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Position: PhD candidate

Keywords: Animal welfare, Behaviour, Reliability of preclinical results

Title Abstract: **Increasing animal welfare and reliability of results from preclinical trials and animal studies - Zooming in on variation in adaptive response patterns within and between two mouse inbred strains**

Inter-individual differences in behavioural response in mouse inbred strains are often written off as unfortunate noise. We suggest that part of this variation may provide useful information on variation in adaptive capacities in response to aversive stimuli. More insight in these capacities ensures more accurate assessment of which individuals are at risk for compromised welfare. At the same time, on a more fundamental experimental level, capturing part of this variation may better control for confounding variables and thus improve reliability of preclinical results.

In order to study this we developed an approach for the assessment of temporal behavioural response types on an individual level: pattern analysis. Previous studies on adaptive capacities in two mouse inbred strains (BALB/cJ and 129P3/J), tested repeatedly over 20 trials in an initially unknown environment [the modified Hole Board], showed – based on means – distinct patterns between strains; BALB/cJ mice on average showed adaptation over time while 129P3/J did not, suggesting that the latter strain may be at higher risk for compromised welfare.

Interestingly, retrospect analyses on the same datasets using pattern analysis, revealed that adaptive and non-adaptive patterns were displayed by individuals of both mouse strains, suggesting that they appeared to surpass inbred strain differences in response. Furthermore, we did not find any significant differences in shape of curve between behaviours displayed over 20 trials compared to those displayed during the first trial (5 minutes), or the four trials recorded on the first day of testing, suggesting that initial responses may have predictive value as to whether individuals will adapt or not.

We are currently elaborating on these findings in order to explore whether treatment groups composed of the same response type differ in inter-individual variation of dependent variables from groups that are a mixture of response types.

Offering: Ethological animal tests, Animal welfare advice

Looking for: Advice on advanced statistical techniques
