

CAPTIONS FOR SUPPLEMENTARY MOVIES

Supplementary Movie 1. **Ca²⁺ transients in body-wall muscle cells of a wild-type worm** (matching the wild-type sample in Figure 5). **Top**, Movie of Ca²⁺ transients detected by the Ca²⁺-sensitive fluorescent protein GCaMP2. **Bottom**, Plot of Ca²⁺ transients of the cells in the movie. Each distinctly colored line in the plot represents the cell outlined in that same color in the movie.

Supplementary Movie 2. **Ca²⁺ transients in body-wall muscle cells of an *unc-9(fc16)* mutant worm** (matching the *unc-9* sample in Figure 5). **Top**, Movie of Ca²⁺ transients detected by the Ca²⁺-sensitive fluorescent protein GCaMP2. **Bottom**, Plot of Ca²⁺ transients of the cells in the movie. Each distinctly colored line in the plot represents the cell outlined in that same color in the movie.

Supplementary Movie 3. **Ca²⁺ transients in body-wall muscle cells of an *unc-1(e719)* mutant worm** (matching the *unc-1* sample in Figure 5). **Top**, Movie of Ca²⁺ transients detected by the Ca²⁺-sensitive fluorescent protein GCaMP2. **Bottom**, Plot of Ca²⁺ transients of the cells in the movie. Each distinctly colored line in the plot represents the cell outlined in that same color in the movie.

Supplementary Movie 4. **Ca²⁺ transients in body-wall muscle cells of a transgenic worm in which *unc-9* expression in muscle was selectively inhibited by RNA interference** (matching the *unc-9* RNAi sample in Figure 5). **Top**, Movie of Ca²⁺ transients detected by the Ca²⁺-sensitive fluorescent protein GCaMP2. **Bottom**, Plot of Ca²⁺ transients of the cells in the movie. Each distinctly colored line in the plot represents the cell outlined in that same color in the movie.

Supplementary Movie 5. **Ca²⁺ transients in body-wall muscle cells of a transgenic *unc-9(fc16)* mutant worm in which UNC-9 deficiency in muscle was selectively rescued** (matching the *unc-9* Rescue sample in Figure 5). **Top**, Movie of Ca²⁺ transients detected by the Ca²⁺-sensitive fluorescent protein GCaMP2. **Bottom**, Plot of Ca²⁺ transients of the cells in the movie. Each distinctly colored line in the plot represents the cell outlined in that same color in the movie.

Supplementary Movie 6. **Ca²⁺ transients in body-wall muscle cells of a wild-type worm** (matching the Control sample in Figure 8). **Top**, Movie of Ca²⁺ transients detected by the Ca²⁺-sensitive fluorescent protein GCaMP2. **Bottom**, Plot of Ca²⁺ transients of the cells in the movie. Each distinctly colored line in the plot represents the cell outlined in that same color in the movie.

Supplementary Movie 7. **Ca²⁺ transients in body-wall muscle cells of a wild-type worm before and after the administration of (+)-tubocurarine (TBC)** (matching the TBC sample in Figure 8). **Top**, Movie of Ca²⁺ transients detected by the Ca²⁺-sensitive fluorescent protein GCaMP2. **Bottom**, Plot of Ca²⁺ transients of the cells in the movie. Each distinctly colored line in the plot represents the cell outlined in that same color in the movie.

Supplementary Movie 8. **Ca²⁺ transients in body-wall muscle cells of a wild-type worm before and after the administration of gabazine** (matching the Gabazine sample in Figure 8). **Top**, Movie of Ca²⁺ transients detected by the Ca²⁺-sensitive fluorescent protein GCaMP2. **Bottom**, Plot of Ca²⁺ transients of the cells in the movie. Each distinctly colored line in the plot represents the cell outlined in that same color in the movie.

Supplementary Movie 9. **Ca²⁺ transients in body-wall muscle cells of a wild-type worm before and after the administration of (+)-tubocurarine (TBC) plus gabazine** (matching the TBA+Gabazine sample in Figure 8). **Top**, Movie of Ca²⁺ transients detected by the Ca²⁺-sensitive fluorescent protein GCaMP2. **Bottom**, Plot of Ca²⁺ transients of the cells in the movie. Each distinctly colored line in the plot represents the cell outlined in that same color in the movie.