



**Figure S12** Mouse behavioral data: estimated trends of genetic effects (in logit scale) for markers 6, 23, 37, 50, 64, 74, 81, 91, 108, 118, 145, 156, 165, 202, 205, 217 and 224 by using **VBfun** which assumed the diagonal residual covariance structure. The shadow area represents the dark period (7pm-7am).