

## ADDITIONAL FILE 5

### Independent associations of $\alpha$ -syn SAA and AD status and their interaction with clinical outcomes

|                                       | n   | $\alpha$ -syn SAA+   |              | AD+                  |              | Interaction between $\alpha$ -syn SAA+ and AD+ |         |                    |
|---------------------------------------|-----|----------------------|--------------|----------------------|--------------|------------------------------------------------|---------|--------------------|
|                                       |     | OR                   | p value      | OR                   | p value      | OR                                             | p value | Corrected p value* |
| <b>Psychiatric disturbances</b>       | 171 | 0.50<br>(0.20–1.21)  | 0.128        | 0.42<br>(0.18–0.93)  | <b>0.033</b> | 8.91<br>(2.32–37.56)                           | 0.001   | <b>0.012</b>       |
| <b>Fluctuating cognition</b>          | 171 | 2.85<br>(1.11–7.80)  | <b>0.028</b> | 0.59<br>(0.21–1.68)  | 0.320        | 1.09<br>(0.25–4.60)                            | 0.905   | 0.926              |
| <b>Visual hallucinations</b>          | 171 | 2.47<br>(0.98–6.55)  | 0.055        | 1.57<br>(0.66–3.95)  | 0.314        | 0.94<br>(0.24–3.54)                            | 0.926   | 0.926              |
| <b>Extrapyramidal signs</b>           | 171 | 3.08<br>(1.27–7.74)  | <b>0.012</b> | 0.49<br>(0.21–1.16)  | 0.105        | 2.31<br>(0.60–9.22)                            | 0.223   | 0.735              |
| <b>RBD</b>                            | 171 | 11.0<br>(1.18–1462)  | <b>0.032</b> | 0.58<br>(0.003–107)  | 0.787        | 2.65<br>(0.01–556)                             | 0.650   | 0.926              |
| <b>Pyramidal signs</b>                | 171 | 1.00<br>(0.33–3.07)  | 0.991        | 0.69<br>(0.24–2.04)  | 0.498        | 0.12<br>(0.001–1.42)                           | 0.103   | 0.618              |
| <b>Myoclonus</b>                      | 171 | 5.98<br>(1.25–58.28) | <b>0.023</b> | 5.73<br>(1.30–54.21) | <b>0.018</b> | 0.31<br>(0.03–2.10)                            | 0.245   | 0.735              |
| <b>Cerebellar signs</b>               | 171 | 0.88<br>(0.005–165)  | 0.952        | 4.24<br>(0.39–576)   | 0.266        | 1.31<br>(0.005–309)                            | 0.905   | 0.926              |
| <b>Akinetic mutism</b>                | 171 | 2.85<br>(0.50–29.38) | 0.250        | 1.80<br>(0.32–18.45) | 0.526        | 1.37<br>(0.10–12.87)                           | 0.791   | 0.926              |
| <b>Seizures</b>                       | 171 | 1.25<br>(0.38–4.35)  | 0.712        | 1.26<br>(0.43–4.08)  | 0.676        | 0.85<br>(0.14–4.47)                            | 0.847   | 0.926              |
| <b>Delirium before clinical onset</b> | 155 | 4.08<br>(1.30–14.96) | <b>0.015</b> | 0.47<br>(0.10–2.07)  | 0.315        | 0.46<br>(0.05–3.60)                            | 0.460   | 0.926              |
| <b>Delirium, overall</b>              | 155 | 2.00<br>(0.80–5.11)  | 0.139        | 0.81<br>(0.35–1.91)  | 0.632        | 0.68<br>(0.17–2.60)                            | 0.576   | 0.926              |

\*: after multiple comparison correction (false discovery rate at  $\alpha=0.05$  according to Benjamini-Hochberg); a single correction was performed for the interaction between  $\alpha$ -syn SAA and AD status (12 clinical outcomes)

Odds ratios are expressed as main value (95% confidence interval). P values of statistically significant associations are shown in bold. All results are derived from multivariable penalized logistic regression models according to Firth. For each clinical outcome, binarized  $\alpha$ -syn SAA and AD status and the interaction term were included as predictors in the same model. Abbreviations: AD, Alzheimer's disease;  $\alpha$ -syn, alpha-synuclein; OR, odds ratio; RBD: REM-sleep behavioral disorder; SAA, seed amplification assay.