

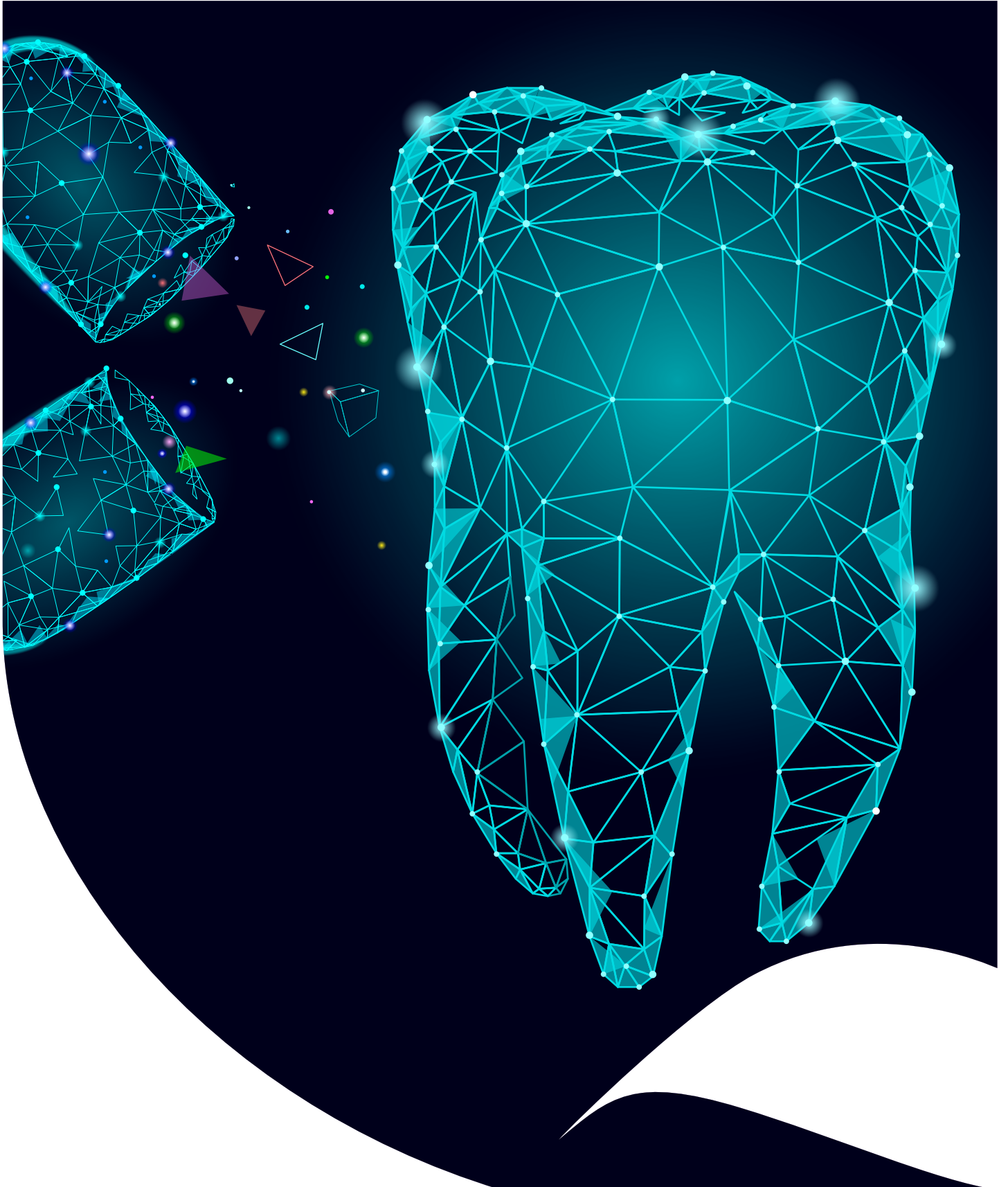


THE UNIVERSITY  
OF QUEENSLAND  
AUSTRALIA

CREATE CHANGE

# School of Dentistry

## Research Report 2021





# Foreword

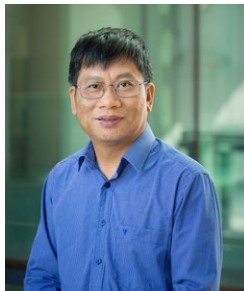


## Head of School

In 2021, I am very pleased to reflect on a successful year of research output and engagement across a wide range of fields from our traditional strengths in dental public health, education and clinical practice, to exciting emerging capabilities in materials science, nanotechnology and biofabrication.

It has been very pleasing to continue to achieve these outcomes during a time of significant disruption due to the COVID pandemic. The school has a strong focus on translational research, emphasizing the importance of research impact on patient outcomes, as well as healthcare policy and practice. Thanks to the hard work and commitment of our staff and students, together with the support of our local, national and international collaborators, as well as the generosity of our alumni industry, that we are able to deliver life-changing programs that benefit the most vulnerable members of our community, support our students through their learning, and teach future dental professionals compassion and empathy.

**Professor Saso Ivanovski**



## Director of Research

I am very pleased to be joining the UQ School of Dentistry at such a pivotal moment in its research growth journey.

The School has well established strengths across a variety of fields, and I am pleased to lead the next phase as we build on past success. In addition to my field of dental public health, the School of Dentistry is at the forefront of innovation in regenerative dentistry, craniofacial reconstruction and orofacial rehabilitation, as well as clinical translation. Located within the Oral Health Centre at Herston, as part of the Oral Health Alliance with Metro North Hospital and Health Service, our research is intrinsically linked to both the education and training of our current and future health professionals, and the treatment of patients. Through the complementary strengths of our expertise, knowledge and resources, we hope to create a truly world class centre of excellence, leading the way in oral health. I look forward to building on the successes of 2021 to merge scientific and clinical knowledge to improve quality of life.

**Professor Loc Do**

# Research Streams

The School of Dentistry's research is grouped under three main streams: **the Centre for Orofacial Regeneration, Reconstruction and Rehabilitation; Dental Public Health; and the Clinical Research Units.**

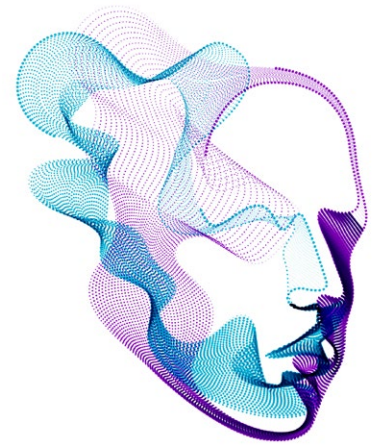
Covering a wide range of areas from stem cell and tissue engineering and biological sciences through to technologies applied in clinical practice, dental public health and dental education, we produce quality dental and oral health research that contributes to the advancement of scientific knowledge both locally and internationally.

The School has a demonstrated long-standing history of quality research, rated 'above world standard' in 2010 and 2012 and 'well-above world standard' in 2015 and 2018 by the Excellence in Research for Australia (ERA) rankings. We encourage translational research, emphasizing the importance of research impact on patient outcomes, as well as healthcare policy and practice.

UQ Oral Health

## Centre for Orofacial Regeneration, Reconstruction and Rehabilitation (COR3)

The Centre's purpose is to be a centre of excellence that advances orofacial regeneration, reconstruction and rehabilitation to improve patient outcomes through the highest quality research and education. We engage with society, industry and the profession to drive learning, innovation and discovery.



## 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. The stream provides scientific evidence to inform public policies and practices aiming to improve oral health of the population.



## Clinical Research Units

The purpose of these Units is to promote and facilitate clinical research activities in the School of Dentistry, The University of Queensland, and Oral Health Centre, Queensland Health Metro-North Hospital and Health Service. This is achieved through:

- Interdisciplinary cooperation and collaboration to promote evidence based dental clinical research
- Translation of 'cutting edge' pre-clinical research for clinical application (e.g. diagnostic methodology, dental devices/materials)



# 2021 research in numbers



\* Includes publications with the School of Dentistry listed as an affiliation, and publications where current staff were listed as an author not necessarily while they were a staff member at the school.

## Funding trend

**617%**

increase in total funding since 2017

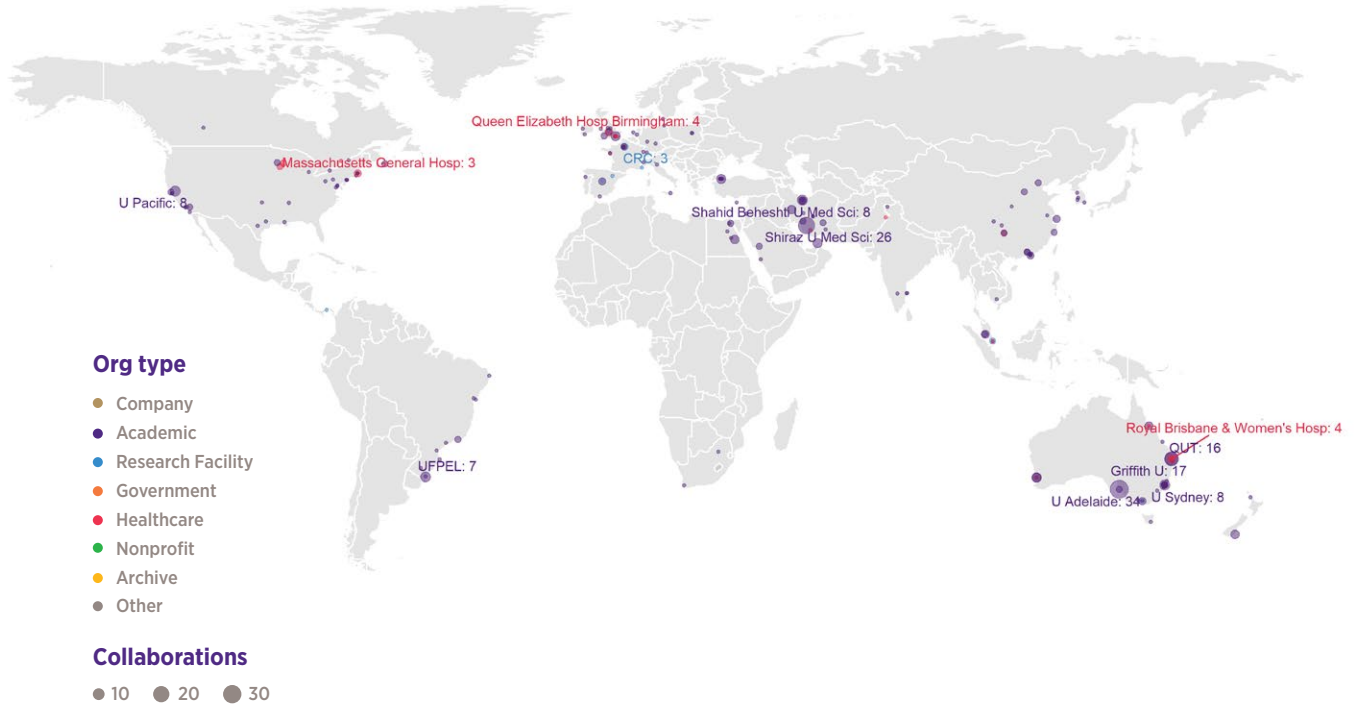
**1458%**

increase in Category 1 Australian competitive grant R&D income since 2017

**1877%**

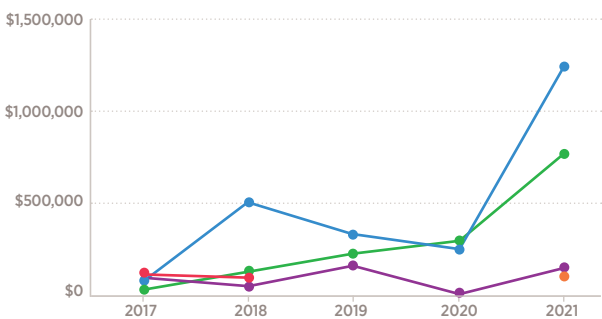
increase in Category 3 Industry and other R&D income since 2017

## Publication collaboration map



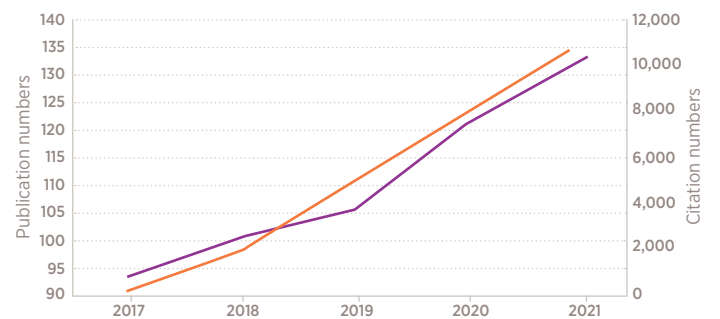
## Grant income

Pro Rata Amount Approved \$ by Funding Year and Prelim HERDC Income Category Desc



- Category 1: Australian competitive grant R&D income
- Category 2: Other public sector R&D income
- Category 3: Industry and other R&D income
- Category 4: CRC R&D income
- HERDC not eligible

## Publication and citation numbers



- Publication numbers  
Note: includes publications where the School of Dentistry is listed as an affiliation
- Citation numbers





# Awards

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**Professor Saso Ivanovski**

International Association for Dental Research (IADR)  
ANZ Alan Docking award – Highest honour in IADR ANZ  
awarded annually for outstanding career achievement in  
dental research

IADR PRG Award in Regenerative Dental Medicine –  
global award for outstanding career research in  
oral regeneration

ASP Dr Ray Williams award for 2018-2020 – awarded by  
Australian Society of Periodontology for outstanding  
research contribution over a three year period

Elected Senior Research Fellow of the International  
Association for Implantology

Elected Fellow of the Pierre Fauchard Academy

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**Dr Sobia Zafar**

Elected Fellow of the Pierre Fauchard Academy

Elected Fellow of Faculty of dental Trainers of the  
Royal College of Surgeons Edinburgh

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**Dr Mathew Nangle**

Elected Fellow of the Pierre Fauchard Academy

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**Divya Chopra**

The International Association for Dental Research (IADR)  
Joan Chong Award for Dental Materials

Best Poster Presentation award – Drug Delivery  
Australia Conference 2021

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# Media highlights



## Pain relief for sensitive teeth using nanotechnology

Dr Chun Xu spoke to 7 News about using nanotechnology to provide more effective long-term pain relief for people with sensitive teeth.

 7 News

## Head of UQ's School of Dentistry is recognised as world's top researcher in regenerative periodontal medicine

Professor Saso Ivanovski has been recognised as a world leader in regenerative periodontal medicine research with a prestigious international award.



 HABS News



## Law change urged to address Queensland's poor fluoridation rate

Professor Loc Do was interviewed by Brisbane Times about his study on 24,664 Australian children that raised particular concerns for young Queenslanders and tooth decay.

 Brisbane Times



## Simple treatments reduce tooth decay in remote Indigenous children

Associate Professor Ratilal Laloo spoke to the Brisbane Times about an intervention that reduced Indigenous kids' tooth decay rates in remote north Queensland.

 Brisbane Times



## 3D print technology used to advance dental and facial reconstruction

Professor Saso Ivanovski features in Bite Magazine about the new Centre for Orofacial Regeneration, Reconstruction and Rehabilitation (COR3).

 Bite Magazine



# Highlighted projects

## PROJECT

### SMILE birth cohort study

#### Project investigators:

Loc Do, Diep Ha

#### Funding:

- Australian National Health and Medical Research Council (NHMRC) Project Grants # APP1046219 2013-17 and APP144595 2018-22, and
- a NHMRC Career Development Fellowship 2012-16.

#### Chief Investigators:

Loc Do and Diep Ha from UQ, in collaboration with dental researchers, dieticians and statistician from University of Adelaide, Flinders, University, Curtin University, University of Otago, and University of Bristol.

#### Description:

The Study of Mothers' and Infants' Life Events Affecting Oral Health (SMILE) is one of the largest and most comprehensive birth cohort studies targeting child oral health, worldwide. Running in its tenth year now, SMILE's long-term purpose is to identify and evaluate the relative importance and timing of critical factors that shape the oral health of young children. It will then evaluate those factors in their inter-relationship with socioeconomic influences.

#### Impact and Translation:

SMILE has contributed numerous publications in high impact dental, nutritional and public health journals on a wide range of topics. Its findings have contributed to policies and practices aiming at improving child oral health. It is one of the first few studies to investigate early childhood dietary patterns. SMILE has been featured in the Channel 7 The House of Wellness Program February 2021.

Two most recent publications address a major determinant of child oral and general health, free sugars intake, using a sophisticated longitudinal trajectory method.

- Ha DH et al. Group-based trajectories of maternal intake of sugar-sweetened beverage and offspring oral health from a prospective birth cohort study. *Journal of Dentistry* 2021
- Nguyen et al. Pairwise approach for analysis and reporting of child's free sugars intake from a birth cohort study. *Community Dentistry and Oral Epidemiology* 2021.

## PROJECT

# Effectiveness, cost-effectiveness and cost-benefit of a single annual professional intervention for the prevention of childhood dental caries in a remote rural Indigenous community

### Project investigators:

Ratilal Lalloo, colleagues from Griffith University, Queensland University of Technology, Adelaide University and James Cook University

### Funding:

NHMRC Project Grant

### Description:

The study sought to:

1. assess the effectiveness of an annual oral health preventive intervention in slowing the incidence of dental caries in children in this community,
2. identify the mediating role of known risk factors for dental caries; and
3. assess the cost-effectiveness and cost-benefit of the intervention.

### Impact and translation:

#### Select publications

Effectiveness, cost-effectiveness and cost-benefit of a single annual professional intervention for the prevention of childhood dental caries in a remote rural Indigenous community. Lalloo R, Kroon J, Tut O, Kularatna S, Jamieson LM, Wallace V, Boase R, Fernando S, Cadet-James Y, Scuffham PA, Johnson NW. *BMC Oral Health*. 2015 Aug 29;15:99. doi: 10.1186/s12903-015-0076-9. PMID: 26318162 Free PMC article.

Salivary characteristics and dental caries experience in remote Indigenous children in Australia: a cross-sectional study. Lalloo R, Tadakamadla SK, Kroon J, Tut O, Kularatna S, Boase R, Kapellas K, Gilchrist D, Cobbledick E, Rogers J, Johnson NW. *BMC Oral Health*. 2019 Jan 17;19(1):21. doi: 10.1186/s12903-018-0692-2. PMID: 30654791 Free PMC article.

Dental caries experience in children of a remote Australian Indigenous community following passive and active preventive interventions. Kroon J, Lalloo R, Tadakamadla SK, Johnson NW. *Community Dent Oral Epidemiol*. 2019 Dec;47(6):470-476. doi: 10.1111/cdoe.12486. Epub 2019 Jul 21. PMID: 31328295 Free PMC article.

Demonstration of high value care to improve oral health of a remote Indigenous community in Australia. Kularatna S, Lalloo R, Kroon J, Tadakamadla SK, Scuffham PA, Johnson NW. *Health Qual Life Outcomes*. 2020 Feb 24;18(1):43. doi: 10.1186/s12955-020-01300-8. PMID: 32093749 Free PMC article.

Surface-Specific Caries Preventive Effect of an Intervention Comprising Fissure Sealant, Povidone-Iodine and Fluoride Varnish in a Remote Indigenous Community in Australia. Tadakamadla SK, Lalloo R, Kroon J, Johnson NW. *Int J Environ Res Public Health*. 2020 Mar 23;17(6):2114. doi: 10.3390/ijerph17062114. PMID: 32209984 Free PMC article.

Response of Salivary Microbiota to Caries Preventive Treatment in Aboriginal and Torres Strait Islander Children. Skelly E, Johnson NW, Kapellas K, Kroon J, Lalloo R, Weyrich L. *J Oral Microbiol*. 2020 Oct 11;12(1):1830623. doi: 10.1080/20002297.2020.1830623. PMID: 33149844 Free PMC article.

Cariou lesions in permanent dentitions are reduced in remote Indigenous Australian children taking part in a non-randomised preventive trial. Lalloo R, Tadakamadla SK, Kroon J, Jamieson LM, Ware RS, Johnson NW. *PLoS One*. 2021 Jan 28;16(1):e0244927. doi: 10.1371/journal.pone.0244927. eCollection 2021. PMID: 33507984 Free PMC article. Clinical Trial.

Predicting dental caries increment using salivary biomarkers in a remote Indigenous Australian child population. Fernando S, Tadakamadla S, Kroon J, Lalloo R, Johnson NW. *BMC Oral Health*. 2021 Jul 23;21(1):372. doi: 10.1186/s12903-021-01702-0. PMID: 34301228 Free PMC article.

Biocultural Drivers of Salivary Microbiota in Australian Aboriginal and Torres Strait Islander Children. Handsley-Davis M, Skelly E, Johnson NW, Kapellas K, Lalloo R, Kroon J, Weyrich LS. *Front Oral Health*. 2021 Mar 18;2:641328. doi: 10.3389/froh.2021.641328. eCollection 2021. PMID: 35047996 Free PMC article.

#### Media coverage

[Indigenous kids' tooth decay rates reduced in remote north Queensland](https://www.uq.edu.au/news/article/2021/03/indigenous-kids%E2%80%99-tooth-decay-rates-reduced-remote-north-queensland)

<https://www.uq.edu.au/news/article/2021/03/indigenous-kids%E2%80%99-tooth-decay-rates-reduced-remote-north-queensland>

[Simple treatments reduce tooth decay in remote Indigenous children](https://www.brisbanetimes.com.au/national/queensland/simple-treatments-reduce-tooth-decay-in-remote-indigenous-children-20210310-p57912.html)  
<https://www.brisbanetimes.com.au/national/queensland/simple-treatments-reduce-tooth-decay-in-remote-indigenous-children-20210310-p57912.html>

[Preventative treatments decrease rate of tooth decay in Indigenous children](https://www.ada.org.au/News-Media/News-and-Release/Latest-News/Indigenous-health-report-16032021)

<https://www.ada.org.au/News-Media/News-and-Release/Latest-News/Indigenous-health-report-16032021>

## PROJECT

# Saliva and GCF in COVID-19 immunity detection

### Project investigators

Pingping Han, Chun Liu, Corey Moran, Srinivas Sulugodu Ramachandra, Laurence Walsh, Maria Natividad Gómez-Cerezo, Saso Ivanovski

### Funding

- The Association for Dental Infection Control (ADIC, to P.H. and S.I.)
- The Australasian Osseointegration Society Limited (AOS, to P.H. and S.I.)
- The Australian and New Zealand Academy of Periodontists (ANZAP, to P.H. and S.I.)
- The UQ HaBS Early Career Academic Research Accelerator Award (to P. H.)

### Description

We investigated the role of saliva and gingival crevicular fluids (GCF) in detecting the COVID-19 immunity response with two projects:

1. This prospective cohort study aimed to evaluate the antibody responses in non-invasive gingival crevicular fluid (GCF) and unstimulated whole saliva to the SARS-CoV-2 Spike unit 1 receptor-binding domain (S1-RBD) protein following administration of the mRNA BNT162b2 vaccine. The concentration of anti-S1-RBD antibodies in GCF was significantly higher than in saliva at all time points.
2. A 3D antibody test was developed by immobilizing the receptor-binding domain on Spike subunit 1 (S1-RBD) of SARS-CoV-2 onto engineered melt electrowritten (MEW) poly( $\epsilon$ -caprolactone) (PCL) scaffolds using carbodiimide crosslinker chemistry.

### Impact and translation

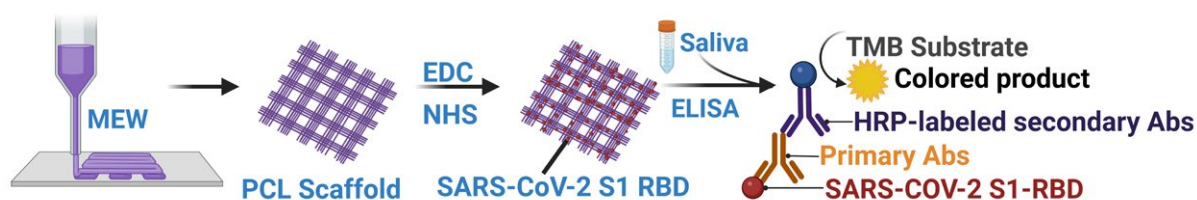
These two projects have been published in the Journal of Periodontology (<https://aap.onlinelibrary.wiley.com/doi/abs/10.1002/JPER.22-0152>) and RSC Advances (<https://pubs.rsc.org/en/content/articlehtml/2022/ra/d2ra03979f>).

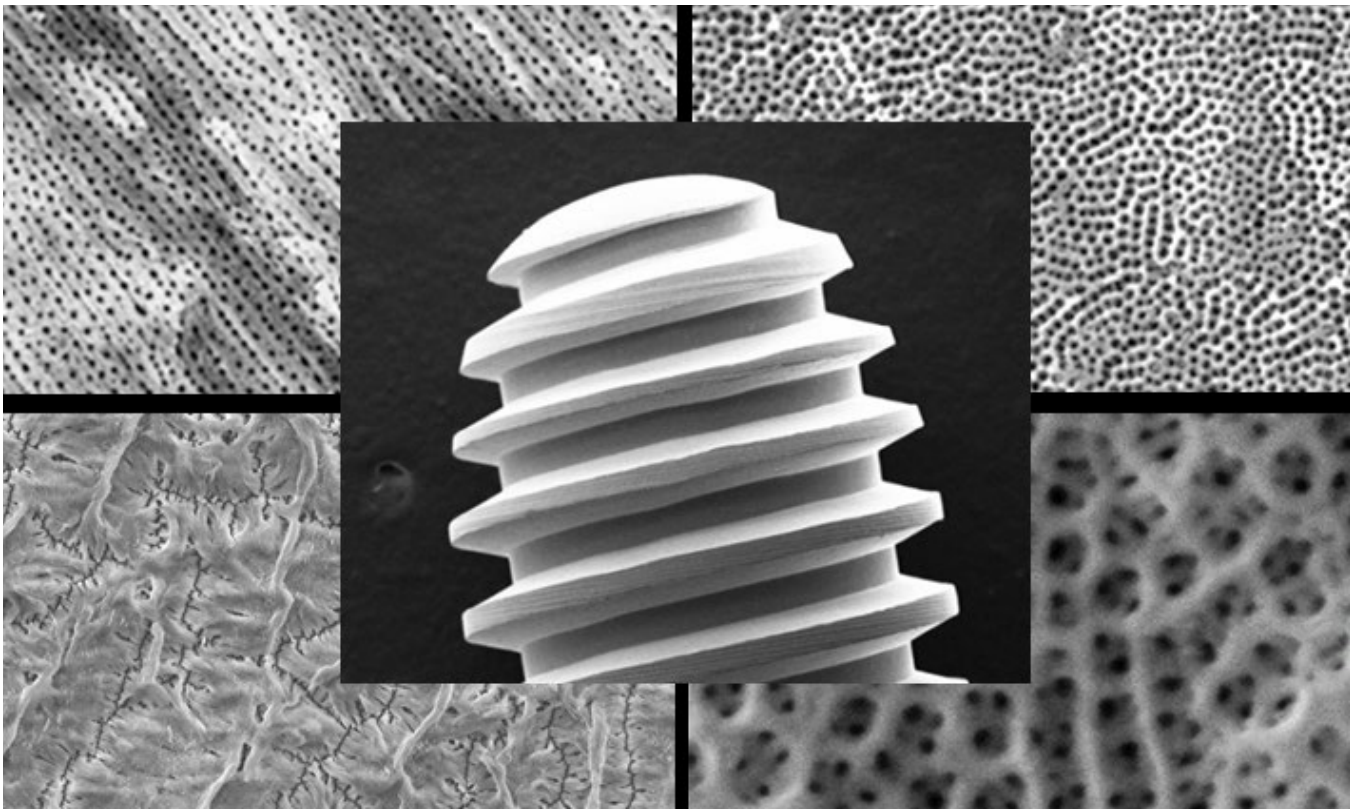
### Project 1

Led to a HABS media exposure: <https://habs.uq.edu.au/article/2022/07/what-health-can-saliva-and-fluids-under-gum-detect-covid-19-antibodies>. This project, along with other COVID-19 research generated from our group were presented by Prof Saso Ivanovski at the EuroPerio10, JUNE 15-18, 2022 in Copenhagen.

### Project 2

Chun Liu was awarded the IADR ANZ Colgate Junior/Senior category award (runner-up) and presented the research output at the IADR 61st Annual Scientific Meeting of the IADR ANZ Division from 26th to 28th September, Melbourne, Victoria, Australia.





## PROJECT

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### Optimizing Titanium Dental Implant Nano-Engineering via Anodization

#### Project investigators

Tianqi Guo, Prof. Sašo Ivanovski, Dr. Karan Gulati

#### Funding

- ITI-International Team for Implantology Research Grants (2021-23);
- Australian Dental Research Foundation (ADRF) Research Grants (2022).

#### Description

Electrochemically anodized titanium-based implants with controlled titania nanotopography enables enhanced bioactivity. However, anodization optimizations have been restricted to polished flat Ti foils, while clinical implants are often micro-rough with curved geometry. To enable anodization optimization of Ti implants, we performed short-time anodizations (10s-600s) on implant relevant micro-rough Ti wires (D: 0.8mm) and rods (D: 5mm) to understand the nanostructure self-ordering.

We report an efficient implant nano-engineering protocol (PBR value of 2.7-3.0) for Ti rods (mimicking dental implants/abutments) via tailored anodization parameters. Further, reduced anodization voltage is proposed for anodizing Ti wires (mimicking orthopaedic fracture pins) to minimize excessive TiO<sub>2</sub> dissolution.

This study evaluated nanostructure self-ordering on clinically relevant curved/micro-rough titanium, towards an improved understanding implant nano-engineering.



# Research groups

Below is a selection of research groups at the School of Dentistry.

## Population Oral Health at UQ (POHUQ)

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### Group leader

Loc Do

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### Group members (staff, students)

Nicole Stormon, Helena Schuch, Diep Ha, Peivand Bastani, Nithin Manchery, Chris Sexton, Thu Le

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### Students

Michael Foley, An Dao, Nilesh Torwane

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### Description

Oral health is an integral part of general health, affecting individuals, the health system and society. Population Oral Health research is a major branch of dental research, producing the essential information used by the scientific community, policymakers and dental service providers, the profession, the industry, and the public to improve the oral health of communities at national, regional and global levels. Population Oral Health at UQ (POHUQ) is a leader in oral epidemiological and population oral health research, targeting the improvement of population oral health and reduction in inequalities in oral health. POHUQ is supported by three NHMRC Grants and a 5-year UQ VC Strategic Funding Support.

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### Impact and translation

Ha DH, AJS Spencer, Moynihan P, WM Thomson, Do LG. J Dent Research 2021. Excess Risk of Dental Caries from Higher Free Sugars Intake Combined with Low Exposure to Water Fluoridation. This is a comprehensive analysis of interactions between two key determinants of oral health: water fluoridation and sugars intake.

It has attracted high attention from media and the profession. Its Altmetric is 81. This paper has led to IADR ANZ Investigator Award in Preventive and Community Dentistry 2022 for Dr Diep Ha.

- Do LG, keynote speaker. International Association for Dental Research/American Association for Dental, Oro and Craniofacial Research NTP NASEM Fluoride Science Webinar. 3rd September 2021.
- Do LG, et al. Position Statement on Community Water Fluoridation. International Association for Dental Research

### Example of media

<https://www.brisbanetimes.com.au/national/queensland/law-change-urged-to-address-queensland-s-poor-fluoridation-rate-20210703-p586j0.html>



## Xu Group Nanomaterials for biomedical applications

### Group leader

Dr Chun Xu

### Group members

Dr Chris Wang, Mr Sepanta Hosseinpour (PhD), Ms Juan Wen(PhD), Mr Shu Hua (PhD), Ms Huan Dai (PhD), Mr Kittitat Triwattana (Master), Ms Siyuan Liu(Master), Ms Donghong Xie(Master).

### Description

Nanomaterials possess unique physical, chemical and biological properties due to the nanosize effects and offer various advantages for biomedical applications.

Our research interest includes two parts: fundamental research about nanomaterials and nano-bio interactions, and translational medical/dental applications.

Specifically, our research includes: the design and synthesis of functional nanomaterials, revealing their interaction with biological systems, and explores their biomedical applications including drug delivery, gene therapy, bone and dental tissue regeneration.



### Impact and translation

#### Key publications

1. Chun Xu, Chang Lei, Yue Wang, Chengzhong Yu, Dendritic Mesoporous Nanoparticles: Structure, Synthesis and Properties, *Angewandte Chemie International Edition*, 2021, 134(12), e202112752. DOI: 10.1002/anie.202112752 (IF: 16.823)
2. Yanqi Ye, Chun Xu\*, Fengqian Chen, Qi Liu, Ning Cheng\*, Targeting innate immunity in breast cancer therapy: a narrative review, *Frontiers in Immunology*, 2021, 12, 771201. DOI: 10.3389/fimmu.2021.771201 (Corresponding author, IF: 8.786)
3. Sepanta Hosseinpour, Laurence Walsh, Chun Xu\*, Modulating Osteoimmune Response by Mesoporous Silica Nanoparticles, *ACS Biomaterials Science & Engineering*, 2021. DOI: 10.1021/acsbomaterials.1c00899 (Corresponding author, IF: 5.13)
4. Sepanta Hosseinpour, Ashwin Nanda, Laurence J. Walsh\*, Chun Xu\*, Microbial decontamination and antibacterial activity of nanostructured titanium dental implants, *Nanomaterials*, 2021, 11(9), 2336. DOI: 10.3390/nano11092336 (Corresponding author, IF: 5.719)
5. Yuxue Cao, Chun Xu\*, Patricia P. Wright, Jingyu Liu, Yueqi Kong, Yue Wang, Xiaodan Huang, Hao Song, Jianye Fu, Fang Gao, Yang Liu, Laurence J. Walsh, Chang Lei\*, Calcium-Doped Silica Nanoparticles Mixed with Phosphate-Doped Silica Nanoparticles for Rapid and Stable Occlusion of Dentin Tubules, *ACS Applied Nano Materials*, 2021, 4(9), 8761–8769. DOI:10.1021/acsnm.1c01365 (Corresponding author, IF: 6.140)

### Media Highlights

#### UQ news

Nanotechnology offers pain relief for tooth sensitivity  
<https://www.uq.edu.au/news/article/2021/11/nanotechnology-offers-pain-relief-tooth-sensitivity>

#### Habs news

Pain relief for sensitive teeth using nanotechnology  
<https://habs.uq.edu.au/article/2021/11/pain-relief-sensitive-teeth-using-nanotechnology>

#### 7 News

Queensland scientists make breakthrough to manage sensitive teeth

<https://www.facebook.com/watch/?v=220823006850478&ref=sharing>

# Bio manufacturing and regenerative dentistry

## Group leader

Dr Cedryck Vaquette

## Group members

Reuben Staples, Amelia Carr, Vignesh Selvaprithviraj, Omar Breik, Ryan Goh, Miriam Lee

## Description

Our mission is to address unmet clinic needs by the utilisation of regenerative medicine technologies for dental applications.

Our research is divided in three main streams:

1. vertical bone augmentation,
2. periodontal regeneration,
3. additive manufacturing:

### 1. vertical bone augmentation

Dimensionally stable vertical bone regeneration outside of the existing bony envelope is a major challenge in the field of orofacial surgery. Adequate space maintenance and wound stability to facilitate vertical bone formation is particularly challenging, as is inappropriate dimensional stability subsequent to surgical re-entry and implant placement, leading to resorption of the previously formed bone. Our group investigate the effect of scaffold composition and degradation time frame on the maintenance of previously augmented bone.

### 2. Periodontal regeneration

Periodontal regeneration requires the apposition of newly formed cementum on the tooth root surface, new bone formation, and the reestablishment of a periodontal ligament (PDL) attachment. This has proven to be challenging due to the highly hierarchical architecture of the periodontium, which requires a highly coordinated spatiotemporal healing response to achieve regeneration.

Current periodontal regenerative techniques are primarily based on the concept of guided tissue regeneration. The broad concept is to prevent epithelial downgrowth along the tooth surface while maintaining space for promoting new bone and periodontal attachment formation but current techniques remain largely unpredictable.

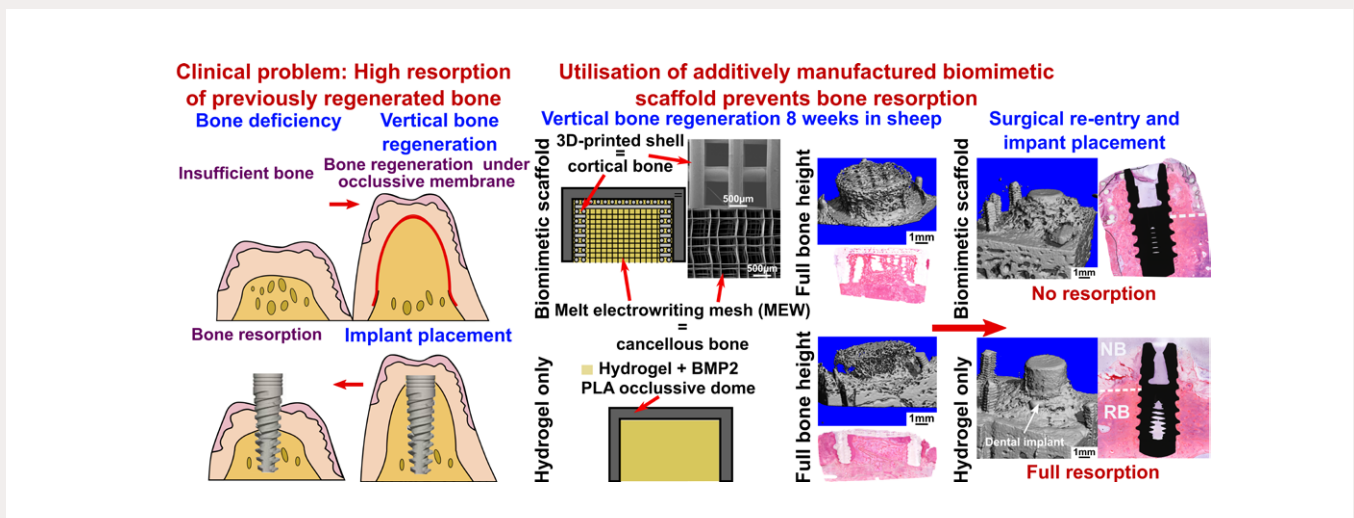
Our proposed has proposed the utilisation of additively manufactured multiphasic scaffold with a high degree a compartmentalisation for achieving proper periodontal regeneration.

### 3. Additive manufacturing

Our group investigates the enhancement of the biofunctionality of additively manufactured scaffold for tissue engineering and regenerative medicine application. This includes surface functionalisation, bioceramic 3D-printing, bioprinting, ECM decoration, dual scale scaffold.

## Impact and translation

In 2021, our group has published a landmark study investigating the stability of vertically augmented bone in Biomaterials, one of the leading journals of the field. This also contributed to the award of funding for clinically translating our scaffold for applications in craniofacial bone reconstruction.



## Endodontology

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### Staff

Ove Peters (lead), Unni Krishnan, Christine Peters, Trish Wright, Sepanta Hosseinpour

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### Students

Farzaneh Afkhami (PhD), Philip Chien (MPhil), Yasmen Alfaisal (MPhil), Richard Huynh (MPhil), Helen McHugh (DClinDent), Georgina Marshall (DClinDent), Wai-Sze (Cece) Chan (DClinDent, Kush Ohri (DClinDent), Jasmine Holgate (DClinDent)

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### Projects

Our research, both clinically and in the lab, aims to improve the quality of lives through better endodontic therapy. Endodontics is more than root canal treatment and consequently our activities include projects both related to vital pulp therapy (VPT) and to non-surgical root canal treatment (RCT).

Regarding VPT, we are exploring various aspects of diagnostic methods and the predictive value of findings at the point of service for clinical outcomes. This research is supported by in vitro studies into immunomodulatory effects of contemporary and experimental biomaterials.

For conventional RCT our work aims to improve materials and usage parameters to make modern techniques accessible to clinicians and by extension to patients. One recent study looked at the utility of finite element analysis to predict behaviour of root canal instruments in the design phase. Other experiments include the assessment of root canal filling materials.

Overarchingly, the intent and possible impact of work in our lab is shown in publications, presentations and guidelines that collectively should lead to evidence-based good clinical practice in endodontics. Therefore, we are currently looking into barriers and enablers in both VPT and RCT.



## Special needs dentistry

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### Group leader

Dr Claudia Lopez Silva

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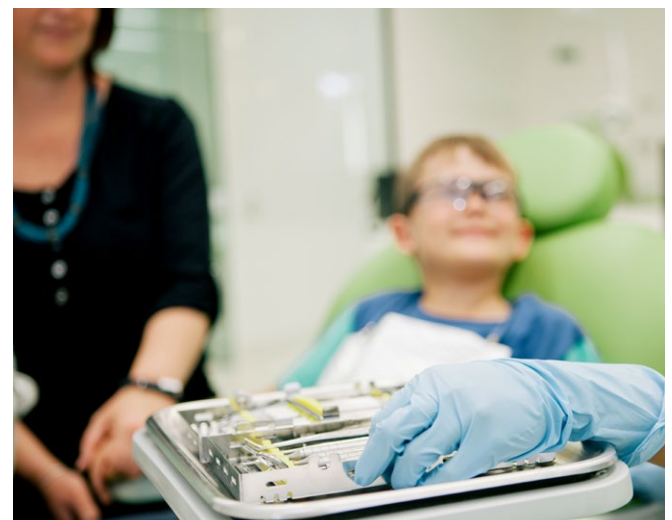
### Group members

- Dr Candy Fung: (DCD student)
- Dr Lydia See (DCD student)
- Dr David Fu
- Dr Matthew Nangle
- Prof Laurie Walsh

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### Description

- Oral health interventions in aged care facilities (lead: C Fung)
- Silver fluoride therapy for patients with special needs (lead: L See)
- General Anaesthesia vs Intravenous Sedation vs Relative Analgesia for patients with special needs (lead: D Fu)
- The dental-systemic interface and respiratory infections in Intensive Care Unit (lead: C Lopez Silva)
- Low level laser therapy for mucositis in oncology patients (lead: L Walsh)



# Research grants

(Current and awarded in 2021)

## New grants

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### Determinants of inequality in child oral health at school age - A prospective cohort study

NHMRC Project Grant

\*DO, Loc; Golley, R.; \*HA, Diep; Leary, S.; Manton, D.; Scott, J.; Thomson, W. & Spencer, J.

**\$533,547.00**

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### Effect of exposure to fluoridated water in early childhood on child psychological and intellectual development

NHMRC Project Grant

\*DO, Loc; Sawyer, A.; Jones, A.; \*HA, Diep; Leary, S. & Spencer, J.

**\$124,604.50**

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### Contemporary evidence for water fluoridation program - a before-and-after population-based study

NHMRC IDEAS Grants

\*DO, Loc; Spencer, J.; \*FORD, Pauline; Brown, M.; Whelton, H.; Broadbent, J.; Roberts-Thomson, K.; \*LALLOO, Ratilal & others

**\$1,655,282.00**

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### Aerosol transmission model and protective strategies

ADIC Research Funding

\*HAN, Pingping & \*IVANOVSKI, Saso

**\$15,000.00**

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### Human salivary circular RNAs profile in periodontal disease - a pilot study

Australian Dental Research Fund Inc

\*HAN, Pingping; WEI, Wei; LI, Xiang & \*IVANOVSKI, Saso

**\$12,650.00**

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### Soft tissue insertion into micro-tubules on Ti discs using femtosecond laser micromachining: subtraction modification

Australian Dental Research Fund Inc

\*ALI, Abdalla; \*LEE, Sang B; \*HAN, Pingping & \*STAPLES, Reuben

**\$16,500.00**

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### Multi-therapeutic extracellular matrix (ECM)-mimicking nanofibers on nano-engineered dental implants

Australian Dental Research Fund Inc

\*GULATI, Karan; KUMERIA, Tushar & \*IVANOVSKI, Saso

**\$14,146.00**

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### Tailored release of BMP-2 from nanoporous titanium screws for augmenting osseointegration

Australian Dental Research Fund Inc

\*GULATI, Karan; Choudhury, N. & \*IVANOVSKI, Saso

**\$10,278.40**

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### Optimizing titanium surface topography and chemistry towards enhanced soft-tissue integration

Australian Dental Research Fund Inc

\*GULATI, Karan; \*GUO, Tianqi; \*HAN, Pingping & \*IVANOVSKI, Saso

**\$9,407.20**

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### Non-surgical periodontal therapy with azithromycin: effects on the subgingival microbiome

Australian Dental Research Fund Inc

\*IVANOVSKI, Saso; \*SULUGODU RAMACHANDRA, Srinivas; \*WOODFORD, Valerie; \*MERCADO, Faustino; \*LEE, Sang B & \*HAN, Pingping

**\$15,180.00**

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### Comparative analysis of immunomodulatory impact of plasmid DNA-BMP-2 delivered by core-cone mesoporous silica nanoparticle versus recombinant BMP-2 to macrophages

Australian Dental Research Fund Inc

\*HOSSEINPOURDOUGOLSAR, Sepanta; \*WALSH, Laurence J & \*XU, Chun

**\$14,074.50**

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### The effects of bioinspired titanium nanostructure on gingival fibroblasts and oral biofilm

Australian Dental Research Fund Inc

\*LEE, Sang B; \*ALALI, Aya; \*HAN, Pingping & \*ALI, Abdalla

**\$9,994.60**

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**Small extracellular vesicles-loaded titanium nanopores for gingival peri-implant soft tissue barrier**

International Team for Implantology Foundation

\*HAN, Pingping; \*GULATI, Karan & \*IVANOVSKI, Saso

**\$70,382.40**

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**Resorbable metals, tissue biofabrication and dentistry - Joint Fellowship appointment**

Metro North Hospital and Health Service

\*IVANOVSKI, Saso

**\$651,000.00**

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**3D bioprinted oral tissue models**

Colgate Palmolive Company

\*IVANOVSKI, Saso

**\$679,864.00**

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**Periodontal cells-derived small extracellular vesicles on in vivo periodontal regeneration**

Osteology Foundation Young/Advanced Researcher Grant

\*HAN, Pingping; SALOMON GALLO, Carlos F & \*IVANOVSKI, Saso

**\$90,184.00**

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**Clinical research study to evaluate the effect of gingival inflammation of a toothpaste containing vitamin D in patients with established dental plaque and gingivitis**

Colgate-Palmolive Company

\*IVANOVSKI, Saso; \*LEE, Sang B; \*WOODFORD, Valerie & \*HAN, Pingping

**\$176,710.00**

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**Evolving trends in the surgical management of maxillofacial trauma**

Australian & New Zealand Association of Oral & Maxillofacial Surgeons

\*JOHNSON, Nigel

**\$6,462.00**

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**Development of nano-formulation for topical application**

UQ Knowledge Exchange & Translation Fund

\*XU, Chun

**\$56,800.00**

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**The effects of enamel matrix derivative on human macrophage phenotypes and wound healing**

Australian Dental Research Fund Inc

\*LEE, Sang B; Hamlet, S. & \*IVANOVSKI, Saso

**\$11,660.00**

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## Ongoing grants

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**Child Dental Benefit Policies and the Health of Australian Children**

ARC Discovery Projects

\*CONNELLY, Luke B; \*BIRCH, Stephen; Nguyen, H.; FORD, Pauline; Le, H. & Paolucci, F.

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**Regenerative treatment of peri-implantitis using bone constructs with osteogenic, immunomodulatory and antimicrobial properties**

International Team for Implantology Foundation

\*IVANOVSKI, Saso; \*VAQUETTE, Cedryck; Heitz-Mayfield, L.; Bartold, M. & Berglundh, T.

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**Dual-action titanium abutments: Micro-nano scale topography and local protein release towards augmented soft-tissue integration**

Australian Dental Research Fund Inc

\*GULATI, Karan & \*IVANOVSKI, Saso

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**Evaluation of a novel nanocomposite bioprinted scaffolds for bone tissue engineering**

Australian Dental Research Fund Inc

\*IVANOVSKI, Saso; \*RAVEENDRAN, Nimal; \*SELVAPRITHIVIRAJ, Vignesh & \*VAQUETTE, Cedryck

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**Injectable swelling hydrogels for soft tissue expansion**

Australian Dental Research Fund Inc

\*IVANOVSKI, Saso; \*SELVAPRITHIVIRAJ, Vignesh; \*VAQUETTE, Cedryck & \*BARTNIKOWSKI, Michal

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**Addressing the oral health needs of people with multiple sclerosis**

Multiple Sclerosis Research Australia

\*NANGLE, Matthew R; BLUM, Stefan; HENRY, Julie D & MANCHERY GOPINATHAN, Nithin

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**Determining the accuracy of interproximal enamel reduction performed in aligner treatment using a three-dimensional model system**

Align Technology Research Grants

\*FREER, Elissa M; \*KERR, Brett; \*WEIR, Anthony P & \*SHAIENDRAN, Arun V

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**Immunomodulatory properties of three different chairside autologous blood preparations for the functionalization of PCL-3D printed constructs**

Australian Dental Research Fund Inc

\*IVANOVSKI, Saso; \*FERNANDEZ MEDINA, Tulio E & \*VAQUETTE, Cedryck

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**A comparison of various melt electrospinning fibre arrangements for the promotion of functional periodontal ligament attachment**

Australian Dental Research Fund Inc

\*VAQUETTE, Cedryck; \*STAPLES, Reuben & \*IVANOVSKI, Saso

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**A multiplex bead platform to identify small extracellular vesicle surfaces signatures in periodontitis**

Australian Dental Research Fund Inc

\*HAN, Pingping; SALOMON GALLO, Carlos F & \*IVANOVSKI, Saso

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**Sequential release of azithroycin from stimuli-responsive mesoporous bioactive glasses for application in periodontal regeneration**

Australian Dental Research Fund Inc

\*VAQUETTE, Cedryck; \*GOMEZ CERREZO, Maria N & \*IVANOVSKI, Saso

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**Improving oral health outcomes for people with multiple sclerosis**

Metro South Hospital and Health Service

\*NANGLE, Matthew R; Blum, S.; Boocock, H.; HENRY, Julie D & Swayne, A.

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**Growth factor eluting scaffolds for alveolar ridge preservation**

Australian Dental Research Fund Inc

\*GRONDAHL, Lisbeth; \*MUTCH, Alexandra L & VAQUETTE, Cedryck

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**3D-printed customised Bio-Oss/ Polydioxanone scaffold for vertical bone regeneration**

Osteology Foundation Young/Advanced Researcher Grant

\*IVANOVSKI, Saso & \*VAQUETTE, Cedryck

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**Application of a commercially available xenograft impregnated with Azithromycin for peri-implantitis treatment**

Australian Dental Research Fund Inc

\*VAQUETTE, Cedryck; LEE, Miriam & \*IVANOVSKI, Saso

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**Promoting periodontal regeneration through lithium-regulated immunomodulation and osteogenesis**

Australian Dental Research Fund Inc

\*IVANOVSKI, Saso; \*VAQUETTE, Cedryck & \*BARTNIKOWSKI, Michal

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**Functional nano-cement scaffolds for the treatment of osteoporotic bone defects**

NHMRC Early Career Fellowships

\*XU, Chun

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**Titanium implants with dual micro- and nano-scale topography for electrically stimulated osteogenic and antibacterial functions**

NHMRC Early Career Fellowships

\*GULATI, Karan

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**Development of a 3D printed graft for surgical repair of the Scapholunate Interosseous wrist ligament (SLIL) (MRFF MTPConnect Horizons funding administered by Griffith University)**

Griffith University

\*VAQUETTE, Cedryck

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**Combining lyophilized decellularized cell sheets and customized 3D bioprinted CaP coated constructs for periodontal tissue regeneration**

Australian Dental Research Fund Inc

\*FARAG, Amro A

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**ARC Research Hub for Advanced Manufacturing of Medical Devices**

ARC Industrial Transformation Research Hubs

\*DARGUSCH, Matthew S; \*ST JOHN, David H; Easton, M.; Cairney, J.; \*VEIDT, Martin; \*BERMINGHAM, Michael; \*KENT, Damon; \*SMART, Michael K & others

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# Publications

## 267 publications

**219 publications authored by Dentistry staff (indexed in Scopus and available for analysis in SciVal for the period of 2021)**

## Book Chapter

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Cheng, N., Wen, J., Hitching, R., Lei, C.\* and Xu, C.\* (2021) Tooth bioengineering and whole tooth regeneration.

In (Eds.), *Regenerative approaches in dentistry: an evidence-based perspective* (pp. 89-102). Cham, Switzerland: Springer.

He, Y., Guastaldi, F., Xu, C.\* and Ye, Q. (2021) *Regenerative Approaches in Orthodontic and Orthopedic Treatment*. In (Eds.), *Regenerative Approaches in Dentistry* (pp. 151-170). Cham, Switzerland: Springer.

Hosseinpour, S.\*, Nanda, A.\*, Lei, C.\*, Lowe, B.\*, Ye, Q.\* and Xu, C.\* (2021) Nanobiomaterials in craniofacial bone regeneration. In (Eds.), *Advances in Dental Implantology using Nanomaterials and Allied Technology Applications* (pp. 25-52). Cham, Switzerland: Springer.

Kocak Oztug, N.\*, Ramachandra, S.\*, Lacin, C., Alali, A.\* and Carr, A.\* (2021) *Regenerative approaches in periodontics*. In (Eds.), *Regenerative approaches in dentistry: an evidence-based perspective* (pp. 103-131). Cham, Switzerland: Springer International Publishing.

Peters, O., Arias, A. and Shabahang, S. (2021) *Cleaning and Shaping*. In (Eds.), *Endodontics: Principles and Practice 6th ed.* (pp. 297-326). London: Elsevier.

Peters, O., Paranjpe, A. and Gaudin, A. (2021) *Dentine-pulp complex regeneration: an evidence-based perspective*. In (Eds.), *Regenerative approaches in dentistry* (pp. 35-62). Cham, Switzerland: Springer Nature.

Peters, O., Peters, C. and Basrani, B. (2021) *Cleaning and Shaping of the Root Canal System*. In (Eds.), *Cohen's Pathway of the Pulp 12 ed.* (pp. 236-303). St. Louis, MO United States: Elsevier.

Ratheesh, G., Vaquette, C.\*, Sonar, P. and Xiao, Y. (2021) *Strategies of 3D bioprinting and parameters that determine cell interaction with the scaffold: a review*. In (Eds.), *Regenerated Organs: Future Perspectives* (pp. 81-95). London, United Kingdom: Elsevier.

Rezai Rad, M., Hosseinpour, S.\*, Ye, Q. and Yao, S. (2021) *Dental tissues originated stem cells for tissue regeneration*. In (Eds.), *Regenerative approaches in dentistry: an evidence-based perspective* (pp. 9-33). Cham, Switzerland: Springer International Publishing.

Walsh, L. and Hosseinpour, S. (2021) *The paradigm of regenerative dentistry and its future perspectives*. In (Eds.), *Regenerative Approaches in Dentistry* (pp. 1-8). Cham, Switzerland: Springer International Publishing.

## Journal Article

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Abaid, S., Zafar, S.\*, Kruger, E. and Tennant, M. (2021) *Determine the applicability of Moyers analysis in the contemporary Western Australian adolescent population*. *Current Dentistry*, 03(1): 30-40.

Abaid, S., Zafar, S.\*, Kruger, E. and Tennant, M. (2021) *Mesiodistal dimensions and sexual dimorphism of teeth of contemporary Western Australian adolescents*. *Journal of Oral Science*, 63(3): 247-251.

Abdal-hay, A.\*, Sheikh, F., Shmroukh, A., Mousa, H., Kim, Y. and Ivanovski, S.\* (2021) *Immobilization of bioactive glass ceramics @ 2D and 3D polyamide polymer substrates for bone tissue regeneration*. *Materials and Design*, 210: 1-12.

Abdellah, M., Abdelhaleem, A., Alnaser, I., Abdel-Jaber, G. and Abdal-hay, A.\* (2021) *Flexural, compression and fracture properties of epoxy granite as a cost-effective structure materials: new machine element foundation*. *AIMS Materials Science*, 8(1): 82-98.

Agour, M., Abdal-hay, A.\*, Hassan, M., Bartnikowski, M.\* and Ivanovski, S.\* (2021) *Alkali-treated titanium coated with a polyurethane, magnesium and hydroxyapatite composite for bone tissue engineering*. *Nanomaterials*, 11(5): 1-14.

Akers, H., Foley, M., Brown, J. and Woodford, V. (2021) *What price heritage? The Brisbane Dental Hospital and Queensland University Dental College Building alias, The Palace: an imminent test case?*. *Dental Historian*, 66(2): 99-111.

Alali, A.\*, Abdal-hay, A.\*, Gulati, K.\*, Ivanovski, S.\*, Fournier, B.\* and Lee, R.\* (2021) *Influence of bioinspired lithium-doped titanium implants on gingival fibroblast bioactivity and biofilm adhesion*. *Nanomaterials*, 11(11).

Al-Bermani, A., Quigley, N. and Ha, W.\* (2021) *Do zirconia single-retainer resin-bonded fixed dental prostheses present a viable treatment option for the replacement of missing anterior teeth? A systematic review and meta-analysis*. *The Journal of Prosthetic Dentistry*.

Almabadi, E., Bauman, A., Akhter, R., Gugusheff, J., Van Buskirk, J., Sankey, M., et al. (2021) *The effect of a personalized oral health education program on periodontal health in an at-risk population: a randomized controlled trial*. *International Journal of Environmental Research and Public Health*, 18(2): 1-15.

Almabadi, E., Seymour, G.\*, Akhter, R., Bauman, A., Cullinan, M.\* and Eberhard, J. (2021) *Reduction of hsCRP levels following an Oral Health Education Program combined with routine dental treatment*. *Journal of Dentistry*, 110: 1-5.

- Almeida, F., Costa, V., Schuch, H. and Goettems, M. (2021) Prevention and Management of Dental Trauma in Primary Teeth in the Context of the COVID-19: A Critical Literature Review. *Pesquisa Brasileira em Odontopediatria e Clínica Integrada*, 21.
- Alvino, L., Ha, W., Chan, W. and Rossi-Fedele, G. (2021) What is new in the 2020 International Association of Dental Traumatology emergency treatment guidelines?. *Dental Traumatology*, 37(3): 510-520.
- Archer, N., Zebic, L., Turton, N., Higginson, J., Idle, M., Praveen, P., et al. (2021) An evaluation of the clinical utility of C-reactive protein and antibiotic use in patients undergoing major head and neck reconstructive surgery with outcome assessment. *Oral and Maxillofacial Surgery*, 26(3): 455-461.
- Arora, H. and Ivanovski, S. (2021) Ten year clinical and aesthetic outcomes of an immediately placed and restored implant in the anterior maxilla: a case report. *Prosthesis*, 3(2): 129-136.
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- Bastani, P., Alipoori, S., Imani-Nasab, M., Jamalabadi, S. and Kavosi, Z. (2021) Evidence-based decision making among healthcare managers: Evidence from a developing Country. *International Journal of Healthcare Management*, 14(1): 197-202.
- Bastani, P., Bikineh, P., Mehralian, G., Sadeghkhani, O., Rezaee, R., Kavosi, Z., et al. (2021) Medication adherence among the elderly: applying grounded theory approach in a developing country. *Journal of Pharmaceutical Policy and Practice*, 14(1).
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- Bastani, P., Bordbar, N., Golestanmanesh, F., Kavosi, Z., Pourmohammadi, K., Kashefian-Naeeni, S., et al. (2021) Hospital accreditation: A solution for Iranian challenges or a challenge for the hospitals?. *World Medical and Health Policy*, 13(2): 250-271.
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- Bastani, P., Mohammadpour, M., Ghanbarzadegan, A., Kapellas, K. and Do, L. (2021) Global concerns of dental and oral health workers during COVID-19 outbreak: a scope study on the concerns and the coping strategies. *Systematic Reviews*, 10(1): 1-9.
- Bastani, P., Mohammadpour, M., Ghanbarzadegan, A., Rossi-Fedele, G. and Peres, M. (2021) Provision of dental services for vulnerable groups: a scoping review on children with special health care needs. *BMC Health Services Research*, 21(1)
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- Blundell, H.\*, Weir, T.\*, Kerr, B.\* and Freer, E.\* (2021) Predictability of overbite control with the Invisalign appliance. *American Journal of Orthodontics and Dentofacial Orthopedics*, 160(5): 725-731.



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## Conference Paper

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Hogerheyde, T., Walsh, L. and Zafar, S. (2021). The effects of disinfection and sterilisation protocols on preformed paediatric crowns. In *28th Congress of the International Association of Paediatric Dentistry*. 28th Congress of the International Association of Paediatric Dentistry, Online. 10-13 June 2021.

Hossain, N., Kaur, H., Mohanasundaram, D., Calache, H. and Zafar, S. (2021).

Paediatric dental training: how confident are dental students?. In *12th European Academy of Paediatric Dentistry (EAPD) Interim Seminar*. 12th European Academy of Paediatric Dentistry (EAPD) Interim Seminar, Virtual event. 23-24 April 2021.

Kaur, H., Mohanasundaram, D., Hossain, M., Calache, H. and Zafar, S. (2021).

The self-evaluated confidence of dental students receiving paediatric training on treating paediatric patients (SoD Undergrad Student Research Excellence Award Winner). In *UG Dental Student Conference*. UG Dental Student Conference, Brisbane, QLD Australia. 11 November 2021.

Kaur, H., Mohanasundaram, D., Hossain, N., Calache, H. and Zafar, S. (2021).

The evaluation of undergraduate dental students' experiences in paediatric dentistry. In *UQ School of Dentistry Research Day*. UQ School of Dentistry Research Day, Brisbane, QLD, Australia. 9 July 2021.

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Lai, Y., Downs, J., Wong, K., Walsh, L., Leonard, H. and Zafar, S. (2021). Enablers and barriers in dental attendance in Rett syndrome: an international observational study. In *UQ School of Dentistry Research Day 2021*. UQ School of Dentistry Research Day 2021, Brisbane, QLD, Australia. 9 July 2021.

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Lim, J., Tian, J., Cai, F., Zachar, J. and Zafar, S. (2021). Evaluation of parental knowledge and attitude towards dental trauma management of their children. In UG Dental Student Conference. UG Dental Student Conference, Brisbane, QLD, Australia. 11 November 2021.

Malek, A., Tran, N., Zafar, S., Farag, A. and El Masoud, B. (2021). The efficacy of digital intra oral scanners in patients who have had periodontal disease. In UG Dental Student Conference. UG Dental Student Conference, Brisbane, QLD Australia. 11 November 2021.

Mohanasundaram, D., Kaur, H., Hossain, N., Calache, H. and Zafar, S. (2021). Paediatric dentistry training: building or breaking dental students' confidence?. In 28th Congress of the IAPD. 28th Congress of the IAPD, Virtual. 10-13 June 2021.

Mohanasundaram, D., Kaur, H., Hossain, N., Calache, H. and Zafar, S. (2021). Paediatric dentistry training: Building or breaking dental students' confidence?. In 28th Congress of the International Association of Paediatric Dentistry. 28th Congress of the International Association of Paediatric Dentistry, Online. 10-13 June 2021.

Ru, T., Ning, T., Fang, N., Lopez-Silva, C. and Zafar, S. (2021). Association between lack of dental service utilisation and caregiver-reported caries in Australian Indigenous children: a national survey (Best Presentation Award). In UG Dental Student Conference. UG Dental Student Conference, Brisbane, QLD Australia. 11 November 2021.

Salehi, F., Bastani, P., Ahmadian, L., Samadi, K., Yazdani, A. and Sharifian, R. (2021). Prerequisites of personal health record for chronic kidney disease: a scoping review and evaluation of the content validity. In Studies in Health Technology and Informatics. pHealth 2021, Genoa, Italy, (179-184). 9-10 November 2021.

Tian, J., Lim, J., Moh, C., Zafar, S. and Zachar, J. (2021). Evaluation of parental and training coaches knowledge and attitude towards dental trauma management in children: A questionnaire based cross sectional survey. In 28th Congress of the International Association of Paediatric Dentistry. 28th Congress of the International Association of Paediatric Dentistry, Online. 10-13 June 2021.

Tian, J., Lim, J., Moh, F., Zafar, S. and Zachar, J. (2021). Evaluation of parental and training coaches knowledge and attitude towards dental trauma management in children: a questionnaire based cross sectional survey. In 28th Congress of the IAPD. 28th Congress of the IAPD, Virtual. 10-13 June 2021.

Tian, J., Lim, J., Moh, F., Zafar, S. and Zachar, J. (2021). Self reported knowledge and attitude of parents and training coaches in relation to dental trauma management of children. In 12th European Academy of Paediatric Dentistry (EAPD) Interim Seminar. 12th European Academy of Paediatric Dentistry (EAPD) Interim Seminar, Oslo, Norway; Virtual Event. 23-24 April 2021.

## Research Report

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Stormon, N., Tran, C. and Suen, B. (2021) Australian Oral Health Workforce.

## PhD Thesis

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De Luca, M. (2021) Multi-omics: leveraging omics data integration to identify dysregulated biology in breast cancer.

Fernandez, T. (2021) Vertical bone augmentation using functionalised 3D printed polymer constructs.

Stormon, N. (2021) Predictors of oral health in Australian children.

Thattaruparambil Raveendran, N. (2021) A multiphasic hierarchical 3D bioprinted hydrogel scaffold for periodontal regeneration.

# Postgraduate research

## Higher Degree by Research PhD and MPhil students

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Manar Alderi  
Amelia Carr  
Cheryl Chen  
Philip Chien  
Divya Chopra  
Stefan Danylak  
Bilal El-Masoud  
Michael Foley  
Christina Franks  
Tianqi Guo  
Thomas Hogerheyde  
Sepanta Hosseinpourdougolsar  
Anjana Jayasree  
Nicolie Jenkins  
Kexin Jiao  
Yvonne Lai  
Claudia Lopez Silva  
Hasan Maki  
Manal Masood  
Alison Nation  
Vignesh Selvaprithiviraj  
Christopher Sexton  
Aroscha Weerakoon  
Juan Wen  
Mark Westaway

## DClinDent students

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Ahmed Ali Al-Humairi  
Lanit Anand  
Himanshu Arora  
John Biun  
Gabrielle Bou-Samra  
Thomas Briggs  
Wai-Sze (CeCe) Chan  
Janice Chuang  
James English  
Cheuk Kee (Candy) Fung  
Yong Hoon (Jimmy) Gim  
Remy Golding  
Tapiwa Gwengo  
Shenna Ho  
Jasmine Holgate  
Jimmy Hsiao  
Gloria Hsu  
Jonathan Lam  
May Lam  
Tony Leung  
Andrew Liaw  
Soo Jin Lim  
Katheryn McKenna  
Matthew Moore  
Joseph O'Connor  
Reeynaa Ohm  
Kushagra Ohri  
Anthony Puljich  
Su Sheng Quach  
Lydia See  
Caitlin Stephens  
Dinusha Thalagala  
Andy Tsai  
Max Wei  
Alan Zhu

# Undergraduate research

## Year 5 BDS Sc Dental Student Research Projects

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### **Vertical root fracture of molar teeth: A finite element stress analysis of sound and endodontically prepared teeth subjected to occlusal forces**

Researchers: Bonnie Han Chung, Michelle Ruijia Zhang, Su A Kim

Supervisors: Hon Professor Alex Moule, Professor Ove A. Peters, Dr Unni Pillai

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### **Teaching of undergraduate implant dentistry in Australia: a study of students' perspectives**

Researchers: An Tran, Annie Bai, Chae Won Lee

Supervisor: Dr Tulio Fernandez-Medina

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### **Understanding the building blocks of the paediatric dentistry curriculum for undergraduate students**

Researchers: Harmeet Kaur, Divyadarshini Mohanasundaram, Md Nadeem Hossain

Supervisor: Dr Sobia Zafar

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### **Parental and training coach' knowledge and attitude towards dental trauma management of children: a questionnaire-based cross-sectional survey**

Researchers: Juliana Tian, Jonathan Lim Jun Jie, Francis Moh

Supervisors: Dr Sobia Zafar, Dr Jessica Zachar

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### **Association between lack of dental service utilisation and caregiver-reported caries in Australian Indigenous children: a national survey**

Researchers: Jia Ru Toh, Nadine Wooi, Si Ning Tan

Supervisors: Dr Sobia Zafar, Dr Claudia Silva Lopez

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### **Addressing the needs or demand: a geospatial analysis of dental practices in Queensland**

Researchers: Chi Ian Kuong, Sai Tung Cheng, Siu Hei Tsung

Supervisor: Mr Christopher Sexton

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### **Utilisation of Government Dental Schemes and Physical Access to Services for Australian Children**

Researchers: Ahranni Sivakumar, Benjamin Perera, Zazi Brennan

Supervisors: Professor Marc Tennant, Professor Estie Kruger, Dr Gillian Jean, Dr Nicole Stormon

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### **Patterns of service use of the Child Dental Benefits Schedule amongst priority groups of Australian children**

Researchers: Daniel Leung, Jessica Zhuang, Neema Safari

Supervisor: Dr Nicole Stormon

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### **The application of failure modes and effects analysis (FMEA) in the clinical risk assessment of a biodegradable 3D-printed patient-specific scaffold designed for bone regeneration in the oral cavity**

Researchers: Ping Qi Lim, Sue Huey Lim, Maria Sherilyn

Supervisors: Dr Tulio Fernandez-Medina, Dr Sepanta Hosseinpour

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### **Orthodontic treatment need, facial anthropometrics and quality of life in Australian children**

Researchers: Kiana Baban, Murshidah Kafrawi, Astrid Klatte

Supervisor: Dr Nicole Stormon

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### **Tissue changes around immediate implants in the maxillary anterior region - A retrospective study**

Researchers: Junyoung Park, Hyunwook Ham, Joshua Shieh

Supervisors: Dr Himanshu Arora, Prof Saso Ivanovski

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### **Association between disability status and dental attendance patterns in Australian children: a national survey**

Researchers: Seerat Sawhney, Cantho [Theresa] Vu, Fiona Chen

Supervisors: Dr Claudia Lopez-Silva, Dr Sobia Zafar

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### **Dry mouth effects from drugs used for depression, anxiety, schizophrenia and bipolar mood disorder in adults: A Systematic Review**

Researchers: Cherilyn Teoh, Millie Thing, Serene Lau

Supervisors: Professor Steve Kisely, Dr Meng-Wong Taking, Dr Sarah Chaw

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### **A method of investigating periodontal bone loss in a genetic mouse model of Hereditary Haemochromatosis**

Researchers: David Liu, Xin Yuan Liu, Yun Hwan Lim

Supervisors: Tianqing Liu, Gregory Anderson, Sašo Ivanovski, Pingping Han

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### **The effect of instrument lubricant on surface roughness and colour change of dental restorations over time**

Researchers: Cedric Choy, Jabez Chow, Jolyn Ho

Supervisor: Dr Ian Meyers

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**The effect of different mixing times on setting time and handling properties of encapsulated GICs**

Researchers: Brenda Ang, Ho Xing Yee, Nicole Y Low

Supervisor: Professor Ian A Meyers

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**Awareness of loupes amongst dental students**

Researchers: Natalie An Qi Lim, Shan Li Ong, Jun Keat Low

Supervisors: Emeritus Professor Laurence J. Walsh AO, Dr George Bogen

Researchers: Natalie An Qi Lim, Shan Li Ong, Jun Keat Low

Supervisors: Emeritus Professor Laurence J. Walsh AO, Dr George Bogen

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**The accuracy of intra-oral scanner impressions vs conventional impressions in periodontally compromised dentition**

Researchers: Nathan Tran, Amirmiya Malek

Supervisors: Dr Bilal El Masoud, Dr Sobia Zafar, Dr Amro Farag

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**Intratubular Penetration of MTA in Endodontic Retreatment: A confocal microscopic study**

Researchers: Phoebe Cho, Vivian A. K. V. Dao, Eric Zong

Supervisors: Dr Yu-Yao Teoh, Dr George Bogen

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**A Systematic Review and Meta-Analysis of the Association Between Periodontal Disease and Severe Mental Illness**

Researchers: Vickie Cai, Chee Peng Ng, Jenny Zhao

Supervisors: Professor Steve Kisely, Professor Dan Siskind

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**Comparison of MTA and a Novel Calcium Hydroxide Cement (Supercal) for Prolonged Antibacterial Effect using a Colourimetric Assessment**

Researchers: Dean Galanos, Kia Hoveydai, Anna Kelly

Supervisors: Dr Yu-Yao Teoh, Dr George Bogen, Emeritus Professor Laurence J. Walsh

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**Investigation of the chemical and microstructural properties of enamel, dentine and cementum layers in young and healthy populations by Nano-FTIR, FTIR and Raman spectroscopy analysis**

Researchers: Michael Au, James Paek, Sujin Lee

Supervisor: Dr Abdalla Ali

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**A cohort study of dental students' clinical exposure a quantitative review**

Researchers: Virginia Han, Wan-Ting Huang, Hannah E. Pouw

Supervisors: Christopher T. Sexton, Aus Hmud

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**Effect of Post Depth and Diameter on Residual Dentine Thickness in Maxillary Premolars: A Radiographic Analysis**

Researchers: Zhi Yang Chong, Hsin Teng Michelle Loke, Yuexin Casey Shi

Supervisors: Prof Ove Peters, Dr Bilal El Masoud, Dr George Bogen, Prof Paul Monsour

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# Research Day 2021 presentations

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**Impact of two silica-based miRNA nano-vectors on mesenchymal stem cells**

Sepanta Hosseinpour

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**The effects of bioinspired titanium nanostructure on human gingival fibroblasts**

Aya Alali

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**Influence of sterilization on topography, chemistry and bioactivity of nanoengineered dental implants**

Tianqi Guo

---

**Nano-engineered titanium implants for local therapy and improved osseointegration**

Anjana Jayasree

---

**Fabrication optimization of nano-engineered zirconia dental implants**

Divya Chopra

---

**Salivary circular RNA in periodontal disease**

Kexin Jiao

---

**Enablers and barriers in dental attendance in Rett syndrome: an international observational study**

Yvonne Lai

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**Facial anthropometrics: epidemiology and concordance in Australian children and their parents**

Radin Manofi-Khosroshahi

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**The evaluation of undergraduate dental students' experiences in paediatric dentistry**

Harmeet Kaur

---

**Audit of educational, social and economic benefits of rural Indigenous community**

dental student clinical outplacement

Sandra March, Clare Mangoyana

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**A structured approach modelling child-level predictors of children's dental caries**

Nicole Stormon

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**SMS reminders to improve public outpatient attendance: a retrospective study**

Christopher Sexton

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**The Queensland birth cohort study for early childhood caries (ECC): Results at 7 years**

Leigh Harrison-Barry

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**Oral care provision for older adults with disabilities: Singapore dentists' perspectives**

Janice Chuang

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