

### One minute pitch

RNAscope(R) ISH is the only technology delivering sensitive and specific multiplex detection of any checkpoint marker, in complex tumor environment enabling a better understanding of the tumor/stroma/immune system interaction.

### Concept - Immuno-oncology

**Immuno-oncology** Branch of immunology that studies interactions between the immune system and cancer cells

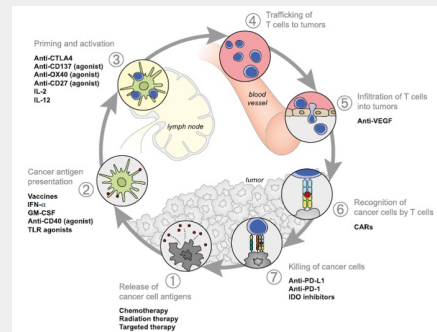
**Cancer Immune Cycle** The cancer immunity cycle describes a process of how one's own immune system can protect the body against cancer. When performing optimally, the cycle is self-sustaining. See image below.

**Immune Checkpoint Marker** Immune checkpoint markers are molecules in the immune system that either turn up a signal or turn down the cancer immunity cycle.

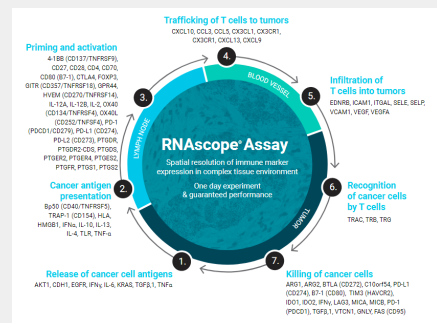
**PDL1-PD1** Most widely known and studied checkpoint marker. Known to turn down the immune response (pregnancy). Used by cancer to escape the immune cycle.

**Immuno-therapy** Use of the immune system to re-establish an efficient cancer immune cycle to treat cancer. Include checkpoint marker therapy, CAR-T cell therapy, therapeutic antibodies, etc

### Cancer Immune Cycle



### RNAscope probes for each stage of the cycle



### Questions to ask

Are you looking to measure the expression of different checkpoint markers in the tumor?

We can provide an assay (with high sensitivity and specificity) for any checkpoint marker in 2 weeks

Are you looking to measure the infiltration of the immune cell in to the tumor?

RNAscope ISH allows to visualize which genes are expressed, localize where they are expressed, and quantify the level of expression.

Do you want to multiplex your assays?

Unlike IHC, RNAscope multiplex ISH requires minimum optimization and can be achieved in few days. Note also that RNAscope ISH can easily be combined with IHC



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### Research Challenges and RNAscope Key Benefits

**Morphological context** Cancer tissues are non-uniform and extremely complex structure. Analysis in the context provide unique information to better understand the complex and dynamic relationship between the immune system, the tumor(s) and the environment. While many biomarker analysis technologies are available, most do not provide spatial and cell type-specific information critical for assessing the specific immune cell types with lineage and functional information in the evolving microenvironment of each tumor.

**Antibody specificity** RNAscope provides specific and sensitive assay for any target gene and is the ideal tool to validate IHC results

**Blurry IHC staining** Punctuate dot, easy to read

**Multiplexing optimization** Multiplexing capabilities are highly desirable in order to obtain comprehensive single cell-level co-expression information and to maximize the use of limited biopsied sample material. Multiplex capability up to 4 targets without extensive optimization (few days versus weeks or months for IHC)

### Competitor product

IHC - limited by antibody availability, lack of specificity and long/difficult multiplex optimization

Profiling technology like Nanostring that allows analysis of multi-gene expression signatures. Limitation: lack of morphological context.

### Recommended products - Academic

RNAscope® Fluorescent Multiplex (320850) for fresh & fixed frozen C1/C3: stronger channel (low expression), C2: slightly weaker channel

RNAscope® Multiplex Fluorescent v2 (323110) up to 4 targets, but ideal for FFPE, 4-plex: They need 4-Plex Ancillary Kit (323120)

RNAscope® 2.5 HD Duplex Reagent Kit (322430)

### Recommended products - Biopharma

RNAscope® LS Multiplex Fluorescent Assay

RNAscope® 2.5 LS Duplex Assay

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### Key tools/References

- App note & appendix
- Probe list
- Lung Cancer Study flyer
- Multitude of posters/Pubcrushs
- 3 min speech

Find everything in Showpad: Disease/area of research - Immuno-oncology: <http://bit.ly/2q7rGHQ>



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