Biotelligences Fortnight
Issue 8 (January 26 2015): Gandhi RM. et al Frontiers in Cellular Neuroscience
mGluR5 and Fragile X Syndrome

For this new Biotelligences Fortnight, we have selected an article by Gandhi and colleagues published in *Frontiers in Cellular Neuroscience* in March 2014 (PMID: 24701200). This study investigates the efficacy of the mGluR5 antagonist MPEP at improving hippocampal-based visual-spatial learning in the Fmr1 KO mouse model of Fragile X Syndrome (FXS). The results suggest that mGluR5 antagonism ameliorates the performance of KO mice in the Hebb-Williams maze and increases the amount of hippocampal PSD-95, a protein deregulated in FXS. The article has sound biostatistics in almost all aspects of design, analysis and disclosure. We particularly liked: **(1)** the detailed statistical paragraph with its description of the statistical procedures and their justifications, as well as the package used; **(2)** the verification that assumptions were met prior to the ANOVA; **(3)** the log-transformation of the data in order to get normality; **(4)** the disclosure made about outliers and missing data; **(5)** the use of Bonferroni-corrected non-parametric (Mann-Whitney) test when square root, inverse and log-transformations failed to correct the skewness of the data distribution; **(6)** the comprehensive disclosure of the F ratio, exact p-values, effect size (η^2) and confidence intervals; **(7)** the systematic indication of the new alpha thresholds after Bonferroni corrections; **(8)** the discussion about the limitations of the correlation study due to a possible inadequate power.

There were only two points related to biostatistics that we feel could have been improved. Firstly, the choice of SEM to show dispersion is questionable and we recommend using 95% confidence intervals to show imprecision or standard deviations to show variability. Additionally, the bar graph in Fig. 5 could have been replaced by a scatter plot graph, where individual values are shown, for increased data transparency.

In conclusion, with the exception of a few minor flaws, this article has very high standards in biostatistics. We congratulate the authors for the quality of their quantitative data analysis.

The Biotelligences team