**Supplemental data**

**Fig. S1a**

***Vpx***

Required for binding

CRL4DCAF1 E3 Ub ligase

mac239 MSDPRERIPPGNSGEETIGEAFEWLNRTVEEINREAVNHLPRELIFQVWQRSWEYWHDEQGMSPSYVKYRYLCLIQKALFMHCKKGCRCLGEGHGAGGWRPGPPPPPPPGLA\*

1-2 .......................\*...................................\*--------------------------------\*...................\*

1-3 .......................\*................L...............QTSINGRKTSRK\*

1-4 .......................\*...................................\*--------------------------------\*...................\*

1-5 .......................\*.............S.................G...\*--------------------------------\*...................\*

1-6 .....................L.\*...................................\*--------------------------------\*...................\*

1-7 .......................\*........................\*.G........\*--------------------------------\*...................\*

1-8 .......................\*................L...............QTSINGRKTSRK\*

1-9 .......................\*..............................\*....\*--------------------------------\*...................\*

1-10 .......................\*...................................\*--------------------------------\*...................\*

1-11 .......................\*...................................\*--------------------------------\*...................\*

1-12 .......................\*........---------..................\*--------------------------------\*...................\*

mac239 MSDPRERIPPGNSGEETIGEAFEWLNRTVEEINREAVNHLPRELIFQVWQRSWEYWHDEQGMSPSYVKYRYLCLIQKALFMHCKKGCRCLGEGHGAGGWRPGPPPPPPPGLA

2-3 .....V.................\*................................QTSINGRKTSRK\*

2-4 .......................\*........-------------...\*..........\*--------------------------------\*...................\*

2-7 ................R......\*...................................\*--------------------------------\*...................\*

2-9 .......................\*.............S.....................\*--------------------------------\*Y..................\*

2-10 R......................\*...................................\*--------------------------------\*...................\*

2-14 ......-----............\*........................\*.G........\*--------------------------------\*...................\*

2-15 ......-----............\*...................................\*--------------------------------\*...................\*

2-18 .......................\*...................................\*--------------------------------\*...................\*

2-20 I......................\*...................................\*--------------------------------\*...................\*

mac239 MSDPRERIPPGNSGEETIGEAFEWLNRTVEEINREAVNHLPRELIFQVWQRSWEYWHDEQGMSPSYVKYRYLCLIQKALFMHCKKGCRCLGEGHGAGGWRPGPPPPPPPGLA

3-1 ......K..............L.....................................\*--------------------------------\*...................\*

3-2 ......K..............L.....................................\*--------------------------------\*...................\*

3-3 ......K..............L....................................K\*--------------------------------\*...................\*

3-4 ..G...K..............L.....................................\*--------------------------------\*...................\*

3-7 ......K..............L.....................................\*--------------------------------\*...................\*

3-9 ......K..............L\*....................................\*--------------------------------\*...................\*

3-10 ......K..............L.....I...............................\*--------------------------------\*...................\*

3-11 ......K..............L.....................................\*--------------------------------\*...................\*

3-18 ......K..............L.....................................\*--------------------------------\*...................\*

3-19 ......K..............L.....................................\*--------------------------------\*...................\*

3-20 ......K..............L.....................................\*--------------------------------\*...................\*

3-24 ......KN.............L.....................................\*--------------------------------\*...................\*

3-25 ......K..............L.............T.......................\*--------------------------------\*...................\*

mac239 MSDPRERIPPGNSGEETIGEAFEWLNRTVEEINREAVNHLPRELIFQVWQRSWEYWHDEQGMSPSYVKYRYLCLIQKALFMHCKKGCRCLGEGHGAGGWRPGPPPPPPPGLA

4-21 I....................L.....I...........................\*...\*--------------------------------\*...........S.......\*

4-23 I....................L.\*...............................\*..K\*--------------------------------\*...........S.......\*

4-24 I..L.................L.\*.........................L.....\*...\*--------------------------------\*...........S.......\*

4-25 I....................L.\*...I....................\*..........\*--------------------------------\*...............T...\*

4-26 .....................L.\*.........................L.....\*...\*--------------------------------\*...........S.......\*

4-29 ............K.........\*.........................\*..........\*--------------------------------\*...........S.......\*

4-30 I..L.................L.\*...............................\*...\*--------------------------------\*...........S.......\*

4-31 ................I....L.\*........................\*..........\*--------------------------------\*...........S.......\*

4-32 .....................L.\*...A...............................\*--------------------------------\*...........S.......\*

4-33 I....................L...........................L.....\*...\*--------------------------------\*...........S.......\*

4-34 I....................L.................................\*...\*--------------------------------\*...........S...L...\*

mac239 MSDPRERIPPGNSGEETIGEAFEWLNRTVEEINREAVNHLPRELIFQVWQRSWEYWHDEQGMSPSYVKYRYLCLIQKALFMHCKKGCRCLGEGHGAGGWRPGPPPPPPPGLA

5-1 ......................................................\*....\*--------------------------------\*...................\*

5-2 R..L.......................................................\*--------------------------------\*............S......\*

5-3 ...........................................................\*--------------------------------\*.............S.....\*

5-4 ..........................S............................\*...\*--------------------------------\*...................\*

5-5 ...........................................................\*--------------------------------\*.......L....S......\*

5-7 .....................L.....................................\*--------------------------------\*...................\*

5-8 .....................L.....................................\*--------------------------------\*...................\*

5-9 .........................D.................................\*--------------------------------\*............S......\*

5-10 R..........................................................\*--------------------------------\*........R..........\*

5-11 R.......................................S..................\*--------------------------------\*...................\*

5-12 ...........................................................\*--------------------------------\*........R..........\*

mac239 MSDPRERIPPGNSGEETIGEAFEWLNRTVEEINREAVNHLPRELIFQVWQRSWEYWHDEQGMSPSYVKYRYLCLIQKALFMHCKKGCRCLGEGHGAGGWRPGPPPPPPPGLA

6-13 ................A.........K................................\*--------------------------------\*...................\*

6-14 ............................I......V..................--------------------------------------\*...................\*

6-18 ................A..................V.......................\*--------------------------------\*.....\*.............Y

6-19 ......................................................--------------------------------------\*.....\*.............Y

6-21 ..................................................G........\*--------------------------------\*Y....\*...S.........\*

6-22 ...........................................................\*--------------------------------\*.........S.........\*

6-23 ...S.............T...............G......................\*..\*--------------------------------\*.........S......E..\*

6-24 ......................................................--------------------------------------\*.....\*.............Y

**Fig. S1b**

*Vpr*

mac239 MEERPPENEGPQREPWDEWVVEVLEELKEEALKHFDPRLLTALGNHIYNRHGDTLEGAGELIRILQRALFMHFRGGCIHSRIGQPGGGNPLSAIPPSRSML\*

1-2 ....................A...................................................Y............................\*

1-3 .......................................................................................A.............\*

1-4 ..................................................................................................G..\*

1-5 .....................................................................................................\*

1-6 .....................................................................................R...............\*

1-7 .....................................................................................................\*

1-8 .....................................................................................................\*

1-9 ...I.................................................................................................\*

1-10 ......G...S..........................................................................................\*

1-11 ......G..RS..........................................................................................\*

1-12 .....................................................................................................\*

mac239 MEERPPENEGPQREPWDEWVVEVLEELKEEALKHFDPRLLTALGNHIYNRHGDTLEGAGELIRILQRALFMHFRGGCIHSRIGQPGGGNPLSAIPPSRSML\*

2-3 .........R........................................................................................G..\*

2.4 .....................................................................................................\*

2-7 ......G...S..........................................................................................\*

2-9 ....................M................................................................................\*

2-10 .....................................................................................................\*

2-14 ..................................................................................................G..\*

2-15 ................G....................................................................................\*

2-18 ....................A...................................................Y............................\*

2-20 ..................................................................................................G..\*

mac239 MEERPPENEGPQREPWDEWVVEVLEELKEEALKHFDPRLLTALGNHIYNRHGDTLEGAGELIRILQRALFMHFRGGCIHSRIGQPGGGNPLSAIPPSRSML

3-1 ...................G...V..............W.I...............................Y............................\*

3-2 ...................G...V..............W.I...............................Y.....................L...N..\*

3-3 ...................G...V..............W.................................Y.....................L...N..\*

3-4 ...................G...V..............W.................................Y..R..................L...N..\*

3-7 ...................G...V..............W.................................Y.....................L...N..\*

3-7 ...................G...V..............W.................................Y.....................L...N..\*

3-10 ...................G...V..............W.................................Y.....................L...N..\*

3-11 ...................G...V..............W.........S.......................Y.....................L...N..\*

3-18 ...................G...V..............W.................................Y.....................L...N..\*

3-19 ...................G...V..............W.................................Y.....................L...N..\*

3-20 ...................G...V..............W.................................Y.....................L...N..\*

3-24 ...................G...V..............W.I...........N...................Y.....................L...N..\*

3-25 ...................G...V..............W.I...............................Y.....................L...N..\*

mac239 MEERPPENEGPQREPWDEWVVEVLEELKEEALKHFDPRLLTALGNHIYNRHGDTLEGAGELIRILQRALFMHFRGGCIHSRIGQPGGGNPLSAIPPSRSML

4-21 .............................................Y............................S..................M....T..\*

4-23 ...........L.................................Y................K...........S.......................N..\*

4-24 ...........L...........M.....................Y............................S.................VT....N..\*

4-25 ...........L.................................Y............................S.................VT....N..\*

4-26 ..........................................................................S..................T....N..\*

4-29 .....................K.................................................................R..........T..\*

4-30 .............................................Y............................S.......................T..\*

4-31 ...........L............K....................Y................K...........S..................T....N..\*

4-32 .............................................Y............................S..................T....N..\*

4-33 .............................................Y..............I.............S..................TQ...N..\*

4-34 .............................................Y............................S.................VT....N..\*

mac239 MEERPPENEGPQREPWDEWVVEVLEELKEEALKHFDPRLLTALGNHIYNRHGDTLEGAGELIRILQRALFMHFRGGCIHSRIGQPGGGNPLSAIPPSRSML\*

5-1 ....................................................................................A................\*

5-2 ....................................................................................A................\*

5-3 ....................................................................................T................\*

5-4 ....................................................................................A................\*

5-5 ....................................................................................T................\*

5-7 ....................................................................................T................\*

5-8 ....................................................................................T................\*

5-9 ....................................................................................A................\*

5-10 ..........S.........................................................................A................\*

5-11 ......................I.............................................................A................\*

5-12 ..........S.........................................................................A................\*

mac239 MEERPPENEGPQREPWDEWVVEVLEELKEEALKHFDPRLLTALGNHIYNRHGDTLEGAGELIRILQRALFMHFRGGCIHSRIGQPGGGNPLSAIPPSRSML\*

6-13 .....................................................................................W...............\*

6-14 .............................................Y.......................................................\*

6-17 ............................K.........W..V...Y.......................................................\*

6-18 .............................................Y............E..........................................\*

6-19 .............................................Y.......................................................\*

6-20 ......................................W..V...Y.......................................................\*

6-21 ...................................H.SW..V...........................................................\*

6-22 ..G..........................................Y.......................................................\*

6-23 ......................................W..V...........................................................\*

6-24 .............................................Y.......................................................\*