

Supplemental information

**Alzheimer's disease patient-derived
high-molecular-weight tau impairs
bursting in hippocampal neurons**

Samuel S. Harris, Robert Ellingford, Jana Hartmann, Debanjan Dasgupta, Marten Kehring, Rikesh M. Rajani, David Graykowski, Noé Quittot, Dhanush Sivasankaran, Caitlin Commins, Zhanyun Fan, Suraya A. Bond, Fred Wolf, David Dupret, Raymond J. Dolan, Arthur Konnerth, Andreas Neef, Bradley T. Hyman, and Marc Aurel Busche

Table S1: Linear mixed effects model output showing selective impact of HMW tau on fast complex burst firing, related to Figure 4. Linear mixed effects model to assess how HMW or LMW tau levels influence the probability of observing burst events ('EventProbability', centred) of different complexity (number of spikes within burst event [2-≥5], 'BurstLength') and different burst speeds (intra-burst ISI threshold 4-12ms, representing faster to slower burst events, 'BurstThreshold'). Note the significant main (negative) effect of HMW level, indicating that higher HMW concentrations reduce the overall likelihood of observing a burst event, and the associated significant higher-order interaction, pointing to an impact of HMW levels on the relationship between burst metrics (as visualised in Figure 4J). In contrast, LMW levels did not manifest significant effects on the probability of observing burst events.

LME Model Formula: EventProbability ~ HMWLevel*BurstLength*BurstThreshold + LMWLevel*BurstLength*BurstThreshold + (1 AnimalID)							
Fixed effects coefficient name	Estimate	SE	tStat	DF	pValue	Lower	Upper
(Intercept)	0.0815	0.0341	2.394	204	0.0176	0.0144	0.1487
BurstThreshold	-8.4668	3.7732	-2.244	204	0.0259	-15.906	-1.027
BurstLength	-0.0187	0.0086	-2.164	204	0.0316	-0.0357	-0.002
HMWLevel	-0.0007	0.0002	-3.205	204	0.0016	-0.0011	-0.0003
LMWLevel	-0.0001	0.0002	-0.236	204	0.8135	-0.0005	0.0004
BurstThreshold:BurstLength	2.0949	1.0269	2.0400	204	0.0426	0.0702	4.1197
BurstThreshold:HMWLevel	0.1168	0.0241	4.8491	204	0.000002	0.0693	0.1644
BurstLength:HMWLevel	0.0001	0.0001	2.6534	204	0.0086	0.00004	0.0003
BurstThreshold:LMWLevel	-0.0203	0.0252	-0.807	204	0.4205	-0.0700	0.0293
BurstLength:LMWLevel	0.00002	0.0001	0.3503	204	0.7265	-0.0001	0.0001
BurstThreshold:BurstLength:HMWLevel	-0.0253	0.0066	-3.851	204	0.0002	-0.0382	-0.012
BurstThreshold:BurstLength:LMWLevel	0.0029	0.0069	0.4232	204	0.6726	-0.0106	0.0164