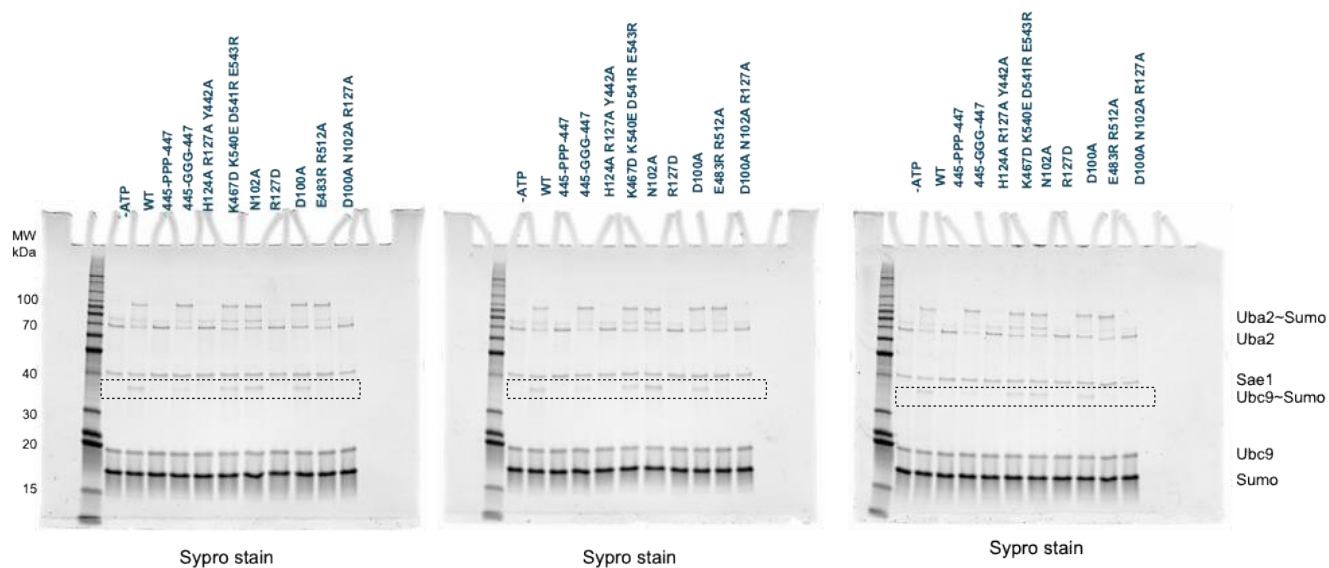


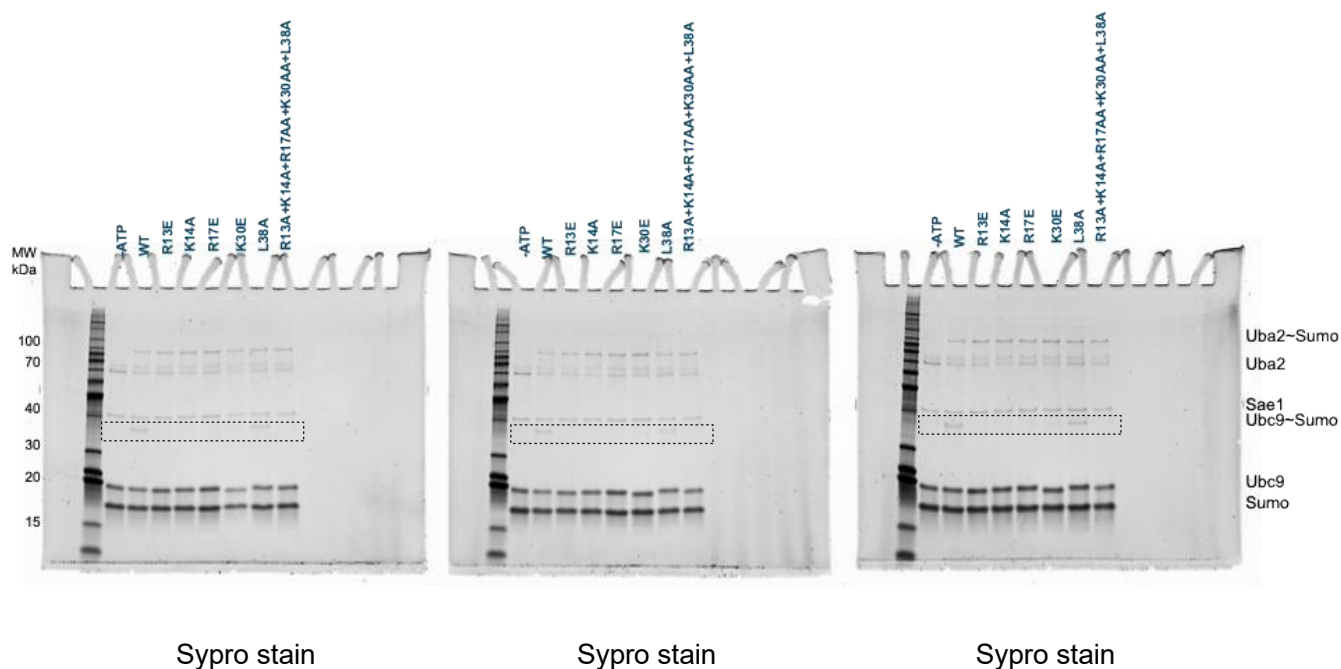
Uncropped gel images for Extended Data Figure. 4

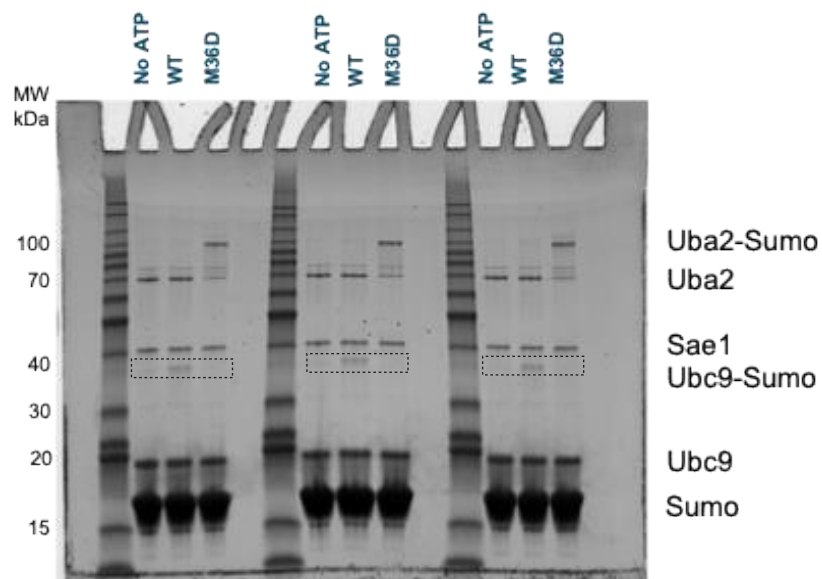
UBA2 mutants



Extended Data Fig. 4a

UBC9 mutants for UFD:UBC9 interface

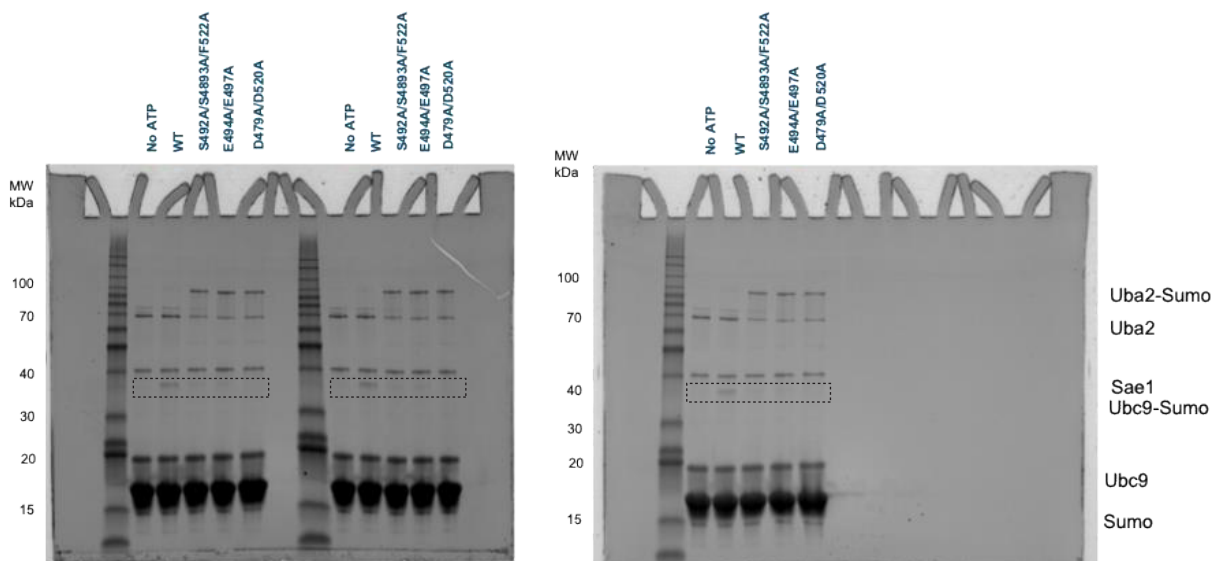




Sypro stain

Extended Data Fig. 4b

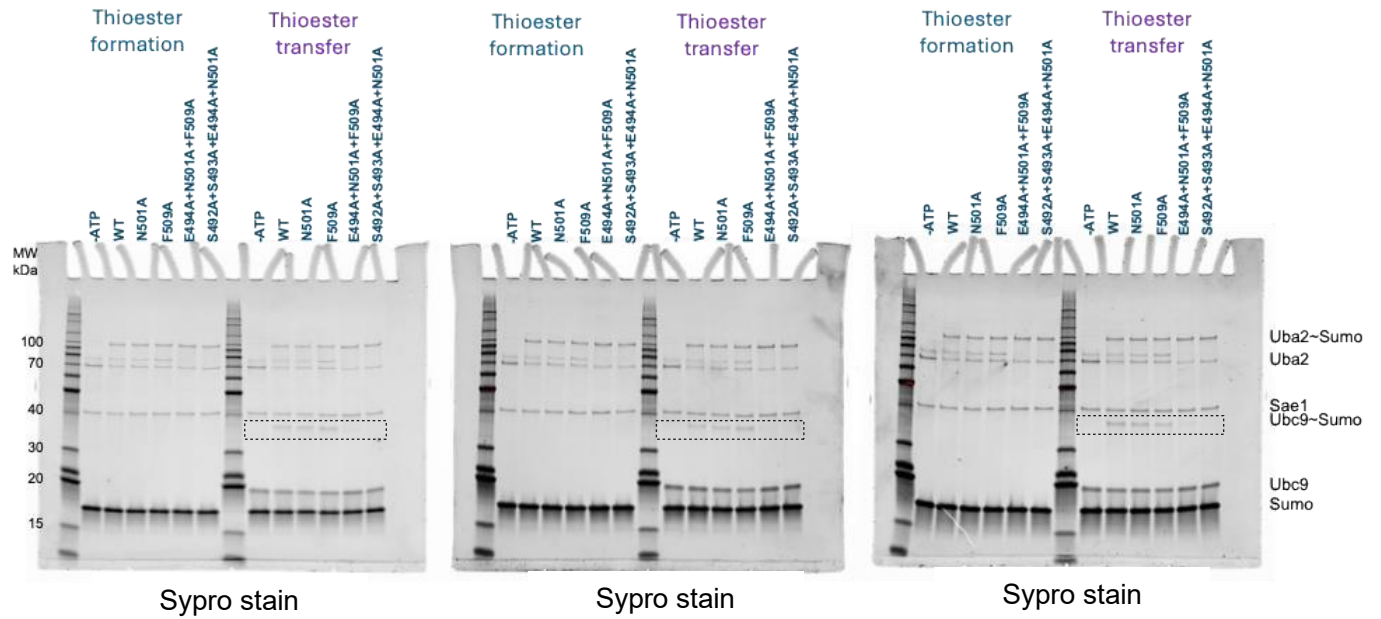
UFD mutants for UFD:UBC9 interface



Sypro stain

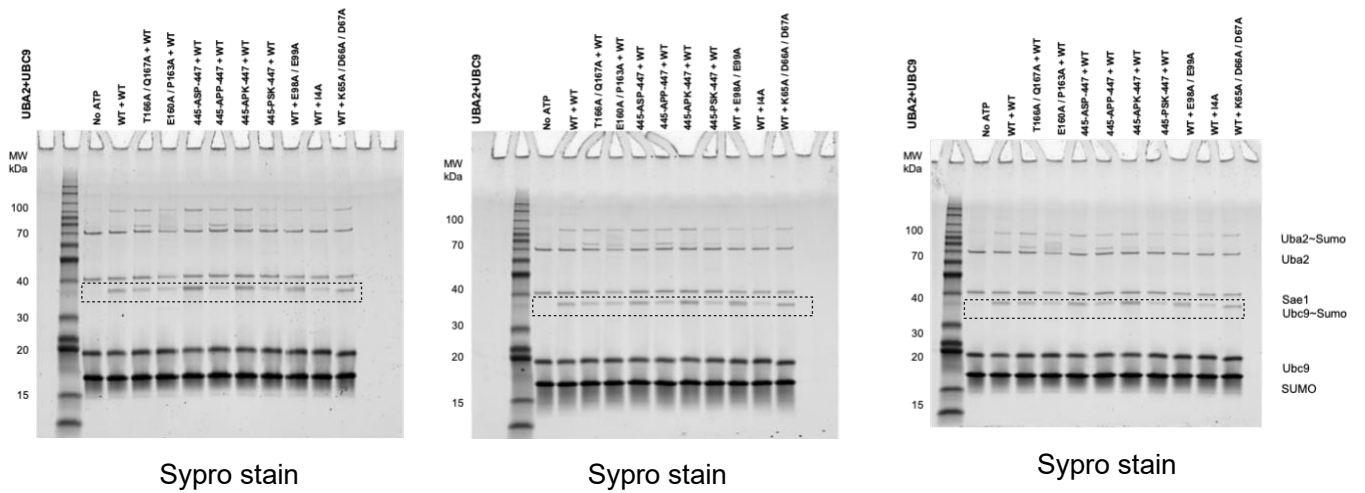
Sypro stain

Extended Data Fig. 4c



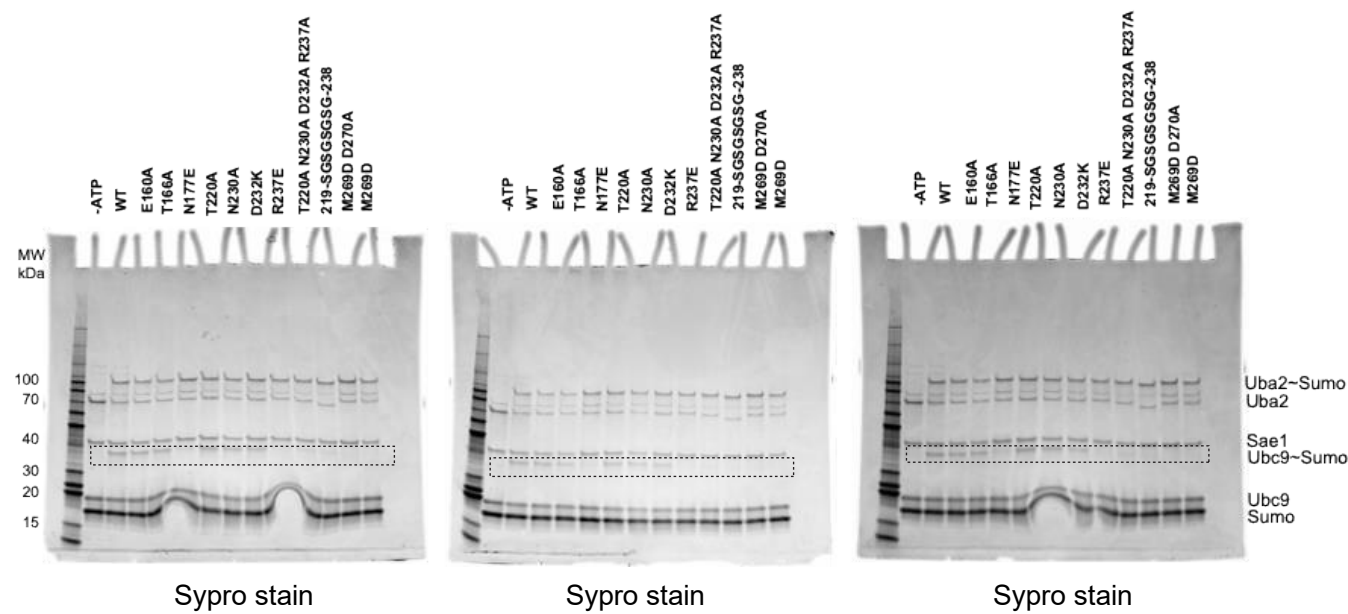
Extended Data Fig. 4d

UBA2 and UBC9 mutants



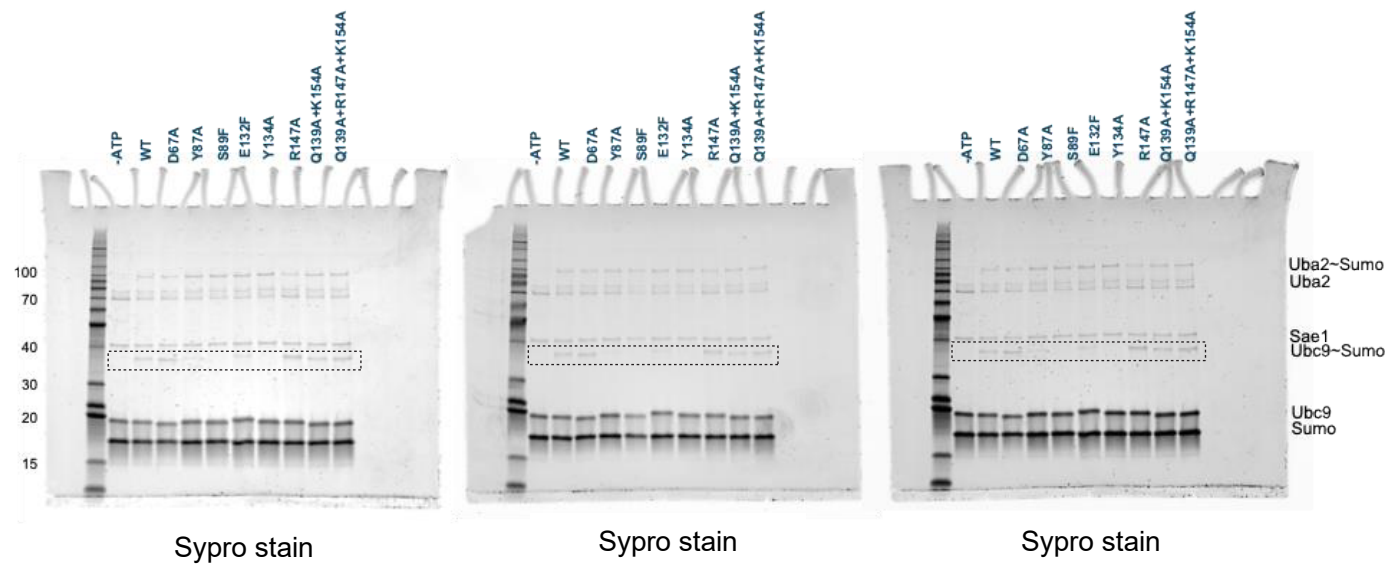
Extended Data Fig. 4e and i

SCCH mutants for SCCH:UBC9 interface



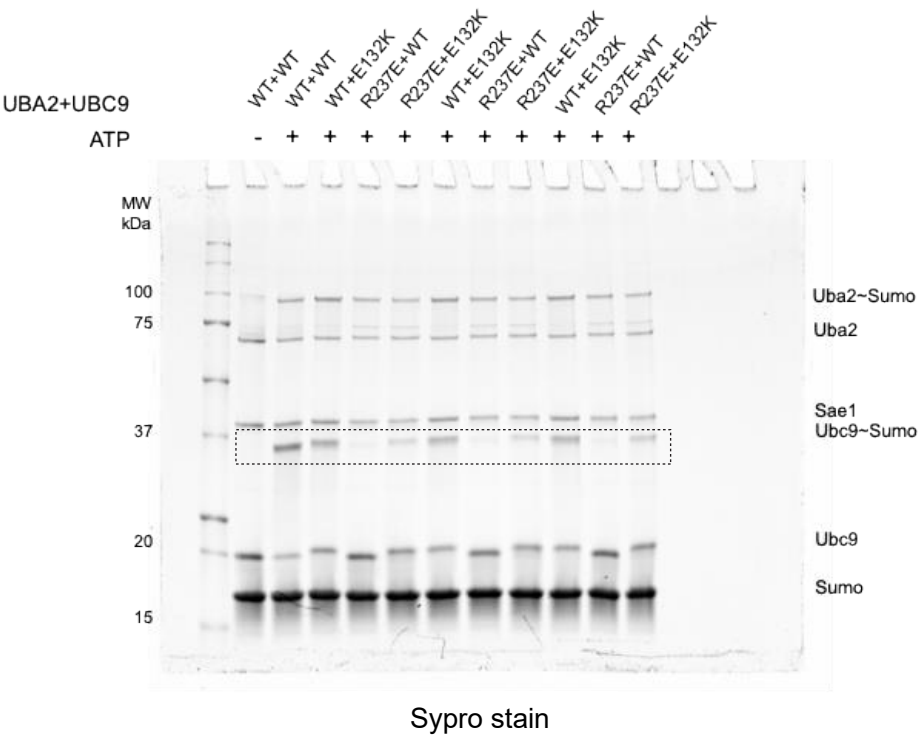
Extended Data Fig. 4f

UBC9 mutants for SCCH:UBC9 interface



Extended Data Fig. 4g

Charge Swap



Extended Data Fig. 4h