

Dr Clare Ray PhD

Lecturer in Cardiovascular and Respiratory Science

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About

Clare Ray is a lecturer in Cardiovascular and Respiratory Sciences.

She combines her teaching responsibilities on the MBChB, BMedSc and BDS programmes with a research interest in the regulation of skeletal muscle blood flow on which she has published a number of papers.

Qualifications

- Associate in Learning and Teaching in HE 2009
- School of Medicine's Award for Excellence in Teaching 2007
- PhD Physiology 2004
- BMedSc (Hons) 2000

Biography

Clare Ray qualified with a BMedSc (1st Class Hons) in Medical Science, specializing in Cardiovascular Physiology, from the University of Birmingham in 2000. She went on to study for a PhD in the Department of Physiology, developing a novel technique for directly measuring the *in vitro* release of nitric oxide from blood vessels and elucidating the pathway by which adenosine evokes nitric oxide release during systemic hypoxia.

Her two post-doctoral research projects, both funded by the British Heart Foundation, allowed Clare to continue her research into skeletal muscle blood flow at the University of Birmingham and it was during this time that she developed her interest in learning and teaching.

Whilst continuing her research interests, Clare completed the Associate Module in Learning and Teaching in HE in 2009 and was appointed as a lecturer in Cardiovascular and Respiratory Sciences in January 2010. She is currently studying towards the PGCertLTHE.

Clare has also been involved with the University's widening participation scheme, Access to Birmingham (A2B), since 2004 and has tutored over 100 students from local schools applying for courses in the College of Medical and Dental Sciences. In addition, she has recently become involved in the new multi-institutional widening participation scheme, Realising Opportunities.

Teaching

- MBChB
- BMedSc (Biological Sciences)
- BMedSc (Biomaterials)
- BDS
- GEC
- MRes (*in vivo*)

Postgraduate supervision

Clare currently co-supervises a PhD student on a collaborative project with the School of Sport and Exercise Sciences and Astra Zeneca, developing *in vivo* models and techniques to investigate the influence of the endothelium as a barrier to insulin action.

Research

The main theme of Clare's research is the regulation of skeletal muscle blood flow. Her focus has been on the role of the local mediators adenosine and nitric oxide in matching oxygen delivery to oxygen consumption during hypoxia when oxygen delivery is compromised and during exercise when oxygen consumption is increased. More recently she has been interested in the role of reactive oxygen species in the vasodilator responses of skeletal muscle and the influence of adaptive and maladaptive changes induced by chronic hypoxia. Clare is also involved in research investigating the skeletal muscle vasodilatation evoked by insulin with a focus on the role of nitric oxide and the endothelium as a barrier to insulin action in models of Type 2 Diabetes.

She is also interested in learning and teaching scholarship and research and is currently undertaking a study into novel methods for student feedback.

Other activities

- Member of the Physiological Society
- Associate of the Higher Education Academy
- Volunteer speaker for Understanding Animal Research
- Consultant for publishing company Quarto on their range of children's books about the human body.

Publications

Ray CJ & Marshall JM (2009). Nitric oxide (NO) does not contribute to the generation or action of adenosine during exercise hyperaemia in rat hindlimb. **Journal of Physiology** 587, 1579-1591

Ray CJ & Marshall JM (2009). Elucidation in the rat of the role of adenosine and A2A-receptors in the hyperaemia of twitch and titanic contractions. **Journal of Physiology** 587, 1565-1578

Ray CJ & Marshall JM (2006). The cellular mechanisms by which adenosine evokes release of nitric oxide from rat aortic endothelium. **Journal of Physiology** 570, 85-96

Broadley AJ, Korszun A, Abdelaal E, Moskvina V, Jones CJ, Nash GB, Ray CJ, Deanfield J & Frenneaux MP (2005). Inhibition of cortisol production with metyrapone prevents mental stress-induced endothelial dysfunction and baroreflex impairment. **Journal of the American College of Cardiology** 46, 344-350

Ray CJ & Marshall JM (2005). Measurement of nitric oxide release evoked by systemic hypoxia and adenosine from rat skeletal muscle in vivo. **Journal of Physiology** 568, 967-978

Ray CJ, Abbas MR, Coney AM & Marshall JM (2002). Interactions of adenosine, prostaglandins and nitric oxide in hypoxia-induced vasodilatation: in vivo and in vitro studies. **Journal of Physiology** 544, 195-209