

# Implications of Notch Signaling Pathway in Breast Cancer

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## Background

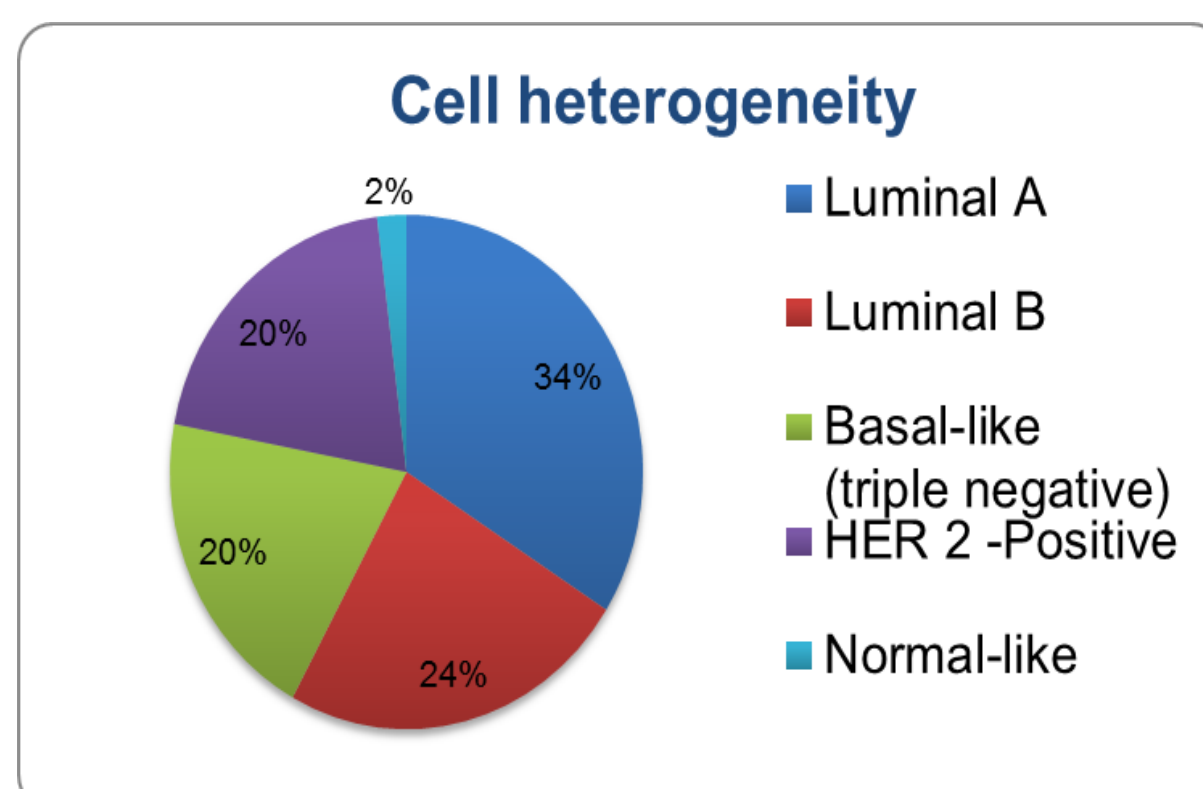
### Breast Cancer Facts and Figures

- American Cancer Society estimated 40,290 breast cancer deaths in year 2015.
- Second leading cause of death due to cancer among US women.
- About 1 in 8 American women will develop invasive breast cancer over the course of her lifetime.

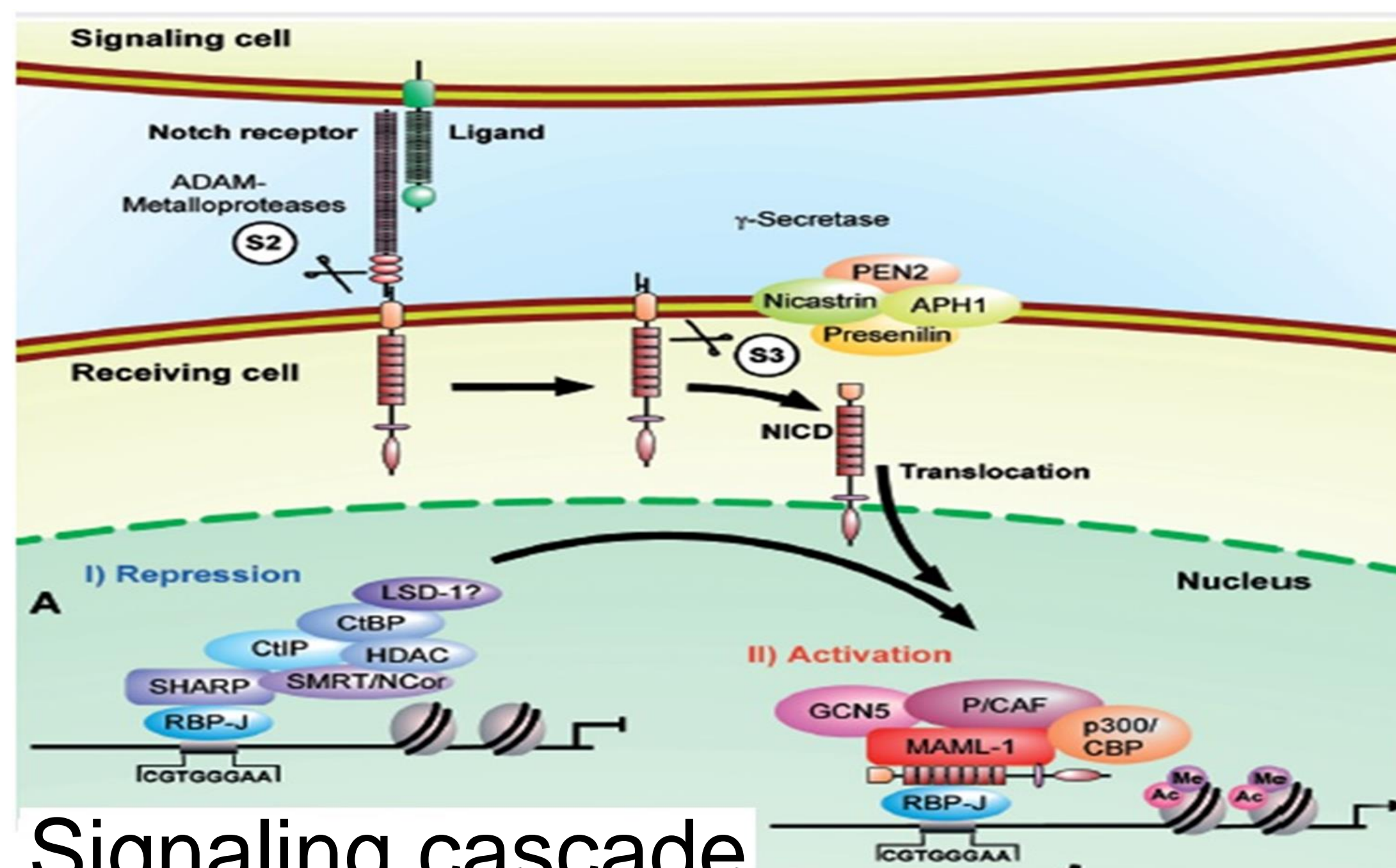


### Primary reasons of current treatment failure

- **Cell heterogeneity**
- **One-dose-fits-all approach**
- Metastasis
- Recurrence
- Side effects and resistance to the current treatments



Target – Notch Signaling Pathway  
(required for progression of breast cancer cells)



Signaling cascade

## Impact

At present, identification of targetable molecular pathways is a pressing need which may lead to the discovery of novel prognostic or predictive biomarkers and therapeutic targets.

## Key Findings

Among four Notch genes being studied, Notch 2 and Notch 4 demonstrate the highest and lowest expression respectively and are uniquely associated with breast cancer cell growth in all subtypes.

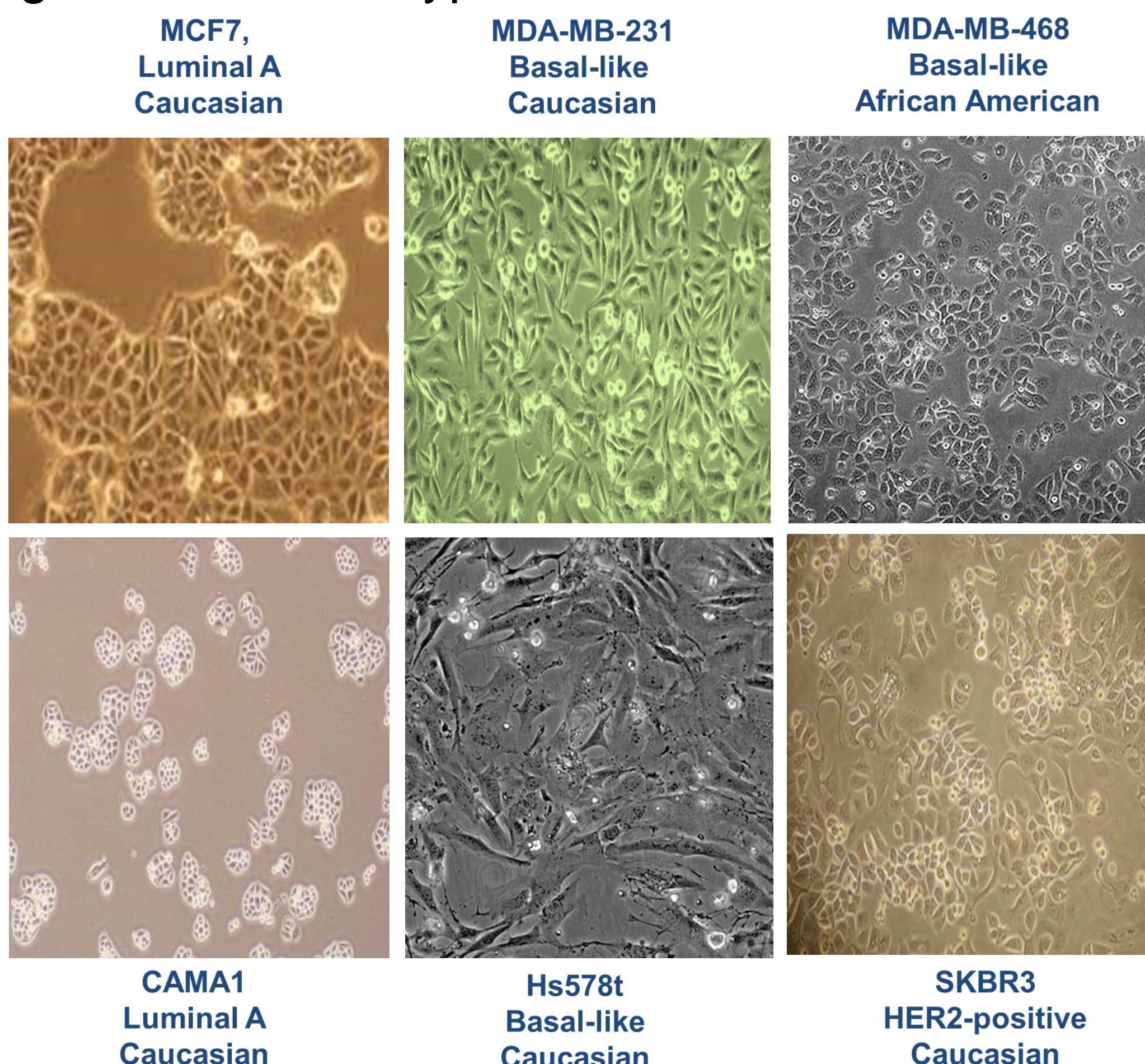


Table: Ct (threshold cycle) values obtained after qPCR

Cell line	Notch 1	Notch 2	Notch 3	Notch 4	SDHA
MCF-7	28.9583	23.62667	25.6533	31.17000	24.17667
Hs578t	29.1133	24.88111	26.3150	31.08834	24.29722
MDA-MB-231	28.6466	21.26556	29.3800	30.63000	24.39000
MDA-MB-468	28.7200	24.57889	29.3650	30.77167	25.06889
CAMA-1	28.6316	25.54222	25.4550	30.58500	25.35944

## Conclusion

The present study has potential to reveal the role of each Notch gene in breast cancer subtypes such as triple negative breast cancer and therapeutic promise of targeting each Notch gene independently depending upon their role in given cell type.

## Acknowledgements

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