

**Title:** Supplementary Movie 1. Absence of Adgrd1 does not affect ciliary function on oviductal epithelium.

**Description:** The cilia that line the ampullary epithelium continuously beat in an abovarial direction in the Adgrd1<sup>-/-</sup> mutant oviduct. Effective transport is shown by the movement of 15 µm microparticles placed on the explant along the ampullary folds.

**Title:** Supplementary Movie 2. Muscle function appears normal in Adgrd1-deficient oviducts.

**Description:** Beads and 2-cell embryos are regularly moved back and forth due to rhythmic muscular contractions within an Adgrd1<sup>-/-</sup> ampulla explant at 1.5 dpc. A contracting segment of the isthmus is visible in the upper left corner. The video is shown at four frames per second.

**Title:** Supplementary Movie 3. Dysregulation of oviductal fluid flow in Adgrd1-deficient oviducts.

**Description:** Videos of the behaviour of a tracer dye injected into Adgrd1-deficient and control oviducts to directly observe oviductal fluid flows. Videos from the Adgrd1-mutant (left) and control (right) are shown side-by-side and have been time-matched to the start of the injection to facilitate comparison.