**Supplemental Figure 1**

**A**. Scatter plot depicting daytime and nighttime sleep scatter plot. Fed day sleep on x-axis plotted (mins/12 hrs) to Fed night sleep on y-axis (mins/12 hrs) (Simple Linear Regression: F (1, 609) equals 57.65, R2 equals 0.0863, P-value equals<0.0001, N=616). **B**. Scatter plot depicting the average number of sleep bouts compared to the average bout length. Sleep bout on x-axis to average bout length on y-axis Simple Linear Regression: F (1, 611) equals 338.2, R squared 0.3563, P value <0.0001, N=616). C. Total sleep/waking activity scatter plot. Fed total sleep on x-axis plotted (mins/24 hrs) to waking activity on y-axis (beam breaks/min (Simple Linear Regression: F (1, 612) equals 4.568, R2 equals 0.0074, P-value equals<0.0330, N=616). Control flies with no endogenous targets Act5c GAL4 drive luc RNAi (yellow), lines tested in (grey), and unc79 highest sleep and SR (red).

**Supplemental Figure 2.**

**A.** Waking activity violin plots over a 72-hour experiment for female Act5c>luc RNAi (grey) and Act5c>unc79 RNAi (red). Waking activity is higher during Day 1 fed (P<0.0001; N≥37) and Day 3 starved (P<0.01; N≥37), while not different during Day 2 (P<0.1199; N≥32). **B.** Waking activity violin plots over a 72-hour experiment for female unc79 mutants. Waking activity differ during starved state of unc79 F03453 (maroon) and unc79 F01615 (red) more than w1118 (grey, P<0.0001; N≥39), but not during fed state (P<0.856; N≥39). **C**. Daytime sleep for Act5c>unc79 RNAi (red) during fed (Two-way ANOVA: F (2, 261) = 12.96, P<0.0001 N>39), starved day 1 (Two-way ANOVA: F (2, 261) = 12.96, P<0.0001, N>39) and starved day 2 (Two-way ANOVA: F (2, 261) = 12.96, P<0.0001 N>39) flies slept significantly longer compared to Act5c>luc RNAi (grey) controls. **D**. Nighttime sleep for Act5c>unc79 RNAi (red) during starved day 2 (Two-way ANOVA: F (2, 261) = 12.96, P<0.0001 N>39) Act5c>unc79 RNAi (red) flies slept significantly longer compared to Act5c>luc RNAi (grey) controls. Fed day sleep for Act5c>luc RNAi (grey) controls are higher than Act5c>unc79 RNAi (red, Two-way ANOVA: F (2, 261) = 18.26, P<0.0001 N>39), while no observed difference in starved day 1 (Two-way ANOVA: F (2, 261) = 12.96, P< 0.8935, N>39). **E**. Daytime sleep for female unc79 F01615 (red) during fed (Two-way ANOVA: F (2, 668) = 60.22, P<0.0001 N>39), starved day 1 (Two-way ANOVA: F (2, 668) = 60.22, P<0.0001, N>39) and starved day 2 (Two-way ANOVA: F (2, 668) = 60.22, P<0.001 N>39) flies slept significantly longer compared to W1118 control. Day sleep for female unc79 F03453 (maroon) during fed (Two-way ANOVA: F (2, 668) = 60.22, P<0.001 N>39), starved day 1 (Two-way ANOVA: F (2, 668) = 60.22, P<0.01, N>39), and starved day 2 (Two-way ANOVA: F (2, 668) = 60.22, P<0.0001 N>39) flies slept significantly longer compared to W1118 control. **F**. Nighttime sleep for female unc79 F01615 (red) during fed (Two-way ANOVA: F (2, 654) = 51.17, P<0.0001 N>39), starved day 1 (Two-way ANOVA: F (2, 654) = 51.17, P<0.0001, N>39) and starved day 2 (Two-way ANOVA: F (2, 654) = 51.17, P<0.0001 N>39) flies slept significantly longer compared to W1118 control. Day sleep for female unc79 F03453 (maroon) during fed (Two-way ANOVA: F (2, 668) = 60.22, P<0.001 N>39), starved day 1 (Two-way ANOVA: F (2, 668) = 60.22, P<0.0001, N>39), and starved day 2 (Two-way ANOVA: F (2, 668) = 60.22, P<0.0001 N>39) flies slept significantly longer compared to W1118 control. **G.** Total sleep violin plot over a 48-hour experiment for male unc79 mutants. Waking activity differ during fed and starved state of unc79 F01615 (red) more than w1118 (grey, P<0.0001; N≥39), but not during fed or starved state for unc79 F03453 (maroon, P<0.8559; N≥39). **H.** Starvation resistance of male flies did not differ between unc79 F03453 (maroon) unc79 F01615 flies (red), and both were greater than w1118 (grey). **I**. Waking activity for male flies for 48-hour period. Mutant unc79F01615 (red) is less active than w1118 (grey, P<0.0001; N≥32), while unc79F03453 (maroon, P>0.0648; N=32), and heterozygous controls (pink, P>0.0733; N=32). All sleep data are violin plots and SR data are survival curves. \*\*p < 0.01; \*\*\*p < 0.001; \*\*\*\*p < 0.0001.

**Supplemental Figure 3.**

**A**. Knockdown of unc79 in different brain regions show no differences to respective flies expressing luc-RNAi (One-way ANOVA : F (12, 454) equal 2.247). Peptidergic knockdown of unc79 (C929>unc79 RNAi) does not differ in control (C929>luc RNAi) (pink, P equals 0.9665, N>40). Fan-shaped body knockdown of unc79 (23E10>unc79 RNAi) does not differ in control (23E10>luc RNAi) (orange, P equals 0.698, N>29). Central complex knockdown of unc79 (R69F08>unc79 RNAi) does not differ in control (R69F08>luc RNAi) (green, P equals 0.8795, N>33). Glial knockdown of unc79 (repo>unc79 RNAi) (teal, P equals 0.9999, N>21) does not differ in control (Repo>luc RNAi). Circadian genes knockdown of unc79 timeless (tim> unc79 RNAi) (blue, P equals 0.8226, N>32) does not differ in control (tim>luc RNAi) and pigment dispersion factor (pdf> unc79 RNAi) (purple, P equals 0.9997, N>32) does not differ in control (pdf>luc RNAi). **B**. Starvation resistance for knockdown of unc79 in brain region drivers compared to luc control (Gehan-Breslow-Wilcoxon test). Peptidergic knockdown of unc79 (C929>unc79 RNAi) does not differ in control (C929>luc RNAi) (pink, df equal 1, P equals 0.668, N>40). Fan-shaped body knockdown of unc79 (23E10>unc79 RNAi) does not differ in control (23E10>luc RNAi) (orange, df equals 1, P equals 0.0879, N>32). Central complex knockdown of unc79 (R69F08>unc79 RNAi) does not differ in control (R69F08/ luc RNAi) (green, df equals 1, P equals 0.6268, N>33). Glial knockdown of unc79 (repo>unc79 RNAi) (teal, df equals 1, P equals 0.3464, N>21) does differ to control (Repo>luc RNAi). Circadian genes knockdown of unc79 timeless (tim> unc79 RNAi) (blue, df equals 1, P-value equals 0.072, N>32) does not differ in control (tim>luc RNAi). Pigment dispersion factor (pdf> unc79 RNAi) (purple, df equals 1, P-value equals 0.0191, N>32) is significantly different than control (pdf>luc RNAi). **C.** Sleep is measured in first 12 hrs. Pan-neuronal knockdown of unc79 (nSyb>unc79 RNAi, red) is significantly increased in day sleep during fed (Two-Way ANOVA: F (2, 263) = 15.39, P<0.0001, N>30), starved day 1 (P<0.0001, N>30), and starved day 2 (P<0.0001, N>30); while nSyb>attp2 (light grey) and nSyb>luc RNAi controls shows starvation-induced sleep suppression. **D.** Sleep is measured in second 12 hrs. Pan-neuronal knockdown of unc79 (nSyb>unc79 RNAi, red) is significantly reduced in night sleep during fed (Two-Way ANOVA: F (2, 292) = 54.15, P<0.0001, N>30), starved day 1 (P<0.05, N>30). Pan-neuronal knockdown of unc79 (nSyb>unc79 RNAi, red) increased night sleep on starved day 2 (P<0.05, N>30); while nSyb>attp2 (light grey) and nSyb>luc RNAi controls shows starvation-induced sleep suppression. **E.** Nighttime sleep in flies with mushroom body knockdown of unc79 (OK107>unc79 RNAi, red) is not different in fed conditions (Two-Way ANOVA: F (2, 348) = 65.71, P>0.4791, N>30). Nighttime sleep for starved day 1 Ok107>unc79 RNAi is less than Ok107>luc RNAi (P<0.0037, N>31). No difference in and starved day 2 (P<0.0001, N>31); while OK107>attp2 (grey) and OK107>luc RNAi (light grey) controls maintain normal nighttime sleep. OK107/attp2 to Ok107>unc79 RNAi (dark grey) is not significant (P> 0.8150, N>31) and Ok107>luc RNAi to Ok107>unc79 RNAi (grey) is significant (P<0.0001, N>3). All sleep data are violin plots and SR data are survival curves. \*\*\*p < 0.001; \*\*\*\*p < 0.0001.

**Supplemental Figure 4.**

**A.** Day sleep is measured during the first 12 hrs. Flies with *unc79* knocked downin the αβ lobes(c739>unc79 RNAi, pink) fail to suppress starvation during starved day 1 (Two-way ANOVA F (10, 1195) = 106.9, P<0.0001, N>53) and starved day 2 (P<0,0001) compared to control (c739>luc RNAi, light grey); while fed day 1 did not differ (P>0.1224). Mushroom body α’β’ knockdown of unc79 (c305a> unc79 RNAi, red) fails to suppress starvation during starved day 1 (Two-way ANOVA F (10, 1195) = 106.9, P<0.0001, N>51) and starved day 2 (P<0.0001) compared to control (c305a>luc RNAi, light grey); while fed day 1 did not differ (P>0.999). Mushroom body γ knockdown of unc79 (1471 >unc79 RNAi, maroon) significantly increase daytime sleep during fed day (Two-way ANOVA F (10, 1195) = 106.9, P<0.0001, N>53) and fails to suppress sleep on starved day 1(P< 0.0001, N>53), and starved day 2 (P<0.0001, N>53) compared to control (1471>luc RNAi, dark grey). **B**. Nighttime sleep is measured during the last 12 hrs. Flies with *unc79* knocked downin the αβ lobes(c739>unc79 RNAi, pink) has lower nighttime sleep during fed day 1 (Two-way ANOVA F (10, 1195) = 106.9, P<0.0001, N>51) compared to (c739>luc RNAi, light grey). Nighttime sleep did not differ 1 (P<0.999, N>51) and starved day 2 (P<0.999, N>51) compared to control (c739>luc RNAi, light grey). Mushroom body α’β’ knockdown of unc79 (c305a> unc79 RNAi, red) has lower nighttime sleep (Two-way ANOVA F (10, 1195) = 106.9, P<0.05, N>51) compared to control (c305a>luc RNAi, light grey); while nighttime sleep during starved day 2 increased (P<0.0001, N>51) compared to control (c305a>luc RNAi, light grey). Nighttime sleep for c305a> unc79 RNAi (red) did not differ in (P>0.999, N>51) during starved day 1 compared to control (c305a>luc RNAi, light grey). Mushroom body γ knockdown of unc79 (1471 >unc79 RNAi, maroon) significantly increase nighttime sleep during fed day 1 (Two-way ANOVA F (10, 1195) = 106.9, P<0.0001, N>53) and starved day 2 (P<0.0001, N>53) compared to control (1471>luc RNAi, dark grey). **C.** Daytime sleep is measured during the first 12 hrs. Mushroom body GAL80 rescue γ knockdown of unc79 RNAi (1471>MBGal80; unc79 RNAi) significantly rescues nighttime sleep compared to γ knockdown of unc79 (1471>unc79RNAi, P-value <0.01, N>37); while, daytime sleep for γ knockdown of unc79 (1471>unc79RNAi) is increased compares to other control groups (unc79RNAi/+, P<0.0001; 1471/+, P<0.0001; MBGal80;lucRNAi/+, P<0.0001; 1471>MBGal80;lucRNAi, P<0.0001; MBGal80;lucRNAi/+, P-value<0.0001; and, MBGal80;unc79RNAi/+, P<0.0001). **D.** Nighttime sleep is measured during the second 12 hrs. Mushroom body GAL80 rescue γ knockdown of unc79 RNAi (1471>MBGal80; unc79 RNAi) rescues does not differ compared to γ knockdown of unc79 (1471>unc79RNAi, P>0.1307, N>37). Nighttime sleep for γ knockdown of unc79 (1471>unc79RNAi) is increased compares 1471/+ (P<0.0001, N>37) and MBGal80;lucRNAi/+, (P<0.01, N>37).

All sleep data are violin plots. \*\*\*p < 0.001; \*\*\*\*p < 0.0001.

**Supplemental Figure 5.**

**A****.** Day sleep is measured during the first 12 hrs. Mushroom body knockdown of *unc79* (OK107>unc79RNAi) significantly increased sleep (Two-way ANOVA: F (2, 944) = 49.91, P<0.001, N>40) compared to control (unc79RNAi/+). Mushroom body knockdown of narrow abdomen (OK107>na RNAi) did not differ (P>0.999, N>35) compared to control (*na* RNAi/+). Mushroom body knockdown of unc80 (OK107>unc80RNAi) did not differ (P>0.999, N>42) compared to control (unc80 RNAi/+). **B**. Nighttime sleep is measured during the second 12 hrs. Mushroom body knockdown of narrow abdomen (OK107>na RNAi) did not differ (Two-way ANOVA: F (2, 715) = 20.9, P>0.456, N>35) compared to control (*na* RNAi/+). Mushroom body knockdown of unc80 (OK107>unc80RNAi) did not differ (P>0.995, N>42) compared to control (unc80 RNAi/+). Mushroom body knockdown of *unc79* (OK107>unc79 RNAi) did not differ (P<0.390, N>40) compared to control (unc79 RNAi/+). All sleep data are violin plots. \*\*\*p < 0.001.