

The project is supported by





Funded by the Horizon 2020 Framework Programme of the European Union

What is research waste?

Malcolm Macleod

Collaborative Approach to Meta-Analysis and Review of Animal Data from Experimental Studies and University of Edinburgh

Bergen Public Meeting. 6th February, 2019

/, Rustam Salman, Joseph Frantzias, Robin Grant, Paul Brennan, Ian Whittle, Andrew L alie Percie du Sert, Paul Garner, Lauralyn McIntyre, Gregers Wegener, Lindsay Thoi ıtonic, Tori O'Collins, Uli Dirnagl, H Bart van der Worp, Philip Bath, Mharie McRae, Stuaເັ້າໄດ້ເຄື່ອນ, Iar Mildonis, Konstantinos Tsilidis, Orestis Panagiotou, John Ioannidis, Peter Batchelor, David Howells of Lorkeers, Geoff Donnan, Peter Sandercock, A Metin Gülmezoglu, Andrew Vickers, An-Wen Chan n المانيات David Moher,, Davina Ghersi, Douglas G Altman, Elaine Beller, Elina Hemminki, Elizabeth Wager المانيات jian Song, Harlan M Krumholz, Iain Chalmers, Ian Roberts, Isabelle Boutron, Janet Wisely, Jonathan Grant nathan Kagan, Julian Savulescu, Kay Dickersin, Kenneth F Schulz, Mark A Hlatky, Michael B Bracken, Mike Clarke uin J Khoury, Patrick Bossuyt, Paul Glasziou, Peter C Gøtzsche, Robert S Phillips, Robert Tibshirani, Sander eenland. Sandv Oliver. Silvio Garattini. Steven Julious. Susan Michie. Tom Jefferson. Emily Sena. Gillian Currie anna Vesterinen, Kieren Egan, Nicki Sherratt, Cristina Fonseca, Zsannet Bahor, Theo Hirst, Kim Wever, Hugo edder, Katerina Kyriacop Wu Dal Ball Skalle (SEE all Canah) Was Tear, Catherine Dick, Tracey podruff, Patrice Sutton, Andrew Thomson, Aparna Polituru, Sarah MaCarm, Gillian Mead, Joanna Wardlaw, Rustam ılman, Joseph Frantzias, Robin Grant, Paul Brennan, Ian Whittle, Andrew Rice, Rosie Moreland, Nathalie Percie du ert, Paul Garner, Lauralyn McIntyre, Gregers Wegener, Lindsay Thomson, David Howells, Ana Antonic, Tor Collins. Uli Dirnagl. H Bart van der Worp. Philip Bath. Mharie McRae. Stuart Allan. Ian Marshall. Xenios Mildonis onstantinos Tsilidis, Orestis Panagiotou, John Ioannidis, Peter Batchelor, David Howells, Sanne Jansen of Lorkeers eoff Donnan, Peter Sandercock, A Metin Gü**MalcolmAMacleod**kers, An-Wen Chan, Ben Djulbegovic, David oher, Davina Ghersi, Collaborative Approach to Meta-Analysis and Review of Julian Song, Harlan M umholz, Iain Chalmers, Iain Roberts, Isabelle Boutton, Manet Wiselvs in Indiana Cram Chalmers, Iain Roberts, Isabelle Boutton, Manet Wiselvs in Indiana Cram Chalmers, Iain Roberts, Isabelle Boutton, Manet Wiselvs in Indiana Cram Chalmers, Iain Roberts, Isabelle Boutton, Manet Wiselvs in Indiana Cram Chalmers, Iain Roberts, Isabelle Boutton, Manet Wiselvs in Indiana Chalmers, Iain Roberts, Isabelle Boutton, Manet Wiselvs in Indiana Chalmers, Iain Roberts in Indiana Chalmers, Iain Roberts in Iain Roberts in Indiana Chalmers in Iain Roberts in Iain Rober

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CAMARADES: Bringing evidence to translational medicine



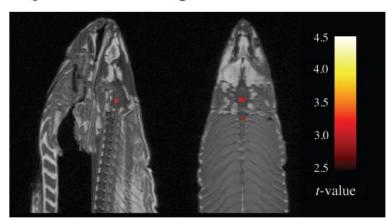
Journal of Serendipitous and Unexpected Results



Neural Correlates of Interspecies Perspective Taking in the Post-Mortem Atlantic Salmon: An Argument For Proper Multiple Comparisons Correction

Craig M. Bennett 1*, Abigail A. Baird 2, Michael B. Miller 1 and George L. Wolford 3

One mature Atlantic Salmon (Salmo salar) participated in the fMRI study. The salmon measured approximately 18 inches long, weighed 3.8 lbs, and was not alive at the time of scanning. It is not known if the salmon was male or female, but given the post-mortem state of the subject this was not thought to be a critical variable.



The task administered to the salmon involved completing an open-ended mentalizing task. The salmon was shown a series of photographs depicting human individuals in social situations with a specified emotional valence, either socially inclusive or socially exclusive. The salmon was asked to determine which emotion the individual in the photo must have been experiencing.

Several active voxels were observed in a cluster located within the salmon's brain cavity (see Fig. 1). The size of this cluster was 81 mm^3 with a cluster-level significance of p=0.001.

Either we have stumbled onto a rather amazing discovery in terms of post-mortem ichthyological cognition, or there is something a bit off with regard to our uncorrected statistical approach.



Winner of the 2012 Ignoble Prize for Neuroscience

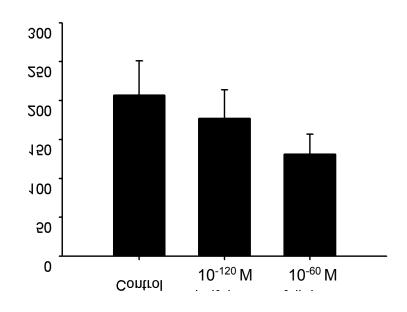




Treatment of experimental stroke with low-dose glutamate and homeopathic Arnica montana*

W. Jonas¹, Y. Lin², A. Williams², F. Tortella², R. Tuma³

- ¹ Uniformed Services University of the Health Sciences, Bethesda, Maryland
- ² Walter Reed Army Institute of Research, Washington, D.C.
- ³ Temple University, Philadelphia, PA





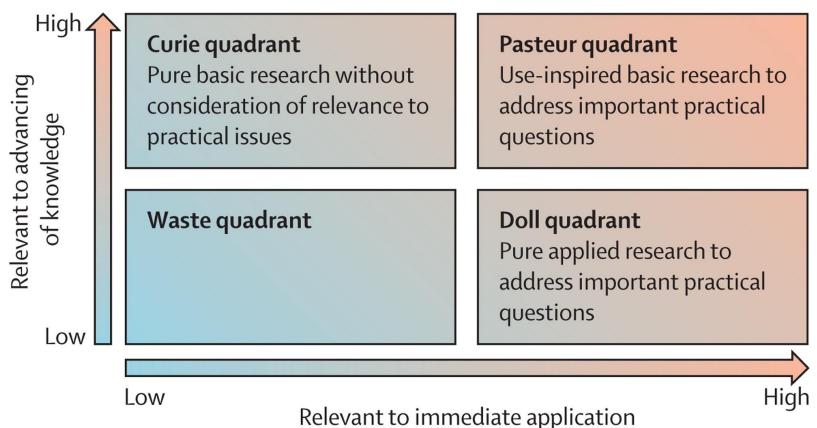


Questions relevant to users of research?	>	Appropriate research design, conduct and analysis?	_	Efficient research regulation and delivery?	-	Accessible, full research reports?	+	Unbiased and usable reports?
High priority questions addressed Important outcomes assessed Clinicians and patients involved in setting research agendas		Studies designed with reference to systematic reviews of existing evidence Studies take adequate steps to reduce biases - e.g. unconcealed treatment allocation		Appropriate regulation of research Efficient delivery of research Good re-use of data		Studies published in full Reporting of studies with disappointing results		Trial interventions sufficiently described Reported planned study outcomes New research interpreted in the context of systematic assessment of relevant evidence



1. Setting research priorities



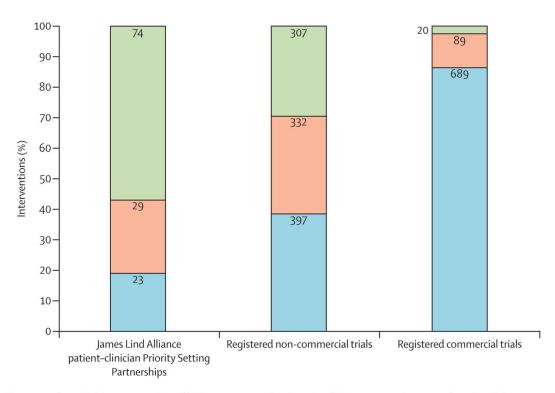




1. Setting research priorities



Whose priorities?



- Education and training, service delivery, psychological interventions, physical interventions, excercise, complementary interventions, diet, and other
- Radiotherapy, surgery and perioperative interventions, devices, and diagnostic interventions
- Drugs, vaccines, and biologicals





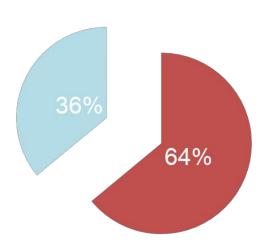
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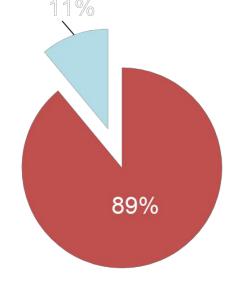




Failure to replicate published pre-clinical academic results







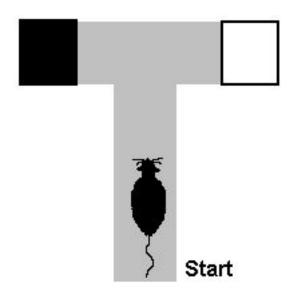




You can usually find what you're looking for ...



- 12 graduate psychology students
- 5 day experiment: rats in T maze with dark arm alternating at random, and the dark arm always reinforced
- 2 groups "Maze Bright" and "Maze dull"



Group	Day 1	Day 2	Day 3	Day 4	Day 5
"Maze bright"	1.33	1.60	2.60	2.83	3.26
"Maze dull"	0.72	1.10	2.23	1.83	1.83
Δ	+0.60	+0.50	+0.37	+1.00	+1.43

Rosenthal and Fode (1963), Behav Sci 8, 183-9



The scale of the problem



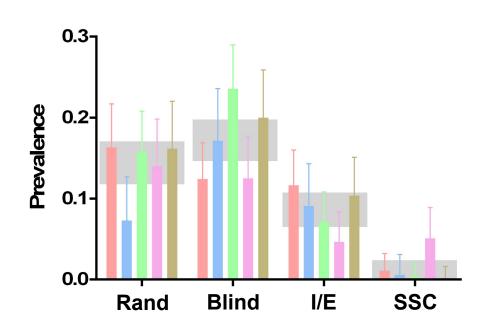
RAE 1173



"an outstanding contribution to the internationally excellent position of the UK in biomedical science and clinical/translational research."

"impressed by the strength within the basic neurosciences that were returned ...particular in the areas of behavioural, cellular and molecular neuroscience"

1173 publications using non human animals, published in 2009 or 2010, from 5 leading UK universities





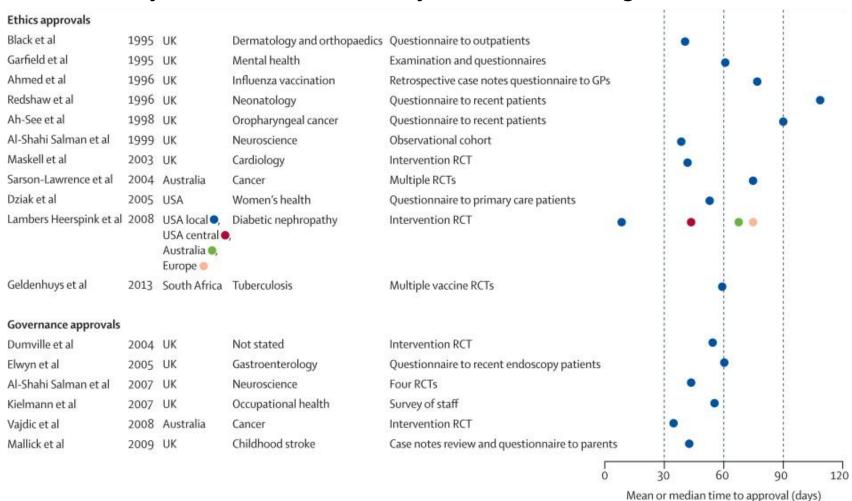


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Delays and inconsistency in ethics and governance







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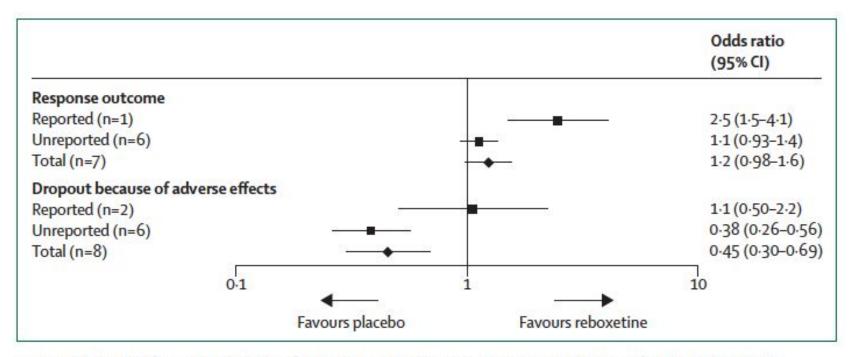


Figure 3: Results of a meta-analysis of reported and unreported randomised trials of reboxetine versus placebo for acute treatment of major depression

Data used to create this figure from Eyding et al. 18



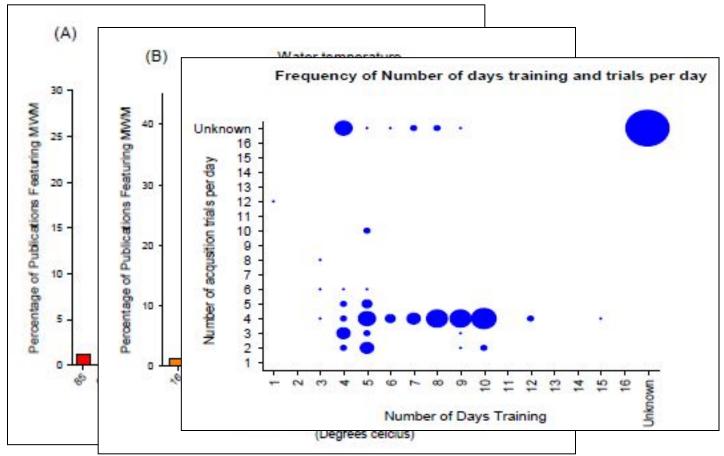


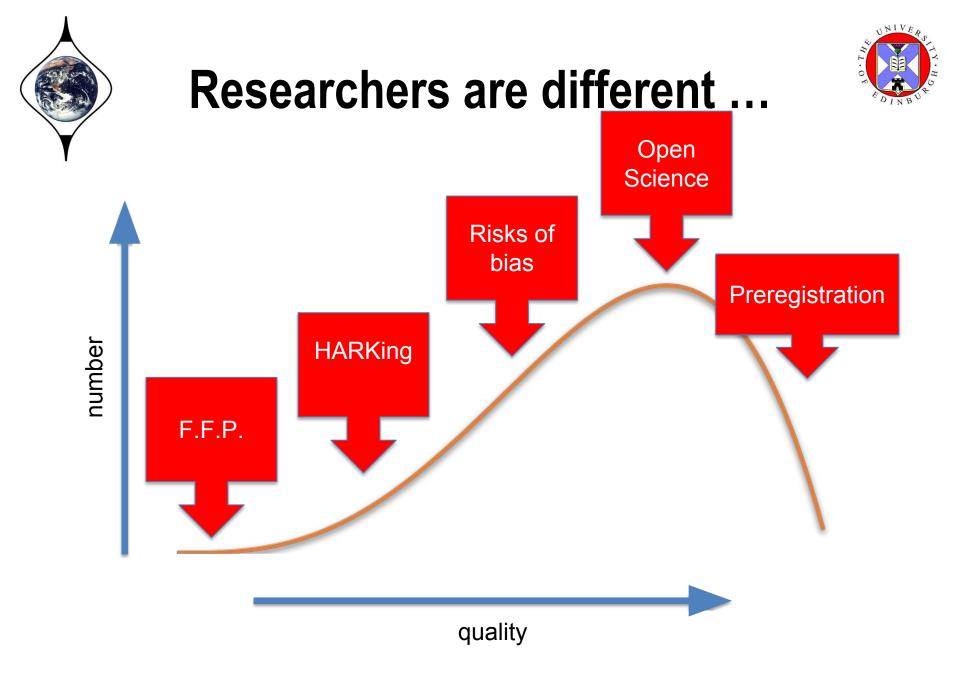
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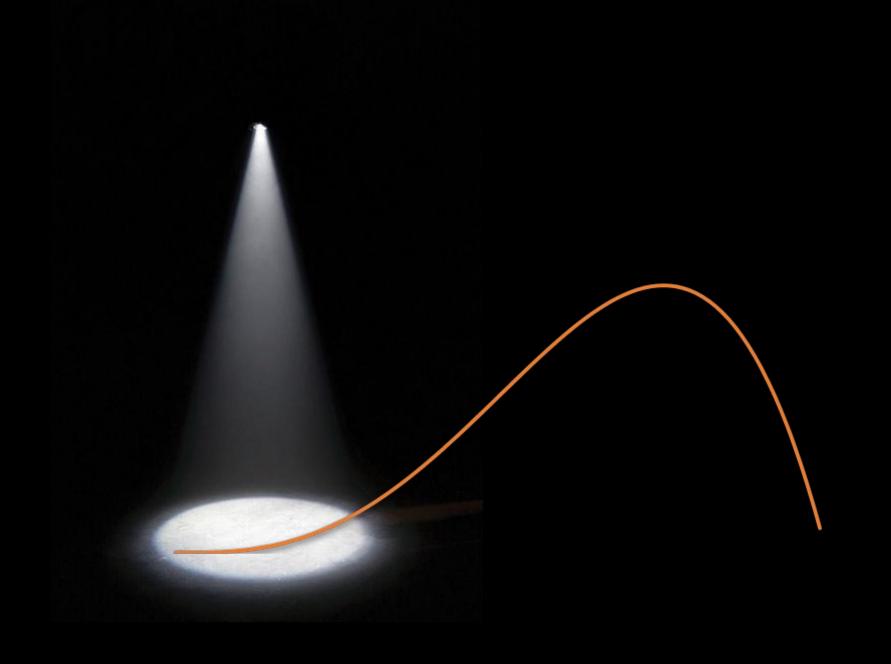


Use of the Morris Water Maze





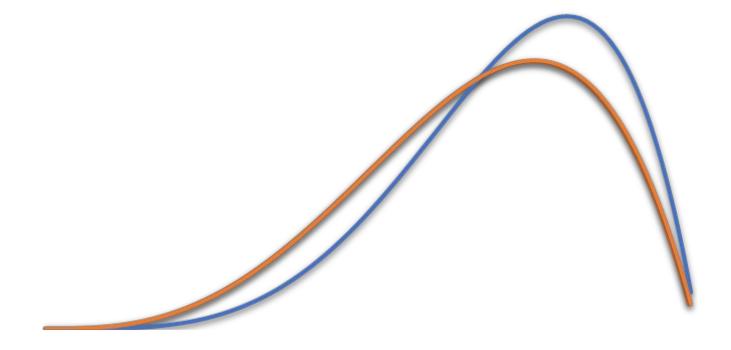






Research Improvement Strategy







If you are planning a systematic review or meta-analysis of animal data, CAMARADES are here to help: malcolm.macleod@ed.ac.uk





CAMARADES: Bringing evidence to translational medicine