**SUPPORTING INFORMATION**

**Supplementary Video data**

*[Ca2+]i oscillations and CGE*

After microinjection of Syt1-MO or control-MO, the GV oocytes were incubated in M2 medium containing 2.5 mM milrinone for 24 h, then transferred to milrinone-free M16 medium for culture for 12 h. MII eggs were then collected and the zona pellucida in the mouse oocytes was removed by a short incubation in acid Tyrode medium. These were loaded with the Ca2+-sensitive dye, fura-3-AM, and TMA-DPH, and activated with SrCl2. Then free [Ca2+]i and CGE were determined by monitoring the fluorescence levels. In the control-MO group, Ca2+ oscillations were obvious and maintained for about 30 min (Fig. S*1A* and Video 1); in the Syt1-MO group, Ca2+ oscillations disappeared and the fluorescence density declined slowly (Fig. S*1B* and Video 2). Time-lapse images were acquired every 5 s for 40 min. For exocytosis of CGs, CG fluorescence intensity increased sharply and was maintained at a plateau level in the control-MO oocytes (Fig S*2A* and Video 3). However, in the Syt1-MO group, CG fluorescence density increased slowly and an increase followed (Fig. S*2B* and Video 4), when compared with the control-MO oocytes. Time in the control-MO group (4.61 ± 1.40 s) was significantly decreased compared with that in the Syt1-MO group (10.80 ± 2.47 s) (*P* < 0.05). Time-lapse images were acquired every 15 s for 40 min.

*F-actin*

GV oocytes were injected with LifeAct-GFP and Syt1-MO or control-MO. After microinjection, oocytes were incubated in M2 medium containing 2.5 mM milrinone for 24 h, then transferred to milrinone-free M16 medium for culture for 12 h, then MII eggs were collected. F-actin-mRNA was expressed at the oocyte cortex, especially at the cap of F-actin. In the control-MO group, the cap was observed (Fig. S*3A* and Video 5), while in the Syt1-MO group, no cap was visible (Fig. S*3B* and Video 6). Time-lapse images were acquired every 15 s for 40 min.



Figure S1.<Author: Please supply title and legend for figure.>



Figure S2. <Author: Please supply title and legend for figure.>



Figure S3. <Author: Please supply title and legend for figure.>