**Supplementary File 1**

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| --- | --- | --- |
| **Protein**  | **+/+ vs** | **β\* Allele Effect****in *Syngap1* Hets** |
| **+/-**  | **+/Td** | **Td/Td** | **β\*/β\*** | **PBM/PBM** | **+/β\*** *($***)** | **-/β\*** *(#)* |
| **Total SynGAP**  | ~50% | ~25%↓↓ | ~50%↓↓↓ | ⇔ | ⇔ | ⇔ | ~50%↓↓↓ |
| ↓↓ |
| **SynGAP-α1** | ~50% | ~50% | ~95%↓↓↓ | Increased | ⇔ | ~10-20% | 50% |
| ↓↓ | ↓ | ↑ | (\*) | ↑↑↑ | ↑↑↑ |
| **SynGAP-α2** | ~50% | ~50% | ~95%↓↓↓ | Increased | ⇔ | ~10-20% | ~50% |
| ↓ | ↓↓ | ↑ | ↑↑↑ | ↑↑↑ |
| **SynGAP-β** | ~50% | ~50% | ~100%↑↑ | ~0% | ⇔ | ~50% | ~0% |
| ↓ | ↑↑ | ↓↓↓ | ↓↓↓ | ↓↓↓ |
|   | **Fig.S2** | **Fig. 2/S2** |  | **Fig. 3 and S3** | **Fig. 5** | **Fig. 4 and S4** |
|   |   |   |   |  |  |  |
|   |   |   |   |   |   |  |  |

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| **Behavior**  | **+/+ vs** | **β\* Allele Effect****in *Syngap1* Hets** |
| **+/Td** | **Td/Td** | **β\*/β\*** | **PBM/PBM** | **+/β\*** *($)* | **-/β\*** *(#)* | **+/-** *($)* |
| **Survival** | ⇔ | Reduced | ⇔ | ⇔ | ⇔ | ⇔ | ⇔ |
| ↓↓↓ |
| **Locomotion** | Elevated | Elevated | Reduced | Elevated | Reduced | Reduced | Elevated |
| ↑↑↑ | ↑↑↑ | ↓↓ | ↑↑↑ | ↓ | ↓ | ↑↑↑ |
| **Seizure Threshold** | More sensitive | *N/A* | Protection | More sensitive | Protection | Protection | More sensitive |
| ↓↓↓ | ↑↑↑ | ↓↓ | ↑ | ↑ | ↓↓↓ |
| **Remote Memory (FC)** | ImpairedMemory | *N/A* | ⇔ | ImpairedMemory | ⇔ | ⇔ | ImpairedMemory↓↓↓ |
| ↓ | ↓↓↓ |
| **Morris Water Maze** | ⇔ | *N/A* | EnhancedLearning | ImpairedLearning | *N/A* | *N/A* | *N/A* |
| ↑↑ | ↓↓↓ |
|   | **Fig. 2** | **Fig. 3** | **Fig. 8** | **Fig. 4** |  | **Previously published** |

[continued on next page]

|  |  |
| --- | --- |
| **E-Phys**  | **+/+ vs** |
| **+/Td** | **β\*/β\*** | **PBM/PBM** |
| **LTP** | *N/A* | *N/A* | Impaired |
| ↓↓↓ |
| ***m*EPSC Amplitude** | Increased | Reduced | Increased |
| ↑↑↑ | ↓↓ | ↑↑↑ |
| ***m*EPSC Frequency** | Increased | Reduced | Increased |
| ↑↑↑ | ↓↓↓ | ↑↑↑ |
|   | **Fig. 9** |

|  |
| --- |
| ⇔ = no change |
| ↓ = *p <0.05* |
| ↓↓ = *p <0.01* |
| ↓↓↓ = *p <0.001* |
| ↑ = *p <0.05* |
| ↑↑ = *p <0.01* |
| ↑↑↑ = *p <0.001* |

***($*)** relative to +/+

***(#*)** relative to +/-

**(\*)** Reduced antibody affinity