



ANIMAL RESEARCH REVIEW PANEL

Housing & Enrichment Webinar : 22 August 2023 : Additional Q&A document

Section 3 of the [Australian Code for the Care and Use of Animals for Scientific Purposes](#) (the Australian Code) outlines the principles for supporting and safeguarding the well-being of animals used for research and teaching in terms of the animal’s lifetime experience.

When animals are involved in research or teaching activities, ensuring that they are given the best possible standard of care is fundamental to achieving animal welfare goals. Appropriate housing and enrichment promotes species-typical behaviours, enhances the overall well-being of animals, and supports quality research and education outcomes.

During the webinar we heard from three presenters:

- Dr Findy Wills – Veterinarian and clinical animal behaviourist, Consultant to RSPCA NSW speaking on “Housing and Enrichment as Tools for the Emotional Management of Dogs Housed in Research Facilities.”
- Adjunct Professor Joanna Makowska – of the Animal Welfare Program at University of British Columbia, Canada speaking on “The benefits of more naturalistic housing for rodents in research” .
- Dr Chloe Stevens – Senior Scientific Officer for Refinement in the Animals in Science Department, RSPCA UK speaking on “The benefits of enrichment for laboratory zebrafish”.

Below are follow up questions that the speakers did not have time to answer during the webinar

	If dogs are awake for 4-8 hours, how long do you think they need to be outside the cage exercising?
Dr Findy Wills	<p>The more time kennelled dogs spend out of their kennels the better to reduce the fear/anxiety and frustration associated with confinement, social isolation and lack of choice and autonomy. There are no papers specifically that I know of that answers this particular question. However, there has been studies that have shown that 15-45 min of safe human social interactions reduced stress levels in shelter dogs. From my personal experience, 15-20 minutes of structured scent work generally will provide sufficient mental stimulation for a short decompression nap for most dogs afterwards. It is, however, important to note that the length of time is very individualised, and they vary depending on each dog’s emotional needs.</p> <p>Reference: Gunter LM, Gilchrist RJ, Blade EM, Barber RT, Feuerbacher EN, Platzer JM, Wynne CDL. Investigating the Impact of Brief Outings on the Welfare of Dogs Living in US Shelters. <i>Animals</i>. 2021; 11(2):548. https://doi.org/10.3390/ani11020548</p>

	<p>Did you compare male and female rodents to see if there were differences in their behavioural responses to your stimuli?</p>
<p>Dr Joanna Makowska</p>	<p>We only tested female rats in the semi-naturalistic set-up. Older literature suggests that male rats have a lower propensity to climb and burrow than females, but they are still motivated to do it. For more background information, you can see the two papers that were published on this study here: https://royalsocietypublishing.org/doi/full/10.1098/rsos.160136 and here: https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0147595</p> <p>For the playpen, we again only published our study with female mice, but we did use males in an unpublished pilot study. We found that males were equally eager to access and use the playpen. We observed more chasing in the playpen in males but did not observe any overt aggression. We believe that aggression didn't escalate, because the large space and spatial division allowed mice to run and escape, and therefore de-escalate effectively. In some groups, we observed a male monopolise the running wheel, but again this did not result in aggression; the male in question simply didn't allow other males to use the wheel while he was using it. You can see the published paper (using females) here: https://www.nature.com/articles/s41598-021-98356-3. Another paper with the results on aggression after cage-changing and stereotypes is forthcoming.</p>
	<p>Are you aware of any research facilities worldwide or in Australia that provide better housing for their rats, and what their cost-benefit assessment of that is?</p>
<p>Dr Joanna Makowska</p>	<p>Most facilities that I am aware of do this on a small scale with a small number of rodents. There is one great example, however, that has implemented better housing for <i>all</i> their research rats and mice: the Research Institutes of Sweden (RISE). This company does GLP and toxicology studies. I do not know the cost-benefit assessment, other than the fact that they find it absolutely worthwhile because their animals are calmer, and procedures take less time to perform. They not only house their rodents better, but they also habituate and train them to any procedures they will encounter.</p> <p>The two researchers who initiated this wrote an article about it here on p. 6: https://awionline.org/sites/default/files/awi_quarterly_issue/digital_magazine/AWI-Summer-2020-Quarterly.pdf. They also produced a great 55-min training video here: https://www.ri.se/sv/vad-vi-gor/expertiser/3r-fokus-pa-djurens-valfard.</p>
	<p>What are the main differences between a play pen environment and environmental enrichment provided in a chicken cage? What are the advantages/disadvantages of having a separate play pen environment?</p>
<p>Dr Joanna Makowska</p>	<p>The difference between a playpen and environmental enrichment provided within the animals' home cages is the frequency and duration of provision. The playpen and an enriched cage can look identical; the only difference between them is whether the animals live in them permanently or get to visit them only sometimes (like going to the playground).</p> <p>Ideally, animals would live in species-appropriate cages that are larger and provisioned with lots of structural and occupational enrichment. However, because transitioning to this type of housing will take some time (and money), an alternative is to set-up only a few of these (less costly and takes less space) and rotate animals through them. Thus, the advantage of playpens is that you could have only a few copies of each, rather than buying hundreds or thousands (depending on how many cages you have at your facility). The disadvantages are that moving animals to and from the playpens takes time, and that ultimately the animals still spend most of their time in a small, poorly provisioned cage.</p> <p>For more information and practical tips on playpens for rodents, please see some great resources from the UK's NC3Rs here: https://nc3rs.org.uk/sites/default/files/2022-01/Practical%20strategies%20for%20providing%20rats%20with%20a%20complex%20environment%20-%20Presentation%20IAT%20congress%202017%20Playtime%20for%20Rats.pdf and here: https://vimeo.com/546405848/cdaec670eb</p>

	How did you manage disease control/prevention when using playpens?
Dr Joanna Makowska	Our animals were not immunocompromised, and they were housed in a clean, CL2-level barrier facility. Each cage of mice accessed the playpen with their cage mates, but we did not introduce different cages at the same time. Mice never urinated or defecated in the playpens. We did not clean the playpens between cages, but you can choose to do so. The mouse playpen was made using ventilated rat cages. We didn't have any issues with disease. I've also done this with rats and did not have any issues with disease either. What precautions are needed will be dependent on the disease and immune status of your animals.

References used in the presentation “Housing and Enrichment as Tools for the Emotional Management of Dogs Housed in Research Facilities”

- NSW 2021 Animal Use in Research Statistics, <https://www.dpi.nsw.gov.au/dpi/animals/animal-ethics-infolink/nsw-animal-use-statistics>
- RSPCA Knowledge Base <https://kb.rspca.org.au/knowledge-base/why-are-animals-used-in-research/>
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- Tooley C, Heath SE. Emotional Arousal Impacts Physical Health in Dogs: A Review of Factors Influencing Arousal, with Exemplary Case and Framework. Animals. 2023; 13(3):465
- Panksepp, J. (1998). Affective neuroscience: The foundations of human and animal emotions. Oxford University Press.
- Desforges E. Challenges and Solutions Surrounding Environmental Enrichment for Dogs and Cats in a Scientific Environment. Animals (Basel). 2021 Oct 15;11(10):2980.
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- Taylor, Katy & Mills, Daniel. (2007). The effect of the kennel environment on canine welfare: A critical review of experimental studies. Animal Welfare. 16. 435-447. 10.1017/S0962728600027378.

References to support the presentation: “The benefits of more naturalistic housing for rodents in research”

- <https://royalsocietypublishing.org/doi/full/10.1098/rsos.160136>
- <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0147595>
- <https://www.nature.com/articles/s41598-021-98356-3>
- https://awionline.org/sites/default/files/awi_quarterly_issue/digital_magazine/AWI-Summer-2020-Quarterly.pdf.
- <https://www.ri.se/sv/vad-vi-gor/expertiser/3r-fokus-pa-djurens-valfard>.
- <https://nc3rs.org.uk/sites/default/files/2022-01/Practical%20strategies%20for%20providing%20rats%20with%20a%20complex%20environment%20-%20Presentation%20IAT%20congress%202017%20Playtime%20for%20Rats.pdf>
- <https://vimeo.com/546405848/cdaec670eb>

References used in the presentation “The benefits of enrichment for laboratory zebrafish ”

- Chloe H Stevens, Barney T Reed and Penny Hawkins. [Enrichment for Laboratory Zebrafish – A review of the Evidence and Challenges](#)
- www.rspca.org.uk/animalsinscience