

1 **Supplementary Figure legends**

2 **Figure.S1 BRG1 inhibits NSCLC proliferation in vitro.** **A** Representative image of
3 BRG1 expression in tumor tissues and in adjacent normal tissues. Black scale bar, 50
4 μm . **B** The protein level of BRG1 detected by western blot assays in the indicated cells.
5 **C, D** Western blot assays verifying overexpression of BRG1 in A549 cells and
6 knockdown of endogenous BRG1 via shBRG1 plasmids in PC9 cells (shBRG1 #1,
7 shBRG1 #2). **E, F** The mRNA level of BRG1 detected by qRT-PCR assays in A549
8 cells with BRG1 overexpression and in PC9 cells with BRG1 knockdown (n=3). **G, H**
9 The proliferation of indicated NSCLC cells in vitro evaluated by BrdU assays (n=3).
10 All western blotting experiments were independently replicated three times, yielding
11 consistent results. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

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13 **Figure.S2 BRG1 inhibits NSCLC proliferation in vitro and in vivo.** **A, B** The
14 proliferation of indicated NSCLC cells in vitro evaluated by CCK8 assays (n=5). **C, D**
15 The proliferation of indicated NSCLC cells in vitro evaluated by colony formation
16 assays (n=3). **E** Representative image of subcutaneous xenografts (n = 5) formed by the
17 indicated PC9 cells in nude mice. **F** Tumor size (n = 5) were calculated every 7 days,
18 and the growth curve was drawn. **G** Tumor weight (n = 5) of the subcutaneous
19 xenografts were measured. ** $p < 0.01$, *** $p < 0.001$, **** $p < 0.0001$.

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21 **Figure.S3 Knockdown of BRG1 promotes glycolytic metabolism in NSCLC cells.**

22 **A, B** Co-IP assays were performed in HEK293T cells using antibodies against GST or
23 Flag to examine the exogenous interaction between GST-BRG1 and Flag-PKM2. All
24 western blotting experiments were independently replicated three times, yielding
25 consistent results. **C, D** ECAR of PC9 cells with BRG1 knockdown was measured with

the Seahorse XF24 analyzer platform (n = 4). Glycolysis, glycolytic capacity and glycolytic reverse in each group were analyzed. **E, F** OCR of A549 cells stably overexpressing BRG1 was measured with the Seahorse XF24 analyzer platform (n = 4). **G, H** OCR of PC9 cells with BRG1 knockdown was measured with the Seahorse XF24 analyzer platform (n = 4). *p < 0.05, **p < 0.01, ***p < 0.001, ****p < 0.0001.

Figure.S4 BRG1 modulates the proliferation of NSCLC cells through the regulation of PKM2 pyruvate kinase activity. **A** Glucose uptake assay was performed in PC9 cells with BRG1 knockdown (n = 3). **B** Lactate level was measured in PC9 cells with BRG1 knockdown (n = 3). **C** Intracellular ATP level was measured in PC9 cells with BRG1 knockdown (n = 3). **D** PC9 cells with BRG1 knockdown (shBRG1) were treated with either vehicle control (DMSO) or 30 μ M TEPP-46 and in vitro proliferation was evaluated by CCK8 assays (n = 5). **E** Nude mice bearing PC9 cells with BRG1 knockdown (shBRG1) or control (shNC) were treated with vehicle (DMSO) or TEPP46 (150 mg/kg, orally daily). Tumor size (n = 5) were calculated every 7 days, and the growth curve was drawn. **F** Representative image (n = 5) of subcutaneous xenografts. **G** Tumor weight (n = 5) of the subcutaneous xenografts were measured. **p < 0.01, ***p < 0.001, ****p < 0.0001, ns, no significant.

Figure.S5 BRG1 modulates the proliferation of NSCLC cells through the regulation of PKM2 pyruvate kinase activity. **A, B** A549 cells with BRG1 overexpression were treated with either vehicle control (DMSO) or 10 μ M PKM2-IN-1 for 24 hours, followed by ECAR analysis using the Seahorse XF24 analyzer (n = 5). Glycolysis, glycolytic capacity and glycolytic reverse in each group were analyzed. **C** A549 cells with BRG1 overexpression were treated with either vehicle control (DMSO)

or 10 μ M PKM2-IN-1 and in vitro proliferation was evaluated by CCK8 assays (n = 5).

*p < 0.05, ***p < 0.001, ****p < 0.0001, ns, no significant.

Figure.S6 BRG1 modulates pyruvate kinase activity of PKM2 and in vitro proliferation through PKM2 Y105 phosphorylation. **A** The protein level of PKM2 was detected in control or BRG1 stable overexpression A549 cells via western blot assays. **B** The protein level of PKM2 was detected in PC9 cells silenced with control (shNC) or BRG1 shRNA (shBRG1 #1 and #2) via western blot assays. **C** The oligomeric state of PKM2 was detected in PC9 cells silenced with control (shNC) or BRG1 shRNA (shBRG1 #1 and #2). Cell lysates from the indicated cells were incubated with or without 0.01% glutaraldehyde and then subjected to western blot assays. GA, glutaraldehyde. **D** Western blot assays verifying that BRG1 and reconstituted shRNA-resistant Flag-PKM2 (WT or Y105F mutant) were transfected into shPKM2-treated A549 cells. **E** Indicated cells were subjected to pyruvate kinase activity analyses (n = 3). **F** The proliferation of indicated cells in vitro evaluated by CCK8 assays (n=5). *p < 0.05, ****p < 0.0001, ns, no significant.

Figure.S7 BRG1 modulates in vivo proliferation through PKM2 Y105 phosphorylation. **A** Representative IHC staining images of xenograft tumors using antibodies against BRG1, PKM2, p-PKM2^{Y105}, Ki-67. Black scale bar, 50 μ m. **B, C** The IHC scores of p-PKM2^{Y105} and Ki-67 were quantified. *p < 0.05, **p < 0.01, ***p < 0.001

Figure.S8 BRG1 modulates the proliferation of NSCLC cells through SHP1. **A** BRG1 were transfected into control (shNC) or shSHP1-treated A549 cells and in vitro

proliferation was evaluated by CCK8 assays (n = 5). **B** Subcutaneous xenografts were formed by the indicated A549 cells in nude mice. Tumor size (n = 5) were calculated every 7 days, and the growth curve was drawn. **C** Representative image of subcutaneous xenografts (n = 5). **D** Tumor weight (n = 5) of the subcutaneous xenografts were measured. **E, F** A549 cells with BRG1 overexpression were treated with either vehicle control (DMSO) or 5 μ M TPI-1 and in vitro proliferation was evaluated by colony formation assays (n=3). **G** A549 cells with BRG1 overexpression were treated with either vehicle control (DMSO) or 5 μ M TPI-1 and in vitro proliferation was evaluated by CCK8 assays (n = 5). *p < 0.05, ***p < 0.001, ****p < 0.0001, ns, no significant.

Supplementary Table Legend

Table.S1 Systematic mass spectrometry analysis to identify potential proteins that interact with BRG1: transfecting GST-BRG1 or plasmid vector control into HEK293T cells, then pulled down GST-BRG1 using anti-GST magnetic beads. The protein sample was separated using SDS-PAGE and subsequently analyzed by mass spectrometry.