**Table S1 Statistical tests used in this study**

**Figure: 2E**

| Number: | Genotype: | n: |
|---|---|---|
| 1 | $w^{1118}$;; **(WT)** | 5 |
| 2 | ;*unc-104*$^{bris}$/*unc-104*$^{bris}$ **(*unc-104*$^{bris}$)** | 6 |

**Test:** Student's two-tailed t-test

**p-Value:**

| | 1 |
|---|---|
| 1 | |
| 2 | n.s. |

**Figure: 2F**

| Number: | Genotype: | n: |
|---|---|---|
| 1 | *elav*$^{C155}$*-Gal4 /+; ;UAS-unc-104*$^{mCherry}$/+ **(control)** | 9 |
| 2 | ;*unc-104*$^{bris}$/*unc-104*$^{d11024}$;*UAS-unc-104*$^{mCherry}$/+ **(*unc-104*$^{bris}$/-)** | 10 |
| 3 | *elav*$^{C155}$*-Gal4/+;unc-104*$^{bris}$/*unc-104*$^{d11024}$;*UAS-unc-104*$^{mCherry}$/+ **(rescue)** | 9 |

**Test:** One-Way ANOVA followed by Tukey's Multiple Comparison test

**p-Value:**

| | 1 | 2 | 3 |
|---|---|---|---|
| 1 | | *** | n.s. |
| 2 | | | *** |
| 3 | | | |

**Figure: 4A**

| Number: | Genotype: | n: |
|---|---|---|
| 1 | $w^{1118}$;; **(WT)** | 6 |
| 2 | ;*unc-104*$^{bris}$/*unc-104*$^{bris}$ **(*unc*$^{bris}$)** | 8 |
| 3 | ;*unc-104*$^{bris}$/*unc-104*$^{d11024}$ **(*unc-104*$^{bris}$/-)** | 8 |
| 4 | *elavX-Gal4 /+; ;UAS-unc-104*$^{mCherry}$/+ **(control)** | 6 |
| 5 | *elavX-Gal4 /+;unc-104*$^{bris}$/*unc-104*$^{d11024}$ ;*UAS-unc-104*$^{mCherry}$/+ **(rescue)** | 6 |

**Test:** One-Way ANOVA followed by Tukey's Multiple Comparison test

**p-Value:**

| | 1 |
|---|---|
| 1 | |
| 2 | *** |
| 3 | *** |
| 4 | n.s. |
| 5 | n.s. |

**1-2.5 mm**

| | 1 |
|---|---|
| 1 | |
| 2 | *** |
| 3 | *** |
| 4 | n.s. |
| 5 | n.s. |

**2.6-4 mm**

**Figure:** **6C**

| Number: | Genotype: | n: |
|---|---|---|
| 1 | *elav $^{C155}$-Gal4 /+; ;UAS-unc-104 $^{mCherry}$/+* **(control)** | 9 |
| 2 | *;unc-104 $^{bris}$ /unc-104 $^{d11024}$;UAS-unc-104 $^{mCherry}$/+* **(*unc-104 $^{bris}$*/-)** | 10 |
| 3 | *elav $^{C155}$-Gal4/+;unc-104 $^{bris}$ /unc-104 $^{d11024}$;UAS-unc-104 $^{mCherry}$/+* **(rescue)** | 9 |

**Test:** Kruskal-Wallis H-test followed by Mann-Whitney pairwise comparison test

**p-Value:** (Bonferroni corrected)

| | 1 | 2 | 3 |
|---|---|---|---|
| 1 | | *** | n.s. |
| 2 | | | ** |
| 3 | | | |

**Figure:** **6D**

| Number: | Genotype: | n: |
|---|---|---|
| 1 | *elav $^{C155}$-Gal4 /+; ;UAS-unc-104 $^{mCherry}$/+* **(control)** | 9 |
| 2 | *;unc-104 $^{bris}$ /unc-104 $^{d11024}$;UAS-unc-104 $^{mCherry}$/+* **(*unc-104 $^{bris}$*/-)** | 10 |
| 3 | *elav $^{C155}$-Gal4/+;unc-104 $^{bris}$ /unc-104 $^{d11024}$;UAS-unc-104 $^{mCherry}$/+* **(rescue)** | 9 |

**Test:** Kruskal-Wallis H-test followed by Mann-Whitney pairwise comparison test

**p-Value:** (Bonferroni corrected)

| | 1 | 2 | 3 |
|---|---|---|---|
| 1 | | ** | n.s. |
| 2 | | | * |
| 3 | | | |

**Figure:** **7B**

| Number: | Genotype: | n: |
|---|---|---|
| 1 | *elav $^{C155}$-Gal4 /+;;* **(control)** | 9 |
| 2 | *elav $^{C155}$-Gal4 /+;unc-104 $^{bris}$ /unc-104 $^{d11024}$* **(*unc-104 $^{bris}$*/-)** | 8 |
| 3 | *elav $^{C155}$-Gal4 /+;unc-104 $^{bris}$ /unc-104 $^{d11024}$;UAS-Brp* **(unc-104$^{bris}$/-; Brp↑)** | 8 |

**Test:** Kruskal-Wallis H-test followed by Mann-Whitney pairwise comparison test

**p-Value:** (Bonferroni corrected)

| | 1 | 2 | 3 |
|---|---|---|---|
| 1 | | * | n.s. |
| 2 | | | ** |
| 3 | | | |

**Figure:** **7C**

| Number: | Genotype: | n: |
|---|---|---|
| 1 | *elav $^{C155}$-Gal4 /+;;* **(control)** | 9 |
| 2 | *elav $^{C155}$-Gal4 /+;unc-104 $^{bris}$ /unc-104 $^{d11024}$* **(*unc-104 $^{bris}$ /-*)** | 8 |
| 3 | *elav $^{C155}$-Gal4 /+;unc-104 $^{bris}$ /unc-104 $^{d11024}$ ;UAS-Brp/+* **(*unc-104 $^{bris}$ /-; Brp ↑*)** | 8 |

**Test:** Kruskal-Wallis H-test followed by Mann-Whitney pairwise comparison test

**p-Value:** (Bonferroni corrected)

| | 1 | 2 | 3 |
|---|---|---|---|
| 1 | | ** | n.s. |
| 2 | | | ** |
| 3 | | | |

**Figure:** **7D**

| Number: | Genotype: | n: |
|---|---|---|
| 1 | *elav $^{C155}$-Gal4 /+;;* **(control)** | 9 |
| 2 | *elav $^{C155}$-Gal4 /+;unc-104 $^{bris}$ /unc-104 $^{d11024}$* **(*unc-104 $^{bris}$ /-*)** | 8 |
| 3 | *elav $^{C155}$-Gal4 /+;unc-104 $^{bris}$ /unc-104 $^{d11024}$ ;UAS-Brp/+* **(*unc-104 $^{bris}$ /-; Brp ↑*)** | 8 |

**Test:** Kruskal-Wallis H-test followed by Mann-Whitney pairwise comparison test

**p-Value:** (Bonferroni corrected)

| | 1 | 2 | 3 |
|---|---|---|---|
| 1 | | ** | ** |
| 2 | | | * |
| 3 | | | |

**Figure:** **8B**

| Number: | Genotype: | n: |
|---|---|---|
| 1 | *w $^{1118}$ ;;* **(WT)** | 7 |
| 2 | *;unc-104 $^{bris}$ /+* **(*unc-104 $^{bris}$ /+*)** | 9 |
| 3 | *;unc-104 $^{bris}$ /unc-104 $^{bris}$* **(*unc-104 $^{bris}$*)** | 7 |
| 4 | *;unc-104 $^{bris}$ /unc-104 $^{d11024}$* **(*unc-104 $^{bris}$ /-*)** | 9 |

**Test:** Kruskal-Wallis H-test followed by Mann-Whitney pairwise comparison test

**p-Value:** (Bonferroni corrected)

| | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| 1 | | n.s. | * | ** |
| 2 | | | n.s. | ** |
| 3 | | | | n.s. |
| 4 | | | | |

**Figure:** **8C**

| **Number:** | **Genotype:** | **n:** |
|---|---|---|
| **1** | $w^{1118}$;; **(WT)** | 7 |
| **2** | ;*unc-104*$^{bris}$/+ **(*unc-104*$^{bris}$/+)** | 9 |
| **3** | ;*unc-104*$^{bris}$/*unc-104*$^{bris}$ **(*unc-104*$^{bris}$)** | 7 |
| **4** | ;*unc-104*$^{bris}$/*unc-104*$^{d11024}$ **(*unc-104*$^{bris}$/-)** | 9 |

**Test:** Kruskal-Wallis H-test followed by Mann-Whitney pairwise comparison test

**p-Value:** (Bonferroni corrected)

| | **1** | **2** | **3** | **4** |
|---|---|---|---|---|
| **1** | | **n.s.** | **n.s.** | **n.s.** |
| **2** | | | **n.s.** | **n.s.** |
| **3** | | | | **n.s.** |
| **4** | | | | |

**Figure:** **8D**

| **Number:** | **Genotype:** | **n:** |
|---|---|---|
| **1** | $w^{1118}$;; **(WT)** | 7 |
| **2** | ;*unc-104*$^{bris}$/+ **(*unc-104*$^{bris}$/+)** | 9 |
| **3** | ;*unc-104*$^{bris}$/*unc-104*$^{bris}$ **(*unc-104*$^{bris}$)** | 7 |
| **4** | ;*unc-104*$^{bris}$/*unc-104*$^{d11024}$ **(*unc-104*$^{bris}$/-)** | 9 |

**Test:** Kruskal-Wallis H-test followed by Mann-Whitney pairwise comparison test

**p-Value:** (Bonferroni corrected)

| | **1** | **2** | **3** | **4** |
|---|---|---|---|---|
| **1** | | **n.s.** | * | ** |
| **2** | | | * | * |
| **3** | | | | **n.s.** |
| **4** | | | | |

**Figure:** **8F**

| **Number:** | **Genotype:** | **n:** |
|---|---|---|
| **1** | $w^{1118}$;; **(WT)** | 8 |
| **2** | ;*unc-104*$^{bris}$/+ **(*unc-104*$^{bris}$/+)** | 10 |
| **3** | ;*unc-104*$^{bris}$/*unc-104*$^{bris}$ **(*unc-104*$^{bris}$)** | 10 |
| **4** | ;*unc-104*$^{bris}$/*unc-104*$^{d11024}$ **(*unc-104*$^{bris}$/-)** | 10 |

**Test:** One-Way ANOVA followed by Tukey's Multiple Comparison test

**p-Value:** (Bonferroni corrected)

| | **1** | **2** | **3** | **4** |
|---|---|---|---|---|
| **1** | | *** | *** | *** |
| **2** | | | *** | *** |
| **3** | | | | **n.s.** |
| **4** | | | | |

**Figure:** **8G**

| **Number:** | **Genotype:** | **n:** |
|---|---|---|
| **1** | $w^{1118}$;; **(WT)** | 8 |
| **2** | ;*unc-104*$^{bris}$/+ **(*unc-104*$^{bris}$/+)** | 10 |
| **3** | ;*unc-104*$^{bris}$/*unc-104*$^{bris}$ **(*unc-104*$^{bris}$)** | 10 |
| **4** | ;*unc-104*$^{bris}$/*unc-104*$^{d11024}$ **(*unc-104*$^{bris}$/-)** | 10 |

**Test:** One-Way ANOVA followed by Tukey's Multiple Comparison test

**p-Value:** (Bonferroni corrected)

| | **1** | **2** | **3** | **4** |
|---|---|---|---|---|
| **1** | | ** | *** | *** |
| **2** | | | *** | *** |
| **3** | | | | **n.s.** |
| **4** | | | | |

**Figure:** **8I**

| **Number:** | **Genotype:** | **n:** |
|---|---|---|
| **1** | $w^{1118}$;; **(WT)** | 10 |
| **2** | ;*unc-104*$^{bris}$/+ **(*unc-104*$^{bris}$/+)** | 10 |
| **3** | ;*unc-104*$^{bris}$/*unc-104*$^{bris}$ **(*unc-104*$^{bris}$)** | 10 |
| **4** | ;*unc-104*$^{bris}$/*unc-104*$^{d11024}$ **(*unc-104*$^{bris}$/-)** | 10 |

**Test:** Kruskal-Wallis H-test followed by Mann-Whitney pairwise comparison test

**p-Value:** (Bonferroni corrected)

| | **1** | **2** | **3** | **4** |
|---|---|---|---|---|
| **1** | | **n.s.** | ** | ** |
| **2** | | | ** | ** |
| **3** | | | | ** |
| **4** | | | | |

**Figure:** **8J**

| **Number:** | **Genotype:** | **n:** |
|---|---|---|
| **1** | $w^{1118}$;; **(WT)** | 10 |
| **2** | ;*unc-104*$^{bris}$/+ **(*unc-104*$^{bris}$/+)** | 10 |
| **3** | ;*unc-104*$^{bris}$/*unc-104*$^{bris}$ **(*unc-104*$^{bris}$)** | 10 |
| **4** | ;*unc-104*$^{bris}$/*unc-104*$^{d11024}$ **(*unc-104*$^{bris}$/-)** | 10 |

**Test:** Kruskal-Wallis H-test followed by Mann-Whitney pairwise comparison test

**p-Value:** (Bonferroni corrected)

| | **1** | **2** | **3** | **4** |
|---|---|---|---|---|
| **1** | | **n.s.** | * | * |
| **2** | | | **n.s.** | * |
| **3** | | | | **n.s.** |
| **4** | | | | |

**Figure:** **8K**

| Number: | Genotype: | n: |
|---|---|---|
| 1 | *w*$^{1118}$*;;* **(WT)** | 8 |
| 2 | *;unc-104*$^{bris}$*/+* **(*unc-104*$^{bris}$*/+*)** | 10 |
| 3 | *;unc-104*$^{bris}$*/unc-104*$^{bris}$ **(*unc-104*$^{bris}$)** | 10 |
| 4 | *;unc-104*$^{bris}$*/unc-104*$^{d11024}$ **(*unc-104*$^{bris}$*/-*)** | 10 |

**Test:** Kruskal-Wallis H-test followed by Dunn's Multiple Comparison test

**p-Value:**

| | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| 1 | | n.s. | * | *** |
| 2 | | | * | *** |
| 3 | | | | n.s. |
| 4 | | | | |

**Figure:** **9B**

| Number: | Genotype: | n: |
|---|---|---|
| 1 | *elav*$^{C155}$*-Gal4 /+; ;UAS-unc-104*$^{mCherry}$*/+* **(control)** | 9 |
| 2 | *;unc-104*$^{bris}$*/unc-104*$^{d11024}$*;UAS-unc-104*$^{mCherry}$*/+* **(*unc-104*$^{bris}$*/-*)** | 11 |
| 3 | *elav*$^{C155}$*-Gal4/+;unc-104*$^{bris}$*/unc-104*$^{d11024}$*;UAS-unc-104*$^{mCherry}$*/+* **(rescue)** | 8 |

**Test:** Kruskal-Wallis H-test followed by Mann-Whitney pairwise comparison test

**p-Value:** (Bonferroni corrected)

| | 1 | 2 | 3 |
|---|---|---|---|
| 1 | | ** | n.s. |
| 2 | | | ** |
| 3 | | | |

**Figure:** **9C**

| Number: | Genotype: | n: |
|---|---|---|
| 1 | *elav*$^{C155}$*-Gal4 /+; ;UAS-unc-104*$^{mCherry}$*/+* **(control)** | 9 |
| 2 | *;unc-104*$^{bris}$*/unc-104*$^{d11024}$*;UAS-unc-104*$^{mCherry}$*/+* **(*unc-104*$^{bris}$*/-*)** | 11 |
| 3 | *elav*$^{C155}$*-Gal4/+;unc-104*$^{bris}$*/unc-104*$^{d11024}$*;UAS-unc-104*$^{mCherry}$*/+* **(rescue)** | 8 |

**Test:** Kruskal-Wallis H-test followed by Mann-Whitney pairwise comparison test

**p-Value:** (Bonferroni corrected)

| | 1 | 2 | 3 |
|---|---|---|---|
| 1 | | n.s. | n.s. |
| 2 | | | n.s. |
| 3 | | | |

**Figure:** **9D**

| Number: | Genotype: | n: |
|---|---|---|
| 1 | *elav $^{C155}$-Gal4 /+; ;UAS-unc-104 $^{mCherry}$/+* **(control)** | 9 |
| 2 | *;unc-104 $^{bris}$ /unc-104 $^{d11024}$;UAS-unc-104 $^{mCherry}$/+* **(*unc-104 $^{bris}$*/-)** | 11 |
| 3 | *elav $^{C155}$-Gal4/+;unc-104 $^{bris}$ /unc-104 $^{d11024}$;UAS-unc-104 $^{mCherry}$/+* **(rescue)** | 8 |

**Test:** Kruskal-Wallis H-test followed by Mann-Whitney pairwise comparison test

**p-Value:** (Bonferroni corrected)

| | 1 | 2 | 3 |
|---|---|---|---|
| 1 | | ** | n.s. |
| 2 | | | ** |
| 3 | | | |

**Figure:** **9F**

| Number: | Genotype: | n: |
|---|---|---|
| 1 | *elav $^{C155}$-Gal4 /+; ;UAS-unc-104 $^{mCherry}$/+* **(control)** | 9 |
| 2 | *;unc-104 $^{bris}$ /unc-104 $^{d11024}$;UAS-unc-104 $^{mCherry}$/+* **(*unc-104 $^{bris}$*/-)** | 10 |
| 3 | *elav $^{C155}$-Gal4/+;unc-104 $^{bris}$ /unc-104 $^{d11024}$;UAS-unc-104 $^{mCherry}$/+* **(rescue)** | 9 |

**Test:** One-Way ANOVA followed by Tukey's Multiple Comparison test

**p-Value:**

| | 1 | 2 | 3 |
|---|---|---|---|
| 1 | | *** | n.s. |
| 2 | | | *** |
| 3 | | | |

**Figure:** **9G**

| Number: | Genotype: | n: |
|---|---|---|
| 1 | *elav $^{C155}$-Gal4 /+; ;UAS-unc-104 $^{mCherry}$/+* **(control)** | 9 |
| 2 | *;unc-104 $^{bris}$ /unc-104 $^{d11024}$;UAS-unc-104 $^{mCherry}$/+* **(*unc-104 $^{bris}$*/-)** | 10 |
| 3 | *elav $^{C155}$-Gal4/+;unc-104 $^{bris}$ /unc-104 $^{d11024}$;UAS-unc-104 $^{mCherry}$/+* **(rescue)** | 9 |

**Test:** One-Way ANOVA followed by Tukey's Multiple Comparison test

**p-Value:**

| | 1 | 2 | 3 |
|---|---|---|---|
| 1 | | *** | n.s. |
| 2 | | | *** |
| 3 | | | |

**Figure:** **11B**

| Number: | Genotype: | n: |
|---|---|---|
| 1 | *elav $^{C155}$-Gal4 /+;unc-104 $^{bris}$ /unc-104 $^{d11024}$* (***unc-104 $^{bris}$ /-***) | 8 |
| 2 | *elav $^{C155}$-Gal4 /+;unc-104 $^{bris}$ /unc-104 $^{d11024;}$ UAS-Brp-RNAi* (***Brp ↓***) | 8 |
| 3 | *elav $^{C155}$-Gal4 /+;unc-104 $^{bris}$ /unc-104 $^{d11024;}$ UAS-Brp* (***Brp ↑***) | 8 |

**Test:** One-Way ANOVA followed by Tukey's Multiple Comparison test

**p-Value:**

| | 1 | 2 | 3 |
|---|---|---|---|
| 1 | | n.s. | n.s. |
| 2 | | | n.s. |
| 3 | | | |

**Figure:** **11C**

| Number: | Genotype: | n: |
|---|---|---|
| 1 | *elav $^{C155}$-Gal4 /+;unc-104 $^{bris}$ /unc-104 $^{d11024}$* (***unc-104 $^{bris}$ /-***) | 8 |
| 2 | *elav $^{C155}$-Gal4 /+;unc-104 $^{bris}$ /unc-104 $^{d11024;}$ UAS-Brp-RNAi* (***Brp ↓***) | 8 |
| 3 | *elav $^{C155}$-Gal4 /+;unc-104 $^{bris}$ /unc-104 $^{d11024;}$ UAS-Brp* (***Brp ↑***) | 8 |

**Test:** One-Way ANOVA followed by Tukey's Multiple Comparison test

**p-Value:**

| | 1 | 2 | 3 |
|---|---|---|---|
| 1 | | n.s. | n.s. |
| 2 | | | n.s. |
| 3 | | | |

**Figure:** **11D**

| Number: | Genotype: | n: |
|---|---|---|
| 1 | *elav $^{C155}$-Gal4 /+;unc-104 $^{bris}$ /unc-104 $^{d11024}$* (***unc-104 $^{bris}$ /-***) | 8 |
| 2 | *elav $^{C155}$-Gal4 /+;unc-104 $^{bris}$ /unc-104 $^{d11024;}$ UAS-Brp-RNAi* (***Brp ↓***) | 8 |
| 3 | *elav $^{C155}$-Gal4 /+;unc-104 $^{bris}$ /unc-104 $^{d11024;}$ UAS-Brp* (***Brp ↑***) | 8 |

**Test:** One-Way ANOVA followed by Tukey's Multiple Comparison test

**p-Value:**

| | 1 | 2 | 3 |
|---|---|---|---|
| 1 | | n.s. | n.s. |
| 2 | | | n.s. |
| 3 | | | |

**Figure:** **11E**

| Number: | Genotype: | n: |
|---|---|---|
| 1 | *elav $^{C155}$-Gal4 /+;unc-104 $^{bris}$ /unc-104 $^{d11024}$* **(*unc-104 $^{bris}$ /-)** | 8 |
| 2 | *elav $^{C155}$-Gal4 /+;unc-104 $^{bris}$ /unc-104 $^{d11024;}$ UAS-Brp-RNAi* **(*Brp*↓)** | 8 |
| 3 | *elav $^{C155}$-Gal4 /+;unc-104 $^{bris}$ /unc-104 $^{d11024;}$ UAS-Brp* **(*Brp*↑)** | 8 |

**Test:** One-Way ANOVA followed by Tukey's Multiple Comparison test

**p-Value:**

| | 1 | 2 | 3 |
|---|---|---|---|
| 1 | | n.s. | n.s. |
| 2 | | | n.s. |
| 3 | | | |

**Figure:** **11F**

| Number: | Genotype: | n: |
|---|---|---|
| 1 | *elav $^{C155}$-Gal4 /+;unc-104 $^{bris}$ /unc-104 $^{d11024}$* **(*unc-104 $^{bris}$ /-)** | 8 |
| 2 | *elav $^{C155}$-Gal4 /+;unc-104 $^{bris}$ /unc-104 $^{d11024;}$ UAS-Brp-RNAi* **(*Brp*↓)** | 8 |
| 3 | *elav $^{C155}$-Gal4 /+;unc-104 $^{bris}$ /unc-104 $^{d11024;}$ UAS-Brp* **(*Brp*↑)** | 8 |

**Test:** One-Way ANOVA followed by Tukey's Multiple Comparison test

**p-Value:**

| | 1 | 2 | 3 |
|---|---|---|---|
| 1 | | n.s. | n.s. |
| 2 | | | n.s. |
| 3 | | | |