

Supplemental Material (Figures S1-S4)

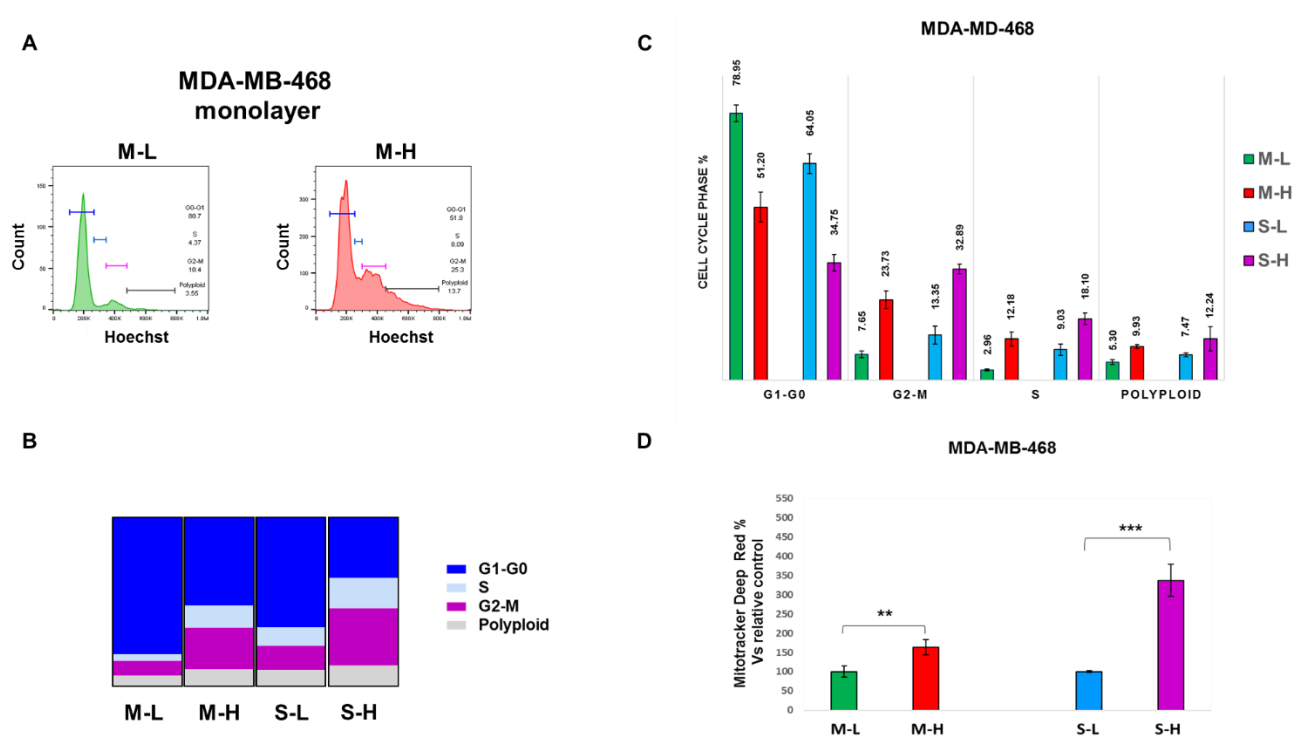


Figure S1.

MDA-MB-468 e-CSCs demonstrate increased cell cycle progression and increased mitochondrial mass. A) Representative images of cell cycle analysis. B & C) Analysis of cell cycle progression. See also Table 2. D) Analysis of mitochondrial mass with MitoTracker vital staining. Note that the S-H cell sub-population derived from MDA-MB-468 cells shows the largest increases in cell cycle progression and mitochondrial mass. Virtually identical results were obtained with MCF7 cells. Compare with data presented in Figures 5 & 6.

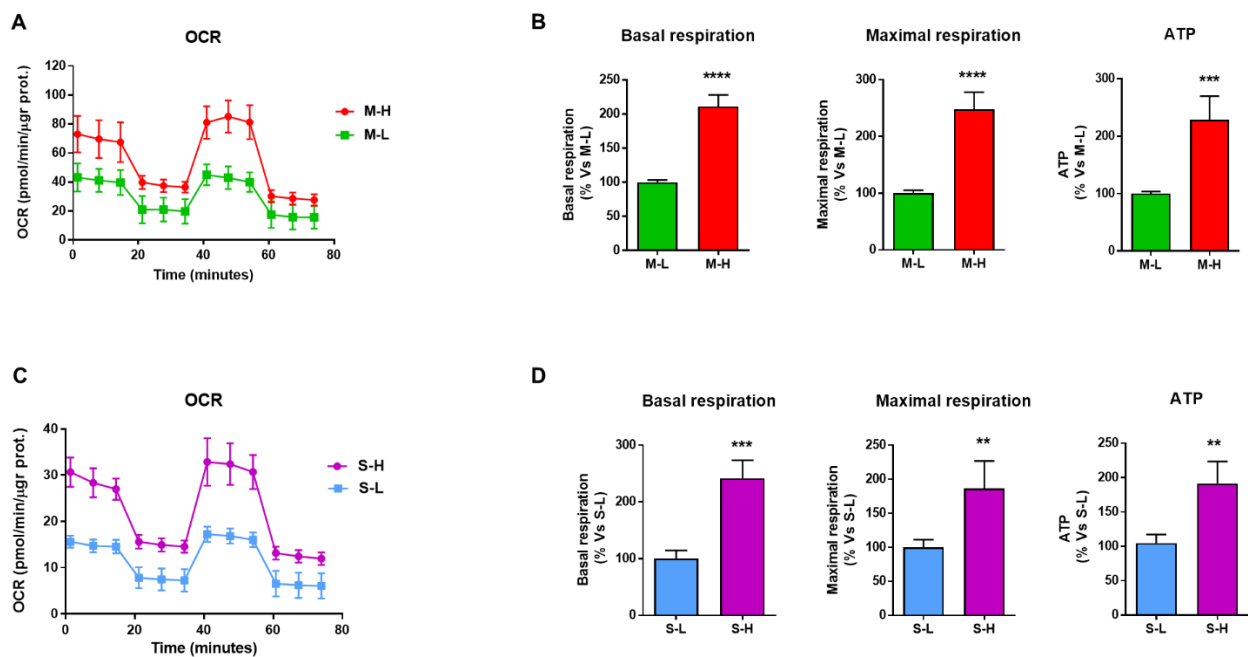


Figure S2.

MDA-MB-468 e-CSCs have increased oxidative mitochondrial metabolism. The oxygen consumption rate (OCR) was measured, using the Seahorse XFe96 metabolic-flux analyzer. Note that high OCR in MDA-MB-468 cells directly correlates with high-flavin content. For example, M-H cells (from 2D-monolayers) and S-H cells (from 3D-spheroids) have the highest levels of OCR, as compared to the M-L and S-L sub-populations. A, B) OCR for M-L vs. M-H sub-populations; C, D) OCR for S-L vs. S-H sub-populations.

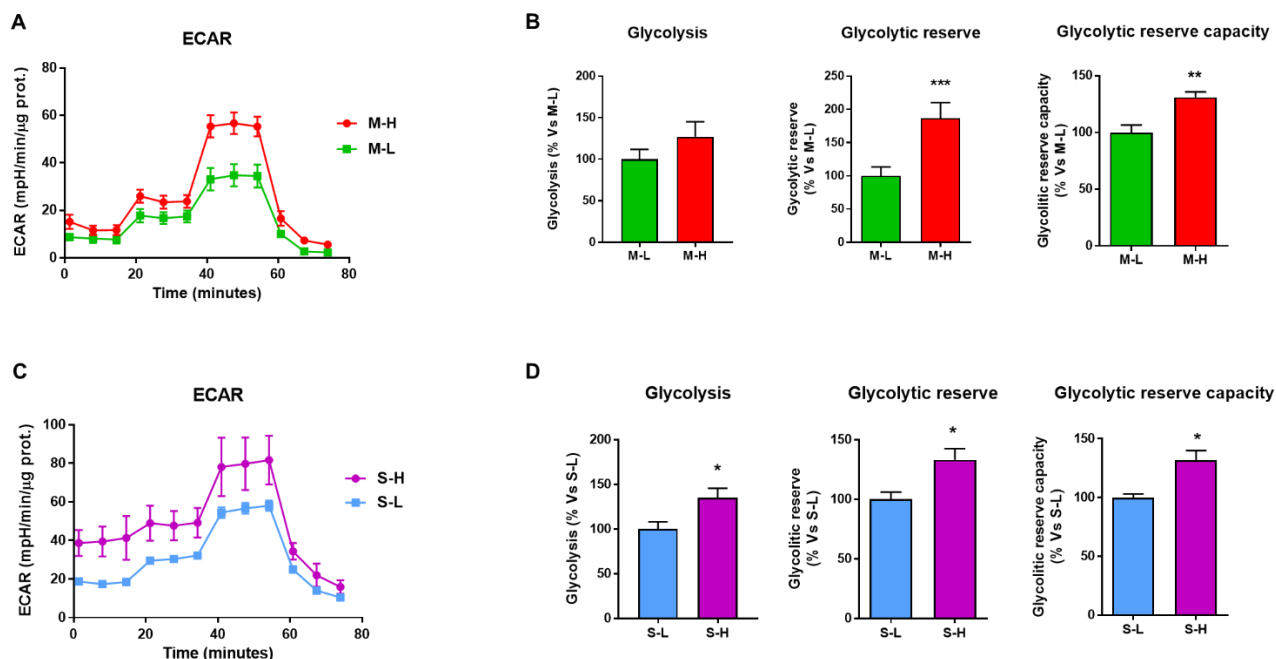
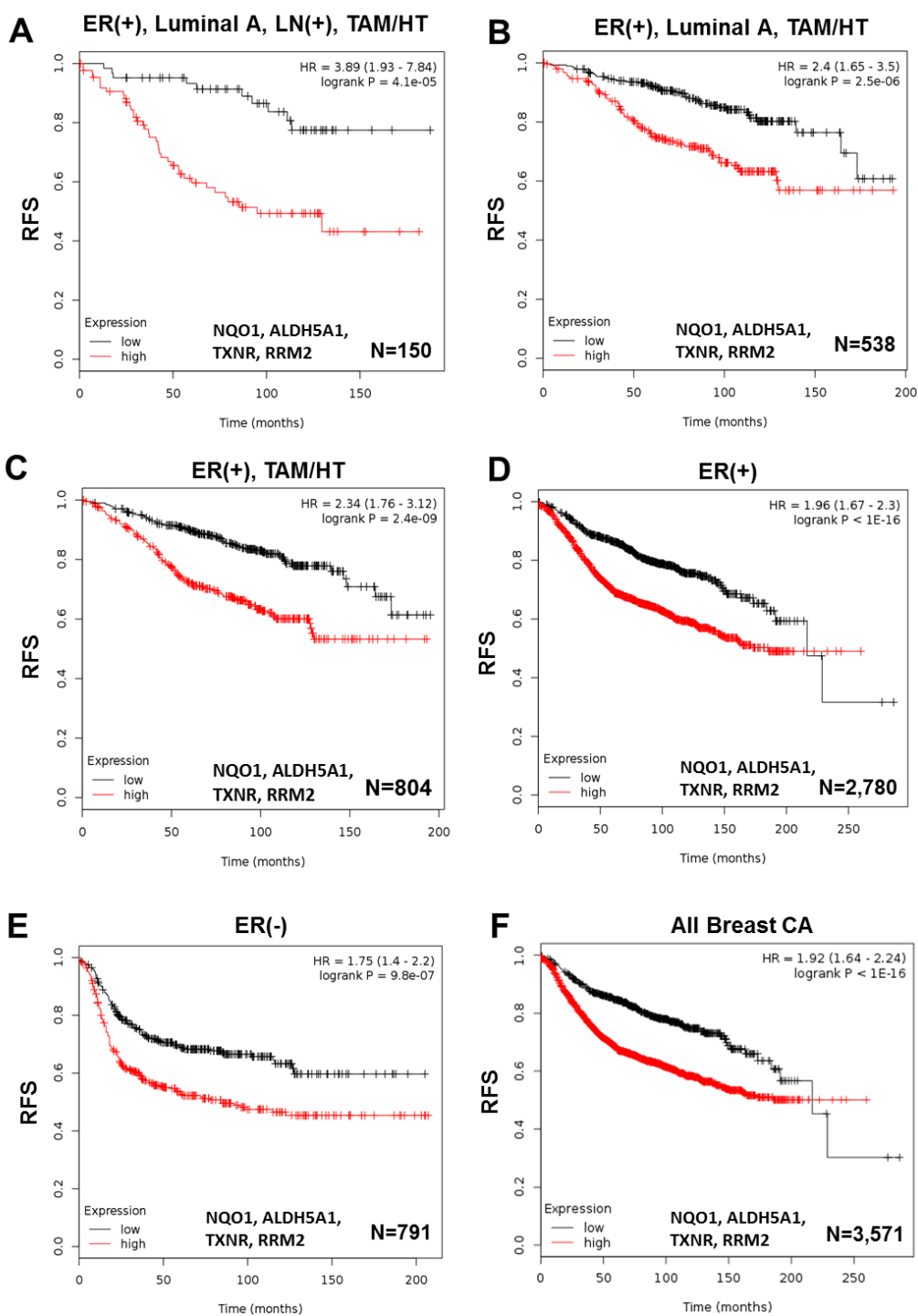


Figure S3.

MDA-MB-468 e-CSCs have elevated levels of aerobic glycolysis. The extracellular acidification rate (ECAR) was measured, using the Seahorse XFe96 metabolic-flux analyzer. Note that high ECAR in MDA-MD-468 cells directly correlates with high-flavin content. For example, M-H cells (from 2D-monolayers) and S-H cells (from 3D-spheroids) have the highest levels of ECAR, as compared to the M-L and S-L sub-populations. A, B) ECAR for M-L vs. M-H sub-populations; C, D) ECAR for S-L vs. S-H sub-populations



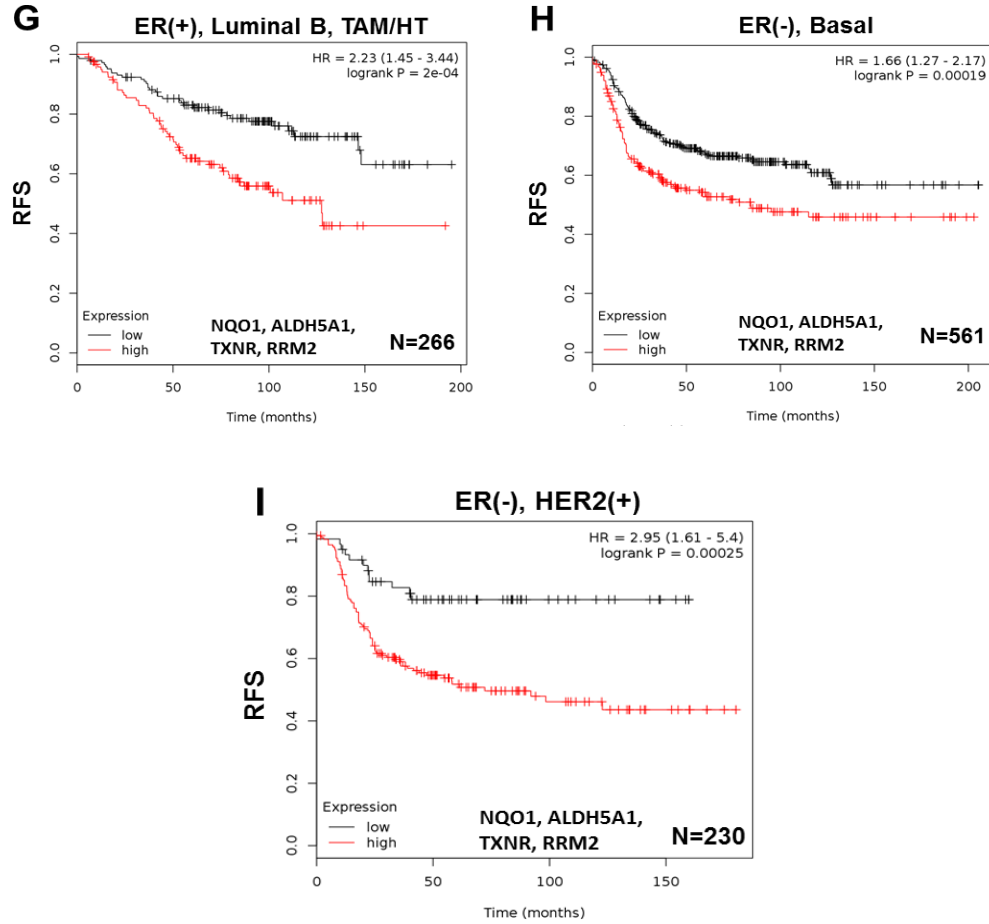


Figure S4.

K-M analysis of human breast cancer patient sub-types, using an anti-oxidant signature derived from e-CSCs. The K-M curves directly show that the anti-oxidant signature from e-CSCs effectively predicts tumor recurrence in all of the breast cancer sub-types tested. The patient groups examined were as follows: A) ER(+), Luminal A sub-type, with Lymph-Node metastasis (LN(+)) at diagnosis, and treated with hormonal therapy (TAM/HT) (N=150); B) ER(+), Luminal A sub-type, and treated with hormonal therapy (TAM/HT) (N=538); C) ER(+) and treated with hormonal therapy (TAM/HT) (N=804); D) All ER(+) (N=2,780); E) All ER(-) (N=791); F) All Breast Cancer (N=3,571); G) ER(+), with the Luminal B sub-type (N=266); H) ER(-), with the Basal sub-type (N=561); and I) ER(-) and HER2(+) (N=230).

RFS, recurrence-free survival.