Lay Members' Forum 2017

Wednesday 6th December

The Royal Society, London

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10:15	**Arrival and registration, with tea, coffee and biscuits**	
11:00 - 11:10	**Welcome and introduction**	**Maggy Jennings RSPCA**
11:10 - 11:30	**The AWERB at CRUK Manchester Institute** *examples of what works well for this AWERB and how it ensures all the tasks are addressed*	**Janet Watson CRUK**
11:30 - 12:00	**Assessing your Culture of Care** *how does the ASRU 'low level concerns' document fit in?*	**Lynda Noddings Home Office ASRU**
12:00 - 12:45	**Tackling the Non-Technical Summary** *how lay members can help ensure the NTS is fit for purpose and understood by other lay people; with interactive discussion*	**Donald Bruce Edinethics**
12:45 - 1:45	**Lunch**	
1:45 - 2:05	**Boredom in animals** *which animals can get bored, how do we know and what can we do about it?*	**Charlotte Burn Royal Veterinary College**
2:05 - 2:25	**Recognising and reducing distress** *understanding what causes distress in animals and how to help reduce this*	**Penny Hawkins RSPCA**
2:25 - 2:50	**Refining zebrafish care and use** *new findings on enrichment and pain relief*	**Lynne Sneddon University of Liverpool**
2:50 – 3:15	**Animals in trauma research** *how animals are used and the Three Rs applied; ethical dilemmas and welfare issues*	**Jordi Tremoleda Queen Mary University of London**
3:15 – 3:30	**Closing remarks and take-home messages**	
3:30	**Close**	

The AWERB at CRUK Manchester Institute

Janet Watson, CRUK Manchester Institute

Janet Watson is the AWERB Chair at CRUK Manchester Institute. This presentation will describe examples of what works well for this AWERB and how it ensures all the tasks are addressed.

The Cancer Research UK Manchester Institute is a leading cancer research institute within The University of Manchester, core funded by Cancer Research UK, the largest independent cancer research organisation in the world. Research spans the whole spectrum of cancer, from programmes investigating the molecular and cellular basis of cancer, to those focused on translational research and the development of therapeutics.

An establishment's Animal Welfare and Ethical Review Body (AWERB) is charged with a number of responsibilities, including encouraging a culture of care, supporting and advising staff dealing with animals, promoting good animal welfare and the 3Rs, reviewing management and operational structures and appropriate training processes, reviewing and advising the Establishment Licence Holder on proposed projects and conducting retrospective reviews and assessments of projects carried out at the establishment. I shall describe how the AWERB at CRUK MI endeavours to address all these tasks and how the outputs from these are shared across the establishment to promote high standards of animal science and welfare and uptake of the 3Rs.

Assessing your Culture of Care - how does the ASRU 'low level concerns' document fit in?

Lynda Noddings, Home Office, ASRU

This session does not seek to explore the culture of care concept as this is already covered in the many excellent publications already available.

Suffice to say however that in seeking to characterise the factors that influence the culture of care at an establishment insight is undoubtedly provided into what results in a 'good' culture and equally importantly what can result in one that is 'bad.'

It is clear that multi-factorial influences shape the culture of care at any given establishment. Whilst it should be noted that culture of care is not *specifically* referenced or legally defined in ASPA there are however a number of references to culture of care in the Guidance.

The notion of a 'good' culture of care is perhaps quite subjective and without a clear yardstick against which to measure 'good' can mean different things to different people. Would a more objective way of benchmarking an establishment against expectation be useful in driving improvement forward?

This presentation explores how the ASRU 'Identification and management of patterns of low- level concerns at licensed establishment' document could fit into this process.

Could AWERB reflection upon the presence or absence of indicators of low level concerns in their establishment be a practical method of informing a process of continuous improvement?

Useful links:

Guidance on the Operation of the Animals (Scientific Procedures) Act 1986
gov.uk/government/uploads/system/uploads/attachment_data/file/291350/Guidance_on_the_Operation_of_ASPA.pdf

Identification and management of patterns of low- level concerns at licensed establishment
gov.uk/government/uploads/system/uploads/attachment_data/file/512098/Patterns_low-level_concerns.pdf

RSPCA/LASA Guiding Principles on Good Practice for Animal Welfare and Ethical Review Bodies, 3rd edition tinyurl.com/RSPCA-LASA-AWERB

A resource book for lay members of ethical review and similar bodies worldwide
tinyurl.com/RSPCALMH

Tackling the Non-Technical Summary

Donald Bruce, Edinethics

Each time a scientist applies for a licence to perform animal experiments, it's a statutory requirement for them to write a 'Non-Technical Summary' (NTS) of their proposed study. But this formal duty can be a challenge. Some scientists are good at communicating in ways understandable to the non-expert; others, sadly, are not. NTSs range from the excellent to the almost incomprehensible. This interactive session will explore how lay members can help ensure the NTS is fit for purpose and understood by other lay people. The main features of a lay summary will be examined and some pitfalls identified, with examples of good and bad practice. Some examples will be given to critique and improve: what does and does not communicate to a lay person. We will also consider how a lay member might best interact with the AWERB and the scientist, in practice, and how might lay summaries better fulfil the role of keeping the wider population informed of what is being researched in their name?

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Boredom in animals - which animals can get bored, how do we know and what can we do about it?

Charlotte Burn, Royal Veterinary College

Persistent boredom in humans, such as occurs in prisoners, hospital inpatients or factory workers, can be highly distressing and can lead to problems including risk-taking behaviour, depression or cognitive impairment. Some have doubted that animals can experience boredom and the subject has been little researched as a biological phenomenon to date. However, human and animal studies across recent decades reveal that many parallels exist between human and animal responses to lack of stimulation.

As with humans, we know that barren environments can cause abnormal behaviour and depression-like symptoms in animals. Animals seek stimulation when faced with monotony, including stimulation that they would normally be expected to avoid, such as consuming sickness-inducing food, pressing levers for bright light, or approaching predator odour. It is also likely that monotony causes drowsiness in animals, with animals that lack environmental enrichment spending more time lying awake inactive, and inactivity being associated with yawning.

As well as this seemingly paradoxical display of stimulus-seeking combined with drowsiness, a final hallmark of boredom is the perception that time 'drags'. This is yet to be tested in animals in the context of boredom, but animals can be trained to show anticipatory behaviour when they expect a predictable event to occur. We hypothesise that animals will anticipate such events too early when conditions are relatively monotonous.

As there has been little research on animal boredom so far, we do not know which animals may experience it, but all vertebrates possess the same brain arousal systems that appear to be important in human boredom. This does not necessarily mean they experience boredom, but it seems most likely in animals with generalist, omnivorous lifestyles; in the wild they would benefit most from the motivational aspects of boredom prompting them to explore their habitat. In the laboratory, this might particularly implicate mice, rats, dogs, ferrets and some primates, but there may be many others too. Any animal in a situation where it has nothing to do could potentially get bored, starting to become drowsy and to seek stimulation of almost any kind.

To help alleviate potential boredom, environmental enrichment is key. To help combat boredom, rather than other forms of stress, enrichment must offer stimulation and behavioural choice. Thus, having opportunity to choose which activity to do next, to exercise, to experience new sounds, sights or smells, will be important. Some enrichment relies on novelty, and thus may need to be rotated, but other enrichment may be a daily requirement for animals and still help prevent boredom.

While research is much needed to reveal the complexities of animal boredom, it is already clear that animals suffer from monotony and that over the long term it leads to abnormal brains and behaviour. Boredom is thus an important area for Refinement.

Reference:

- Burn, CC (2017) Bestial boredom: A biological perspective on animal boredom and suggestions for its scientific investigation. *Animal Behaviour* **130**:141-151 doi:10.1016/j.anbehav.2017.06.006

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Recognising and reducing distress

Penny Hawkins, RSPCA

The Animals (Scientific Procedures) Act 1986 refers to 'pain, suffering, distress and lasting harm', and it is important to recognise that distress can be caused by many different factors. For example, scientific procedures can be distressing for animals in ways that may not be immediately obvious, and there are other sources of distress that can have a significant impact on animal welfare and the overall harms experienced by research animals.

This presentation will define stress, provide some examples of animal life experiences that are likely to be distressing, and list some relevant AWERB tasks and actions that you can take, as lay members, to help recognise and reduce distress.

Further reading:

- Mellor D (2016) Updating animal welfare thinking: Moving beyond the "Five Freedoms" towards "A Life Worth Living". *Animals* 6(3), 21; doi:10.3390/ani6030021 (open access).

- National Research Council (2008) *Recognition and Alleviation of Distress in Laboratory Animals.* National Academic Press; Washington, DC – free download at **nap.edu** (search for 'distress' and 'laboratory')

Refining zebrafish care and use: New findings on enrichment and pain

Lynne Sneddon, University of Liverpool

The use of fish in experimentation is increasing, for both scientific and practical reasons, but the welfare of fish is no less important than that of any other animal whose use is regulated under the ASPA. Studies on zebrafish, the most commonly used fish species, are now providing empirical evidence on the impact of environmental enrichment and of the negative effects of invasive procedures.

Even when reared in standard, barren conditions in a typical zebrafish tank racking system, these animals choose to spend more time in an enriched area than a barren one. Studies using naturalistic environmental enrichment have demonstrated that brain development is enhanced and fish are less anxious. Thus, there appear to be some advantages to providing enrichment to zebrafish, but this depends upon the type of enrichment.

Invasive laboratory practices such as tagging for identification, surgery and tissue removal can cause physical damage to the fish and such injury would give rise to the sensation of pain in humans. Recent studies have demonstrated that responses to injury in fish fulfil the definition of animal pain. Thus, it is vital that researchers and carers have a means to assess possible pain and alleviate it.

Simple behavioural changes can be used to discern the presence of pain, and the development of an automated intelligent monitoring software tool will be described that can be used to evaluate the efficacy of analgesic or pain-relieving drugs. Using data collected from zebrafish exposed to different pain types and to stress, such a tool can provide a means of assessing pain and allowing researchers to intervene to improve welfare. Adult zebrafish reduce activity and spend more time at the bottom of their tank after painful procedures. This reduction in activity is also seen in larval zebrafish after 5 days of development post fertilisation. These behavioural changes are prevented by using analgesic drugs administered via immersion in the tank water. The detection and assessment of pain alongside the development of analgesic protocols in experimentation using zebrafish (and other fish) models are important refinements.

This presentation will explain the implications of these recent findings with respect to refining zebrafish housing, care and procedures, and identifying harms to zebrafish.

References:

Lopez-Luna, J., Al-Jubouri, Q., Al-Nuaimy, W. and Sneddon, L.U. (2017a). Activity reduced by noxious chemical stimulation is ameliorated by immersion in analgesic drugs in zebrafish. Journal of Experimental Biology 220, 1451-1458.

Lopez-Luna, J., Al-Jubouri, Q., Al-Nuaimy, W. and Sneddon, L.U. (2017b). Impact of analgesic drugs on the behavioural responses of larval zebrafish to potentially noxious temperatures. Applied Animal Behaviour Science 188, 97-105.

Lopez-Luna, J., Al-Jubouri, Q., Al-Nuaimy, W. and Sneddon, L.U. (2017c). Impact of stress, fear and anxiety on the nociceptive responses of larval zebrafish. PLoS One 12(8): e0181010.

Lopez-Luna, J., Canty, M.N., Al-Jubouri, Q., Al-Nuaimy, W. and Sneddon, L.U. (2017d). Behavioural responses of fish larvae modulated by analgesic drugs after a stress exposure. Applied Animal -Behaviour Science 195, 115–120.

Magalhaes, F.E.A., de Sousa, C.A.P.B., Santos, S.A.A.R., Menezes, R.B., Batista, F.L.A., Abreu, A.O., de Oliveira, M.V., Moura, L.F.W.G., Raposo, R.D. & Campos, A.R.(2017) Adult zebrafish (Danio rerio): An alternative behavioral model of formalin-induced nociception. Zebrafish 14, 422-429.

Mettam, J. M., Oulton, L. J., McCrohan, C. R. and Sneddon, L. U. (2011) The efficacy of three types of analgesic drug in reducing pain in the rainbow trout, Oncorhynchus mykiss. Applied Animal Behaviour Science, 133, 265-274.

Pounder, K. C., Mitchell, J. L., Thomson, J. S., Pottinger, T. G., Buckley, J., & Sneddon, L. U. (2016). Does environmental enrichment promote recovery from stress in rainbow trout. Applied Animal Behaviour Science, 176 (2016) 136–142

Rizzo, A.L., Wooster, G.A., Guanzini, L.E., Peterson, C.M., Fenderson, K.S., Erb, H.N., Bowser, P.R. & Martin, M.E. (2017) Biochemical, histopathologic, physiologic, and behavioral effects of nonsteroidal anti-inflammatory drugs in rainbow trout (Oncorhynchus mykiss). Comparative Medicine 67, 106-111.

Schroeder, P., Jones, S., Young, I. S., & Sneddon, L. U. (2014). What do zebrafish want? Impact of social grouping, dominance and gender on preference for enrichment. Laboratory animals, 48, 328-337.

Schroeder, P. and Sneddon, L.U. (2016). Exploring the efficacy of immersion analgesics in zebrafish using an integrative approach. Applied Animal Behaviour Science 187, 93-102.

Sneddon L.U. (2015) Pain in aquatic animals. Journal of Experimental Biology 218, 967-976.

Sneddon, L.U. Elwood, R.W, Adamo S. and Leach M.C. (2014) Defining and assessing pain in animals. Animal Behaviour 97, 201-212.

Taylor, J. C., Dewberry, L. S., Totsch, S. K., Yessick, L. R., DeBerry, J. J., Watts, S. A. and Sorge, R. E. (2017). A novel zebrafish-based model of nociception. Physiology & Behavior 174, 83-88.

von Krogh, K., Sorensen, C., Nilsson, G.E., Overli, O., 2010. Forebrain cellproliferation, behavior, and physiology of zebrafish, Danio rerio, kept inenriched or barren environments. Physiology & Behavior 101, 32–39.

White, L. J., Thomson, J. S., Pounder, K. C., Coleman R. C. and. Sneddon, L. U. (2017). The impact of social context on behaviour and the recovery from welfare challenges in zebrafish, Danio rerio. Animal Behaviour 132, 189-199.

Animals in trauma research

Jordi Tremoleda, Queen Mary, University of London

Trauma remains one of the world's biggest contributors to the global burden of disease. It is by far the biggest killer of young adults and its incidence and severity is increasing, with over 6 million deaths worldwide. Improved clinical care of trauma patients has increased early survival, but the prognosis for critically injured trauma patients remains poor. Severe bleeding remains the main cause of death that could be prevented and sadly, its effects will affect the function of vital organs in critical patients. Clearly better treatments and care programs are urgently required.

The Centre for Trauma Sciences (C4TS) is a world leading research institute based at the Queen Mary University of London and Barts Health NHS Trust, focussing in the discovery of new treatments and improvements in trauma patient care. But advancement in trauma research remains challenged by the limited funding support and also the complexity of investigating such rapid and unexpected traumatic injury condition. Human trials are scarce and laboratory studies have failed to reflect the whole body injury response. Thus, animal research remains necessary for discovery research and to develop better treatments. But it is of the utmost importance that potential harms to animals are appropriately balanced against the benefits expected, and to ensure and promote animal welfare. We will discuss how the implementation of a clinically integrated research strategy within our animal experimentation program has refined and reduced the use of animals in trauma research, while positively impacting on trauma clinical care.

Reference:

- Tremoleda JL, Watts SA, Reynolds PS, Thiemermann C, Brohi K. (2017) Modelling acute traumatic haemorrhagic shock injury: Challenges and guidelines for preclinical studies. *Shock*. 48(6):610-623. doi: 10.1097/SHK.0000000000000901.

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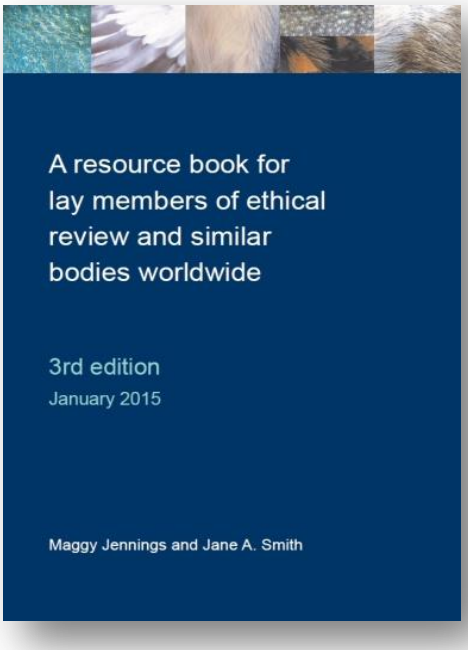
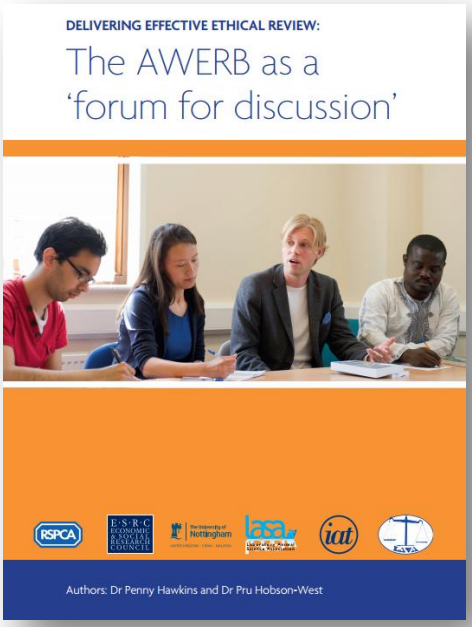
RESOURCES

The RSPCA/LASA Guiding Principles on Good Practice for Animal Welfare and Ethical Review Bodies, 3rd edition provides a brief, clear overview of common AWERB tasks and good practice for meeting these: tinyurl.com/RSPCA-LASA-AWERB

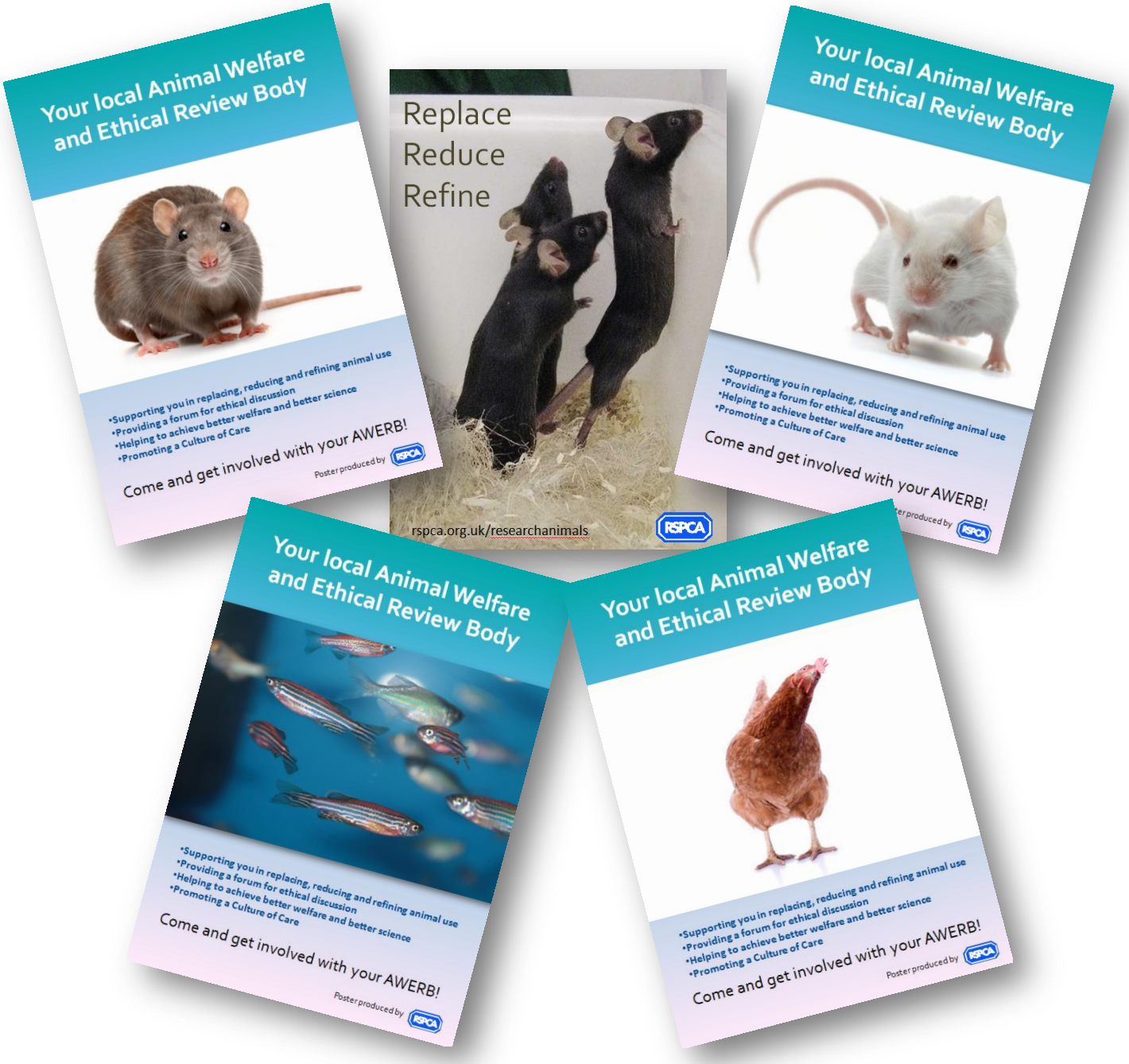


The RSPCA Lay Members' Resource Book, 3rd edition provides guidance on how to participate effectively in the AWERB, including making ethical judgements (NB although the title refers to lay members, the content is relevant to all member categories): tinyurl.com/RSPCALMH



This new booklet provides guidance, ideas and examples to help AWERBs fulfil their forum for discussion function. If you would like a hard copy please email: research.animals@rspca.org.uk or an online page turner/PDF is available at: view.pagetiger.com/AWERB/AWERB

AWERB AND THREE RS POSTERS



Please contact research.animals@rspca.org.uk
if you would like one or more posters, remembering to state which one(s)

Further Reading

The second AWERB-UK meeting, for all AWERB members - including scientists, animal technologists, lab animal vets, AWERB chairs and lay members - was jointly convened by the RSPCA, IAT, LASA and LAVA and held in June 2017.

The meeting summary is available at: tinyurl.com/AWERB-UK2017

Please note that opinions expressed by speakers do not necessarily reflect the views of the RSPCA, staff, members or associates

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