University of Birmingham

Dr Kevin Whitehead

Lecturer in Neuropharmacology

Pharmacy, Pharmacology and Therapeutics

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About

Kevin Whitehead is a lecturer in the Neuropharmacology team, School of Clinical and Experimental Medicine and principal investigator of the *Pain Signalling Group*.

Kevin has extensive experience of *in vivo* monitoring of neurochemistry and his current research is aimed towards an understanding the role of central neuroinflammatory processes in chronic pain. This is approached through whole animal studies for which he holds a Home Office project licence. His work has attracted funding from BBSRC and Arthritis Research Campaign as well as numerous collaborations with the pharmaceutical industry (GlaxoSmithKline, Pfizer, Organon, Parke Davis and NovoNordisk). He also leads the College *Glia Special Interest Group*.

He teaches pharmacology and neuroscience topics across all undergraduate degree programmes offered by the Medical School as well as other undergraduate and taught postgraduate courses across the University. Kevin has supervised five postgraduate research students towards their doctorate.

Kevin regularly speaks at schools on behalf of the national group *Understanding Animal Research*, presenting the facts about the use of animals for the advancement of scientific and medical research. For the last 3 years Kevin has acted as a Governor for a local Birmingham secondary school. He is a member of *International Association for the Study of Pain; British Neuroscience Association*; *Understanding Animal Research (until 2008, Research Defence Society)*.

Qualifications

- PhD *Neuropharmacology (London)*
- GIBol *Pharmacology (Surrey)*
- BSc *Biological Science (Edinburgh)*

Biography

Kevin Whitehead gained a BSc in Biological Scienceat the University of Edinburgh before completing his undergraduate education as a Graduate of the Institute of Biology (Pharmacology) at NESCOT (University of Surrey). He went on to study for a PhD in Neuropharmacology in the Movement Disorders Group, King's College London under Prof Peter Jenner. After working in Prof Phil Moore's lab in the Pharmacology Group, King's College London, Kevin joined the University of Birmingham in 1997 as a Research Fellow working with Prof Norman Bowery in the Department of Pharmacology. This move was made possible through funding of a proposal investigating neurochemical plasticity in the spinal cord underlying chronic inflammatory pain awarded by the Arthritis Research Campaign. The proposal (written by Kevin) utilised his unique expertise in the UK in spinal microdialysis, an *in vivo* neurochemical monitoring technique applied to the spinal cord by only a few laboratories world-wide.

Kevin took up a teaching post in 2001 and was appointed Lecturer in 2006. He continues his research into the pathogenesis of chronic pain, focussing currently on the contribution of neuroinflammation and glial release of immune modulators (cytokines/chemokines) in the CNS to pathological pain conditions.

Teaching

- BMedSc course modules (year): *Pharmacology* (1); *Neuroscience* (1); *Systems Pharmacology* (2); *Neuroscience* (2); *Neuropharmacology* (3); *Molecular and Integrative Pharmacology* (3)
- BDS course modules (year): *Introduction to Biomedical Sciences* (1); *Neuromusculoskeletal System* (2); *Basic & Applied Systemic Human Disease* (3)
- MB ChB course modules (year): *Neurones and Synapses* (1); *Introduction to Respiratory Medicine* (1); *Brain and Behaviour* (2)
- BSc Chemistry with Pharmacology course modules (year): *Pharmacology* (1); *Systems Pharmacology* (2); *Molecular and Integrative Pharmacology* (3)
- BSc MedBiochem course modules (year): *Topics in Medical Biosciences* (2)
- *Good Brain Bad Brain* (MOMD) (2)
- Physician Assistant Programme (1)
- MSc *Advanced Manipulative Physiotherapy*
- MRes *In Vivo Skills*

Research

Research is aimed at identifying critical pathological changes in nociceptive signalling underlying chronic pain states. Focus is on neurochemical plasticity, primarily utilising microdialysis for *in vivo* measurement of the release of neuroactive substances in rodent brain and spinal cord, the latter an approach unique in the UK. Development of 'high flux' microdialysis allied to multiplexed immunoassay (Luminex®) technology allows monitoring of cytokine/chemokine release and a novel window onto neuroinflammatory mechanisms.

Other activities

- Module Coordinator BMedSc Neuroscience 1
- Personal mentor, MB ChB course
- Personal tutor, BMedSc
- Personal mentor, graduate students (Neuropharmacology & Neurobiology)
- Graduate Studies Assistant Coordinator (Neuropharmacology & Neurobiology)
- College Lead for *Glia* Special Interest Group
- Governor, Lordswood Girls' School and Sixth Form Centre

Publications

Whitehead K.J., C.G.S. Smith, S-A. Delaney, S.J. Curnow, M. Salmon, J.P. Hughes, IP Chessell (2010) Dynamic regulation of spinal pro-inflammatory cytokine release in the rat in vivo following peripheral nerve injury. **Brain Behav. Immun**. 24, 569-576

Whitehead K.J., C.G.S. Smith, S-A. Delaney, S.J. Curnow, M. Salmon, J.P. Hughes, IP Chessell (2009)Neurone-glia signalling underlies spinal pro-inflammatory cytokine release evoked by primary afferent stimulation in the neuropathic rat.**Eur. J. Pain** 13 (Suppl. 1): 107.

Smith C.G.S., C.M. Taylor, W.J. Winchester, K. Lee, K.J. Whitehead (2008) Alosetron modulates central serotonergic visceral pain processing in the thalamus. **12th World Congress on Pain, Glasgow**, 17-22 August, 2008.

Devall A.J., K.J. Whitehead, Richards D.A. (2008) Assessment of thalamic 5-HT levels using microdialysis in a rat model of inflammatory pain. **12th World Congress on Pain**, Glasgow, 17-22 August, 2008.

Smith C.G., K.J. Whitehead (2007) GABA transporter type 1 (GAT-1) uptake inhibition reduces stimulated aspartate and glutamate release in the dorsal spinal cord *in vivo* via different GABAergic mechanisms. **Neuropharmacology** 53(8): 975-981.

Devall A.J., R. Blake, N. Langman, C.G.S. Smith, D.A. Richards, K.J. Whitehead (2007) A monolithic column-based reversed-phase liquid chromatography separation for amino acid assay in biological samples. **Journal of Chromatography** *B* 848(2): 323-328.

Langman N., C.G.S. Smith, K.J. Whitehead (2006) Selective serotonin re-uptake inhibition attenuates evoked glutamate release in the dorsal horn of the anaesthetised rat *in vivo.* **Pharmacol. Res.** 53: 149-155.

Whitehead K.J., C.G.S. Smith, B. Hoggart, S.J. Curnow and M. Salmon (2006) Primary afferent induced modulation of spinal pro-inflammatory cytokine release in the neuropathic rat *in vivo. Eur. J. Pain 10 (Suppl. 1): 354.* 10 (Suppl. 1): 354.

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