationship between Body-Mass-Index-for-Age and Cervical-Vertebral-Maturation of Adolescents** **C.K. YEAP**[1], M. GOONEWARDENE[1], and C. BUDGEON[2], [1]School of Dentistry, University of Western Australia, Crawley, Australia, [2]School of Mathematics and Statistics, University of Western Australia, Crawley, Australia	**169599**

Posters from this closed session will be made available for viewing in the general session Tuesday and Wednesday.

Monday 24th September, 2012

Garlanding

Opening Remarks



Professor Ian Rouse

Research and Development in the Pacific Island Countries, *"the Blue Continent"*

Professor Rouse comes from a diverse background and significant experience in Medical Research and Public Health in both the University and the Government sectors in Australia and the United States of America. He has a strong commitment to quality in Higher Education and to a management style which recognizes the importance of, and attempts to encourage and develop every person in the organization. He was awarded his doctorate by the University of Western Australia in 1982, in Medicine- Nutritional Epidemiology and was a postdoctoral fellow at the Harvard Medical School, School of Public Health, Boston 1984-1986. He is currently the Dean of the College of Medicine, Nursing and Health Sciences at the Fiji National University.

Plenary Lecturer 9.30am-10.30am

Professor Mary Macdougall

Global approaches to dental and craniofacial disorders

Mary MacDougall is President of IADR. An active member of IADR since 1987 she has served on numerous committees and as president of the American Association for Dental Research. She is an internationally respected research leader in craniofacial developmental biology and dental genetics. Her research focuses on determining the molecular basis and mechanisms associated with human dental genetic disorders that alter tooth number, formation and hard tissue structure, as well as formation of dental-specific cell types that form specialized extracellular matrices for tooth regeneration. In 2001, she received the IADR Distinguished Scientist Award in Pulp Biology Research and in 2005 the IADR Distinguished Scientist Award in Mineralized Tissue Research. She went on to receive the AADR National Student Group Mentorship Award in 2003 and the AADR Distinguished Mentorship Award in 2010. In 2006, she was honored as an American Association for the Advancement of Science fellow. She earned her Ph.D. in craniofacial biology at the Ostrow School of Dentistry of the University of Southern California and her bachelor's degree in biochemistry at the University of California, San Diego. She is currently associate dean for research, James R. Rosen Chair of Dental Research, professor in the Department of Oral and Maxillofacial Surgery, director of UAB's Institute of Oral Health Research and the Global Center for Craniofacial, Oral and Dental Disorders at the University of Alabama at Birmingham School of Dentistry.

52nd Annual General Meeting Agenda

Day: **24th September** Time: **11.00 a.m.**

Traditional welcome and garlanding of Division Executive Committee
Entertainment by Dental Students from Oceania

1. Apologies

2. Minutes, 51st Annual General Meeting, Melbourne, VIC

3. Matters arising from the minutes
   a. Regional meetings
   b. Membership

4. Correspondence

5. Divisional Presidents Report and IADR Councillors Report

Agenda 6-11 IADR Members only

Break: Entertainment by students

6. Treasurer's Report

7. Election of Office Bearers

8. Matters arising from the IADR (ANZ Division) Council Meeting

9. Recipients of Divisional awards for 2011

10. Venues for future Divisional meetings

    i. 2013 (APR) Bangkok, Thailand
    ii. 2014 New Zealand
    iii. 2015 Brisbane
    iv. 2016 (IADR General Session and APR Meeting) Seoul, South Korea
    v. 2017 Adelaide
    vi. 2018 Perth

11. Any other business

51st Annual General Meeting Minutes

1. **Apologies**
   Toby Hughes, Wendell Evans, Carl Lyons, Chris Peck, Camile Farah

2. **Minutes, 50th Annual General Meeting, Kiama, NSW 2010**
   Accepted

3. **Matters arising from minutes**
   Colgate agreement renewed – similar to previous, increased by CPI, expires in 10 years. New
   schools with 10 or more IADR members that want to form new sections will be supported. In the meantime they are encouraged to link with nearby sections.

4. **Correspondence**
   Correspondence was related to Colgate renewal.

5. **Divisional President's Report and IADR Councillors Report**
   President's report (circulated in conference program)
   Council Report (Matt Hopcraft and Lindsay Richards – Council) – In recent election– only 39% ANZ members voted in that election which makes it hard for ANZ members to get elected. Future meetings ANZ co sponsor in 2016 Seoul. Barcelona meeting returned surplus around 400k. Turnaround time JDR reduced, acceptance 16%.

6. **Treasurer's Report**
   Advised we have 219 members (of those 33 students, 150 full members, 36 retired)

   Income in 2010 $33,136 (sponsorship came in later than usual).
   Expenses mostly travel grants and annual meeting costs.

7. **Election of Office Bearers**
   Elected Linda Slack-Smith as secretary
   Elected Camile Farah as vice president

8. **Matters arising from the IADR (ANZ Division) Council Meeting**
   Declining membership (noted from central office 23%). Lack of activity, lack of relevance, lack of value for money. Aim to make a little more active at section level and improve funding at sections e.g. support research days etc. More members would mean more money to that section.

   Recipients of divisional awards to be announced at conference dinner but included in minutes

   Colgate Travel Grant winners

QLD	Rachel Dunn & Sarah Chaw
NSW	Ming Mai & Simon Dingsdag
VIC	Gareema Prasad & Jacqui Heath
SA	Benlee Yap & Jonathan Christo
Fiji	Ashneeta Prasad
NZ	Inah Kim & Huong Ho

   IADR ANZ division Travel Grant winners

Vic	Tri Nguyen & Shaobing Fong
NSW	Dina Bedros & Sohail Memon
QLD	Lucia Dixon & Angela Gao
Fiji	Sharoon Lata & Ana Buliasewa
NZ	Doreen Ng & Debra Li

9. **Recipients of Divisional Awards for 2012**

Alan Docking:	Richard Cannon
Joan Chong:	T Somasuwan
Preventive:	Lyndie Foster-Page
Colgate Senior:	Shao Bing Fong
Colgate Junior:	Jacqui Heath

10. Venue and date for the 2012 Division meeting and other divisional meetings

The future IADR ANZ Division Meeting dates were corrected to account for APR meetings

Future IADR ANZ Division Scientific Meeting Sites:

2012 APR Fiji;
2013 (APR) Thailand (Now Bangkok rather than Phuket)
2014 New Zealand;
2015 Brisbane;
2016 APR Seoul
2017 Adelaide;
2018 Perth (Note APR meetings will be held every 3-5 yr)*

11. Any other business

Concern raised re the lack of IADR ANZ meetings in Australia and that the expense of travel and lack of local meetings may affect membership and student opportunity to present. Not sure if still clause to pull out of the APR agreement. Suggested option to switch NZ and Brisbane meetings.

Notes

**these have since changed (this change has been agreed by Council)*

IADR ANZ meetings are planned in:

2013 - Bangkok, Thailand - Asia Pacific Regional Meeting
2014 - Brisbane
2015 - New Zealand
2016 - Seoul, Korea – International Meeting and an Asia Pacific Regional Meeting
2017 - Adelaide
2018 - Perth

Monday 24th September, 2012

Symposium: **Craniofacial Biology**

Time: **1.30 – 4.30 p.m**.

Co-conveners: **Prof Grant Townsend and Dr Toby Hughes**

Paper/ Presenter	Abstract No.
Genes, teeth and faces: 30 years of studying twins **Professor Grant Townsend**	169371
Diversity and Complexity: Dental Anomalies and Health Inequalities **Professor Alan Brook**	169855
Complex dental Phenotypes – influences from family data **Dr. Toby Hughes**	169802
Determining how genetic factors influence variation in the oral microbiota and drive disease in early childhood **Dr. Christina Adler**	169859
Epigenetics: unravelling the molecular mechanisms that underpin dental development **Mr. Scott Williams**	169854
Dental phenomics – a new research direction **Dr. Sarbin Ranjitkar**	169888

Oral Session: **1**

Topic: **Preventive and Restorative**

Chair: J.Ralovo Time: **1.30pm – 2.45pm**

Time:	Paper/ Presenter	Abstract No.
1.30pm	**Remineralization Effect of GIC with Release of Calcium and Phosphate** **S. HIROSE**, F. FUSEJIMA, and T. SAKUMA, Research & Development Dept, GC Corporation, Tokyo, Japan	**169667**
1.45pm	**Preclinical Development of an Indicator that Specifically Labels Porous Hydroxyapatite** **J.E. MANGUM**, Department of Pharmacology, University of Melbourne, Parkville, Victoria, Australia, and M. HUBBARD, Department of Paediatrics, University of Melbourne, Melbourne, Australia	**169800**
2.00pm	**Rubber Dam Use and Training Among Undergraduate Students in Fiji** **A.L. PRASAD**, Department of Oral Health, Fiji National University, Suva, Fiji	**169894**
2.15pm	**Effect of tooth bleaching on the mechanical properties of enamel** **H.M. ELFALLAH**, L.E. BERTASSONI, and M.V. SWAIN, Biomaterials, University of Sydney, Sydney, Australia	**169941**
2.30pm	**Chemical compositions of enamel associated with early erosion and remineralisation** **E.D. PORTS**[1], S. RANJITKAR[1], C. HALL[2], J. DENMAN[3], J. KAIDONIS[1], and G. TOWNSEND[1], [1]School of Dentistry, University of Adelaide, Adelaide, Australia, [2]Mawson Institute, University of South Australia, Mawson Lakes, Australia, [3]Ian Wark Research Institute, University of South Australia, Mawson Lakes, Australia	**169891**

Monday 24th September, 2012

Oral Session: **2**

Topic: **Endodontics** Time**: 3.30 – 4.45pm**

Chair: L. Chai; Co-chair: A.Devi

Time:	Paper/ Presenter	Abstract No.
3.30pm	**Retrospective study of orthograde-endodontics in a NSW tertiary referral hospital** B. LAWRENCE[1], R. SUTTON[1], C. YU[1], and **P. DUCKMANTON**[2], [1]Endodontics, University of Sydney, Surry Hills, Australia, [2]Endodontics, Sydney Dental Hospital, Surry Hills, Australia	169905
3.45pm	**Endodontic Markers Amongst Victorian General Practitioners** T. TAH-WARE[1], M. NEWMAN[1], and **P. DUCKMANTON**[2], [1]Endododntics, University of Sydney, Surry Hills, Australia, [2]Endodontics, Sydney Dental Hospital, Surry Hills, Australia	169902
4.00pm	**Laser shockwaves in endodontic irrigating fluids for removal smear layer** **L. CHAI**, School of Dentistry, University of Queensland, Brisbane, Australia, M. LAGEMANN, The University of Queensland, Brisbane, Australia, R. GEORGE, School of Dentistry and Oral Health, Griffith University, Gold Coast, Australia, and L. WALSH, University of Queensland, Brisbane, QLD, Australia	169117
4.15pm	**Tooth Discolouration when using Odontopaste as a root canal medicament** **A.A. DEVI**, R. LAL, and M. CUMBERBATCH, Department of Oral Health, College of Medicine, nursing and health sciences, Suva, Fiji	169885
4.30pm	**Crack Formation During Apicectomy: Operating Microscope Observations and SEM Images** **N. CHANDLER**[1], Y.A. KIM[1], G.P. HERBISON[2], C.H. HAUMAN[1], and L.T. FRIEDLANDER[1], [1]School of Dentistry, University of Otago, [2]Department of Preventive and Social Medicine, University of Otago	169312

Monday 24th September, 2012

Colgate Award Poster Session (Senior) Time: **1.30 – 5.00 p.m**

Closed Judging Session Coordinator: Bindiya Chauhan

Time:	Paper/ Presenter	Abstract No.
1.30pm	**Ancient DNA from dental calculus records past dietary changes** **C.J. ADLER**, Dentistry, University of Sydney, Westmead, Australia	**169860**
1.45pm	**Endoplasmic Reticulum Stress in Periodontal Inflammation and Russell Body Presentation** **B.L. SEO**, D.E. COATES, A. RICH, T. MILNE, J. LEICHTER, and G.J. SEYMOUR, Sir John Walsh Research Institute, University of Otago, Dunedin, New Zealand	**169256**
2.00pm	**Triage Data and Weather of Melbourne** **A. ANWAAR**[1], M. TENNANT[1], and E. KRUGER[2], [1]Centre for Rural and Remote Oral Health, University of Western Australia, Perth, Australia, [2]University of Western Australia, Perth, Australia	**169980**
2.15pm	**Effect of tooth bleaching on the mechanical properties of enamel** **H.M. ELFALLAH**, L.E. BERTASSONI, and M.V. SWAIN, Biomaterials, University of Sydney, Sydney, Australia	**169941**
2.30pm	**Early-childhood-caries in Qatar: Prevalence and Proposal for Improvement** **A. ALKHTIB**, L. MESSER, M. TEMPLE-SMITH, M. PIROTTA, and M. MORGAN, University of Melbourne, Melbourne, Australia	**169920**
2.45pm	**Characterisation of the novel *Porphyromonas gingivalis* transcriptional regulator PgMntR** **H.B. SAID GULAM KHAN**, L. ZHANG, C. BUTLER, S. DASHPER, and E. REYNOLDS, Melbourne Dental School, University of Melbourne, Parkville, Australia	**169899**
3.00pm	**Does Cervical Cancer Predispose Females to Oral Cancer?** **F. DOST**[1], P.J. FORD[2], and C.S. FARAH[1], [1]University of Queensland Centre for Clinical Research, Oral Oncology Research Program, Brisbane, Australia, [2]School of Dentistry, University of Queensland, Brisbane, Australia	**169886**
3.15pm	**Bisphosphonate and geranylgeraniol regulate angiogenic genes in human gingival fibroblasts** **S. ZAFAR**, D. COATES, G. SEYMOUR, B. DRUMMOND, T. MILNE, and M. CULLINAN, Sir John Walsh Research Institute, University of Otago,	**169870**

	Dunedin, New Zealand	
3.30pm	**Effect Of Neuropathic Orofacial Pain On Jaw-Muscle Activity During Chewing** **M.S. MEMON**, Faculty of Dentistry, University of Sydney, T. WHITTLE, Jaw Function and Orofacial Pain Research Unit, Centre for Oral Health, University of Sydney, M. BHASKARACHARYA, Jaw Function & Orofacial Pain Research Unit, University of Sydney, C. PECK, Faculty of Dentistry, University of Sydney, and G. MURRAY, Jaw Function and Orofacial Pain Research Unit, University of Sydney.	**169878**
3.45pm	**Defective repair signalling in oral SCC cell-lines following DNA damage** **M. JESSRI**, A.J. DALLEY, and C.S. FARAH, Oral Oncology Research Group, University of Queensland Centre for Clinical Research, Brisbane, Australia	**169864**
4.00pm	**Support Needs and Quality of Life in Oral Cancer** **K.A. MOORE**[1], P.J. FORD[1], and C.S. FARAH[2], [1]School of Dentistry, University of Queensland, [2]UQ Centre for Clinical Research, The University of Queensland	**169861**
4.15pm	**Preclinical Development of an Indicator that Specifically Labels Porous Hydroxyapatite** **J.E. MANGUM**, Department of Pharmacology, University of Melbourne, Parkville, Victoria, Australia, and M. HUBBARD, Department of Paediatrics, University of Melbourne	**169800**
4.30pm	**Understanding What Drives Dentists To Work With Disadvantaged Groups** **S.P. GARDNER**[1], K. ROBERTS-THOMSON[1], T.A. WINNING[2], and R. PETERSON[3], [1]University of Adelaide, [2]University of Adelaide Adelaide, Australia, [3]School of Medical Sciences, University of Adelaide	**169292**
4.45pm	**A new dental referral pathway for frail community-dwelling older adults** **H. TAN**[1], A.J. SPENCER[1], A. LEWIS[2], and J. WEEKS[2], [1]ARCPOH, School of Dentistry, The University of Adelaide, [2]South Australian Dental Services, Adelaide, Australia	**169261**

Posters from this closed session will be made available for viewing in the general session Tuesday and Wednesday.

Plenary Lecturer 9.00am-10.00am
Colgate Imminent Speaker

Professor Gregory Seymour

Understanding periodontal disease: 40 years of immunology

Professor Greg Seymour has been the recipient of a number of national and international research prizes including the Sir Wilfred Fish prize of the British Society for Periodontology, the Alan Docking Award of the ANZ Division of the IADR, the IADR Distinguished Scientist Award for Basic Research in Periodontal Disease and the Fairfax Reading Prize of the University of Sydney. In 2003 Professor Seymour was awarded Honorary Life Membership of the British Society for Periodontology and in 2004 he became a Member of the Order of Australia for services to Dentistry through Periodontal and Immunology research. He is is a Fellow of the Royal College of Pathologists in the UK, a Fellow of the Faculty of Oral & Maxillofacial Pathology of the Royal College of Pathologists of Australasia and a Fellow of the Royal Australasian College of Dental Surgeons. In 2008 he was elected to Fellowship of the Royal Society of New Zealand in recognition of distinction in research and the advancement of science. Professor Seymour is only the second dentist to be elected as a Fellow of the Royal Society of New Zealand. He was educated at the University of Sydney obtaining a BDS (Hons) in 1971 and an MDSc in 1974. He was then appointed as a Lecturer in Pathology at the Royal Dental Hospital, University of London and undertook his PhD in Immunology, which he obtained from the Faculty of Medicine, University of London in 1978. He has authored or co-authored over 335 peer-reviewed publications in the scientific literature primarily in the areas of immunology and immunopathology. He is currently Dean of the Faculty of Dentistry at the University of Otago, New Zealand and Co-Director of the Molecular Immunopathology Research Group in the Sir John Walsh Research Institute at the University of Otago. His current research interests include the immuno- and molecular pathology of periodontal disease and other oral mucosal diseases including oral and odontogenic tumours. In addition, he is a recognised world authority on the relationship between periodontal disease and systemic health, especially cardiovascular diseases.

Tuesday 25th September, 2012

Symposium: A population approach to oral health

Time: 10.30- 12.30pm

Chair: Jason Armfield (ARCPOH, University of Adelaide, Australia)

Organisers: Gloria Mejia and Kaye Roberts-Thomson

(ARCPOH, University of Adelaide, Australia)

Sponsors: Adelaide RCPOH

Time:	Paper/ Presenter	Abstract No.
10.30am	What is a population health perspective? **Kelly Jones**, ARCPOH, University of Adelaide, Australia	S2 01
11.00am	A population perspective in teaching **Jane Harford**, ARCPOH, University of Adelaide, Australia	S2 02
12.00noon	Measuring the oral health of populations **Gloria Mejia**, ARCPOH, University of Adelaide, Australia	S2 03
12.30pm	Targeting in a population health approach **Kaye Roberts-Thomson**, ARCPOH, University of Adelaide, Australia	S2 04

Tuesday 25th September, 2012

Oral Session: **3**

Topic: **Periodontics** Time**: 10.30am– 11.30am**

Chair: I. Darby

Time:	Paper/ Presenter	Abstract No.
11.00am	**Endoplasmic Reticulum Stress in Periodontal Inflammation and Russell Body Presentation** **B.L. SEO**, D.E. COATES, A. RICH, T. MILNE, J. LEICHTER, and G.J. SEYMOUR, Sir John Walsh Research Institute, University of Otago, Dunedin, New Zealand	**169256**
11.15am	***Porphyromonasgingivalis*gingipainpropeptides inhibit gingipains and bacterial growth** **E. TOH**, University of Melbourne, Oral Health CRC, L. HUQ, School of Dental Science, University of Melbourne, C. SEERS, Oral Health CRC, Melbourne Dental School and Bio21 Institute, S. DASHPER, Oral health CRC, Melbourne Dental School & Bio21 Institute, V. MEURIC, Equipe de Microbiologie UPRES - EA 1254, Université de Rennes 1, Rennes, France, B. WARD, Melbourne Dental School, K. CROSS, Oral Health CRC, Bio21 Research Institute, Melbourne Dental School, and E. REYNOLDS, Oral Health CRC, Melbourne Dental School & Bio21 Institute	**169273**
11.30am	**Bisphosphonate and geranylgeraniol regulate angiogenic genes in human gingival fibroblasts** **S. ZAFAR**, D. COATES, G. SEYMOUR, B. DRUMMOND, T. MILNE, and M. CULLINAN, Sir John Walsh Research Institute, University of Otago, Dunedin, New Zealand	**169870**
11.45am	**Pregnancy Outcomes in Mice with *Fusobacteirumnucleatum* Based Experimental Periodontitis** **J.E. STAMFORD**, School of Dentistry, University of Adelaide, C. ROBERTS, Obstetrics & Gynaecology, University of Adelaide, C. MARCHANT, Colgate Australian Clinical Dental Research Centre, University of Adelaide, and P. ZILM, School of Dentistry, University of Adelaide	**169967**

Tuesday 25th September, 2012

Oral Session: **4**

Topic: **Microbiology and Implantology** Time**: 11.45am– 12.45pm**

Chair: L. Walsh; Co-chair: C. Tran

Time:	Paper/ Presenter	Abstract No.
1.30pm	**Effect of Antiseptic Mouthwash on Retention of Oral Streptococcal Strains** **J. UPRITCHARD**[1], J. PLACE[2], and G. TOMPKINS[1], [1]Sir John Walsh Research Institute, University of Otago, Dunedin, New Zealand, [2]University of Florida, Orlando, FL	**169880**
1.45pm	**Middle Infrared Laser Effects on Titanium Implants** **L. WALSH**[1], L. CHAI[2], C. TRAN[3], N. MEREDITH[3], and R. GEORGE[4], [1]University of Queensland, Brisbane, QLD, Australia, [2]School of Dentistry, University of Queensland, Brisbane, Australia, [3]School of Dentistry, The University of Queensland, Brisbane, Australia, [4]School of Dentistry and Oral Health, Griffith University, Gold Coast, Australia	**168623**
2.00pm	**An In Situ Model for Biofilm Formation on Titanium Implants** **C. TRAN**, L. CHAI, L. WALSH, and N. MEREDITH, School of Dentistry, The University of Queensland, Brisbane, Australia	**169125**
2.15pm	**Functional Effects of Zigomatic Implants-supported Rehabilitation: sEMG Study** **M. DE ROSSI**, C.M. SANTOS, R. MIGLIORANÇA, and S.C.H. REGALO, Morphlogy, Stomatology and Physiology, University of São Paulo, RibeirãoPreto, Brazil	**169914**

Tuesday 25th September, 2012

Oral Session: **5** Topic: **Public Health**

Chair: M Hopcraft; Co-chair: S.Lal Time: **1.30 – 3.00**

Time:	Paper/ Presenter	Abstract No.
1.30pm	**Understanding What Drives Dentists To Work With Disadvantaged Groups** **S.P. GARDNER**[1], K. ROBERTS-THOMSON[1], T.A. WINNING[2], and R. PETERSON[3], [1]University of Adelaide, Adelaide, Australia, [2]University of Adelaide -, Adelaide, Australia, [3]School of Medical Sciences, University of Adelaide, Adelaide, Australia	**169292**
1.45pm	**Oral health related quality of life in Victorian nursing homes** **M.J. SILVA**, University of Melbourne, Carlton, Australia, M. HOPCRAFT, Melbourne Dental School, University of Melbourne, Melbourne, Australia, and M. MORGAN, Melbourne Dental School, University of Melbourne, Melbourne, VIC, Australia	**169697**
2.00pm	**Support Needs and Quality of Life in Oral Cancer** **K.A. MOORE**[1], P.J. FORD[1], and C.S. FARAH[2], [1]School of Dentistry, University of Queensland, Brisbane, Australia, [2]UQ Centre for Clinical Research, The University of Queensland, Herston, Australia	**169861**
2.15pm	**Root caries prevalence among older adults living in central Chile** **R. MARIÑO**[1], C.S. FU[1], and R.A. GIACAMAN[2], [1]Melbourne Dental School, University of Melbourne, Melbourne, VIC, Australia, [2]Cariology Unit, Department of Oral Rehabilitation, University of Talca, Talca, Chile	**169879**
2.30pm	**Fluoride Concentration in Tank Water in Victoria, Australia** **M. HOPCRAFT**, N. COCHRANE, S. ZHAO, A. THEAN, A. TONG, D. TONG, Y.S. THUM, and J. WEN, Melbourne Dental School, University of Melbourne, Melbourne, Australia	**169924**
2.45pm	**How readable are Australian Paediatric Oral Health Education Materials?** **A.S.F. LAM**, Faculty of Dentistry, University of Sydney, Westmead, Australia, Z. KARAMI, Faculty of Dentistry, University of Sydney, Surry Hills, NSW, Australia, and A. ARORA, Population Oral Health, University of Sydney, Westmead, Australia	**169808**

Oral Session: 6

Topic: **Oral Cancer** Time**: 1.30 – 2.45pm**

Chair: F.Dost; Co-chair: K.Tim

Time:	Paper/ Presenter	Abstract No.
1.30pm	**Oral cancer invasion mediated by TGF-β1/MMP via EMT of CSC** **J. GAO**[1], J. QUAN[2], N.W. JOHNSON[3], and N. MORRISON[2], [1]School of Medicine and Dentistry, James Cook University, Cairns, Australia, [2]School of Medical Science, Griffith University, Gold Coast, Australia, [3]Griffith Health Institute, Griffith University, Gold Coast, Australia	**168930**
1.45pm	**Defective repair signalling in oral SCC cell-lines following DNA damage** **M. JESSRI**, A.J. DALLEY, and C.S. FARAH, Oral Oncology Research Group, University of Queensland Centre for Clinical Research, Brisbane, Australia	**169864**
2.00pm	**Does Cervical Cancer Predispose Females to Oral Cancer?** **F. DOST**[1], P.J. FORD[2], and C.S. FARAH[1], [1]University of Queensland Centre for Clinical Research, Oral Oncology Research Program, Brisbane, Australia, [2]School of Dentistry, University of Queensland, Brisbane, Australia	**169886**
2.15pm	**Early detection of oral cancer by oral health practitioners** **K.R. ALLEN**, School of Dentistry, The University of Queensland, Brisbane, Australia, P.J. FORD, School of Dentistry, University of Queensland, Brisbane, Australia, and C.S. FARAH, UQ Centre for Clinical Research, The University of Queensland, Herston, Australia	**169887**
2.30pm	**Mastication and Muscular Thickness of Patients with Head and Neck Cancer** **C.M. SANTOS**, S.C.H. REGALO, and M. DE ROSSI, Morphlogy, Stomatology and Physiology, University of São Paulo, Ribeirão Preto, Brazil	**169909**

Symposium: The Future of Dental Education including the role of Research

Organisers: The Australasia Council of Dental Schools (ACODS)

Time**: 3.00pm – 4.30pm**

Time:	Paper/ Presenter	
11.00am	Keynote address: Manage and Lead Academic Staff in a Dental School **Professor de Vries**	S3 01
	The Future of Dental Education including the role of Research **Andrew Sandham** **Leonie Short** **Laurence Walsh**	 S3 02 S3 03 S3 04

Tuesday 26th September, 2012

Oral Session: **7**

Topic: **Information Technology and Jaw Function**

Chair: O. Waqa Time**: 3.00am – 3.45pm**

Time:	Paper/ Presenter	Abstract No.
3.00pm	**Effectiveness of Yoga in the Management of Jaw Muscle Pain** **P. THIMMA RAVINDRANATH**[1], C. PECK[2], G. MURRAY[1], I. KLINEBERG[1], and M.K. BHUTADA[3], [1]Jaw Function and Orofacial Pain Research Unit, University of Sydney, Sydney, Australia, [2]Faculty of Dentistry, University of Sydney, Surry Hills, Australia, [3]Faculty of Dentistry, University of Sydney, Surry hills, Australia	**169644**
3.15pm	**Effect Of Neuropathic Orofacial Pain On Jaw-Muscle Activity During Chewing** **M.S. MEMON**, Faculty of Dentistry, University of Sydney, Westmead, NSW, Australia, T. WHITTLE, Jaw Function and Orofacial Pain Research Unit, Centre for Oral Health, University of Sydney, Westmead, NSW, Australia, M. BHASKARACHARYA, Jaw Function & Orofacial Pain research Unit, University of Sydney, Westmead, NSW, Australia, C. PECK, Faculty of Dentistry, University of Sydney, Surry Hills, NSW, Australia, and G. MURRAY, Jaw Function and Orofacial Pain Research Unit, University of Sydney, Sydney, Australia	**169878**
3.30pm	**Trends in Information Technology in Dentistry in Australia** **P.D. BARNARD**, Australian Dental Association, St Leonards, Australia	**169867**

Wednesday 26th September, 2012

Plenary Lecturer 9.30am-10.30am

Dr Gloria Mejia

A population approach to oral health

Dr Gloria Mejia is Research Fellow at the Australian Research Centre for Population Oral Health (ARCPOH), at the University of Adelaide. She is a dentist with graduate training in public health (MPH) and oral epidemiology (PhD). Her research interests are in the epidemiology of oral diseases and dental care, particularly in population health research methods and inequality in oral health status and access to dental care. She is currently involved in research projects relating to the delivery of dental services and child oral health outcomes, the intergenerational effects of social factors on dental health, the financial impact of dental services on Australian families, and the changing epidemiology of dental disease and its effects on oral functioning, psychological and social well-being and the need for dental care. Her interest in studying the impact of dental disease on child development led to an international collaboration with Chilean researchers. Her roles at the Australian Research Centre for Population Oral Health include course coordinator for Community Dentistry V (undergraduate) and the proposed postgraduate programs in Population Oral Health (currently under program approval).

Oral Session: **8** Topic: **Dental Public Health**

Chair: W. Evans Time**: 10.30am– 12.15pm**

Time:	Paper/ Presenter	Abstract No.
10.30am	**Access to dental care and oral health-related quality of life** **L.A. CROCOMBE**[1], G. MAHONEY[2], M. WALLER[2], and A.J. SPENCER[1], [1]Australian Research Centre of Population Oral health, University of Adelaide, Adelaide, Australia, [2]Centre for Military and Veteran's Health, School of Population, University of Queensland, Brisbane, Australia	**168859**
10.45am	**Determinants of Oral health of School Children in NSW, Australia** **S. SIVANESWARAN**, Population Oral Health, University of Sydney, New South Wales, Australia, R. BYUN, New South Wales, Ministry of health, Liverpool, Australia, and L.G. DO, ARCPOH, Dental School, University of Adelaide, Adelaide, Australia	**169798**
11.00am	**Influence of mothers' employment on oral health of their child** **K. PLUTZER**, Arcpoh, University of Adelaide, Adelaide, Australia	**168677**
11.15am	**Fissure Sealant Use in Australian School Dental Services (SDS)** **N. AMARASENA**, and D. HA, ARCPOH, School of Dentistry, University of Adelaide, Adelaide, Australia	**169225**
11.30pm	**Relationship between Child Oral Health and Adult Level of Education** **G.C. MEJIA**, ARCPOH- School of Dentistry, University of Adelaide, Adelaide, SA, Australia, A.J. SPENCER, ARCPOH School of Dentistry, University of Adelaide, Adelaide, SA, Australia, J.M. ARMFIELD, Dental School, Australian Research Centre for Population Oral Health, Adelaide, Australia, and K. ROBERTS-THOMSON, University of Adelaide, Adelaide, SA, Australia	**169895**
11.45pm	**Estimating Oral Health in Aboriginal Australians** **K. ROBERTS-THOMSON**, University of Adelaide, Adelaide, SA, Australia, and L.G. DO, ARCPOH, Dental School, University of Adelaide, Adelaide, Australia	**169565**
12.00pm	**Literature review: Risk Reduction methods in Early Childhood Caries** T. KING, School of Oral Health, Fiji National University and W. EVANS, University of Sydney	**171149**

Wednesday 26th September, 2012

Oral Session: **9**

Topic: **Pediatric, Education and Fear related research**

Chair: Jason Armfield Co-chair: S. Barrow Time**: 10.30 – 12.00pm**

Time:	Paper/ Presenter	Abstract No.
10.30am	**Simplified Method of Using Preformed Metal Crowns in Preschool Children** H. CALACHE[1], **J. BROWNBILL[2]**, D.J. MANTON[3], R. MARTIN[1], M. HALL[1], and K. SIVASITHAMPARAM[1], [1]Dental Health Services Victoria, Melbourne, Australia, [2]University of Melbourne, Malvern East, VIC, Australia, [3]Oral Health CRC and Melbourne Dental School, University of Melbourne	**169236**
10.45am	**Is Beautiful Smile Project solution for early-childhood-caries Problem in Qatar** **A. ALKHTIB**, University of Melbourne	**169554**
11.00am	**Early-childhood-caries in Qatar: Prevalence and Proposal for Improvement** **A. ALKHTIB**, L. MESSER, M. TEMPLE-SMITH, M. PIROTTA, and M. MORGAN, University of Melbourne	**169920**
11.15am	**Pattern of Dental Caries in 6-12 year old School Children** **V.K. HARIKISHAN**, Oral Health, Fiji National University	**169970**
11.30am	**Australian/New Zealand Bachelor Oral Health Students: Sociodemographics and Career Decisions** **S. BARROW**, R. MARIÑO, and M. MORGAN, Melbourne Dental School, University of Melbourne, Melbourne, Australia	**169882**
11.45am	**Use of coping strategies in dentally fearful and non-fearful people** **J. ARMFIELD**, Australian Research Centre for Population Oral Health, School of Dentistry, University of Adelaide.	**169224**

Wednesday 26th September, 2012

Symposium: **Dental Education: Learning Experience of Students**

Co-conveners: **Bernadette Pushpaangaeli and Suneil Nath**
Dental students (BDS 4th year, FNU)

Chair: Loloma- Mai-Viti Esera; **Co-chair**:Kritish Bhai Time: **1.00pm – 3.00p.m**

Paper/ Presenter	Abstract No.
Program overview Leadership, culture, tradition and challenges Multi-entry and multi exit curriculum *A tribute to late Professor G.N. Davis* **Kristy Kimishka, Justin Keshwan, Bernadette Pushpaangaeli, Leenu Maimanuku**	S4 01
Planning, placement experience and evaluation **Taranaivini Kuruavesi , Clement Ilopitu, Tevita Naivalu, Penioni Ravunawa**	S4 02
Results from pilot survey - epidemiology **Kuini Liku, Jinisha Hargovind, Thomas Meke, Stewart Kaimauri, Suneil Nath**	S4 03
The effect of a community dental service outreach and pilot survey programme on the confidence of undergraduate students to treat children and adults: a pilot study *Results from semi-structured interviews* **Meilani Faasoa, Raynold Owen, Bernadette Pushpaangaeli**	S4 04
Experiential learning - Student perspectives on their recent dental outreach experiences: semi-structured interviews **Won-Kyung Jung, Nelis Tumae, Shoma Devi, Willie Piru**	S4 05
Planning for the 2013 placement: stakeholders and collaboration **Kulsoom Mohammed, Karurua Intintaake, Leenu Maimanuku, Seema Lal**	S4 06

Poster Presentations

Time:	Paper/ Presenter	Abstract No.
	Prevention of Dental Caries From Childhood to Adulthood **P. LIU**, J. SPENCER, L. DO, and J. ARMFIELD, ARCPOH, School of Dentistry, University of Adelaide, Adelaide, Australia	**169900**
	Use reimplnted Tooth As An Abutment For Fixed Partial Denture **A. GOLMORADIZADEH**, Centro Escolar University, Manila, Philippines	**170091**
	Long Term Evaluation of Direct Pulp Therapy–A Retrospective Study **R. HARICHANDRAN**, A. FERNANDES, L. BANICEVIC, J. AURORA, M. HEFFERNAN, W.R. EVANS, and P. DUCKMANTON, Endodontics, University of Sydney, Surry Hills, Australia	**169873**
	Dental Caries in Pre-School Children In Tongatapu and Suva L. TOMIKI, and **A.S. NAIDU**, School of Oral Health, Fiji National University, Suva, Fiji	**171147**

ABSTRACTS

168623

Middle Infrared Laser Effects on Titanium Implants

L. WALSH[1], L. CHAI[2], C. TRAN[3], N. MEREDITH[3], and R. GEORGE[4], [1]University of Queensland, Brisbane, QLD, Australia, [2]School of Dentistry, University of Queensland, Brisbane, Australia, [3]School of Dentistry, The University of Queensland, Brisbane, Australia, [4]School of Dentistry and Oral Health, Griffith University, Gold Coast, Australia

Objectives: Shockwaves generated by middle infrared (MIR) lasers have potential application for removing biofilm from implant threads in patients with peri-implantitis. Major effects of MIR lasers which determine their clinical usefulness in implant therapy were described 20 years ago by the authors. The aim of this study was to determine safety thresholds for exposure of titanium surfaces to MIR laser pulses. **Methods:** Machined titanium disks and Neoss Bimodal implants were irradiated at 90 degrees with focused and defocussed beams from MIR lasers (Er:YAG KaVo KEY3; and Er,Cr:YSGG Biolase Waterlase MD) with multiple individual exposure points. A matrix design was used with 4 energy densities, 4 peak powers, and 3 pulse durations. Samples were examined under a stereomicroscope for visual changes, and then under SEM for changes in surface topography. **Results:** Shadowing and projection/defocussing effects occurred at the macro level on implant threads according to the position of the incoming beam. Greater surface effects occurred with increasing MIR laser pulse energy and increasing peak power (shorter pulses). Effects were more pronounced on the implant surface than on plain disks. Plasma formation occurred at peak powers of 500-1,000W, without surface changes. The ablation threshold at which melting first began was 32J/cm^2. Melting of surface microfeatures occurred at peak powers of 1700W (energy density 120J/cm^2), and central cratering with peripheral melting at peak powers of 2100W (energy density 200J/cm^2). **Conclusions:** Implant surface ablation thresholds are well above parameters used currently in clinical practice for debriding teeth using MIR lasers (60 mJ per pulse, peak power 170 watts; energy density 12 J/cm^2), indicating that implant surface damage is unlikely during clinical use for implant debridement at the same settings. Implants for this study were provided by Neoss.

168677

Influence of mothers' employment on oral health of their child

K. PLUTZER, Arcpoh, University of Adelaide, Adelaide, Australia

Objectives: To evaluate the effect of first-time mothers' early employment status on the development of severe early childhood caries (S-ECC) in their child. **Methods:** Questionnaire survey of 429 first-time mothers in metropolitan Adelaide and dental examinations of their child at 20 months of age. **Results:** At 20 ± 2.5 months of age, 5.6% of children exhibited S-ECC defined as one or more demineralized or cavitated lesions on the upper incisors. Of the mothers, 52.2 % had no paid employment, 39.6 % were part-time and 8,2 % full-time employed. Overall, mothers' participation in the workforce had no influence on the frequency of S-ECC in their child, but there was a significant interaction with family structure. For mothers without employment there was no difference between single and two parent families, but children with a working, single mother more frequently exhibited S-ECC than those with a working mother and a two parent family ($P < 0.04$). **Conclusions:** The data suggest that single mothers and especially those in the workforce may need extra assistance and support to prevent severe early childhood caries in their child. This abstract is based on research that was funded entirely or partially by an outside source: NHMRC

168859

Access to dental care and oral health-related quality of life

L.A. CROCOMBE[1], G. MAHONEY[2], M. WALLER[2], and A.J. SPENCER[1], [1]Australian Research Centre of Population Oral health, University of Adelaide, Adelaide, Australia, [2]Centre for Military and Veteran's Health, School of Population, University of Queensland, Brisbane, Australia

Objectives: To determine if Australian Defence Force (ADF) members had better oral health-related quality of life (OHRQoL) than the Australian population and whether the difference was due to better access to dental care. **Methods:** The OHRQoL, as measured by OHIP-14 summary indicators, of participants from the Defence Deployed Solomon Islands (SI) Health Study and National Survey of Adult Oral Health 2004–06 (NSAOH) were compared. The SI sample was age/sex status-adjusted to match that of the NSAOH sample which was age/sex/regional location weighted to that of the Australian population. **Results:** NSAOH respondents with good access to dental care had lower OHIP-14 summary measures [Frequency of impacts 8.5% (95%CI=5.4,11.6), Extent mean=0.16 (0.11,0.22), Severity mean=5.0 (4.4,5.6)] than the total NSAOH sample [Frequency 18.6 (16.6,20.7); Extent 0.52 (0.44,0.59); Severity 7.6 (7.1,8.1)]. The NSAOH respondents with both good access to dental care and good general health had did not have clearer lower OHIP-14 scores again [Frequency 7.6 (4.7,10.6), Extent 0.13 (0.09,0.18), Severity 4.8 (4.2,5.3)], although not as low as that in the SI sample [Frequency 2.6 (1.2,5.4), Extent 0.05 (0.01,0.10); Severity 2.6 (1.9,3.4)]. **Conclusions:** ADF members had better OHRQoL than the Australian population, even those with good access to dental care. This abstract is based on research that was funded entirely or partially by an outside source: Organizations that supported the National Survey of Adult Oral Health 2004-06 were the National Health and Medical Research Council (Grants # 299060, 349514, 349537), the Australian Government Department of Health and Aging - Population Health Division.

168930

Oral cancer invasion mediated by TGF-β1/MMP via EMT of CSC

J. GAO[1], J. QUAN[2], N.W. JOHNSON[3], and N. MORRISON[2], [1]School of Medicine and Dentistry, James Cook University, Cairns, Australia, [2]School of Medical Science, Griffith University, Gold Coast, Australia, [3]Griffith Health Institute, Griffith University, Gold Coast, Australia.

Objectives: This study investigates whether cascades triggered by transforming growth factor (TGF-β1) and matrix metalloproteinases (MMP-2 and MMP-9) mediate bone invasion by oral squamous cell carcinoma (OSCC) via the epithelial-mesenchymal transition (EMT) of cancer stem cells (CSC). **Methods:** Four OSCC cell lines, SSCC15, CC25, HN5 and Tca8113 were treated with 5 ng/mL of TGF-β1 for up to 3 days, whilst conditioned medium (CM) of these cells was collected for co-culture with osteoblasts (hFOB). Assays of cell proliferation, morphology and CSC tumour-sphere formation were determined: proteolytic activities of MMP-2 and MMP-9, and putative markers of CSC, EMT and osteo-molecules were detected by gelatine zymography, immunohistochemistry, western blotting and real-time PCR respectively. Targeted molecules were examined by in tissue sections of bone-invasive OSCCs. **Results:** TGF-β1 had no effect on growth of OSCC cell lines, but mediated the initiation of CSCs, as determined by immunostaining for CD44. Following treatment withTGF-β1, staining of vimentin and EMT markers (Twist-1 and N-cadherin) was found in cancer cells. Zymogenic activities of MMP-2 and MMP-9 were increased in OSCC cells following culture with CM of hFOB. The ratio of receptor activator of nuclear factor ligand (RANKL)/ osteoprotegerin (OPG), zymogen and MMP-9 were increased in hFOB cells cultured with CM from OSCC lines, while zymogen expression of MMP-2 was decreased. In clinical samples, all targeted molecules were expressed in invading malignant keratinocytes, and OPG was expressed in osteoclasts. Osteoclast-related molecules [membrane type 1-MMP (MT1-MMP) and RANKL] were up-regulated, whilst OPG was down-regulated in cancer cells. **Conclusions:** This study suggests that EMT of CSC in OSCC is triggered by TGF-β1 and promotes bone invasion of OSCC.
This paper is competing for the Oral Biology Award.

169117

Laser shockwaves in endodontic irrigating fluids for removal smear layer

L. CHAI, School of Dentistry, University of Queensland, Brisbane, Australia, M. LAGEMANN, The University of Queensland, Brisbane, Australia, R. GEORGE, School of Dentistry and Oral Health, Griffith University, Gold Coast, Australia, and L. WALSH, University of Queensland, Brisbane, QLD, Australia.

Objectives: Laser-generated shockwaves may help clean the root canal system. This in vitro study compared smear layer removal by pulsed 940 nm diode laser-generated shockwaves generated in different solutions (3% H2O2, 15% EDTAC or EDTAC followed by H2O2) with either plain or conical fiber tips. **Methods:** Root canals in 8 groups of 10 single roots were prepared using rotary files. A pulsed 940 nm diode laser was used to irradiate fluid in the root canal using 4W/50Hz. Roots were then split and the apical, middle and coronal thirds of the canal examined using SEM. The area of dentine tubules was determined by image analysis. The effects of fiber type and irrigant were explored through Kruskal-Wallis tests (non-parametric ANOVA) with $p<0.05$ considered significant. **Results:** Laser pulses generated cavitation in all fluids, but there was no difference between different fiber designs in terms of smear layer removal. The EDTAC and EDTAC + H2O2 groups showed significantly greater smear layer removal in the apical third region compared to the negative control (Ni-Ti rotary files + water) ($p < 0.01$). The EDTAC and EDTAC + H2O2 groups were significantly better in smear layer removal than H2O2 groups ($p < 0.05$). **Conclusions:** Lasing EDTAC considerably improved smear layer removal by enhanced agitation through cavitation, while lasing into H2O2 gave only minimal advantage. Lasers may concomitantly assisted in disinfection of the root canal. Further research is needed to optimize the smear layer removal effect, particularly in terms of power settings and fiber tip movement.

169125

An In Situ Model for Biofilm Formation on Titanium Implants

C. TRAN, L. CHAI, L. WALSH, and N. MEREDITH, School of Dentistry, The University of Queensland, Brisbane, Australia.

Objectives: Biofilms form readily on the surfaces of dental implants, and are responsible for inflammation in the peri-implant tissues. Current methods of surface cleaning for implants have limited effectiveness. The aim of this study was to develop an in situ model which could then be used for testing various conventional and novel (laser-based) methods of implant surface debridement. **Methods:** Neoss Bimodal threaded titanium implants were mounted into custom-made vacuum-formed removable oral appliances configured with the implant horizontal on the buccal surface of mandibular first molar teeth. The implants were fixed into position by their healing abutment screws to prevent them from being dislodged during normal movements of the buccal mucosa. Variations in design including use of PVC tubing allowed variations in salivary contact and oxygen tension to achieved. Appliances were worn continuously for 48 hours, being removed temporarily during eating and oral hygiene procedures. Biofilms were stained using 3 tone disclosing solution, then fixed and assessed using SEM. **Results:** Designs with the implant enclosed in a PVC tube showed rapid formation of dense biofilms over 48 hours. These biofilms contained water channels and large numbers of facultative and anaerobic bacteria, with the typical three dimensional configuration of dental plaque biofilms across the surface of the implant, including the region of the threads. There were no significant adverse effects experienced from wearing the appliances. **Conclusions:** This in situ model generates a biofilm representative of dental plaque and will be useful for evaluating different methods of debridement both intra-orally and on the bench.

Implants for this study were provided by Neoss.

169224

Use of coping strategies in dentally fearful and non-fearful people

J. ARMFIELD, Australian Research Centre for Population Oral Health, School of Dentistry, University of Adelaide, Adelaide, Australia

Objectives: Coping strategies may be used by dentally fearful people to help them deal with their fear or to enable them to undergo treatment. The study aims were to investigate the newly constructed Dental Coping Strategy Questionnaire (DCSQ-15) and to examine associations between the use of coping strategies and both dental fear and dental attendance. **Methods:** A national random sample of 1,083 Australian adults (response rate = 71.4%) completed a mailed questionnaire as part of a nested study within the National Dental Telephone Interview Survey (NDTIS). Data from the nested study were matched to NDTIS data. **Results:** Exploratory and confirmatory factor analysis (EFA and CFA) were undertaken on the DCSQ-15. The previously determined five-factor structure of the questionnaire was not confirmed by the EFA, and the CFA showed the model provided a poor fit to the data. A two-factor model identified from the EFA also showed less than adequate model fit in the CFA. Greater use of all coping strategies in the DCSQ-15 was significantly associated with greater dental fear (Pearson r correlations = 0.22–0.60, ps < 0.001). Also, greater use of coping strategies was associated with more avoidance or delay of going to the dentist and with less frequent dental visiting. **Conclusions:** Contrary to expectations, coping strategies identified within the DCSQ-15 were associated with greater dental fear and greater dental avoidance. It may be that fearful individuals use coping strategies as an attempt to deal with their fear, but that for most people these attempts are unsuccessful. This abstract is based on research that was funded entirely or partially by an outside source: Australian Dental Research Foundation

169225

Fissure Sealant Use in Australian School Dental Services (SDS)

N. AMARASENA, and D. HA, ARCPOH, School of Dentistry, University of Adelaide, Adelaide, Australia

Providing fissure sealants to children attending SDS in Australia is considered as an indicator of receipt of preventive care.

Objectives: To describe the fissure sealant use among children attending SDS in 2008 by age, caries experience, state/territory and remoteness, and the trends of fissure sealant use in Australia between 1989 and 2008. **Methods:** Fissure sealant use among 63,870 children aged 6 to12 years was ascertained as part of an annual surveillance survey to monitor the oral health of children who were enrolled in SDS in 2008. New South Wales and Victoria were excluded from the survey due to non-representativeness of the sample and lack of access to data, respectively. **Results:** On average, fissure sealants were provided to 0.56 teeth in all children with 0.10 teeth among 6 year olds and 0.75 teeth among 12 year olds being sealed. Nearly 17% children with no caries experience had fissure sealants whereas almost 30% children who had experienced caries were provided with sealants. While the children in the Northern Territory reported the lowest mean number of teeth with sealants (0.20) those in the Australian Capital Territory had the highest mean number of teeth sealed (1.70). Children from inner (0.65) and outer (0.64) regions had a greater mean number of teeth with fissure sealants than those who live in major cities (0.54) and remote/very remote regions (0.38). From 1989 to 2001, fissure sealant use among children with and without caries experience increased with 41% and 34% children, respectively, having fissure sealed teeth in 2001, but decreased thereafter to 35% and 18% in 2008. **Conclusions:** Despite a decline in fissure sealant use after 2001, children who already had caries experience were more likely to receive sealants throughout the period reported. This abstract is based on research that was funded entirely or partially by an outside source: AIHW.

This paper is competeting for the following awards: Colgate Award (Senior), Colgate Travel Grant Winners, IADR ANZ Division Travel Grant Winners.

169236

Simplified Method of Using Preformed Metal Crowns in Preschool Children

H. CALACHE[1], **J. BROWNBILL**[2], D.J. MANTON[3], R. MARTIN[1], M. HALL[1], and K. SIVASITHAMPARAM[1], [1]Dental Health Services Victoria, Melbourne, Australia, [2]University of Melbourne, Malvern East, VIC, Australia, [3]Oral Health CRC and Melbourne Dental School, The University of Melbourne, Carlton Victoria, Australia

Preformed stainless steel crowns (SSC) give carious deciduous molar teeth the best prognosis compared to other restorations. A simplified method, without cavity preparation, the Hall Technique, has been reported to be successful with school age children. We will test this method with pre-school children from an inner urban community. **Objectives:** To determine the success of the Hall Technique to manage caries within the outer half of dentine in pre-school children, and to determine the acceptability of the Hall Technique to clinicians, children and their carers. **Methods:** The study is a non-controlled prospective clinical trial at a community clinic. Inclusion criteria: 3, 4 or 5 years-old on day of recruitment; no relevant medical history; one or two primary molars with caries within the outer half of dentine; no pulpal symptoms; dental radiographs available; no inter-radicular radiolucency on selected primary molar teeth; informed consent from parent and acceptance of treatment by child. The **Hypothesis** is that the failure rate for the Hall Technique will be similar to the conventional SSC (7%) 12 months after insertion. Three dentists have been trained in placing crowns with emphasis on safety and diagnosis and have commenced placing 220 crowns. Data being collected includes: time taken for procedure; occlusal vertical dimension change; and acceptability to child, parent and dentist. **Results:** Weighted Kappa values of examiners showed >0.6 and >0.8 agreement with the gold standard for ICDAS II calibration. Occlusion returned to baseline within 30 days. **Conclusions:** Occlusal vertical dimension changes are transitory and symptom free. This presentation will discuss the study protocol and recruitment method, including calibration of examiners in the use of ICDAS II and a radiographic scoring method.

169256

Endoplasmic Reticulum Stress in Periodontal Inflammation and Russell Body Presentation

B.L. SEO, D.E. COATES, A. RICH, T. MILNE, J. LEICHTER, and G.J. SEYMOUR, Sir John Walsh Research Institute, University of Otago, Dunedin, New Zealand

Objectives: Endoplasmic reticulum (ER) stress results in the activation of the unfolded protein response (UPR) pathways to alleviate stress and re-establish homeostasis. The UPR is composed of three axes (IRE1, ATF6 and PERK), which facilitate protein-folding, attenuate protein synthesis or induce apoptosis. The objectives of the current study were to examine the expression of genes crucial to the UPR pathways in inflamed periodontal tissues as compared to control tissues; and to determine which UPR genes were differentially expressed in inflamed periodontal tissue with and without Russell bodies (RB). **Methods:** Fourteen periodontal tissues were used. The tissues were histologically categorised into 3 groups: control (uninflamed/minimally inflamed), RB-ve (inflamed without RB) and RB+ve (inflamed with RB). Quantitative real-time reverse transcriptase polymerase chain reaction (qRT^2-PCR) was performed for the analysis of gene expression. **Results:** A total of 84 genes related to the UPR pathways were analysed. A gene regulation threshold was set of >±2.0 fold-regulation and $p<0.05$. Genes down-regulated in association with periodontal inflammation as compared to control tissues were PPIA, GANC and heat shock proteins HSPA1B, HSPA2 and HSPA4. Comparison of inflamed RB+ve with the inflamed RB-ve groups found up-regulation of genes associated with protein translation (DNAJC3, SIL1), ER quality control (GANC, UGCGL1), ER-associated degradation (EDEM3) and an upstream transcription factor IRE1. **Conclusions:** We have shown that heat shock proteins, an isomerase (PPIA) and an ER quality control component (GANC) were down-regulated in inflamed periodontal tissues. The negative regulation of heat shock proteins in relation to the host response in periodontal inflammation is of particular interest. It was also shown that the expression of UPR genes differed based on the presence of RB. Interestingly IRE1 was the only upstream transcription factor that was induced. These genes may serve as markers of ER stress in inflamed tissues containing RB. Funding: New Zealand Dental Association Research Foundation

This paper is competing for the Colgate Award (Senior)

169261

A new dental referral pathway for frail community-dwelling older adults

H. TAN[1], A.J. SPENCER[1], A. LEWIS[2], and J. WEEKS[2], [1]ARCPOH, School of Dentistry, The University of Adelaide, Adelaide, Australia, [2]South Australian Dental Services, Adelaide, Australia.

Objectives: To investigate the impact of oral health screening and referral by allied health professionals on self-rated oral health in frail community-dwelling elderly. **Methods:** Domiciliary Care South Australia (DCSA) Occupational Therapists (OTs) and Adelaide Aged Care Assessment Team (AACAT) who usually assess older adults for help needed at home or entry to a residential care facility undertook an oral screening for community-dwelling older adults on their need for dental treatment using 6 oral screening questions. Older adults completed a pre-dental treatment questionnaire, including level of self-rated oral health and adverse social impacts from oral disorders in the previous 4 weeks measured by the 14-item Oral Health Impact Profile (OHIP-14). After receiving treatment at a SA Dental Service (SADS) community clinic, participants were asked to answer the same questions. **Results:** 95% of (314 out of 329) frail older adults either responded affirmatively to the question about need for dental visit or reported one or more impacts queried in the remaining screening questions were identified by AACAT as subjects needing a dental visit and were referred to SADS community clinics. Pre-treatment self-rated oral health and OHIP-14 in this elderly cohort were significantly worse than their contemporaries in the population. The percentage who reported their oral health as being good, very good or excellent increased from 35% pre-treatment to 58% post-treatment ($p<0.05$). Post-dental treatment, the average number of impacts significantly reduced from 2.9 to 1.7 impacts, indicating a significant improvement ($P<0.01$). However, the self/proxy reported quality of life remained worse than those of general population 65+ years old. **Conclusions:** This project developed a new referral pathway for community-dwelling older adults into dental treatment. An improvement in self-rated oral health and social impacts of oral disease was achieved after older adults received oral screening and referral by allied health professionals and subsequent dental care.

This paper is competeting for the following awards: The IADR ANZ Division Investigator Award in Preventive and Community Dentistry, Colgate Award (Senior), Colgate Travel Grant Winners, IADR ANZ Division Travel Grant Winners

169273

***Porphyromonas gingivalis* gingipain propeptides inhibit gingipains and bacterial growth**

E. TOH, University of Melbourne, Oral Health CRC, L. HUQ, School of Dental Science, University of Melbourne, C. SEERS, Oral Health CRC, Melbourne Dental School and Bio21 Institute, The University of Melbourne, S. DASHPER, Oral health CRC, Melbourne Dental School & Bio21 Institute, The University of Melbourne, V. MEURIC, Equipe de Microbiologie UPRES - EA 1254, Université de Rennes 1, Rennes, France, B. WARD, Melbourne Dental School, University of Melbourne, K. CROSS, Oral Health CRC, Bio21 Research Institute, Melbourne Dental School, University of Melbourne, and E. REYNOLDS, Oral Health CRC, Melbourne Dental School & Bio21 Institute, The University of Melbourne.

Porphyromonas gingivalis, the main pathogen that causes chronic periodontitis in adults, secretes outer membrane cysteine proteinases, the Arg-specific proteinases (RgpA, RgpB/Arg-gingipains) and the Lys-specific proteinase (Kgp/Lys-gingipain) that are its main virulence factors. Inhibition of these proteinases using specific inhibitors is an important therapeutic strategy to prevent or treat this chronic disease. Many proteinases are synthesized as inactive precursors with propeptides that inhibit proteinase function. **Objectives:** This study aims to characterize the inhibitory potential of Kgp and RgpB propeptides against the mature cognate enzymes. **Methods:** Mature Kgp was purified from a *P. gingivalis* Kgp adhesin-binding domain (ABM1) mutant which releases the Kgp catalytic domain ($Kgp_{cat}\Delta ABM1$) into the culture supernatant, allowing simpler purification. Purification of $Kgp_{cat}\Delta ABM1$ and RgpB from *P. gingivalis* strain HG66 was carried out at pH 5.3 to prevent enzyme degradation. Recombinant propeptides of Kgp and RgpB were produced in *Escherichia coli* and purified using nickel-affinity chromatography. The propeptides were incubated with the purified $Kgp_{cat}\Delta ABM1$ or RgpB with chromogenic or fluorescent substrates to monitor proteolytic activity. *P. gingivalis* growth assays were conducted in a protein-based medium. **Results:** Both propeptides exhibited selectivity towards their cognate enzyme with 60-90% inhibition at an enzyme:inhibitor concentration of 1:10 with the rRgpB propeptide displaying stronger inhibitory activity. The rKgp and rRgpB propeptides displayed competitive inhibition kinetics with a K_i of 2.3 mM and 9 nM, respectively. Their specificity for the gingipains was demonstrated by their inability to inhibit papain, a closely related cysteine proteinase. Both propeptides at 100 mg/L caused a 50% reduction of *P. gingivalis* growth in the protein based medium. **Conclusions:** Gingipain propeptides are capable of inhibiting mature gingipains; therefore the development of specific small peptide inhibitors based on cognate propeptide sequences may be a viable therapeutic strategy against pathogenic bacteria that rely on proteolytic activity for virulence. This abstract is based on research that was funded entirely or partially by an outside source: Oral Health CRC

169292

Understanding What Drives Dentists To Work With Disadvantaged Groups

S.P. GARDNER[1], K. ROBERTS-THOMSON[1], T.A. WINNING[2], and R. PETERSON[3], [1]University of Adelaide, Adelaide, Australia, [2]University of Adelaide -, Adelaide, Australia, [3]School of Medical Sciences, University of Adelaide, Adelaide, Australia.

Introduction: Many Australians suffer a greater burden of dental disease than the general population because of disparities in access to dental care. They include rural/remote dwellers, people which special needs, those residing in Residential Care Facilities, Incarcerated, recent refugees and migrants. Recruitment and retention of the dental labour force to provide care for these groups is problematic due to personal, professional and structural challenges. **Objectives:** To explore the characteristics, values, beliefs and motivation of dentists who provide care to underserved population groups to better understand the intrinsic nature of what drives and sustains these few dentists in the work they do.**Methods:** A qualitative empirical investigation using semi structured in-depth interviews which were audio-recorded for analysis. A purposeful sampling strategy was used to recruit 16 dentists diverse in age, sex, practice type and location using the 'snowballing' technique. Thematic analysis based on Glaser's style Grounded theory principles was the methodology used to analyse the transcripts. Verbatim transcripts of the interviews were checked and verified by the participants for accuracy. **Results:** Data were coded systematically using an iterative process and checked by independent researchers. The analysis resulted in the emergence of five preliminary themes associated with *Dental school experience, Resilience, Rewards*, being *Tapped on the shoulder*, and having a strong commitment *to Helping the less fortunate*.**Conclusions:** Resilience and a strong sense of social justice, purpose and satisfaction were key characteristics of these dentists. Their backgrounds and experiences, including those as a dental student, may have contributed to them doing what they do despite the associated challenges. A follow up study will investigate whether there are variations in the qualities of dentists who treat those Australians who have fair and equitable access to dental services and those who do not.

This paper is competing for the Colgate Award (Senior), Colgate Travel Grant Winner

169312

Crack Formation During Apicectomy: Operating Microscope Observations and SEM Images

N. CHANDLER[1], Y.A. KIM[1], G.P. HERBISON[2], C.H. HAUMAN[1], and L.T. FRIEDLANDER[1], [1]School of Dentistry, University of Otago, Dunedin 9054, New Zealand, [2]Department of Preventive and Social Medicine, University of Otago, Dunedin, New Zealand

Objectives: To compare dental operating microscope (DOM) observations of cracks formed in roots during the 3 stages of apicectomy with scanning electron microscopy (SEM) by means of resin replicas. **Methods:** In Part 1, the root canals of 48 extracted teeth were prepared and root filled with gutta percha and sealer. Half were resected 3 mm from the apex using a low-speed TC surgical bur (H33L, Komet, Brasseler, Germany) and the rest with a high-speed bur (H162, Komet). Twelve roots from each group were polished with a bur (H135UF, Komet). In Part 2, root-end cavities were prepared using ultrasonic tips (ProUltra® surgical tip SURG 2, Dentsply). In Part 3, cavities were randomly assigned to either receive mineral trioxide aggregate (MTA) or super EBA (sEBA) root-end fillings. At each stage the root ends were examined by three endodontists using a DOM (x21.25) and impressions taken to make epoxy replicas for SEM (x25). Regression and Kappa analyses were performed. **Results:** With regards to number of cracks, 13, 44 and 22 cracks in Parts 1, 2, and 3 respectively, were found with SEM. The correlation between DOM and SEM was only moderate (Kappa score 0.4568, $P = 0.0008$). False positive identifications of cracks were made with the DOM at all stages. **Conclusions:** The DOM may lead to an over-diagnosis of cracks. Restorations with either MTA or sEBA reduced the number of cracks visible after ultrasonic preparation.

169371

Genes, teeth and faces: 30 years of studying twins

G. TOWNSEND[1], T. HUGHES[1], M. BOCKMANN[1], S. MIHAILIDIS[1], A. BROOK[2], A. HARRIS[1], C. BENNETT[1], and S. PINKERTON[1], [1]School of Dentistry, University of Adelaide, Adelaide, Australia, [2]Queen Mary University of London, Institute of Dentistry, London and, University of Adelaide, Adelaide, Australia

Objectives: Studies of twins and their families carried out over the past 30 years by the Craniofacial Biology Research Group at the University of Adelaide have provided insights into the roles of genetic, epigenetic and environmental influences on human dento-facial growth and development and oral health. The aims of this presentation are: to review some of the main findings of our studies; to highlight the value of using different twin models, including the monozygotic (MZ) co-twin design; and to describe some of the developments that have occurred over this time in data acquisition and analysis. **Methods:** Three cohorts of twins have been recruited, with over 1,200 pairs of twins enrolled. Records collected have included: dental models; facial and intra-oral photographs; clinical data on caries experience and prevalence of developmental dental anomalies; saliva and plaque samples; palm- and finger-prints, information on functional lateralities; questionnaires about physical development, and general and oral health; and blood or buccal cells for zygosity determination. The factors influencing phenotypic expression of many dento-facial features have been explored using a variety of twin study designs. **Results:** Our studies have shown that the contribution of genetic factors to observed variation differs between different oro-facial structures, with evidence of phenotypic correlations and pleiotropic effects. Recent studies have indicated that epigenetic effects also play an important role in dental development. With advances in 2D and 3D imaging, new phenotypes are being recorded with greater validity and reliability than previously. **Conclusions:** Through improved phenotyping and the application of modern genome scanning approaches, studies of twins offer exciting new opportunities to clarify how genetic, epigenetic and environmental factors contribute to health and disease in the oro-facial region. This abstract is based on research that was funded entirely or partially by an outside source: NHMRC Project - 1006294 NHMRC CCRE - 565520 Foundation for Children ADRF Colgate.

Acknowledgements: We acknowledge the NHMRC, ADRF, Foundation for Children and Colgate for their support and we thank the twins and their families for their participation.

169554

Is Beautiful Smile Project solution for early-childhood-caries Problem in Qatar

A. ALKHTIB, University of Melbourne, Melbourne, Australia

This abstract is based on research that was funded entirely or partially by an outside source: Medical Research Centre and Primary Health Care Corporation, Qatar. (#10097)

169565

Estimating Oral Health in Aboriginal Australians

K. ROBERTS-THOMSON, University of Adelaide, Adelaide, SA, Australia, and L.G. DO, ARCPOH, Dental School, University of Adelaide, Adelaide, Australia.

Objectives: Aboriginal Australians have poorer health than other Australians. However, despite a national health survey there has been no national Aboriginal oral health survey with only small localised studies having been undertaken on adults. This study seeks to explore variations in reporting on Aboriginal oral health due to methodological difficulties by comparing estimates of smaller studies against that of the National Survey of Adult Oral Health (NSAOH). **Methods:** NSAOH used a stratified random sample of the Australian population. The urban Aboriginal study was on a convenience sample of adults attending a community health centre. In both cases dental examinations were undertaken by trained and calibrated dental examiners. The proportion with a DMFT = 0 as well as mean DMFT and its components were examined. **Results:** NSAOH examinations were conducted on 5505 adults, 72 of whom were Aboriginal, the urban Aboriginal study had 251 participants. For non- Aboriginal Australians under 35 years the proportion with a DMFT = 0 in NSAOH was 24.3%, compared to Aboriginal Australians of 11.2%, whereas among the urban Aboriginal population the proportion was 5.2%. Similar results were found for severity with mean DMFT of non-Aboriginal Australians in NSAOH of 4.5, NSAOH Aboriginal Australians 7.0 and among urban Aboriginal Australian 10.2. In a study in one remote area of 377 adults 18-24 years the DMFT was 4.61, and in another with 215 adults 18-34 years, DMFT was 3.6. **Conclusions:** The Aboriginal adults who participated in NSAOH were not only different from the non-Aboriginal participants but were also different from the Aboriginal adult population generally. Localised surveys even with a moderate sample size may also be biased and results need to be considered carefully when policy decisions are to be made. This abstract is based on research that was funded entirely or partially by an outside source: NHMRC 299060, NHMRC 519246

169599

Exploring the relationship between Body-Mass-Index-for-Age and Cervical-Vertebral-Maturation of Adolescents

C.K. YEAP[1], M. GOONEWARDENE[1], and C. BUDGEON[2], [1]School of Dentistry, University of Western Australia, Crawley, Australia, [2]School of Mathematics and Statistics, University of Western Australia, Crawley, Australia

Objectives: To explore any potential relationship between the body-mass-index-for-age and cervical vertebrae maturation scores (CVMS) of adolescents. **Methods:** After obtaining human research ethics approval (RA/4/1/5272), a retrospective study was conducted on the demographic information and cervical vertebral maturation of 319 orthodontic adolescent patients aged 10-15 years old who were seen in a public teaching hospital between 2000 and 2011. Variables from the data were analysed using both univariate and multivariate regression. The principal multivariate technique to determine which predictors had an impact on CVMS was ordinal logistic regression. Variables that were significant at a 5% significance level were retained in the final model. Adjusted odds ratios (OR) and 95% confidence intervals (CI) were calculated for this model. **Results:** Ordinal logistic regression revealed that after adjusting for age and gender, BMI-for-age was associated with higher CVMS (p=0.0087). Compared to underweight participants (BMI-for-age percentile<5), those with standard weight (5-84th percentile) were associated with higher CVMS (OR 4.389; 95% CI: 1.846-10.435), as were overweight (85-94th percentile, OR: 3.28; 95% CI: 1.24-8.677) and obese patients (≥95th percentile, OR: 3.526; 95% CI: 1.104-11.268). The analysis indicated that there was no significant association between participant's race/ethnicity and CVMS. **Conclusions:** After adjusting for age and gender, higher BMI-for age percentiles is associated with higher CVMS of adolescents. This abstract is based on research that was funded entirely or partially by an outside source: UWA FMDHS Faculty Office Summer Vacation Research Scholarship 2011/2012.

This paper is competing for the Colgate Award (Junior), IADR ANZ Division Travel Grant Winner

169644

Effectiveness of Yoga in the Management of Jaw Muscle Pain

P. THIMMA RAVINDRANATH[1], C. PECK[2], G. MURRAY[1], I. KLINEBERG[1], and M.K. BHUTADA[3], [1]Jaw Function and Orofacial Pain Research Unit, University of Sydney, Sydney, Australia, [2]Faculty of Dentistry, University of Sydney, Surry Hills, Australia, [3]Faculty of Dentistry, University of Sydney, Surry hills, Australia.

Objectives: Jaw and cervical muscle pain is a common component of Temporomandibular Disorders (TMD) with impairment in jaw function, the prevalence of which results in high health-care costs. The aim of this study is to investigate the effectiveness of a non-invasive approach by using Yoga in the management of muscle pain. **Methods:** Twenty six subjects with standardised diagnoses of jaw muscle pain (Research Diagnostic Criteria for TMDs) volunteered for this double-blind randomised controlled study. Subjects undergoing other management for facial pain and TMDs were excluded. Subjects were randomized to one of two interventions, either a yoga inclusive management program or active control standard care program. Both groups received the intervention for 28 days. The outcome measures analysed were the change in pain intensity on an 11-point numerical rating scale and change in pain location and distribution with marking the area using digitalised pain mapping software during the study. Jaw mobility, oral health related quality of life and cognitive factors related to the subject`s understanding of pain were determined at baseline and at the end of 28days. The effectiveness of Yoga was assessed by calculating the change in outcome measures at the beginning and the end of the study and compared using the Mann Whitney test. **Results:** Of the twenty six subjects, nineteen (9 Yoga; 10 controls) completed the study. The yoga group exhibited reduced pain mapping areas (p=0.065), increased jaw mobility and pain free opening (p=0.053) compared with the active control group. There was a statistically significant improvement in the pain catastrophising (p=0.035) and pain self efficacy (p=0.001) scores in the yoga group. **Conclusions:** The results support the useful role of yoga in the management of jaw muscle pain. This abstract is based on research that was funded entirely or partially by an outside source: ADRF Grant(99-2011); Colin Cormie Grant.

This paper is competeting for the following awards: The Alan Docking IADR Science Award, The IADR ANZ Division Investigator Award in Preventive and Community Dentistry, Colgate Award (Senior), IADR ANZ Division Travel Grant Winner

169667

Remineralization Effect of GIC with Release of Calcium and Phosphate

S. HIROSE, F. FUSEJIMA, and T. SAKUMA, Research & Development Dept, GC Corporation, Tokyo, Japan.

Objectives: Compare the remineralization effect of three glass ionomer cements (GICs) which release calcium and phosphate. Remineralization was measured using microhardness. Material groups were: (1) GC Fuji VII EP (EP) conventional GIC incorporates with Recaldent™(casein phosphopeptide-amorphous calcium phosphate: CPP-ACP), (2) Riva Protect (RP) conventional GIC incorporates with amorphous calcium phosphate, (3) 3M ESPE Vanish XT (XT) resin modified GIC incorporates with calcium glycerophosphate. **Methods:** Bovine incisor enamel was cut mounted in acrylic resin and then enamel surface polished. Each specimen was covered with 0.1 mm thick plastic tape with 3mm diameter hole. The specimens were placed into a Carbopol and lactic acid demineralization solution (pH4.8, HAP 1mg/L) for 5 hours at 37° C. The hardness of the specimens was measured using a microhardness tester equipped with diamond Vickers indenter at 300-gf load for 10s. Demineralized enamels were covered with the corresponding GIC materials. The enamels surfaces were remineralized for 1 week in artificial saliva (pH=7) at 37°C. Covered GICs on enamels were then removed, and hardness of specimens were measured again.Mean surface microhardness for each treatment group was calculated and compared using one-way ANOVA and Tukey's method. **Results:** The microhardness values of EP was significantly higher than those of RP and XT($p<0.01$) after one week of remineralization.

Vickers Hardness Number			
	Fuji VII EP	Riva Protect	Vanish XT
Baseline	171.1(10.4)[a]	170.8(20.6)[a]	170.9(12.4)[a]
Remineralization 1week	210.2(10.8)[b]	185.1(17.2)[a]	176.8(12.7)[a]

n=9, ():S.D. **Conclusions:** Fuji VII EP may have more remineralization effect to the demineralized enamel lesions than Riva protect and Vanish XT.

169697

Oral health related quality of life in Victorian nursing homes

M.J. SILVA, University of Melbourne, Carlton, Australia, M. HOPCRAFT, Melbourne Dental School, University of Melbourne, Melbourne, Australia, and M. MORGAN, Melbourne Dental School, University of Melbourne, Melbourne, VIC, Australia.

Objectives: The aim of this study was to investigate the oral health related quality of life (OHRQoL) amongst residents living in nursing homes in Victoria, and to assess the impact of dental caries and salivary disorders on OHRQoL. **Methods:** Clinical dental examinations were conducted on residents from 19 randomly selected nursing homes in metropolitan Melbourne, using ICDAS-II Criteria. OHRQoL was determined by using the Oral Health Impact Profile 14 (OHIP-14). Xerostomia was measured using the Xerostomia Inventory (XI) and a validating question. Saliva testing was conducted using the GC Saliva Check-Kit. This data was then analysed using SPSS V.17.0. **Results:** Nursing home residents were elderly, medically compromised and functionally impaired and had extended stays at nursing homes. The most frequently reported impacts on OHRQoL included difficulty eating certain foods (27.7%), feeling self-conscious (20.6%) and embarrassed (19.1%) because of problems with the mouth, and painful aching from the mouth (18.4%). Significantly higher rates of untreated coronal and root caries were found amongst residents who reported feeling self-conscious with a mean 3.5(SD=0.8) decayed teeth, compared to 1.9(SD=0.3) amongst those who did not report an impact. Whilst OHRQoL was not associated with salivary gland hypofunction, there were strong associations with xerostomia. The prevalence of xerostomia was significantly higher amongst residents who reported difficulty eating certain foods, feeling self-conscious or embarrassed because of the mouth and painful aching from the mouth. **Conclusions:** Improving oral health of nursing home resident is likely to result in significant improvement in quality of life. This abstract is based on research that was funded entirely or partially by an outside source: Alzheimer's Australia Hazel Hawke Research Grant Dental Health Services Victoria Research Grant.

This paper is competing for the Colgate Award (Senior)

169798

Determinants of Oral health of School Children in NSW, Australia

S. SIVANESWARAN, Population Oral Health, University of Sydney, New South Wales, Australia, R. BYUN, New South Wales, Ministry of health, Liverpool, Australia, and L.G. DO, ARCPOH, Dental School, University of Adelaide, Adelaide, Australia

Evidence is required to inform effective health promotion strategies to reduce inequalities in child oral health. **Objectives:** The aim of this paper is to document the determinants of oral health of children in NSW. **Methods:** The survey covered a representative sample of children aged 5–12 years from schools in NSW. Trained and calibrated examination teams conducted oral epidemiologic examination. Basic demographic data was also collected. Negative binomial regression analysis was used to calculate the rate ratios (RR) between determinants and oral health outcomes while controlling for other factors. **Results:** Total of 7995 children were examined. After controlling for other variables, for children aged **5 to 10** years: living in a postcode where the town water supply was unfluoridated(RR=1.60; 95% CI, 1.29-2.00), Indigenous children (RR=1.66; 95% CI, 1.25-2.20), having a parent/ guardian with a Centrelink concession card (RR=1.61; 95% CI, 1.41-1.84), having a mother who was born in a country that does not use English as a main language (RR=1.79; 95% CI, 1.53-2.08), increasing remoteness (IRR=1.93; 95% CI, 1.24-3.02) was significantly associated with a increase in the count of **deciduous dmfs.** Similarly, for children aged **8 to 12 years:**living in a postcode where the town water supply was unfluoridated (RR=1.33; 95% CI, 1.02-1.72), being of Indigenous background ((RR=1.77; 95% CI, 1.30-2.40)), having a parent (or guardian) who is a holder of a Centrelink concession card (RR=1.55; 95% CI, 1.33-1.81), having a mother whose English is not the main language (RR=1.24; 95% CI, 1.03-1.48), was significantly associated with a increase in the count of **permanent DMFS**. **Conclusions:** Children of indigenous background, living in unfluoridated areas, whose parents are concession card holders, having a mother who was born in a country that does not use English as a main language have significantly higher dental decay rates than the general child population.

169800

Preclinical Development of an Indicator that Specifically Labels Porous Hydroxyapatite

J.E. MANGUM, Department of Pharmacology, University of Melbourne, Parkville, Victoria, Australia, and M. HUBBARD, Department of Paediatrics, University of Melbourne, Melbourne, Australia.

Objectives: This project aimed to develop and test a new type of dental indicator that could be used clinically to detect abnormally porous hydroxyapatite, as encountered in hypomineralisation defects and the early stages of caries. **Methods:** We selected a protein that had the dual characteristics of (1) high-affinity binding to hydroxyapatite, plus (2) the capacity for chemical modification without loss of this binding activity. The indicator was synthesised by coupling this protein to a blue-black dye using a heterobifunctional cross-linker. Functionality was assessed *in vitro*by measuring reversible binding to pure hydroxyapatite powder. Preclinical testing included exposure of the indicator to (1) hypomineralised enamel lesions, (2) enamel with experimental demineralisation (phosphoric acid etch), and (3) enamel with natural caries lesions; all followed by water rinsing and photography. **Results:** Successful synthesis was established by showing that the indicator was highly visible and could bind reversibly to pure hydroxyapatite *in vitro*. Potential clinical utility of the indicator was demonstrated through its ability to highlight the presence of hypomineralised and demineralised enamel regions. Tortuous boundaries of hypomineralised enamel were revealed starkly, so facilitating complete removal of affected tissue. Acid-demineralised enamel was readily visualised in a severity-dependent fashion. Natural caries lesions were rapidly and intensely labelled over most of the visibly-affected regions. However some areas of apparently-intact surface enamel were unlabelled, suggesting that the indicator may usefully distinguish active from inactive caries. **Conclusions:** This novel indicator shows promise for delineating hypomineralised enamel from normal, for early detection of caries and enamel erosion, and for distinguishing active from inactive caries. Further work is required to explore each of these aspects, and to investigate the utility of additional reporter elements (e.g. radiographic indicator).

This paper is competeting for the Colgate Award (Senior)

169802

Complex dental phenotypes - inferences from family data

T. HUGHES, and G. TOWNSEND, Dentistry, University of Adelaide, Adelaide, SA, Australia.

Objectives: The human dentition demonstrates significant variation in development, form, function and liability to defects and disease. Variation exists within and between individuals, families, sexes, ethnic groups and populations. It has been attributed to temporal effects acting at the level of the individual (within a lifetime) and the population (across generations). Such variation elicits two fundamental questions for dental researchers: 1. What proportion of a population's phenotypic variation is due to genes, and what proportion is due to environmental factors? 2. How do genes and the environment interact to produce specific phenotypes, and how might such knowledge better inform clinical decision-making? **Methods:** These questions can be addressed using family studies; the former through use of population models of phenotypes that exhibit familial aggregation, and using linkage and association analyses to identify key genes; the latter by identifying functional variants and quantifying levels of gene expression. The role of the epigenome in development and patterns of trait transmission has assumed increased importance in biological models of dental variation. This, too, can be addressed through judicious use of family data. **Results:** This presentation will illustrate how studies of twin families can be used to partition population variation into genetic and environmental components using mathematical models of the twin relationship. It will explore how such models can reveal information about relationships between dental features, and how these models can advantageously incorporate molecular marker data to identify genes of major influence. Finally, the presentation will briefly examine how studies of monozygotic twins can be used to model the role of the epigenome in dental development. **Conclusions:** Family studies present a powerful, top-down approach to exploring variation in complex dental phenotypes.
Acknowledgements: We acknowledge the NHMRC, ADRF, Foundation for Children and Colgate for their support and we thank the twins and their families for their participation. This abstract is based on research that was funded entirely or partially by an outside source: NHMRC CCRE - 565520

This paper is competing for the The Oral Biology Award

169807

The Association Between *Fusobacterium nucleatum* subspecies and Adverse Pregnancy Outcomes

S. STOCKHAM[1], C. ROBERTS[2], C. MARCHANT[3], and P. ZILM[1], [1]School of Dentistry, University of Adelaide, Adelaide. South Australia, Australia, [2]Obstetrics & Gynaecology, University of Adelaide, Adelaide. South Australia, Australia, [3]Colgate Australian Clinical Dental Research Centre, University of Adelaide, Adelaide. South Australia, Australia

Objectives: *Fusobacterium nucleatum* (*Fn*) is one of the most abundant species in the sub-gingival biofilm and has been isolated from amniotic fluid in cases of adverse pregnancy outcomes (APO). The aim of the study was to identify if particular sub-species of *Fn* were capable of haematogenous transmission to the uterus in mice causing APO. **Methods:** At day 16 of their 21 day gestation, pregnant mice were intravenously injected with 0.1 mL saline or individual *Fn* subspecies. At day 18, two mice were sacrificed to identify if *Fn* was present in the blood, liver, spleen or placenta using PCR. DNA primers used were specific for each subspecies. **Results:** The haematogenous spread of *Fn* to the placenta was confirmed. Mice challenged with *Fn* demonstrated intrauterine growth restriction (IUGR), low birth weight (LBW) and fetal resorption compared with controls. The litter size and number of resorptions were statistically significant between groups, (p=0.023 and p=0.001 respectively). Mice inoculated with; a) subsp. *vincentii* and *fusiforme* demonstrated significantly more resorptions than controls (mean difference 3.30, p=0.014, p=.026). b) subsp. *nucleatum* demonstrated late resorptions associated with arrested fetal development.c) subsp. *fusiforme* significantly reduced placental weight (0.089±SEM g versus 0.114±SEMg p=0.00). d) subsp. *polymorphum* was the only subspecies found not to translocate to the placenta.e) subsp. *vincentii* reduced the length of gestation (19.6± 0.173 days) compared with other groups (p=0.025). f) *Fn* subsp. induced a significant difference in weight at day 18 and delivery compared with controls. **Conclusions:** This study confirmed that *Fn* can transmigrate haematogenously to the uterus, leading to APO in mice. The introduction of *Fn* subsp. into the bloodstream results in IUGR, LBW and stillbirth to varying degrees. *Fn* subsp. *vincentii* may be associated with PTB. This study strengthens the role of *Fn* in the association between periodontitis and adverse pregnancy outcomes.

This paper is competing for the Colgate Award (Junior), Colgate Travel Grant Winner

169808

How readable are Australian Paediatric Oral Health Education Materials?

A.S.F. LAM, Faculty of Dentistry, University of Sydney, Westmead, Australia, Z. KARAMI, Faculty of Dentistry, University of Sydney, Surry Hills, NSW, Australia, and A. ARORA, Population Oral Health, University of Sydney, Westmead, Australia

Objectives: The objective of this study was to analyze the readability of paediatric oral health education leaflets available in Australia. **Methods:** Forty Australian paediatric oral health education materials from the industry, commercial and government organizations were analyzed for general readability according to the following parameters: - Readability (Flesch-Kincaid grade level (FKGL), Gunning Fog index (Fog) and Simplified Measure of Gobbledygook (SMOG)) - Thoroughness (inclusion of topics important to children's oral health) - Textual framework (use of pictures, bulleted text) - Terminology (use of jargons) **Results:** The readability showed a large variation from the 3rd grade to the 10th grade with an average of 7th grade (6.55±1.94). Leaflets produced by the Industry were among the hardest to read with an average readability at the 8th grade (8.47±0.05). The readability of leaflets produced by the commercial sector was at the 7th grade (7.06±1.70) and the government at the 6th grade (6.33±1.98). The FKGL consistently yielded readabilities 2 grades below the Fog and SMOG indexes. In the content analysis we identified 14 essential paediatric oral health topics. **Conclusions:** Paediatric oral health education materials are readily available, yet their quality and readability vary widely. Our results show that a large number of paediatric dental leaflets may be difficult to read for disadvantaged populations in Australian. A redesign of these leaflets while taking literacy into consideration is required. This abstract is based on research that was funded entirely or partially by an outside source: NHMRC Project Grant (1033213)

This paper is competeting for the following awards: Colgate Award (Junior), The IADR ANZ Division Investigator Award in Preventive and Community Dentistry, Colgate Travel Grant Winners, IADR ANZ Division Travel Grant Winner

169854

Epigenetics: unravelling the molecular mechanisms that underpin dental development

S.D. WILLIAMS, T. HUGHES, and G. TOWNSEND, School of Dentistry, University of Adelaide, Adelaide, Australia.

Objectives: Research following the completion of the Human Genome Project has demonstrated that the aetiology of complex diseases cannot be explained by genetics alone. Much research is now looking at epigenetics in an effort to elucidate how the environment interacts with our genes to bring a phenotype or disease process into being. One aspect of our current research involves investigating whether a discordant epigenetic profile may be associated with discordant expression of dental developmental anomalies in a cohort of Australian MZ twins. **Methods:** We subjected 60 DNA samples from 30 MZ twin pairs to epigenetic analysis (genome-wide microarray methylation profiling). A control group of concordant MZ pairs was compared with a group of discordant pairs for missing and extra teeth. All groups were ascertained across a broad range of tooth sizes, and an approximately equal distribution of males and females was selected. **Results:** DNA samples were taken at the time of phenotyping, approximately 20 years ago. Although a degree of degradation was evident, our samples were still of high quality. Preliminary results have shown that there is a substantial degree of discordance in epigenetic profiles between many MZ twin pairs and that discordance may be greater for twins with discordant dentitions. **Conclusions:** Our preliminary analysis suggests that, at a genome-wide level, there may be an influence of methylation status on tooth formation, manifesting in variation in the presence or absence of teeth. Further analyses are required to investigate effects on tooth size and more sophisticated site-specific analyses are also required to investigate specific genes. Epigenetics research is now being applied in several areas of dentistry and promises to have far-reaching clinical implications in the future.
Acknowledgements: We acknowledge the NHMRC, ADRF, Foundation for Children and Colgate for their support and we thank the twins and their families for their participation. This abstract is based on research that was funded entirely or partially by an outside source: NHMRC Project - 1006294 NHMRC CCRE - 565520 Foundation for Children ADRF.

This paper is competing for the Colgate Award (Junior), Colgate Travel Grant Winner, IADR ANZ Division Travel Grant Winner

169855

Diversity and Complexity: Dental Anomalies and Health Inequalities

A. BROOK[1], A. HONE[2], E. HART[3], G. TOWNSEND[4], T. HUGHES[4], and M. BROOK O'DONNELL[5], [1]Queen Mary University of London, Institute of Dentistry, London and, University of Adelaide, Adelaide, Australia, [2]School of Mathematics, Statistics & Actuarial Science, University of Kent, Canterbury, England, [3]School of Computing, Napier University, Edinburgh, Scotland, [4]School of Dentistry, University of Adelaide, Adelaide, Australia, [5]Research Center for Group Dynamics, University of Michigan, Ann Arbor, MI

Objectives: To examine how the findings from investigating the interactions during dental development as a Complex Adaptive System can indicate both the possibilities of reducing the frequency of dental anomalies in populations and approaches to other oral and general health inequalities. **Methods:** 1, Examine the published data on the development of the dentition for evidence of the general characteristics of Complex Adaptive Systems. 2, Identify factors from this process that could be modified to reduce the frequency of dental anomalies. 3, Apply these findings to strategies designed to reduce oral and general health inequalities. **Results:** In the development of the dentition lower level molecular interactions, genetic/epigenetic/environmental, lead to the emergence of higher level cells, tissues and calcified teeth as a self organising process. Antagonistic actions of Fgfs and Bmps influence the expression of Pax 9, while the differentiation of cells is partly regulated by the epigenetic factor histone demethylase. Multitasking, another characteristic of Complex Adaptive Systems, occurs as genetic pathways act simultaneously and in parallel. The self adaptive characteristics of critical phases, robustness and diversity have also been identified. From the multifactorial interactions leading to dental anomalies, it is the general environmental factors of poor nutrition, infection, toxins and trauma that could most readily be targeted. **Conclusions:** 1, Diversity and Complexity affect the development of the dentition, which has the characteristics of a Complex Adaptive System. 2, from the complex aetiology of dental anomalies it is the general environmental factors that are possible initial targets in seeking to reduce the burden of treatment need. 3, programmes to address dental anomalies should be part of, and can contribute to, strategies to reduce oral and general health inequalities.

169857

Identifying individual Possums using their oral bacteria

C. BENN[1], J. KIESER[1], J. UPRITCHARD[1], G. TOMPKINS[1], J. ROSS[2], and N. HENG[1], [1]Sir John Walsh Research Institute, University of Otago, Dunedin, New Zealand, [2]Faculty of Agriculture and LIfe Sciences, Lincoln University, Lincoln, New Zealand

The New Zealand Brushtail possum, *Trichosurus vulpecula*, poses a threat to native forest and fauna. Furthermore, possums constitute both reservoir and vector for bovine tuberculosis. To better monitor possum ecology, new ways of population monitoring and management are required. **Objectives:** The aims of this study were (i) to determine whether possums can be individually identified by the bacteria they leave when biting Waxtags™; and (ii) to determine how long after biting can bacteria be recovered from Waxtags™. **Methods:** Eight possums from two locations were sampled by swabbing the central incisors and culturing the bacteria on Mitis-Salivarius agar (selective for streptococci). DNA was isolated from individual bacterial colonies and amplified by arbitrarily-primed polymerase chain reaction with OPA-2 as primer. The amplicons were separated by agarose electrophoresis and compared. Following biting by a human, plain and sugar-coated Waxtags™ were tied to trees (outside) and sampled at three, five and seven day intervals. Streptococci were cultured and the number of colonies compared. **Results:** Of the eight possums sampled, only two (one from each geographical location) had distinct dominant amplicon profiles. Three possums from each location shared dominant amplicon profiles. Possums from the same location possessed similar amplicon profiles but there were no similarities between possums from different locations. Streptococci were recovered from sugar-coated Waxtags™ after seven days, but from plain Waxtags™ streptococci could not be recovered after three days. **Conclusions:** Possums from the same geographical region harbor streptococci with indistinguishable DNA profiles and therefore cannot be identified by this method. However, possums from different locations have distinct streptococcal DNA profiles and this may aid in identifying animals from separate ranges. Sugar-covered Waxtags™ offer an opportunity to monitor possum activities over extended periods and could provide a more cost effective method of population monitoring.

This paper is competeting for the Colgate Award (Junior)

169859

How genetic factors influence variation in the oral microbiota

C.J. ADLER[1], T. HUGHES[2], and G. TOWNSEND[2], [1]Dentistry, University of Sydney, Westmead, Australia, [2]School of Dentistry, University of Adelaide, Adelaide, Australia

Objectives: Dental caries continues to be the most common chronic disease affecting Australian children, despite the implementation of public health initiatives. This presentation aims to review how host genetic and environmental factors drive the critical variation in composition of the oral microbiota, leading to either dental decay or oral health, through the genetic analysis of oral samples from twin cohorts. **Methods:** To demonstrate the links between genes, environment and dental disease, we need to first identify which aspects of the oral microbial community are associated with dental decay. This presentation will review the elusive aetiology of caries and changing estimates of heritability of this disease. Varying results have been produced when the composition of the oral microbial community has been investigated using different types of genetic analyses. These techniques have evolved from traditional methods, which include culture and culture-independent techniques (e.g., cloning), to next-generation sequencing methods that enable in-depth analysis of microbial communities. **Results:** Due to the current lack of in-depth taxonomic information available for the oral microbial community, in both caries and health, we do not have a have a realistic picture of the complex oral microbial ecosystem or what factors control it. To address this issue, we plan to examine how host genetic and environmental factors influence variation in the oral microbiota by conducting an in-depth genetic analysis of oral samples from the Australian twin cohort, which is managed by the Craniofacial Biology Research Group. **Conclusions:** The advancement in genetic techniques has meant there are new opportunities for twin studies to clarify how host and environmental factors shape the oral microbial community structure, and drive the ecosystem towards either health or caries. By revealing how these factors influence the oral microbiota's composition, this information will be used to identify high caries-risk individuals and direct caries treatment approaches.

This abstract is based on research that was funded entirely or partially by an outside source: NHMRC and Wellcome Trust

169860

Ancient DNA from dental calculus records past dietary changes

C.J. ADLER, Dentistry, University of Sydney, Westmead, Australia

Objectives: Human evolution has been punctuated by major changes in diet, with important impacts on our biology. Two of the biggest dietary shifts involved the increasingly carbohydrate-rich diets associated with the adoption of Neolithic (farming) diets from ~10,000 years BP and the industrial processing of staples such as flour and sugar in the Industrial Revolution (~1800 AD). Increased signs of physiological stress in Neolithic skeletal records suggest that these changes directly underpin many diseases associated with modern lifestyles. Major shifts in human diet are likely to have considerable impacts on commensal bacteria, and co-evolved host-microbiota mutualisms whose role is increasingly recognized in human health and disease. However, the evolutionary history of human microbiota is poorly quantified, and genetic records from commensal bacterial have not yet been recovered from fossil remains. **Methods:** Here we show that dental calculus on ancient human teeth preserves a detailed record of past bacterial DNA diversity and health changes. We collected dental calculus samples (n=28) from ancient European agriculturist groups spanning the Neolithic to Medieval periods. Bacterial DNA was extracted from the sterilised calculus samples and used to generate PCR amplicon libraries of the 16S rRNA gene, which were sequenced using 454 technology. **Results:** We found that dental calculus from early European farming communities had higher oral microbe diversity compared to modern populations, with a dominance of bacteria associated with periodontal disease. The latter maintain relatively constant levels after the introduction of agriculture. The composition of oral microbiota remained surprisingly constant between Neolithic and Medieval times, after which (the now ubiquitous) caries-forming bacteria became dominant, probably during the Industrial Revolution. **Conclusions:** The data suggests the ecosystem of the human mouth has recently undergone changes, and provides insight into the pathogenic consequences. Archaeological dental calculus provides a method to track the evolution of oral diseases. This abstract is based on research that was funded entirely or partially by an outside source: Wellcome Trust

This paper is competeting for the Colgate Award (Senior)

169861

Support Needs and Quality of Life in Oral Cancer

K.A. MOORE[1], P.J. FORD[1], and C.S. FARAH[2], [1]School of Dentistry, University of Queensland, Brisbane, Australia, [2]UQ Centre for Clinical Research, The University of Queensland, Herston, Australia

Objectives: Oral cancer diagnosis and treatment have a substantial effect on the quality of life of those affected by the disease. In addition to coping with the physical side effects of treatment, sufferers of oral cancer must also face the diagnosis of a life threatening illness. This report aims to systematically review the literature describing the support needs of oral cancer patients and their influence on quality of life (QoL). **Methods:** Six electronic data bases were searched using a combination of key word and Medical Subject Heading (MeSH) terms, yielding 790 potentially relevant articles. Forty-five articles were identified as meeting the inclusion criteria. Articles were included if they described support needs influencing quality of life in oral cancer patients, were original research and were published in English. Findings were synthesized based on the prevalence of the support need(s) identified and their relative impact on QoL. **Results:** Support needs identified with a high prevalence and high impact on QoL included coping with the burden of radiotherapy in both psychosocial and physical aspects, dry mouth and oral dysfunction issues. Issues of depression, anxiety and malnutrition were identified as having a low prevalence, but high impact on QoL. **Conclusions:** The support needs of oral cancer patients are varied and highly subjective, reflecting the complex nature of the disease and its treatment. Reflective of their high impact on QoL, future research should investigate the psychological and social support needs of oral cancer patients, in addition to physical support needs throughout treatment. This abstract is based on research that was funded entirely or partially by an outside source: Dental Hygiene Association of Australia.

This paper is competing for the Colgate Award (Senior)

169862

Regulation of Immune Cells in Oral Lichen Planus

F.A. FIRTH, L. FRIEDLANDER, V. PARACHURU, T. KARDOS, A. RICH, and G. SEYMOUR, University of Otago, Dunedin, New Zealand

Oral mucosal lichen planus (OMLP) is a common immunological disease with significant morbidity. **Objectives:** The aims of this study were: to compare the numbers and distribution of the recently described T-helper (Th) lymphocyte subsets, T regulatory cells (Tregs, $FoxP3^+$) and Th-17 cells ($IL\text{-}17^+$), known to control some immune reactions in OMLP, and to determine which cell types expressed FoxP3 and/or IL-17. The hypothesis was that $FoxP3^+$ and $IL\text{-}17^+$ cells regulate the immune response in OMLP. **Methods:** Ethical approval was obtained. Immunohistochemistry was used to investigate the presence of $FoxP3^+$ or $IL\text{-}17^+$ cells in 12 inflammatory control sections and 17 sections of OMLP. Double-labelling immunofluorescence (IF) was used to determine the type of cell expressing FoxP3/IL-17. Student's t test was used to determine the statistical significance of the quantitative results, with $p<0.05$ considered statistically significant. Intra-and inter-observer differences were assessed and these results were compared using Pearson's chi-squared test. **Results:** OMLP displayed significantly more $FoxP3^+$ cells (mean 79.3 *vs*. 20.6 cells/area, $p<0.05$) and fewer $IL\text{-}17^+$ cells (mean 1.05 *vs*. 3.30 cells/area, $p<0.05$) than non-specific inflammatory cases. The majority of $FoxP3^+$ cells were in the sub-epithelial infiltrate, while $IL\text{-}17^+$ cells were deeper in the stromal tissues. IF showed that $FoxP3^+$ cells co-localised with T cells, while the $IL\text{-}17^+$ cells did not, rather they morphologically resembled mast cells. All $IL\text{-}17^+$ cells were positive for mast cell tryptase but not all cells with the appearance of mast cells were positive for IL-17. **Conclusions:** The higher proportion of $FoxP3^+$ cells in OMLP supports the hypothesis that these cells are involved in the immune response of the disease, while the down-regulation of $IL\text{-}17^+$ cells could also be important in the immune control of OMLP. The identification of $IL\text{-}17^+$ cells as mast cells in OMLP rather than T lymphocytes as previously considered is also of relevance. This abstract is based on research that was funded entirely or partially by an outside source: Otago Medical Research Foundation Summer Studentship Scholarship

This paper is competing for the Colgate Award (Junior)

169864

Defective repair signalling in oral SCC cell-lines following DNA damage

M. JESSRI, A.J. DALLEY, and C.S. FARAH, Oral Oncology Research Group, University of Queensland Centre for Clinical Research, Brisbane, Australia

Objectives: Comparative evaluation of double strand break (DSB) dynamics in progression of potentially malignant oral disorders to oral squamous cell carcinoma (OSCC). **Methods:** Two discrete approaches were used to induce DSB in cell lines derived from normal through dysplastic to OSCC tissues. Hydrogen peroxide induces DSB via indiscriminate oxidative damage whereas camptothecin induces DSB by specifically intercalating to the DNA/topoisomerase1 interface. Camptothecin induced DSB are cumulative, reversible and consequent to cell cycle interruption at S phase. After optimization, γH2Ax foci were counted manually and confirmed by image analysis software and Western blot. **Results:** Dynamics of DSB repair in response to hydrogen peroxide and camptothecin was observed over 24 hours. Maximal number of γH2Ax foci was detected immediately and 2 hours post exposure to camptothecin and hydrogen peroxide respectively; the repair was linear onwards. When adjusted for the baseline number of γH2Ax, neoplastic cell lines showed the lowest number of maximal DSB and slowest rate of repair compared to other cell lines. Severely dysplastic cell lines also showed a significantly lower increase in the number of γH2Ax foci when compared to mildly dysplastic and normal oral cell lines ($P<0.008$). **Conclusions:** There is a difference in efficiency of DSB repair pathways in different cell lines derived from different stages of oral carcinogenesis with neoplastic cell lines having the most defective DSB repair system. This abstract is based on research that was funded entirely or partially by an outside source: Australian Dental Research Foundation

This paper is competing for the Colgate Award (Senior)

169867

Trends in Information Technology in Dentistry in Australia

P.D. BARNARD, Australian Dental Association, St Leonards, Australia

Objectives: To examine information technology trends within dental practices and its use in continuing professional development [CPD] of dentists in Australia. **Methods:** Dental Practice Surveys were conducted by the author from 1961 to 2010. Questionnaires were sent to Australian Dental Association [ADA Inc.] members every 3-5 years. Returns [23,395] from 6 surveys [1993-2010] represented 49% of members. **Results:** Relative decrease of solo practitioners and increase of salaried dentists has resulted in more staff and facilities per private practice. Dentist CPD hours per year increased slowly from 4.7 in 1984 to 5.4 in 2010. Internet use for CPD increased from 44% in 2001 to 65% in 2010. Communication with ADA Inc. improved and by 2010, 29% were using the Online National Library. Computer private practice use increased from 9% in 1983 to 43% in 1993 [mostly accounts]. From 1997 to 2004 computer usage increased: Internet 21-81%; patient records 14-38%; accounts 57-83%. 2010 non-clinical computer practice use was: accounts 87%; staff education 37%; patient education 37%; patient recall 73%. 2010 computer clinical digital use was: charting 50%; photography 58%; radiographs 65%; models 15%. In 2004, 65-68% of respondents supported ADA Inc. use of electronic surveys through website and e-mail and to report fees, patient visits and services provided. In 2010, support was shown for: electronic prescription writing 55%; integration of MIMS with records 64%; and future e-Health records 49%. **Conclusions:** Dentistry in Australia has embraced information technology changes with increased computer use for CPD and dental practice activities, along with digital IT changes for records and equipment.

169870

Bisphosphonate and geranylgeraniol regulate angiogenic genes in human gingival fibroblasts

S. ZAFAR, D. COATES, G. SEYMOUR, B. DRUMMOND, T. MILNE, and M. CULLINAN, Sir John Walsh Research Institute, University of Otago, Dunedin, New Zealand

This abstract is based on research that was funded entirely or partially by an outside source: Maurice and Phyllis Paykel Trust (MPPT) and New Zealand Dental Research Association Foundation (NZDARF)

Previous studies have indicated that the mevalonate pathway (MVP) and an anti-angiogenic effect of bisphosphonates may play a role in the pathogenesis of bisphosphonate related osteonecrosis of the jaw (BRONJ). **Objectives:** To determine the effects of the bisphosphonate, zoledronic acid (ZA) and replenishment of the MVP by geranylgeraniol (GGOH), on human gingival fibroblasts (HGFs) at the cellular and genetic levels. **Methods:** Primary cell lines of HGFs (n=5) were cultured from gingival tissue excised during gingivectomy/crown-lengthening surgeries. All assays were conducted at 24, 48, 72 and 96hrs post treatment with and without ZA and GGOH (72hrs only). Cell viability and apoptosis were determined using the CellTiter-Blue viability assay, the caspase3/7 apoptosis assay and transmission electron microscopy (TEM). *Quantitative* Real-Time PCR (qRT^2-PCR) gene expression assays were conducted for VEGFA, BMP2, RHOB, EREG and IFNA1 with ELISAs for VEGF-A and BMP-2. **Results:** Cellular viability increased in the presence of 20-50µM ZA at 24hrs and then decreased rapidly. The simultaneous addition of ZA and GGOH (at 72hrs) restored cell viability to control levels. Caspase 3/7 was detected in ZA treated HGF. TEM revealed dilation of the rER with ZA and multiple lipid-like vesicles following the addition of GGOH. ZA significantly ($p<0.05$, Fold Induction>±2) up-regulated VEGFA, RHOB, BMP2 and EREG at one or more time points but not IFNA1. Addition of GGOH resulted in a reduction in the expression of all genes compared with ZA treated HGFs. The protein concentration of VEGFA was higher in ZA treated HGFs compared to controls, however BMP2 proteins were undetected. **Conclusions:** ZA increased expression of four key angiogenesis genes in HGFs. GGOH partially reversed the effects of ZA in HGFs both at the cellular and genetic levels, suggesting the regulation of these genes is mediated via the MVP. This study was funded by the MPPT and NZDARF.

This paper is competing for the Colgate Award (Senior)

169873

Long Term Evaluation of Direct Pulp Therapy–A Retrospective Study

R. HARICHANDRAN, A. FERNANDES, L. BANICEVIC, J. AURORA, M. HEFFERNAN, W.R. EVANS, and P. DUCKMANTON, Endodontics, University of Sydney, Surry Hills, Australia

Introduction: Direct pulp therapy (pulp-capping) is defined as wound dressing of exposed vital pulp tissue, usually indicated due to pulp exposure through caries excavation or mechanical trauma. At present, treatment of pulpal exposures using this procedure remains a contentious clinical issue. A lack of standardisation in treatment criteria means that there is variation in: medicament choice; time elapsed prior to placement of the permanent restoration; and timing of review appointments. **Objectives:** To evaluate systematically the cumulative survival rate of direct pulp-capped permanent teeth treated at the Sydney Dental Hospital between 2005-2010. **Methods:** Records of patients treated at Sydney Dental Hospital with direct pulp therapy procedure carried out during the periods from 2005-2010 were retrieved. Patients without any follow-up record were invited to attend for clinical evaluation. Direct pulp therapy was considered a failure where the tooth had been extracted, endodontic therapy undertaken, was negative to vitality testing or if apical rarefaction was detected. **Results:** Follow-up data was available for 280 patients. Pulp therapy medicaments used included Ledermix® cement, calcium hydroxide, and Mineral Trioxide Aggregate (MTA). Forty-five cases were regarded as successful, equating to 16% with 235 cases or 84% rated as failing (95% Confidence Interval 79-88%.) The survival rates of teeth treated with Ledermix® cement were 79 % at 3 months and 41% and 12 months. The majority of failures occurred between the ages 31-50 years and 51-70 years, 37.5% and 35.50% respectively. **Conclusions:** It was concluded, from this study, that the procedure of direct pulp therapy with Ledermix® cement is ineffective. The practice of Ledermix® pulp-capping should be reconsidered. Further research should be conducted into the use of MTA as a pulp-capping agent.

169878

Effect Of Neuropathic Orofacial Pain On Jaw-Muscle Activity During Chewing

M.S. MEMON, Faculty of Dentistry, University of Sydney, Westmead, NSW, Australia, T. WHITTLE, Jaw Function and Orofacial Pain Research Unit, Centre for OPral Health, University of Sydney, Westmead, NSW, Australia, M. BHASKARACHARYA, Jaw Function & Orofacial Pain research Unit, University of Sydney, Westmead, NSW, Australia, C. PECK, Faculty of Dentistry, University of Sydney, Surry Hills, NSW, Australia, and G. MURRAY, Jaw Function and Orofacial Pain Research Unit, University of Sydney, Sydney, Australia

Objectives: To determine whether there is a relation between the report of neuropathic orofacial pain (NOP) on muscle activity during free (casual) and standardized chewing tasks. **Methods:** Fourteen subjects with a diagnosis of NOP (4 males and 10 females), having a mean age of 63.0±9.5 years (range 49-76) and 15 age and gender matched healthy subjects for control (5 males and 10 females) were recruited for the study. NOP subjects had a history of pain for 3-36 years. but pain free on day of experiment. In each subject, surface electrodes were placed bilaterally over anterior temporalis and masseter muscles and unilaterally over right digastric muscle. Electromyographic activity was amplified, filtered and digitized,and jaw movement was recorded with a jaw tracking system during free chewing (natural) and standardized chewing of gum on the right side of the mouth. The standardized and free chewing tasks were repeated a minimum 2 times and each trial lasted approximately 20 seconds. **Results:** A comparison of the neuropathic pain group vs. pain-free control group has demonstrated jaw muscle activity that depends on the task kinematic variables (displacement at every 0.5 mm interval). A significanct group displacement interaction ($p<0.05$) found on Right Masseter and left Masseter for free chewing and right temporalis for standardized chewing during jaw opening and for right temporalis jaw closing of free chewing. **Conclusions:** The results indicate an effect of history of NOP pain at displacement on muscle activity of elevator and depressor muscles varied between participants with no pain and chronic pain condition, which is suggestive that there is a long-term effect of neuropathic orofacial pain on jaw muscle activity. Acknowledgement: NHMRC Australia, ADRF, ADA (NSW Branch), Hamdard University, Pakistan. This abstract is based on research that was funded entirely or partially by an outside source: NHMRC

This paper is competing for the following awards: The Alan Docking IADR Science Award, The Oral Biology Award, Colgate Award (Senior)

169879

Root caries prevalence among older adults living in central Chile

R. MARIÑO[1], C.S. FU[1], and R.A. GIACAMAN[2], [1]Melbourne Dental School, University of Melbourne, Melbourne, VIC, Australia, [2]Cariology Unit, Department of Oral Rehabilitation, University of Talca, Talca, Chile

Objectives: To assess the prevalence and distribution of root caries and treatment needs in an ambulant population of older adults, living in the Maule Region of Chile. **Methods:** A sample of 438 older adults, aged 65-74 years, and living independently in the community were orally examined and underwent a structured oral health interview. Data collection extended from March to October 2011. **Results:** This was a largely dentate population (74.9%). Dentate participants had 70.4% of their root surfaces with recession. Those with exposed root surfaces had an average of 29.1 root surfaces exposed. This represents an average of 64.1% of root surfaces with recession. In relation to the prevalence of root surface caries, those with exposed root surfaces had an average 43.7% of the root surfaces with caries history, with a mean participants score on root caries index (RCI) of 8.23%, with a mean of 0.21 and 0.55 root surfaces filled and decayed, respectively. **Conclusions:** Participants seemed to have better oral health status than previously reported. The epidemiological transition in Chile would mean more older people retaining their natural teeth, which in terms of root caries would mean a potential increasing problem. Results revealed that, consistent with more recent studies conducted in independent living older adults elsewhere, root caries occurred in a lower frequency in Chilean community-dwelling older adults. Yet, this, and the proportion of unmet restorative needs could be reduced. Expansion of community-based preventive care programs specifically tailored to older adults is needed to address this challenge. This abstract is based on research that was funded entirely or partially by an outside source: IADR/RDP University of Talca, Chile Internal research grants

169880

Effect of Antiseptic Mouthwash on Retention of Oral Streptococcal Strains

J. UPRITCHARD[1], J. PLACE[2], and G. TOMPKINS[1], [1]Sir John Walsh Research Institute, University of Otago, Dunedin, New Zealand, [2]University of Florida, Orlando, FL

The use of oral antiseptic mouthwash has the potential to reduce the carriage of harmful micro-organisms but the effect on the dominant benign (potentially beneficial) organisms and concomitant disruption of the oral ecology has not been assessed. **Objectives:** This study aimed to determine the effect of mouthwash containing chlorhexidine on the retention of specific strains of streptococcus, distinguished (typed) by arbitrarily-primed PCR (AP-PCR). **Methods:** Five healthy participants undertook a two-week course of mouthwash treatment, rinsing twice daily. Samples were collected from the lower incisors before mouthwash usage and again on completion of the course. Samples were cultured on Mitis-Salivarius agar and incubated anaerobically at 37°C for 24 hours. From each participant, 30 colonies were subcultured (purified) by restreaking onto tryptic soy agar. Colonies from each subculture were lysed to release DNA that was used as template in AP-PCR. Amplicon profiles from samples recovered before and after mouthwash treatment were compared for each participant. **Results:** Overall the numbers of distinguishable streptococcus strains decreased from mean 11.4 (±3.6) before to mean 8.2 (±2.8) after mouthwash treatment; and the dominant strains changed in four participants. For two participants, the entire streptococcal profiles changed; thus, none of the strains detected before treatment were detected after treatment. Only one participant maintained the same dominant strain before and after mouthwash treatment, although the proportion of this strain decreased by 50%. **Conclusions:** These findings indicate that the protracted use of mouthwash has a significant effect on the resident oral microbiota of an individual. Future experiments to expand this trial will include samples recovered three months after completion of the mouthwash to determine whether the original streptococcal strains re-appear in the absence of the antiseptic.

169882

Australian/New Zealand Bachelor Oral Health Students: Sociodemographics and Career Decisions

S. BARROW, R. MARIÑO, and M. MORGAN, Melbourne Dental School, University of Melbourne, Melbourne, Australia

Objectives: This study aims to describe the sociodemographic profile of Bachelor of Oral Health (BOH) students in Australian and New Zealand dental schools Additionally, it aims to describe their career decisions, preferences, influences and choices. **Methods:** Data was collected during the 2009 and 2011 academic years via a questionnaire constructed and distributed on *Survey Monkey*. **Results:** A total of 271 students participated in the study. Average age was 23.7 years, ranging from 18 to 55 years. The majority of the respondents were female (87.8%), single (74.5%) and of Anglo-Saxon background (59.4%). Most students were Australian/New Zealand citizens. The largest number of respondents indicated their fathers (35.1%) and mothers (42.8%) had secondary school as their highest level of education. Over half of the students made the decision to study BOH after high school (52.8%). Of those who did not commence after high school, 53.7% had previously worked as a Dental Assistant/Auxiliary. Respondents were influenced mainly by the perception that the career involved "caring for and helping other people" (91%) and were also self motivated (90.2%). The majority of respondents wished to work in a metropolitan environment (59.8%), practising within both the public and private sectors (47.2%). Of those who indicated interest in working with a specialist, the major fields of interest were orthodontics, paedodontics and periodontics. However, 15% wanted to continue on to study Bachelor of Dental Science. **Conclusions:** This study provides an initial description of the sociodemographic profile of BOH students across Australia and New Zealand. The results indicated a majority of respondents were from Anglo-Saxon background and a larger than expected number of male students. A significant proportion of those who worked before entering BOH worked as a dental assistant. These findings indicate an overall different BOH student profile compared to dental students.

169885

Tooth Discolouration when using Odontopaste as a root canal medicament

A.A. DEVI, R. LAL, and M. CUMBERBATCH, Department of Oral Health, College of Medicine, nursing and health sciences, Suva, Fiji

Objectives: To find out if there is any change in color of teeth when using Odontopaste as intracanal medicament. **Methods:** Access cavities were cut and the root canals were prepared using a standard technique to a size 35 file in forty maxillary and mandibular extracted anterior teeth. The teeth were randomly divided into four groups of 10 teeth each and the medicaments were placed as follows: Groups 1 and 2 had Odontopaste placed in the root canals ensuring that all of the paste was below the cemento-enamel junction. In Group 3 and 4, Ledermix paste was applied in the same manner. Cavit was then placed in the access cavities of all the teeth. Groups 1 and 3 were left in sunlight while Groups 2 and 4 left in the dark for 12 weeks. The teeth were assessed every two weeks for colour changes. **Results:** After 12 weeks, definite grey changes were noted in Group 3 but no grey discolouration was noted in the other groups. However, Groups 1, 2, and 4 showed slight yellow colour changes. **Conclusions:** There were some changes in color but no grey discoloration when Odontopaste was used as an intracanal medicament.

169886

Does Cervical Cancer Predispose Females to Oral Cancer?

F. DOST[1], P.J. FORD[2], and C.S. FARAH[1], [1]University of Queensland Centre for Clinical Research, Oral Oncology Research Program, Brisbane, Australia, [2]School of Dentistry, University of Queensland, Brisbane, Australia

Objectives: The human papillomavirus (HPV) has been implicated in many mucosal cancers, including the female cervix and oral cavity. The aim of this study was to investigate whether a history of cervical cancer may increase the risk of second primary oral cancer. **Methods:** All cases of cervical, oral and oropharyngeal cancer in female residents of Queensland were extracted from the Queensland Cancer Registry for the period 1982 to 2008 and incidence of oral and oropharyngeal cancer in patients with previous cervical cancer determined. The incidence of oral and oropharyngeal cancer in the Queensland female population was calculated based on data from the registry and the Australian Bureau of Statistics. The relative risk of developing oral or oropharyngeal cancer in cervical cancer patients compared with the general female population was then determined. **Results:** Over the study period 3,328 females with an epithelial cancer of the cervix were followed up for 30,375 person-years at risk of second primary oral cancer. 18 individuals (0.59/1000 person-years) were subsequently diagnosed with oral cancer, within 20 years of cervical cancer diagnosis (mean=8.1y, SD=5.6, 95% CI 5.4, 10.9). Based on census population data, the expected incidence of oral cancer among the general female population of Queensland is 0.09/1000 person-years, giving a relative risk of 6.7 (95% CI 4.1-10.9). When stratified into UV and non-UV-associated oral cancers, the relative risks were 3.7 (95% CI 1.5, 9.2) and 9.7 (95% CI 5.2, 17.4) respectively. **Conclusions:** The present study shows that females with a history of cervical cancer have a greater than six times risk of subsequent oral or oropharyngeal cancer than females of the general population and that this risk increases to almost ten-fold for non-UV-associated oral cancers. Whether the proposed shared aetiological factor of HPV is the explanation for these findings deserves further investigation.

This paper is competing for the Colgate Award (Senior)

169887

Early detection of oral cancer by oral health practitioners

K.R. ALLEN, School of Dentistry, The University of Queensland, Brisbane, Australia, P.J. FORD, School of Dentistry, University of Queensland, Brisbane, Australia, and C.S. FARAH, UQ Centre for Clinical Research, The University of Queensland, Herston, Australia

Objectives: To identify the factors influencing the early detection of oral cancer for oral health therapists, dental hygienists and dental therapists. **Methods:** A survey was developed drawing on the literature and distributed following three oral cancer screening workshops held in regional Queensland. **Results:** The 39 participants comprised 22 oral health therapists, 12 dental hygienists and 5 dental therapists, with an average of 7.8 years since graduation. Most participants (79.5%) did not agree that patients will detect an oral mucosal change and 92.3% agreed that screening should be performed for all new and recall patients. The majority (79.5%) agreed oral cancer would be encountered in their practising career and 71.8% had detected a suspicious lesion, yet only 63.2% had referred a suspicious lesion. Most participants (74.4%) felt comfortable discussing the presence of a suspicious lesion with patients and 94.9% agreed it was the role of the dental practitioner to screen rather than the doctor. In terms of barriers to oral cancer screening, 41% of participants stated time and 23.1% stated lack of financial incentives. A higher proportion agreed lack of confidence (56.5%) and training (69.2%) were barriers. The majority (78.5%) believed they could influence a patient to cease smoking and most (87.2%) felt they should provide tobacco cessation advice. All participants felt their understanding of oral pathology and mucosal screening had improved following the workshop and that they would screen differently (87.2%) and more often (76.3%). Despite this, most still believed that further education regarding both oral pathology (94.9%) and screening (79.5%) was needed. **Conclusions:** Whilst lack of time and financial incentives were perceived to be impediments to mucosal screening , lack of confidence and training were the most prevalent barriers This issue should be addressed through implementation of effective continuing education courses targeting oral cancer screening and referral practices.

This paper is competing for the Colgate Award (Junior)

169888

Dental phenomics – a new research direction

S. RANJITKAR[1], S. MIHAILIDIS[1], C. HALL[2], and G. TOWNSEND[1], [1]School of Dentistry, University of Adelaide, Adelaide, Australia, [2]Mawson Institute, University of South Australia, Mawson Lakes, Australia

Objectives: Advancements since the Human Genome Project have highlighted the need to collect more extensive and intensive phenotypic data to clarify the complex interactions between genes and the environment in determining health and disease within human populations. This has opened up a new field of research in dentistry, termed 'dental phenomics', involving large-scale phenotyping of dental features to complement findings of genetic studies. The aim of this presentation is to review current approaches to obtaining dental phenotypic data relating to dental morphology. **Methods:** Phenomic research involving dental morphology can be explored by characterising the physical and chemical properties of teeth, including their structure and mechanical characterisation at macro-, micro- and nano-scales. Emerging techniques include 3D laser scanning, as well as micro-computed tomography (microCT) and nano-computed tomography (nanoCT). We describe the application of some of these techniques, including their advantages and limitations. **Results:** Traditional and emerging imaging techniques offer exciting opportunities for phenotyping the human dentition. A detailed characterisation of the quality of the tooth structure and the nature of bonding between organic and inorganic interfaces using nanotechniques can also provide information about the building blocks of teeth that determine their overall properties. **Conclusions:** With improvements in the efficiency of data acquisition and analysis, dental phenomic research has the potential to translate into significant benefits in clinical management of patients with underlying genetic conditions. This abstract is based on research that was funded entirely or partially by an outside source: Australian Dental Research Foundation Inc Dentsply Pty Ltd

169891

Chemical compositions of enamel associated with early erosion and remineralisation

E.D. PORTS[1], S. RANJITKAR[1], C. HALL[2], J. DENMAN[3], J. KAIDONIS[1], and G. TOWNSEND[1], [1]School of Dentistry, University of Adelaide, Adelaide, Australia, [2]Mawson Institute, University of South Australia, Mawson Lakes, Australia, [3]Ian Wark Research Institute, University of South Australia, Mawson Lakes, Australia

Objectives: Recent nanotechnological advancements have opened up opportunities for characterisation of early stages of erosive demineralisation and remineralisation of tooth structure, leading to a better understanding of the pathogenesis of dental erosion and preventive strategies. By using Time-of-Flight Secondary Ion Mass Spectroscopy (ToF-SIMS), the aim of the present study was to assess the changes in chemical composition in human enamel following a single erosion episode and a subsequent application of a remineralising (CPP-ACP) paste. **Methods:** Changes in the chemical compositions of flat, polished sound enamel specimens (n = 3) were determined at three different stages, including baseline, erosion in citric acid at pH 3 for 2 minutes, and remineralisation with a CPP-ACP paste for 5 minutes (Tooth Mousse, GC Asia, Tokyo, Japan). The specimens were then subjected to ToF-SIMS analysis at the end of each stage (ten measurements per stage) by generating both organic and inorganic mass spectral data obtained from the first 1-2 nm of the enamel surface. Principal Component Analysis (PCA) was used for multivariate analysis of the data at each stage of treatment for each specimen. **Results:** A score plot of the first two Principal Components (i.e. components 1 and 2) showed different clusters for all three stages, with a greater variation in the surface chemistry for the CPP-ACP treated surface compared with baseline and erosion stages. The concentrations of Mg, Al, Si and Fe decreased with erosion but partially recovered after CPP-ACP treatment. **Conclusions:** Our findings provide an insight into the fundamental mechanisms involved in early erosive demineralisation and remineralisation processes. The changes in the composition of metallic ions at different stages of treatment are probably associated with the changes occurring in the structure of hydroxyapatite crystals under eroded and remineralised conditions. This abstract is based on research that was funded entirely or partially by an outside source: Australian Dental Research Foundation Inc Dentsply Pty Ltd

This paper is competing for the Colgate Award (Junior)

169892

Flow Cytometric Co-expression of Bmi-1 & ABCG2 Identifies OSCC

L.P. PITTY[1], A.J. DALLEY[2], and C.S. FARAH[2], [1]School of Dentistry, University of Queensland, Brisbane, Australia, [2]Oral Cancer Research Program, University of Queensland Centre for Clinical Research, Brisbane, Australia

Objectives: The quest for deeper understanding of the processes involved in cancer has led to a widely accepted model of cancer initiation and progression based on the concept of cancer stem cells (CSCs). Many of the properties of stem cells have been observed in cells within human cancers. The objective of this research is to investigate and characterise the expression of purported CSC biomarkers ABCG2, ALDH1, Bmi-1, and transcription factors Snail-1, Snail-2, Twist-1 and Twist-2 in normal, dysplastic and oral squamous cell carcinoma (OSCC) cell lines. **Methods:** The expression of the CSC markers ABCG2, ALDH1 and Bmi-1 were examined by flow cytometry in cell lines OKF6 (normal oral mucosa), DOK (mild dysplastic mucosa), POE (severe dysplasia) and PJ15, SCC04, SCC09, SCC15, SCC25 (oral squamous cell carcinomas). RT-PCR was utilised to characterise expression of stem-ness related genes Snail 1 & 2 and Twist 1 & 2 in the same cell lines. **Results:** Bmi-1 and ABCG2 co-expression is increased in OSCC compared to normal and dysplastic cell lines. ALDH1 and Twist-2 expression is increased in dysplastic and OSCC cell lines. Snail-1 expression is decreased in dysplastic and increased in OSCC cell lines. Snail-2 expression is increased in dysplastic and decreased in OSCC cell lines. **Conclusions:** The investigation of CSC biomarkers in these cell lines has elucidated valuable understanding in characterising the initiation and progression of HNSCCs. Co-expression of stem cell markers Bmi-1 and ABCG2 may identify OSCC. ALDH1 and Twist-2 expression may be an important indicator of a tissue's progression through dysplasia to OSCC. The relationship between Snail 1 and 2 in oral tissues, as it progresses through dysplasia to OSCC, needs further investigation. Future research of CSC biomarkers in OSCC primary tissue will provide deeper understanding of the disease process and will have profound implications for diagnosis, prognosis and treatment. This abstract is based on research that was funded entirely or partially by an outside source: Australian Dental Research Foundation and Cancer Council Queensland

This paper is competing for the Colgate Award (Junior)

169893

Over Expression of BMI-1 and ABCG2 in Oral Cancer

A. MAJOR[1], A.J. DALLEY[2], and C.S. FARAH[2], [1]School of Dentistry, University of Queensland, Brisbane, Australia, [2]Oral Cancer Research Program, University of Queensland Centre for Clinical Research, Herston, Australia

Objectives: The cancer stem cell (CSC) hypothesis suggests that only a specific subpopulation of self-sustaining cancer cells have the exclusive ability to maintain the tumour. Although there has not been a well-defined set of markers defined for CSCs in oral squamous cell carcinoma, several studies have been conducted and a number of markers proposed. The objective of this research was to investigate the expression of reported stem cell markers ABCG2 and Bmi-1 in oral squamous cell carcinoma using immunohistochemistry. Furthermore, expression of ABCG2 and Bmi-1 will be investigated in cell lines derived from normal oral mucosa and oral squamous cell carcinoma. **Methods:** Expression of ABCG2 and Bmi-1 was investigated in 270 human tissue biopsies comprising oral squamous cell carcinoma (120), severely dysplastic oral mucosa (20), mildly dysplastic oral mucosa (60) and normal oral mucosa (70) via immunohistochemistry. Furthermore, qPCR was undertaken to investigate the expression of ABCG2 and Bmi-1 in a number of cell lines (OKF6, DOK, POE, PJ15, SCC04, SCC09, SCC15 and SCC25). **Results:** IHC revealed strong Bmi-1 expression in basal cells. It was also found to be over-expressed in dysplastic and cancerous cell lines as compared to normal. In addition, the same cell lines over-expressed ABCG2. **Conclusions:** The investigation of expression of Bmi-1 and ABCG2 in this sample of human biopsies and cell lines has provided valuable information regarding carcinogenesis of oral squamous cell carcinoma. It suggests that Bmi-1 and ABCG2 may be useful as cancer stem cell markers. Further research is required in this area in order to identify the true role of these markers.
This abstract is based on research that was funded entirely or partially by an outside source: Australian Dental Research Foundation and Cancer Council Queensland.

This paper is competing for the Colgate Award (Junior)

169894

Rubber Dam Use and Training Among Undergraduate Students in Fiji

A.L. PRASAD, Department of Oral Health, Fiji National University, Suva, Fiji

Objectives: : 1) To determine the isolation techniques preferred by students for different dental procedures. 2) To determine the adequacy of content covered on rubber dams. 3) To compare rubber dam use among students according to their different levels of study. **Methods:** 48 structured questionnaires were distributed among the third, fourth and fifth year dental students at FNU. **Results: :** A 100% response rate was obtained. Students preferred to use cotton rolls for isolation during GIC (79%) and Amalgam (65%) procedures. Majority of the students felt that the training and teaching sessions on rubber dam are sufficient. **Conclusions:** The results suggest that the students are aware and sufficiently trained on the use and importance of rubber dam. There are various factors in practice and training that could be emphasized to encourage students on future use of rubber dam.

169895

Relationship between Child Oral Health and Adult Level of Education

G.C. MEJIA, ARCPOH- School of Dentistry, University of Adelaide, Adelaide, SA, Australia, A.J. SPENCER, ARCPOH School of Dentistry, University of Adelaide, Adelaide, SA, Australia, J.M. ARMFIELD, Dental School, Australian Research Centre for Population Oral Health, Adelaide, Australia, and K. ROBERTS-THOMSON, University of Adelaide, Adelaide, SA, Australia

Objectives: Based on a lifecourse approach, in particular, the critical period model which specifies that exposures during a particular time window have lasting effects, this study aimed to examine the relationship between child dental disease and adult educational status. **Methods:** Data were derived from the 2005-2006 Life Course Approach to Oral Health Inequalities study, a follow-up study of a cohort recruited into the Child Fluoride Study (CFS) in 1991-1992. The current analysis includes a sample of 24- to 34-year-old South Australians (n=1608) recruited into the CFS between the ages of 7 to 17 years. The main explanatory variable originated from the CFS questionnaire in which parents were asked if the child ever had a toothache. Given the dependent variable consisted of three ordinal education levels (year 11 or less; completed year 12/certificate/diploma/trade; bachelor or higher), cumulative logit models (ordinal logistic regression) were run to obtain proportionate odds ratios. SAS 9.3 was used for the analysis. **Results:** The crude association between having experienced toothache as a child and adult educational level yielded a proportionate odds ratio of 1.36 (95%CI: 1.10, 1.70) and remained significant after controlling for sex, maternal/female caregiver education, childhood household income and childhood caries experience (total burden of disease: dmft+DMFT) with a prevalence odds ratios of 1.43 (95%CI: 1.11, 1.83). **Conclusions:** The results of this study on the social impact of dental disease suggest a relationship between child oral health and adult educational status. Childhood and adolescence could be considered sensitive periods for learning and development; experiencing pain due to dental disease during this window may impact future educational levels. This abstract is based on research that was funded entirely or partially by an outside source: NHMRC project grant 349491

169898

From Babies to Retirement: What microbes lurk in our mouths?

P.D. SUNDARESAN[1], C.M. MURRAY[1], K.J. WADE[1], M.P. CULLINAN[1], B.K. DRUMMOND[1], J.L. STANTON[2], G.J. SEYMOUR[1], and N.C.K. HENG[1], [1]Sir John Walsh Research Institute, University of Otago, Dunedin, New Zealand, [2]Anatomy, University of Otago, Dunedin, New Zealand

The human mouth is believed to harbour >700 microbial species. However, little is known about the number and types of oral species present as humans age. **Objectives:** To characterise, by next-generation DNA sequencing technology, the bacterial diversity in humans at different stages of life in both health and disease. **Methods:** Samples from five intraoral sites were taken from 28 participants in eight age groups: 10-12 months, 2-3 years, 4-5 years (with and without caries), 6-7 years, 13-15 years, 20-25 years, 40-50 years and >65 years. Bacterial 16S rRNA genes were PCR-amplified from each sample and sequenced using the GS-FLX Titanium pyrosequencer. All sequence data was processed using CLOTU. **Results:** Analysis of the bacterial diversity in all oral samples revealed the presence of only 40 to <200 distinct species with age-dependent species distribution being observed. Gram-positive species (e.g., *Streptococcus*) were predominantly detected on the dental surfaces in infants, which shifted to a more Gram-negative profile (e.g., *Leptotrichia*, *Fusobacterium*) in older age groups. The adolescent group (13-15 years) appeared to be a critical point after which bacterial profiles were dominated by genera such as *Capnocytophaga*, *Porphyromonas* and *Prevotella*. The genus *Rothia* was hardly detected in adults, suggesting that it may be child-specific. Comparison of the bacterial species between children with and without dental caries revealed significant upward shifts in the populations of *Streptococcus*. However, the prevalent streptococcal species in children with caries was not *Streptococcus mutans* but *Streptococcus sanguinis*, a finding that merits further investigation. **Conclusions:** Despite a limited range of species overall, age-dependent shifts in oral bacterial diversity were evident at different stages of life with some genera being detected only in certain age groups, e.g., *Rothia* (children). Furthermore, the presence of under-studied genera such as *Lachnospiraceae* and *Leptotrichia* demonstrate the need to elucidate their ecological roles in the oral cavity. This abstract is based on research that was funded entirely or partially by an outside source: New Zealand Lottery Grants Board (Lottery Health) and New Zealand Dental Association Research Foundation/Ministry of Health

This paper is competing for the Colgate Award (Junior)

169899

Characterisation of the novel *Porphyromonas gingivalis* transcriptional regulator PgMntR

H.B. SAID GULAM KHAN, L. ZHANG, C. BUTLER, S. DASHPER, and E. REYNOLDS, Melbourne Dental School, University of Melbourne, Parkville, Australia

Preferred Presentation Format: Poster Discussion

Intends to withdraw abstract if preferred mode is not assigned.

Objectives: Bacterial transcriptional regulators control gene expression in respond to environmental challenges. Elucidation of the mechanism of action of these regulators in *Porphyromonas gingivalis* a major pathogen in chronic periodontitits, will provide us with a better understanding of how this organism survives in the healthy oral cavity and causes disease and may provide targets for small molecule inhibitors. We identified a novel member of the MntR family of transcriptional regulators in *P. gingivalis* (PgMntR) that uniquely contains two FeoA domains, which are usually associated with protein-protein interactions and ferrous iron transporters. MntRs usually function as a dimer regulating gene expression in response to the level of intracellular manganese. Aims: To characterise the metal binding site of PgMntR and the function of its novel two FeoA C-terminal domains. **Methods:** Wild-type and mutant PgMntR proteins either lacking FeoA domains or with altered metal binding residues were expressed, purified and characterized using mass-spectrometry and circular-dichroism spectroscopy. **Results:** Mass spectrometric analysis detected the monomeric form of the wild-type and mutated PgMntR but dimeric form of the proteins when both FeoA domains were removed. This indicated that the FeoA domains prevent dimerisation of the protein. The absence of metal ions in the purified proteins showed that metal ion is not an essential component to the monomeric form of PgMntR. Circular dichroism revealed that the mutations affected the secondary structure of PgMntR, with all of the amino acid substitutions making the protein more thermally stable. The addition of manganese increased the thermal stability of the wild-type, but decreased the stability of the mutants tested. **Conclusions:** PgMntR appears to function differently to other members of the MntR family, given that the novel double FeoA domain prevents dimerisation of PgMntR. As MntR homologues normally function as a dimer, PgMntR must use a different mechanism to function, which is yet to be elucidated. This abstract is based on research that was funded entirely or partially by an outside source: Oral Health CRC and NHMRC providing the funding.

This paper is competing for the Colgate Award (Senior)

169900

Prevention of Dental Caries From Childhood to Adulthood

P. LIU, J. SPENCER, L. DO, and J. ARMFIELD, ARCPOH, School of Dentistry, University of Adelaide, Adelaide, Australia

Intends to withdraw abstract if preferred mode is not assigned.

Objectives: To analyse the preventive effect of access to water fluoridation from childhood to adulthood. **Methods:** A cohort of 9,875 South Australia (SA) children was recruited through school dental services in 1991/1992 for the Child Fluoride Study. Parents provided residential history, preventive dental behaviours and social characteristics. Children were examined within the SA School Dental Service. Follow-up examination data were obtained from the Child Dental Health Survey through to 1999. In 2005-06 the participants were traced as young adults and recruited to follow-up two studies: Life Course Approach to Oral Health Inequalities (NHMRC #349491) and Caries Initiation Study (NHMRC #565397). Participation in these recent studies involved updating residential history, preventive dental behaviours and social characteristics as young adults. Residential histories were linked to access to fluoridated water. These young adults also underwent an oral epidemiological examination. Individual growth models were constructed to investigate the overall change in caries experience as well as individual differences in trajectory from childhood to adulthood. **Results:** A total of 1221 participants ranging in age from 20 to 35 years old had linked data from 5 examinations to 1999 and a final examination in 2006-11 period. At the final examination the mean DMFT score was 3.33 (95% CI, 3.12-3.55). The model showed that individuals varied in DMFT score and its rate of increase. The average DMFT increased 0.17 percentage point (PP) per year from age 6 to age 35. Gender and lifetime access to fluoridated water (LAFW) were associated with DMFT score. Participants with no access to fluoridated water had a 0.034 PP faster increase per year on DMFT score than those with 100% LAFW. **Conclusions:** Change in caries experience from childhood to adulthood (6-35 years old) indicated the persistence of a preventive effect of water fluoridation through to young adulthood. This abstract is based on research that was funded entirely or partially by an outside source: NHMRC

169901

Epigenetics of Dental Development

S.D. WILLIAMS, T. HUGHES, and G. TOWNSEND, School of Dentistry, University of Adelaide, Adelaide, Australia

Objectives: Developmental anomalies of the dentition have clinical implications. There is growing evidence that these conditions share common genetic influences. Our group has been exploring this using Australian twin cohorts. Phenotypic discordance in monozygous (MZ) co-twins traditionally indicates the influence of the environment. Evidence has been accumulating that epigenetic modifications may also have a role in phenotypic discordance. DNA methylation, one of three key epigenetic processes, is fundamental for embryological development and has been implicated in disease. The aim of this study was to determine whether differential DNA methylation is associated with differential expression of dental anomalies. **Methods:** The population was sourced from a cohort of Australian twins with available DNA. Phenotypic records included tooth charts of permanent dentition, tooth dimensions and tooth volume. The control group comprised 10 MZ pairs with no agenesis/supernumeraries. The first test group comprised 14 MZ pairs discordant for agenesis. The second test group comprised 6 MZ pairs discordant for supernumerary teeth. Groups were ascertained across a range of tooth sizes. Equal numbers of male and female pairs were selected. DNA samples were subjected to genome-wide methylation analysis using the Illumina450 microarray, interrogating ~485,000 CpG sites. Following routine quality control and data cleaning, we plan to analyse genome-wide and site-specific associations. **Results:** Despite modest degradation, all samples yielded methylation data. All except one control sample yielded >425,000 CpG sites. Preliminary analysis of intra-pair correlations for average beta indicated discordance between many MZ twins. There was some evidence that the discordance was greater for twins discordant for dental anomalies. **Conclusions:** This is the first study to suggest that epigenetic factors may play a role in early dental development. Our preliminary analysis suggests that, genome-wide, there may be an influence of methylation status on tooth embryogenesis. More sophisticated analyses are required for a definitive answer. This abstract is based on research that was funded entirely or partially by an outside source: ADRF NHMRC

This paper is competing for the Colgate Award (Junior)

169902

Endodontic Markers Amongst Victorian General Practitioners

T. TAH-WARE[1], M. NEWMAN[1], and **P. DUCKMANTON**[2], [1]Endododntics, University of Sydney, Surry Hills, Australia, [2]Endodontics, Sydney Dental Hospital, Surry Hills, Australia

Objectives: Investigate Victorian general practice endodontics to make comparisons with other Australian states. **Methods:** A 23 question survey regarding endodontic practices and procedures was mailed (with an electronic option to complete), to Victorian private practitioners. Questions addressed the use of; rubber dam, irrigant type, types of rotary systems used, hand instrument techniques, medicaments, magnification, obturation materials and techniques and referral patterns. **Results:** Nine and a half percent (221) responded. A majority of Victorian respondents (98%) indicated that they use rubber dam, the most common reason against being patients object to its use (64%). The most popular type of rubber dam used (76%) was latex based. Respondents who use isolation aids represented 48%. EDTA was the most common choice of irrigant used (69%), followed by Milton's® (51%), and Sodium Hydroxide (46%). The use of endodontic lubricant was favoured by 65% of respondents, with 70% indicating that they use RC Prep®, and 17% Glyde®. Rotary techniques were used by 79% of respondents. All non-users of rotary techniques had concerns about instrument fracture. Ledermix® was the favoured dressing material (79%), followed by calcium hydroxide (71%) and Pulpdent® (46%). The most popular filling techniques were lateral condensation (62%) and Thermafil® (23%). A total of 92% used Resin sealer. Sixty four percent of respondents indicated that they use magnification. A majority (57%) indicated that the percentage of patients referred was less than 10%. Fifty eight percent spend less than 25% of their clinical practice time devoted to endodontics, with 34% indicating less than 10%. **Conclusions:** Victorian dentists appear to be following accepted endodontic principles, with the take-up of magnifying aids and rotary instrumentation techniques appearing high.

169905

Retrospective study of orthograde-endodontics in a NSW tertiary referral hospital

B. LAWRENCE[1], R. SUTTON[1], C. YU[1], and **P. DUCKMANTON**[2], [1]Endodontics, University of Sydney, Surry Hills, Australia, [2]Endodontics, Sydney Dental Hospital, Surry Hills, Australia

Objectives: To evaluate the long-term success of primary nonsurgical endodontics to establish factors determining overall success, survival or failure. **Methods:** A retrospective cohort study model of patients having received primary endodontics at Sydney Dental Hospital between January 1996 and December 2002 was carried out. Over 7000 patients were identified and randomly selected for review with specific inclusion and exclusion criteria determining eligibility. Treatment details, clinical and radiographic assessment at review from time of treatment were recorded to assess outcome at least 8 years after treatment. Kaplan-Meir and Cox regression analyses determined overall success, survival and failure. **Results:** Two Hundred and Thirty Nine teeth were included in the study. At review, 188 teeth (78%) were retained and 51 teeth (22%) were lost/failed due to endodontic complications. Radiographic assessment showed 104 (43.5%) teeth with evidence of healing (success), while 135 teeth (56.5%) showed evidence of disease (survival). It was seen that the risk of failure increased per year by 2.1%, a trend seeing increasing age directly related to endodontic failure. General Practitioners were 46% times less likely to result in failure compared to an Endodontist . A significant difference in the failure rate of smokers compared with non-smokers was found, with smokers at a 2.6 times or 160% increased risk. **Conclusions:** Approximately 78% of teeth survived at least 8 years following endodontics, with 43.5 % of teeth found to be disease free (success). Age, operator and patient smoking were found significant in affecting the outcome

169909

Mastication and Muscular Thickness of Patients with Head and Neck Cancer

C.M. SANTOS, S.C.H. REGALO, and M. DE ROSSI, Morphlogy, Stomatology and Physiology, University of São Paulo, Ribeirão Preto, Brazil

Objectives: The aim of this clinical study was to evaluate the electromyographic activity and the muscle thickness of masseter and temporalis muscles of patients submitted to head and neck cancer treatment and compare this data with those persons that had never received this type of treatment. **Methods:** The experimental group consisted of 11 patients with head and neck cancer treatment finalized. This cancer treatment was based on radiotherapy focused on local of different types of head and neck cancer lesions. The control group consisted of 11 subjects paired with experimental group. The electromyographic activity (sEMG), evaluated by the data of Root Medium Square of masseter e temporalis muscles, was carried out by Myosystem Br-1 electromyographer at rest, maximal parafilm clenching, opening and closing the mouth, deglutition, chewing of bilateral parafilm, chewing of right side, of left side and of habitual side of a mastication tester. Muscle thickness was measured with a SonoSite Titan ultrasound tool using a high-resolution real-time 56mm/10 MHz linear-array transducer. Ultrasound images were obtained from the bilateral masseter and temporal muscles at rest and at maximal voluntary contraction. sEMG data were normalized by maximal clenching. Pearlson correlation test was used to discover if the correlation between muscle thickness and sEMG is different or not on two groups analyzed: patients treated to head and neck cancer and health persons. **Results:** Patients that were submitted to cancer treatment revealed negative correlation between sEMG and muscular thickness at a lot of clinical situations tested, differing to health people that do not revealed correlations between this two types of evaluations. **Conclusions:** Cancer treatment finalized at 6 months ago, in cases of head and neck cancer, affect the correlation between sEMG and muscular thickness when compared to health people group. In cancer group, when sEMG increase, the muscular thickness decrease; and it was not observed in health group. This abstract is based on research that was funded entirely or partially by an outside source: Financial Support: Fapesp. Process Number: 2010/10472-9

169914

Functional Effects of Zigomatic Implants-supported Rehabilitation: sEMG Study

M. DE ROSSI, C.M. SANTOS, R. MIGLIORANÇA, and S.C.H. REGALO, Morphlogy, Stomatology and Physiology, University of São Paulo, Ribeirão Preto, Brazil

Objectives: The aim of this clinical study was to evaluate the muscular function of patients totally rehabilitated with zigomatic (maxillar) and all on four (mandibular) implants, in regard to their maintenance of postural position, compared with those having natural dentition. **Methods:** The experimental group consisted of 20 patients (10 men, 10 women; mean age 60.6 years) using zigomatic (maxillar) and all on four (mandibular) implants for a period of at least six months. The control group consisted of 20 dentate subjects paired with members of the experimental group according to age and gender. The surface electromyographic (sEMG) activity of the masseter and temporal muscles was recorded at rest (10sec), protrusion (10sec), and right and left laterality (10sec). The RMS of maximum voluntary dental clenching normalized the RMS values of subjects' postural positions. Inter-group comparisons were made using an independent sample t-test (SPSS 17.0). Significance level was set at $P<0.05$. **Results:** There were no statistically significant ($P>0.05$) differences between groups in all evaluated situations. **Conclusions:** Patients using implants and dentate patients demonstrated similar postural sEMG values, showing that zigomatic implants-supported prosthesis can be considered a good treatment option for oral rehabilitation in edentulous patients. This abstract is based on research that was funded entirely or partially by an outside source: FAPESP (Process 2010/10289-0) Foundations of research support of Sao Paulo state- Brazil

169920

Early-childhood-caries in Qatar: Prevalence and Proposal for Improvement

A. ALKHTIB, L. MESSER, M. TEMPLE-SMITH, M. PIROTTA, and M. MORGAN, University of Melbourne, Melbourne, Australia

Objectives: Dental caries is the most prevalent chronic disease in early childhood in most communities worldwide. Several studies conducted in the Gulf Cooperation Council countries have documented a high prevalence of early childhood caries (ECC). To date, no studies have been conducted in Qatar to examine the prevalence and severity of ECC. There are no structured oral health preventive programs for preschoolers in Qatar. Objectives were to conduct a cross-sectional study of caries prevalence and severity and dental anomalies of preschoolers attending 16 kindergartens in Qatar, as part of a larger project examining issues around implementation of a primary care oral health promotion project, The Beautiful Smile Project. **Methods:** Stratified cluster random sampling was used to select 400, 4-5 year-old children from randomly- selected kindergartens. Clinical examinations, questionnaires, interviews and focus groups were utilised. Caries experience was measured using World Health Organisation (WHO) caries criteria (dmft); enamel defects were scored by the modified developmental defects of enamel index (DDE). Questionnaires concerning knowledge and attitudes towards preschoolers' oral health were distributed to 400 mothers (response rate: 79%) and 358 health professionals (69%). Semi-structured interviews and focus groups exploring acceptance of the Project were conducted with 20 key informants, 129 health professionals and 12 mothers (overall attendance 98%). **Results:** The mean dmft, caries prevalence, and significant caries index of preschoolers were 7.6 (±5.0), 89%, 13.6 respectively; 27% had demarcated enamel opacities. Interviews and focus groups revealed barriers to Project implementation including parental practices, oral health attitudes, health services staffing, and training deficiencies. However, clinicians were willing to collaborate and supportive leadership was evident. **Conclusions:** The prevalence of ECC was high in preschoolers in Qatar. There are several barriers that need to be overcome, and avenues that can be utilised, in order to implement a preventive Project for ECC in Qatar. This abstract is based on research that was funded entirely or partially by an outside source: Support: Medical Research Center, Hamad Medical Corporation and Primary Health Care Corporation, Qatar. Department of General Practice and Primary Care, Melbourne Dental School and Oral Health CRC

This paper is competing for the following awards: The IADR ANZ Division Investigator Award in Preventive and Community Dentistry, Colgate Award (Senior)

169924

Fluoride Concentration in Tank Water in Victoria, Australia

M. HOPCRAFT, N. COCHRANE, S. ZHAO, A. THEAN, A. TONG, D. TONG, Y.S. THUM, and J. WEN, Melbourne Dental School, University of Melbourne, Melbourne, Australia

Objectives: Water fluoridation is been shown to be effective in caries prevention, however not all Victorians have access to fluoridated water. Many people in rural areas rely on rainwater tanks as their water source, and since 1999 the proportion of Victorian households with water tanks has been increasing. There is currently little information available on whether these water tanks contain any fluoride, and whether the fluoride present in these tanks are at an optimal level for the prevention of dental decay. The aim of this study was to: (1) analyse the fluoride concentration of tank water collected from water tank users in rural Victoria; (2) investigate variables that may affect fluoride concentration; and (3) survey participant attitudes towards water fluoridation. **Methods:** Plastic tubes and a questionnaire were distributed through dentists to households with water tanks in rural Victoria. A midstream sample was collected and returned. Water samples were measured in triplicate using ion chromatography to determine fluoride concentration. The questionnaire contained questions about the type of water tank and roof that collected the water, as well as questions that gauged attitudes towards fluoride. **Results:** A total of 123 samples and completed questionnaires were returned. The mean fluoride concentration in water tanks of <0.01 ppm. No statistically significant association was found between fluoride concentration and variables investigated such as tank material, tank age, roof material and gutter material. Attitudes to water fluoridation varied across the State. **Conclusions:** Fluoride levels in tank water are well below the optimal level of fluoride for caries prevention (1 ppm) present in reticulated water. The rural populous which rely solely on tank water for drinking may require additional fluoride supplements for optimal caries prevention.

169941

Effect of tooth bleaching on the mechanical properties of enamel

H.M. ELFALLAH, L.E. BERTASSONI, and M.V. SWAIN, Biomaterials, University of Sydney, Sydney, Australia

Objectives: This study investigated the effect of tooth bleaching agents on the mechanical properties of dental enamel. **Methods:** Extracted human teeth were used. Half of each sample subjected to a bleaching agent and the other half was covered with nail varnish (control). Two bleaching agents were used;16% carbamide peroxide (CP)"Polanight" and 35% hydrogen peroxide (HP) "Polaoffice^{+}". Bleaching agents were applied according to the manufacturers' instructions. CP group was treated for 90 mins daily for 14 days. 35%HP was applied four times on enamel surface for 10 mins each in a single session. Samples were stored in HBSS following bleaching treatment. Nanoindentation was used for the analysis of enamel hardness, elastic modulus and creep deformation. Vicker's indentations were the basis for characterising the crack behaviour and fracture toughness of enamel. Microstructural investigation of the samples using FESEM was conducted. Data were statistically analysed using ANOVA and a Tukey test. **Results:** Hardness and elastic modulus of enamel were significantly ($P \geq .0001$) reduced (13.7% and 6.5% respectively) after treatment with CP bleaching agent. Enamel treated with HP showed significant reduction of (~10% and 5.5%) in hardness and elastic modulus respectively. Indentation crack lengths of CP and HP bleached enamel were increased (49% and 28%) with a significant ($p \leq .0001$) reduction of fracture toughness (~ 46% and 38.5% respectively). The creep deformation at maximum load has increased and the recovery at unloading was reduced after bleaching treatment. **Conclusions:** Tooth bleaching agents can produce detrimental effects on the mechanical properties of dental enamel, possibly as a consequence of damaging or denaturing of its protein components.

This paper is competing for the following awards: The Alan Docking IADR Science Award, The Joan Chong Award in Dental Materials, Colgate Award (Senior)

169943

Assessing the Prevalence of *Heliobacter pylori* in Saliva Using Elisa

Y. GOLPAK[1], J. NARA[2], M.S. SIDDIQI[3], and V.J. TEMPLE[2], [1]Division of Dentistry, University of Papua and New Guinea, Port Moresby, Papua New Guinea, [2]Division of Basic Medical Sciences, University of Papua and New Guinea, Port Moresby, Papua New Guinea, [3]Division of Dentistry, University of Papua and New Guinea, Porr Moresby, Papua New Guinea

Objectives: *Helicobacter pylori* are gram negative bacteria that are strongly associated with gastro-duodenal diseases, including chronic active gastritis, peptic and duodenal ulcers and gastric cancer. The objectives of this study were to assess the prevalence of *H. pylori* in saliva, and establish a protocol for assay of *H. pylori*in the School of Medicine and Health Sciences (SMHS). **Methods:** Subjects for this prospective cross-section study were selected from patients attending the dental clinics in SMHS and Port Moresby General Hospital. About 5.0ml of saliva was collected from randomly selected patients after obtaining their signed informed consent. Solid phase Enzyme-Linked Immunosorbent Assay (ELISA) was used for the qualitative and quantitative determination of Immunoglobulin-G antibodies against *H. pylori* in human saliva. The guidelines and cut-off points indicated by the manufacturer were used in the interpretation of both data. **Results:** A total of 250 subjects were recruited for this study, of which 117 were from the dental clinics. Analysis of the data for the 117 subjects indicated a response rate of 92.3% (108 subjects). Of the 108 subjects, 64.8% were females and 35.2% were males. Age range and mean age were 6 to 64yrs and 27.7yrs for the females; 8 to 80yrs and 32.1yrs for the males respectively. *H. pylori*were positive in the saliva of 81.4% of females and 65.8% of males. Equivocal results were obtained in the saliva of 5.7% females and 7.9% males. **Conclusions:** The noninvasive sensitive ELISA for assay of IgG against *H. pylori* shows high prevalence of *H. pylori* in saliva. This assay method might be useful as an alternative diagnostic test in place of the invasive and expensive procedures currently used for the assay of *H. pylori.*

169967

Pregnancy Outcomes in Mice with *Fusobacteirum nucleatum* Based Experimental Periodontitis

J.E. STAMFORD, School of Dentistry, University of Adelaide, Adelaide, Australia, C. ROBERTS, Obstetrics & Gynaecology, University of Adelaide, Adelaide, Australia, C. MARCHANT, Colgate Australian Clinical Dental Research Centre, University of Adelaide, Adelaide. South Australia, Australia, and P. ZILM, School of Dentistry, University of Adelaide, Adelaide. South Australia, Australia

Objectives: 1. To generate alveolar bone loss and periodontal inflammation consistent with periodontitis in mice, using Fusobacterium nucleatum and Porphyromonas gingivalis. 2. To determine whether F. nucleatum is capable of translocating from the periodontium to the murine placenta haematogenously; 3. To determine whether experimentally induced periodontitis with F. nucleatum and P.gingivalis increases the likelihood of adverse birth outcomes in mice. **Methods:** Periodontitis was induced in mice using a mixture of F. nucleatum and P. gingivalis, suspended in 2% carboxymethyl cellulose brushed into the gingival sulcus over 40 days. Mice were mated and bacterial inocluations continued until day 17 of gestation. The mice were euthanased and the placenta, liver, spleen and blood extracted and assessed for the presence of F. nucleatum and P. gingivalis by polymerase chain reaction (PCR). The maxillary and mandibular buccal gingivae and oral mucosa were harvested by sharp dissection. Half of each head was defleshed mechanically using 1% sodium hydroxide solution (NaOH) and assessed for bone loss (increased distance between the buccal cemento-enamel junction and alveolar bone crest) using a Leica MZ16FA stereomicroscope compared to controls. The other half was fixed in 10% formalin and histologically assessed for periodontal inflammation.**Results:** Alveolar bone loss was evident in the buccal maxilla and mandible in five of ten experimental mice compared to controls. Pregnancy rates were low at 50%,however, adverse pregnancy outcomes were evident in one experimental mouse (2 pups carried only compared to 7-10 pups in control mice.). **Conclusions:** Experimentally induced periodontitis with F. nucleatum and P. gingivalis in mice may cause adverse pregnancy outcomes via the haematogenous translocation of bacteria and feto-placental infection. More information is needed to determine the exact link between periodontitis and preterm birth. Oral inoculation of F. nucleatum and P. gingivalis in mice is an effective animal-based model of periodontitis.

This abstract is based on research that was funded entirely or partially by an outside source: ADRF, Grant number 77-2011

169970

Pattern of Dental Caries in 6-12 year old School Children

V.K. HARIKISHAN, Oral Health, Fiji National University, Suva, Fiji

Objectives: The aim of this study was to describe the pattern of dental caries experienced by children between the ages of 6 to12 years old in the Central Eastern Division of Fiji. **Methods:** This was a retrospective cross sectional study that aimed to collect information related to the pattern of dental caries affecting children in Fiji utilizing data present through dental records kept by the Oral Health School Teams in the Central Eastern Division. The primary target group was 112 children's records. The list of schools covered by the Ministry of Health school team for the central eastern division was obtained. Examination and treatment records of the school children were reviewed for the following information: diagnosis of caries based on tooth and tooth surface affected, age, ethnicity and gender using Epi Infor 6. The patients were from urban, periurban and rural setting. **Results:** The results showed that the molars had high frequency of occlusal caries (89.9%) followed by interproximal which had a similar trend and the least affected was incisal edge of the incisors. There was a significant difference in caries amongst schools with canteen and those without it. In the 6-8 year olds, the pit and fissures caries is the highest (50%) for schools that have canteen. Similar trends are seen in the 8-10 and 10 -12 year olds although the percentage of caries has decreased. There was no significant finding revealed across age, ethnicity and gender. **Conclusions:** There is an increase in the presence of caries on the occlusal caries amongst the 6 to 12 year olds in the greater Suva area. Hence the Ministry of Health should target these surfaces for prevention with the use of pit and fissure sealants.

169980

Triage Data and Weather of Melbourne

A. ANWAAR[1], M. TENNANT[1], and E. KRUGER[2], [1]Centre for Rural and Remote Oral Health, University of Western Australia, Perth, Australia, [2]University of Western Australia, Perth, Australia

Objectives: Currently there is lack of information on the scientific link between climatic changes and dental diseases. Linkage of climatic changes with medical conditions/diseases have been described extensively, and some information is available on associations with some dental diseases/conditions (e.g. pulpitis, temporomandibular joint pain/dislocation, tooth fracture). The aim of this study was to assess if there were any associations between the weather and the demand for emergency dental services, in the city of Melbourne Australia, over a five-year period.**Methods:** A data set with 130426 entries, over a 5.5-year period (January 2006 to August 2011) was analysed. Each entry reflected a patient demanding emergency dental treatment by phone from Royal Dental Hospital of Melbourne (RDHM). Patients were categorised into one of 5 categories, using a previously described telephone triage system. Each entry was correlated with weather data; include rainfall, temperature and solar irradiance.**Results:** Category 1 and 2 patients demanded treatment, irrespective of weather conditions.Saturdays and Sundays were the busiest days of a week in terms of emergency phone calls. Rainfall, moon phases and solar irradiance did not have any significant effects on patient demand, although some differences were observed but not significant.**Conclusions:** Although some weather effects on patient emergency service demand were noticed (in case of psychological effects on an individual), none of these were statistically significant, and there does not seem to be any associations between emergency dental service demand and various aspects of the weather.

This paper is competing for the Colgate Award (Senior)

170091
Use reimplnted Tooth As An Abutment For Fixed Partial Denture
A. GOLMORADIZADEH, Centro Escolar University, Manila, Philippines

Objectives: Save the teeth are the final goal in any dental treatment, but in some cases with poor prognosis ,extraction is the best way .In this study I focus in irremediable tooth ,means the teeth have at least 1 sign and symptom for extraction .Save the irremediable tooth now under the old method has low risk to success or in some cases is impossible .but in this method we can predict good prognosis after the operation. **Methods:** In this case patient was 43 years old, she complains about 2nd premolar upper right side. Clinical examination shows the tooth was crownless, with a big periapical lesion involved the periradicular also with initial root resorption in palatal root. Tentative diagnosis was chronic preapical periodontitis. For her we did RCT then extract the tooth, curette and irrigate the socket fill ¼ of that with hydroxyapatite and reimplant the tooth, during that I also adjust the crown root ratio to prevention of crown lengthening afterwards, then splint to the adjacent tooth for 2 weeks. And after 6month I used that as an abutment for fixed partial denture. **Results:** Radiographic examination after 6 months shows that no more lesions in periapical and periradicular area,no mobility , stopped root resorption, and tooth is was in healthy condition. And radiographic examination after 2 years shows tooth in normal condition. **Conclusions:** Following the patient after 2 years shows everything is normal and in acceptable condition. This is an example of use of reimplanted tooth as an abutment for fixed partial denture and show the use of the natural abutment it will near to our responsibility in conservative dentistry and it will be safe and more comfortable for the patients, in prevention of edentulism , bone resorption and other negative effects.

This paper is competing for the following awards: Colgate Award (Junior), The Alan Docking IADR Science Award, The Joan Chong Award in Dental Materials, The IADR ANZ Division Investigator Award in Preventive and Community Dentistry

171149
Literature review: Risk Reduction methods in Early Childhood Caries
T. KING, School of Oral Health, Fiji National Universtiy, Fiji, and W. EVANS, University of Sydney, Surry Hills, Australia

Objectives: : To review literatures on the preventive or risk reduction methods in Early Childhood Caries. **Methods:** This review covered the period from 1991 to 2005. A total of 134 journal articles were initially searched electronically from medline and embase using the search terms 'oral health promotion' (OHP) and 'project for children and adolescents' and further filtered with a total of retrieved 22 articles available for final analysis. **Results:** Most international studies included in the literature review, originated in developed; few in developing countries with only one study from the Pacific region. Studies on preventive methods either implemented a singular strategy or combinations of preventive methods. Primary measures of study effect were oral health status and behaviour outcomes, calculated as dental caries and oral health behaviour improvement, no change in dental caries or oral health behaviour and unreported findings. **Conclusions:** All studies except six, adopted combinations of preventive modalities. Disappointingly, many studies lack emphasis, render low priority or did not report oral health status measurement as an outcome.

171147
Dental Caries in Pre-School Children In Tongatapu and Suva
L. TOMIKI, and **A.S. NAIDU**, School of Oral Health, Fiji National University, Suva, Fiji

Objectives: The aim of this study is to evaluate if there is a similar pattern between diet and dental caries in Suva (2004) and Tongatapu (2011). **Methods:** Oral examinations were carried out on a sample of 70 preschool children in 4 preschools in Suva (2004). Questionnaires were given out to the respective caregivers. Oral examinations were carried out on a sample of 200 preschool 3-5 yr olds. Questionnaires were then administered to the parents/guardians. **Results:** The mean DMFT of 3.52 was determined for the study based in Suva, Fiji in 2004 for 3-6 olds and the mean DMFT in Tongatapu for 3 yr olds was 1.72. 4 yr olds was 3.37 and 5 yr olds was 3.75. Chi square analysis ($p=0.05$) depicted that the null hypothesis between dmft and diet in Suva, Fiji. However the study in Tongatapu, Tonga showed the null hypothesis is rejected ($p<0.05$) between diet and dental caries. **Conclusions:** There was no correlation seen between level of dental caries and diet in pre-schoolers in Suva Fiji 2004. However there was a significant relationship between dental caries and diet in Tongatapu, Tonga 2011 which showed that as there was more cariogenic diet the level of dental caries increased.