

Toll-Like Receptor 10 in Human Lungs

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INTRODUCTION

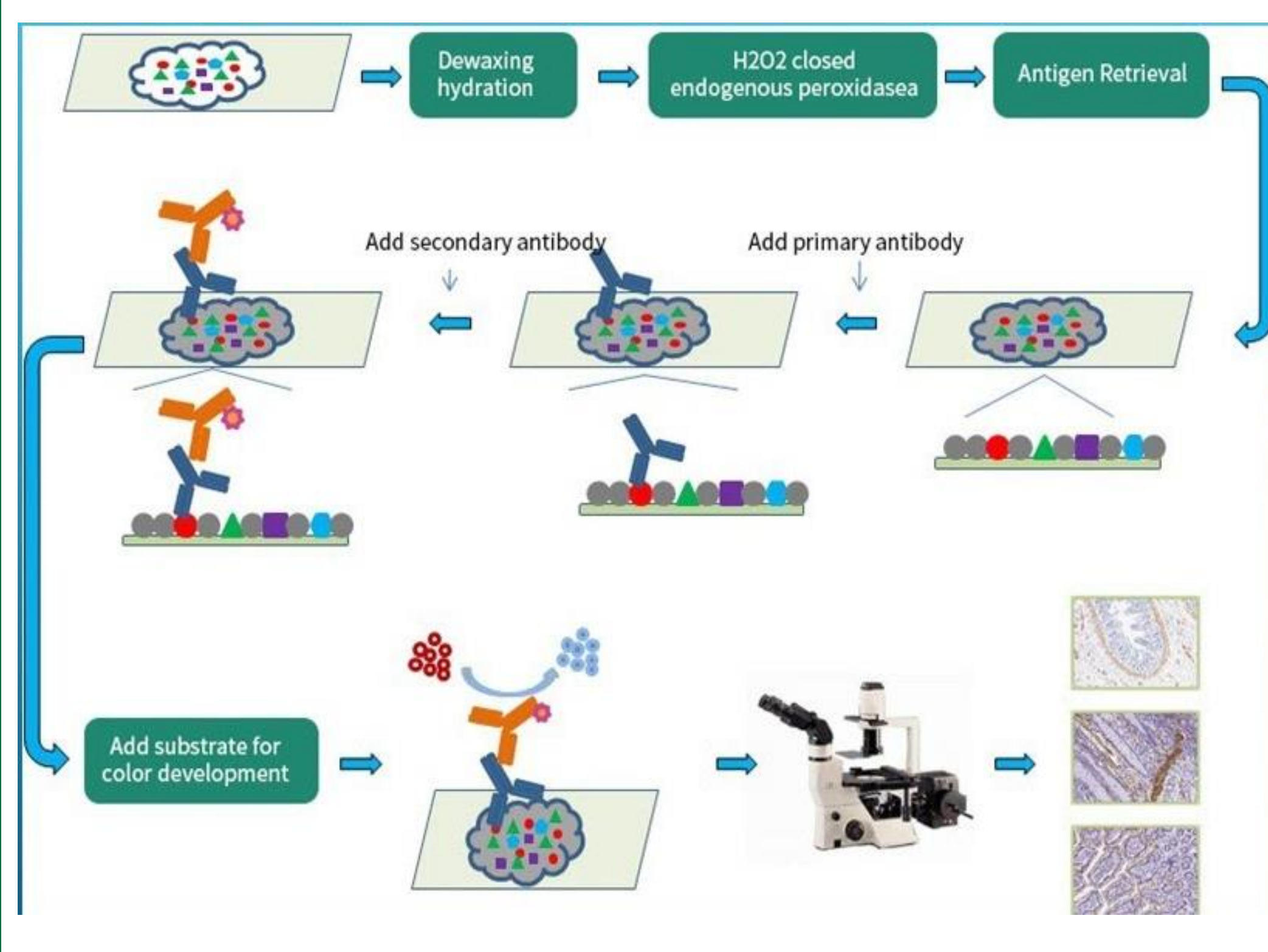
The biggest infectious disease outbreaks have been respiratory diseases, which are a leading cause to death and disability in humans. Though the use of antibiotics has helped greatly, challenges occur due to the evolution of anti-microbial resistance. Fortunately, the body has an innate immune system that is the primary response when an infection invades the lungs. Toll-like receptors are important for this primary response. They recognize pathogens and initiate a cascade of events to activate an inflammatory response. Toll-like receptor 10, also known as TLR10, has a unique anti-inflammatory function. This is different compared to the other TLRs, since they have pro-inflammatory properties. TLR10 is the latest TLR to be discovered, therefore little data can be found on its expression and very little is known about its function.

OBJECTIVE

- To compare the expression of TLR10 in the lungs of healthy and unhealthy humans.

MATERIALS AND METHODS

Immunofluorescence staining using fixed human lung samples from both healthy and unhealthy human lungs.



RESULTS

HEALTHY HUMAN LUNGS

DAPI MAC387 VWF TLR10

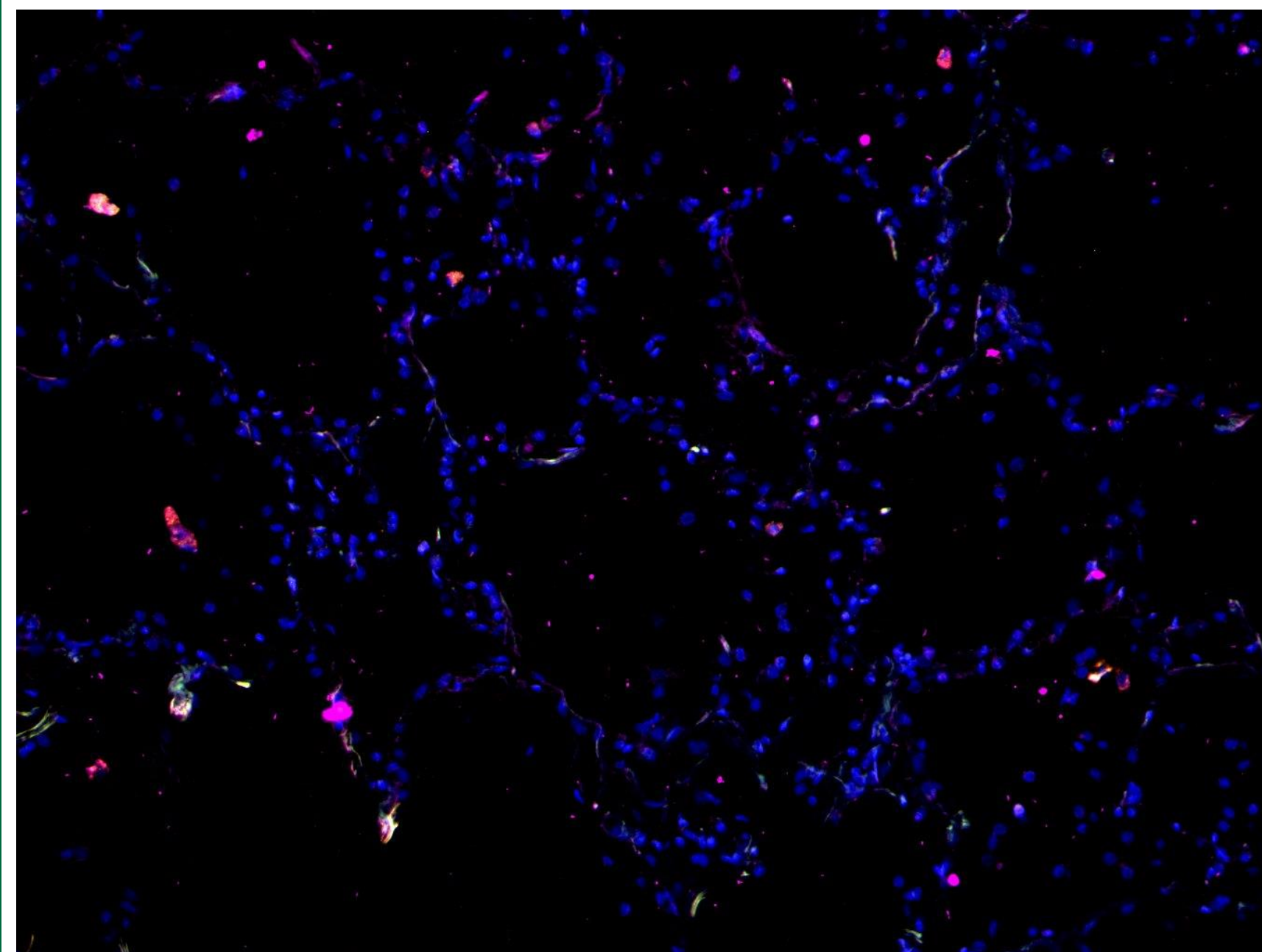
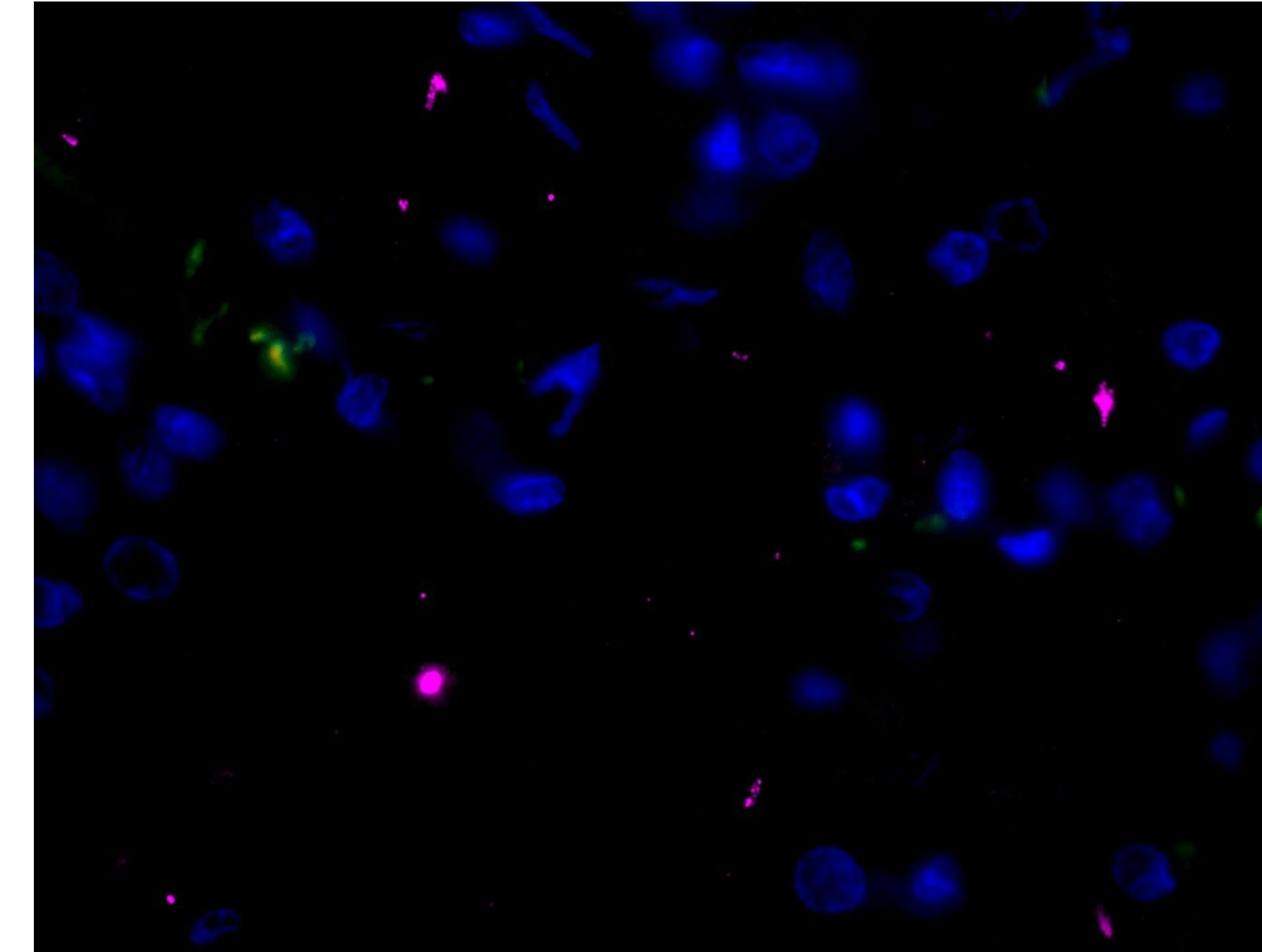


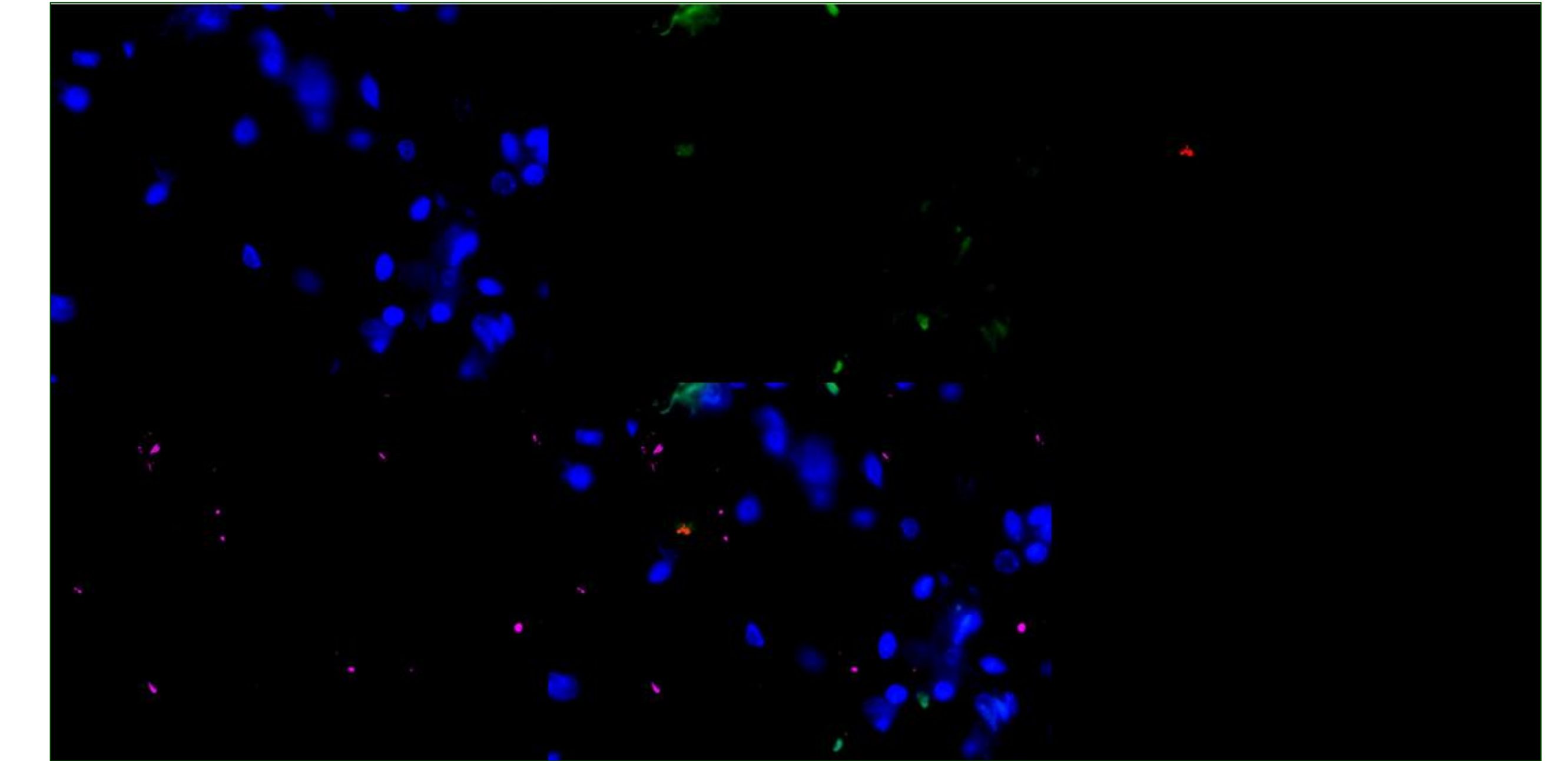
Figure 1. TLR10 expression in healthy human lung sample analyzed by immunofluorescence staining at 10x. VWF and MAC387 are used as markers.



DAPI MAC387 VWF TLR10

Figure 2. TLR10 expression in control human lung sample analyzed by immunofluorescence staining at 100x. VWF and MAC387 are used as markers.

DAPI MAC387 VWF



TLR10 MIXED

Figure 3. TLR10 expression in control human lung sample analyzed by immunofluorescence staining at 100x. VWF and MAC387 are used as markers.

UNHEALTHY HUMAN LUNGS

DAPI TLR2 FLT-1 TLR10

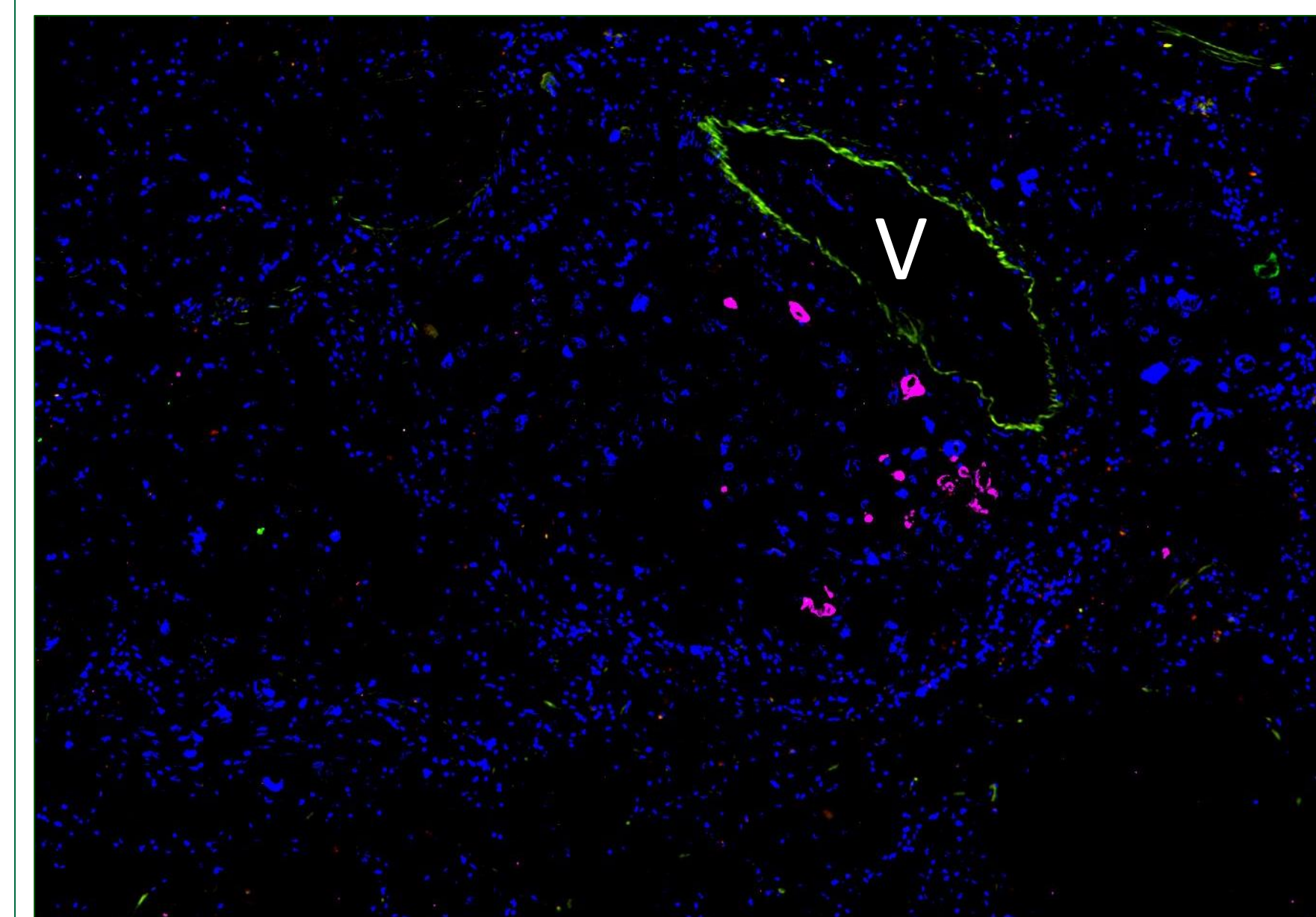
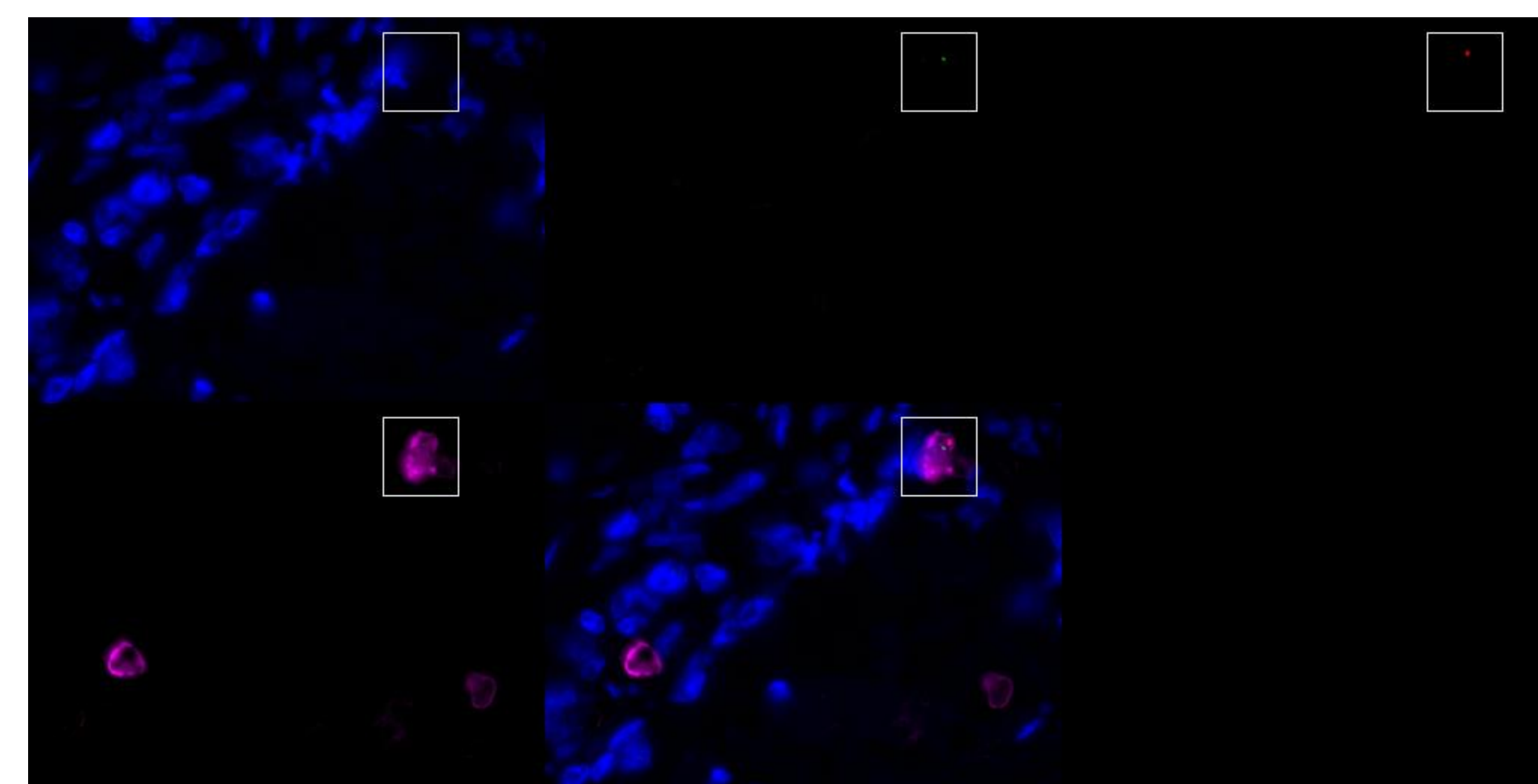


Figure 4. TLR10 expression in unhealthy human lung sample analyzed by immunofluorescence staining at 10x. TLR2 and FLT-1 are used as markers.

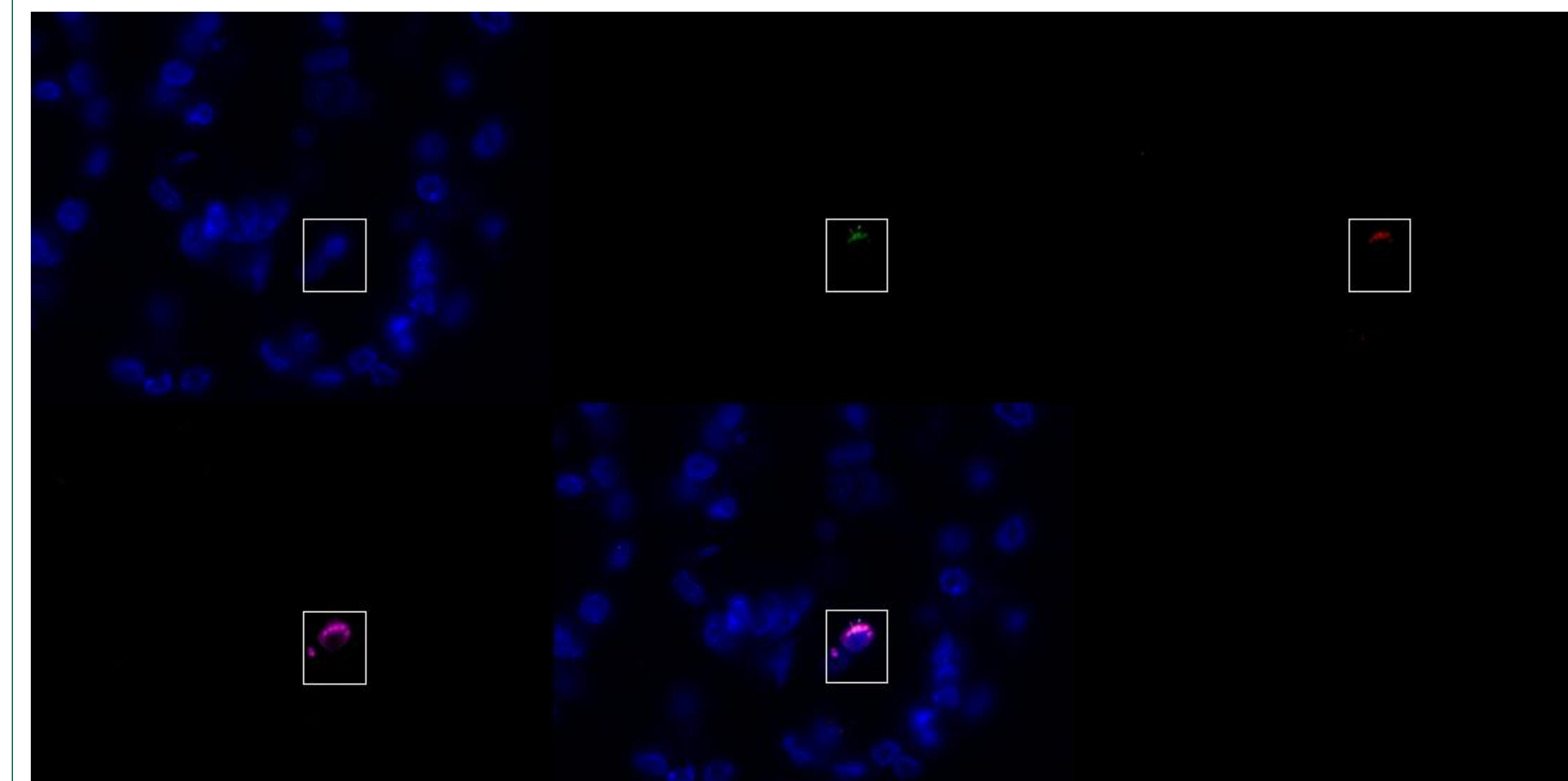
DAPI TLR2 FLT-1



TLR10 MIXED

Figure 5. TLR10 expression in unhealthy human lung sample analyzed by immunofluorescence staining at 100x. TLR2 and FLT-1 are used as markers.

DAPI TLR2 FLT-1



TLR10 MIXED

Figure 6. TLR10 expression in unhealthy human lung sample analyzed by immunofluorescence staining at 100x. TLR2 and FLT-1 are used as markers.

CONCLUSIONS

- TLR10 is expressed in immune cells, such as dendritic cells, macrophages, B cells, monocytes, and neutrophils.
- TLR10 was found in the lymphoid tissue of the unhealthy human lungs.
- Difference in appearance between the staining of TLR10 in the healthy and unhealthy lungs.
- TLR10 was seen in the endothelial cells, macrophages, and the neutrophils.
- Knowing the ligand for TLR10 will help in further understanding its function

REFERENCES

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- Balachandran Y, Singh B. Toll-like receptor 10 has a role in human macrophage response against *Streptococcus pneumoniae*. *Cell Tissue Res.* 2022 Jul 22. doi: 10.1007/s00441-022-03671-4. Epub ahead of print. PMID: 35867184.

ACKNOWLEDGMENTS

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