

# Immunohistology

## Breast pathology



## IVD certified Breast Cancer Panel

Breast cancer belongs to the most frequent cancer diseases in women. A reliable immunohistochemical diagnostic is of great importance for the characterisation of the tumour and therefore for the treatment of the patients. Especially the semiquantitation of scoring systems demands highest quality not only of

the laboratory performance but also of the reagents used in IHC. Zytomed Systems offers CE/IVD certified reagents which were also evaluated in external quality control schemes like the German QuIP and the Danish NordiQC circles. This quality enables you to obtain excellent immunohistochemical results.

### Bibliography

Harvey JM *et al.* Estrogen receptor status by immunohistochemistry is superior to the ligand-binding assay for predicting response to adjuvant endocrine therapy in breast cancer.  
J Clin Oncol 17:1474-1481, 1999

Remmele W, Stegner HE. Recommendation for uniform definition of an immunoreactive score (IRS) for immunohistochemical estrogen receptor detection (ER-ICA) in breast cancer tissue. Pathologe 8:138-140, 1987

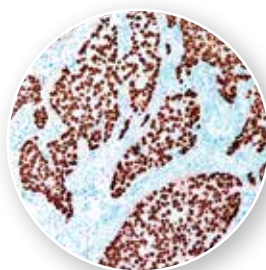
Goldhirsch A *et al.* Meeting highlights: international expert consensus on the primary therapy of early breast cancer 2005.  
Ann Oncol 16:1569-1583, 2005

Wolff AC *et al.* American Society of Clinical Oncology/College of American Pathologists Guideline Recommendations for Human Epidermal Growth Factor Receptor 2 Testing in Breast Cancer. J Clin Oncol 25:118-145, 2007

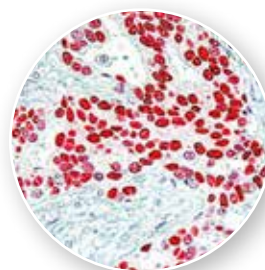
Wolff AC *et al.* Recommendations for human epidermal growth factor receptor 2 testing in breast cancer: American Society of Clinical Oncology/College of American Pathologists clinical practice guideline update.  
J Clin Oncol. 31:3997-4013, 2013

### Breast carcinoma antibodies

| Description   | Dilution      | Pre-treatment | Volume | Cat. No.  |
|---|---------------|---------------|--------|-----------|
| <b>HER2</b><br>Clone: CB11<br>Host: Mouse                   | 1:200-1:400   | Citrate       | 1 ml   | MSK044    |
|   |               |               | 0.5 ml | MSK044-05 |
|   |               |               | 6 ml   | MSG044    |
| <b>Ki-67</b><br>Clone: SP6<br>Host: Rabbit                  | 1:200         | Citrate       | 1 ml   | RBK027    |
|   |               |               | 0.5 ml | RBK027-05 |
|   |               |               | 6 ml   | RBG027    |
| <b>Estrogen Receptor</b><br>Clone: 1D5<br>Host: Mouse       | 1:100 - 1:300 | Citrate       | 1 ml   | MSK001    |
|   |               |               | 0.5 ml | MSK001-05 |
|   |               |               | 6 ml   | MSG001    |
| <b>Progesterone Receptor</b><br>Clone: SP42<br>Host: Rabbit | 1:200 - 1:400 | Citrate       | 1 ml   | RBK020    |
|   |               |               | 0.5 ml | RBK020-05 |
|   |               |               | 6 ml   | RBG020    |



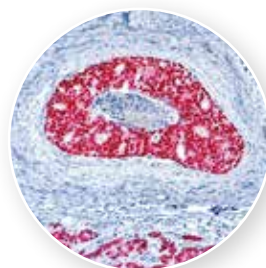
ER, clone 1D5  
(Cat. No. MSK001)



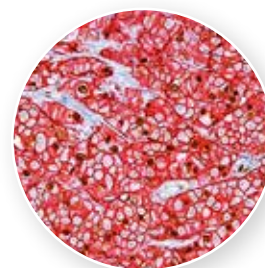
PR, clone SP42  
(Cat. No. RBK020)



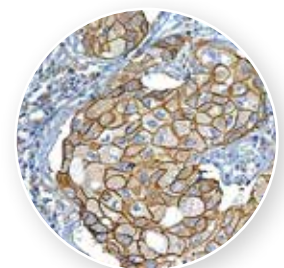
Ki-67, clone SP6  
(Cat. No. RBK027)



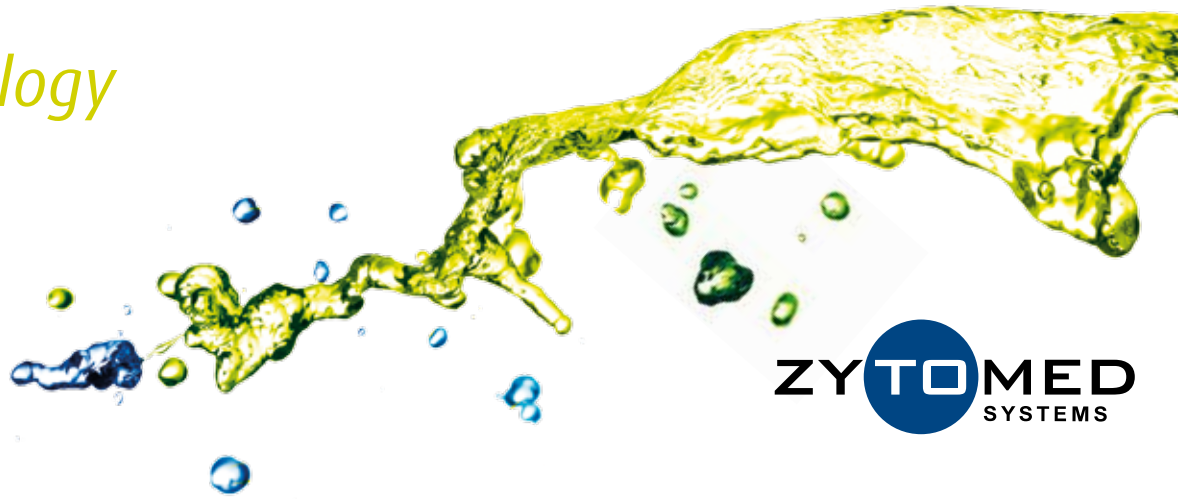
ER, clone 1D5  
(Cat. No. MSK001)



HER2/Ki-67 double stain  
on breast carcinoma



HER2, clone CB11  
(Cat. No. MSK044)



## Scoring schemes of immunohistochemical ER/PR staining on breast carcinoma

### ► "Allred Score" (Harvey et al. 1999)

| Percentage of positive cell nuclei (Proportion Score, PS) | Staining intensity (Intensity Score, IS) | Score  |
|---|--|--|
| no positive nuclei: 0 points                              | No staining reaction: 0 points           | Points Proportion Score<br>+<br>Points Intensity Score<br>(0 – 8 points) |
| < 1 % positive nuclei: 1 point                            | weak staining reaction: 1 point          |  |
| 1-10 % positive nuclei: 2 points                          | intermediate staining reaction: 2 points |  |
| 11-33 % positive nuclei: 3 points                         | strong staining reaction: 3 points       |  |
| 34-66 % positive nuclei: 4 points                         |  |  |
| > 66 % positive nuclei: 5 points                          |  |  |

### ► "Remmele Score" (IRS, immunoreactive score according to Remmele and Stegner, 1987)

| Percentage of positive cell nuclei | Staining intensity                       | Score   |
|------------------------------------|--|---|
| no positive nuclei: 0 points       | No staining reaction: 0 points           | Points percentage of<br>positive cell nuclei<br>x<br>Points staining intensity<br>(0 – 12 points) |
| < 10 % positive nuclei: 1 point    | weak staining reaction: 1 point          |   |
| 10 –50 % positive nuclei: 2 points | intermediate staining reaction: 2 points |   |
| 51 –80 % positive nuclei: 3 points | strong staining reaction: 3 points       |   |
| > 80 % positive nuclei: 5 points   |  |   |

### Staging according to Goldhirsch et al. (2005)

| Non-responder to endocrine therapy (ER-/PR-negative) | Uncertain responder to endocrine therapy | Responder to endocrine therapy (ER-/PR-positive) |
|--|--|--|
| no positive tumour cell nuclei                       | 1 –9 % positive tumour cell nuclei       | ≥ 10 % positive tumour cell nuclei               |

### ► HER2 scoring according to the ASCO/CAP 2013

| Staining intensity   | IHC Score |
|--|-----------|
| Circumferential membrane staining that is complete, intense  | 3 +       |
| Circumferential membrane staining that is incomplete and/or weak/moderate and within >10% of the invasive tumor cells; or complete and circumferential membrane staining that is intense and within ≤10% of the invasive tumor cells | 2 +       |
| Incomplete membrane staining that is faint/barely perceptible and within >10% of the invasive tumor cells  | 1 +       |
| No staining observed or membrane staining that is incomplete and is faint/barely perceptible and within ≤10% of the invasive tumor cells   | 0 +       |