

Summer 8-10-2023

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Recommended Citation

Juvera, Oscar D.; Mohapatra, Bhopal C.; Kotwal, Anupam; Luan, Haitao; Bennett, Robert; Chakraborty, Sukanya; Bhat, Aaqib; Zahid, Mariam; Storck, Matthew; Band, Vimla; and Band, Hamid, "Comparative Immunohistochemical Analysis of EHD1 Expression in Adjacent, Metastatic, and Normal Thyroid Tissue" (2023). *Posters: 2023 Summer Undergraduate Research Program*. 3.
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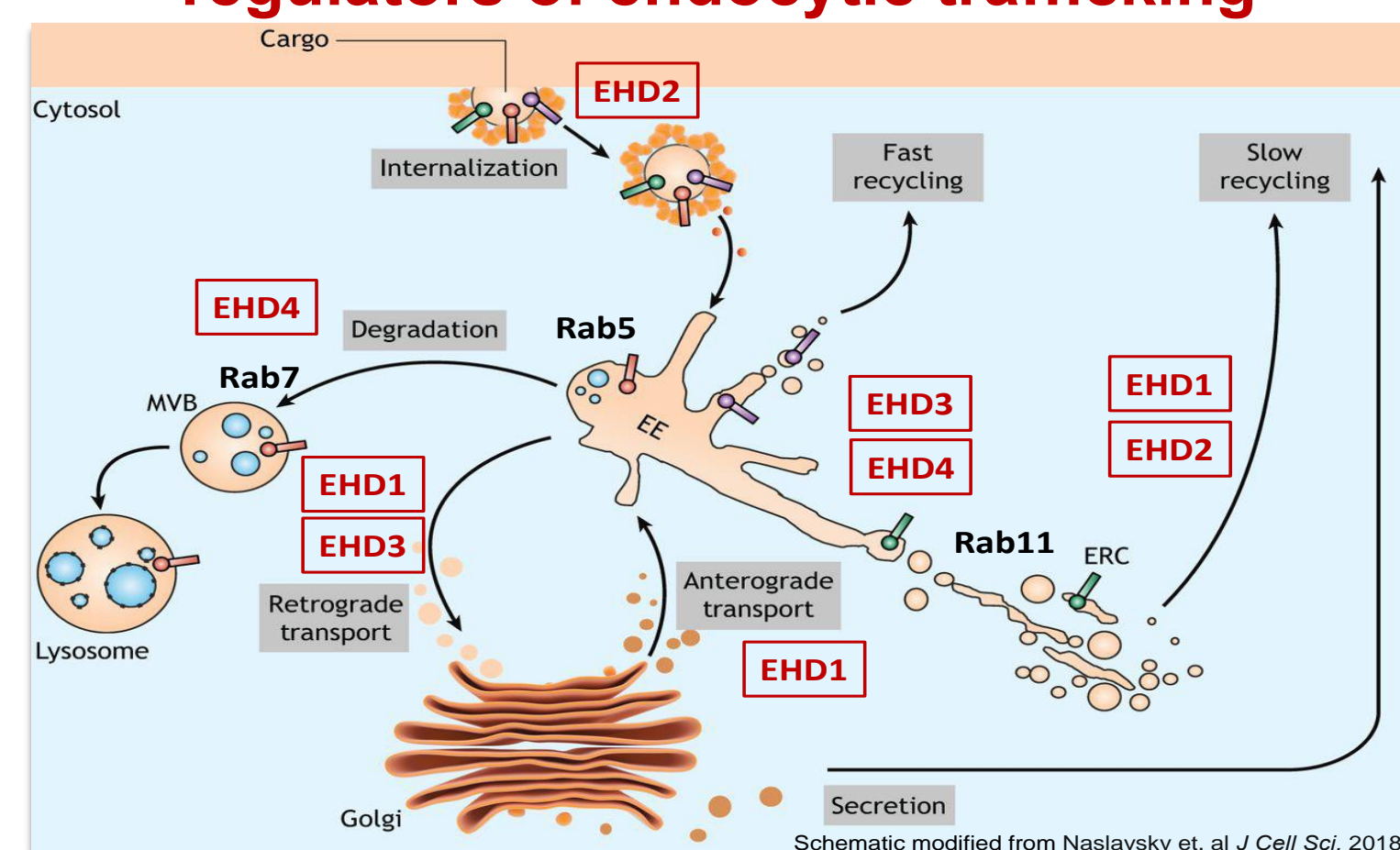
Comparative Immunohistochemical Analysis of EHD1 Expression in Thyroid Cancer, Adjacent, Metastatic, and Normal Thyroid Tissue

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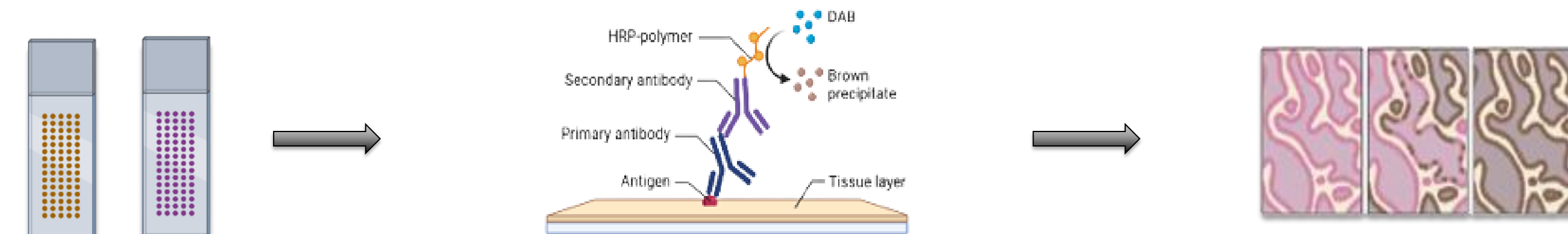
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BACKGROUND: The discovery of prognostic biomarkers plays a crucial role in enhancing the treatment and care of individuals with differentiated thyroid cancer (DTC) who are at risk of disease progression. A significant breakthrough came with earlier research, which revealed higher levels of the EHD1 protein in papillary DTC when compared to the surrounding healthy tissue. This exciting finding served as the driving force behind the initiation of a more extensive investigation **aimed** at validating EHD1 as a potential biomarker and exploring its connection with clinical outcomes. By unraveling the potential implications of EHD1 in DTC cases, this study holds the promise of advancing our understanding and approach to managing this type of cancer effectively.

EHD Eps15 Homology Domain containing proteins: regulators of endocytic trafficking



METHODS



- Tissue cores (diameter: 1.5 mm) arrayed as tissue microarrays.
- Thyroid carcinoma cell lines: KTC-1, FTC-133, C643, BCPAP.
- Incubated under controlled conditions (37°C, 5% CO₂)
- Lentiviral vector system used for transfection.

EHD1 as a novel biomarker of differentiated thyroid cancer

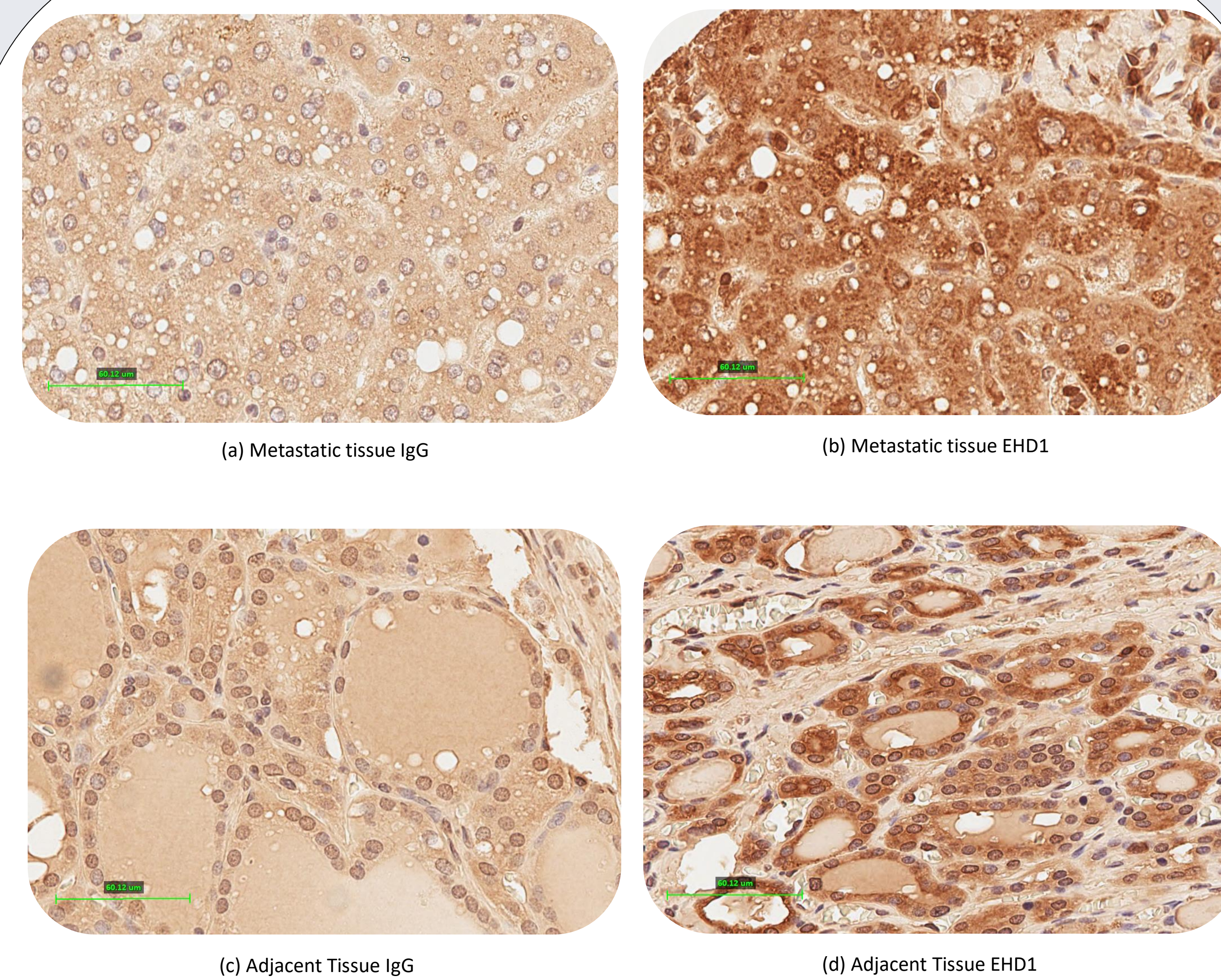


Figure 1. Immunohistochemical Analysis of Thyroid Tissue Microarrays. Immunohistochemistry (IHC) was performed to visualize and analyze the localization and abundance of the EHD1 protein in both metastatic and adjacent thyroid tissues. Control IgG antibodies were used to ensure specificity and accuracy in the assessment of EHD1 expression levels. (a) and (b) Metastatic tissue and adjacent samples were subjected to incubation with respective control immunoglobulin G (IgG) antibodies, serving as negative controls in the experimental procedure. (c) and (d) Metastatic tissue and adjacent samples were subjected to incubation with control EHD1 antibodies, facilitating visualization and characterization of protein binding events.

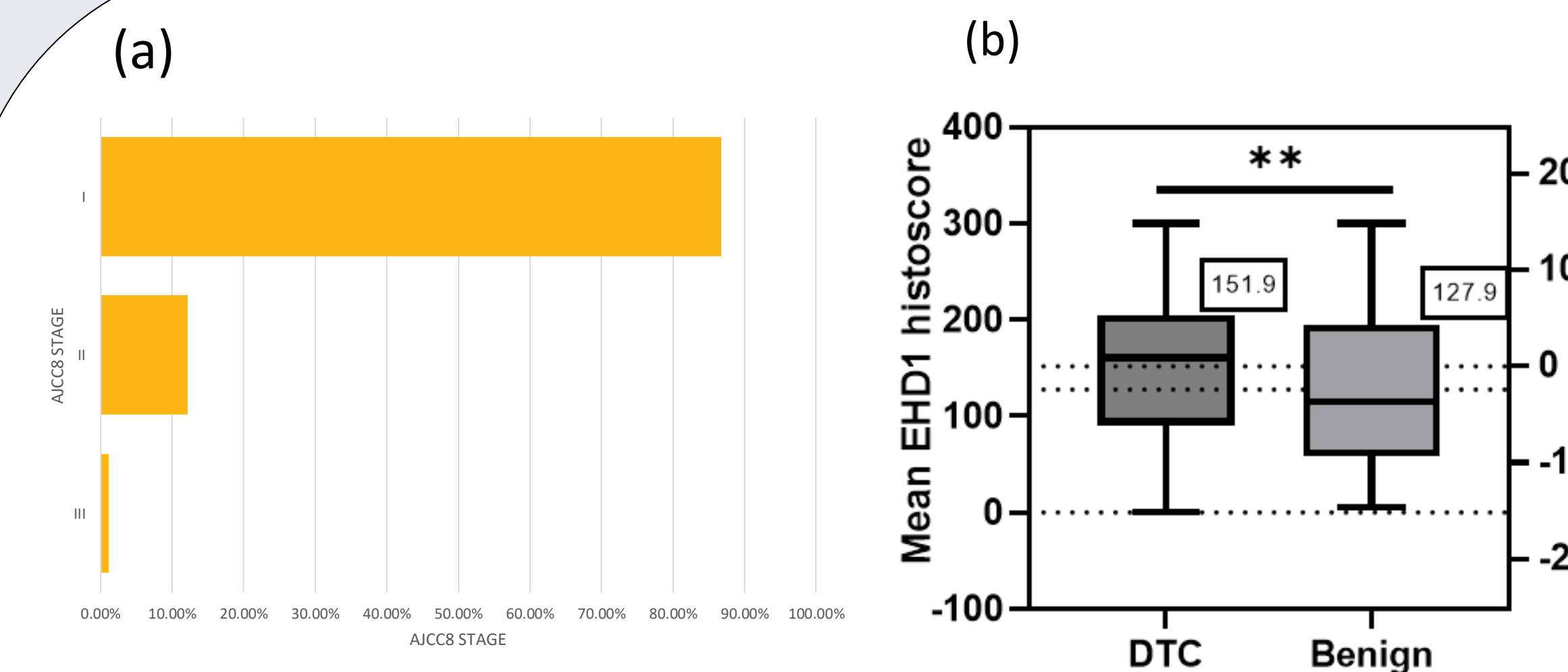


Figure 2 Correlation of EHD1 Histocore with AJCC8 Staging Classification in Differentiated Thyroid Carcinoma. (a) American Joint Committee on Cancer 8th Edition (AJCC8) staging classification for the studied cases (b) Comparison between cases (DTC without distant metastases) and controls (benign thyroid) in terms of EHD1 histocore. **p<0.01

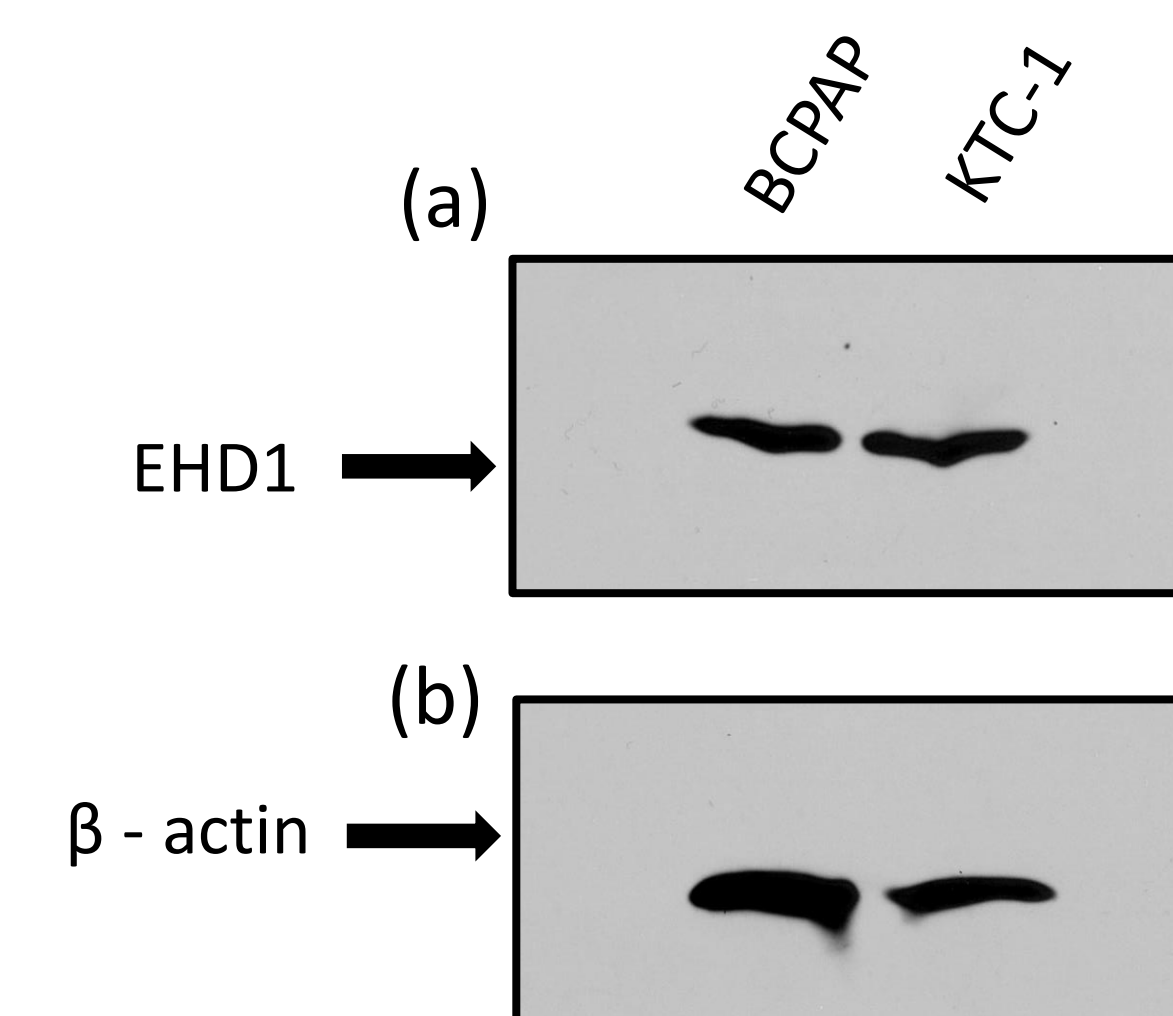


Figure 3: Comparative Analysis of EHD1 Expression in BCPAP and KTC-1 Cell Lines. (a) illustrates the BCPAP cell line, showing distinct bands for EHD1 and the control beta-actin. (b) depicts the KTC-1 cell line, displaying bands for EHD1 and the control beta-actin. The results shed light on the differential expression of EHD1 in these cell lines, providing insights into potential functional implications.

CONCLUSIONS

- **EHD1 is highly expressed** in thyroid cancer tissue compared to benign thyroid tissue.
- **Qualitative analysis** confirms higher EHD1 expression in **thyroid cancer** tissue than in **adjacent normal** thyroid tissue.
- Using cell lines (KTC-1, FTC-133, C643, BCPAP) with high EHD1 expression enables rigorous study of **EHD1's involvement** in thyroid cancer oncogenic processes.
- EHD1 knockout using **CRISPR-Cas9** have been initiated.

