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BaseScope™ Probes for MAGEA Gene Family Detection

Discern highly homologous sequences in intact tissue with morphological context

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MAGEA Gene Family Detection

Ongoing clinical trials of cancer vaccines and adoptive cell therapies target members of the melanoma-associated antigen (MAGE) family, which are highly prevalent in tumors. However, their highly homologous nature, with >90% sequence identity between the *MAGE-A* genes, poses significant challenges to their specific detection in tumors. Due to antibody cross-reactivity there is limited capability of protein-specific assays to detect and distinguish between the various MAGE-A antigens. Here, the BaseScope™ RNA *in situ* hybridization (ISH) assay was developed to discern *MAGEA1*, *MAGEA3*, *MAGEA4*, and *MAGEA10* expression in cell lines and tumor tissues.

The BaseScope™ Assay is similar to the RNAscope® ISH technology. Both achieve single-molecule RNA detection using paired oligo ("ZZ") probes to amplify signal without non-specific background. However, the BaseScope™ probe design and advanced signal amplification system enable single-molecule RNA detection with as few as 1 ZZ probe and it can differentially discern between highly homologous sequences, such as the *MAGE-A* gene family members, in intact fixed tissue.

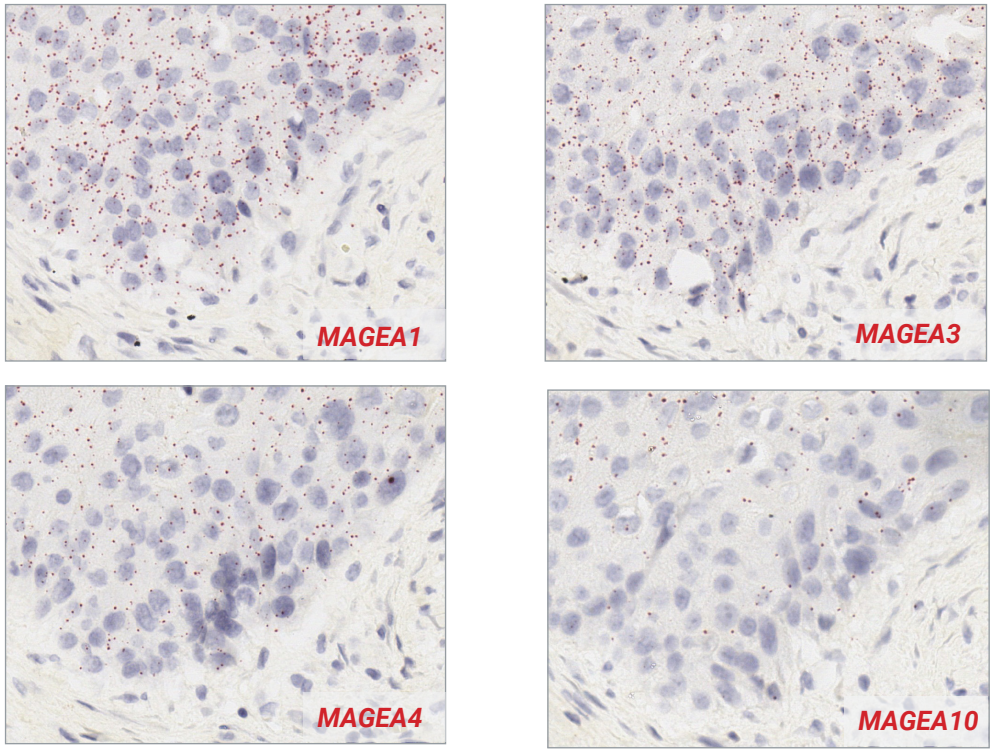

FIGURE 1. Detection of individual *MAGE-A* genes in human lung cancer tissue.

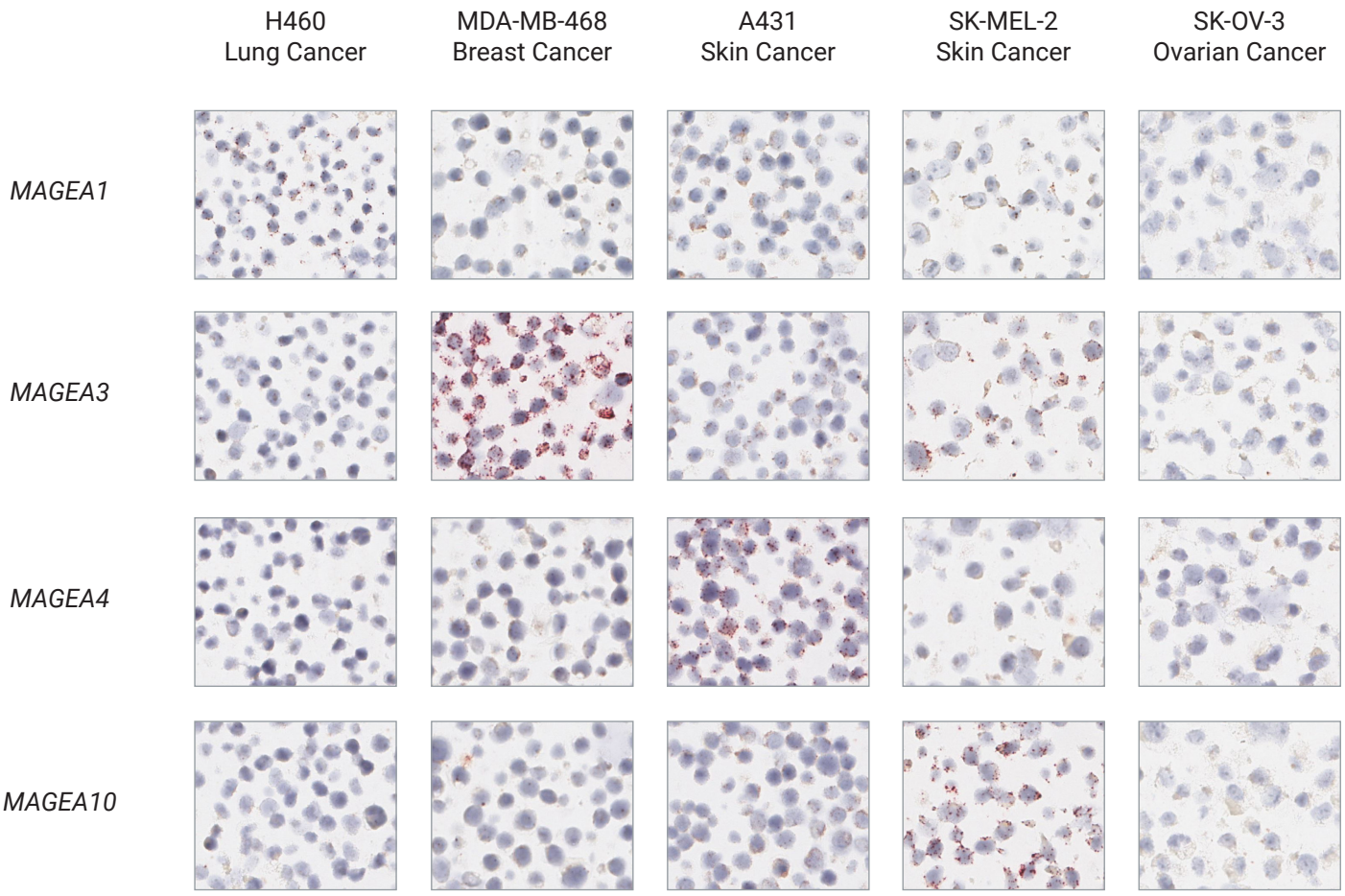

FIGURE 2. Specific detection of individual *MAGE-A* genes in human cancer cell lines.

Gene	H460* (Lung Cancer)	MBA-MB-468 (Breast Cancer)	A431 (Skin Cancer)	SK-MEL-2 (Skin Cancer)	SK-OV-3* (Ovarian Cancer)
MAGEA1	+++++	–	–	–	–
MAGEA3	+	+++++	–	++	–
MAGEA4	–	–	+++++	–	–
MAGEA10	–	+	–	+++++	–

TABLE 1. Summary of *MAGEA* expression pattern in cells lines as detected by the BaseScope™ Assay.
*H460 and SK-OV-3 cell line expression patterns of *MAGEA1*, *MAGEA3*, *MAGEA4*, and *MAGEA10* confirmed by GeneCards

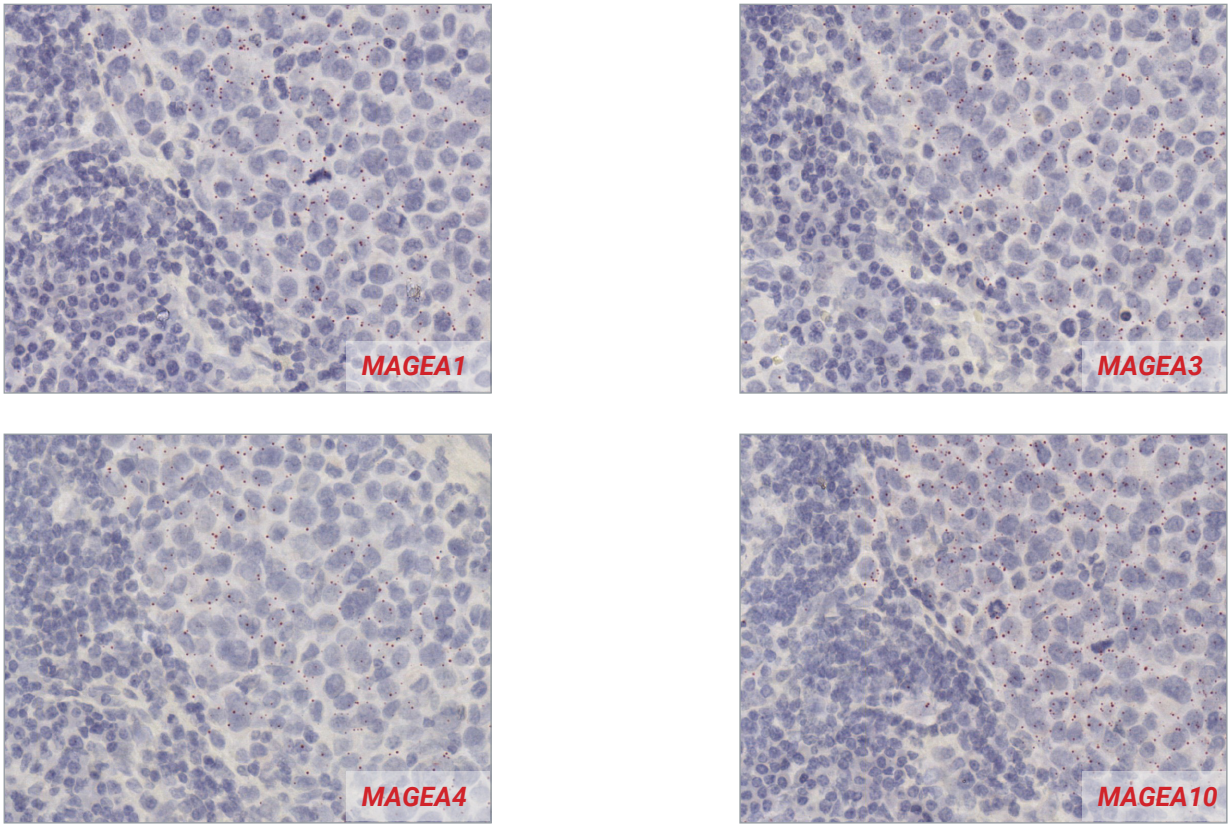

FIGURE 3. Detection of individual *MAGE-A* genes in human melanoma.

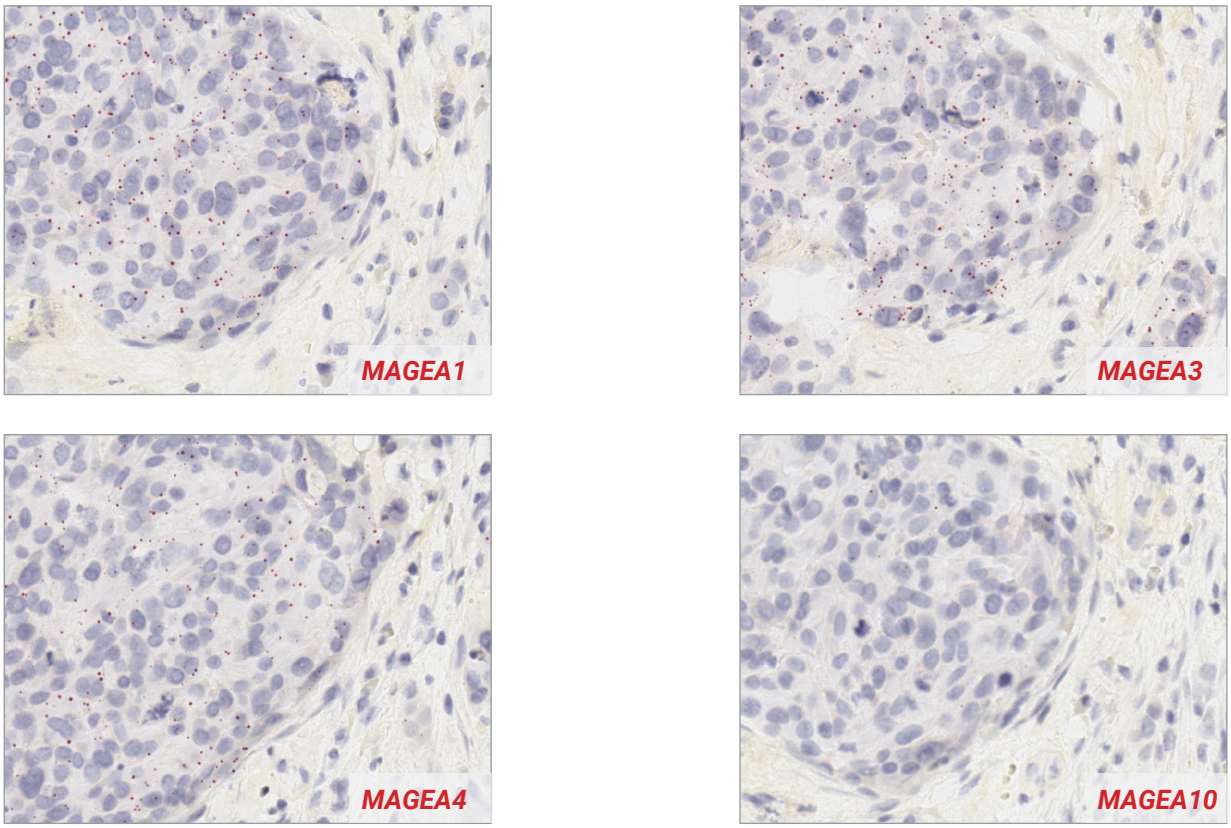

FIGURE 4. Detection of individual *MAGE-A* genes in human head & neck cancer.

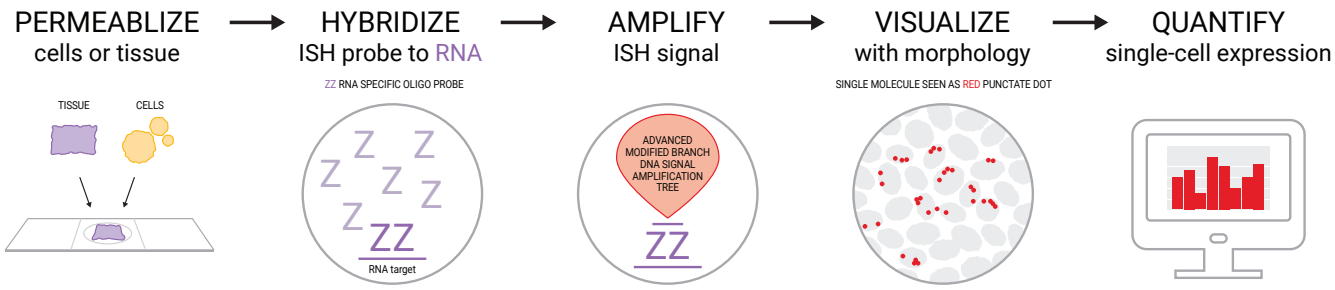

FIGURE 5. BaseScope™ Assay workflow.

Probes	Catalog #	Comments
BA-Hs-MAGEA1-2zz-st	715201	Detects *MAGEA1*
BA-Hs-MAGEA3-2zz-st	715211	Detects *MAGEA3*
BA-Hs-MAGEA4-2zz-st	715221	Detects *MAGEA4*
BA-Hs-MAGEA10-2zz-st	715231	Detects *MAGEA10*

Assay	Catalog #
BaseScope™ LS Reagent Kit	323600

TABLE 2. BaseScope™ probes and reagents used for *MAGE-A* detection.

Need to know what MAGEA family members your tissues are expressing? Outsource your study to the experts!

- Utilize ACD's expertise in the BaseScope MAGEA assay for recommendations on a controlled study design
- Rely on ACD's scientific experts for accurate data interpretation
- Results are delivered in 4 weeks on average
- Have confidence in our quality procedures and optimization protocols

"This data puts us in a perfect position to act immediately so thank you for all of your effort on this and its successful execution."

– Scott Rowlinson, Aeglea Bio

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