

Genomic Testing in Breast Cancer Management: Personalized Medicine

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Genetic

- Inherited traits
- Risks passed on
- Predicts risk
- Allows action

Genomic

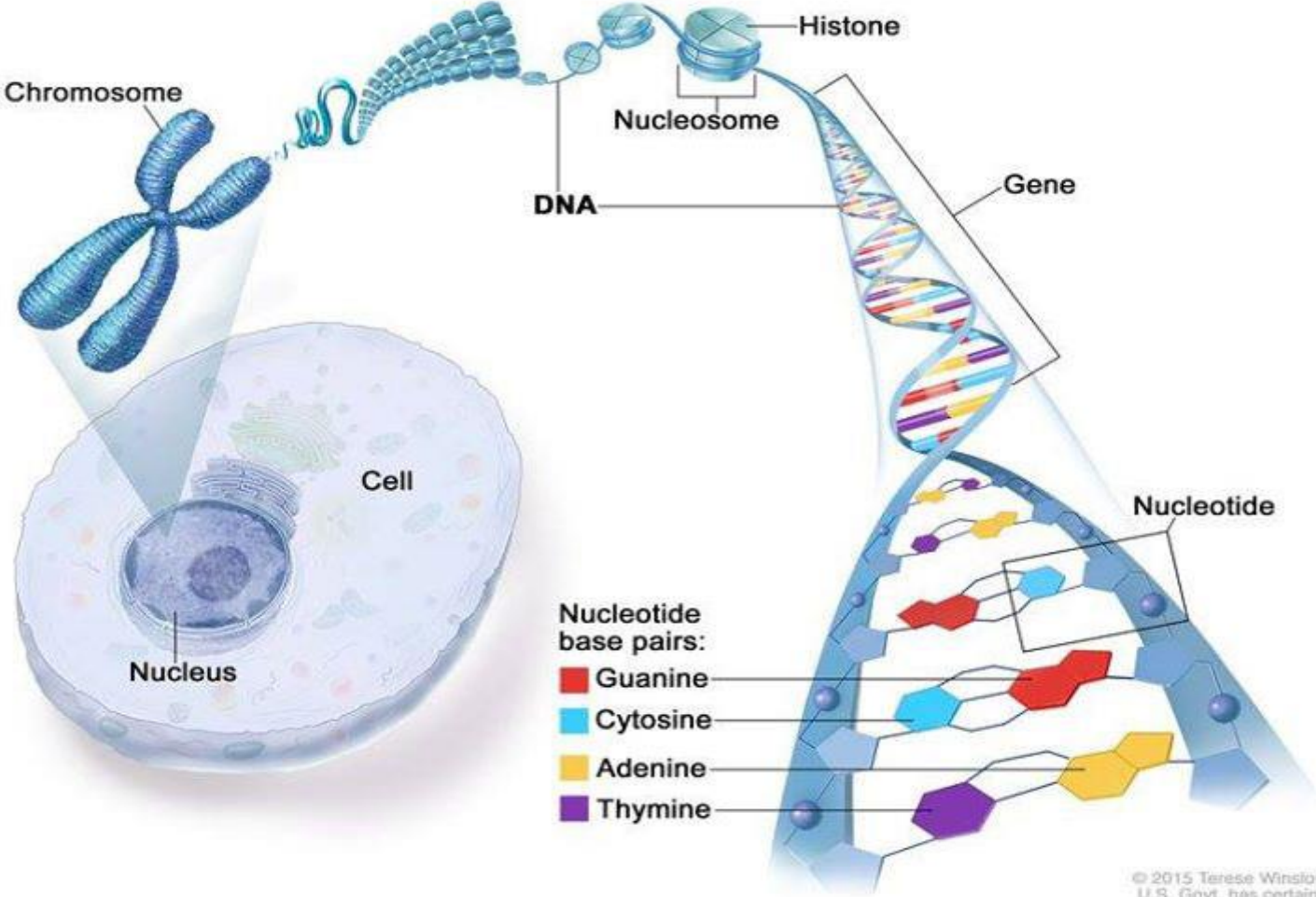
- Interactions of genes
- How genes influence tumor behavior
- Predicts recurrence
- Helps decide treatments

Genetics vs Genomics

- Age
- Tumor size
- Grade
- LNs
- Hormone receptor status
- Pathologic features

Standard clinical features

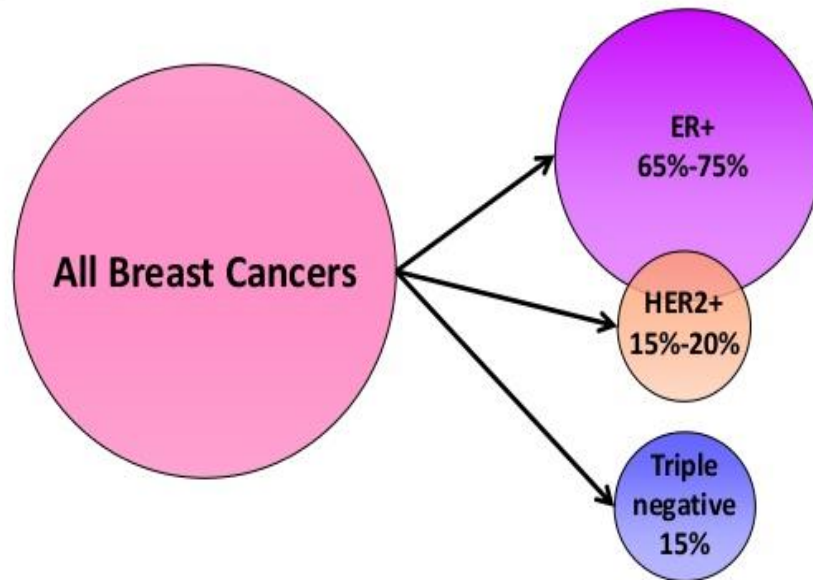
DNA Structure



- Breast Cancer Recurrence scores
- Subtyping/ function
- ER/PR/HER2 gene expression status

What genomic testing tells us

Clinical Breast Cancer Subsets Defined by IHC



subtypes

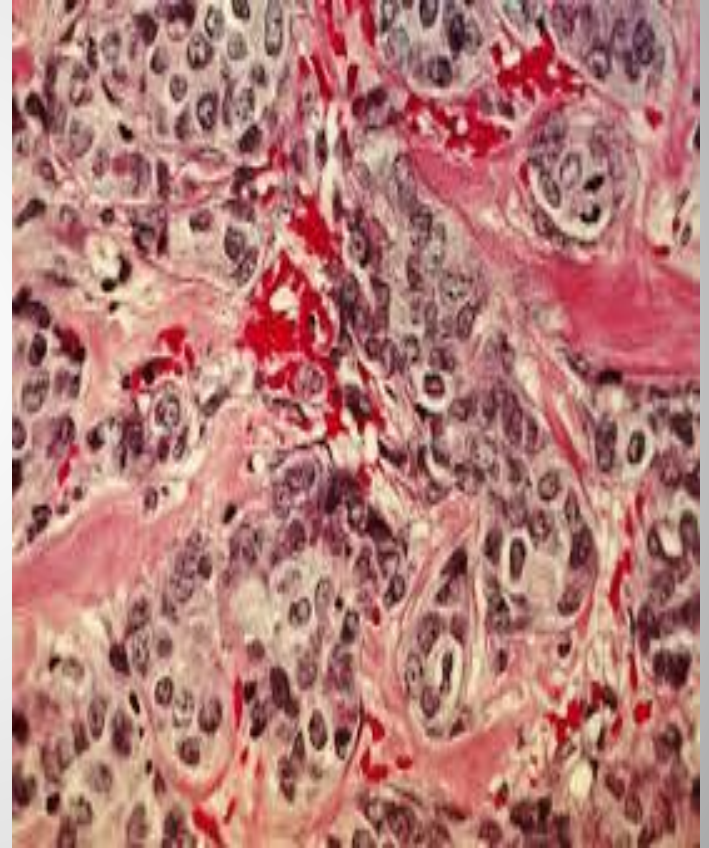
Luminal A

Luminal B

Basal (usu TNBC)

HER2 (errbb2)

- Low or high risk of recurrence
- Helps reduce chemo
- Targets therapy based on molecular subtyping



Genomic testing

1 Breast Cancer Report - Node Negative Prognosis

PatientID: DOE, JANE ELIZABETH
 Gender: Female
 Date of Birth: 01-Jan-1950
 Medical Record/Patient #: 556677771
 Date of Collection: 10-Oct-2015
 Specimen Type/ID: Breast/C83P0ZDYQ
 Study #: ReportStudy1055

Genomic Health, Inc.
 301 Penobscot Drive, Redwood City, CA 94063 USA
 USA/Canada: +1.866.ONCOTYPE
 International: www.oncotypedx.com/contact
 www.oncotypedx.com
 CLIA Number 05D1018272

Report Number: OR123456789-01
 Specimen Received: 30-Oct-2015
 Date Reported: 10-Nov-2015
 Client: Community Medical Center
 Ordering Physician: Dr. Harry D Smith
 Additional Recipient: Dr. Sally M Jones

3 Recurrence Score[®] Result

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Oncotype DX[®] Breast Cancer Assay uses RT-PCR to determine the expression of a panel of 21 genes in tumor tissue. The Recurrence Score result is calculated from the gene expression results and ranges from 0-100.

The findings are applicable to women who have stage I or II node negative (N-), estrogen receptor positive (ER+) breast cancer, and will be treated with 5 years of tamoxifen (tam). It is unknown whether the findings apply to other patients outside these criteria.

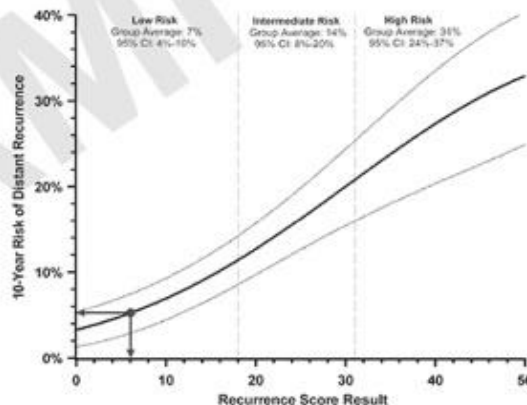
Clinical Experience: The following results are from a clinical validation study that included 668 patients from the NSABP B-14 study. The study included female patients with stage I or II, N-, ER+ breast cancer treated with 5 years of tam.¹

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Prognosis: 10-Year Risk of Distant Recurrence after 5 Years of Tam, Based on the Recurrence Score Result (from NSABP B-14)

10-Year Risk of Distant Recurrence

Tam Alone
5%
 (95% CI: 3%-7%)



¹ Park et al. N Engl J Med. 2006.

Laboratory Director(s): S. Shak, MD; J. Anderson, MD; F. Baehner, MD & P. Joseph, MD

This test was developed and its performance characteristics determined by Genomic Health, Inc. The laboratory is regulated under the Clinical Laboratory Improvement Amendments of 1988 (CLIA) as qualified to perform high-complexity clinical testing. This test is used for clinical purposes. It should not be regarded as investigational or for research. These results are adjunctive to the ordering physician's workup.

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Q19004 Rev027

Oncotype report sample

References

- <http://www.slideshare.net/DanaFarber/whats-hot-in-breast-cancer-treatment>
- <http://www.pathophys.org/breast-cancer/>

