
Curriculum Vitae - Professor Malcolm Macleod

Current Appointments:

Professor of Neurology and Translational Neuroscience, University of Edinburgh since 2012
Honorary Consultant Neurologist, NHS Forth Valley since 2007
- Contracted to UoE, ~50% salary from NHS Forth Valley
Honorary Fellow, Florey Neurosciences Institute, Melbourne, Australia since 2010

Previous appointments

Reader (2010-12), Senior Lecturer (2007-10), Part time Senior Lecturer (2005-7) Centre for Clinical Brain Sciences, University of Edinburgh; Consultant Neurologist, NHS Forth Valley (2005-7); SpR in Neurology (NHS Lothian)(2001-5); Clinical Research Fellow, National Stroke Research Institute, Melbourne, Australia (2003-4); SHO (Neurosurgery, Neurorehabilitation)(2000-1); British Brain and Spine Foundation Research Fellow (JR Seckl, University of Edinburgh)(1998-2000); MRC Clinical Training Fellow (JS Kelly, University of Edinburgh)(1995-8); SHO (Internal Medicine)(1992-5); HO (Internal Medicine, Neurosurgery)(1991-2).

Degrees awarded

Ph.D. "On the Neuroprotective Actions of FK506" University of Edinburgh, (2001); Certificate in Health Economics, University of Aberdeen (1994); M.R.C.P.(UK) (1994); M.B.,Ch.B. University of Edinburgh (1991); B.Sc. First Class Honours in Medical Science (Pharmacology) University of Edinburgh (1988).

Other positions

Clinical Lead, Neurology, NHS Forth Valley (since 2005)
Commissioner (since 2014) Commission for Human Medicines
Member (since 2013), UK Home Office Animals in Science Committee
Member (since 2013) and Vice Chair (since 2015), Committee for Human Medicines Expert Advisory Group for Neurology, Psychiatry and Pain
Member (since 2014) European Medicines Agency Specialist Advisory Group for Neurology
Member (2015-17), US NRC Committee on Endocrine-Related Low Dose Toxicity
Member, NC3Rs grant panel (since 2015)
Affiliate, Meta-Research Innovation Centre at Stanford (METRICS) (since 2015)

Previous positions

Organising Committee, Academy of Medical Sciences symposium on Reproducibility and reliability of biomedical research (2015)
Organising Committee, US ILAR Roundtable on Reproducibility Issues in Research with Animals and Animal Models (2014)
Chairman, ANR (France) FLAG-ERA Human Brain Project funding panel, 2015
Founding Convener, Collaborative Approach to Meta-Analysis and Review of Animal Data in Experimental Studies (CAMARADES) (2005-13)
President, European Stroke Research Network for Hypothermia (2010-12)

Editorial Positions

Founding co-Editor in Chief, Evidence Based Preclinical Medicine (since 2014); Editorial Boards Stroke (since 2008; Assistant Editor 2010-15); PLoS Medicine (since 2009); International Journal of Stroke (since 2010); Journal of Cerebral Blood Flow and Metabolism (since 2010); Systematic Reviews (since 2011); BMC Research Methodology (since 2011); Nature Scientific Reports (since 2015)

Major research interests

Systematic review and meta-analysis of laboratory studies

My group has led the development and application of systematic review and meta-analysis to data from in vivo experiments modeling human disease. Our major strength is in neuroscience but we are also involved with collaborations addressing heart failure, septic shock and reproductive toxicology. In each instance our focus has been as much on issues of the quality of reporting as on producing summary estimates of how good drugs are. This work has led to model specific guidelines for good laboratory practice and informed the development of the ARRIVE guidelines, and collaborations with publishers (PLoS, Nature Publishing Group) testing the effectiveness of editorial interventions.

Clinical trial programmes including EuroHYP-1, PRECIOUS and MS-SMART

I am co-chief investigator of EuroHYP-1, a 1500 patient RCT of therapeutic hypothermia in acute ischaemic stroke. I am scientific liaison officer for the trial, lead the randomization and eCRF Work

Package, and have taken a leading role in public engagement work including live appearances on national radio and television news. We developed the trial protocol, in part, on the basis of our findings from a systematic review and meta-analysis of the effect of hypothermia in animal models of stroke. In the MS-SMART program we used systematic review and meta-analysis of human and animal data to inform the design and drug choice for an adaptive clinical trial in secondary progressive multiple sclerosis, and the first phase of this trial had now been funded.

Principal research grants

- PREvention of Complications to Improve Outcome in elderly patients with acute stroke (PI van der Worp) Horizon 2020 €5,994,000 2015-20.
- Assessment of the impact of editorial change on the quality of reporting in Nature journals. Arnold Foundation \$82,860 2015
- A randomised, controlled study of editorial interventions to improve compliance with the ARRIVE guidelines. NC3Rs £25,000 2015
- ivSyRMAF (In vivo Systematic Review and Meta-Analysis Resource) (PI) NC3Rs £495,000 2013-8
- MultiPART – a framework for multicentre preclinical *in vivo* studies (PI Sena) *European Community FP7* €498,000 2013-15
- Effect of scalp cooling on brain temperature (PI) Dignitana AB (Sweden) £35,000 2013
- Reduction and refinement in animal models of neuropathic pain; using systematic review and meta-analysis (PI Sena) NC3Rs, £209,000 2012-14
- EuroHYP-1: a randomised controlled trial of hypothermia for acute ischaemic stroke” (Co-PI, with 5 others) *European Community FP7* €10.9m (£9,545,406) 2012-2017
- “Getting it right: selecting interventions for a clinical trial in secondary progressive multiple sclerosis” (PI) *MS Society* £25,912 2011
- “The Edinburgh Trials Methodology Hub” (with 6 others) *MRC Trials Methodology Hub* £2,500,000 2009-2012
- “Does increased mineralocorticoid expression represent a novel therapeutic approach in cerebral ischaemia?” (PI) *The Wellcome Trust* £161,371 2003-2006

Selected recent and forthcoming invited presentations

- “Design, conduct and reporting of in vivo research” Improving Biomedical Research 2015: Challenges and Solutions, METRICS, Stanford (Nov 2015)
- “What do we know about the credibility of research in the biomedical sciences?” The 2015 Southampton Conference on the Credibility of Empirical Research. (July 2015)
- “How can we optimise the reproducibility of research using animals?” Academy of Medical Sciences Symposium on reproducibility and reliability of biomedical research. London (April 2015)
- “Systematic review of experimental animal studies”: EPA IRIS Workshop on the NRC Recommendations. Arlington VA (Oct 2014)
- “Restoring Faith in the Research Enterprise: A Call to Action”: ILAR Roundtable: The Missing “R”: Reproducibility in a Changing Research Landscape. Washington DC (June 2014) (<http://tinyurl.com/mna6l2z>)
- “Rigour Mortis – How bad research is killing science” Professorial Inaugural Lecture, University of Edinburgh (May 2014) (<http://tinyurl.com/nqrl22y>).
- “Improving value to reduce waste in research; Animal Studies” Equator Network Paris Launch (May 2014) (<http://tinyurl.com/qabylmb>)
- “Biomedical research: increasing value, reducing waste”: introductory comment in Symposium on The Lancet Series on Research: Increasing value, reducing waste (Jan 2014) (<http://tinyurl.com/qelvgsc> video 1)
- “Saving Brains: Developing Effective Treatments for Stroke” Let's Talk About Health: From Cradle to Grave Public Lecture series, Edinburgh (Dec 2013)
- “Using Evidence to Inform Translational Medicine” The Second David Sackett Symposium, Niagara (Sept 2013)
- “Systematic Review of Animal Studies and Approaches for Characterizing Study Quality” Workshop on weight of evidence; US National Research Council Committee to review the Integrated Risk Information System (IRIS) process. Washington DC (March 2013)
- “Systematic reviews of animal studies as a tool for clinical trial design” European Commission DG Research and Innovation Strategic Workshop “Clinical Trials in Horizon 2020” Brussels (Feb 2013)

Malcolm Macleod: Selected Publications (ORCID id 0000-0001-9187-9839)

1. Vesterinen HM, Connick P, Irvine CM et al. Drug repurposing: a systematic approach to evaluate candidate oral neuroprotective interventions for secondary progressive multiple sclerosis. *PLoS One*. 2015;10(4):e0117705. doi: 10.1371/journal.pone.0117705.
2. Milidonis X, Marshall I, Macleod MR et al. Magnetic resonance imaging in experimental stroke and comparison with histology: systematic review and meta-analysis. *Stroke*. 2015;46(3):843-51. doi: 10.1161/STROKEAHA.114.007560
3. McCann SK, Irvine C, Mead GE et al. Efficacy of antidepressants in animal models of ischemic stroke: a systematic review and meta-analysis. *Stroke*. 2014;45(10):3055-63.
4. Amarenco P, Davis S, Jones EF et al. Aortic Arch Related Cerebral Hazard Trial Investigators. Clopidogrel plus aspirin versus warfarin in patients with stroke and aortic arch plaques. *Stroke*. 2014;45(5):1248-57. doi: 10.1161/STROKEAHA.113.004251.
5. Al-Shahi Salman R, Beller E, Kagan J et al. Increasing value and reducing waste in biomedical research regulation and management. *Lancet*. 2014;383(9912):176-85. doi: 10.1016/S0140-6736(13)62297-7.
6. Ioannidis JP, Greenland S, Hlatky MA et al. Increasing value and reducing waste in research design, conduct, and analysis. *Lancet*. 2014;383(9912):166-75.
7. Macleod MR, Michie S, Roberts I et al. Biomedical research: increasing value, reducing waste. *Lancet*. 2014;383(9912):101-4. doi:10.1016/S0140-6736(13)62329-6.
8. Howells DW, Sena ES, Macleod MR. Bringing rigour to translational medicine. *Nat Rev Neurol*. 2014 Jan;10(1):37-43. doi: 10.1038/nrneurol.2013.232.
9. Antonic A, Sena ES, Lees JS et al. Stem cell transplantation in traumatic spinal cord injury: a systematic review and meta-analysis of animal studies. *PLoS Biol*. 2013;11(12):e1001738. doi: 10.1371/journal.pbio.1001738.
10. Tsilidis KK, Panagiotou OA, Sena ES et al. Evaluation of excess significance bias in animal studies of neurological diseases. *PLoS Biol*. 2013 Jul;11(7):e1001609. doi: 10.1371/journal.pbio.1001609.
11. Hirst TC, Vesterinen HM, Sena ES et al. Systematic review and meta-analysis of temozolomide in animal models of glioma: was clinical efficacy predicted? *Br J Cancer*. 2013;108(1):64-71.
12. Landis SC, Amara SG, Asadullah K et al. A call for transparent reporting to optimize the predictive value of preclinical research. *Nature*. 2012; 490(7419):187-91. (member of 4 person writing committee)
13. Sena ES, Jeffreys AL, Cox SF et al. The benefit of hypothermia in experimental ischemic stroke is not affected by pethidine. *Int J Stroke*. 2012. doi: 10.1111/j.1747-4949.2012.00834.x.
14. Frantziadis J, Sena ES, Macleod MR, Al-Shahi Salman R. Treatment of intracerebral hemorrhage in animal models: meta-analysis. *Ann Neurol*. 2011 Feb;69(2):389-99.
15. Macleod MR. Why animal research needs to improve. *Nature*. 2011 477 (7366):511
16. Rooke ED, Vesterinen HM, Sena ES et al. Dopamine agonists in animal models of Parkinson's disease: a systematic review and meta-analysis. *Parkinsonism Relat Disord*. 2011;17(5):313-20.
17. Vesterinen HM, Sena ES, French-Constant C et al. Improving the translational hit of experimental treatments in multiple sclerosis. *Mult Scler*. 2010 Sep;16(9):1044-55.
18. Sena ES, van der Worp HB, Bath PM, Howells DW, Macleod MR. Publication bias in reports of animal stroke studies leads to major overstatement of efficacy. *PLoS Biol*. 2010 Mar 30;8(3):e1000344.
19. Macleod MR, Fisher M, O'Collins V et al. Good laboratory practice: preventing introduction of bias at the bench. *Stroke*. 2009; 40(3):e50-2.
20. van der Worp HB, Sena ES et al. Hypothermia in animal models of acute ischaemic stroke: a systematic review and meta-analysis. *Brain*. 2007;130:3063-74.
21. Lai M, Horsburgh K, Bae SE et al. Forebrain mineralocorticoid receptor overexpression enhances memory, reduces anxiety and attenuates neuronal loss in cerebral ischaemia. *Eur J Neurosci*. 2007; 25(6):1832-42.
22. Perel P, Roberts I, Sena E et al. Comparison of treatment effects between animal experiments and clinical trials: systematic review. *BMJ*. 2007; 334(7586):197.
23. O'Collins VE, Macleod MR, Donnan GA et al. 1,026 experimental treatments in acute stroke. *Ann Neurol*. 2006; 59(3):467-77.
24. Macleod MR, O'Collins T, Howells DW, Donnan GA. Pooling of animal experimental data reveals influence of study design and publication bias. *Stroke*. 2004; 35(5):1203-8.
25. Macleod MR, Johansson IM, Söderström I et al. Mineralocorticoid receptor expression and increased survival following neuronal injury. *Eur J Neurosci*. 2003; 17(8):1549-55.