

ROR2⁺ Pericytes Drive a COL5A2-Rich Perivascular Niche That Promotes Vascular Leakage and Immune Exclusion in Lung Cancer

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Tumor Biology – Basic Science

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1 · DISCOVERY

Tumor-enriched pericytes nominate COL5A2.

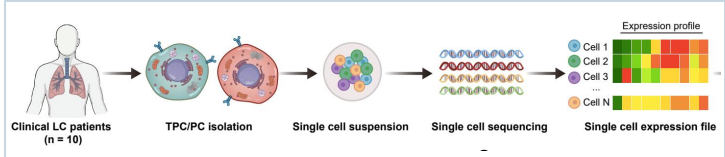


Fig.1 Patient-to-single-cell workflow

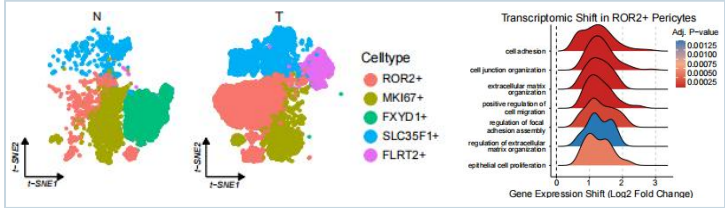


Fig.2 Proportion and transcriptional features of ROR2+ pericytes

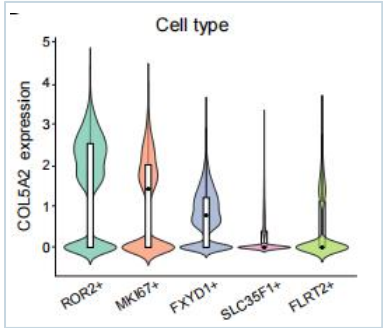


Fig. 3 COL5A2 follows ROR2 status

ROR2⁺ pericytes couple remodeling + crosslinking.

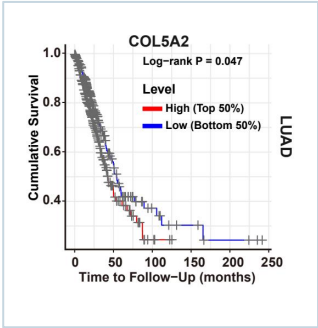


Fig. 4 LUAD survival

2 · SPATIAL NICHE

Perivascular COL5A2 tracks ROR2⁺ pericytes.

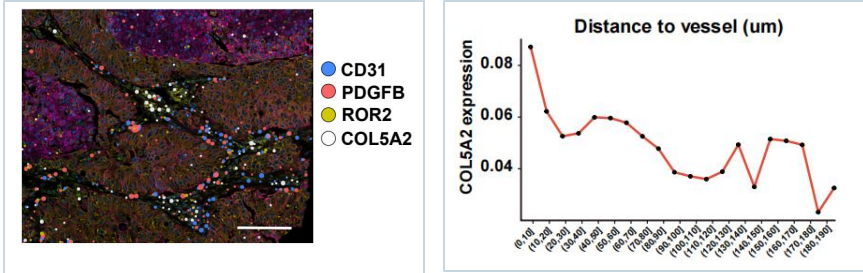
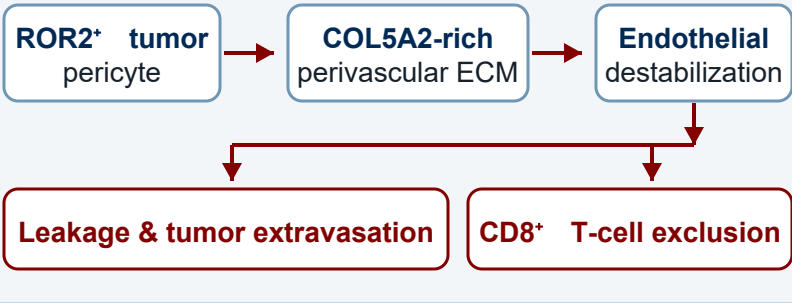


Fig. 5 Multiplex spatial map and vessel-distance profile

MECHANISTIC MODEL



Barrier lowering—not motility—explains the phenotype.

Inference from submitted single-cell, spatial and functional analyses.

3 · FUNCTION & CLINICAL RELEVANCE

COL5A2 links leakage, spread and immune exclusion.

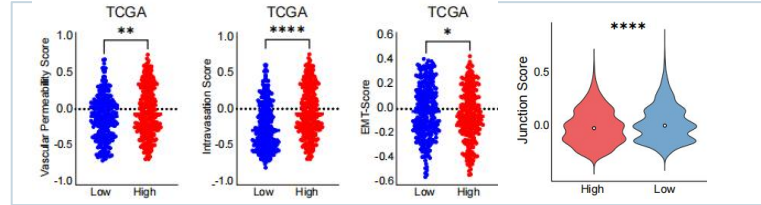


Fig. 6 · High COL5A2: ↑ permeability / intravasation; limited EMT

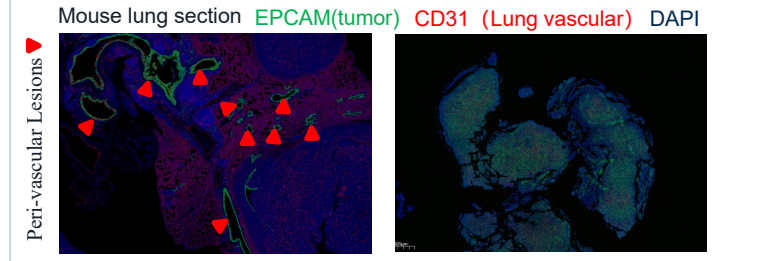


Fig. 7 Metastasis potential.

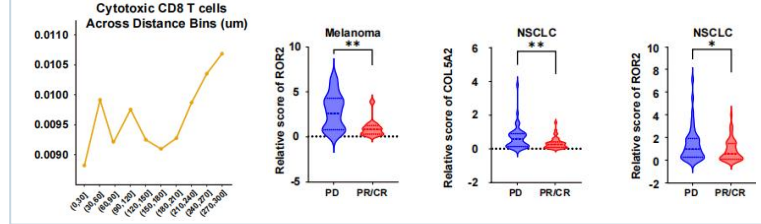


Fig. 8 CD8 exhaustion and immune desert.

CLINICAL SIGNAL High COL5A2 tracks poorer survival, metastasis and immune exclusion.

TAKE-HOME

ROR2⁺ pericytes are a spatially organized stromal driver of a COL5A2-rich vascular gateway.

This niche lowers endothelial and matrix barriers while excluding cytotoxic T cells—supporting metastasis without a strong intrinsic EMT program.