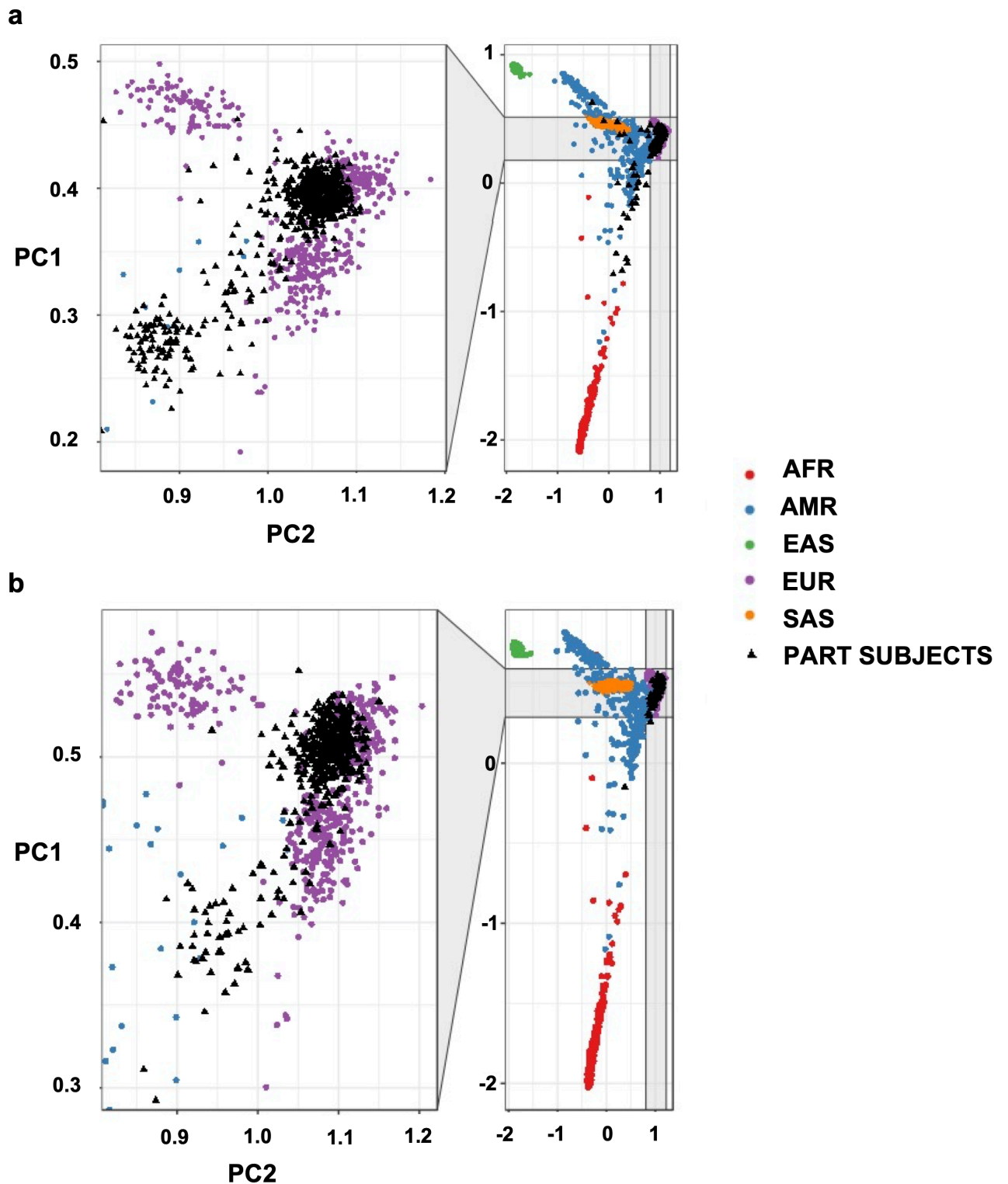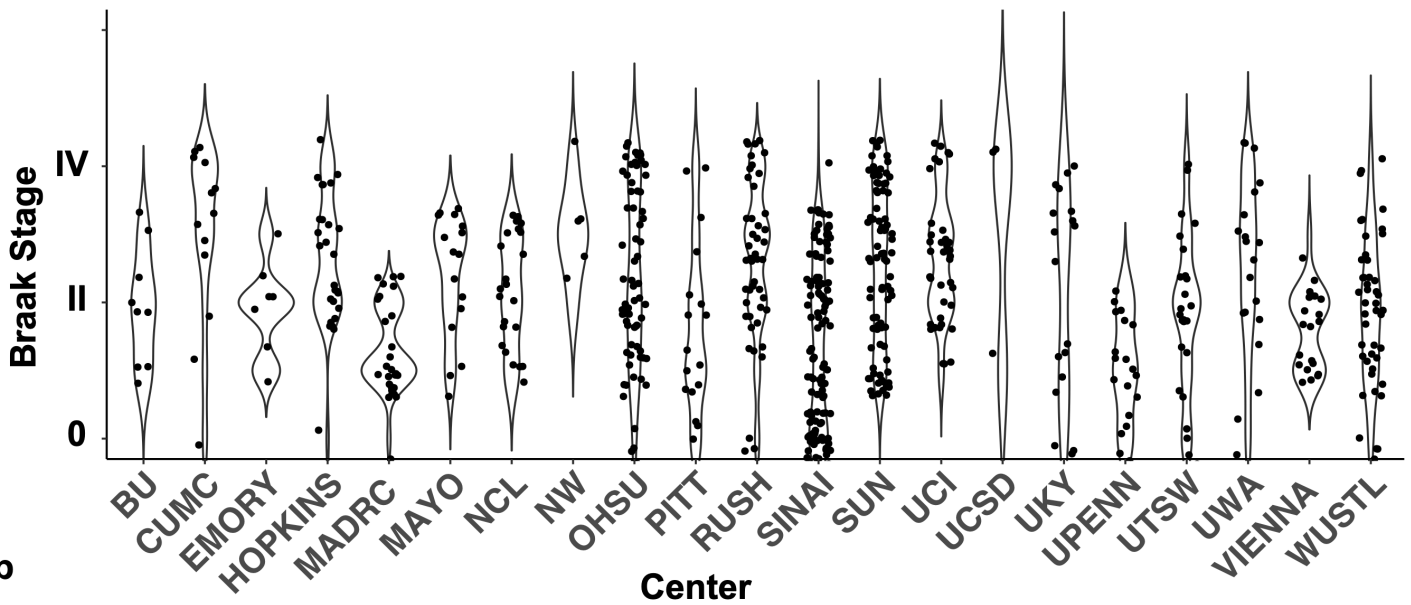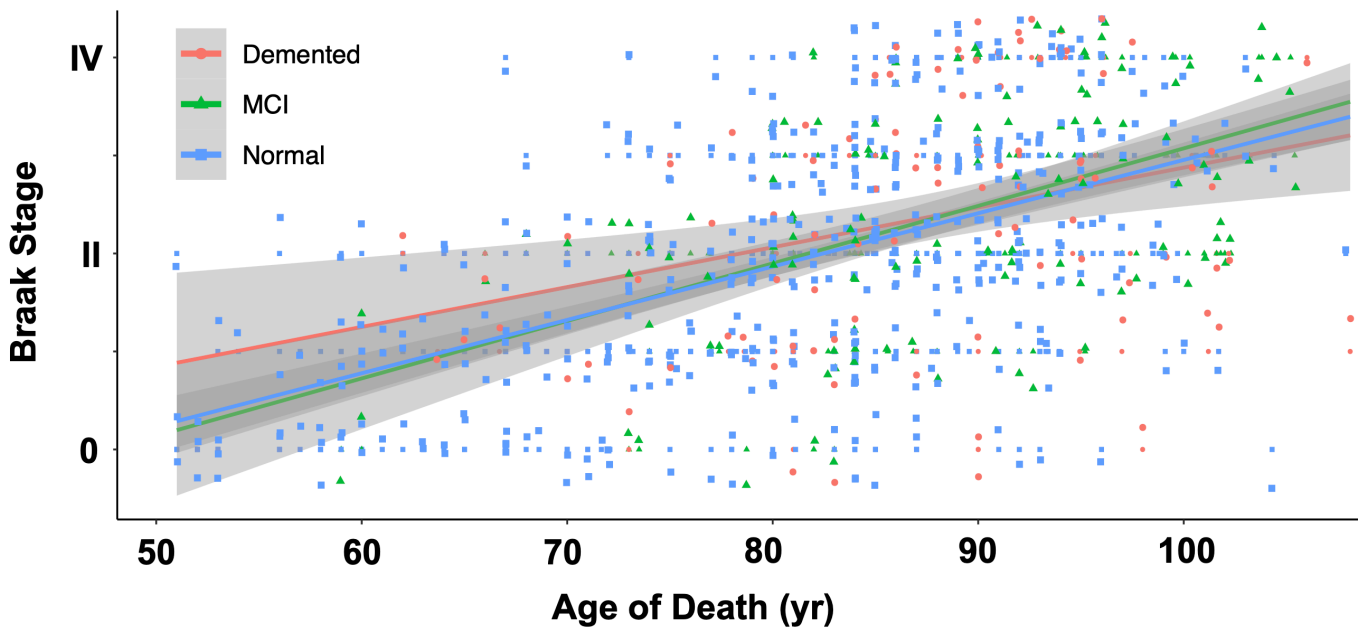# Supplementary Figure 1

Supplementary Figure 1 | Principal component analysis of the PART subjects genotyped on the **(a)** OmniExpress-24 and **(b)** Global screening array. Refence population 1000 genomes
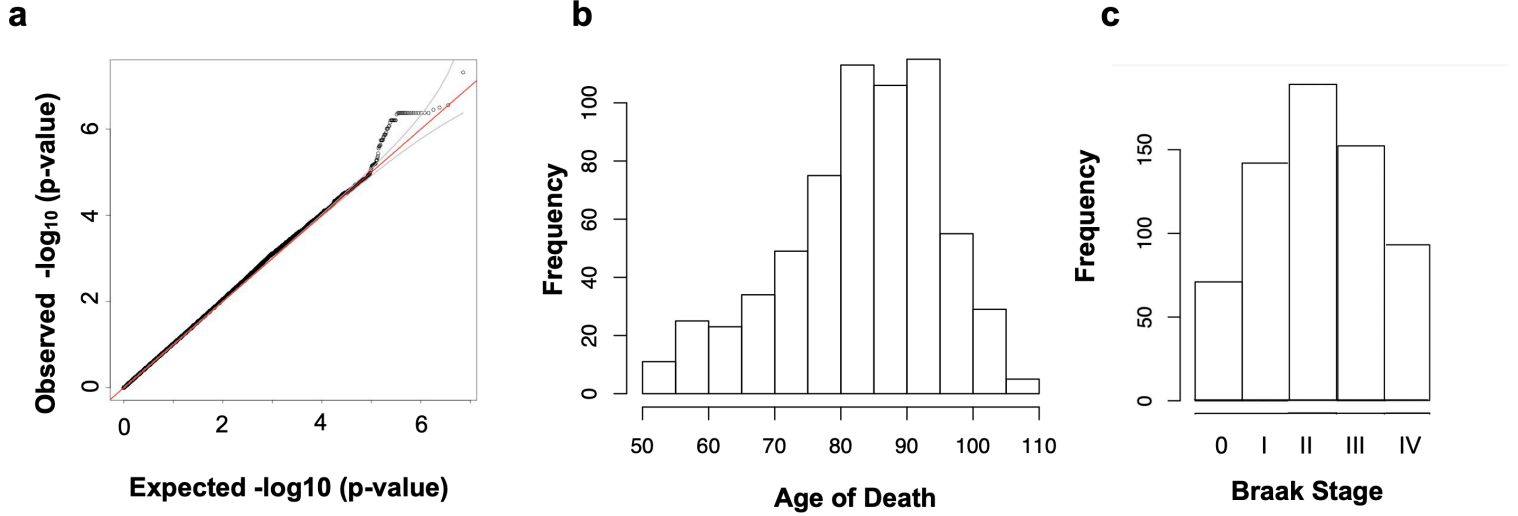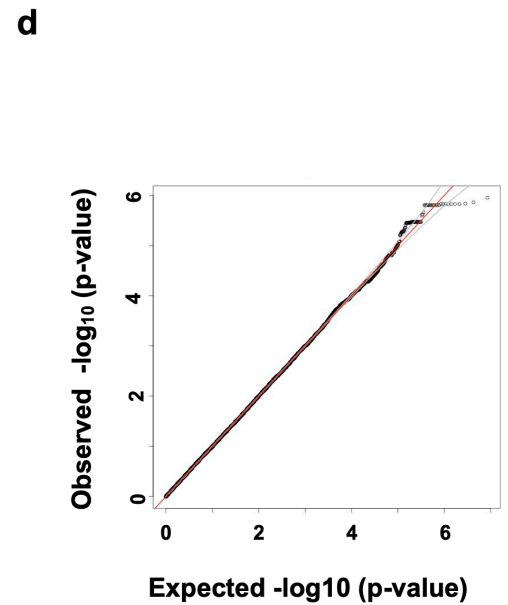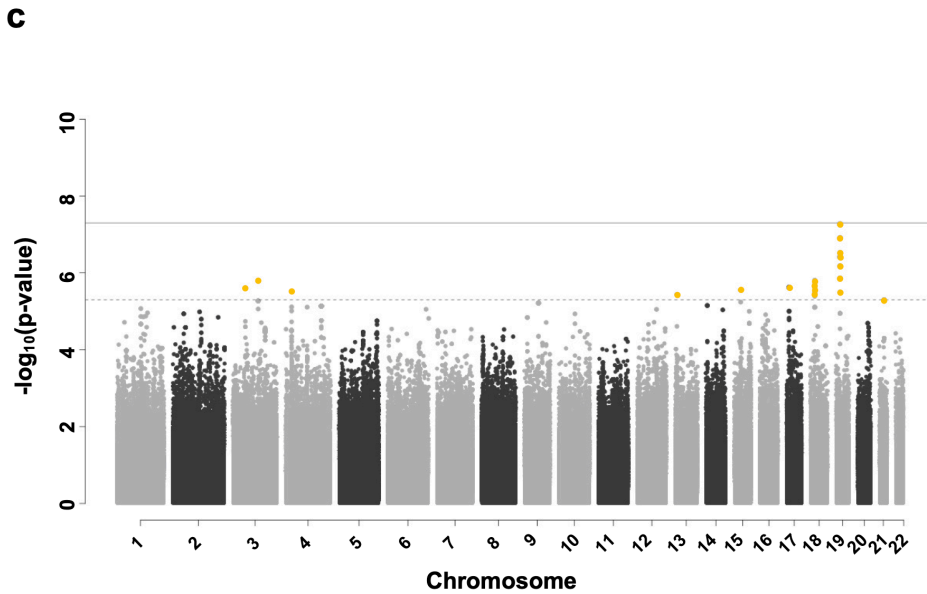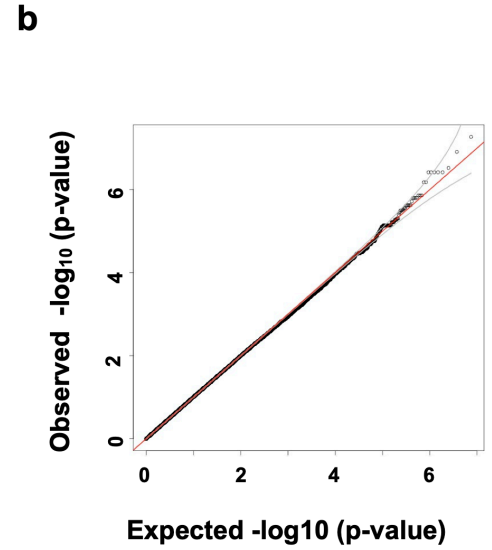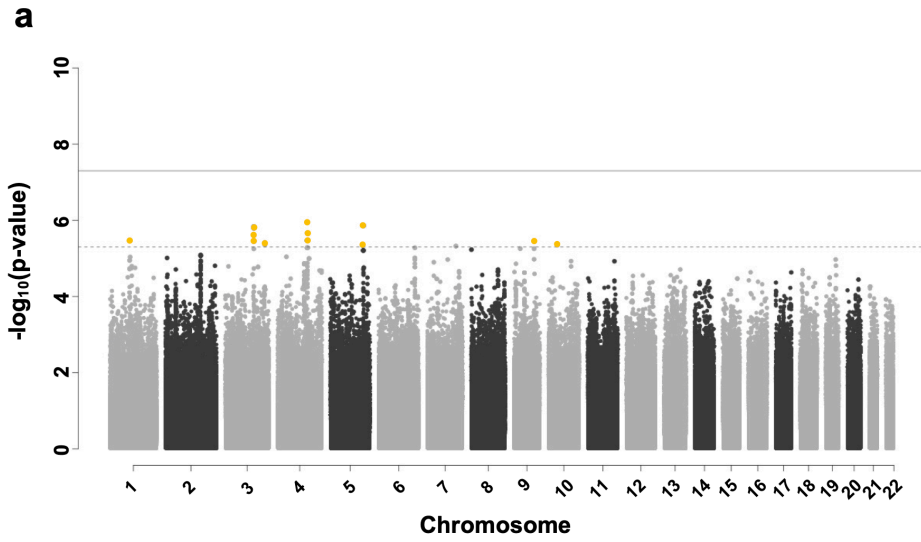
Supplementary Figure 2

Supplementary Figure 2 | (a) Violin plot showing Braak stage across centers (categorical data points wobbled). **(b)** Scatterplot showing similar (*p* = N.S.) trends of aging and cognitive status when compared to Braak staging.
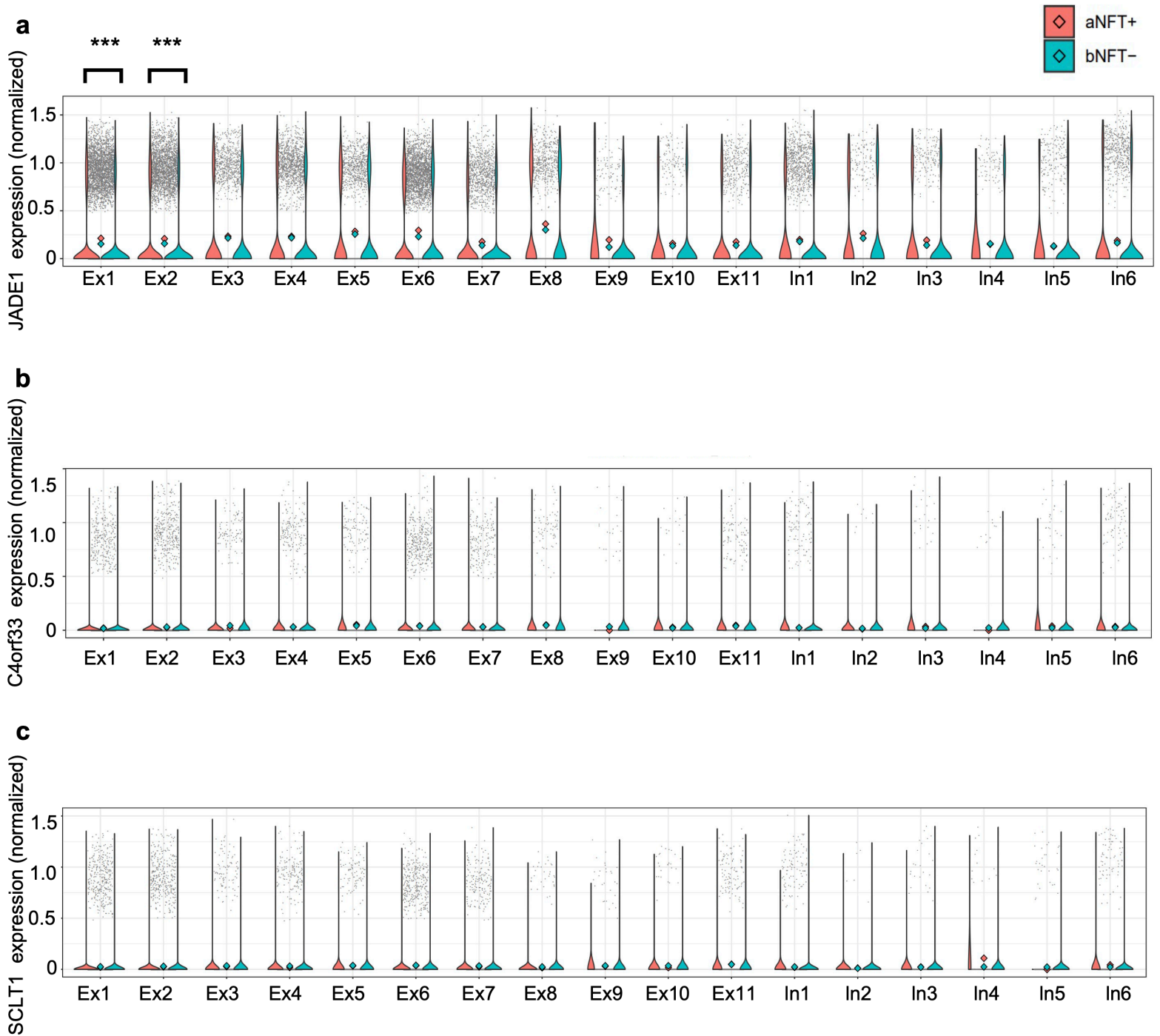
Supplementary Figure 3

Supplementary Figure 3 | (a) The QQ plot validates the data quality control performed on the population (λ = 1.045). The distribution of the age of death **(b)** and Braak Stage **(c)**

Supplementary Figure 4
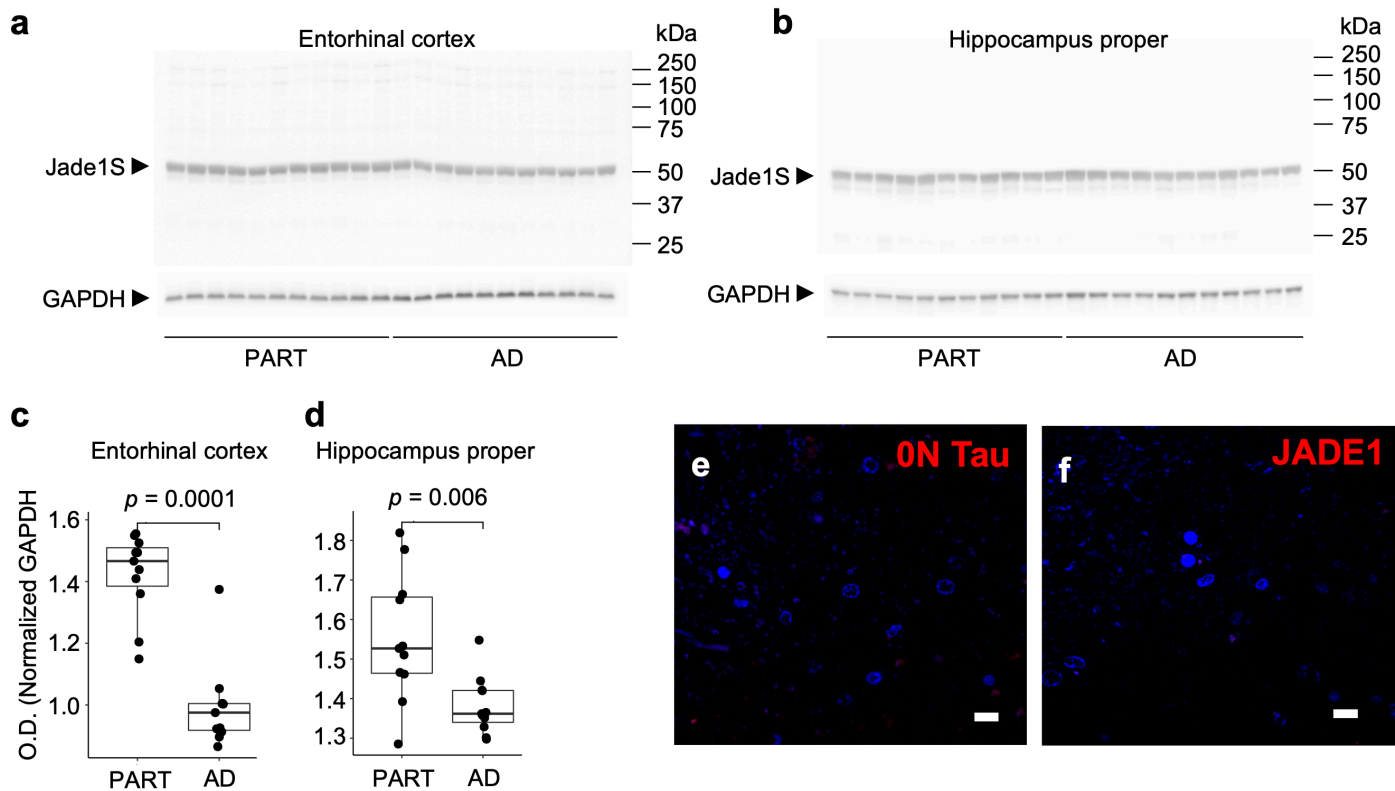
a

b

c

d

Supplementary Figure 4 | Individual analysis of the PART subjects genotyped on the **(a)** global screening array and **(b)** Omni express. The λ is 1.014 and 1.03 respectively
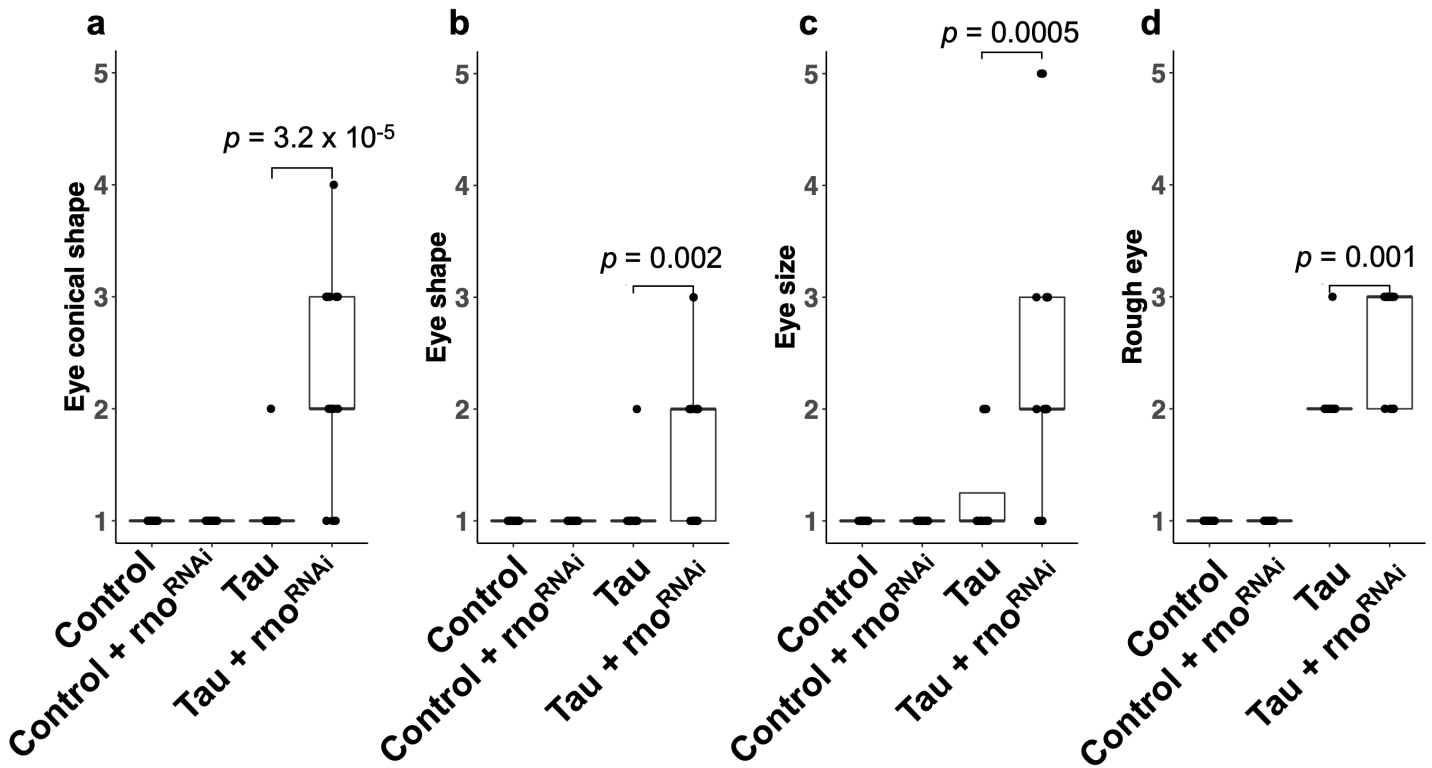
Supplemental Figure 5

Supplemental Figure 5 | (a-c) Comparison of JADE1,C4orf33 and SCLT1 Single cell soma RNA sequencing of all neuronal subtypes (p=7.82 × 10^{-08} and 4.55 × 10^{-15} for Ex1 and Ex2 respectively)
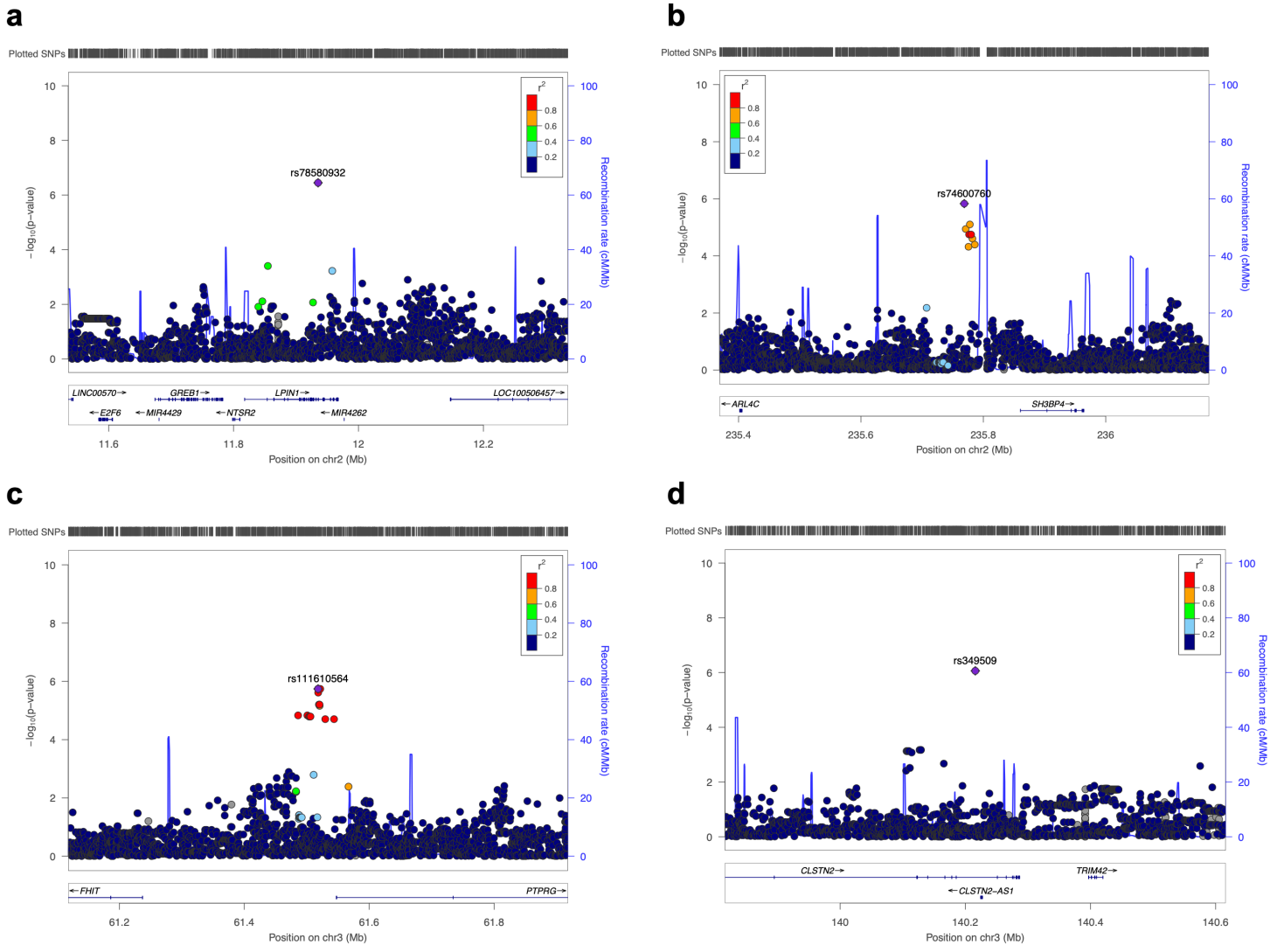
Supplementary Figure 6

Supplementary figure 6 | (a,b) Immunoblot staining of all PART of all subjects (n=11) in this study and quantification of the banding intensity **(b,c)** and which show JADE1 protein levels were statistically higher in PART cases. **(e,f)** Negative controls of the Proximity ligand assay (lacking one antibody) demonstrating no positive staining in PART cases in the entorhinal cortex, yet positive DAPI staining in neurons. Scale bar represents 10 μm
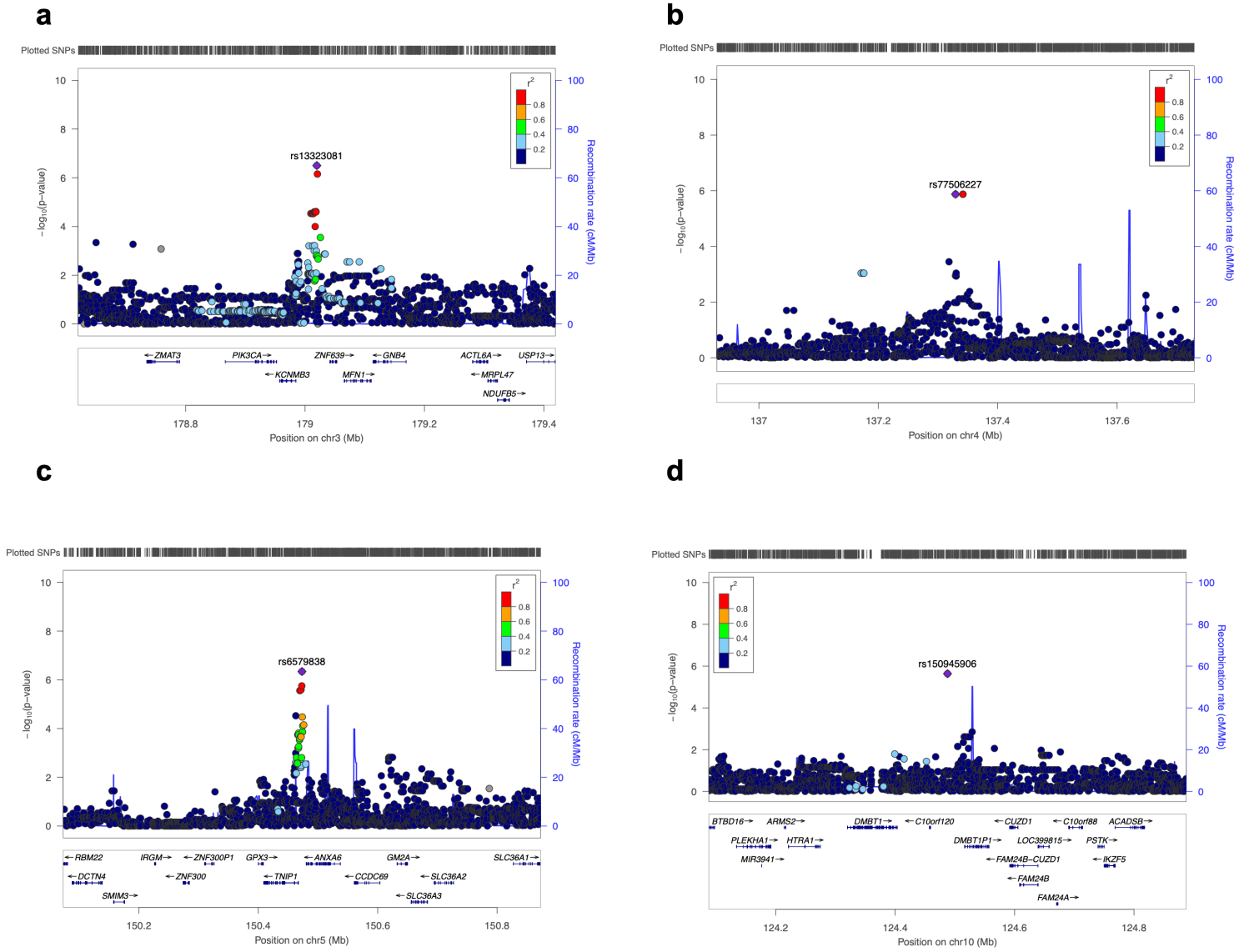
Supplementary Figure 7

Supplementary Figure 7 | (a-d) Individual rater-blinded *Drosophila* eye scores. All comparisons between Tau and Tau+rno[RNAi] are significant.

Supplementary Figure 8

Supplementary Figure 8 | (a-d) Locuszoom plots of the genome-wide suggestive hits on chromosomes 2 and 3
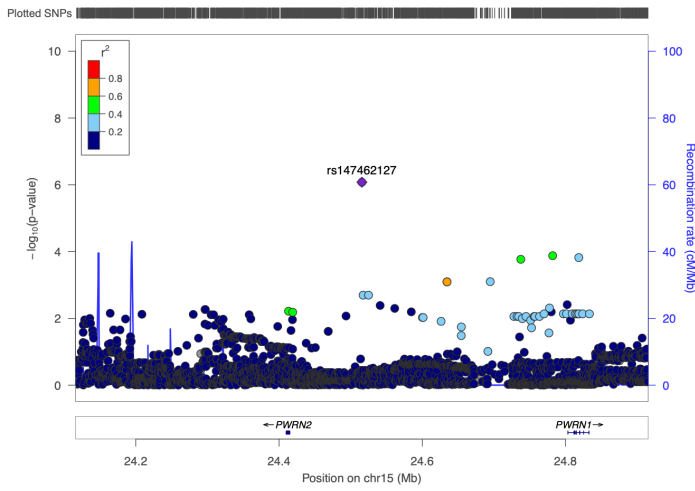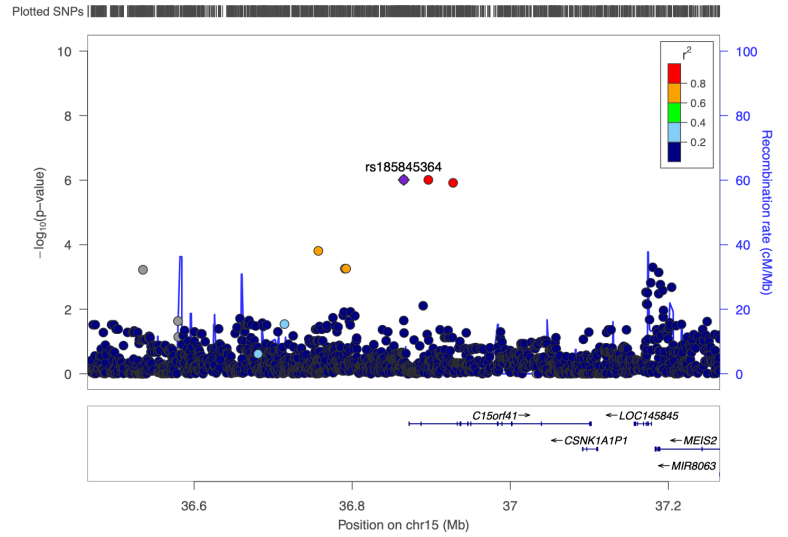
Supplementary Figure 9

Supplementary Figure 9 | (a-d) Locuszoom plots of the genome-wide suggestive hits on chromosomes 3,4,5, and 10
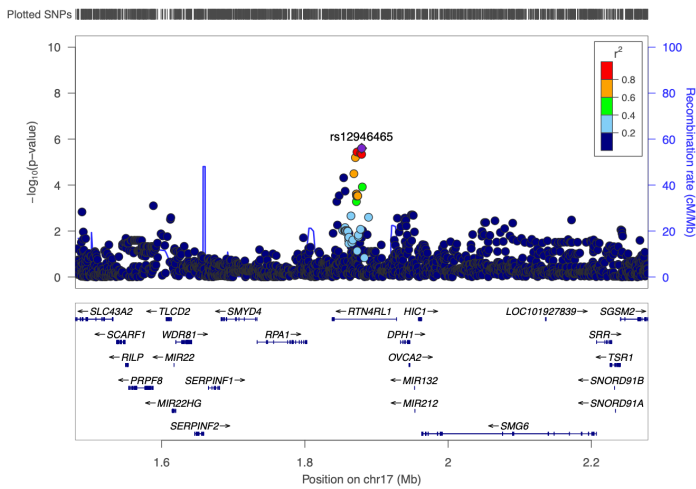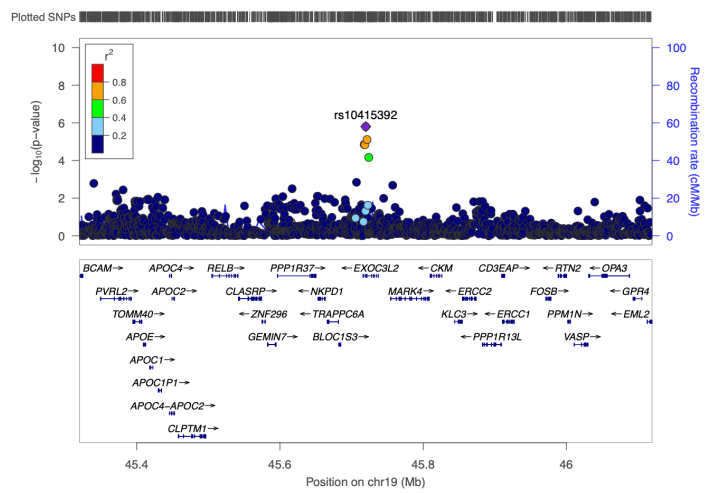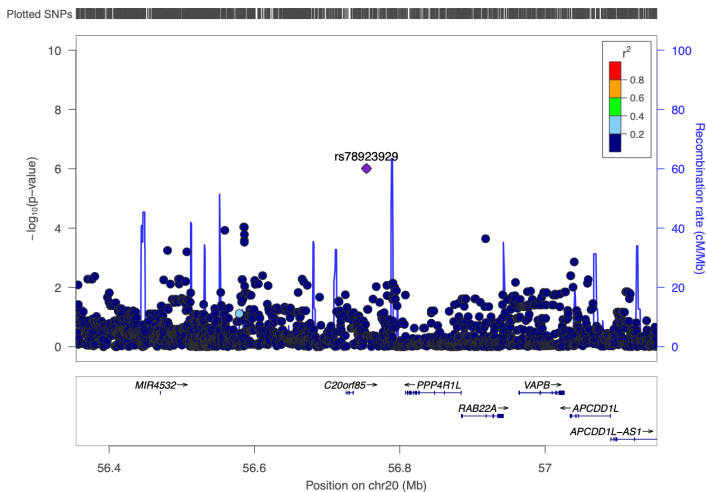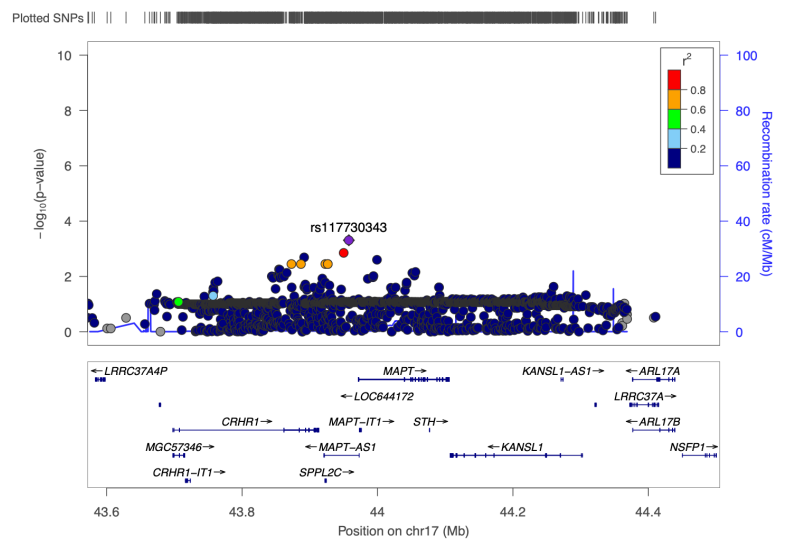
Supplementary figure 10

Supplementary figure 10 | (a-e) Locuszoom plots of the genome-wide suggestive hits on chromosomes 15,17,19 and 20 and **(f)** the mild signal observed in the MAPT locus