

## RT-PCR RESULTS:

The tissue sample received was detected positive for E545K mutation on Exon 9. Evidence suggests that such mutations lead to constitutive activation of the PI3K pathway. This assay helps in risk stratification and classification of tumors.

## DISCUSSION:

Somatic alteration of phosphatidylinositol-4,5-bisphosphate 3-kinase catalytic subunit alpha (PIK3CA) located in chromosome 3q26.32 which encodes the PIK3CA gene to p110 $\alpha$  protein, which is an important component of class I phosphoinositide 3-kinase (PI3K) is a crucial therapeutic target in breast cancer and PI3K $\alpha$ -specific inhibitor Alpelisib has been used in clinics. Approximately 80% mutations in PIK3CA occurs at three "hotspots" E542K and E545K in exon 9 encoding the helical domains, and H1047R in exon 20 encoding the kinase domains.(4)

Through the PI3K/AKT pathway, altered PIK3CA gene plays a critical role in cell survival, apoptosis, proliferation, motility, and adhesion.(5)

Role of most common mutations leading to downstream signaling

Exon 20 (H1047R): enhances the interaction of the p110 kinase domain with cell membranes

Exon 9 (E542K and E545K): disrupt the inhibitory interface with p85

## CONCLUSION:

PIK3CA mutations are commonly encountered in Hormone Receptor positive and Her2 Negative metastatic breast cancer and have shown promising clinical outcome leading to better prognosis. It provides insights into genotyping each breast cancer and exploits the usage of PI3K/AKT inhibitors together with other combination of drugs for effective target treatment strategies.