BREAST CANCER BIOMARKERS

What are Biomarkers?
Biomarkers are found in bodily fluids; they can be biomolecules or even genes and DNA. Biomarkers can be used many ways.

What is Breast Cancer?
Breast Cancer is a disease when cells in the breast grow out of control. Breast cancer mostly occurs in women.

Current Biomarkers:
HER2: Growth Factor Receptor
PgR: Progesterone Receptor
ER: Estrogen Receptor

Current Biomarkers have been clinically tested and are currently used in diagnosis and treatment of breast cancer

Biomarkers in Cancer Detection
1. **Risk Assessment:** screenings to detect cancer at early stage.
2. **Screening/Detection:** indicate presence of disease, biomarkers for screening/detection are real-time indicators of cancer presence.
3. **Diagnosis:** Diagnosis via biopsy, determine origin of tumor.
4. **Prognosis:** these biomarkers inform the patient's outcome and which breast cancers grow rapidly or more aggressively.
5. **Prediction:** biomarkers predict patient response to treatments and determine optimal drug dose.
6. **Monitoring:** monitor patient's breast cancer recurrence after treatment and therapeutic response.

Ki67:
Ki67 is an emerging Biomarker known for its eminence in proliferation, and its prognosis ability. Proliferation rate is how quickly a cancer cell copies its DNA and divides into 2 cells.

Emerging Biomarkers:
Ki67: Proliferation
Cyclin E: Tumorigenesis
Cyclin D1: Cell proliferation

Emerging Biomarkers are still undergoing clinical testing.