Triple Negative Breast Cancer - Differentiation of **TNBC** (ER-, PR-, and HER2/neu-) using New miRNA Biomarker Panel

Ready-to-Use fully optimized **SSNA** miRNA *in situ* hybridization (ISH) Kit

Triple-negative breast cancer (TNBC) is an aggressive form of breast cancer with a poor prognosis. It accounts for 10–20% of all breast cancer cases, occurring more in young women. TNBC is characterized by the absence of estrogen receptor, progesterone receptor, and human epidermal growth factor receptor-2/Neu amplifications. TNBC cells are insensitive to current targeted therapies due to lack of biomarkers and pose poor clinical prognosis. Emerging evidence shows that microRNAs (miRNAs) are aberrantly expressed in many human cancers including breast cancer. miRNAs are a group of small, noncoding RNAs with tissue-specific expression patterns have shown great potential as diagnostic and prognostic biomarkers in various types and subtypes of cancer. *In situ* hybridization (ISH) technology has enabled profiling of miRNAs in formalin-fixed paraffin-embedded (FFPE) samples. Performing miRNA ISH using BioGenex Super Sensitive Nucleic Acid (SSNA) probes helps to understand the pathogenesis and therapeutic outcomes in patients with TNBC. BioGenex unique miRNA probes enable detection of a single nucleotide mismatch, thus allowing high sensitivity and specificity.

Application:

BioGenex end-to-end miRNA solution, including Xmatrx® automated systems and miRNA ISH TNBC Breast Panel Probes, was successfully used for differentiation of triple-negative breast cancer from other subtypes. The study used FFPE breast cancer and normal breast tissue samples for the analysis. miRNA staining was evaluated semi-quantitatively by intensity as weak, moderate, or strong.

Read more about the study in the corresponding application note: 937-4112.0

BioGenex SSN miRNA ISH Breast Cancer Probe Panel

Target miRNA	miR-21	miR-205	miR-211	miR-222
Catalog no (25 test)	HM021-100	HM205-100	HM211-100	HM222-100
Control slides (5 slides)	FB-HM021	FB-HM205	FB-HM210	FB-HM222

BioGenex miRNA Detection kit and Ancillary Reagents

Catalog	Product name
DF400-YADE	XISH™ One-Step Polymer-HRP ISH Detection Kit (Automation)
DF400-50KE	Super Sensitive One-Step Polymer-HRP ISH Detection Kit (Manual)

BioGenex proprietary **Super Sensitive Nucleic Acid (SSNA)** miRNA probes are specially designed for *in situ* hybridization of tissue samples. BioGenex miRNA probes have high melting temperatures (T_m) and are dual-end labeled. Together with BioGenex Super Sensitive Detection kits result in a clean and intense stain for localized visualization of key miRNA signal biomarkers.

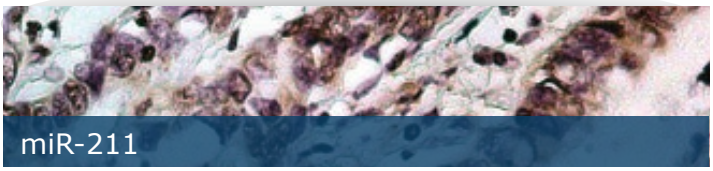
Breast ISH probes:

miR-21 Probe

miR-21 regulates cell differentiation, proliferation, and apoptosis by modulating target proteins. miR-21 primarily target PTEN and programmed cell death 4 (PDCD4).

miR-205 Probe

miR-205 suppresses epithelial to mesenchymal transition by targeting the transcriptional factors ZEB1 and SIP1. miR-205 also regulate E-Cadherin and possibly target PTEN.



miR-211

miR-211 is localized on intron 6 of the Trpm1 gene at 15q13-q14, a locus that is frequently lost in neoplasms.

miR-222

miR-222, together with miR-221, is encoded in tandem from a gene cluster located on chromosome X. Both miRNAs regulate p27kip1, Bmf, PTEN, Mdm2, PUMA, and TRPS1.

BioGenex Platforms for miRNA ISH Workflow:

Xmatrx® Ultra
Fully Automated System
for high throughput labs

Xmatrx® NANO VIP
Fully Automated System
for medium throughput labs

Xmatrx® MINI
Manual System for medium
and small throughput labs

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