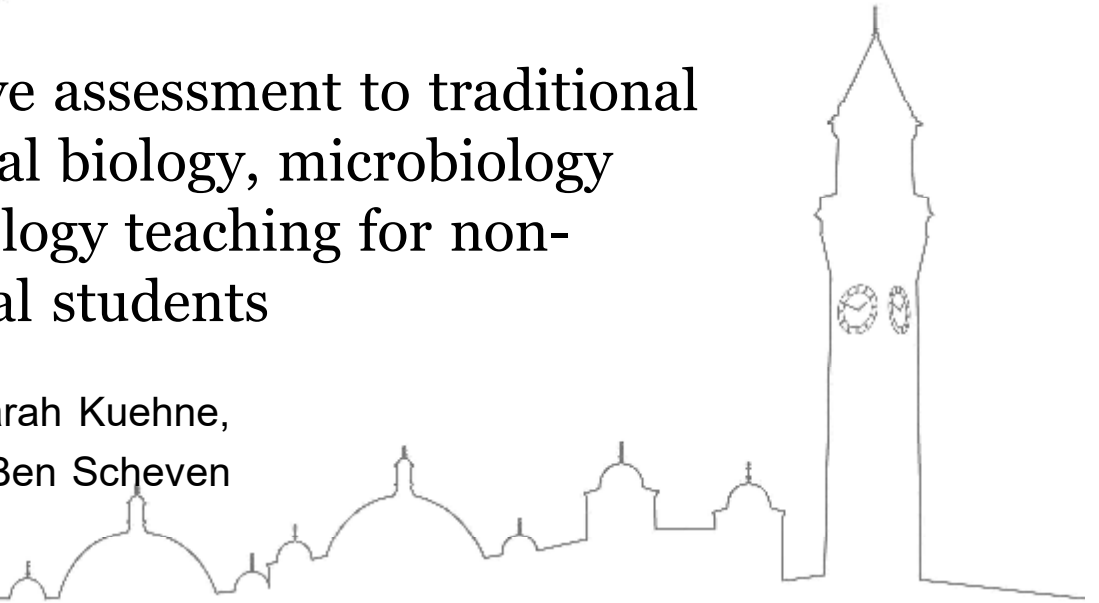




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An alternative assessment to traditional exams for oral biology, microbiology and immunology teaching for non-clinical dental students

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Oral biology, microbiology and immunology teaching at UoB

- Developed during the change to UoB BDS curriculum in 2020
- 20 credit module covering the titled areas
- Delivered in Semester 1 of the 2nd year (BDS2)
- Requirement for 50% in class assessment and 50% final exam



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Oral Biology	Microbiology	Immunology
Structure and Function of Dental Tissues Development and Growth of the Jaws Development of dental tissues Mineralisation Amelogenesis & Dentinogenesis Composition and structure of enamel Composition and structure of the dentine-pulp complex Alveolar process & bone biology	Structure & Function of Periodontium Teeth and restorative procedures Development, structure and function of junctional epithelium Eruptive mechanisms of the Dentition Saliva & the salivary glands Structure and function of Oral Mucosa	Bacteria - an introduction Bacteria - diagnosing infectious diseases Oral flora Dental plaque Microbiology of periodontal disease Microbiology of caries Cells and organs of the immune system Inflammation & innate immunity Wound healing Cellular communication Antigens and the T cell response Antibodies and the B cell response Mucosal Immunity Hypersensitivity and immunodeficiency Immunological aspects of oral specialities



Assessments

- In class assessment – Group Poster Project
- groups of 4 students given a topic/scientific question to address – your tasked to research and collate information from the scientific literature.
- (A) Group presentation (**30%**),
- (B) Individual short (up to 400-word) reflective piece about personal contribution to the group project (**15%**),
- (C) Individual assessment of another project in form of 2 questions (**5%**).



Assessments

- Traditionally an exam as end of module assessment:
 - Section A: Structured Short Answer Questions. 10 marks each.
 - Section B: Free response short answer questions. 10 marks each.
 - Section C: MCQ questions. 1 mark each



COVID-era online end of module assessment

- Students provided with a choice of 10 (2020-2021) or 5 (2021-2022) papers in each domain of OB, M or I
- Asked to select one from each domain via abstract review before:
- Identifying how these papers work together across Oral Biology, Microbiology and Immunology to explore a topic in dentistry (e.g Prosthetics; Ageing/geriatric dentistry; Caries; Orthodontics; Periodontitis).



COVID-era online end of module assessment

- Each student to write:
- short overarching introduction based on the chosen papers including reason why they are linked together
- short summary and evaluation of each of the 3 papers
- reflect on the papers and how they are linked to the OBMI course content



COVID-era online end of module assessment

- Provided with a template to complete and an example review
- Word limits to each section
- 4 days to complete (+1 for students with reasonable adjustment plans)
- All submissions assessed for plagiarism



Marking

- All research papers were reviewed in advance to make model answers
- Markers assessed their own domain area plus one other to allow for moderation (summary sections)
- Markers also were allocated a block of student ids for assessment of the intro summary and reflective conclusion



2020-21

Topics	Oral Biology	Microbiology	Immunology
Periodontitis	23	25	17
Caries	12	7	5
Oral cancer	4	4	4
Orthodontics	7	12	12
Paediatric dentistry	0	2	8
Mucosal barrier	1	2	4
Tissue regeneration	1	1	2
Prosthetics	7	7	8
Ageing/geriatric dentistry	12	10	11
Special care/systemic disease	6	3	2

2021-22

Topics	Oral Biology	Microbiology	Immunology
Periodontitis	15	8	9
Caries	6	5	6
Orthodontics	49	49	49
Prosthetics	2	4	3
Ageing/geriatric dentistry	11	13	16



Example: Perio papers 2020-21



RESEARCH ARTICLE

Development of Oral Care Chip, a novel device for quantitative detection of the oral microbiota associated with periodontal disease

Al Nozawa¹, Hiroyuki Oshima¹, Naoyuki Togawa¹, Takenori Nozaki², Shinya Murakami^{3*}



Case Report

LPS-induced premature osteocyte senescence: Implications in inflammatory alveolar bone loss and periodontal disease pathogenesis

Ruben Aquino-Martinez^a, Jennifer L. Rowsey^a, Daniel G. Fraser^a, Brittany A. Eckhardt^a, Sundeep Khosla^{a,b}, Joshua N. Farr^{a,b,c}, David G. Monroe^{a,b,c,d}



Received: 4 July 2018 | Revised: 4 September 2018 | Accepted: 12 September 2018
DOI: 10.1002/jbm.b.13622



ORIGINAL ARTICLE

WILEY

Characterization and comparison of neutrophil extracellular traps in gingival samples of periodontitis and gingivitis: A pilot study

Antonio Magán-Fernández¹ | Francisco O'Valle^{2,3} | Francisco Abadía-Molina^{4,5} | Ricardo Muñoz⁶ | Patricia Puga-Guil⁷ | Francisco Mesa¹



In studying these papers, I now have a greater appreciation that oral biologists, microbiologists and immunologists are not scientists working in separate fields. Their disciplines are highly interrelated and overlap considerably. Hence, they cooperate to develop greater understanding of the science behind a clinical problem. Sometimes their work can seem far removed from clinical dentistry, but I can now see how it underpins and guides development of therapeutic interventions.

In summary, this exercise proved interesting and enlightening, providing the opportunity to approach the module content from a broader perspective. I now fully appreciate how these fundamental sciences provide a solid foundation for my dental studies. I have realised that advances in these fields play a key role in pioneering future preventative and therapeutic interventions in the clinical setting.



Marks

- OB exam 2019 64.9%
- DPI exam 2019 (Immunol and Micro only) 66.7%
- OBMI exam 2020-21 64.3%
- OBMI exam 2021-2022 63.2%



Student comments

- Some anxiety before the assessment due to the 'unknown' nature
- I really enjoyed being able to put the learning from OBMI into a dental context
- It didn't feel like an exam



Staff comments

- There seemed to be a lot of work up front (2020-21)
- Some really good reflections on how the papers linked to the content
- Only one or two cases where academic integrity was pulled up



OBMI team



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