The University of Queensland

School of Dentistry

Research Report 2017
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Foreword

The University of Queensland School of Dentistry has a long standing history of producing high quality oral health research, with the aim of contributing to the advancement of scientific knowledge both locally and internationally. We have a strong focus on translational research, emphasising the importance of research impact on patient outcomes, as well as healthcare policy and practice. The School has demonstrated a strong track record of high quality research, having been rated at the highest level of 5 (‘well-above world standard’) in the most recent Excellence in Research for Australia (ERA) rankings.

In recent years, the school has conducted a significant recruitment of academic staff, which has resulted in a strong increase in both the quantity and quality of research outputs in 2017. Research within the school focusses on several themes, spanning fields from biomaterial science and tissue engineering through to technologies applied in clinical practice, dental public health and dental education. In 2017, there were three principal research streams within the school:

Advanced Materials and Technologies Stream: This group works across the interface between oral microbiology, cariology, dental materials science and advanced technologies to explore key topics of importance with an emphasis on the transition of research into clinical practice. Research leaders within this stream have active collaborations within UQ (Chemical Engineering, Physics, TRI, AIBN, IMB) and collaborate with multiple Australian and overseas universities on projects of common interest. The research stream acts as a node of the CRC in Oral Health, undertaking research with industry partners, as well as commercially funded research.

Regenerative Dentistry Stream: This group conducts a wide range of translational research in tissue engineering, stem cells and molecular biology aiming to replace, engineer or regenerate damaged tissues or organs, restoring normal functionality. Biomedical approaches to tissue regeneration predominately involve the use of dental stem cells, controlled released nano-delivery systems for growth factors, electrospinning, 3D bio-printing and gene editing and reprogramming. The research leaders within this stream collaborate extensively with national and international research partners, e.g. Wenzhou Medical University, Harvard University, on projects focused on the regeneration of bone, nerve, dental pulp and periodontal tissue.

Dental Public Health: The Dental Public Health research stream broadly conducts research to understand the epidemiology of health and oral ill-health; and improve and enhance the oral health of communities at a population level.

Collectively, our staff and students work hard to ensure continuing success in research. This report is a clear testament to the depth and breadth of research being undertaken at the school. These achievements have helped to provide effective solutions to contemporary challenges in dentistry and position the School as a global leader in dental and oral health research.
1. Research Grants

1.1 NHMRC

1.2 ARC

- Prof Adam Ye. Endogenous bone regenerative technique to repair hard tissue defects in congenital craniofacial clefts. ARC DE120101666. $375,000. 2012-2018

1.3 CRC


1.4 ADRF

- Dr Amro Farag. Combining Iyophilized decellularized cell sheets and customized 3D bioprinted CaP coated constructs for periodontal tissue regeneration 16/1/2017 - 15/1/2018 - $8465.00
- Ms Sarah Grainger, Dr Matthew Nangle, Prof Julie Henry. ICD Award. Oral care capacity and oral health in late adulthood - $5268.00

1.5 Colgate-Palmolive Student Grants 2017

- Miss Malak Founda – “The effect of preheating bulk fill resin composites on restoration micro leakage” - $1000
- Dr Nebu Phillip – “Ecological approaches to dental caries prevention: Alteration of dental plaque biofilms by phytochemicals” - $1000
- Dr Alyssa Zhang – “Comparative adoption of cone beam computed tomography and panoramic radiography machines across Australia: a follow up study” - $1000
- Miss Ai Leen Wee – “An In Vitro Study Comparing the Efficacy of Dentine Desensitizing Agents” - $1000
- Junback Hur, Sang Hun Jung and Tae-Hwan-Choi – “Microbial assessment of cross contaminated gutta-percha cones during endodontic treatment” - $1000

1.6 Other Successful Grants 2017

- UQ Early Career Researcher

Dr Chun Xu. Three-Dimensional Printing of Functional Mesoporous Bioceramics for Craniofacial Regeneration – 2017 $33,000

- HABS Research Collaboration Seeding Grant

Dr Chun Xu, Amir Popat and Prof Adam Ye - Electrospun core-shell nanofibers as an efficient growth factors delivery system for guided tissue regeneration – 2017 $36,817

- Multiple Sclerosis and Oral Health

Prof Pauline Ford - Multiple Sclerosis and Oral Health - 16/5-31/12/2017 $23,078

- Australian Society of Endodontology Inc Federal Branch
A/Prof Alex Moule - A novel disinfectant delivery system involving controlled release of Octenidine from silica based nanoparticles - 1/7/2017 – 30/3/2019 $6,187.44

- UQ Employability Grant (August 2017)

Dr Alyssa Zhang - Calcifying Epithelial Odontogenic Tumour in the Maxilla - 2017 $1000

- Australian Society of Periodontology Research Scholarship

Dr Jolene Sum - Factors affecting periodontal referral and the adherence to guidelines among general dentists - 2/1/17 $1,800

2. Journal Publications


3. Edited Books and Book Chapters


4. Non-refereed Publications


5. Abstract Publications


6. Conference, Oral & Poster Presentations

Al-Batanyeh, O., Teoh, Y., Walsh, L.J. Surface Treatments to Increase White Spot Lesion Porosity. IADR General Session, San Francisco. #0624.


Kroon, J., Laloo, R., Tut, O., Johnson, N.W. Caries Prevalence After Introduction and Cessation of Community Water Fluoridation. 11th IADR World Congress of Preventive Dentistry, Delhi, India, 3-6 October 2017.


March, S (2017) ‘What can be done to effectively develop and enhance care planning skills in dental students?’ 57th Annual Scientific Meeting of IADR Australian & New Zealand Division, September 2017.


Tadakamadla, J., Tadakamadla, S., Laloo, R., Johnson, N. Quality of life of patients with oral leukoplakia, lichen planus and submucous fibrosis – a comparison with healthy controls. ANZ Divisional Meeting of the International Association for Dental Research, Adelaide, Australia, 25-27 September 2017.


7. Postgraduate Research

7.1 Postgraduate Student Scholarships

• David Joo - NHMRC Dental Postgraduate Research Scholarship
• Andrea Kazoullis - Australian Postgraduate Award
• Carol Tran - NHMRC Dental Postgraduate Research Scholarship

7.2 Higher Degree by Research – Completing PhD Students in 2017

• Dr Kelsey Pateman - Oral health after head and neck cancer: Supportive care needs and quality of life implications
• Dr William Ha - Improving the properties of Mineral Trioxide Aggregate: A review of clinical usage and investigations of the effects of modifying particle size characteristics of non-aqueous alkaline endodontic materials
• Dr Carol Tran - Novel methods for debridement of dental implant surfaces contaminated by biofilm
• Dr David Joo - Surface Interface Optimisation of Elastomeric Impression Materials

7.3 Higher Degree by Research – Continuing PhD Students in 2017

• Ms Andrea Kazoullis - Interaction of Candida albicans and innate immune cells in vitro
• Dr Baboucarr Lowe - High-Throughput screening of stem cell-surface interactions
• Ms Gillian McGregor - Development of serious games technology to enhance teaching and learning of professional psychology skill
• Dr Nebu Philip - Alteration of dental plaque biofilms by CPP-ACP and other food-derived ingredients
• Dr Arosha Weerakoon - Evaluation of micro and macroscopic properties of etch and rinse, self-etch and glass ionomer cements on bonding to young and sclerotic dentine
• Dr Nicole Jenkins - Oral Health Workforce
• Dr Patricia Wright - Improved irrigation and disinfection systems in endodontic
7.4 MPhil

- Dr Stephanie Tan - *Efficacy of cold saline irrigation on reducing post-operative complications of third molar extraction* (continuing student in 2017)
- Dr Yu-Yao Teoh - *Selected performance characteristics of non-aqueous alkaline endodontic materials* (completing student in 2017)

7.5 Ongoing Doctor of Clinical Dentistry Candidates 2017

- Dr Vanessa Brown - Orthodontics
  *A systematic review and Meta-analysis of longitudinal changes in quality of life with orthodontics*
- Dr Natasha Clare – Orthodontics
  *Birth order and family size effects on oral health-related quality of life in adolescents with a malocclusion*
- Dr Christopher Franco – Orthodontics
  *A comparison of 3-dimensional mandibular superimposition methods to measure mandibular growth rotation (MGR) in growing patients undergoing orthodontic treatment*
- Dr Chiang Sigid Fu – Orthodontics
  *Evaluation of the relationship between cervical vertebrae maturation variables and fusion of the sphenoid-occipital synchondrosis*
- Dr Chris Costello – Orthodontics
  *Root length changes following orthodontic treatment with Invisalign*
- Dr Phillip Goh – Orthodontics
  *Treatment duration by morphology of impacted maxillary canines: a retrospective, multi-practitioner study*
- Dr Arun Vels Shailendran – Orthodontics
  *Determining the accuracy of Interproximal enamel reduction in Orthodontics using a 3-dimensional model system*
- Dr Borjana Simonovic – Orthodontics
  *The impact of changing advice regarding infant sleeping position on craniofacial morphology: a retrospective study*
- Dr Yastira Lalla – DMFR
  *Analysis of referral patterns to a Dento-maxillofacial radiologist from dental practitioners*
- Dr Daniel Selim – DMFR
  *Dento-maxillofacial radiology in Australia and dentist satisfaction with radiology reports*
- Dr Alyssa Zhang – DMFR (completed in 2017)
  *The adoption and usage of cone beam computed tomography and panoramic radiography machines across Australia*
- Dr Sarah Chaw – Oral Med (completed in 2017)
  *A comparison of smartphone, compact camera and digital single-lens reflex (DSLR) digital images for tele-Oral Medicine*
8. Undergraduate Research

8.1 ADRF Undergraduate Student Vacation Scholarships

- Malak Fouda – *Effect of preheating bulk fill resin composites on restoration micro leakage*
- Stephanie Tan - *Effect of propolis extracts on the biofilm formation by Streptococcus spp. on titanium surface*

8.2 Year 5 BDSc Dental Student Research Projects

- In vitro investigation of the radiopacity of endodontic materials
  - Researchers: Hannah Benoit, Tuula Kainulainen, Vinessa Ruan
  - Supervisor: Prof Laurence Walsh

- Exploring possible sources of cross contamination to the gutta percha cones in between endodontic procedures
  - Researchers: Tae Hwan Choi, Junback Hur, Sang Hun Jung
  - Supervisors: A/Prof Alex Moule, Dr Yu-Yao Teoh

- Efficacy of a New Sonic Irrigation Device on Removal of Calcium Hydroxide from Root Canals Using Octenidine
  - Researcher: Hsu Yi, Wong
  - Supervisor: Dr Unni Krishnan

- Sources and Control of Instrument-Created Noise in the Dental Operatory
  - Researchers: Philip Y-H. Chien, William Ho, Eden Tam
  - Supervisor: Prof Laurence Walsh

- Operator preferences between Articaine hydrochloride 4% with epinephrine 1:100,000 vs. Lidocaine hydrochloride 2% with epinephrine 1:80,000
  - Researchers: Nicholas Lee, Kelvin Lin, Jonathan Zhao
  - Supervisor: Dr Amro Farag

- A comparative study of recent graduates, general dental practitioners and prosthodontists’ preferences in temporomandibular disorder management
  - Researchers: Anping Hong, Lee L. Wong, May B. Wong
  - Supervisor: A/Prof Alex Moule

- Dental student attitudes towards dental dam use versus their actual clinical application: A Survey
  - Researchers: Anna Tsai, Hanh Nguyen
  - Supervisor: Dr Bruce Kidd

- The Current Status of the use of salivary biomarkers to determine periodontal disease susceptibility: A Literature Review
  - Researcher: Selene Tam
  - Supervisor: Dr Vincent O’Rourke
• Perceptions of dentistry in final year dental students at the University of Queensland.
  ➢ Researcher(s): Alisha Azam, Michelle Huang, Vera-Min Stephenson
  ➢ Supervisor(s): Dr Kelsey Pateman

• Factors affecting periodontal referral and the adherence to guidelines among general dentists
  ➢ Researcher(s): Jolene Sum
  ➢ Supervisor(s): Dr Vincent O’Rourke

• A comparison of smartphone, compact and digital single-lens reflex (DSLR) digital images for tele-Oral Medicine
  ➢ Researchers: Zheng Liang Foo, Elizabeth Goh, Tsai-Yu Hung
  ➢ Supervisors: Dr Sarah Chaw, A/Professor Neil Savage, Professor Laurence Walsh

• Effect of saliva and blood contamination on resin bond strength in dentistry: A Literature Review
  ➢ Researcher: Thanh Q. Le
  ➢ Supervisor: Dr Sandra March

• An examination of the slot dimensions of a novel passive self-ligating bracket
  ➢ Researchers: Shu-Yu Chen, Christine Cui, Chantal Le
  ➢ Supervisor: A/Prof David Healey

• The Use of Temporary Anchorage Devices by Orthodontists in Australia and New Zealand
  ➢ Researchers: Alex Ang, Suraj Ashok
  ➢ Supervisors: Dr Elissa Freer, A/Prof David Healey

• Assessing the serum carboxy-terminal crosslinking telopeptide (CTX) level changes in patients deemed at risk of ‘Antiresorptive related Osteonecrosis of the Jaw’ (ARONJ) development during a scheduled drug holiday. (LNR)
  ➢ Researcher(s): Young Su Lee, Thilen Naidoo, Jason Phan
  ➢ Supervisor(s): Dr Irina Leonida, Prof Bryan Burmeister

• The effect of active ingredients in toothpastes on Candida albicans
  ➢ Researchers: Suraj Ashok Murthy
  ➢ Supervisor: Dr Nihal Bandara

• Electrospinning of gentamicin-entrapped PVA/PCL core-shell nanofibers for controlled release in vitro
  ➢ Researchers: Li Hao Ran, Yong Jian Perry Lim, Rakila Lakicevic
  ➢ Supervisors: Dr Chun Xu, Prof Adam Ye

• Efficacy of pre-procedural rinses on reducing the viable bacteria in dental aerosols: A Literature Review
  ➢ Researchers: Joe Chia-Yu Wei
  ➢ Supervisors: Dr Bruce Kidd, Dr Sandra March
• Are University of Queensland dental students ready for interprofessional practice?
  ➢ Researchers: Hae In Han, Min Ji Kim
  ➢ Supervisor: Dr Emma Bartle

• From dental school to working life: How much do students know about integrating and managing a dental practice?
  ➢ Researchers: Hye Rim Moon, Shannon MC Sia, Jo Ann Wong
  ➢ Supervisor: Dr David Joo

• Analysis of the relationship between resilience and perceived stressors amongst Australian dental students
  ➢ Researcher: Yunjia Luo
  ➢ Supervisors: A/Prof David Healey, Prof Pauline Ford

• Australian public dental waitlists: a big picture in 2016
  ➢ Student researchers: Bi Q. Ong, Michael Tan, Zhen Z. Wang
  ➢ Supervisor: A/Prof Ratilal Laloo

• The Relationship between the Social Progress Index, and Its Components, and Oral Health: A Global Perspective.
  ➢ Students: Kare Lin, Nadiah Khairul
  ➢ Supervisor: A/Prof Ratilal Laloo

• A content analysis: comparison of cariogenic and erosive advertising in children’s and adult’s television
  ➢ Researchers: Sam Adebajo, Ruoying Pu, Robyn Sharma
  ➢ Supervisor: Dr Monica Thompson

• Perspectives and participations in dental volunteering
  ➢ Researcher: Paul Ngieng
  ➢ Supervisor(s): Dr Archana Pradhan, Nicole Stormon

• A study of the self-reported oral health attitudes and in first year undergraduate dental students in Australia
  ➢ Researcher(s): Dean Wong, Fang Yu (Jenny) Liu
  ➢ Supervisor(s): Dr Kelsey Pateman

• Access to oral health care for people with disabilities: A Literature Review
  ➢ Researcher: Trevor Lee
  ➢ Supervisor: Dr Archana Pradhan

• Access to dental care for the elderly in residential aged care facilities: A Literature Review
  ➢ Researcher: James McAnulty
  ➢ Supervisor: Dr Archana Pradhan

• Access to dental care for people with mental health disorders: A Literature Review
  ➢ Researcher: Jonathan Shin
  ➢ Supervisor: Dr Archana Pradhan
9. Research Staff

9.1 Postdoctoral Research Fellow
- Dr Nihal Bandara
- Dr Helen He
- Dr Shaneen Leishman
- Dr Kathryn Plonka
- Dr Fardad Shakibaie
- Dr Chris Wang
- Dr Michal Bartnikowski
- Dr Chun Xu
- Dr Kelsey Pateman

9.2 Research Assistants
- Dr Lilian Menezes
- Lan Xiao
- Mr Chris Sexton
- Mrs Nicole Stormon

9.3 Research Group leaders
- Prof Pauline Ford and A/Prof Ratilal Lalloo (Dental Public Health)
- Prof Laurie Walsh (Advanced Materials and Technologies)
- Prof Adam Ye (Regenerative Dentistry)
- Prof Saso Ivanovski (Tissue Engineering & Additive Manufacturing)

9.4 UQ Academics
- Prof Pauline Ford
- Prof Laurie Walsh
- Prof Saso Ivanovski
- A/Prof David Thomson
- A/Prof Ratilal Lalloo
- A/Prof David Healey
- Dr Vincent O’Rourke
- A/Prof Alex Moule
- Prof Paul Monsour
- Prof Adam Ye
- Dr Bilal El Masoud
- Dr Robert Ashman
- Dr Ryan Lee
- Dr Alyssa Zhang
- Dr Chun Xu
- Dr Emma Bartle
- Mr Christopher Sexton
- Dr Archana Pradhan
- Dr Unnikrishnan Kunjukrishna Pillai
• Dr Soorebettu Ramananda Prabhu
• Dr Desmond Ong
• Dr Matthew Nangle
• Dr Shanneen Leishman
• Dr Sandra March
• Dr Helen He
• Mr Mark Gervais
• Dr Elissa Freer
• Dr Sowmya Shetty
• Dr Amro Farag
• Mrs Nicole Stormon
• Dr Sarah Chaw
• Dr Ambereen Khan

9.5 Visiting Academics
• Hui Deng
• Prof Ove Peters
• Prof Christine Peters
• Jing Song
• Na Liu

9.6 PhD Students
• Andrea Kazoullis
• Dr Nebu Philip
• Dr Trish Wright
• Carol Tran
• Dr Arosha Weerakoon
• Dr William Ha
• Baboucarr Lowe
• Dr David Joo
• Gillian McGregor

9.7 Masters Students
• Dr Yu-Yao Teoh
• Alex Li
• Cathy Cao

9.8 Academic Staff: Research Affiliates
• A/Prof Bill Kahler
• Dr Basil Athanassiadis
• A/Prof Roy George
• Prof Sam Samaranayake