Melbourne Dental School

Oral Health Science Honours
& Master of Biomedical Science
2025 Research Project Handbook

bio21 institute

THE UNIVERSITY OF MELBOURNE

Faculty of Medicine, Dentistry & Health Sciences

Melbourne Dental School

Welcome to Melbourne Dental School

We have a longstanding record of excellence in health and biomedical research which has led to significant translation into clinics and patient treatment. Research in the School covers a broad range of scientific endeavour from basic science to clinical studies to population health. This embraces various disciplines including **microbiology**, **immunology**, **cancer cell biology**, **biochemistry & molecular biology**, **chemistry**, **anatomy**, **cell biology, public health** and **materials engineering**. Our research also reaches out beyond oral health and dentistry into broader fields of wound healing, drug delivery, orthopaedics and microbiomics.

We are incredibly passionate about the mentoring and the training of future researchers. Indeed, our mission is to deliver excellence in research and education with a vision to be a world-class, research-based School. To achieve this goal, we provide outstanding research training and support for all laboratory and clinician research students as they develop research knowledge and expertise and help drive new discoveries that lead to better outcomes for patients. So, if you are passionate about improving patient health and wellbeing, or interested in developing new therapeutic treatments we encourage you to join us in the pursuit of knowledge by applying to do Honours or a Master's degree at the Melbourne Dental School. Working closely with our researchers, students undertake their project in state-of-the-art research laboratories at the Melbourne Dental School and Bio21 Institute.

There are a number of factors you might want to consider when making the decision about undertaking an Honours year or Master's degree, such as the amount of time spent on your research project, opportunities to undertake professional skills-based subjects, and which pathway would be most advantageous for possible entry into a PhD program in the future. Regardless of your choice, the School provides a stimulating and challenging intellectual environment that allows you to experience research first-hand and put your scientific knowledge into practice. The diversity of Australian and international students from many social and ethnic backgrounds at the School greatly enhances the learning experience. Having arrived in the School from the UK in 2020, I have been keen to develop an environment where collaborative research and working drives novel findings and success. Undertaking your project in the School will mean you will be supported by supervisors committed not only to the research they undertake, but the development of you as a researcher and critical thinker.

This booklet provides information that will help you decide on potential research projects. They all have potential clinical impact. Please take your time to identify projects that are of interest and contact potential supervisors for more information. I am very confident they will be eager to discuss your research interests and talk about their own research, show you around their laboratories, and introduce you to other students and researchers.

I look forward to seeing you at the School and hearing about your exciting research.

Professor Alastair J Sloan
Head of School

Honours and Master of Biomedical Science Projects

Oral Health and Vaping

Oral health providers and vaping cessation

Project description

Join our team as we create and assess an education module and resources to equip oral health providers in vaping cessation assistance.

Areas/techniques in which expertise will be developed

Survey questionnaires
Semi-structured interviews
Post-intervention assessment

Supervisors (Name and email address)

Dr Tami Yap tspyap@unimelb.edu.au
Dr Mat Lim mathew.lim@unimelb.edu.au
Dr Nidhi Saraswat nidhi.saraswat@dhsv.org.au

Degree availability

Honours

Location

Melbourne Dental School

Number of vacancies

1

Recent publications and/or Images

Prosthodontics

Dimensional accuracy and stability of 3D-printed dental bridges

The project will use 3D scanning to assess the accuracy (trueness and precision) of 3D printed dental bridges and compare their accuracy. Variables assessed will include the span of the bridge (2 vs 3 vs 4-unit bridges), the build angulation (0 vs 45 vs 90 degrees), postprocessing protocol, and storage (1 day, 3 days, 1 week, 2 weeks).

Areas/techniques in which expertise will be developed

3D scanning, surface matching and 3D deviation analysis, 3D printing

Supervisors (Name and email address)

A/Prof Khaled Ahmed. khaled.ahmed@unimelb.edu.au
A/Prof Roy Judge. roybj@unimelb.edu.au

Degree availability

Honours

Location

Melbourne Dental School

Number of vacancies

2

Recent publications and/or Images

Gupta, A., Alifui-Segbaya, F., Hasanov, S., White, A. R., Ahmed, K. E., Love, R. M., & Fidan, I. (2023). Material extrusion of thermoplastic acrylic for intraoral devices: Technical feasibility and evaluation. *Journal of the Mechanical Behavior of Biomedical Materials*, *143*, 105950.

Lin, L. H., Granatelli, J., Alifui-Segbaya, F., Drake, L., Smith, D., & Ahmed, K. E. (2021). A proposed in vitro methodology for assessing the accuracy of three-dimensionally printed dental models and the impact of storage on dimensional stability. *Applied Sciences*, *11*(13), 5994.

Vara, Rhea, William Lin, Jhi Kwan Low, Derek Smith, Antonio Grimm, Gareth Calvert, Santosh Kumar Tadakamadla, Frank Alifui-Segbaya, and Khaled E. Ahmed. "Assessing the Impact of Resin Type, Post-Processing Technique, and Arch Location on the Trueness and Precision of 3D-Printed Full-Arch Implant Surgical Guides." *Applied Sciences* 13, no. 4 (2023): 2491.

Dental Population Health

Exploring the graduate characteristics that facilitate or constrain future employment in health workforces in rural Victoria

Aims:

To identify the characteristics of graduates of oral health courses that facilitate or constrain future employment in the oral health workforce in rural Victoria

Objectives:

1. Undertake basic literature review of OH workforce issues in rural Victoria, including on factors that characterise successful recruitment and retention by dental practitioners in rural areas
2. To collect and analyse data on current dental practitioners in rural Victoria to build a picture of key characteristics that led to them working in rural Victoria
3. To analyse dental graduate employment outcome data over recent years to document workforce distribution

Areas/techniques in which expertise will be developed

- Literature reviewing
- Qualitative research
- Quantitative research
- Analysis of existing data

Supervisors (Name and email address)

Prof Julie Satur, juliegs@unimelb.edu.au
Caroline Koedyk, ckoedyk@unimelb.edu.au

Partner organisation

Victorian Oral Health Alliance (an alliance of 24 professional, services and consumer/community organisation concerned about inequity of access to public oral health care). One of VOHA's members, Prof Julie Satur, will act as lead/auspice for this project.

Degree availability. **Hons or Masters Research project**

Location. **Melbourne Dental School**

Number of vacancies. **1**

Recent publications and/or Images

There is insufficient workforce in the public oral health (OH) system, especially in rural Victoria, which is an important contributor to long waiting times for public care, with averages over three years in some cases. There has been a 12% decrease in FTE oral health staff numbers in public OH clinics between 2018 and 2022. There are a range of known factors for broader health workforce shortages, especially in rural areas, including low population density, limited infrastructure, isolation, and a lack of flexible working arrangements which impact decisions to enter the rural workforce. A further factor in the Oral Health sector is the private market based service model sitting outside Medicare generating significant remuneration gaps, relative to both the private sector and the public sector interstate. Additional to these factors are the significant HECS debts, a strong disincentive to seek lower-paid public employment and the culture of a private sector dominant service model. Additionally, there may be a mismatch between the capacity of rural school students to gain entry to OH university courses, the employment goals of actual OH graduates, and the realities of working in rural Victoria.

How to Apply for 2025 Start of Year Intake Honours or Master of Biomedical Science at the Melbourne Dental School

Entry to the Honours and Master of Biomedical Science programs is based on: (1) project availability, (2) academic background, and (3) suitability.

1. Identify projects in this handbook that are of interest to you.
2. Contact the relevant project supervisor to discuss your interest in their research. It is a good idea to email them a copy of your CV and your academic transcripts to help them understand your background, interests and academic strengths.
3. Make a time to meet with potential supervisors to discuss your project interests and discuss your academic record.
4. Visit the laboratory and meet other students and researchers.
5. In some cases, supervisors may be willing to offer you a provisional place in their laboratory (a provisional offer indicates that you have a guaranteed place in the Honours course, providing you satisfy all other entry requirements).
6. Apply:
    - For students who have completed a **Bachelor of Science, Bachelor of Biomedicine** or **Bachelor of Oral Health**, apply for our **Honours** projects online through the Faculty of Medicine, Dentistry and Health Sciences (MDHS) website: https://study.unimelb.edu.au/find/courses/honours/bachelor-of-biomedicine-degree-with-honours/how-to-apply/
    - For **Master of Biomedical Science**, apply online through the Faculty of Medicine, Dentistry and Health Sciences (MDHS) website: study.unimelb.edu.au/find/courses/graduate/master-of-biomedical-science/how-to-apply/

School Contacts

Coordinators for Bachelor of Science (Honours), Bachelor of Biomedicine (Honours) & Master of Biomedical Science:

Dr. Asli McCarthy
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