# University of Birmingham

# Dr Melissa Grant PhD

Lecturer in Biological Sciences

School of Dentistry

## Contact details

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## About

Melissa Grant is a lecturer in biological sciences within the School of Dentistry. Uniquely situated in both the School of Dentistry and the School of Biosciences she has interdisciplinary collaborations with both scientists and clinicians. She is particularly interested in defining proteomic profiles of inflammatory fluids and understanding the processes and prevention of disease development and progression.

## Qualifications

- PhD Biochemistry, University of Birmingham, 2001.
- BSc (Hons) Biochemistry, University of Birmingham, 1997.

## Biography

Melissa graduated in 1997 with a BSc in Biochemistry and immediately took up a CASE Award (Du Pont) PhD in the laboratories of Dr Dennis Briggs, studying enzymes involved in the germination of wheat grain. These enzymes would ultimately be exploited in the improvement of animal feeds and in bread baking, allowing bread to rise more and yield a ‘fluffier’ loaf.

She was introduced to the field of proteomic research at the end of her PhD and subsequently went on to set up the proteomic laboratory of Prof Helen Griffiths at Aston University. Leading on from her interests in nutrition Melissa investigated the effects of vitamins C, E and folate on human health and disease, including cancer, Alzheimer’s and heart diseases. She analysed both human plasma samples and cell culture derived samples, generating a number of papers during this post doctoral research.

In 2005 she joined the School of Dentistry's Periodontal Research Group at the University of Birmingham as lead postdoctoral fellow on projects to assess how micronutrients could be used to improve oral health. The discovery phase has led to generation of a number of activities which may be appearing in a toothpaste near you soon! She has also continued with her interests in proteomic analysis investigating inflammatory fluids from the gingival crevice and from around inflamed hearing aids.

## Teaching

Melissa has successfully completed the associate program of post graduate certificate in learning and teaching in higher education (PGCert LTHE) and is involved in

- **Dental Surgery BDS (/undergraduate/courses/med/dental-surgery.aspx)** (3rd Year Immunology Module)
- **Biomedical Materials Science BMedSc (/undergraduate/courses/med/biomedical-materials-sci.aspx)**
- **MSc Microbiology and Infection (http://www.birmingham.ac.uk/postgraduate/courses/taught/biosciences/microbiology-infection.aspx)**
- Biochemistry

## Postgraduate supervision

Melissa is interested in supervising doctoral research students in the areas of:

Systems biology approaches to the exploration of periodontal and peri-implant inflammation.

Understanding disease progression and prevention in the oral cavity or peri-implant.

## Research

Melissa’s research centres around interdisciplinary collaborations and clinician-scientist partnerships:

She is involved in a number of projects revealing biomarker discovery, either in programmes of oral health, investigating gingivitis and periodontitis, or at epithelial-implant interfaces in the mouth and surrounding bone anchored hearing aids (BAHAs).

She is a collaborator on a number of European FP7 funded grants including:

Markage for discovery of biomarkers of healthy human ageing, and as such she holds an honorary fellowship at Aston University; and Gums & Joints, to investigate the possible link between rheumatoid arthritis and periodontitis.

## Other activities

Melissa is a member of a number of professional bodies to support her research including: The Biochemical Society; The British Society of Proteome Research, The International Association of Dental Research, The Society of Free Radical Research and the Academy of Osseointegration. She has undergone Medici training for marketing, strategy, finance and creating innovation and entrepreneurship within the sciences.

She is a winner of the University's Big Ideas competition and former **Crucible (http://www.nesta.org.uk/crucible/)** labs alumna. She continues to collaborate in innovative blue skies research and engage the public and young scientists through public and school presentations, workshops and art-science collaborations, such as the **HAB project (http://h-a-b.net/)** (which, in collaboration with NASA and Rocket Mavericks, searches for novel extremophiles in the stratosphere that could be exploited for novel functions), **Laboratory Life (http://www.lighthouse.org.uk/programme/laboratory-life?query=laboratory%20life)** (an exploration of environmental bacteria in collaboration with Anna Dumitriu) and **Field_Notes (http://bioartsociety.fi/field_notes/)** (discussions on bioscaffolds and implants with Oron Catts).

Melissa is the creator of a number of laboratory based timelapse videos including:

From Infective Textiles **http://www.youtube.com/watch?feature=player_embedded&v=TKHj5_dIdcU (http://www.youtube.com/watch?feature=player_embedded&v=TKHj5_dIdcU)**

From Field_Notes **http://hecticium.blogspot.com/2011/09/in-lab-again.html (http://hecticium.blogspot.com/2011/09/in-lab-again.html)**

From Laboratory Life: **http://hecticium.blogspot.com/2011/02/visiting-simons-lab.htm (http://hecticium.blogspot.com/2011/02/visiting-simons-lab.html)**

## Publications


Bennett S, **Grant MM**, Creese AJ, Mecocci P, Cooper HJ& Aldred S.(2011)Plasma levels of Complement 4a protein are increased in Alzheimer's disease. Alzheimer Disease & Associated Disorders

*In press*

**Grant MM.** (2011)What do 'omic technologies have to offer periodontal clinical practice in the future? Journal oF PERIODONTAL RESEARCH

*In press*

**Grant MM.** (2010) Identification of SUMOylated proteins in neuroblastoma cells after treatment with hydrogen peroxide or ascorbate BMB reports 43: 720-725

**Grant MM**, Kolamunne RT, Lock FE, Matthews JB, Chapple ILC, Griffiths HR. (2010) Oxygen tension modulates the cytokine response of oral epithelium to periodontal bacteria. Journal oF Clinical Periodontology 37: 1039–1048

Lock FE, Underhill-Day N, Dunwell T, Matallanas D, Cooper W, Hesson L, Recino A, Ward A, Pavlova T, Zabarovsky E, **Grant MM**, Maher ER, Chalmers AD, Kolch W & Latif F. (2010) The RASSF8 candidate tumor suppressor inhibits cell growth and regulates the Wnt and NF-jB signaling pathways. Oncogene 29: 4307-16

**Grant MM**, Monksfield P, Proops D, Brine M, Addison O, Sammons RL, Matthews JB, Reid A, & Chapple ILC. (2010) Fluid Exudates from Inflamed Bone-Anchored Hearing Aids Demonstrate Elevated Levels of Cytokines and Biomarkers of Tissue and Bone Metabolism. Otology & Neurotology 31: 433-439

**Grant MM**, Creese AJ, Barr G, Ling MR, Scott AE, Matthews JB, Griffiths HR, Cooper HJ, & Chapple ILC. (2010) Proteomic Analysis of a Noninvasive Human Model of Acute Inflammation and Its Resolution: The Twenty-one Day Gingivitis Model. Journal of Proteome Research 9: 4732–4744

**Grant MM**, Brock GR, Matthews JB & Chapple ILC. (2010) Crevicular fluid glutathione levels in periodontitis and the effect of non-surgical therapy. Journal or Clinical Periodontology 37:17-2