

[Supplementary Information]

Dysregulated CREB3 cleavage at the nuclear membrane induces karyoptosis-mediated cell death

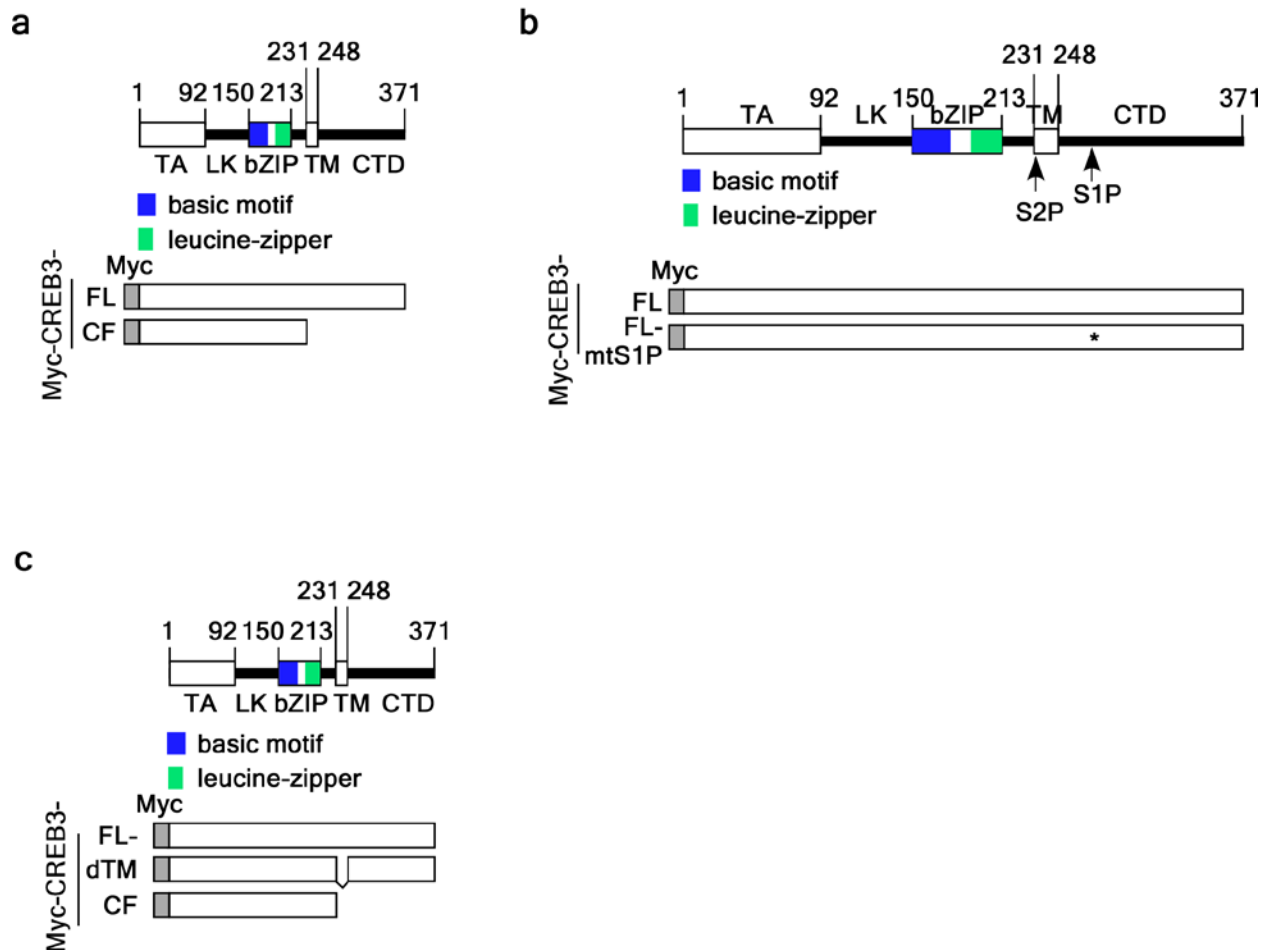
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1. Supplementary Figures: Supplementary Fig. 1 to 4

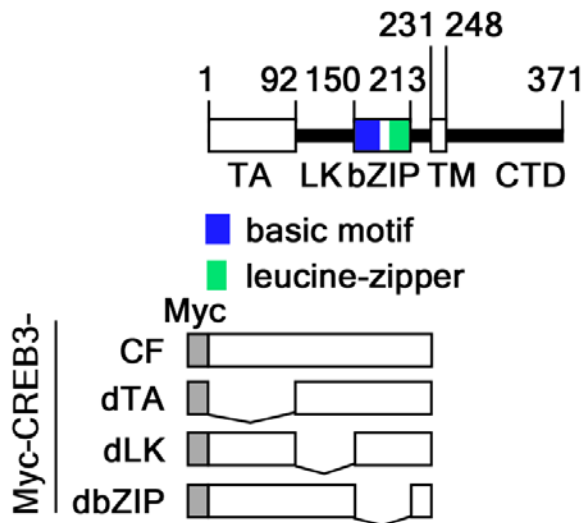
Supplementary Fig. 1 a+b+c by GE Lee



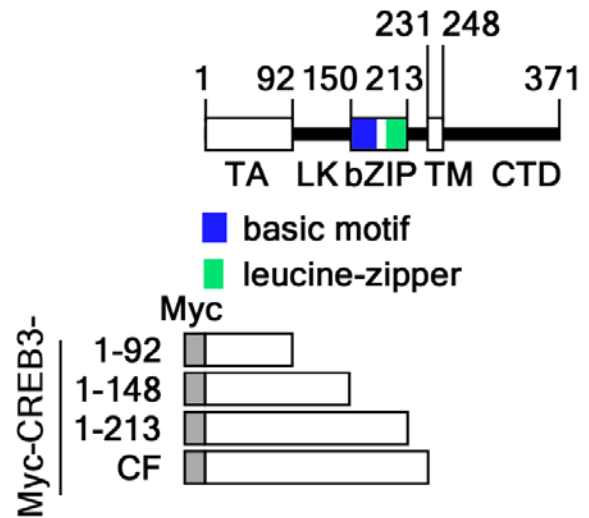
Supplementary Fig. 1 Vector maps for CREB3 using Fig. 1. **a** Vector map for CREB3-FL and CREB3-CF for overexpression. **b** Vector map for CREB3-FL and -FL-mtS1P. **c** Vector map for CREB3-FL, -dTM and -CF.

Supplementary Fig. 2 a+b by GE Lee

a



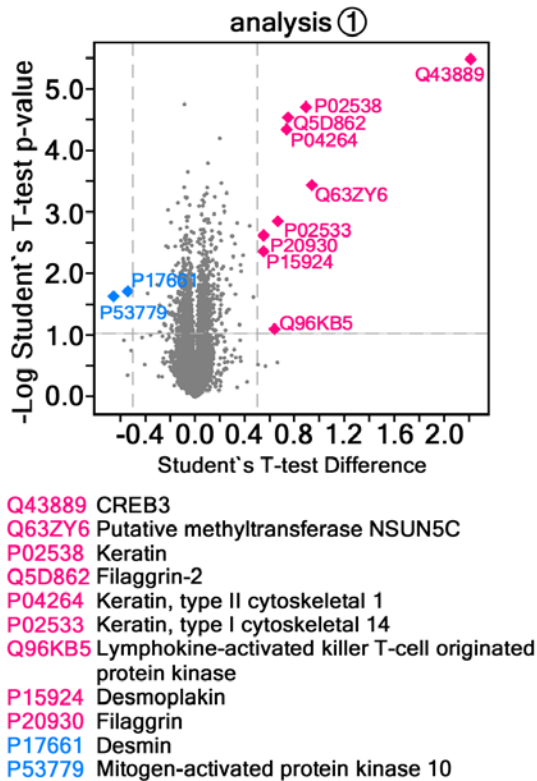
b



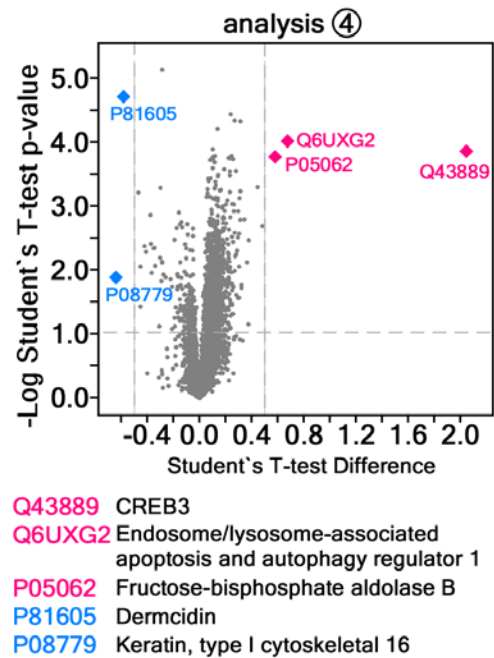
Supplementary Fig. 2 Vector maps for Fig. 2. The vector was used in Fig. 2 a, b, c, and f. **a** Vector maps for the domain deletion mutant of CREB3-CF. **b** Vector maps for serial deletion mutants of CREB3-CF for Fig. 2c.

Supplementary Fig. 3 a+b by GE Lee

a

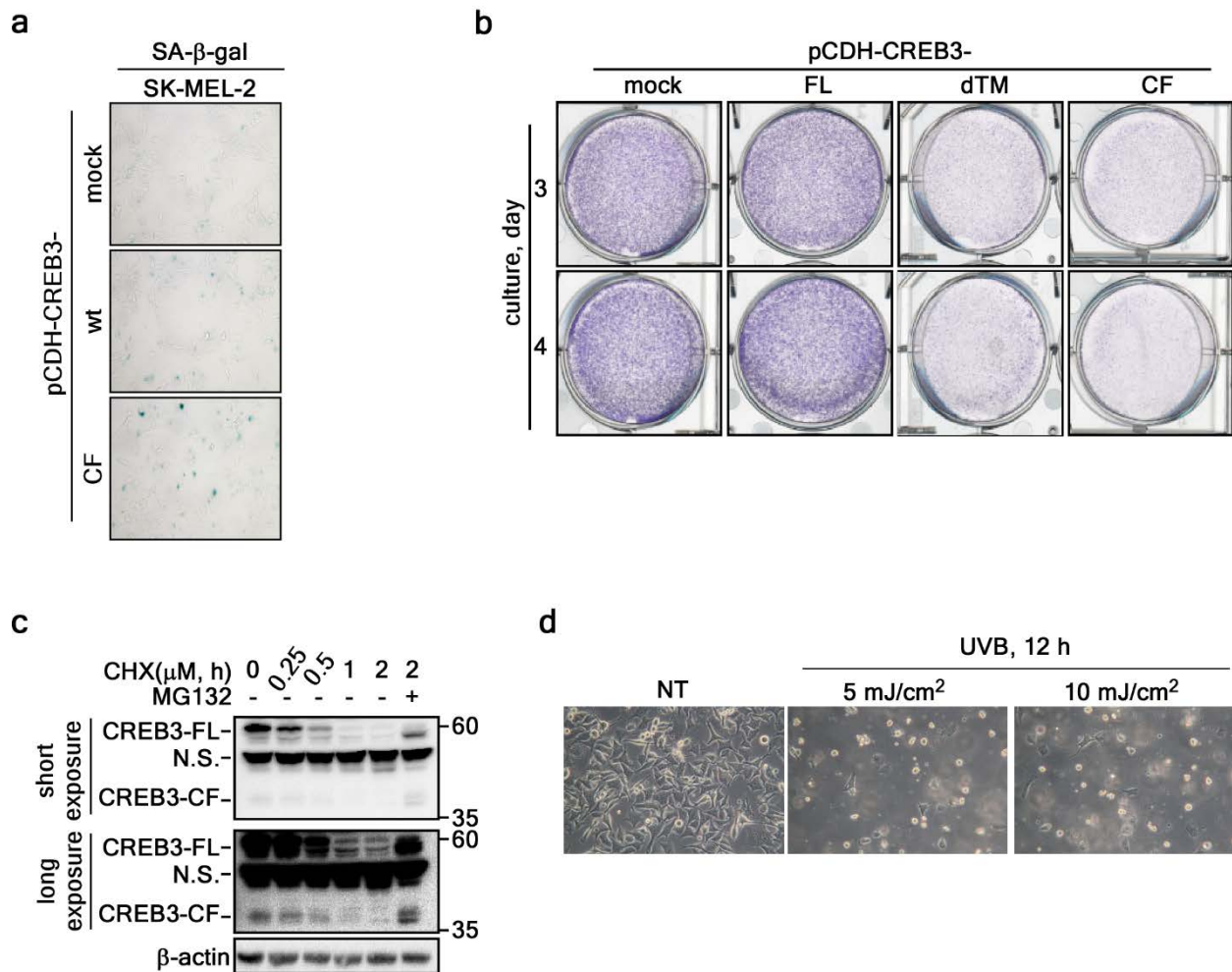


b



Supplementary Fig. 3 Proteomic analysis of CREB3-CF-induced karyoptosis evokes DDR-mediated cell death. **a** Illustration showing volcano plot of CREB3-CF-induced karyoptosis by analysis 1 illustrated in main **Fig. 6c**. Red, increase; blue, decrease. Detailed protein lists for 11 proteins are described. **b** Illustration showing volcano plot of CREB3-CF-induced karyoptosis by analysis 4 illustrated in main **Fig. 6f**. Red, increase; blue, decrease. Detailed protein lists for 5 proteins are described.

Supplementary Fig. 4 a+b+c+d by GE Lee



Supplementary Fig. 4 CREB-CF inhibits cancer cell proliferation by induction of cellular senescence.

a Illustration showing that CREB3-CF expression increases cellular senescence by SA- β -gal staining in SK-MEL-2 and HeLa cells. **b** Illustration showing overexpression of CREB3-CF or -dTM suppresses cell proliferation in SK-MEL-2 cells, while cells stably expressing mock or CREB3-FL showed similar intensity of crystal violet staining. **c** Illustration showing half-life of CREB3-FL and -CF. **d** Illustration showing UVB-induced cell floating. Pictures were taken at 12 h after UVB irradiation with indicated doses.

2. Supplementary Tables: Supplementary Table 1 and 2

Supplementary Table 1. GOBP protein list obtained from proteomic analysis for mock and CREB3-CF (file name: Fig. 6e_proteomics-GOBP list).

Supplementary Table 2. GOBP protein list obtained from proteomic analysis for CREB3-CF, mock, and mock+UVB (file name: Fig. 6h_proteomics-GOBP list).

3. Supplementary live Images: Supplementary Live Image 1 to 3

Supplementary Live Image 1: Time-lapse Live Image obtained by Holotomography (HT-X1) of mock overexpression (file name: HT-X1-mock expression)

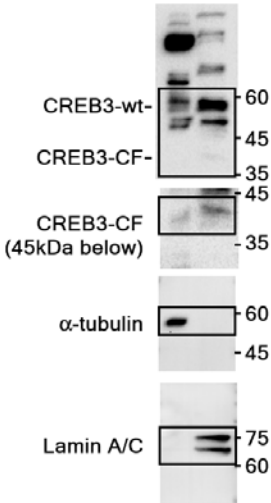
Supplementary Live Image 2: Time-lapse Live Image obtained by Holotomography (HT-X1) of CREB3-FL overexpression (file name: HT-X1-CREB3-FL expression)

Supplementary Live Image 3: Time-lapse Live Image obtained by Holotomography (HT-X1) of CREB3-CF overexpression (file name: HT-X1-CREB3-CF expression)

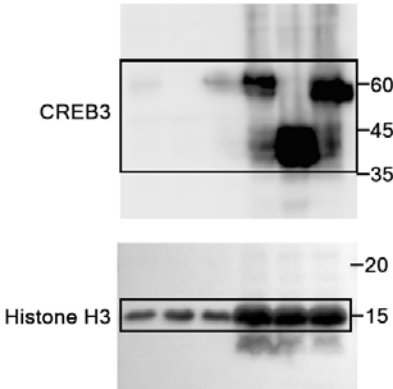
4. Supplementary Whole blots

Whole blot Fig. 1

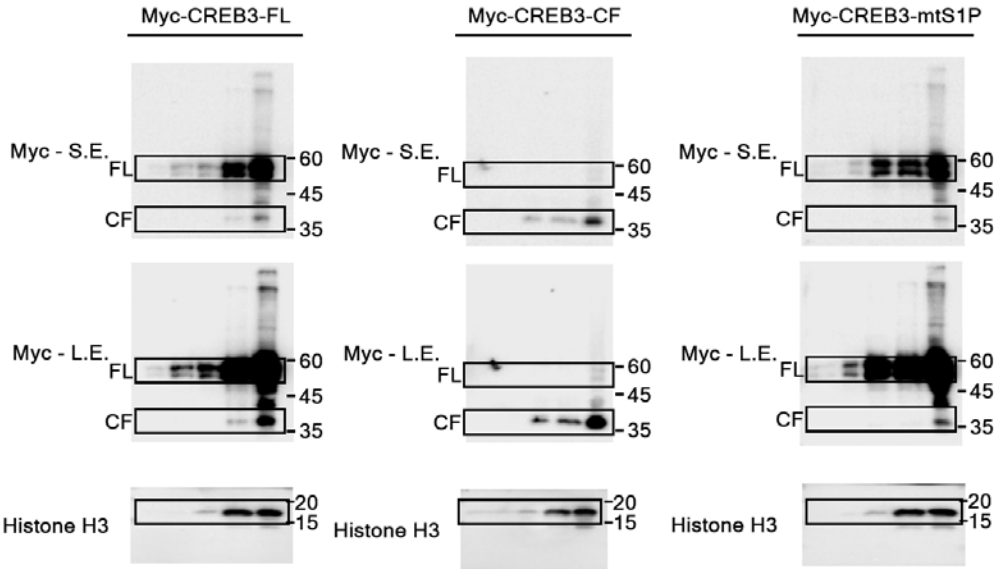
A. Fig 1 b



B. Fig 1 d

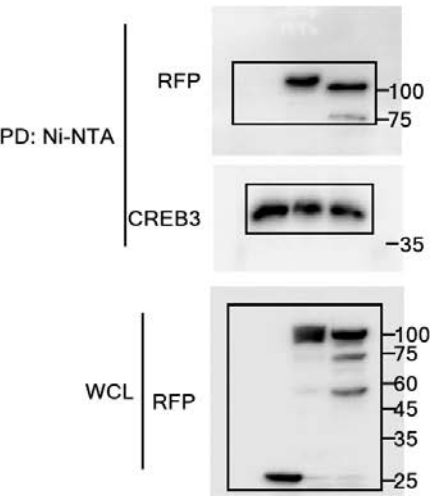


C. Fig 1 g

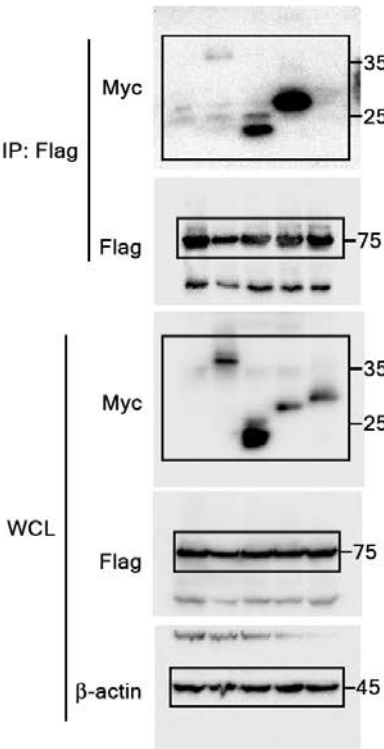


Whole blot Fig. 2

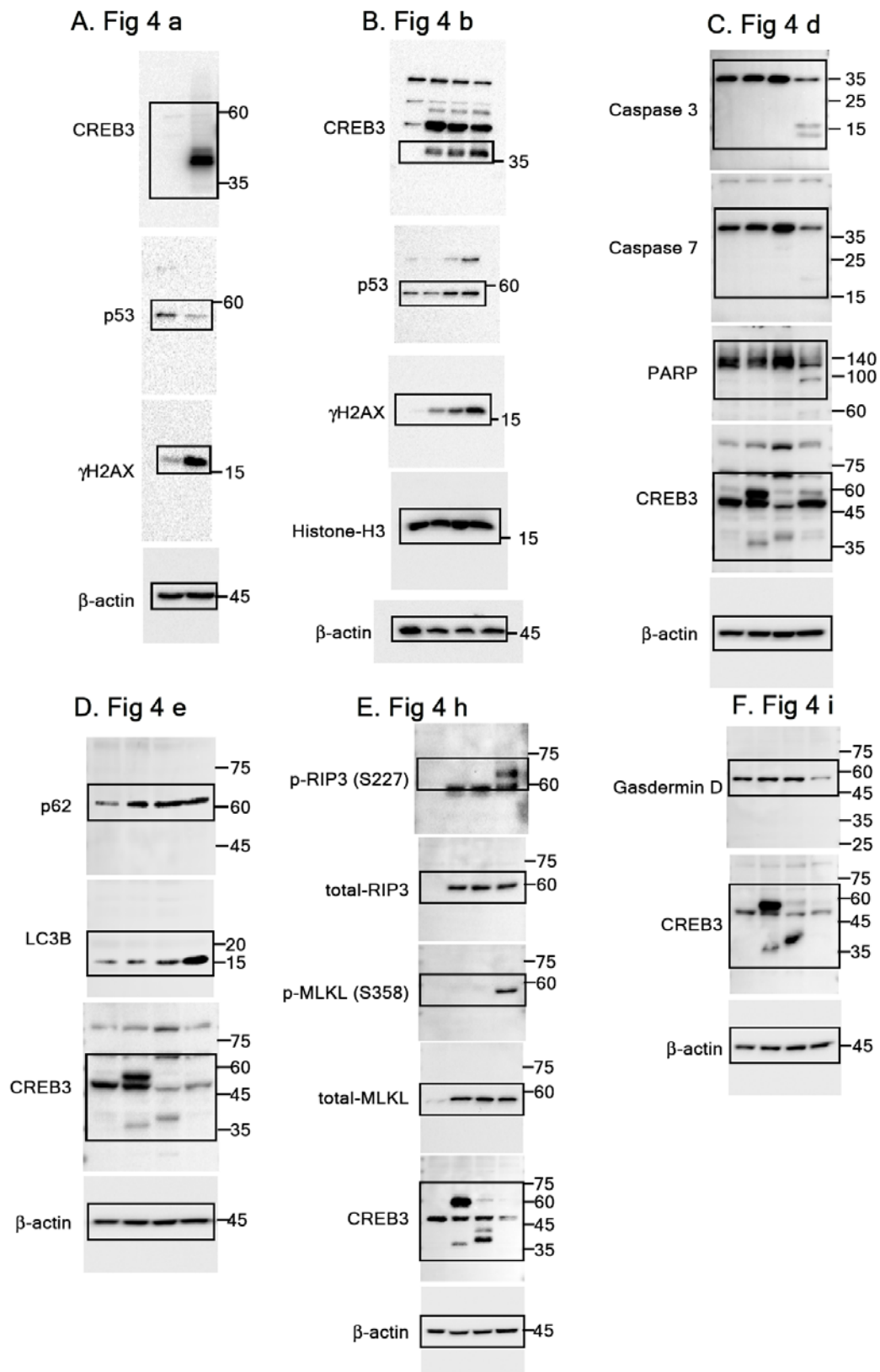
A. Fig 3 b



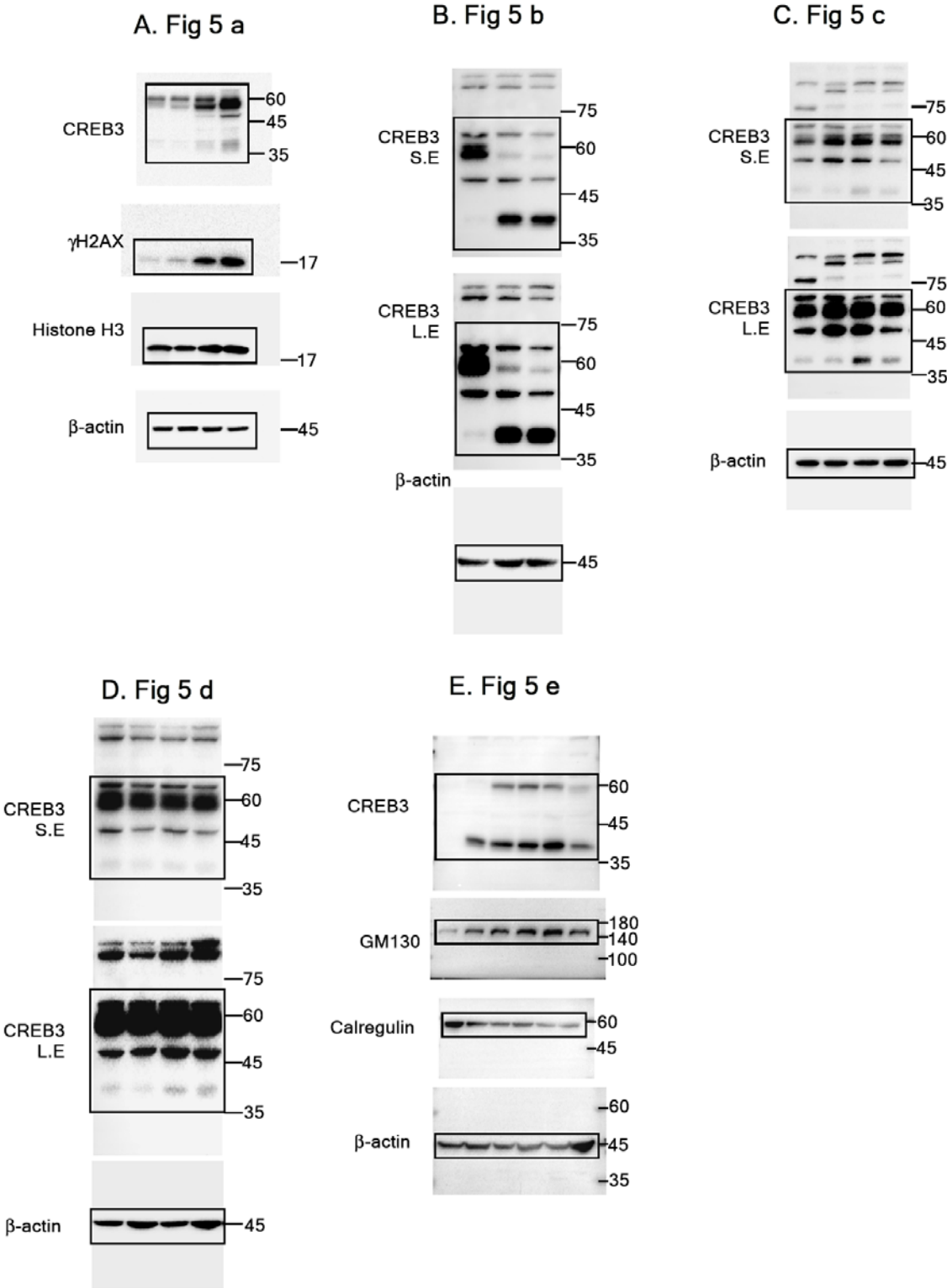
B. Fig 3 c



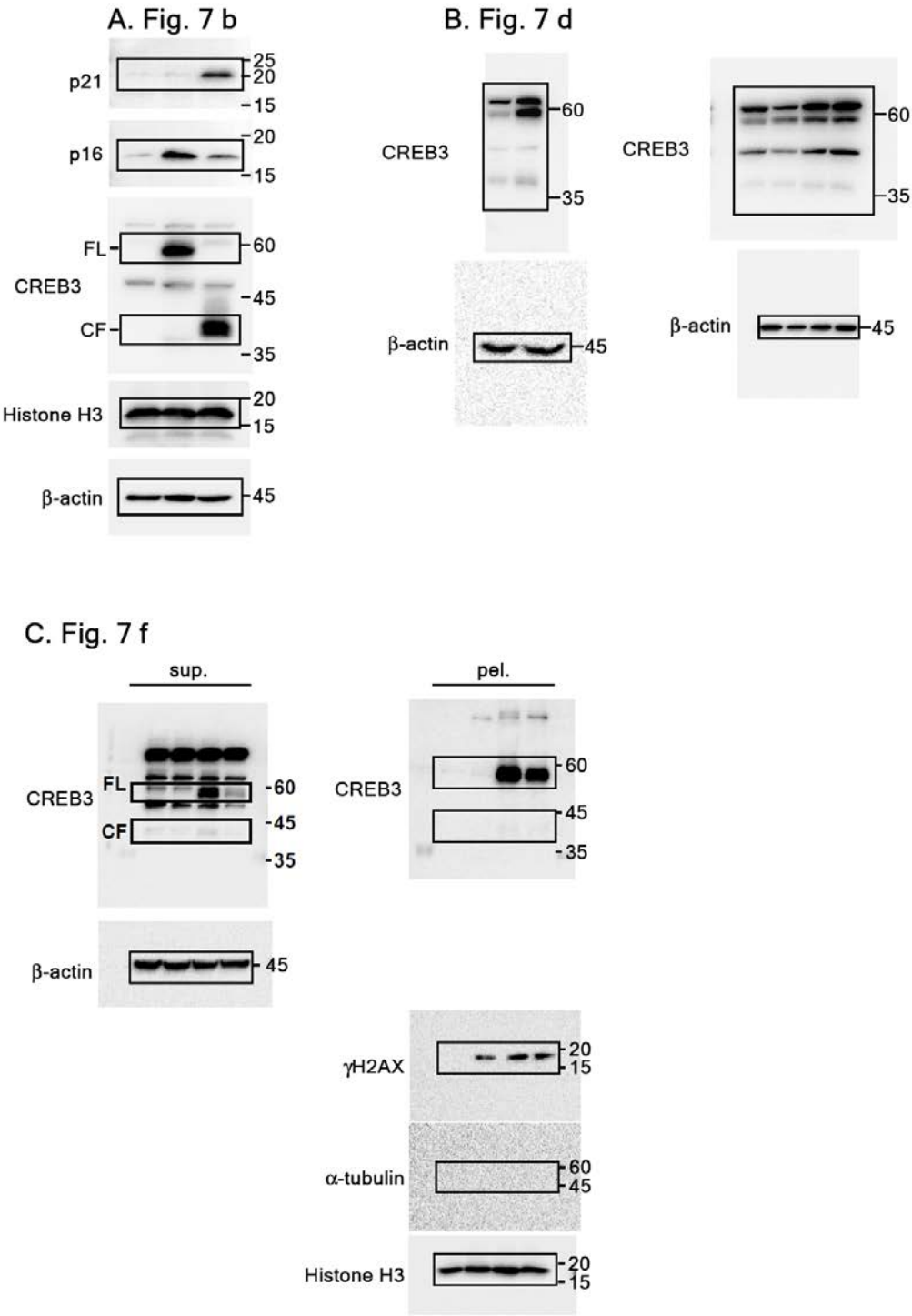
Whole blot Fig. 3



Whole blot Fig. 4



Whole blot Fig. 4



Supplementary Whole blot Fig. 1

A. Fig. S5 c

