

# COL10A1 as a component of lateral information cascade to drive invasion & metastasis of colon

## Background:

- Collagen type X alpha 1 chain (COL10A1) has been discussed as a diagnostic biomarker for colon cancer (CC) [1,2]
- Published work does ignore state of the art molecular technologies nor appreciates intra-/inter tumoral heterogeneity and patient diversity
- Lateral transfer of information carriers from components of the extracellular matrix onto cancer cells emerges as a potent driver mechanisms of tumor progression, but little is known whether COL10A1 presents a potent component in this context

## Aims:

- Investigate the potency COL10A1 in cancer associated fibroblasts to mediate any pro-tumorigenic lateral information flow onto cancer cells and identify putative downstream mechanisms
- Investigate the predictive potential of CC COL10A1 utilizing state of the art molecular technologies to predict lymph node metastatic spread and clinical course of patients

## Results:

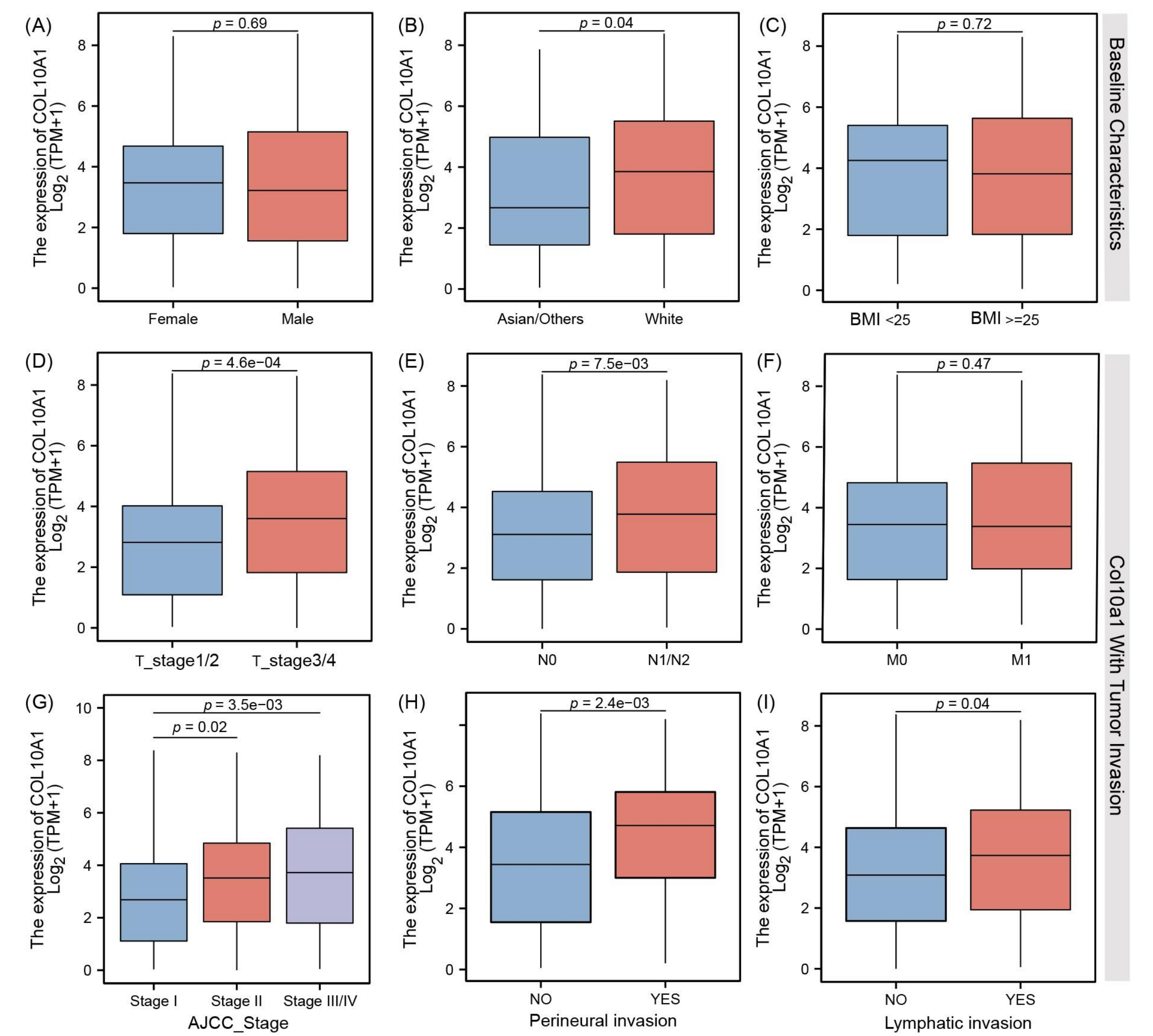
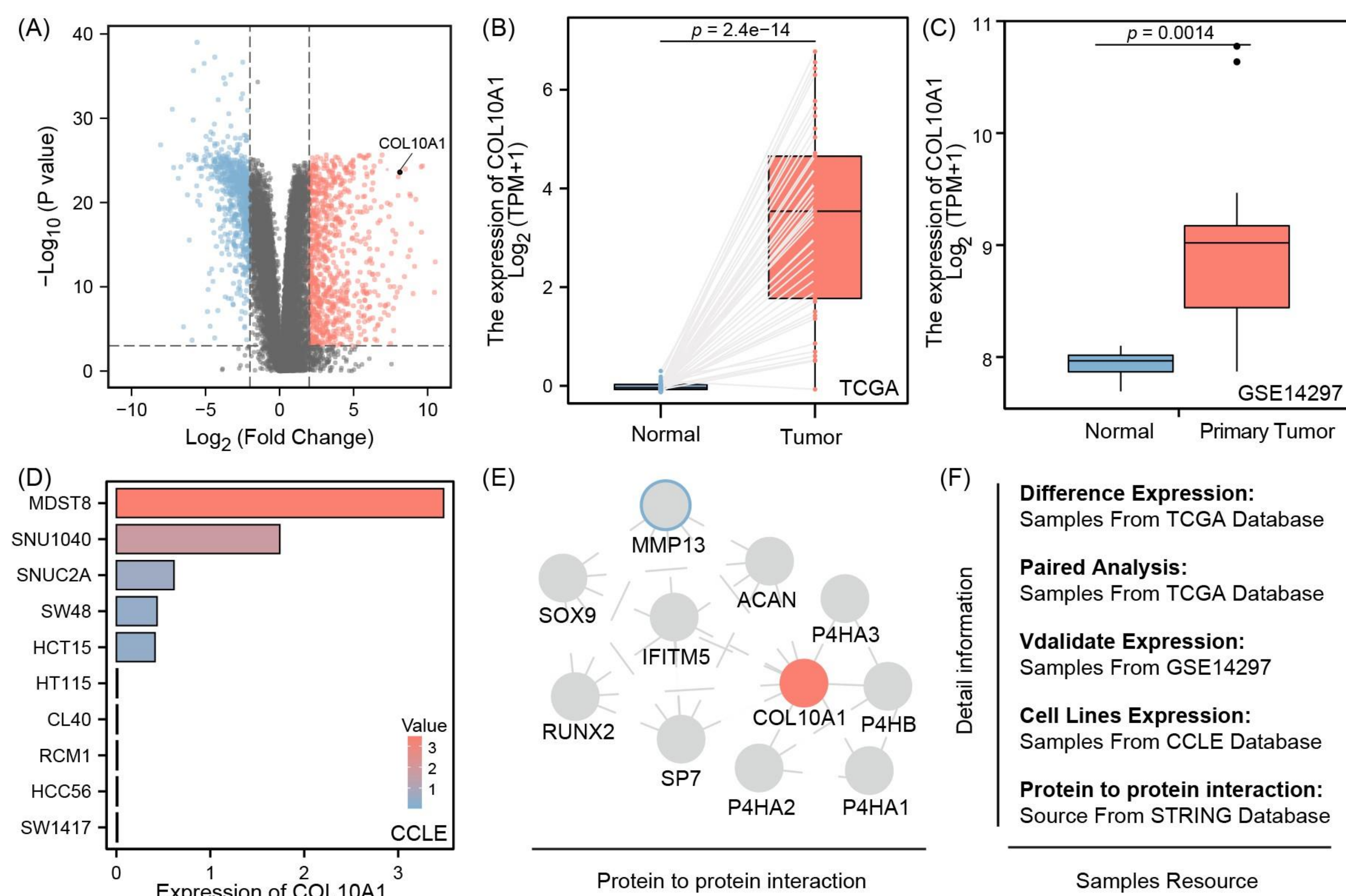


Fig1: COL10A1 mRNA in clinical CR samples is upregulated compared to normal colon. Protein-interaction modelling suggests association of elevated COL10A1 to stemness and epithelial-to-mesenchymal transformation (EMT).

Fig2: COL10A1 in clinical CR samples is associated to perineural invasion and lymphatic invasion. COL10A1 is elevated in Caucasian patients compared to other ethnicities.

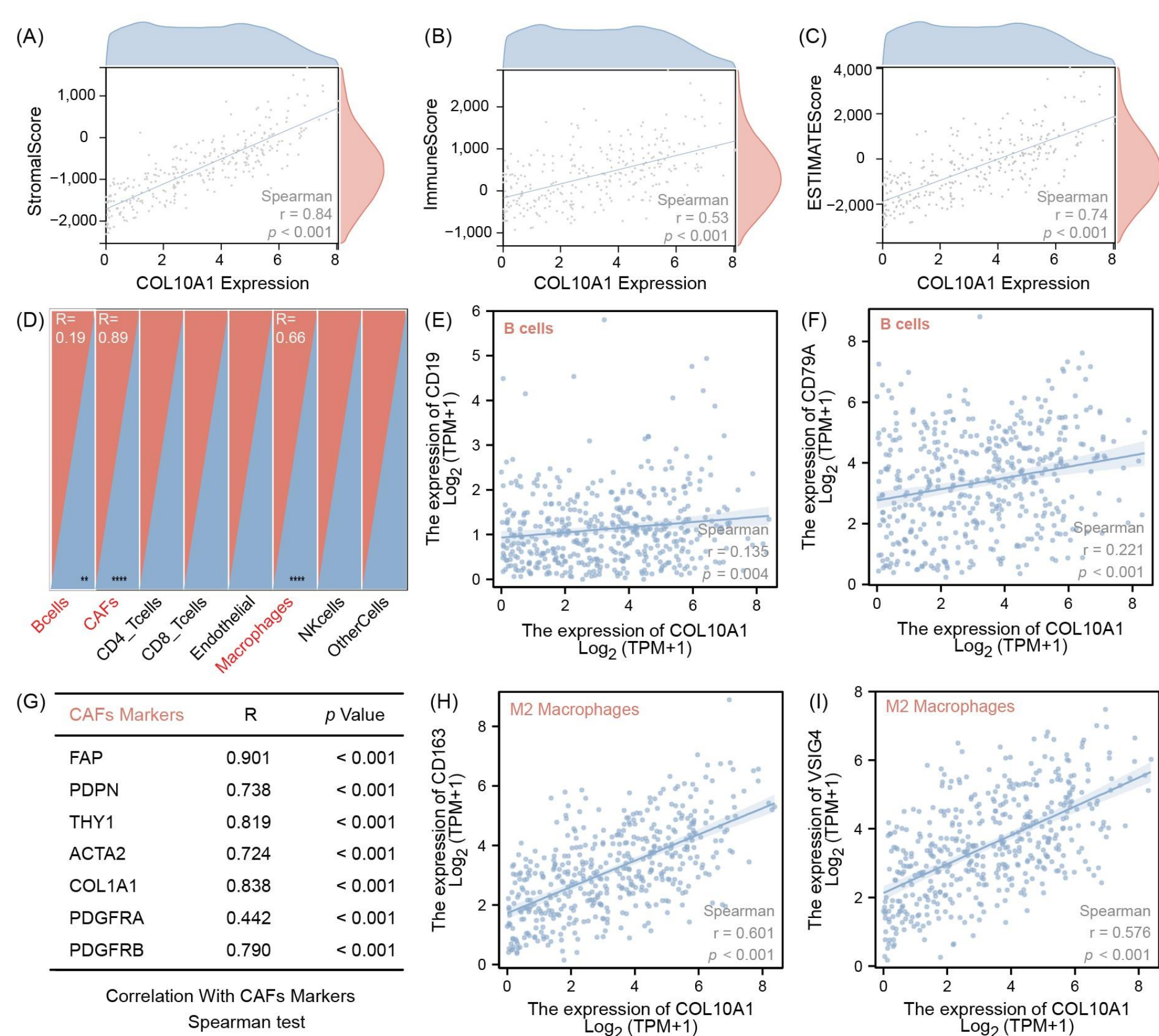


Fig3: Elevated COL10A1 expression significantly associates to CAFs consensus signature and to altered immune checkpoint expression levels

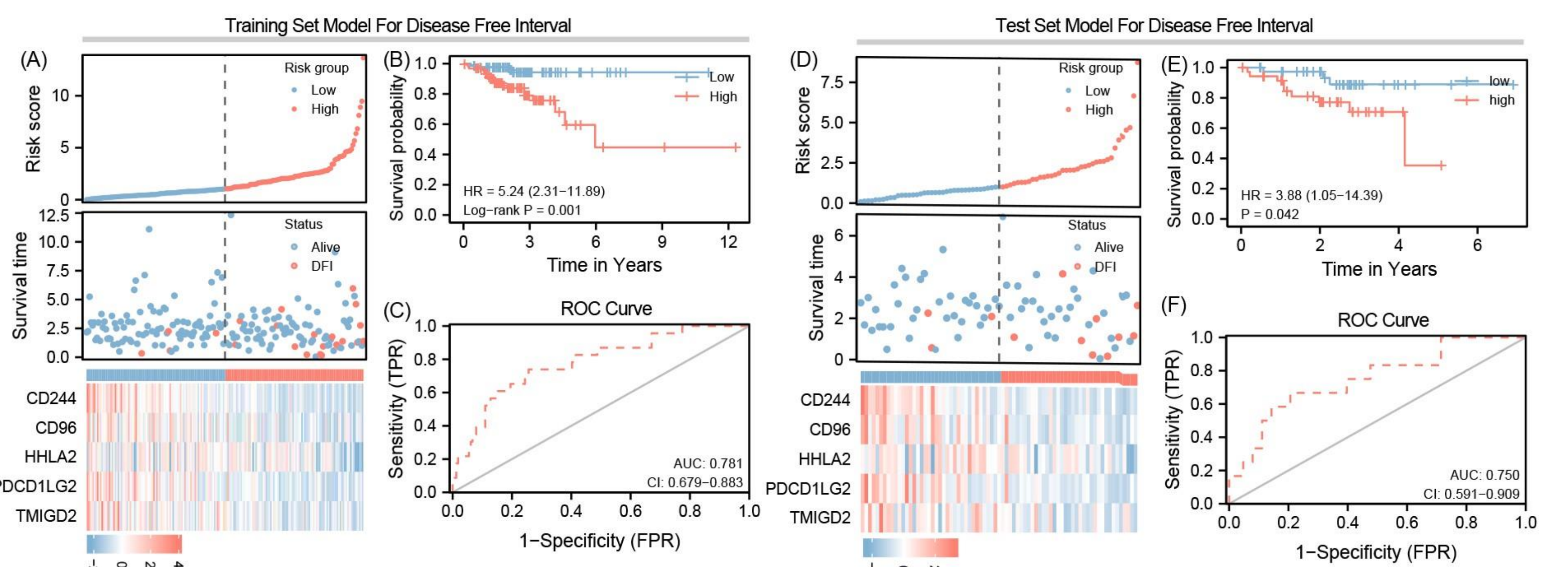
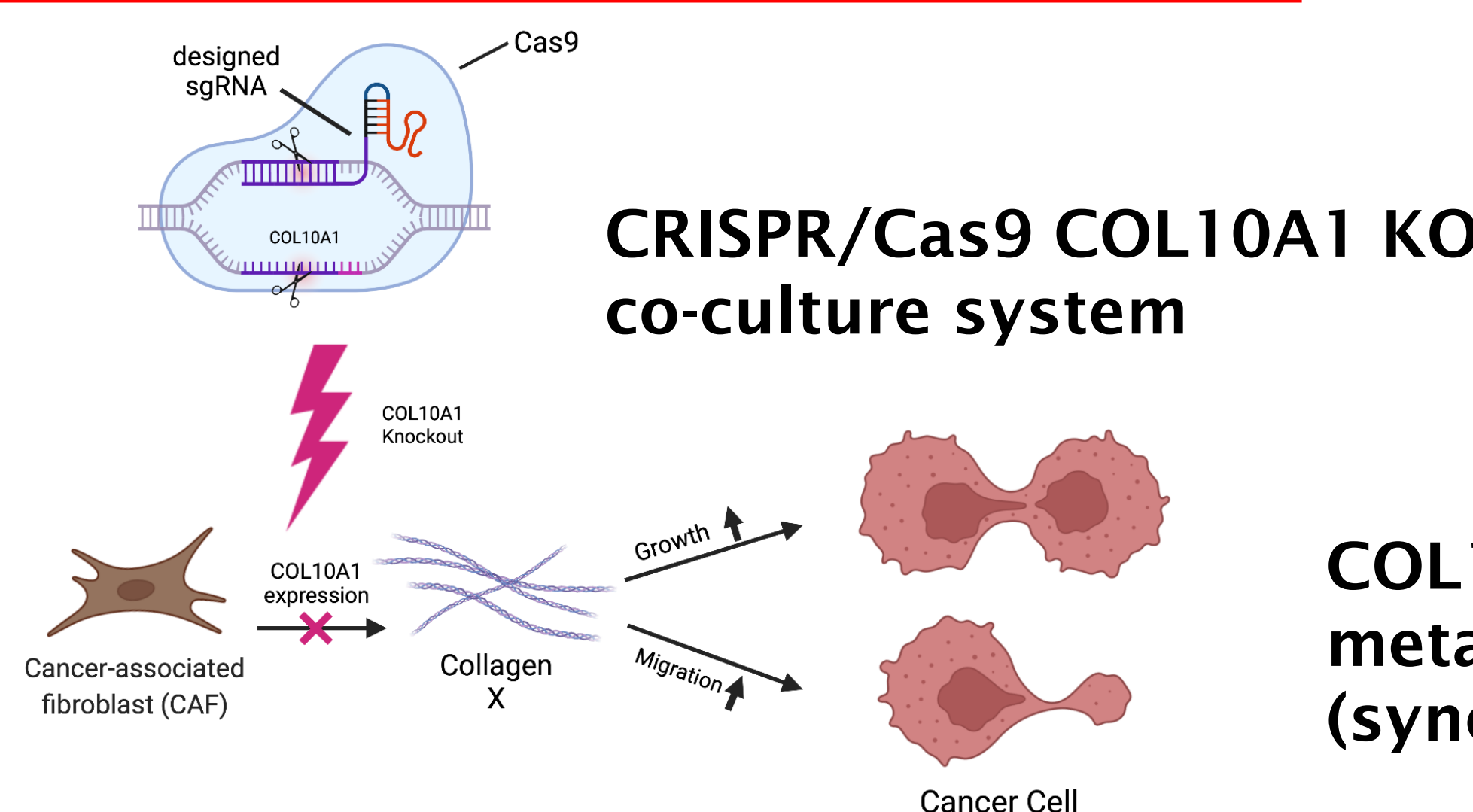
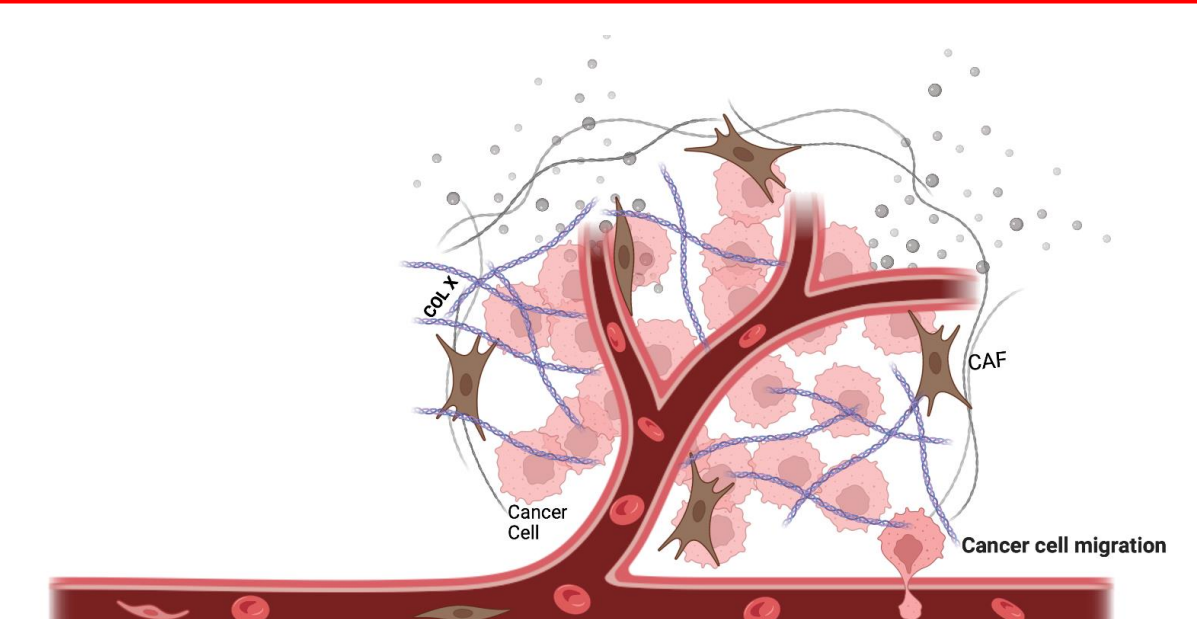


Fig4: COL10A1-associated 5-factor immune modulator signature predicts negative clinical course of CR cancer patients

## Functional validation in a preclinical *in vitro* model



## Prospective clinical assessment OVGU cohort



COL10A1 protein in tissue and liver metastasis as well as lymph nodes (synchronic vs metachronic, blood values ?)

## References:

- [1] Solé et al., 2014; [2] Huang et al., 2018