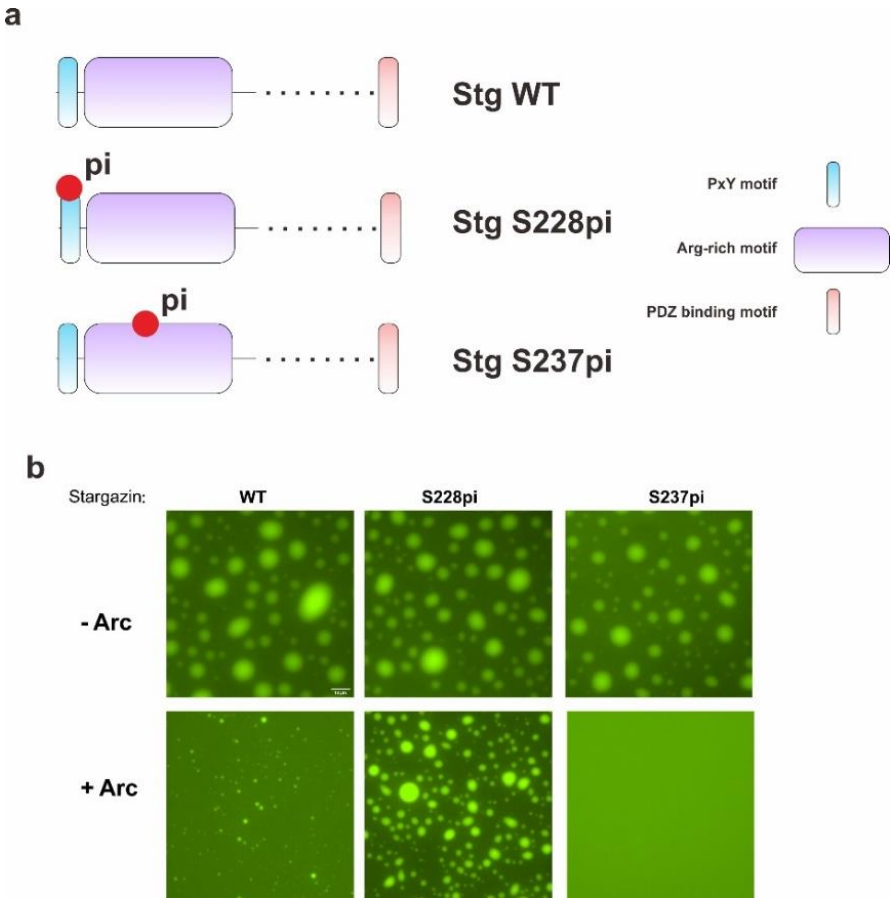

Supplementary information, Fig. S7: Arc selectively disperses condensates formed by PSD-95 with the Stg WT/Stg S237pi peptides, but with the Stg S228pi peptide.

a, schematic diagram showing three synthetic Stg peptides used in the assay. **b**, fluorescence images showing phase separation of the Stg peptides with PSD-95 in the presence or absence of Arc. Concentrations: PSD-95 at 15μM, Stg peptides at 45 μM and Arc at 60 μM. Scale Bar: 10μm.

In these peptides, the three key elements of the Stargazin cytosolic tail (the PxY motif, the Arg-rich sequence and the PDZ-binding-motif) were connected to mimic Stg_CT (i.e., the variable sequence between the Arg-rich sequence and the PDZ-binding motif of Stg tail shown in Figure 3a was removed). In the absence of Arc, the two phosphorylated peptides, similar to the unphosphorylated WT peptide, can phase separate with PSD-95. Addition of Arc dispersed the condensates formed by unphosphorylated peptide (WT) and the Ser237 phosphorylated peptide (S237pi). In contrast, addition of Arc had very little impact on the phase separation of the Ser228pi and PSD-95 mixture.