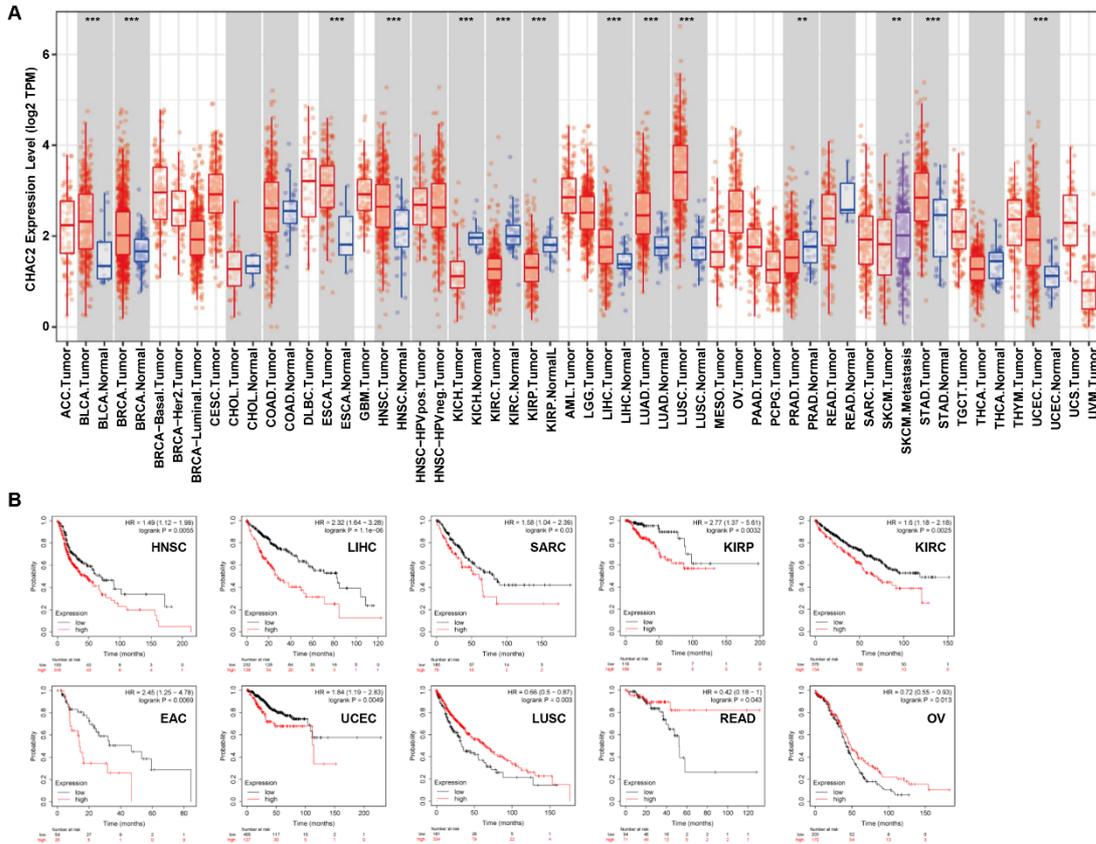


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2

3 **Supplementary Figure 1 CHAC2 is aberrantly expressed in a variety of tumors. (A)**

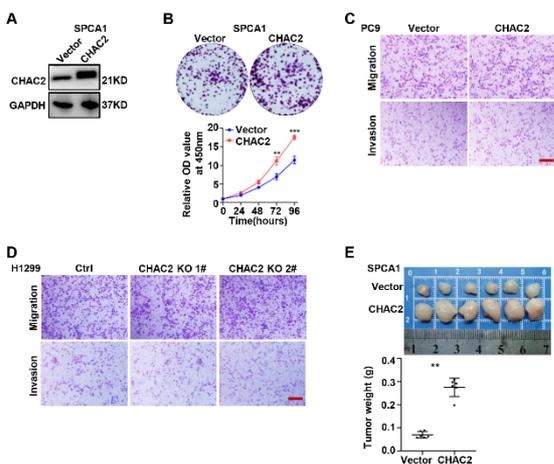
4 Pancancer analysis of the TCGA database indicated that the mRNA levels of CHAC2 were

5 abnormally expressed in most tumors. **(B)** Analysis of the Kaplan–Meier Plotter database

6 showed that the high or low expression of CHAC2 in most tumors affected the prognosis of

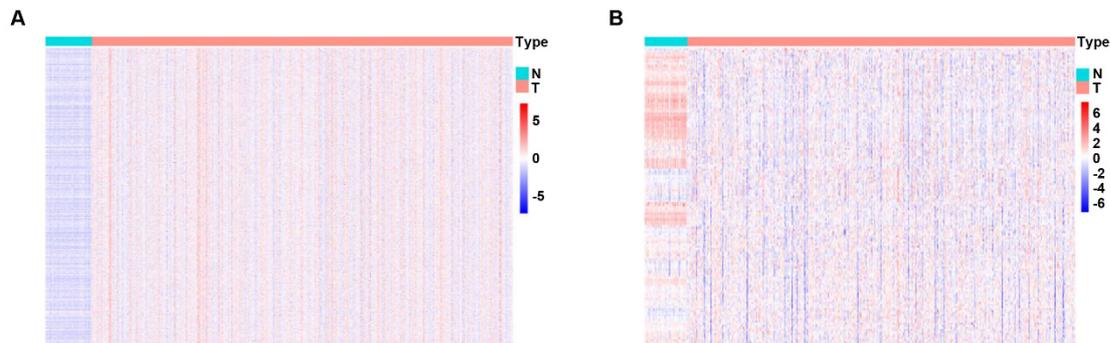
7 patients.

8



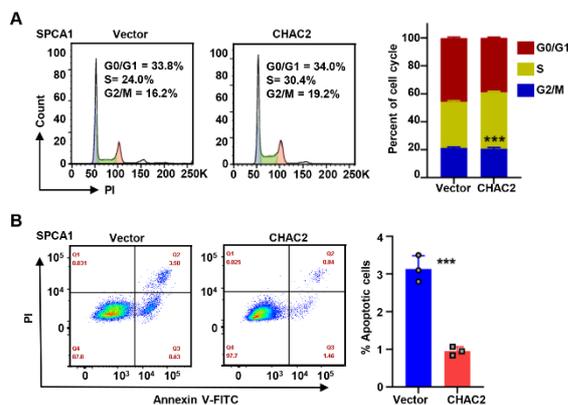
9

10 **Supplementary Figure 2 CHAC2 promotes the proliferation of lung adenocarcinoma.**
 11 **(A)** Immunoblot assays verify the efficiency of CHAC2 overexpression in the SPCA1 cell
 12 line. **(B)** CHAC2 enhanced the proliferation of lung adenocarcinoma SPCA1 cells in vitro.
 13 **(C), (D)** Transwell assays were conducted to examine the migration and invasion abilities in
 14 PC9 cells with CHAC2 overexpression **(C)** and in H1299 cells with CHAC2 knockout **(D)**.
 15 Scale bar: 200µm. **(E)** CHAC2 enhanced the proliferation of lung adenocarcinoma SPCA1
 16 cells in vivo.



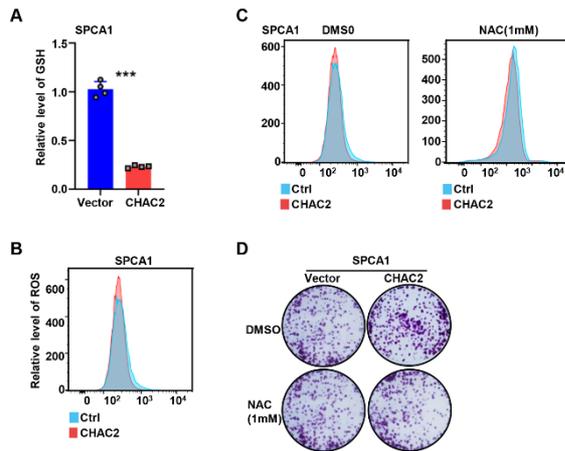
17

18 **Supplementary Figure 3 Heatmap analysis of genes correlated with the mRNA**
 19 **expression level of CHAC2. (A)** Heatmap analysis of genes positively correlated with the
 20 mRNA expression level of CHAC2. **(B)** Heatmap analysis of genes negatively correlated
 21 with the mRNA expression level of CHAC2.



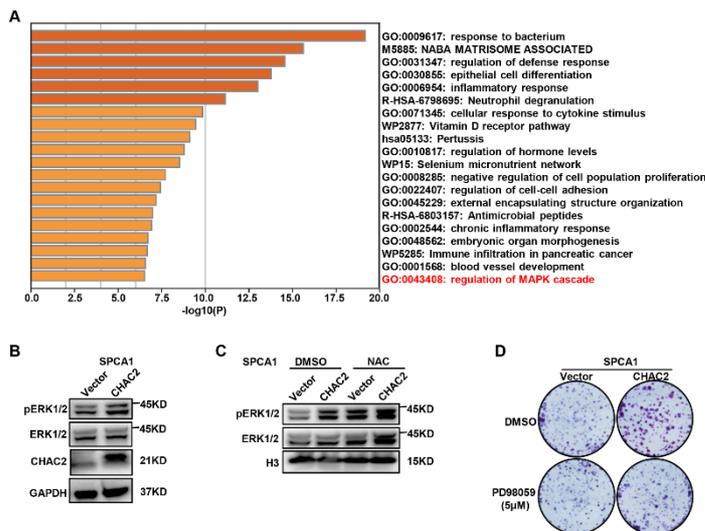
22

23 **Supplementary Figure 4 CHAC2 promotes lung adenocarcinoma progression. (A)** Flow
 24 cytometry was conducted to detect the cell cycle of SPCA1 cells overexpressing CHAC2. **(B)**
 25 Flow cytometry was conducted to detect the apoptosis of SPCA1 cells overexpressing
 26 CHAC2.



27

28 **Supplementary Figure 5 CHAC2 decreased GSH content and increased ROS levels.**
 29 **(A)** The levels of GSH were examined in SPCA1 cells overexpressing CHAC2. **(B)** Flow
 30 cytometry assays were conducted to examine the levels of ROS in SPCA1 cells
 31 overexpressing CHAC2. **(C)** Levels of ROS were examined in SPCA1 cells overexpressing
 32 CHAC2 or vector with NAC (1 mM) or without treatment. **(D)** Colony formation assays of
 33 overexpressing vector and CHAC2 SPCA1 cells with NAC (1 mM) or without treatment.



34

35 **Supplementary Figure 6 CHAC2 activates the MAPK pathway.** **(A)** Pathway enrichment
 36 analysis suggested that overexpression of CHAC2 significantly regulated the MAPK
 37 pathway. **(B)** Immunoblot assays were conducted to detect phospho-ERK in vector and
 38 CHAC2 overexpression SPCA1 cells. **(C)** Immunoblot assays were conducted to detect
 39 phospho-ERK in vector and CHAC2 overexpression SPCA1 cells with NAC (1 mM) or
 40 without treatment. **(D)** Colony formation assays of overexpressing Vector and CHAC2
 41 SPCA1 cells with PD98059 (5µM) or without treatment.

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