Appendix

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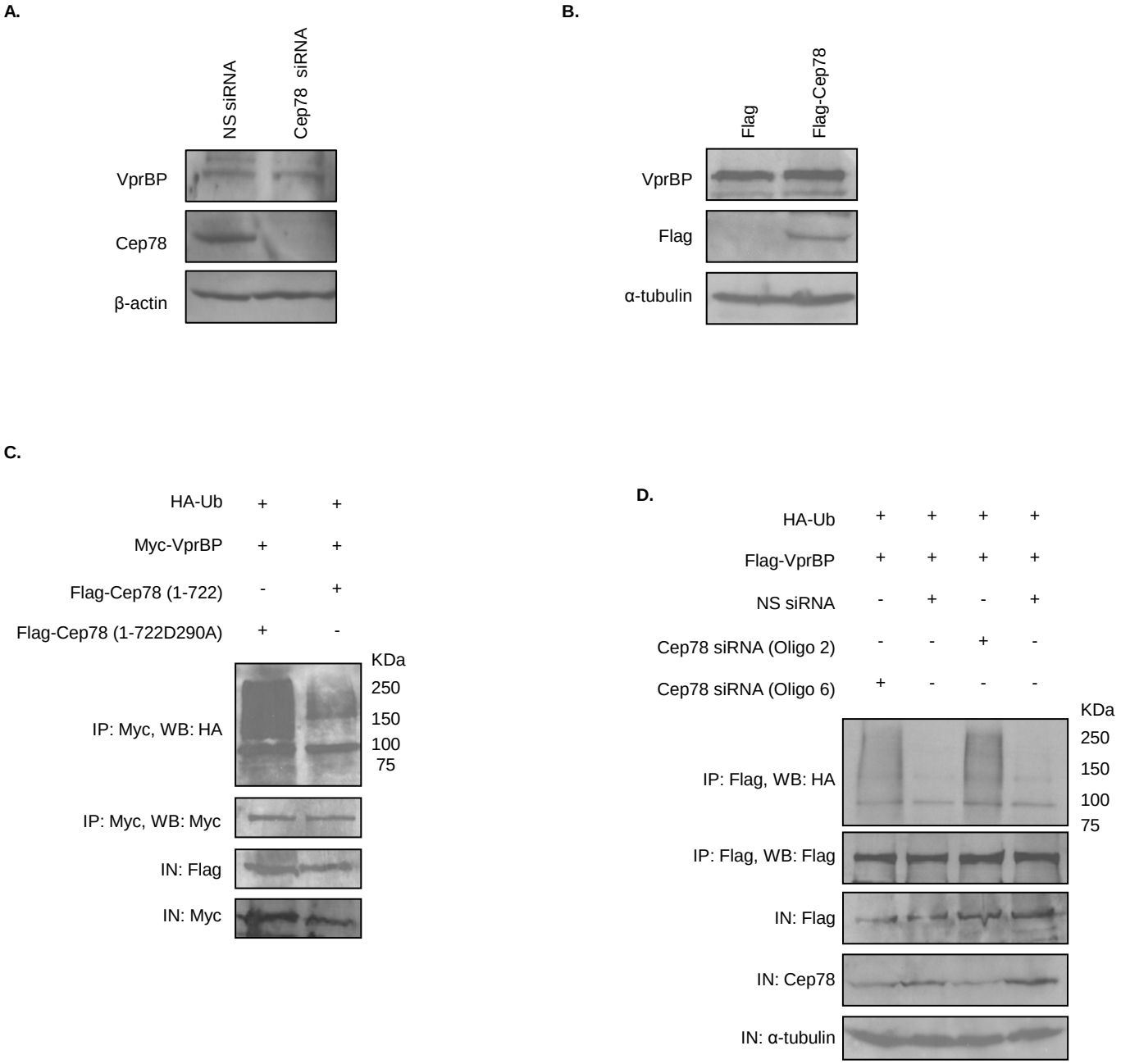
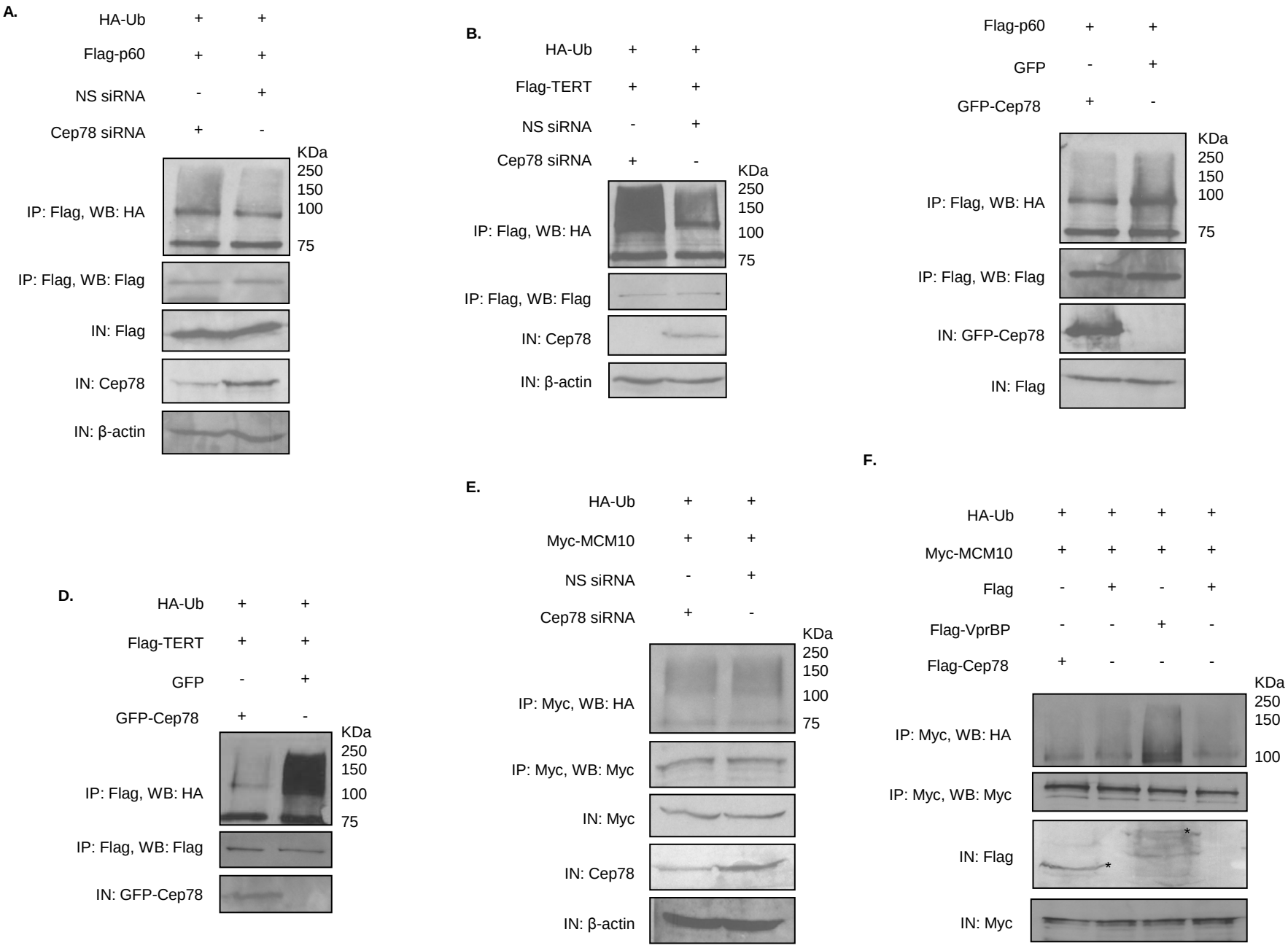
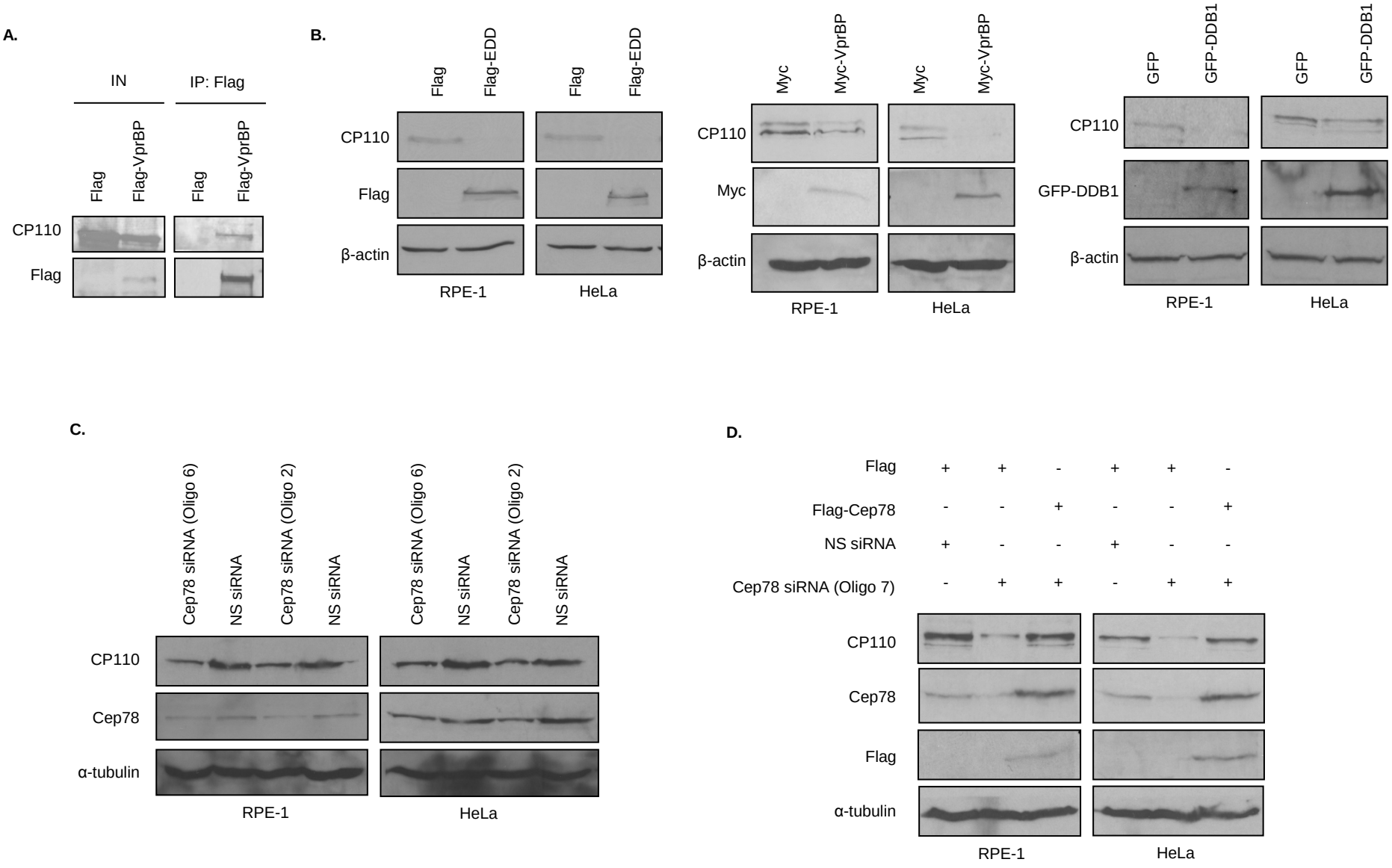
Appendix Figure S1



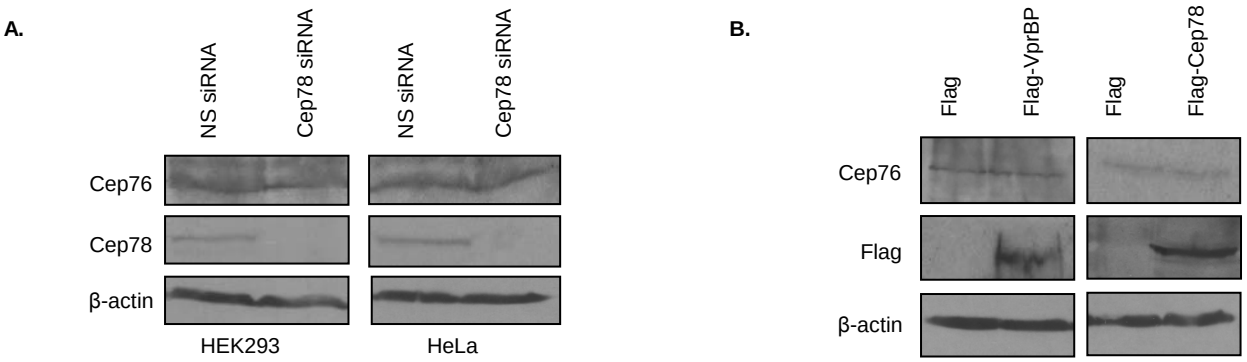
Appendix Figure S2



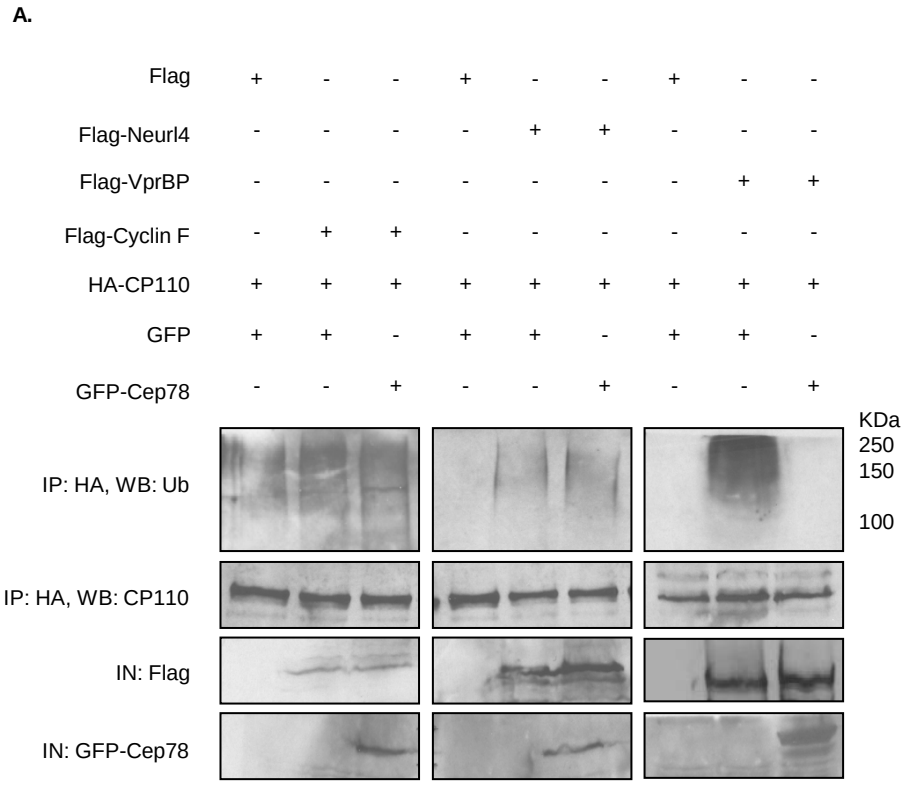
Appendix Figure S3

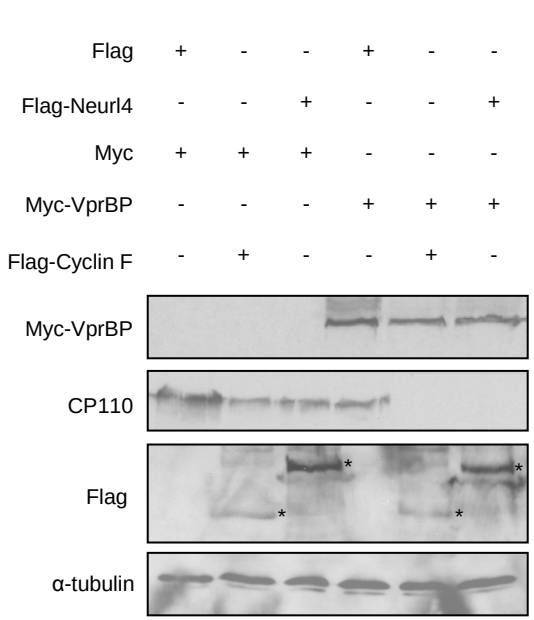


Appendix Figure S4

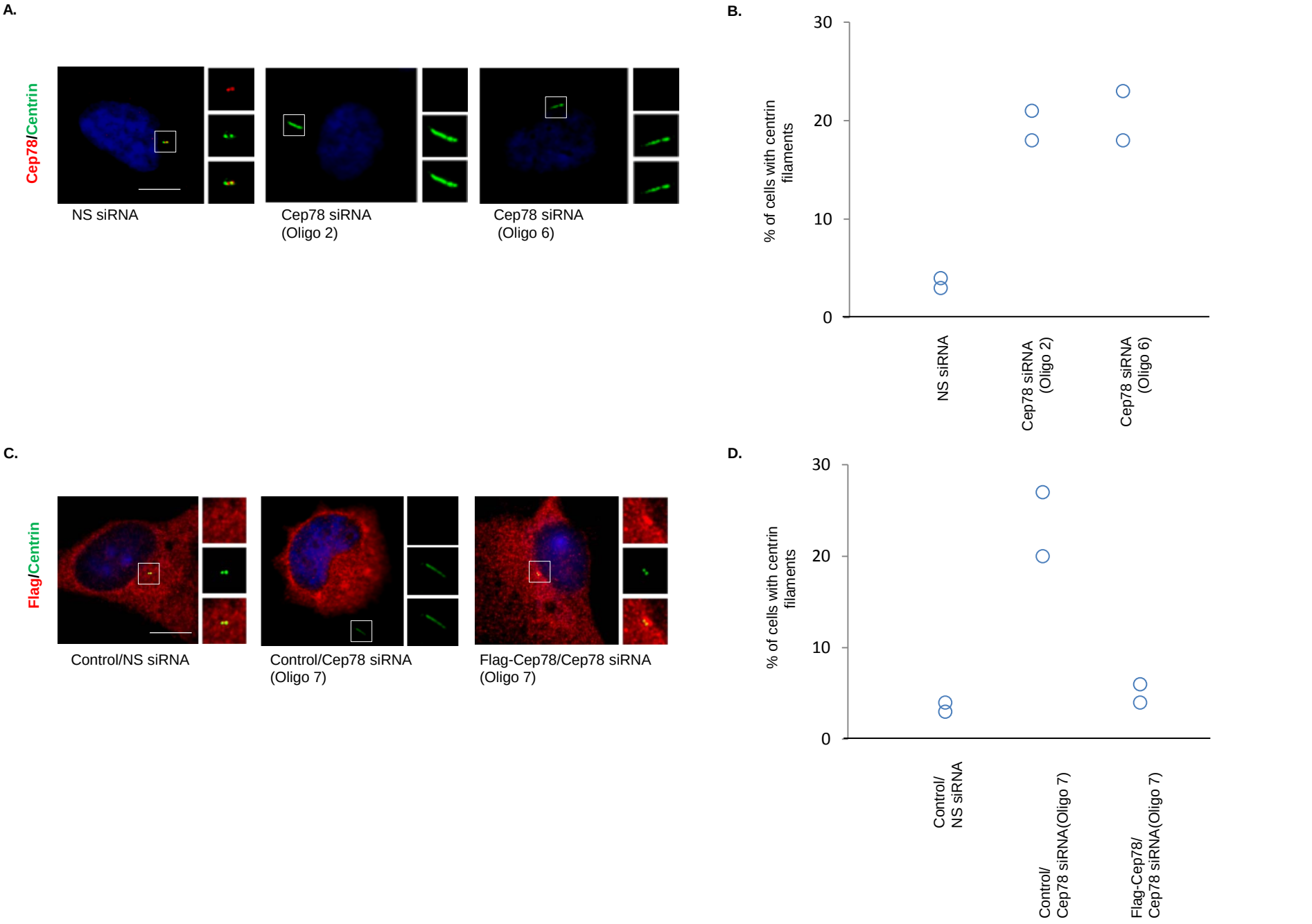


Appendix Figure S5





Appendix Figure S6



Appendix Figure S1: Depletion or expression Cep78 had no effect on VprBP protein levels and Cep78 inhibits EDD-DYRK2-DDB1^{VprBP}

(A) HEK293 cells were transfected with NS siRNA or Cep78 siRNA. Lysates were Western blotted with the indicated antibodies. β-actin was used as a loading control. **(B)** Flag or Flag-Cep78 was expressed in HEK293 cells. Lysates were Western blotted with the indicated antibodies. α-tubulin was used as a loading control. **(C)** Flag-Cep78 wild type (1-722) or mutant (1-722D290A) was co-expressed with HA-Ub and Myc-VprBP in HEK293 cells. Lysates were immunoprecipitated with an anti-Myc antibody without SDS and Western blotted with the indicated antibodies. IN, input. **(D)** HEK293 cells were transfected with NS siRNA or Cep78 siRNA (oligo 2 or oligo 6) and constructs expressing Flag-VprBP and HA-Ub. Lysates were immunoprecipitated with an anti-Flag antibody without SDS and Western blotted with the indicated antibodies. IN, input. α-tubulin was used as a loading control.

Appendix Figure S2: Cep78 modulates ubiquitination of two EDD-DYRK2-DDB1^{VprBP} substrates katanin p60 and TERT but not a CRL4^{VprBP} substrate MCM10

(**A, B**) HEK293 cells were transfected with NS siRNA or Cep78 siRNA and constructs expressing HA-Ub and Flag-katanin p60 or Flag-TERT. Lysates were immunoprecipitated with an anti-Flag antibody in 1% SDS and Western blotted with the indicated antibodies. IN, input. β-actin was used as a loading control. (**C, D**) HEK293 cells were transfected with constructs expressing HA-Ub, Flag-katanin p60 or Flag-TERT, and GFP or GFP-Cep78. Lysates were immunoprecipitated with an anti-Flag antibody in 1% SDS and Western blotted with the indicated antibodies. IN, input. (**E**) HEK293 cells were transfected with NS siRNA or Cep78 siRNA and constructs expressing HA-Ub and Myc-MCM10. Lysates were immunoprecipitated with an anti-Myc antibody in 1% SDS and Western blotted with the indicated antibodies. IN,

input. β-actin was used as a loading control. (**F**) HEK293 cells were transfected with constructs expressing HA-Ub, Myc-MCM10, and Flag, Flag-Cep78 or Flag-VprBP. Lysates were immunoprecipitated with an anti-Myc antibody in 1% SDS and Western blotted with the indicated antibodies. IN, input. ***** denotes bands corresponding to the expected proteins.

Appendix Figure S3: CP110 interacts with VprBP and its protein levels are dependent on EDD-DYRK2-DDB1^{VprBP} and Cep78

(**A**) Flag or Flag-VprBP was expressed in HEK293 cells. Lysates were immunoprecipitated with an anti-Flag antibody and Western blotted with the indicated antibodies. IN, input. (**B**) RPE-1 or HeLa cells were transfected with construct expressing Myc, Myc-VprBP, Flag, Flag-EDD, GFP or GFP-DDB1. Lysates were Western blotted with the indicated antibodies. β-actin was used as a loading control. (**C**) RPE-1 or HeLa cells were transfected with NS siRNA or Cep78 siRNA (oligo 2 or 6). α-tubulin was used as a loading control. (**D**) RPE-1 or HeLa cells were transfected with NS siRNA or Cep78 siRNA that targets the 3'UTR of Cep78 mRNA (oligo 7) and construct expressing Flag or Flag-Cep78. Lysates were Western blotted with the indicated antibodies. α-tubulin was used as a loading control.

Appendix Figure S4: Cep76 protein levels are not affected by EDD-DYRK2-DDB1^{VprBP} or Cep78

(**A**) HEK293 and HeLa cells were transfected with NS siRNA or Cep78 siRNA. Lysates were Western blotted with the indicated antibodies. β-actin was used as a loading control. (**B**) Flag, Flag-Cep78 or Flag-VprBP was expressed in HEK293 cells. Lysates were Western blotted with the indicated antibodies. β-actin was used as a loading control.

Appendix Figure S5: Cep78 regulates CP110 ubiquitination and protein levels through EDD-DYRK2-DDB1^{VprBP}

(A) HEK293 cells were transfected with constructs expressing Flag-Cyclin F, Flag-Neurl4 or Flag-VprBP, GFP or GFP-Cep78, and HA-CP110. Lysates were immunoprecipitated with an anti-HA antibody in 1% SDS and Western blotted with the indicated antibodies. IN, input. (**B**) Flag-Cyclin F, Flag-Neurl4 and Myc-VprBP were expressed singly or in combination in HeLa cells. Lysates were Western blotted with the indicated antibodies. α-tubulin was used as a loading control.***** denotes bands corresponding to the expected proteins.

Appendix Figure S6: Cep78 controls CP110-dependent centriole elongation in non-ciliated cells

(A) HeLa cells transfected with NS siRNA and Cep78 siRNA (oligo 2 or oligo 6) were stained with DAPI (blue) and antibodies against Cep78 (red) and centrin (green). Scale bar, 1 μm. (**C**) HeLa cells were transfected with NS siRNA or Cep78 siRNA that targets the 3'UTR of Cep78 mRNA (oligo 7) and construct expressing an irrelevant Flag-tagged protein (control) or Flag-Cep78. Cells were stained with DAPI (blue) and antibodies against Flag (red) and centrin (green). Scale bar, 1 μm. (**B and D**) The percentage of cells with elongated centrioles (centrin filaments) was determined. At least 100 cells were scored in each condition and two independent experiments were performed.