**Movie S1. TBC1D5 and ATG9 co-localize in live cells.** Live cell imaging was performed on U2OS cells stably expressing GFP-ATG9A and mCherry-TBC1D5, frames were acquired every 5s, during period of 2,75 minutes.

Movie S2. TBC1D5 and ATG9 co-localize in live cells during autophagy. Live cell imaging was performed on U2OS cells stably expressing GFP-ATG9A and mCherry-TBC1D5, 1 hour after the treatment with KU0063794 started, frames were acquired every 5s, during period of 2,83 minutes. Movie represents plasma membrane region of the cell.

Movie S3. TBC1D5 and ATG9 co-localize in live cells during autophagy. Live cell imaging was performed on U2OS cells stably expressing GFP-ATG9A and mCherry-TBC1D5, 3 hours after the treatment with KU0063794 started, frames were acquired every 5s, during period of 3,91 minutes.

**Movie S4. ATG9 trafficks in small highly-mobile vesicles.** Live cell imaging was performed in U2OS cells stably expressing GFP-ATG9. Frames were acquired every 1s during the period of 1,58 minutes.

Movie S5. ATG9 and TBC1D5 co-localize in static vesicles upon CME inhibition Live cell imaging was performed on U2OS cells stably expressing GFP-ATG9A and mCherry-TBC1D5. Cells were imaged 5 minutes after Dynasore inhibitor was added, frames were acquired every 5s, during period of 4,58 minutes.