

1 **Supplementary information**

2 **Supplementary Figure 1**

3 Raw images of the western blot experiments presented in Figures 3, 4; Extended Data Figure 2, 4, 6, 8,
4 9 and 10. Pictures of exposed uncropped blots are shown together with information on the molecular
5 mass ladder that was used.

6

7 **Supplementary Figure 2**

8 Haematoxylin and eosin (H&E) staining images of adjacent areas of cropped images presented in
9 Figures 1, Extended Data Figure 3, 4, and 8.

10

11 **Supplementary Figure 3**

12 DNA staining of adjacent area of cropped image presented in Extended Data Figure 1l.

13

14 **Supplementary Video 1-2**

15 These videos show intravital images of 4T1 breast primary tumors generated from a mix of control 4T1
16 cells (expressing mTurquoise) and *Phgdh*-silenced cells (expressing Dendra). Representative tracks are
17 presented using solid green (*Phgdh*-silenced cells) and purple (shControl cells) lines.

18

19 **Supplementary Video 3-4**

20 These videos show intravital images of 4T1 breast primary tumors generated from a mix of *Phgdh*-
21 silenced cells (expressing Dendra) and *Phgdh*-silenced cells overexpressing wildtype (video 3) or
22 catalytic inactive (video 4) *Phgdh* (expressing mCerulean). Representative tracks are presented using
23 solid green (*Phgdh*-silenced cells) and purple (*Phgdh*-silenced cells overexpressing wildtype or catalytic
24 inactive *Phgdh* cells) lines.

25

26 **Supplementary Table 1**

27 This table is complementary and related to Fig. 1a-b and Extended Data Fig. 1a-f. It contains
28 clinicopathological information of 129 patients with triple-negative breast cancer.

29

30 **Supplementary Table 2**

31 This table is complementary and related to Fig. 1d and Extended Data Fig. 2e. It contains
32 clinicopathological information and the location of lymph node metastases of patients with triple-
33 negative breast cancer.

34

35 **Supplementary Table 3**

36 This table contains the weight of breast primary tumors from mice injected with 4T1 or EMT6.5 and
37 analyzed for number of lung metastases (Fig. 2c, 3d, 4d and Extended Data Fig. 7f).

38

39 **Supplementary Table 4**

40 This table is complementary and related to Fig. 3a. It contains information on metabolites analyzed in
41 4T1 cultured cells including metabolite name, mass isotopomer normalized ion counts and fractional
42 abundances, and total ion counts.

43

44 **Supplementary Table 5**

45 This table is complementary and related to Extended Data Fig. 6b-d and 9a. It contains information on
46 metabolites analyzed in MDA-MB-231 cultured cells including metabolite name, mass isotopomer
47 normalized ion counts and fractional abundances, and total ion counts.

48

49 **Supplementary Table 6**

50 This table is complementary and related to Extended Data Fig. 8a. It contains information on
51 metabolites analyzed in 4T1 and EMT6.5 cultured cells including metabolite name, total ion counts and
52 fractional abundances, and the normalization based on protein content measured by BCA.

53

54 **Supplementary Table 7**

55 This table is complementary and related to Extended Data Fig. 8b. It contains information on
56 metabolites analyzed in 4T1 cultured cells including metabolite name, mass isotopomer normalized
57 ion counts and fractional abundances.

58

59 **Supplementary Table 8**

60 This table is complementary and related to Extended Data Fig. 8e. It contains information on
61 metabolites analyzed in 4T1 cultured cells treated with the PHGDH inhibitor PH-755, including
62 metabolite name, mass isotopomer normalized ion counts and fractional abundances.

63

64 **Supplementary Table 9**

65 This table is complementary and related to Extended Data Fig. 9b-c. It contains information on
66 metabolites analyzed in 4T1 cultured cells, including metabolite name, mass isotopomer normalized
67 ion counts and fractional abundances.

68

69 **Supplementary Table 10**

70 This table contains methods information relating to primer sequences.

71

72 **Supplementary Table 11**

73 This table contains a custom-made gene-set related to OPN signaling via AP-1 signature, which has
74 been used for gene-set enrichment analysis in Fig. 2d and Extended Data Fig. 5a-b.

75

76 **Supplementary Table 12**

77 This table contains methods information relating to antibodies used for immunofluorescence,
78 fluorescent immunohistochemistry and imaging mass cytometry.

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