Wild Type and **Mutated *BRCA*** - **Differentiation** of Breast Cancer using New miRNA Biomarker Panel

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

Breast cancer represents the most common cancer, as well as, the leading cause of death among women globally. *BRCA*1 and *BRCA*2 gene mutation carriers, specifically, have increased risk of developing this disease, accounting for 5-7% of all breast cancer cases. Histologically, breast cancer can be divided into *in situ* and invasive carcinoma. Genetic testing for *BRCA*1 and *BRCA*2 mutations via sequencing is a routine part of clinical genetics, however, increased costs, laborious and complex processes, and absence of "hot-spot" regions, limit this application in clinical practice. Advances in microRNA *in situ* hybridization (miRNA ISH) have enabled profiling of miRNAs in formalin-fixed paraffin-embedded (FFPE) samples, as noted in recent publications. Performing miRNA ISH using BioGenex Super Sensitive Nucleic Acid (SSNA) probes holds promise for improving the understanding of pathogenesis and therapeutic outcomes in patients with breast cancer. BioGenex unique miRNA probes enable detection of single nucleotide mismatch, thus allowing high sensitivity and specificity.

Application:

BioGenex end-to-end miRNA solution, including Xmatrx® automated systems and miRNA ISH *BRCA* Breast Panel Probes were successfully used to differentiate expression patterns of three miRNAs in patients with *BRCA* mutated breast cancer. The FFPE *BRCA* and normal breast tissue samples were used for the analysis. miRNA staining was evaluated semi-quantitatively by intensity as weak, moderate, or strong. The *in situ* experimental conditions for hybridization were optimized for both BioGenex manual and automated systems.

Read more about the study in the corresponding application note: 937-4116.0

BioGenex SSNA miRNA ISH Probes for Differentiation of Wild Type and *BRCA* mutated Breast Cancer

Target miRNA	miR-21	miR-17
Catalog no (25 test)	HM021-100	HM017-100
Control slides (5 slides)	FB-HM021	FB-HM017

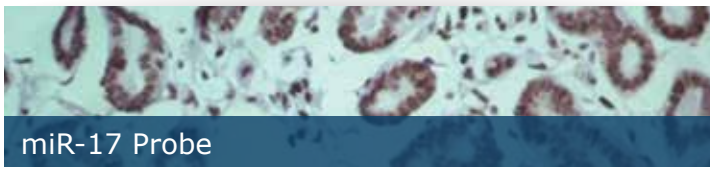
BioGenex miRNA Detection kit and Ancillary Reagents

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.

BRCA Breast ISH probes:

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



miR-17-92 is a polycistronic miRNA cluster that has a potential to regulate hundreds of target mRNAs.

BioGenex Platforms for miRNA ISH Workflow:

Xmatrx® ELITE

Fully Automated System
for high throughput labs

NanoVIP® 300

Fully Automated System
for medium throughput labs

NanoVIP®

Fully Automated System
for medium throughput labs

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