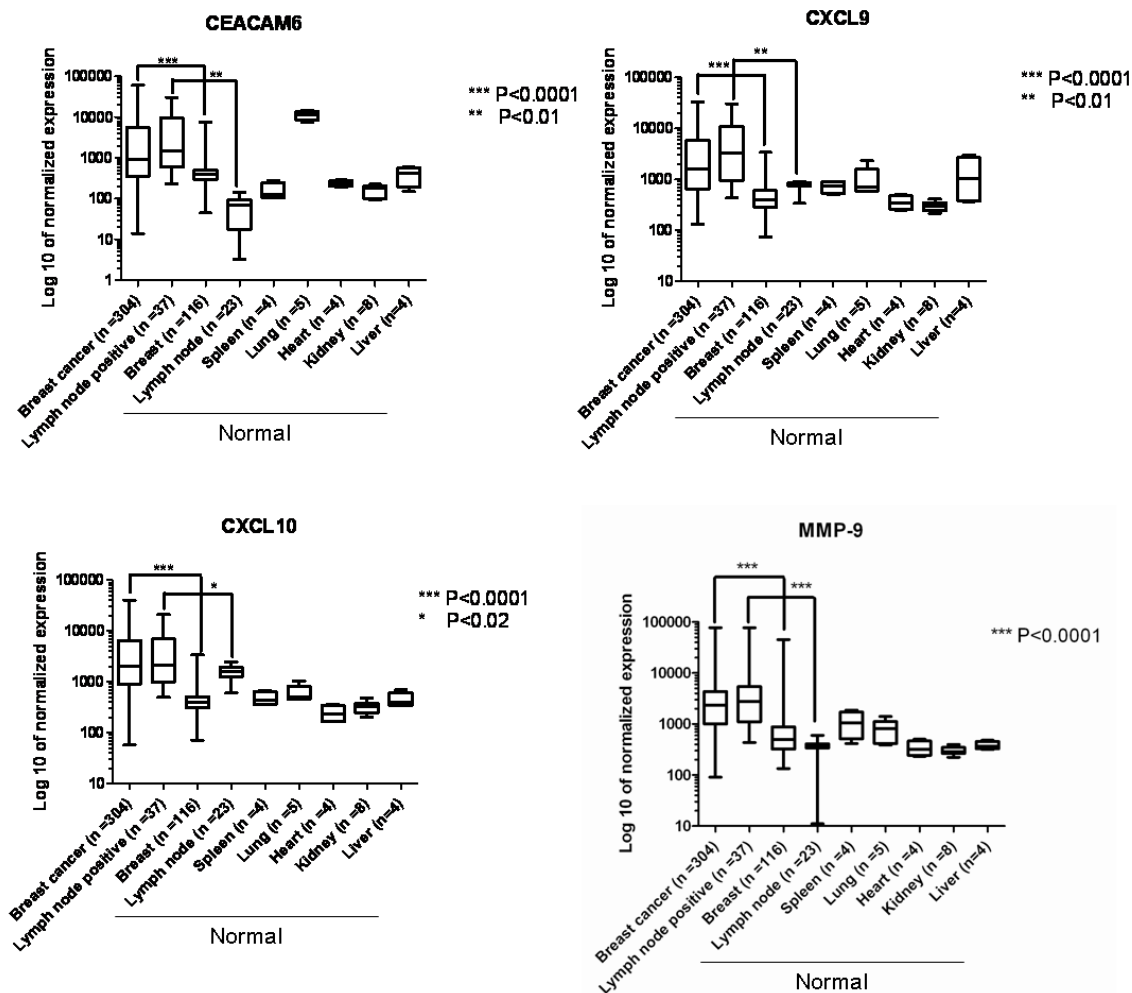
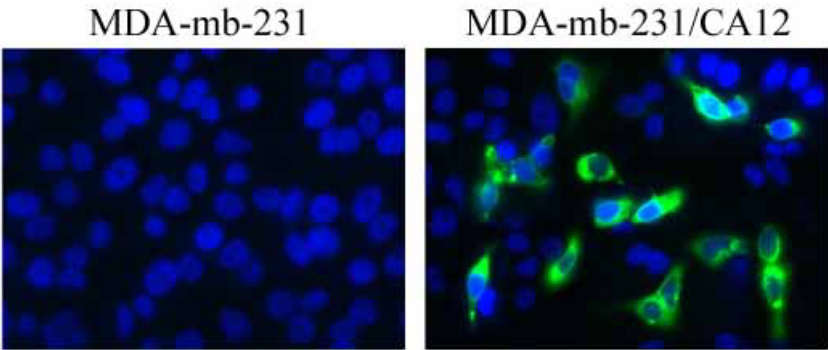


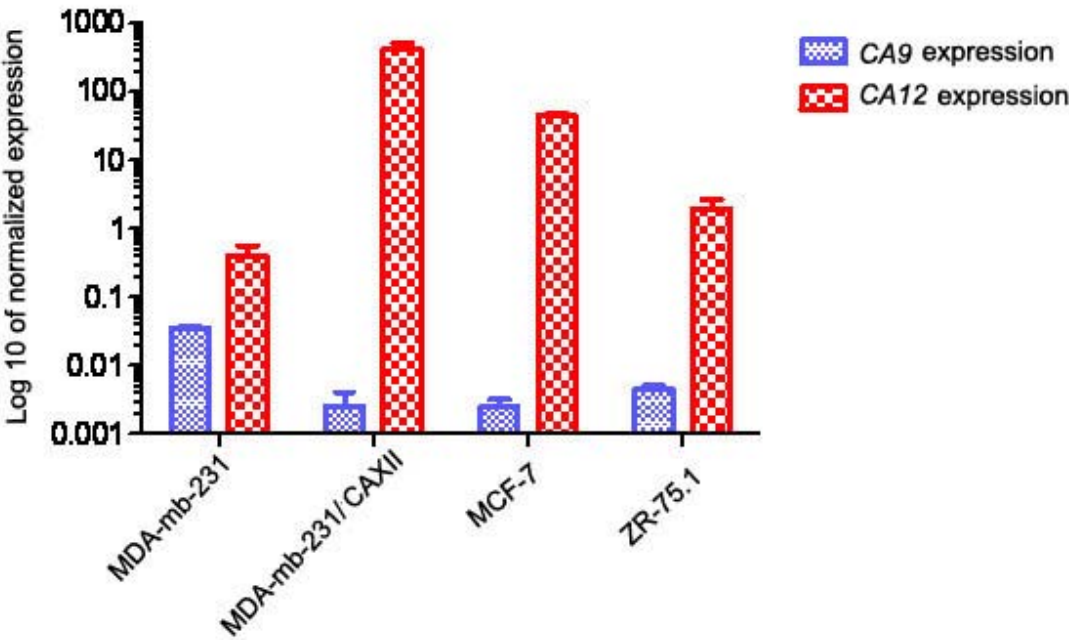
Supplementary Figure S1



Supplementary Figure S2



Supplementary Figure S3

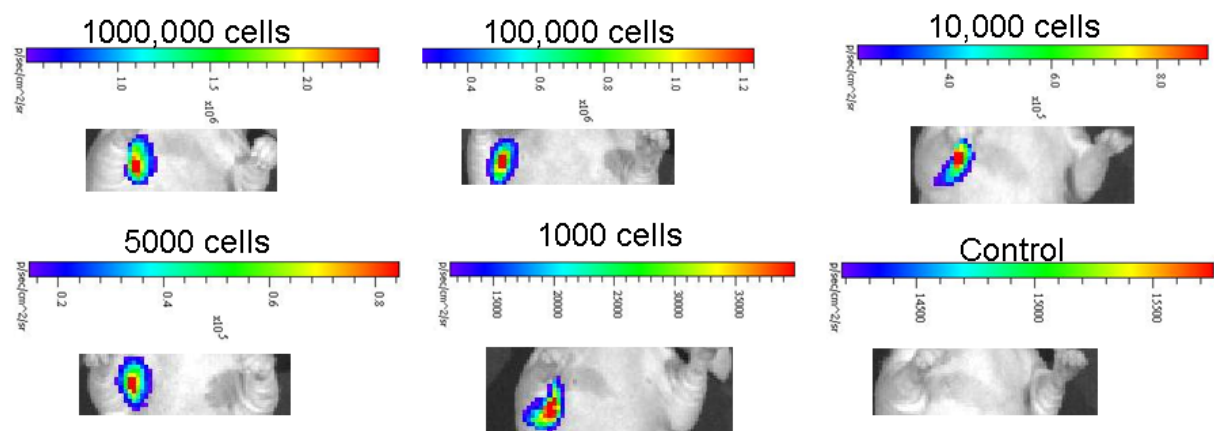


Supplementary Figure S4

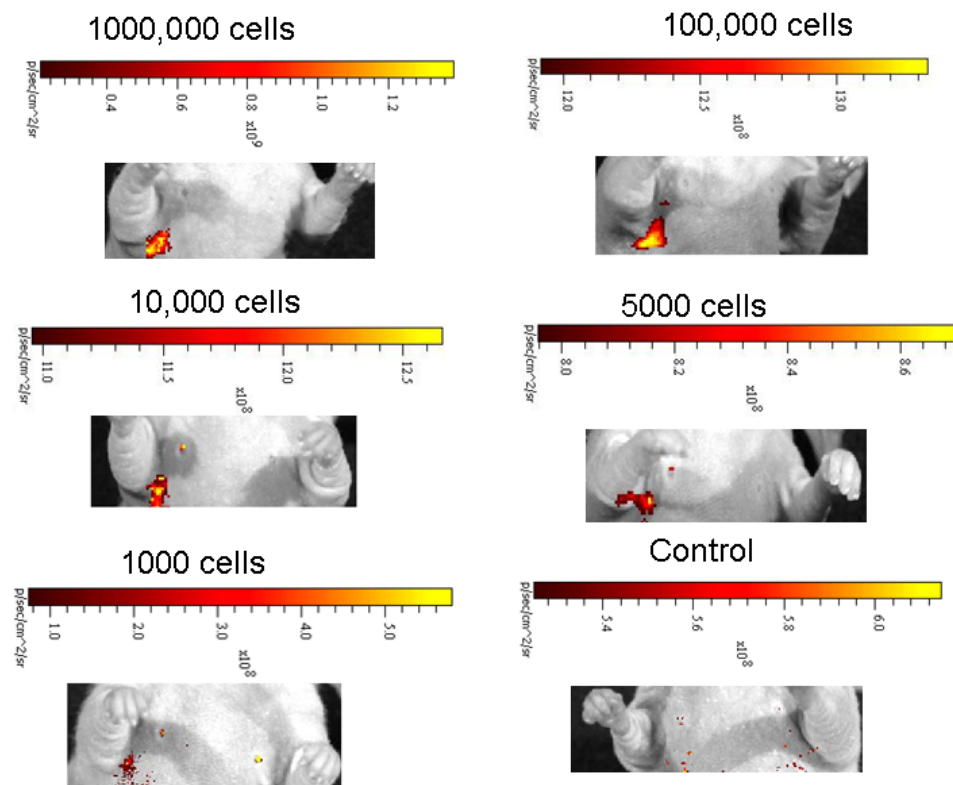


Supplementary Figure S5

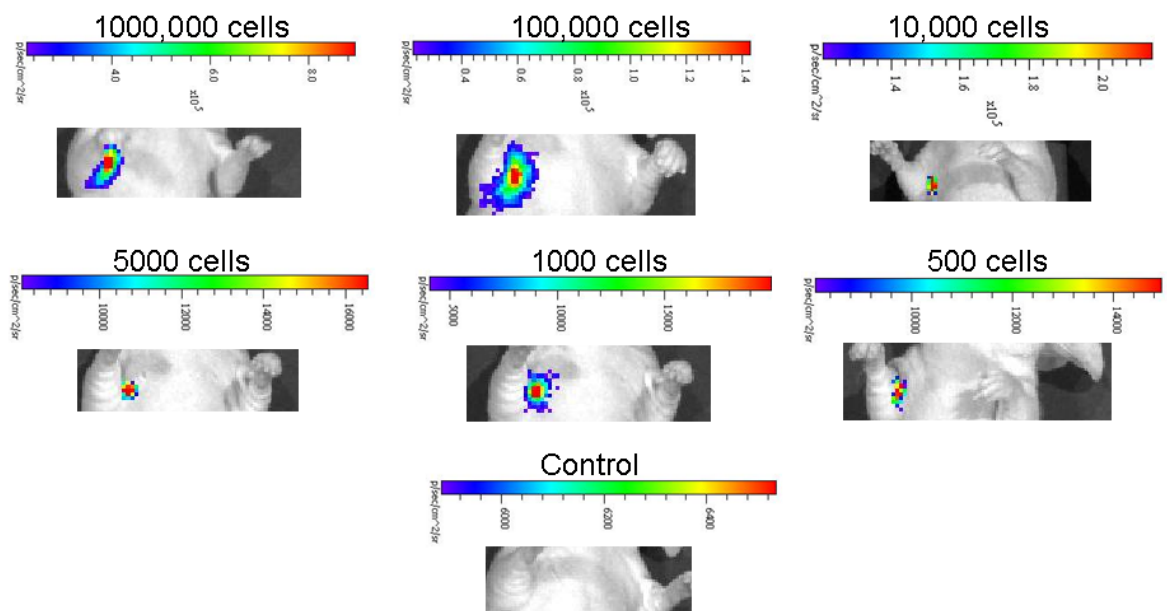
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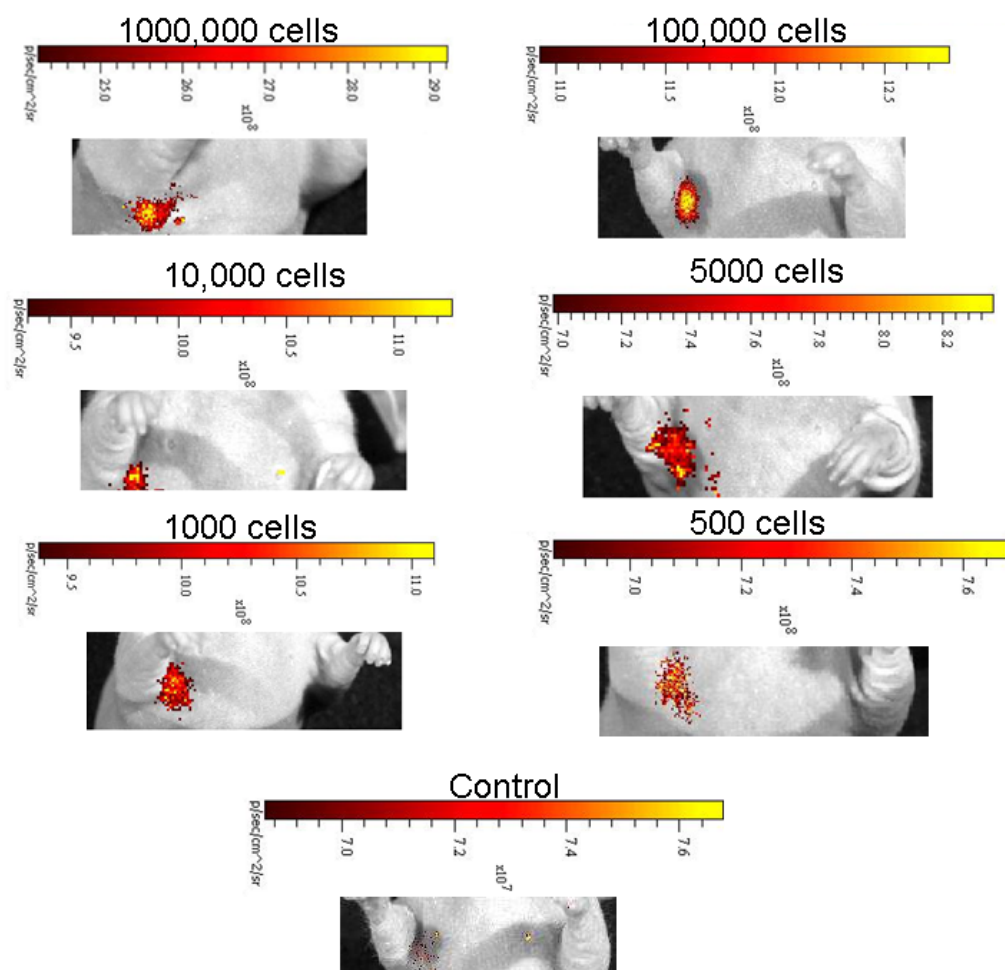
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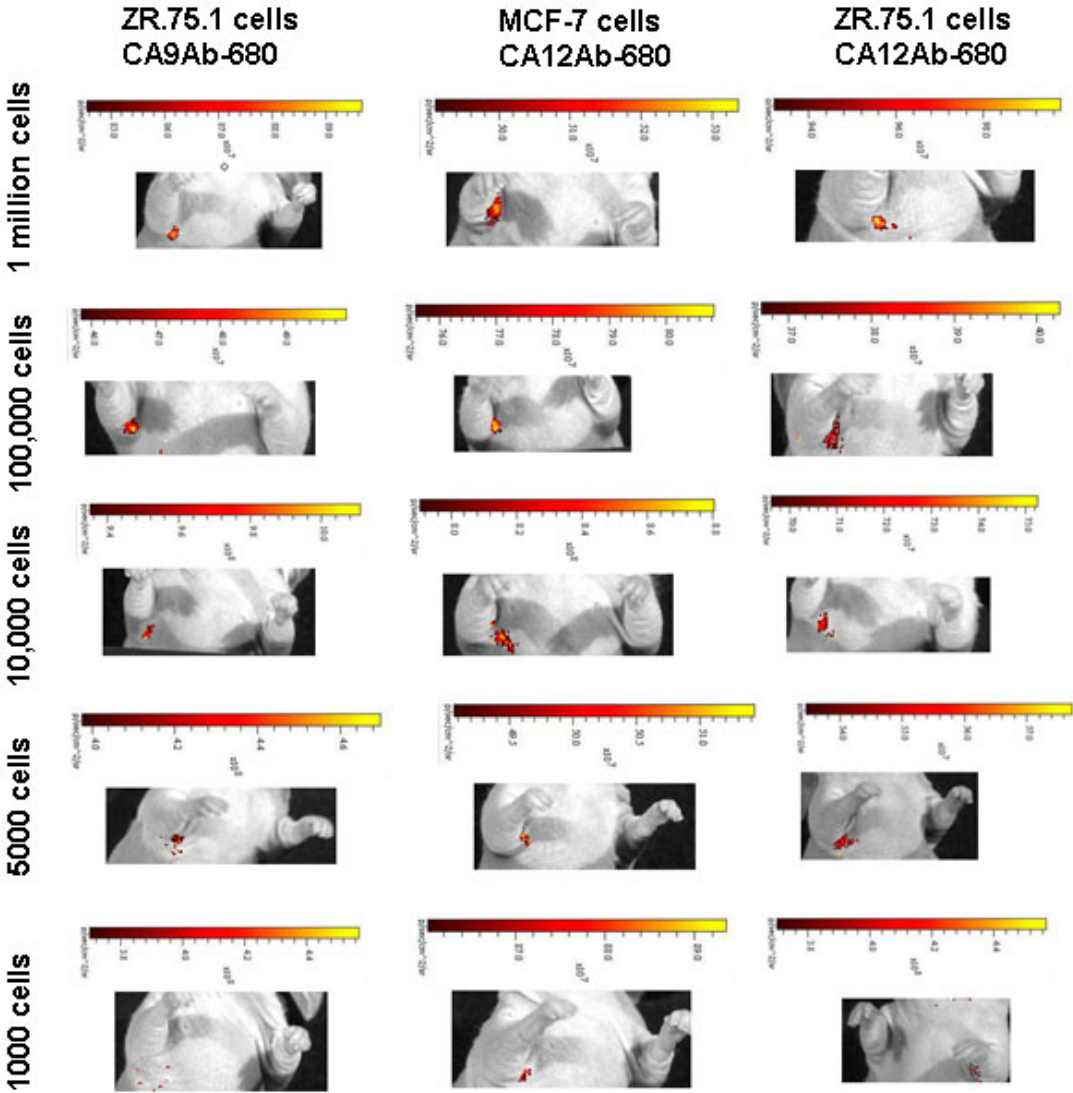
C



D



Supplementary Figure S6



Supplementary Figure Legends

Fig. S1. DNA microarray expression profiles of *CEACAM6*, *CXCL9*, *CXCL10* and

MMP9 mRNA in patient and unaffected tissue samples. Data are represented as mean \pm

s.d. Note the Log 10 scale. Asterisk: significant difference between breast tumor and

normal breast, or diseased lymph nodes and normal lymph nodes with P values inset into

the graphs.

Fig. S2. ICC of CAXII expression (green) in engineered MDA-mb-231 cells but not in

parental. Cell nuclei are stained blue.

Fig. S3. qRT-PCR analysis of *CA9* and *CA12* expression in MDA-mb-231, MDA-mb-

231/CAXII, MCF-7 and ZR-75.1 cells. *CA9* expression in MDA-mb-231 is about 7 times

more than ZR-75.1 cells, while its expression is very low in MCF-7 cells. *CA12*

expression in MDA-mb-231/CAXII (engineered cells) is about 10 and 20 times more

than *CA12* expression in MCF-7 cells and ZR-75.1 cells, respectively. Data are

represented as mean \pm s.d. Note the Log 10 scale.

Fig. S4. Ultrasound guided injection of cells into axillary node (yellow arrow). Needle is

indicated by white arrow. (A) Pre-injection, (B) injection and (C) post-injection.

Fig. S5. Sensitivity of CA9Ab-680 and CA12Ab-680 for detection of tumor cells in

axillary lymph node. A range in number of MDA-mb-231 cells were injected into the

axillary lymph node of nude mice. (A,C) Luciferase bioluminescence imaging 4 hours

after implantation of the cells; MDA-mb-231/Luc (A) and MDA-mb-231/Luc expressing

CAXII (C). (B,D) Agents were injected into the MFP proximal to the axillary nodes and

fluorescence images acquired 24 hours after injection. Panel B shows mice carrying

CA9Ab-680 agent and panel D shows mice carrying CA12Ab-680 agent. As few as 1000

and 500 cells were detected by CA9Ab-680 and CA12Ab-680, respectively. Note that

signal was not detected in a sham injected node (control with no cells). Exposure time is different for every image and the units are p/sc/cm²/sr. For fluorescence studies, the signals were autofluorescence background subtracted.

Fig. S6. Sensitivity of CA9Ab-680 and CA12Ab-680 for detection of tumor cells with different levels of *CA9* and *CA12* expression implanted into the axillary lymph node. A range in number of ZR-75.1/Luc cells (*CA9* and *CA12* low expressing cells, Fig. S5), MCF-7/Luc cells (*CA12* moderate expressing cells, Fig. S5) were injected into the axillary lymph node of nude mice using ultrasound guided injection. After confirmation of accurate implantation into the ALN by bioluminescence imaging, CA9Ab-680 and CA12Ab-680 were injected into the MFP proximal to the axillary nodes and fluorescence images acquired 24 hours after injection. About 5000 ZR-75.1 cells were detected by CA9Ab-680, and as few as 1000 MCF-7/Luc cells and 5000 ZR-75.1/Luc cells were detected by CA12Ab-680. Exposure time is different for every image and the normalized units are p/sc/cm²/sr. For fluorescence studies, the signals were autofluorescence background subtracted.