

Figure 1B

## Double pulse

Test per	Condition group 1	Condition group 2	All pairwise multiple comparison procedures (Holm-Sidak method)				Normality Test (Shapiro-Wilk)	Equal Variance Test (Brown-Forsythe)	Two way repeated measures ANOVA (One factor repetition, Interval)
			mean difference	t value	p	Statistical differences			
Treatment x Interval=10 ms	wt Vehicle	Ts65Dn vehicle	17 708	0.823	0.415	No	Passed, $p=0.06$	Passed, $p=0.816$	F(5,70)=0.471, $p=0.797$
Treatment x Interval=20 ms	wt Vehicle	Ts65Dn vehicle	13 741	0.638	0.526	No			
Treatment x Interval=40 ms	wt Vehicle	Ts65Dn vehicle	4 969	0.231	0.818	No			
Treatment x Interval=100 ms	wt Vehicle	Ts65Dn vehicle	11 387	0.529	0.599	No			
Treatment x Interval=200 ms	wt Vehicle	Ts65Dn vehicle	0.747	0.0347	0.972	No			
Treatment x Interval=200 ms	wt Vehicle	Ts65Dn vehicle	5 908	0.274	0.785	No			

Figure 1 C-F

## LTP Test-evolution

Test per	Condition group 1	Condition group 2	Normality Test (Shapiro-Wilk)	Equal Variance Test (Brown-Forsythe)	Two way repeated measures ANOVA (One factor repetition, Interval)
	Wt Vehicle	Ts65Dn vehicle	Too many comparisons to be indicated individually. Overall, 45 measured times (from Baseline to Day 6) by 6 group comparisons.		
	Wt+a5IA	Ts65Dn a5IA			
	Ts65Dn vehicle	Ts65Dn a5IA			

Figure 1 G

## LTP Test- groups x days

Test per	Condition group 1	Condition group 2	All pairwise multiple comparison procedures (Holm-Sidak method)				Normality Test (Shapiro-Wilk)	Equal Variance Test (Brown-Forsythe)	ANOVA	
			mean difference	t value	p	Statistical differences				
Day 1	Treatment	Wt Vehicle	Wt+a5IA	67.66	8.829	$p<0.001$	Yes	Passed, $p=0.399$	Passed, $p=0.130$	F(3,96)=116.026, $p<0.001$
		Wt Vehicle	Ts65Dn vehicle	140.994	18.399	$p<0.001$	Yes			
		Wt Vehicle	Ts65Dn a5IA	88.695	11.574	$p<0.001$	Yes			
		Wt+a5IA	Ts65Dn vehicle	73.334	9.570	$p<0.001$	Yes			
		Wt+a5IA	Ts65Dn a5IA	21.035	2.745	$p=0.007$	Yes			
		Ts65Dn vehicle	Ts65Dn a5IA	52.299	6.825	$p<0.001$	Yes			
Day 2	Treatment	Wt Vehicle	Wt+a5IA	27.151	4.223	$p<0.001$	Yes	Passed, $p=0.008$	Passed, $p=0.711$	F(3,96)=79.507, $p<0.001$
		Wt Vehicle	Ts65Dn vehicle	66.717	10.377	$p<0.001$	Yes			
		Wt Vehicle	Ts65Dn a5IA	31.921	4.965	$p<0.001$	Yes			
		Wt+a5IA	Ts65Dn vehicle	93.868	14.6	$p<0.001$	Yes			
		Wt+a5IA	Ts65Dn a5IA	59.072	9.188	$p<0.001$	Yes			
		Ts65Dn vehicle	Ts65Dn a5IA	34.796	5.412	$p<0.001$	Yes			
Day 3	Treatment	Wt Vehicle	Wt+a5IA	93.839	11.142	$p<0.001$	Yes	Failed, $p<0.05$	Passed, $p=0.435$	F(3,96)=71.018, $p<0.001$
		Wt Vehicle	Ts65Dn vehicle	21.742	2.581	$p=0.023$	Yes			
		Wt Vehicle	Ts65Dn a5IA	20.218	2.401	$p=0.018$	Yes			
		Wt+a5IA	Ts65Dn vehicle	115.581	13.723	$p<0.001$	Yes			
		Wt+a5IA	Ts65Dn a5IA	73.621	8.741	$p<0.001$	Yes			
		Ts65Dn vehicle	Ts65Dn a5IA	41.96	4.982	$p<0.001$	Yes			
Day 4	Treatment	Wt Vehicle	Wt+a5IA	87.052	8.063	$p<0.001$	Yes	Failed, $p<0.05$	Passed, $p=0.102$	F(3,96)=36.95, $p<0.001$
		Wt Vehicle	Ts65Dn vehicle	17.797	1.648	$p=0.103$	No			
		Wt Vehicle	Ts65Dn a5IA	37.918	3.512	$p=0.001$	Yes			
		Wt+a5IA	Ts65Dn vehicle	104.849	9.711	$p<0.001$	Yes			
		Wt+a5IA	Ts65Dn a5IA	49.134	4.551	$p<0.001$	Yes			
		Ts65Dn vehicle	Ts65Dn a5IA	55.715	5.16	$p<0.001$	Yes			
Day 5	Treatment	Wt Vehicle	Wt+a5IA	145.338	15.106	$p<0.001$	Yes	Passed, $p=0.089$	Passed, $p=0.078$	F(3,96)=93.359, $p<0.001$
		Wt Vehicle	Ts65Dn vehicle	14.544	1.37	$p=0.174$	No			
		Wt Vehicle	Ts65Dn a5IA	52.047	4.904	$p<0.001$	Yes			
		Wt+a5IA	Ts65Dn vehicle	160.338	15.106	$p<0.001$	Yes			
		Wt+a5IA	Ts65Dn a5IA	93.747	8.832	$p<0.001$	Yes			
		Ts65Dn vehicle	Ts65Dn a5IA	66.591	5.274	$p<0.001$	Yes			
Day 6	Treatment	Wt Vehicle	Wt+a5IA	159.562	15.179	$p<0.001$	Yes	Failed, $p<0.05$	Passed, $p=0.114$	F(3,96)=114.507, $p<0.001$
		Wt Vehicle	Ts65Dn vehicle	15.416	1.466	$p=1.466$	No			
		Wt Vehicle	Ts65Dn a5IA	64.717	6.156	$p<0.001$	Yes			
		Wt+a5IA	Ts65Dn vehicle	174.977	16.645	$p<0.001$	Yes			
		Wt+a5IA	Ts65Dn a5IA	94.844	9.022	$p<0.001$	Yes			
		Ts65Dn vehicle	Ts65Dn a5IA	80.133	7.623	$p<0.001$	Yes			

Figure 3

## Y maze

Variable	Test per	Condition group 1	Condition group 2	mean difference	95 CI lower limit	95 CI upper limit	95 CI containing 0	Normality Test (Shapiro-Wilk)	Equal Variance Test (Brown-Forsythe)	ANOVA	
											Number of arms visited
	genotype	Ts65Dn vehicle	Ts65Dn a5IA	-5.615	-11.307	0.000	yes				
		wt vehicle	Ts65Dn vehicle	2.076	-4.307	8.230	yes				
		wt a5IA	Ts65Dn a5IA	-2.384	-7.615	3.076	yes				
% spontaneous alternation	Treatment	wt Vehicle	wt a5IA	0.957	-9.112	11.511	yes	Passed, $p=0.869$	Failed, $p<0.050$	Not Done	
		Ts65Dn vehicle	Ts65Dn a5IA	7.164	1.149	13.029	no				
		genotype	wt vehicle	Ts65Dn vehicle	-12.691	-20.766	-4.757				no
			wt a5IA	Ts65Dn a5IA	-6.485	-15.607	1.934				yes

Figure 2

## Novel object recognition

Variable	Test per	Condition group 1	Condition group 2	mean difference	95 CI lower limit	95 CI upper limit	95 CI containing 0	Normality Test (Shapiro-Wilk)	Equal Variance Test (Brown-Forsythe)	ANOVA	
											Habituation Mean distance travelled (cm)
	genotype	Ts65Dn vehicle	Ts65Dn a5IA	84.237	-50.003	226.345	yes				
		wt vehicle	Ts65Dn vehicle	181.865	76.212	293.642	no				
		wt a5IA	Ts65Dn a5IA	46.287	-57.464	165.232	yes				
Acquisition Mean distance travelled (cm)	Treatment	wt Vehicle	wt a5IA	169.321	74.158	272.476	no	Failed, $p<0.050$	Not Done	Not Done	
		Ts65Dn vehicle	Ts65Dn a5IA	117.688	-6.699	243.119	yes				
		genotype	wt vehicle	Ts65Dn vehicle	111.592	40.841	189.277				no
			wt a5IA	Ts65Dn a5IA	31.854	-50.465	135.625				yes
Test Mean distance travelled (cm)	Treatment	wt Vehicle	wt a5IA	95.451	24.270	167.624	no	Failed, $p<0.050$	Not Done	Not Done	
		Ts65Dn vehicle	Ts65Dn a5IA	62.272	-31.601	152.893	yes				
		genotype	wt vehicle	Ts65Dn vehicle	86.411	20.554	160.094				no
			wt a5IA	Ts65Dn a5IA	24.538	-52.939	131.935				yes
Recognition index	Treatment	wt Vehicle	wt a5IA	-1.293	-21.331	18.353	yes	Passed, $p=0.869$	Passed, $p=0.114$	F(1,50)=4.548, $p=0.038$	
		Ts65Dn vehicle	Ts65Dn a5IA	23.516	4.570	44.437	no				
		genotype	wt vehicle	Ts65Dn vehicle	-0.343	-0.496	-0.178				no
			wt a5IA	Ts65Dn a5IA	-0.0823	-0.285	0.106				yes

Figure 4

## Morris Water Maze

Variable	Test per	Condition group 1	Condition group 2	mean difference	95 CI lower limit	95 CI upper limit	95 CI containing 0	Normality Test (Shapiro-Wilk)	Equal Variance Test (Brown-Forsythe)	ANOVA
	genotype	wt a5IA	Ts65Dn a5IA					Passed, $p=0.632$	Passed, $p=0.643$	RM F(1,72)=3.035, $p=0.107$
Distance (m)	genotype	wt vehicle	Ts65Dn vehicle					Passed, $p=0.559$	Passed, $p=0.832$	RM F(1,102)=12.375, $p=0.003$
	genotype	wt a5IA	Ts65Dn a5IA							
% distance in thigmotaxis	genotype	wt vehicle	Ts65Dn vehicle					Passed, $p=0.179$	Passed, $p=0.181$	RM F(1,102)=17.225, $p<0.001$
	Log 1+% distance in thigmotaxis	genotype	wt a5IA	Ts65Dn a5IA						
Mean speed	genotype	wt vehicle	Ts65Dn vehicle					Passed, $p=0.065$	Passed, $p=0.240$	RM F(1,102)=1.616, $p=0.221$
	Log 1-Mean speed	genotype	wt a5IA	Ts65Dn a5IA						
Probe test	genotype	wt vehicle	Ts65Dn vehicle					Passed, $p=0.243$	Passed, $p=0.079$	F(1,17)=4.531, $p=0.048$
	genotype	wt a5IA	Ts65Dn a5IA							