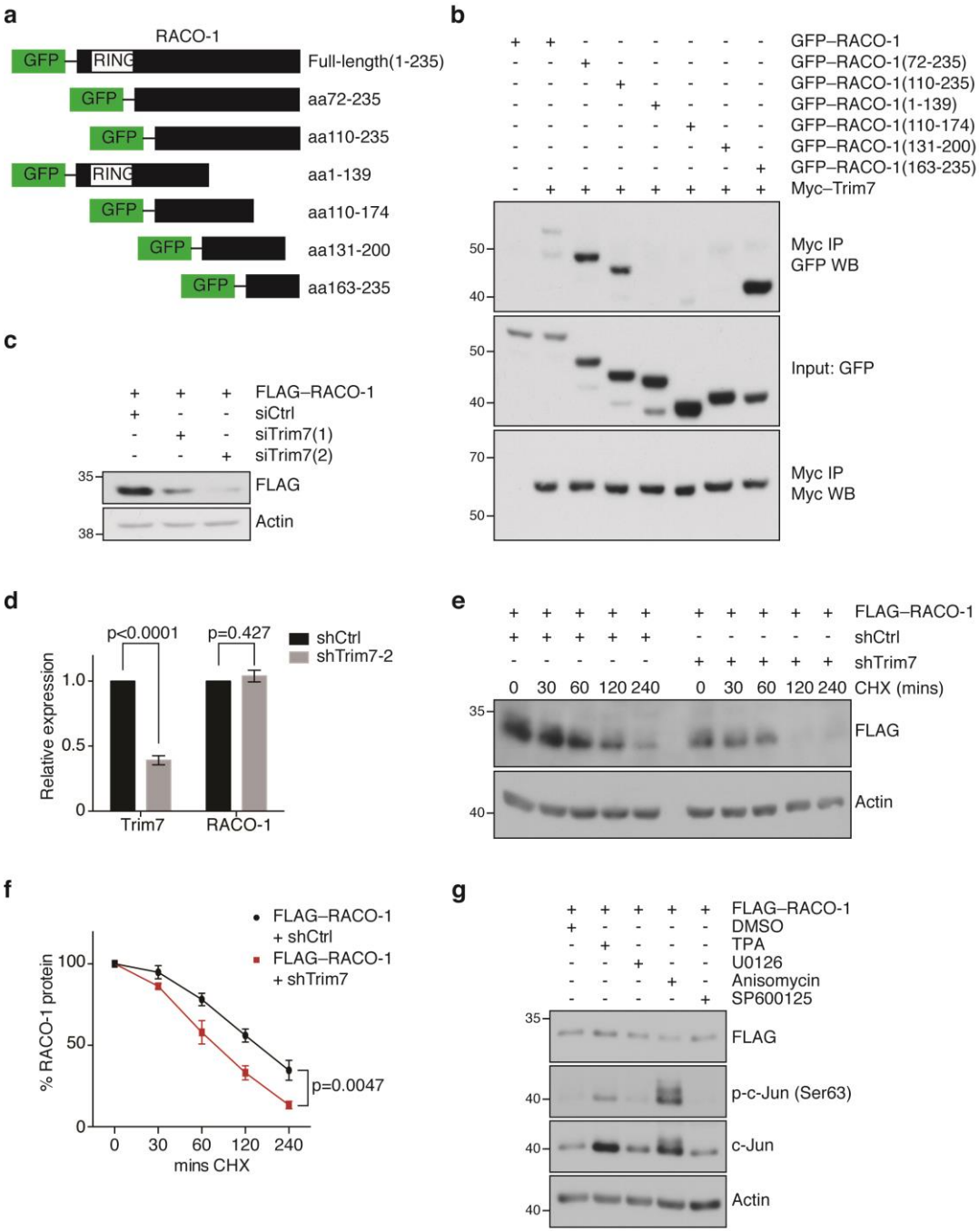
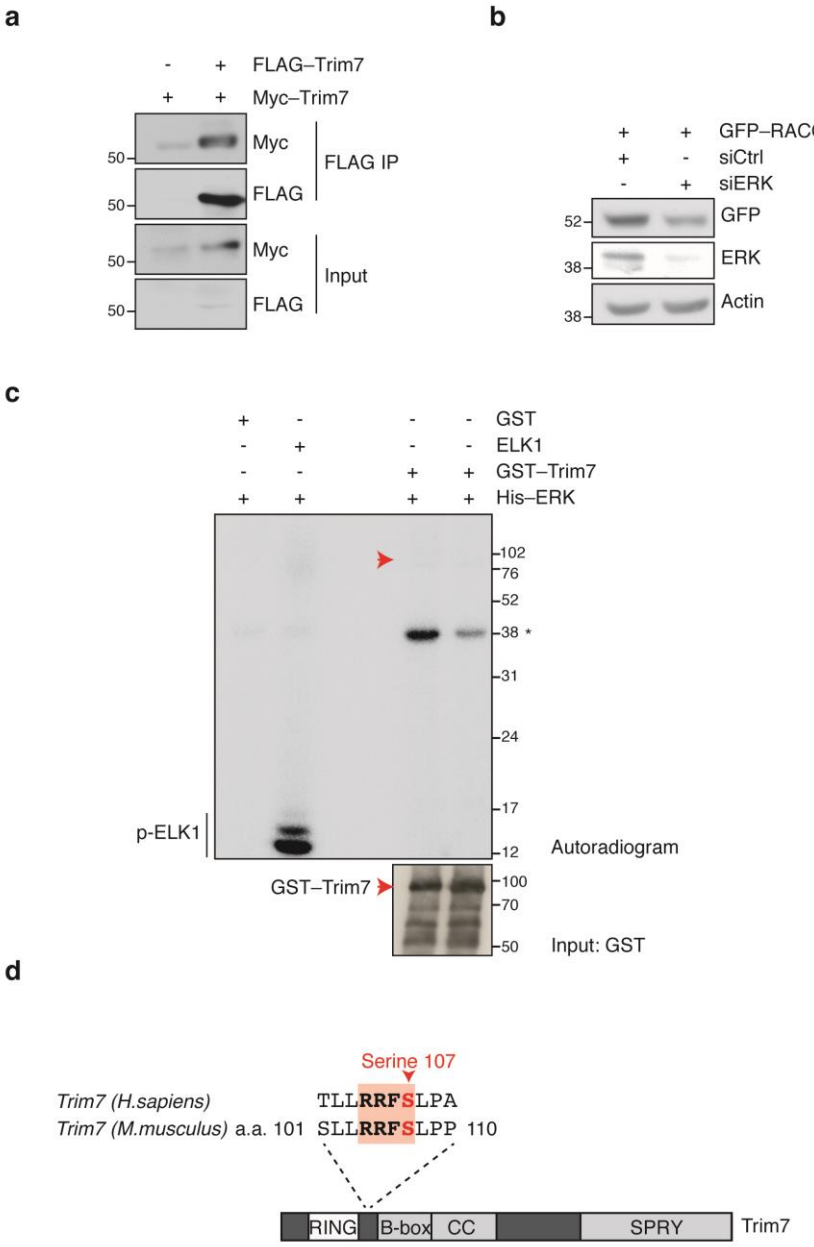
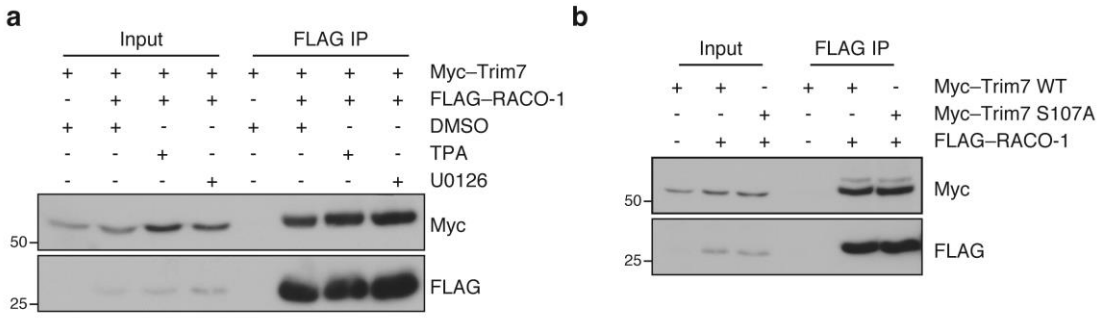


Supplementary Fig.1. Trim7 interacts with and stabilises RACO-1

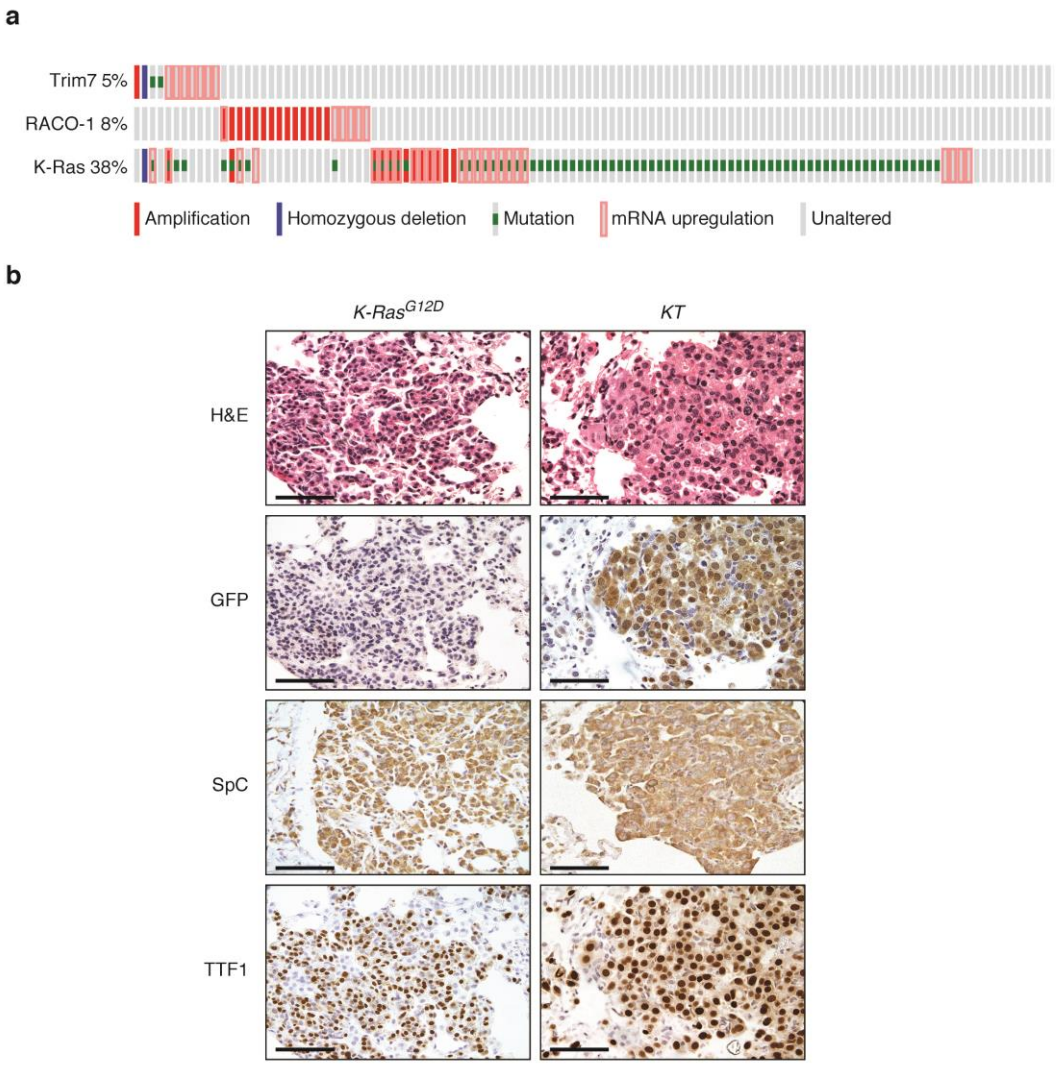
(a) Scheme of GFP–RACO-1 truncation constructs. **(b)** Myc–Trim7 immunoprecipitation showing interaction with the GFP–RACO-1 truncation constructs in (a). **(c)** Western blot showing FLAG–RACO-1 levels in cells transfected with control siRNA or two independent siRNA constructs against Trim7. Actin is shown as loading control. **(d)** Quantitative PCR showing levels of Trim7 and RACO-1 mRNA in H727 cells transiently transfected with the shTrim7 construct used in Figure 1. **(e)** Western blots showing the degradation of FLAG–RACO-1 over time in the presence of cycloheximide (CHX), in cells transfected with control shRNA (shCtrl) or shRNA targeting Trim7. **(f)** Quantification of (e) and 2 other similar CHX time course experiments showing RACO-1 stability. **(g)** Western blots showing FLAG–RACO-1 levels in cells treated with DMSO (vehicle), TPA, MEK inhibitor (U0126), anisomycin (to activate JNK), or JNK inhibitor (SP600125). Phospho-c-Jun (Ser63) is shown as a control for JNK activity.



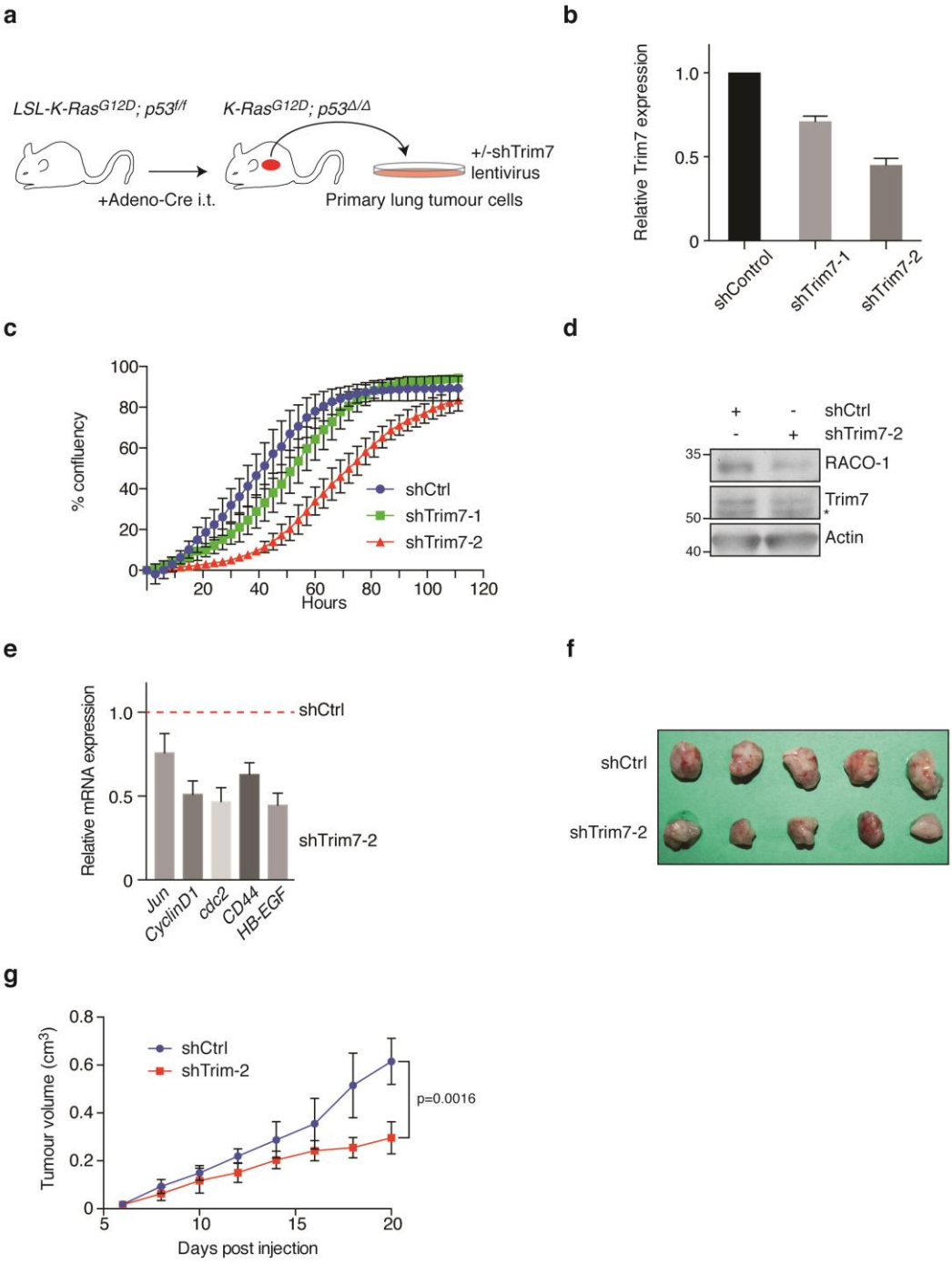
Supplementary Fig.2. Trim7 forms homodimers, and ERK does not phosphorylate Trim7
(a) Co-immunoprecipitation of Myc–Trim7 with FLAG–Trim7 in cells expressing both constructs. **(b)** Western blot showing GFP–RACO-1 levels in cells transfected with control siRNA or siRNA against ERK. Actin is shown as loading control. **(c)** In vitro kinase assay showing phosphorylation of Elk1 but not GST–Trim7 by ERK2. Band at 38kDa (*) is non-specific contaminant from GST-Trim7 prep. Red arrowhead indicates running position of GST–Trim7. **(d)** Scheme of Trim7 protein, showing amino acid alignment for conserved phosphorylation site at S107.



Supplementary Fig.3. MEK-induced phosphorylation of Trim7 does not affect its interaction with RACO-1.
(a) Coimmunoprecipitation of Myc–Trim7 with FLAG–RACO-1 from cells treated with DMSO (vehicle), TPA to activate MEK, or MEK inhibitor (U0126). **(b)** Coimmunoprecipitation of Myc–Trim7 wild-type (WT) or non-phosphorylatable mutant (S107A) with FLAG–RACO-1.

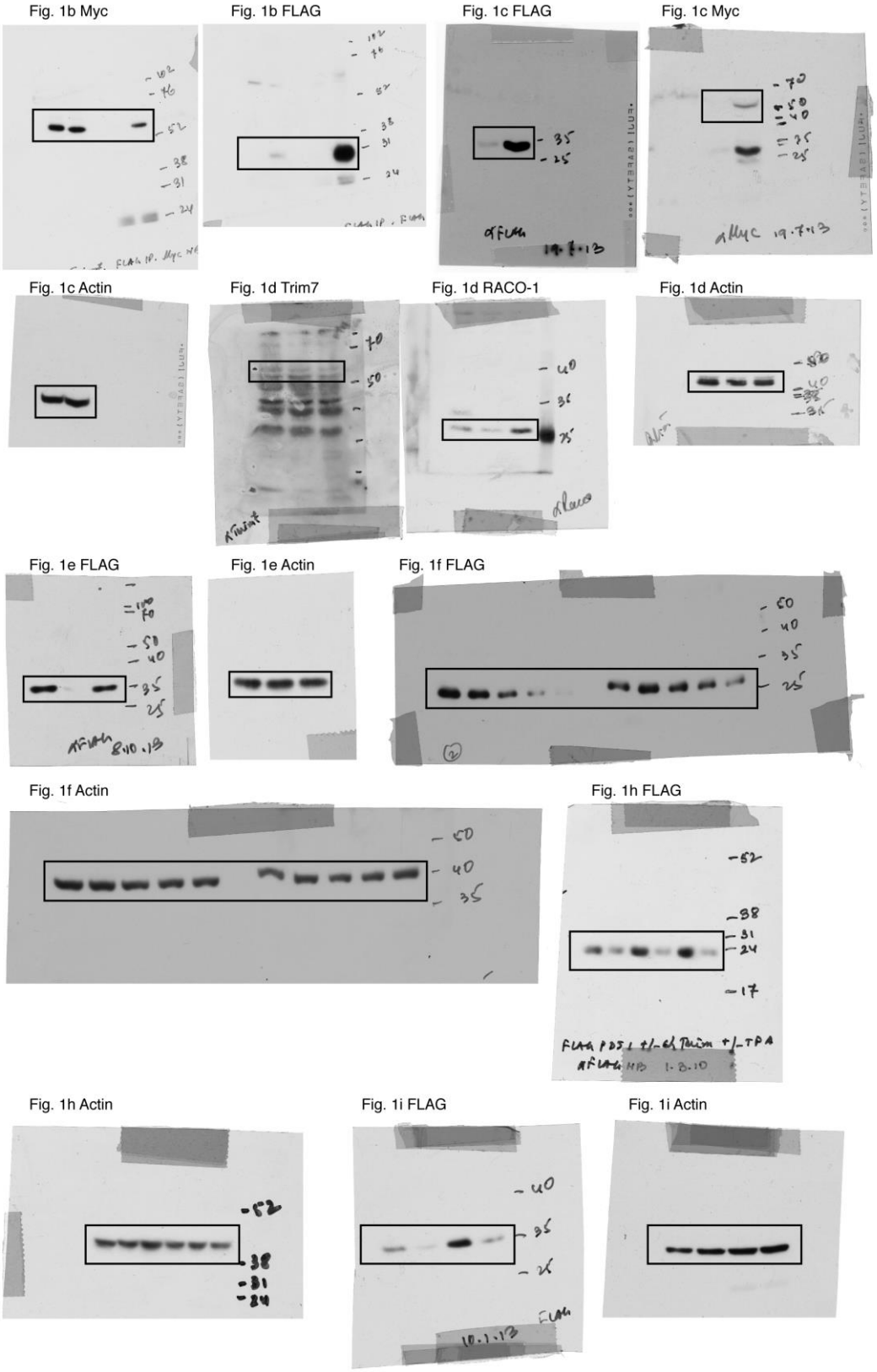


Supplementary Fig.4. Trim7 is overexpressed in 5% of human lung adenocarcinomas and cooperates with K-RasG12D to form lung adenocarcinomas in mice.
(a) Tumour sequencing and expression data from cBioPortal showing incidence of genetic alterations in *Trim7*, *RACO-1* and *K-Ras* in 230 human lung adenocarcinomas. Each column represents one tumour (some unaltered tumours are omitted for clarity). The percentage of tumours showing changes is indicated for each gene at left. Publically available data from TCGA (Comprehensive molecular profiling of lung adenocarcinoma, Nature 2014). **(b)** H&E staining and immunohistochemistry for GFP, surfactant protein C (SpC) and TTF1 in tumour sections from *K-Ras*^{G12D} and *KT* mice (40X magnification). Scale bars indicate 100μm.



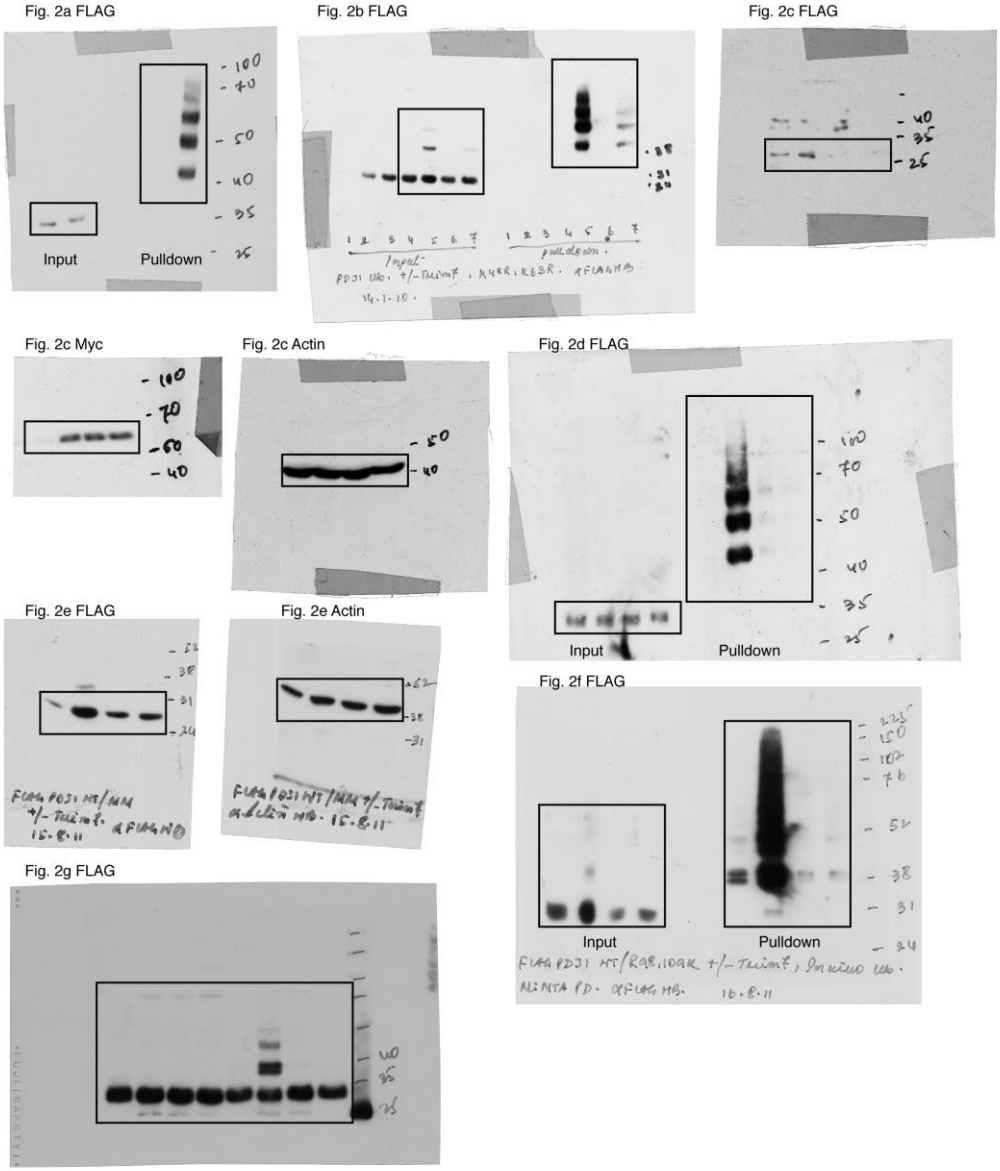
Supplementary Fig.5. shTrim7 inhibits growth of *KP* primary murine lung tumour cells.
(a) Scheme explaining the generation of *KP* primary tumour cells ±shTrim7. i.t., intratracheal intubation. **(b)** Quantitative PCR showing the level of Trim7 knockdown using two different shRNA constructs. **(c)** Time course showing decreased rate of proliferation in Trim7-depleted cells, correlating with the extent of Trim7 knockdown. Cell confluency was measured by IncuCyte time-lapse microscopy. **(d)** Western blot showing reduced RACO-1 protein levels in *KP* cells with shTrim7 compared with control cells. **(e)** q-PCR showing expression of Jun target genes in shTrim7 cells. **(f)** Tumours from shCtrl and shTrim7 *KP* cells injected subcutaneously into NOD/SCID mice. **(g)** Measurement of tumour volume from shCtrl and shTrim7 *KP* cells over time.

a



Supplementary Fig.6. Uncropped blots.
(a) Blots from Figure 1.

b



Supplementary Fig.6. Uncropped blots.
(b) Blots from Figure 2.

c

Fig. 3b pCREB and FLAG

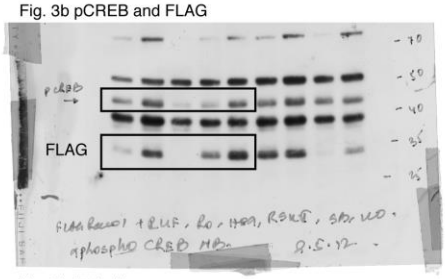


Fig. 3b total CREB

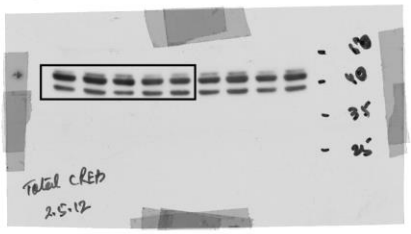


Fig. 3b Tubulin

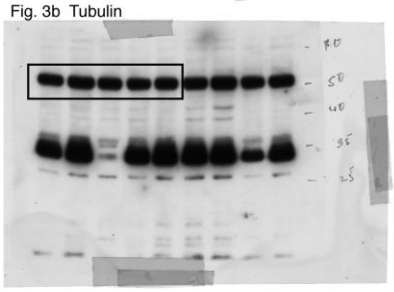


Fig. 3c FLAG and Tubulin

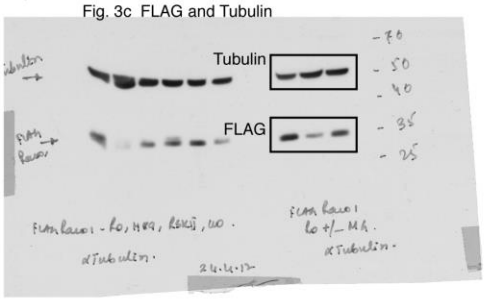


Fig. 3d RACO-1

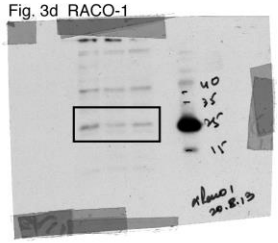


Fig. 3d Actin

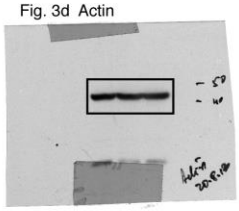


Fig. 3e RACO-1

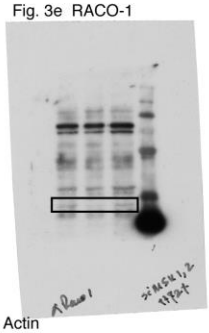


Fig. 3e MSK1

Fig. 3e MSK2

Fig. 3e Actin

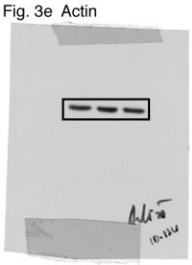
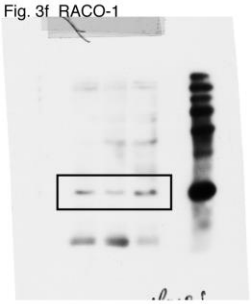


Fig. 3f Actin

Fig. 3f RACO-1



Supplementary Fig.6. Uncropped blots.
(c) Blots from Figure 3b-f.

d

Fig. 3g FLAG low exposure (RACO-1)

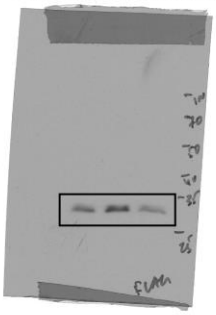


Fig. 3g FLAG high exposure (MSK1)

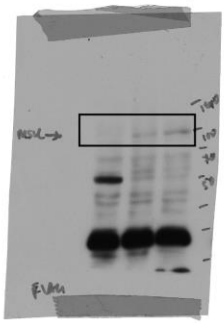


Fig. 3g Actin

Fig. 3g pCREB

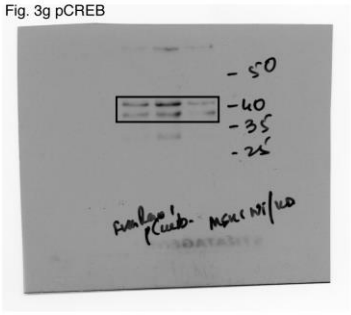


Fig. 3g total CREB

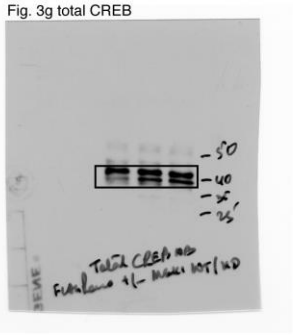


Fig. 3h FLAG low exposure (RACO-1)

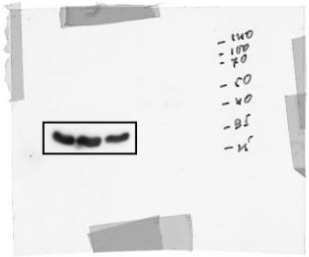


Fig. 3h FLAG high exposure
(MSK1 input/ Ub–RACO-1 pulldown)

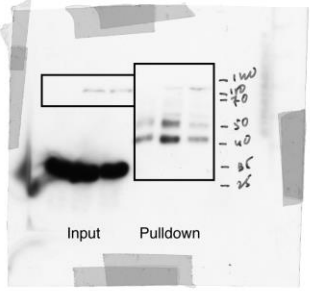


Fig. 3i FLAG

Fig. 3j FLAG

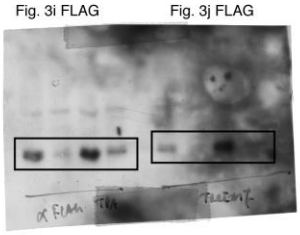
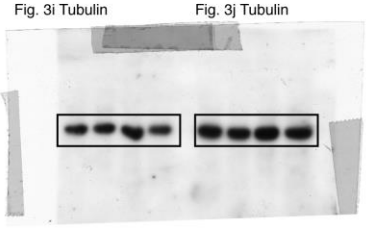


Fig. 3i Tubulin

Fig. 3j Tubulin



Supplementary Fig.6. Uncropped blots.
(d) Blots from Figure 3g-j.

e

Fig. 4a Autoradiograph low exposure (CREB)

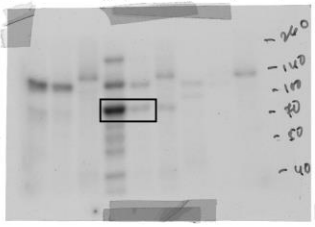


Fig. 4a Autoradiograph high exposure (Trim7)

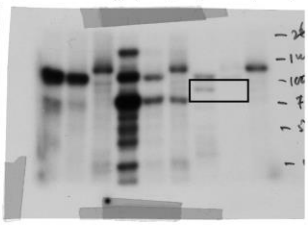


Fig. 4a GST Input

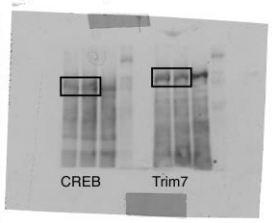


Fig. 4b Autoradiograph

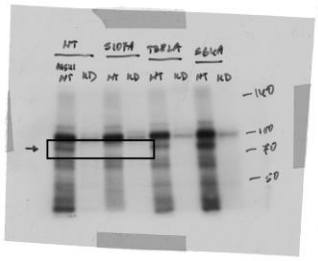


Fig. 4b GST input

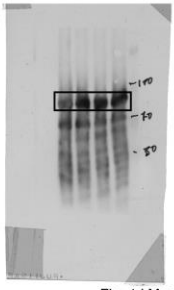


Fig. 4c pS107 Trim7

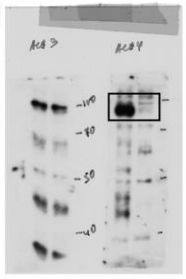


Fig. 4c GST

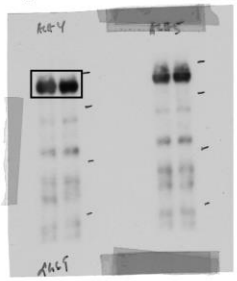


Fig. 4d pS107 Trim7

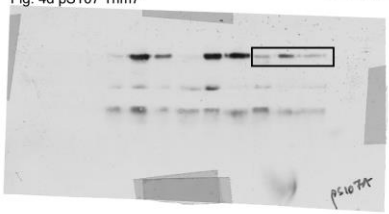


Fig. 4d Myc

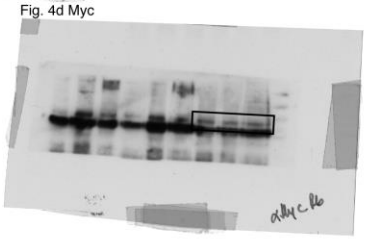


Fig. 4e FLAG (low exposure)

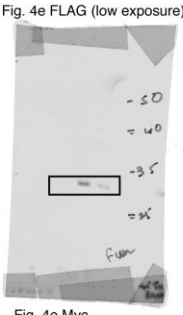


Fig. 4e FLAG (high exposure)

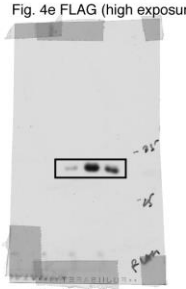


Fig. 4f FLAG (pulldown)

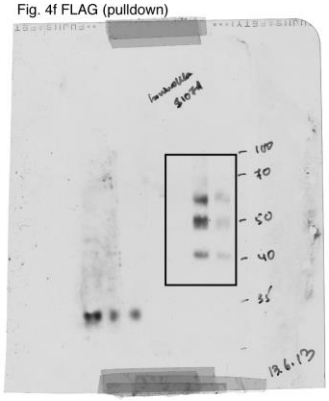


Fig. 4f FLAG (input)

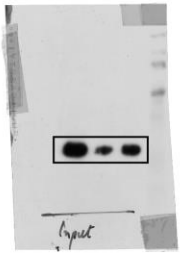


Fig. 4e Myc

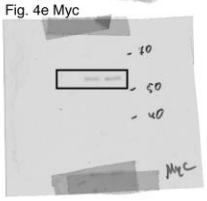


Fig. 4e Actin

Supplementary Fig.6. Uncropped blots.
(e) Blots from Figure 4.

f

Fig. 5c RACO-1

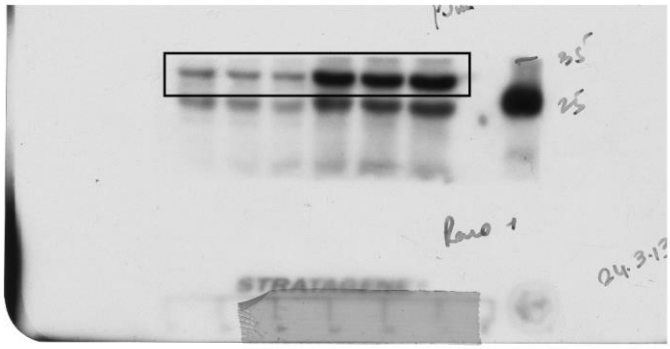
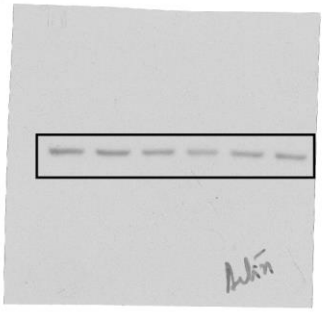


Fig. 5c Actin



Supplementary Fig.6. Uncropped blots.
(f) Blots from Figure 5.

g

Fig. S1b GFP (IP)

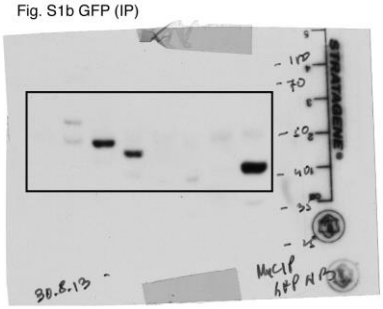


Fig. S1b GFP (input)

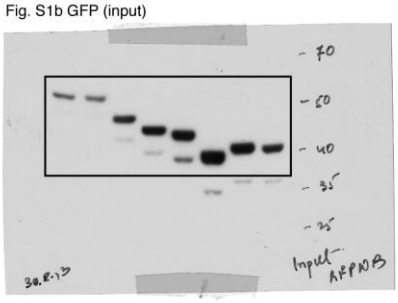


Fig. S1b Myc (IP)

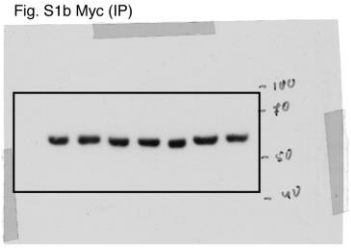


Fig. S1c FLAG

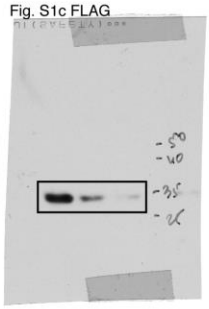


Fig. S1c Actin

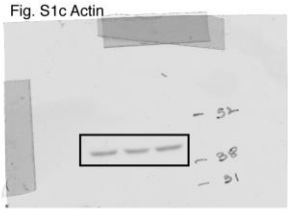


Fig. S1e FLAG

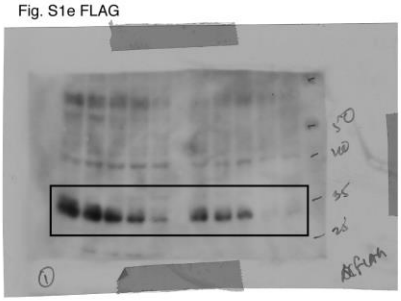


Fig. S1e Actin

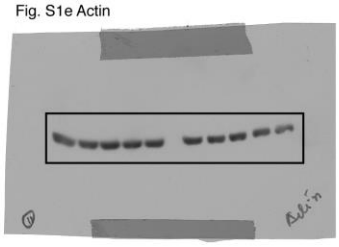


Fig. S1g FLAG

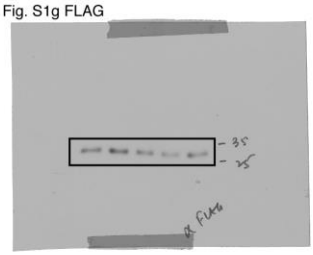


Fig. S1g p-c-Jun (Ser63)

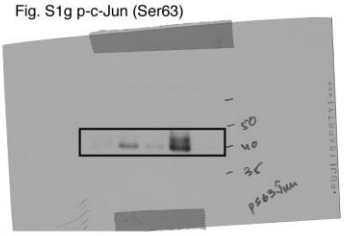


Fig. S1g Total c-Jun

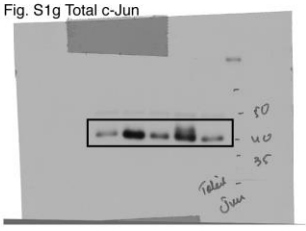
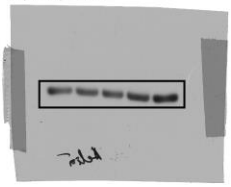


Fig. S1g Actin



Supplementary Fig.6. Uncropped blots.
(g) Blots from Figure S1.

h

Fig. S2a FLAG

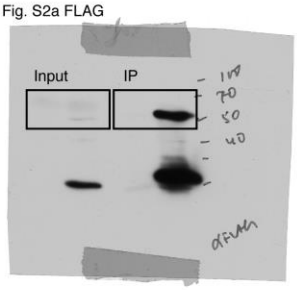


Fig. S2a Myc (IP)

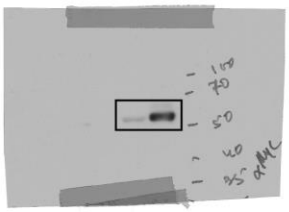


Fig. S2a Myc (Input)

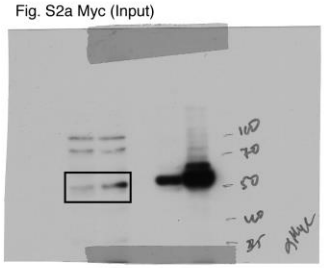


Fig. S2b GFP

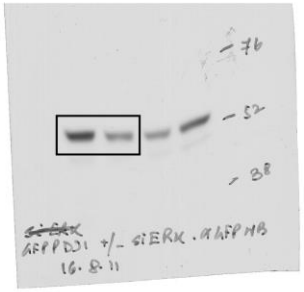


Fig. S2b ERK

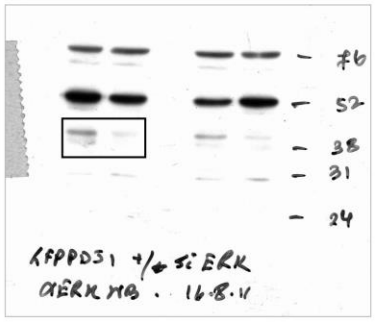


Fig. S2b Actin

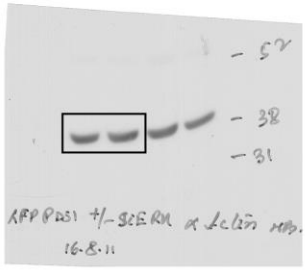


Fig. S2c Autoradiogram

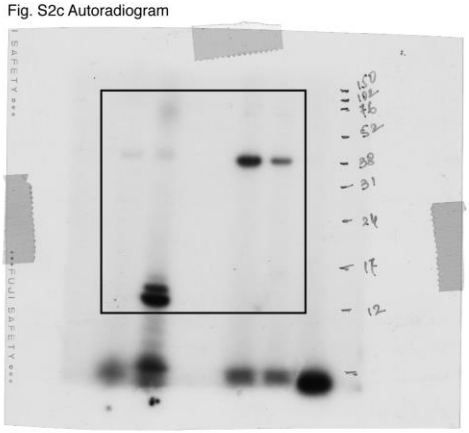
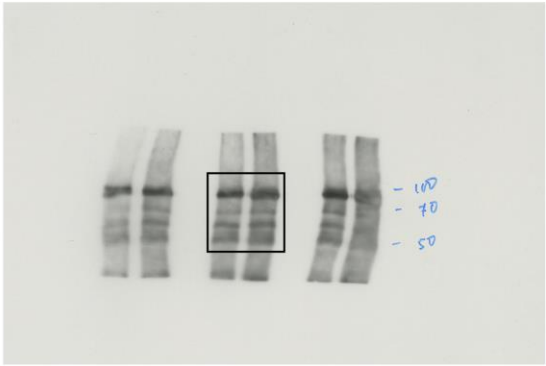


Fig. S2c GST Input



Supplementary Fig.6. Uncropped blots.
(h) Blots from Figure S2.

i

Fig. S3a Myc

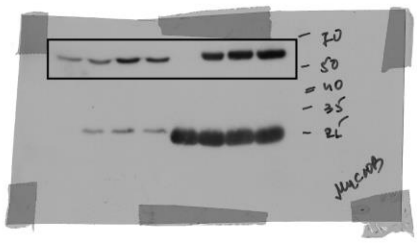


Fig. S3a FLAG

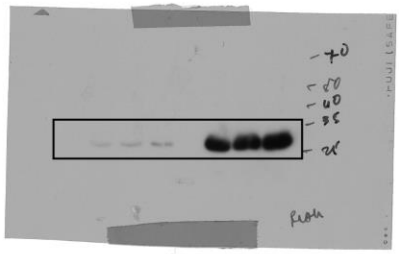


Fig. S3b Myc

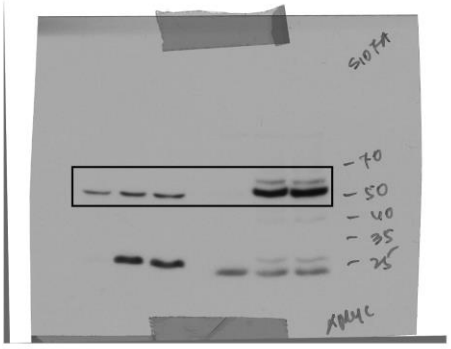


Fig. S3b FLAG

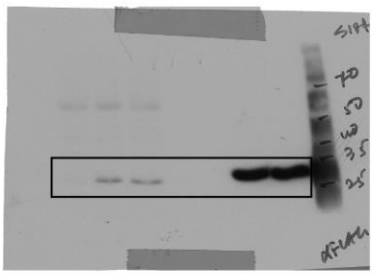


Fig. S5d RACO-1

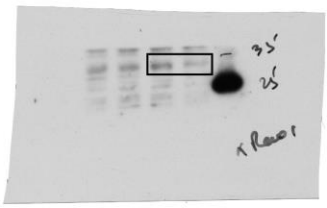


Fig. S5d Trim7

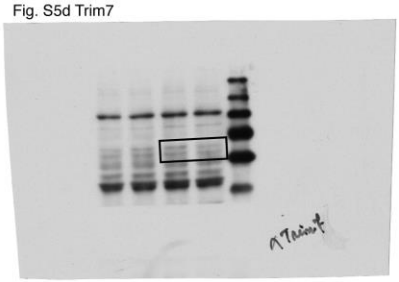
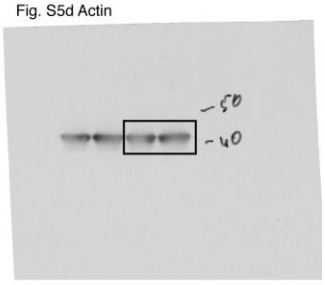


Fig. S5d Actin



Supplementary Fig.6. Uncropped blots.
(i) Blots from Figure S3 and S5.