ISAE Creativity Award 2015

Hanno Würbel, Professor of Animal Welfare at the University of Bern, Switzerland

The work of Hanno Würbel is an example of creative science which has had impact in and beyond the applied animal behaviour community. Hanno questioned the drive to enhance reproducibility of findings across labs by standardising testing conditions (in terms of animals, housing conditions, and experimental procedures), and suggested that this came at the expense of the potential loss of external validity – he labelled this the '*standardisation fallacy*'. He instead suggested that systematic variation could actually strengthen the external validity and therefore reproducibility of experimental results. He also argued that the pursuit of standardisation was a major block on the road towards using enriched housing conditions to improve the welfare of laboratory animals. This was because many scientists feared that a more complex, enriched environment would disrupt standardisation, thereby compromising the precision and reproducibility of experimental results.

These insightful ideas were controversial and generated much discussion within the neuroscience community. In a paper in Nature, he and his colleagues showed that environmental enrichment can be used in mice to improve the animals' well-being without reducing the precision and reproducibility of experimental results. In a subsequent ground-breaking study published in Nature Methods, he showed that systematic variation, also of housing, could actually improve the reproducibility of findings compared to standardisation.

In the words of the award committee: His work is an excellent example of truly innovative research. It is ground-breaking from a fundamental perspective while also having very important applications to animal welfare and laboratory animal science. It represents 'applied ethology' at its finest!

Selected publications

Würbel, H. 2000. Behaviour and the standardisation fallacy. Nat. Genet., 26: 263.

Würbel, H. 2002. Behavioral phenotyping enhanced - beyond (environmental) standardization. Genes Brain Behav., 1: 3-8.

Wolfer, D.P., Litvin, L., Morf, S., Nitsch, R.M., Lipp, H.P. and **Würbel, H.** 2004. Laboratory animal welfare: cage enrichment and mouse behaviour. Nature 432: 821-822.

Richter, S.H., Garner, J.P. and **Würbel, H.** 2009. Environmental standardization: cure or cause of poor reproducibility in animal experiments? Nat. Meth. 6: 257-261.

Richter, S.H., Garner, J.P., Auer, C., Kunert, J. and **Würbel, H.** 2010. Systematic variation improves reproducibility of animal experiments. Nat. Meth. 7: 167-168.