

Supplementary Materials for

Developmental regulation of oocyte lipid uptake via ‘patent’ follicular epithelium in *Drosophila melanogaster*

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Figs. S1 to S5

Captions for Data S1 to S5

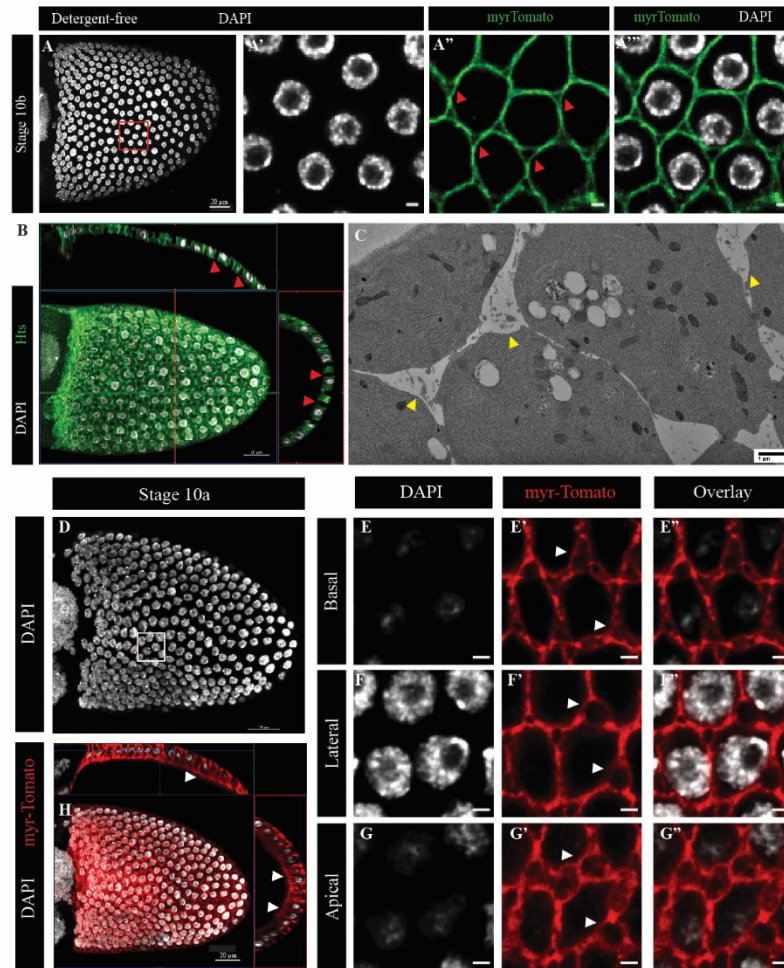


Fig. S1. Confirmation of TCJ gaps in *Drosophila* FE. (A) Stage 10b egg chamber expressing *Tj-Gal4*, *10XUAS-myr-Td-Tomato*, fixed and mounted using a detergent-free protocol (see materials and methods). Red box is enlarged in (A'-A''') showing patent TCJs even when detergent-free reagents are used to process the egg chambers. (B) Ortho view of a projection of a St10a egg chamber showing gaps extending across the FE monolayer (red arrowheads) Hts marks the membrane. (C) TEM image of a St10a egg chamber showing unidentified material in the gaps (yellow arrowheads). (D-G'') Stage 10a oocyte-associated FE expressing *10XUAS-myr-Td-Tomato*. White box is expanded in (E-G''). (E-E'', F-F'', G-G'') Basal, lateral, and apical view, respectively. (H) Ortho view of a projection of a St10a *10XUAS-myr-Td-Tomato* expressing egg chamber, showing gaps extending across the FE monolayer (white arrowheads). DAPI marks nuclei.

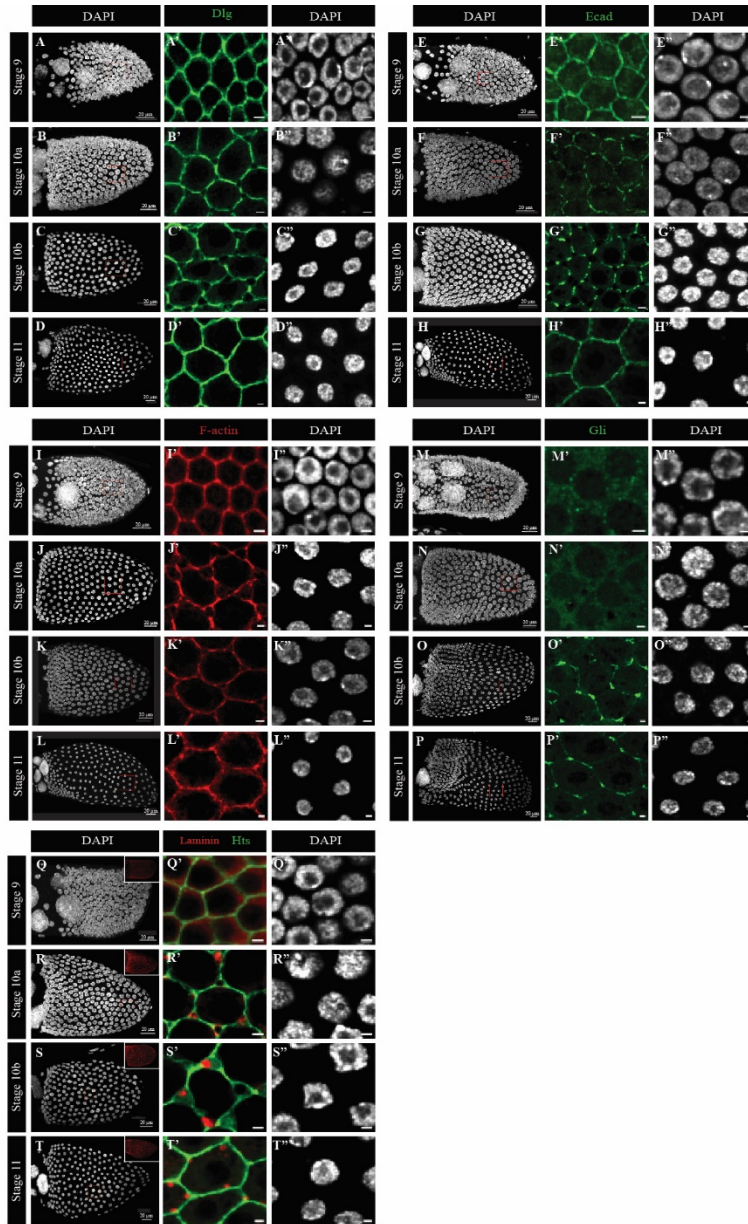


Fig. S2. Characterization of adhesion and junction proteins over patency between stage 9 and 11. (A-D'') Septate junction protein Dlg distribution before (A-A''), during (B-C'') and after (D-D'') patency. (E-H'') Adherens junction protein E-cadherin (E-cad) is intact before patency (E-E''), is removed from the TCs in patent stages (F-G''), and reappears when patency is terminated (H-H''). (I-L'') Cortical F-actin (Phalloidin) remains intact in patent epithelia and continues to line the TCs when patent, making phalloidin a good stain to visualize TC gaps. (M-P'') The tricellular septate junction protein, Gliotactin (Gli), is not present at intact TCs prior to (St9, M-M''), or at the onset of patency (St10a, N-N'') but appears at the TCs at stage 10b (O-O'') and remains after the termination of patency (P-P''). (Q-T'') Localization of the basement membrane component Laminin. Absent from TCJs at St9 (Q-Q''), Laminin appears and localizes in the gaps in patent FE starting at St10a (R-R'') and St10b (S-S''), and is still present near the TCs even at stage 11 after the gaps disappear (T-T''). Insets in (Q-T'') Laminin in the full FE from stage 9 - 11. Consistent staging of egg chambers was based on the characterization by Jia et al, 2016 (31).

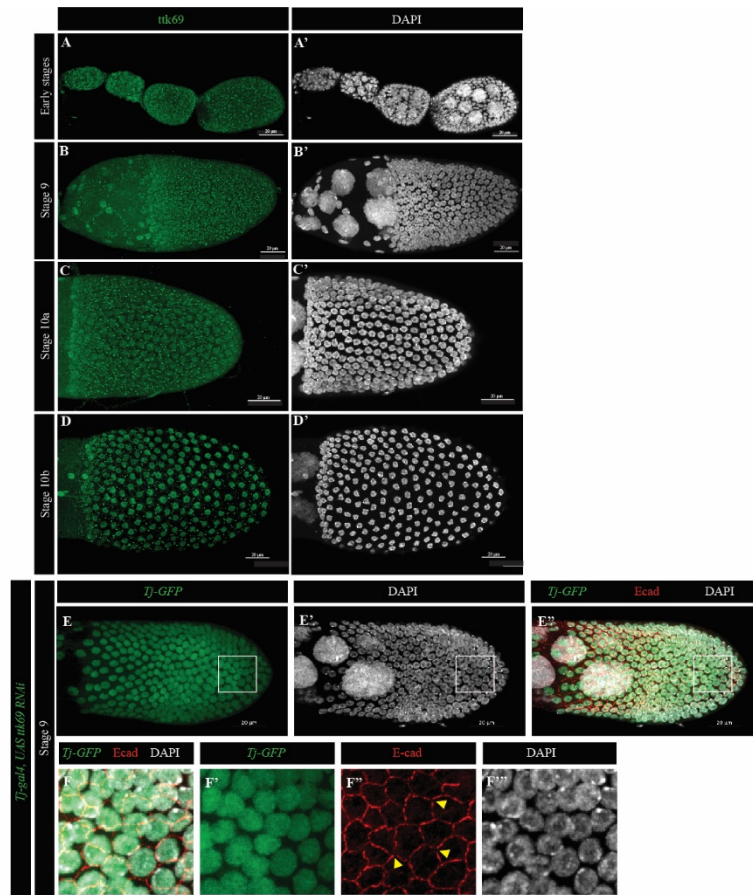


Fig. S3. Ttk69 pattern in WT FE. Fixed ovaries stained for Ttk69 with the antibody from the Xi lab (42). Ttk69 expression is observed in the nuclei of follicle cells even at early stages (A-A'), as well as at St9 (B-B'), St10a (C-C'), and St10b (D-D'). Punctate signals in the FE can be attributed to background noise. DAPI marks nuclei. (E-F''') Stage 9 egg chamber expressing *UAS-ttk69-RNAi* under *Tj-Gal4*. (E-E'') Projection of a St9 *ttk69* KD egg chamber with E-cad immunostaining. White box is expanded in (F-F'''). E-cad is lost from the TCs (yellow arrowheads). DAPI marks the nucleus in grey.

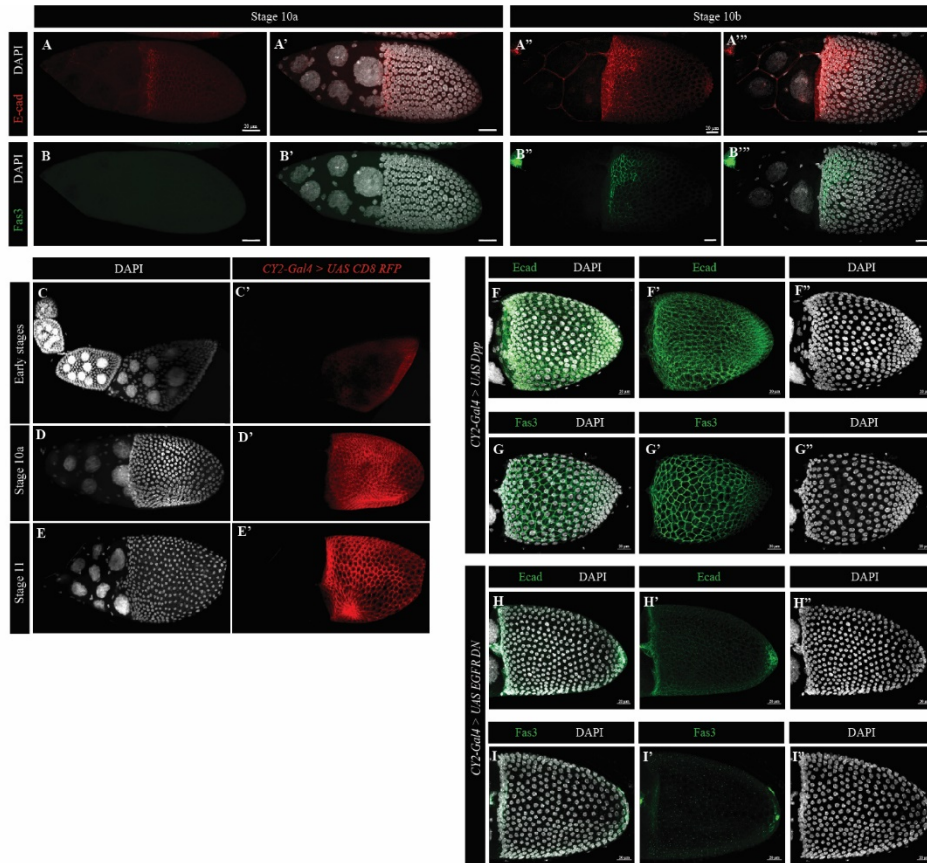


Fig. S4. Dorsal pattern of adhesion proteins E-cad and Fas3. (A-B'') WT egg chambers develop the distinct distribution of E-cad and Fas3 at the dorsal anterior from St10a (A-A', B-B' respectively) to St10b (A''-A'', B''-B'', respectively). (C-E'') *CY2-Gal4* expression pattern in *Drosophila* ovaries marked by *UAS-CD8:RFP* on the membrane. Expression in the oocyte-associated FE begins at St9 (C-C'') and continues through 10a (D-D'') and St11 (E-E''). (F-G'') Egg chambers expressing *UAS-Dpp* under *CY2-Gal4* driver. Expansion of the domains with high E-cad (F-F'') and the Fas3 (G-G'') at stage 10b. (H-I'') Egg chambers expressing a dominant negative form of EGFR under UAS control using the *CY2-Gal4* driver. The dorsal pattern of E-cad (H-H'') and Fas3 (I-I'') are lost in the FE at stage 10b.

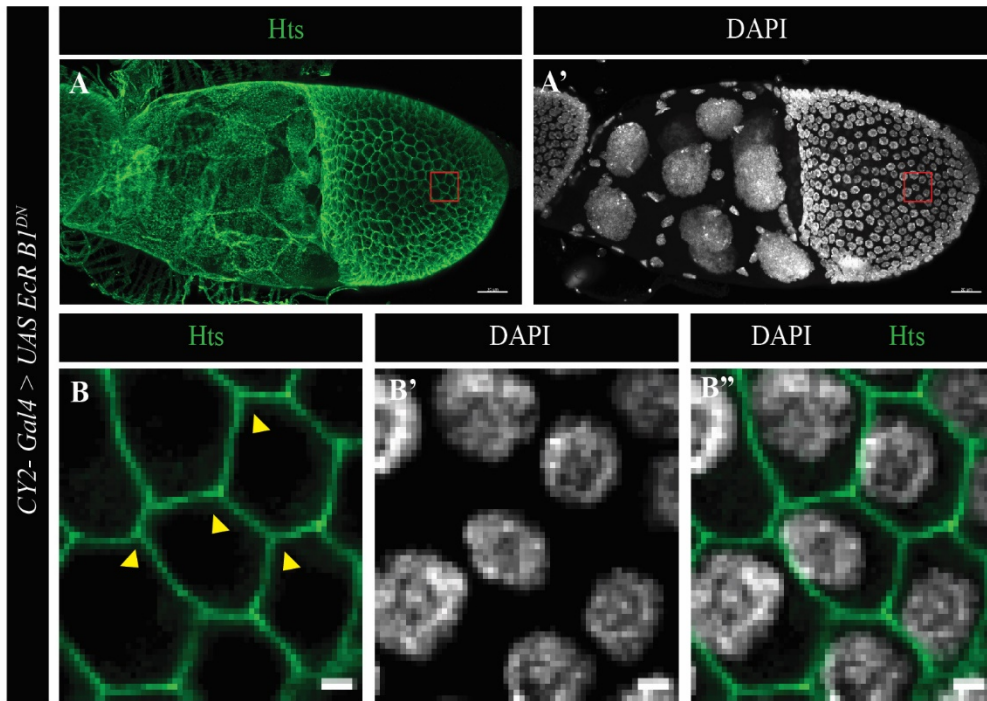


Fig. S5. Ecdysone signaling is required for patency. (A-A') St10a egg chamber expressing a dominant negative form of the ecdysone receptor EcR B1 under *CY2-Gal4*. Red box is enlarged in (B-B''), showing intact TCs (yellow arrowheads). Hts marks the membrane, DAPI marks nuclei.