PS1-001 is a new promising stem cell marker in breast cancer. PS1-001 was found in all subgroups except for triple negative breast cancer (Fig. 1).

Background
There is a lack of a reliable stem cell marker in breast cancer and none is currently used in clinical routine. We have previously evaluated ALDH1, which is a known stem cell marker, but could not prove a prognostic significance in breast cancer.

Methods and patients
We used phage-display technology to find new potential stem cell markers for breast cancer. Peptides binding to a stem cell-like breast cancer cell line were characterized using mass spectrometry and new human antibodies were created. Potential stem cell antibodies were evaluated in a tissue microarray (TMA) consisting of 16 breast cancer samples.

Results
We have selected and characterized 300 potential stem cell markers using phage-display technology and created novel human antibodies (Fig. 2). From this list we selected a smaller subset of technically suitable candidates, PS1-001, which is an unknown protein, was evaluated. We choose the cut-off >10 % and found 31% of the samples to be positive for PS1-001.

Subgrouping the patients into molecular subtype using clinical parameters (grade, ER, PR, HER2 and Ki67) showed PS1-001-positive cancer cells in the HER2+, Luminal B, and Luminal A subgroups, but not in triple negative tumors. PS1-001 showed a higher percentage of positive cells overall in comparison to ALDH1, but ALDH1 showed more positive cells in the triple negative group (Fig. 1).

Discussion
PS1-001 is a new promising stem cell marker in breast cancer and needs to be further evaluated in a larger patient cohort.