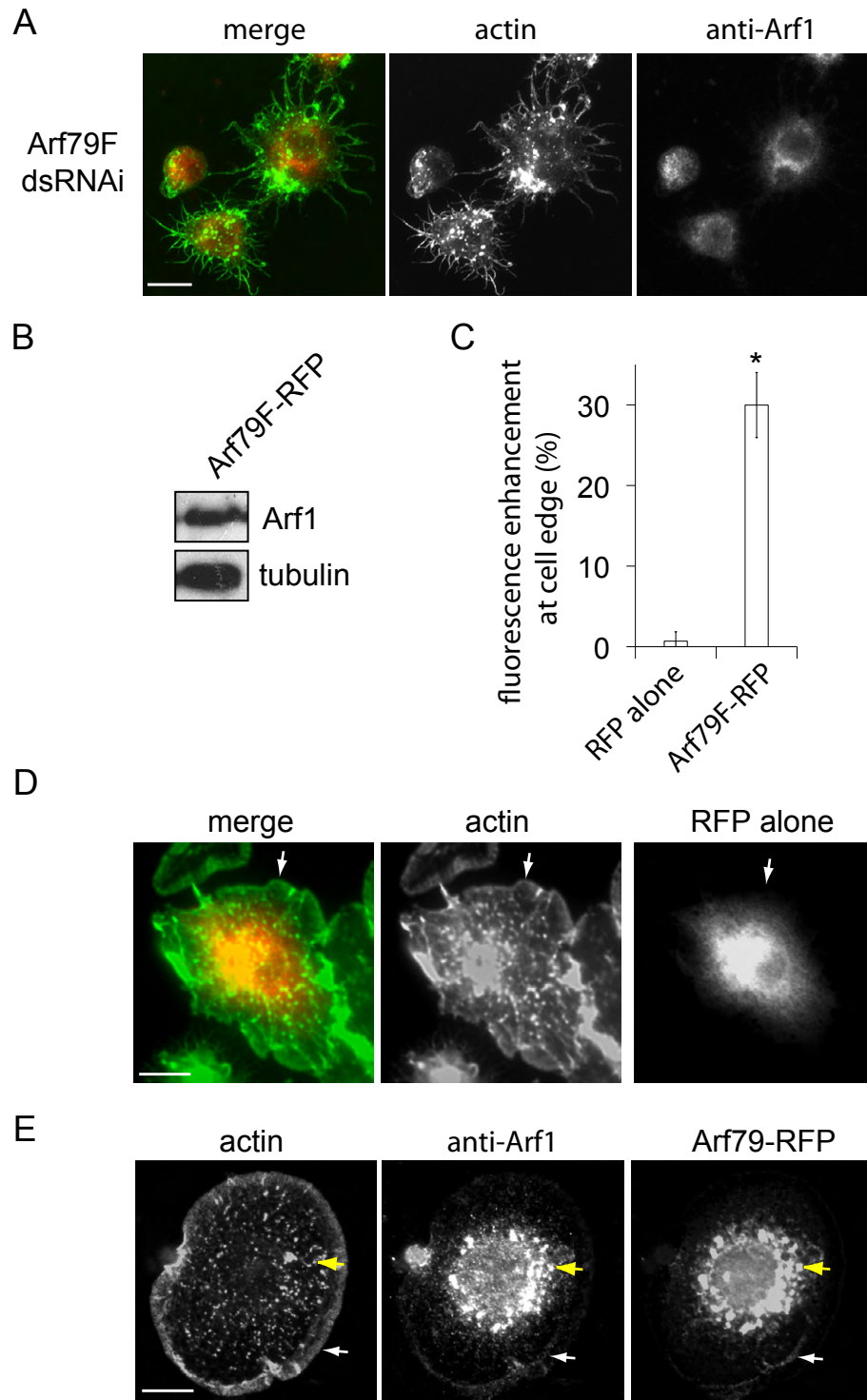
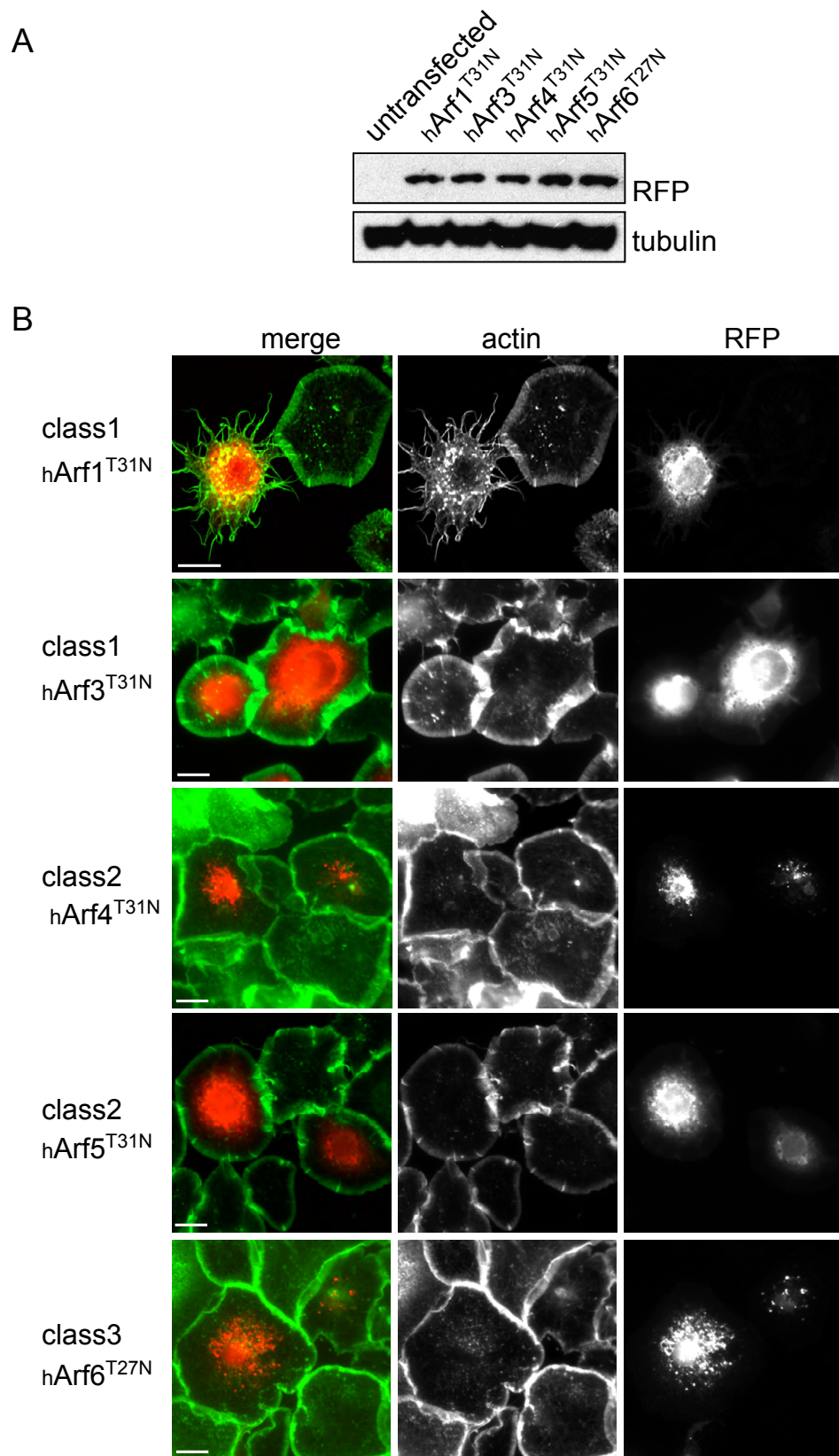


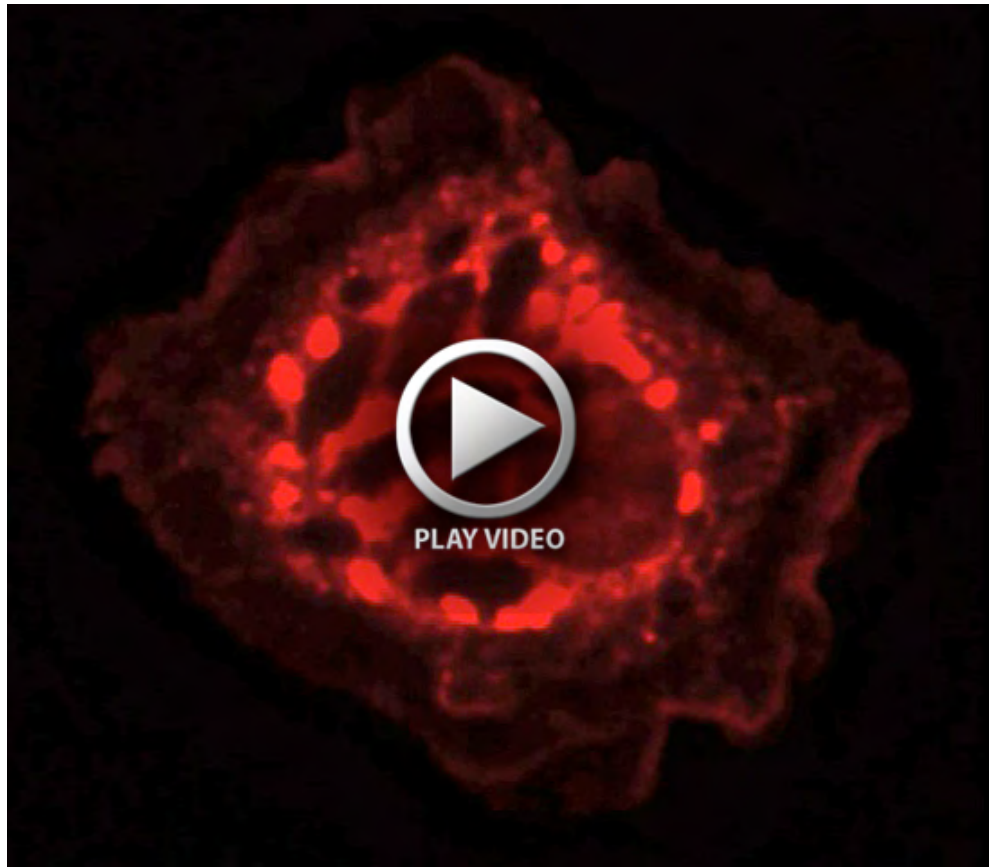
**Fig S1. dsRNAi-mediated knockdown of small GTPases and Sra1.** (A) qRT-PCR quantification of mRNA levels in control- or Arf79F-dsRNAi cells after either 3 or 6 days dsRNA incubation. qRT-PCR quantification of mRNA levels in (B) control-, Sra1-, Rac1- or Arf79F-dsRNAi cells or (C) control-, Arf79F-, Arf102F- or Arf51F-dsRNAi cells after 6 days dsRNA incubation.



**Fig S2. Controls for Arf79F localisation in S2R+ cells.** (A) Arf79F in Arf79F-dsRNA cells visualised with Arf1 antibodies and actin as control (scale bars 10 $\mu$ m). (B) Immunoblot of Arf79F-RFP with antibodies to Arf1 and tubulin as control. (C) Percentage increase in RFP or Arf79F-RFP fluorescence at cell edge relative to cytoplasm. Statistics as Fig 1D. Lamellipodia (white arrows) visualised in cells expressing (D) RFP or (E) Arf79F-RFP by staining actin (scale bars 10 $\mu$ m). Arf79F-RFP stained with Arf1 antibodies confirming Arf79F localisation at the Golgi (yellow) and plasma membrane (white).



**Fig S3. Influence of dominant negative Arf GTPases on lamellipodia formation.** (A) Relative expression of indicated RFP-tagged human Arf dominant negatives determined by immunoblotting whole cell lysates with antibodies to RFP and tubulin as control. (B) Lamellipodia in cells expressing human dominant-negative Arf GTPases (hArf<sup>TN</sup>) visualised by staining actin (scale bars 10µm).



**Movie 1. Arf79F localises to dynamic lamellipodia and macropinosomes.** Live microscopy was used to image S2R+ cells expressing Arf79F-RFP at a rate of 8 frames/second.