Invicro
A Konica Minolta Company

Advanced Pathology Services

Quanticell™

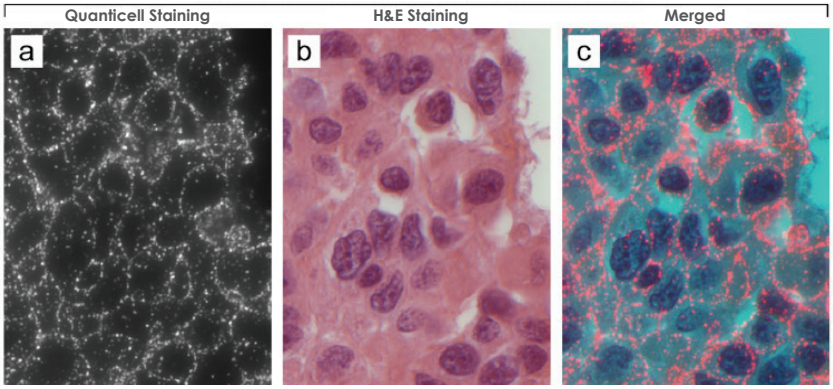
A Highly Sensitive & Predictive Biomarker Quantification Service

Quanticell is a novel quantitative tissue biomarker service that detects proteins using highly stable and bright phosphor-integrated dots (PIDs) developed by Konica Minolta Precision Medicine. From early discovery to clinical trials, this unique service provides sponsors with meaningful insights at all stages of drug discovery and development.

To overcome specific detection-related challenges, this assay offers higher sensitivity compared to common chromogenic and fluorescent-based detection methods. This service enables sponsors to:

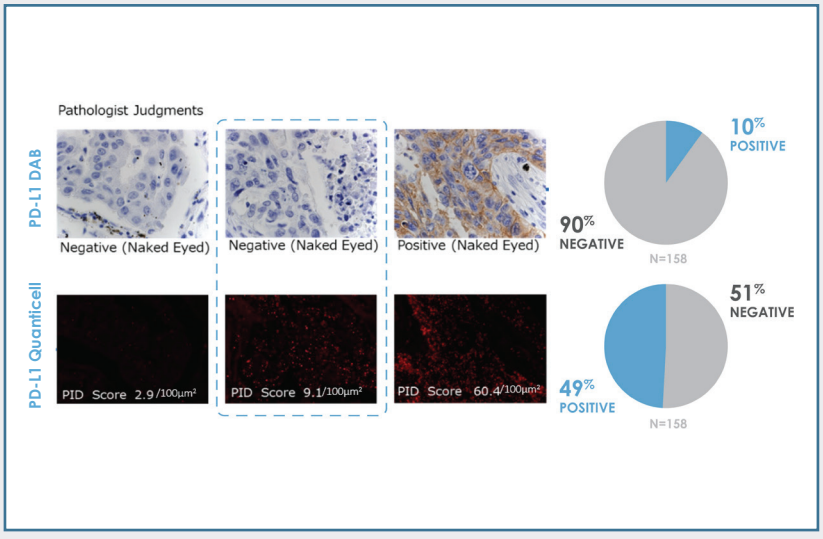
- Visualize and quantitate low expressing targets and immune cells
- Evaluate and measure drug distribution alongside the drug target
- Monitor and quantify drug pharmacodynamic effects in the tissue context
- Assess and predict drug response in patient tissues

Human Breast Cancer Tissue Simultaneously Stained with Quanticell & H&E



Advantages

- Versatile: Track and measure localization of therapeutics: monoclonal antibodies, antibody-drug conjugates, bispecifics and recombinant proteins
- Sensitive: Detect and quantify low expressing targets while maintaining tissue morphology
- Predictive: Assess drug mechanism of action to build more reliable therapy response models
- Accurate: Reduce detection of false negatives
- Flexible: Compatible with typical FFPE IHC antibodies and multiplex staining methods in a single tissue section



CASE STUDY 1

Direct Detection and Quantification of PD-L1 Expression in Patient Tissue Samples

Experiment: Tissues from 158 biliary tract cancers were evaluated for PD-L1 expression using DAB-based detection and compared to the Quanticell detection method.

Results: 10% of cancers showed PD-L1 expression in tumor cells detected using DAB compared to 49% of the same tumor cells detected using Quanticell.

Conclusions: The higher sensitivity provided by Quanticell improves the detection of tumor cell surface markers and may aid in predicting response to checkpoint inhibitor therapies.

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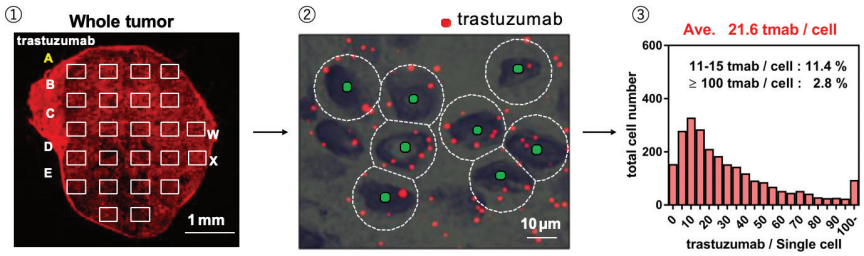
CASE STUDY 2

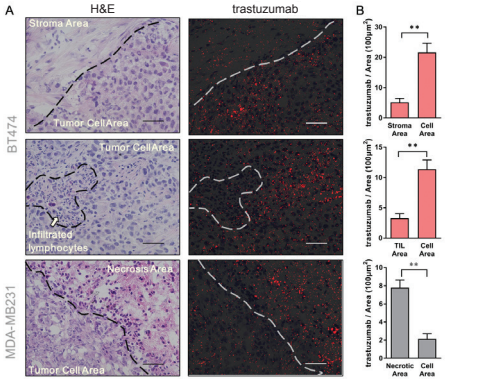
Identifying Trastuzumab Distribution in Xenograft Tissues

Experiment: Human breast cancer cell lines BT474 (HER2 positive) and MDA-MB231 (HER2 negative) were subcutaneously implanted in SCID/Beige mice to prepare cell line derived xenografts. Trastuzumab (10 mg/kg) was administered intraperitoneally followed by tissue collection at several time points. Sections were stained using anti-trastuzumab and detected using Quanticell to directly visualize the distribution of the drug.

RESULTS

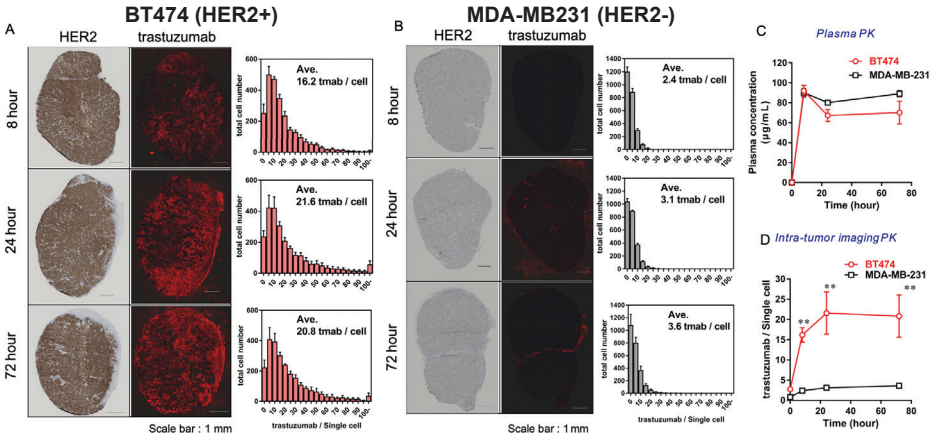


Trastuzumab delivery to tumor: 24 areas of the tumor were examined and PID counts/cell were determined. The histogram shows an average count of 21.6 trastuzumab bound PIDs/cell.



Micro Imaging: High power imaging with Quanticell confirms increased trastuzumab accumulation in tumor cell areas compared to the stroma,infiltrating lymphocytes and viable areas.

Macro Imaging: Assessing the biodistribution of trastuzumab in both HER2 positive and negative xenografts. A) In BT474 (HER2+), trastuzumab distribution was heterogeneous despite homogeneous HER2 expression. B) In MDA-MB231 (HER2-), less trastuzumab was present in viable areas. C) Plasma PK is similar for both models at all time points. D) Intra-tumor imaging PK graph shows higher trastuzumab bound PIDs/cell for BTA474 (HER2+) compared to the MDA-MB231(HER2-) expressing xenografts.



CONCLUSION

- Quanticell provide a reliable way to visualize and quantify the therapeutic target or therapeutic itself.
- Tracking the therapeutic with Quanticell showed higher drug accumulation in target positive cells in a heterogeneous tumor.
- Unlike plasma PK measurements, intratumor imaging shows the effects of tumor heterogeneity on drug and target interactions.
- Quanticell is a reliable solution to assess the biodistribution and pharmacokinetics of large molecule drugs in the tissue context.