BluePrint® Functional Molecular Subtyping

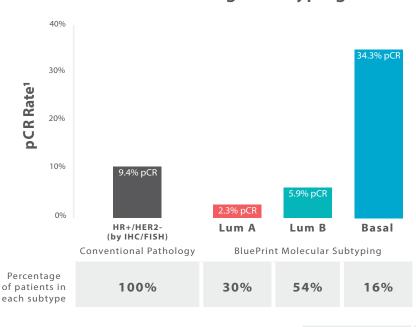
HER2 Luminal Type ABAT LRIGT MYB PGR SCUBE2 HMGCL AFF3 ILEST GOLSYN NATI THSDA CELSR2 BTRC CHAD ADM CA12 COQ7 VAV3 ACBD4 TINC4 XBP1 IRST NUDTG S1000A8 SOX11 NPY1R PREXT SUSD3 TMEMIO1 KIAA1737 DNALIH HDAC1-KIF20A CCDC74B TMSB10 BCL2 ELÖVLS BTD CCDC74B TMSB10 BCL2 ELÖVLS BTD GATA3 LILBB CELSR1 CDC25B TBC1D9 BECNLYTERG1 RENG RUNCH HK3 GATA3 LILBB CELSR1 CDC25B TBC1D9 BECNLYTERG1 RENG RUNCH HK3 GATA3 LILBB CELSR1 CDC25B TBC1D9 BECNLYTERG1 RENG RUNCH HK3 GREB RTMARLI SPEF1 TBC1D9 SVCP3 PERLD1 ERBB2 GRB7 Molecular Subtyping MOlecular Subtyping

BluePrint, the 80-gene molecular subtyping assay, goes beyond the cell surface to evaluate the underlying biology of a tumor and what is driving its growth.



Informs treatment planning in the pre-operative setting

Standard Pathologic Subtyping vs. BluePrint Molecular Subtyping¹



- Further subdivides pathologically luminal tumors (HR+) into low risk Luminal A and high risk Luminal B subtypes.
- Reclassifies as many as 1 in 5 patients' pathologically HR+ tumors into high risk Basal-Type tumors.¹⁻³

- As expected, pCR rates in high risk Basal-Type patients correlate with long-term outcomes.⁴
- The subtyping information that BluePrint provides enables physicians to better tailor preoperative treatment and the timing of surgery to individual patients.⁴

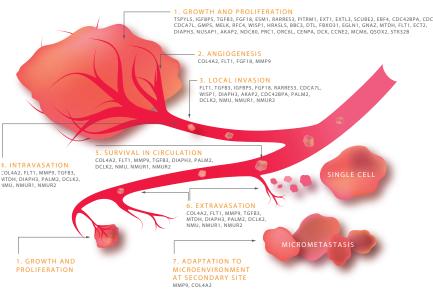
BluePrint Subtyping	pCR Rate (%)	5-Year DMFS by Response		
Luminal A-Type	9/172 (5%)	pCR no pCR	100% 91%	p= N.S.
Luminal B-Type	27/355 (8%)	pCR no pCR	82% 75%	p= N.S.
HER2-Type	102/174 (59%)	pCR no pCR	90% 83%	p= N.S.
Basal-Type	136/371 (37%)	pCR no pCR	94% 58%	p<0.001

1 Groenendijk, et al. npj Breast Cancer 5, 15 (2019); 2 Whitworth, P., et al. Ann Surg Oncol (2017) 24: 669–675; 3 van 't Veer L, et al. 30th EORTC-NCI-AACR Symposium, November 13-16, 2018; 4 Data on file

MammaPrint® Risk of Recurrence Testing

MammaPrint, the 70-gene breast cancer recurrence assay, is the first FDA-cleared and CE-marked risk-of-recurrence test backed by peer-reviewed, prospective outcome data and included in major treatment guidelines.¹

Early Metastatic Process



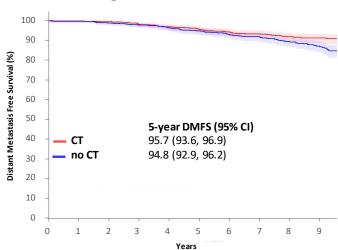
- Interrogates genes involved in every step of the metastatic cascade.
- Results are independent of and complementary to standard IHC/FISH testing.



Provides insight into the benefit of post-operative treatment

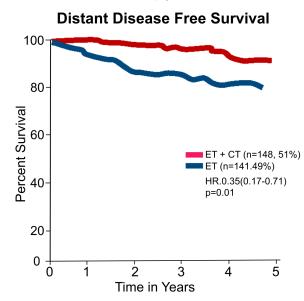
Adjuvant Chemotherapy Planning²

Distant Metastasis-Free SurvivalClinical high risk/MammaPrint Low Risk



MammaPrint Low Risk patients may safely forego adjuvant chemotherapy.

Chemotherapy Prediction³



MammaPrint High Risk patients have significantly better outcomes with chemotherapy.

¹ In 2007, MammaPrint became the first IVDMIA to gain 510(k) clearance from the FDA. In 2018, The MammaPrint and BluePrint Kit attained the CE mark. 2 Cardoso, F., et al. N Engl J Med 2016;375:717-29.; 3 Knauer, M., et al. Breast Cancer Res Treat. 2010 Apr;120(3):655-61.