

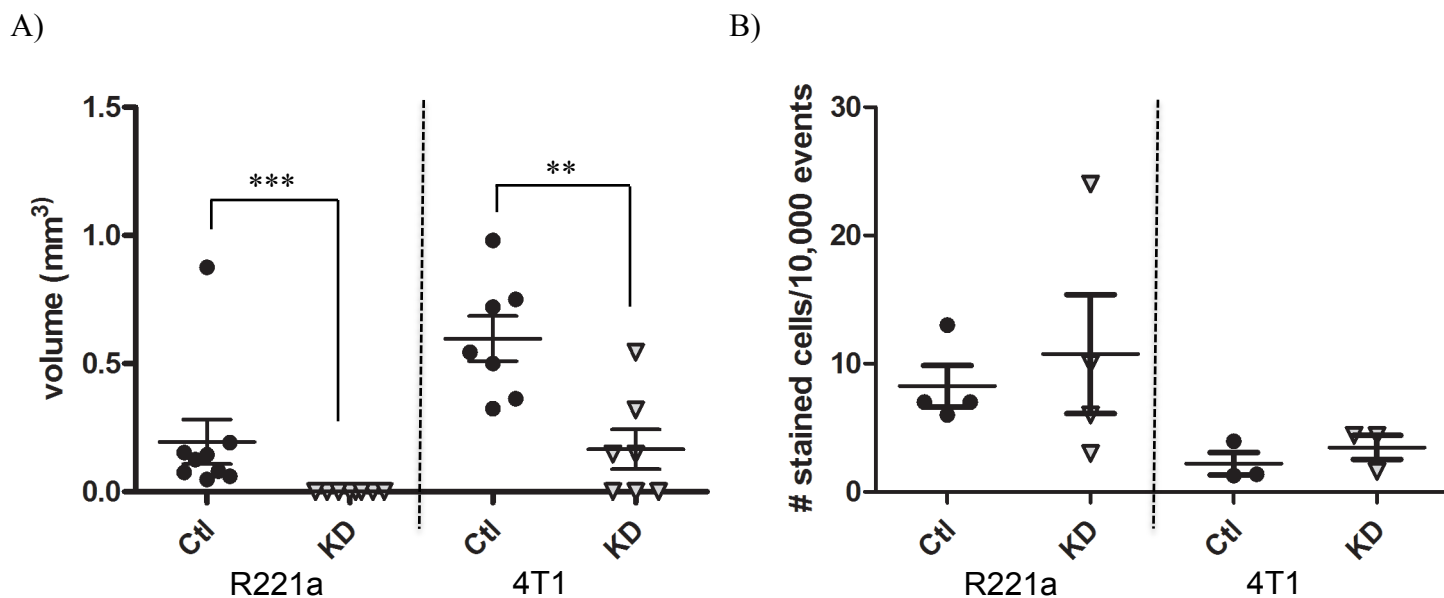
## SUPPLEMENTAL MATERIALS AND METHODS

### Primer sequences for RT-PCR

**Table 1:** Custom primers were requested from Invitrogen with previously published sequences

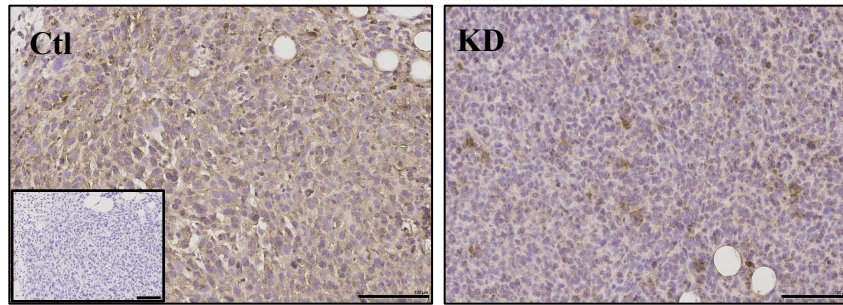
TARGET	FORWARD	REVERSE	SOURCE
Human SLC1A5/ASCT2	AAGATCGTGGAGATGGAGGAT	GAACTGGAAGAGGGTCCCAAAG	<sup>1</sup>
Human Glut1	AACTCTTCAGCCAGGGTCCAC	CACAGTGAAGATGATGAAGAC	<sup>2</sup>
Mouse ASCT2	TGCTTTCGGGACCTCTTCTA	TGATGTGTTTGGCCACACCA	<sup>3</sup>
Mouse Glut1	GCCCCAGAAGGTTATTGA	CGTGGTGA GTGTGGTGGAT	<sup>4</sup>
Human 18S RNA	CAGCCACCCGAGATTGAGCA	TAGTAGCGACGGGGCGGTGTG	ShineGene Molecular Biotech Inc.
Mouse 18S RNA	AGGGGAGAGCGGGTAAGAGA	GGACAGGACTAGGCGGAACA	ShineGene Molecular Biotech Inc.

1. Averous J, Bruhat A, Jousse C, Carraro V, Thiel G, Fafournoux P. Induction of CHOP expression by amino acid limitation requires both ATF4 expression and ATF2 phosphorylation. *J. Biol. Chem.* 2004;279(7):5288-97. doi:10.1074/jbc.M311862200.
2. Amann T, Maegdefrau U, Hartmann A, et al. GLUT1 expression is increased in hepatocellular carcinoma and promotes tumorigenesis. *Am. J. Pathol.* 2009;174(4):1544-52. doi:10.2353/ajpath.2009.080596.
3. Nakaya M, Xiao Y, Zhou X, et al. Inflammatory T cell responses rely on amino acid transporter ASCT2 facilitation of glutamine uptake and mTORC1 kinase activation. *Immunity* 2014;40(5):692-705. doi:10.1016/j.immuni.2014.04.007.
4. Ge X, Chen C, Hui X, Wang Y, Lam KSL, Xu A. Fibroblast growth factor 21 induces glucose transporter-1 expression through activation of the serum response factor/Ets-like protein-1 in adipocytes. *J. Biol. Chem.* 2011;286(40):34533-41. doi:10.1074/jbc.M111.248591.

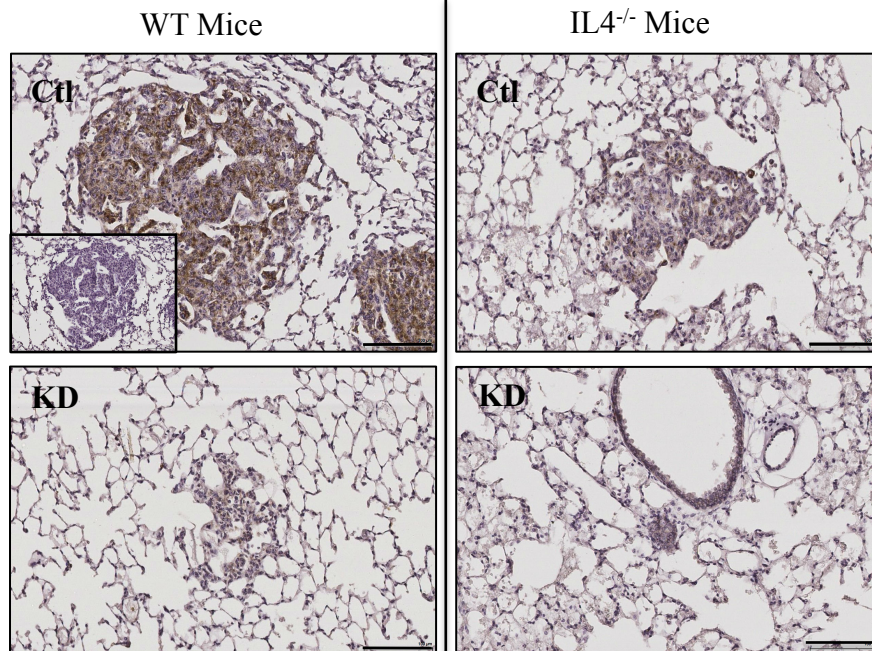


**Supplemental Figure 1: A reduction in initial survival ability does not contribute to the reduction in IL4R $\alpha$  tumor volume at endpoint.** R221a or 4T1 sh-control (Ctl) or IL4R $\alpha$  knockdown (KD) cells were orthotopically injected into the 4<sup>th</sup> mammary gland of mice. **A)** R221a and 4T1 mammary tumor volume at endpoint, as calculated from caliper measurements of tumor length and width (n = 14-16). **B)** Quantification by flow cytometry of the number of cell tracker red positive tumor cells in the mammary glands of mice 48 hours post-injection (n = 6-8).

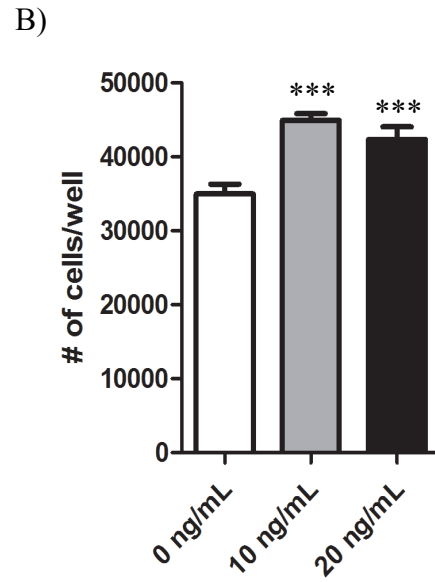
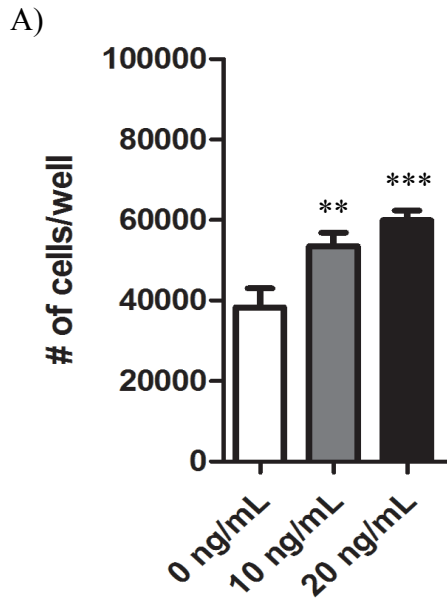
A)



B)

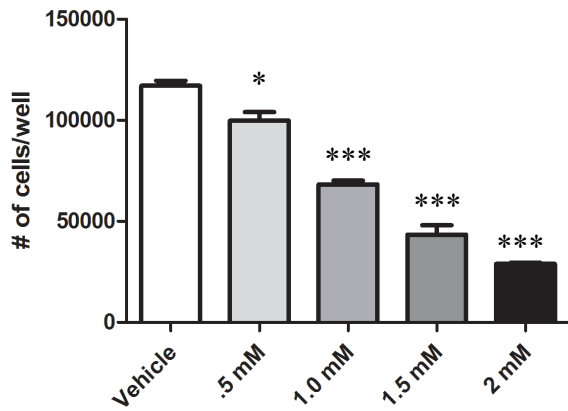


**Supplemental Figure 2: Immunohistochemical analysis of GLUT1 protein expression in 4T1 tumors. A)** Representative images of GLUT1 staining by immunohistochemistry in 4T1 sh-control (Ctl) and IL4R $\alpha$  knockdown (KD) orthotopic mammary tumors and **B)** lung tumor metastases in wild-type (WT) or IL4 knockout (IL4<sup>-/-</sup>) mice. Examples of negative staining controls are shown inset, and all scale bars = 100  $\mu$ M.

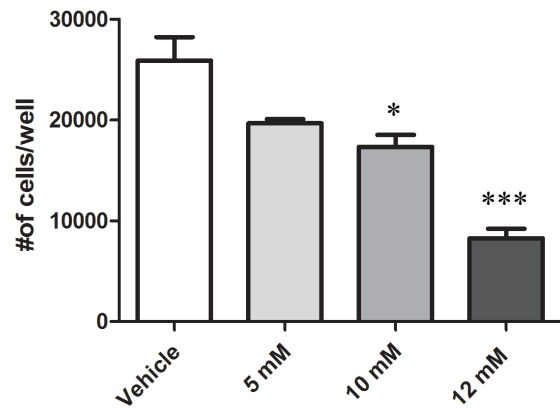


**Supplemental Figure 3: IL4 stimulates growth in human and murine breast cancer cells. A) 4T1 or B) MDA-MB-231 parental cells were treated with recombinant IL4 for 48 hours and cell number determined by CyQUANT® proliferation assay.**

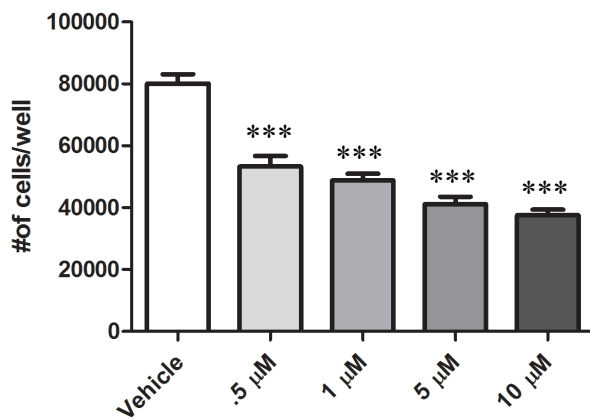
A)



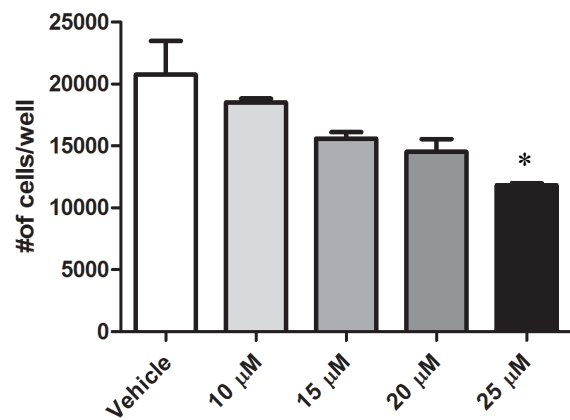
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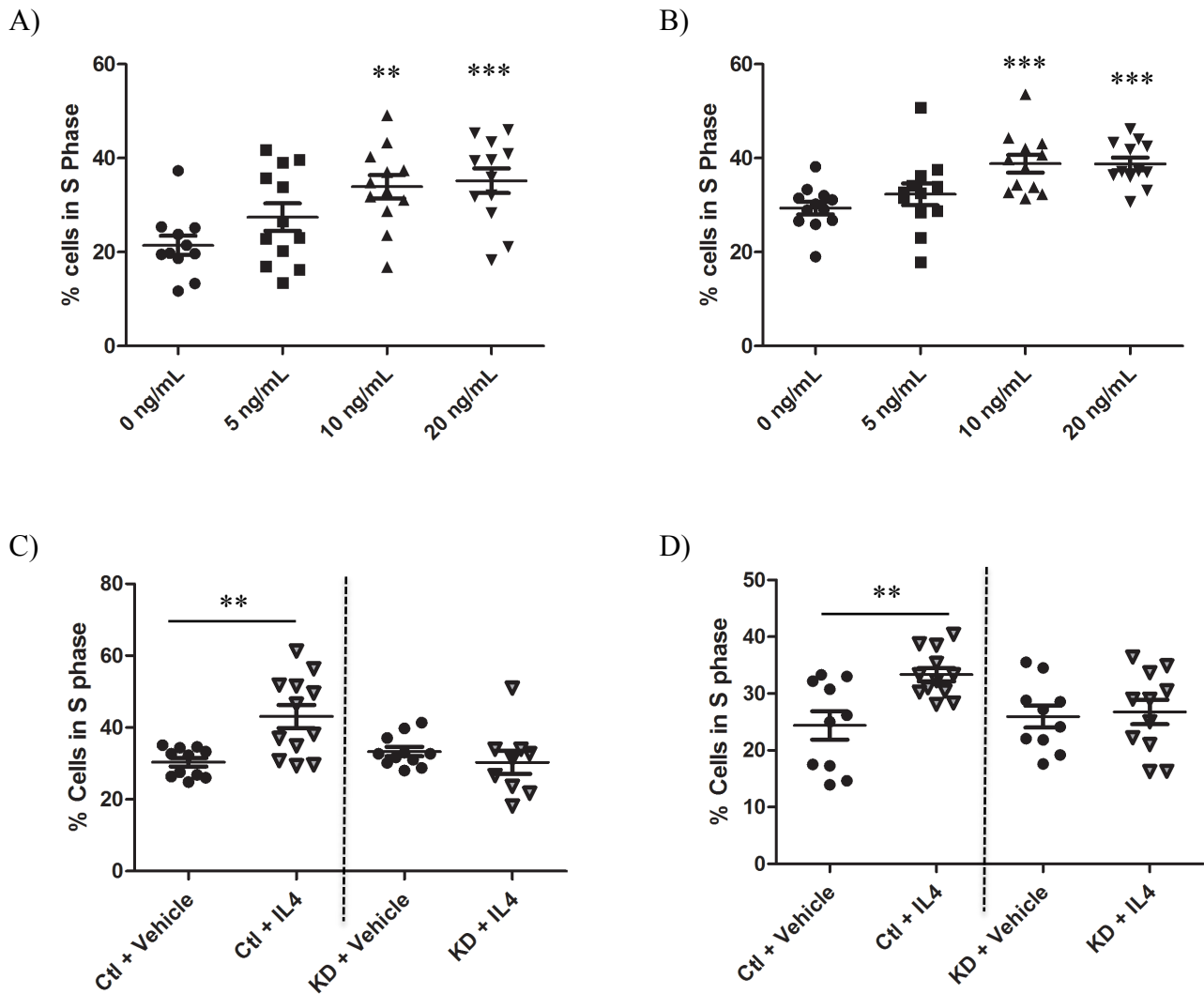
C)



D)



**Supplemental Figure 4: 2 Deoxy-D-glucose (2DG) and compound 968 attenuate human and murine breast cancer cell growth in a dose dependent manner.** A) 4T1 and B) MDA MB 231 sh-control clones were treated once with increasing doses of 2DG and cell number quantified 48 hours later by CyQUANT® proliferation assay. C) 4T1 and D) MDA MB 231 sh-control clones were treated once with increasing doses of 968 and cell number quantified 48 hours later by CyQUANT®.



**Supplemental Figure 5: IL4R $\alpha$  mediates enhanced proliferation in response to IL4 in Human and murine breast cancer cells.** The percent of **A)** 4T1 parental cells and **B)** MDA MB 231 parental cells in S phase was quantified by EDU incorporation assay following 48 hours incubation with increasing doses of IL4. **C)** 4T1 and **B)** MDA MB 231 sh-control and IL4R $\alpha$  KD cells were treated with 10 ng/mL IL4 for 48 hours before the percent cells in S phase was quantified using an EdU incorporation assay.