



**Figure S1.** The effects of gene overexpression and compounds on cell viability. **(a)** Cells were transfected with Myc-tag empty vector (Vec.) or Myc-tag human VPS34 (VPS34) and subjected to indirect immunofluorescence assay (IFA) in 293T cells, followed by measuring transfection efficiency. Scale Bar = 20  $\mu$ m. The cell viability was determined by CCK8 kit in VPS34 overexpressing cells (VPS34) **(b)**, VPS34 knockout (VPS34 KO) cell lines **(f)** and cells treated with Rapa **(e)**, Wort **(g)**, CQ **(h)**. **(c)** Quantifications of the immunoblots in cells expressing VPS34. **(d)** Quantifications of the immunoblots in cells expressing VPS34 treated with lysosomal inhibitor CQ. Cells transfected with Myc-tag empty vector (Vec.) or Myc-tag human SQSTM1 **(i)** and chicken SQSTM1 **(k)**, or cell lines stable expressing human SQSTM1 **(m)** were subjected to indirect immunofluorescence assay (IFA), followed by measuring transfection efficiency. Scale Bar = 20  $\mu$ m. The cell viability was determined by CCK8 kit in SQSTM1 overexpressing 293T cells (human SQSTM1) **(j)**, chicken SQSTM1 expressing DF-1 cells **(l)**, stable 293T cells expressing SQSTM1 **(n)**, and SQSTM1 knockout cell lines **(o)**.