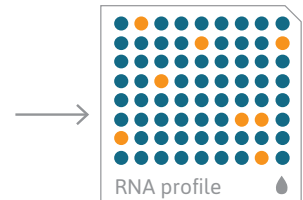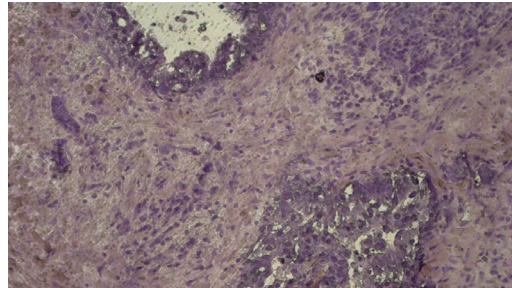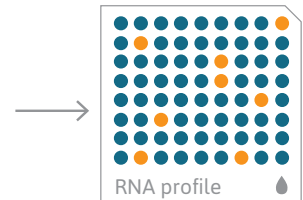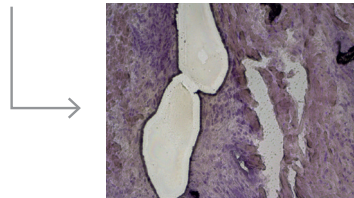# Cell-type specific microRNA/mRNA analysis in complex tissues

Pancreatic Ductal Adenocarcinoma (PDAC)

RNA profile
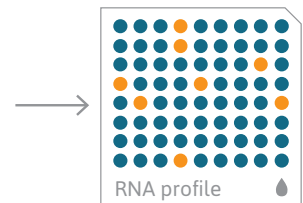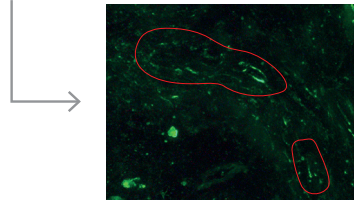
Tumor tissue (TT)

RNA profile
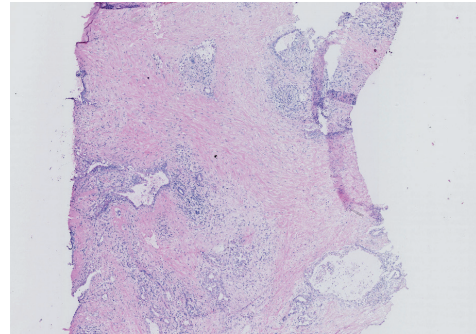
Stromal tissue (ST)
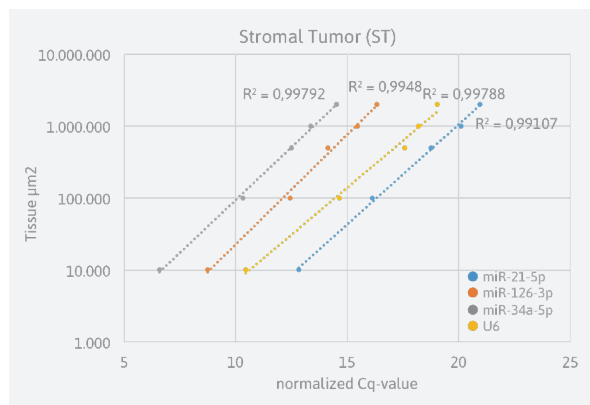

RNA profile

Tumor vessels (TEC)

RNA profile
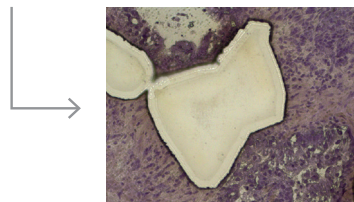
Healthy and malignant tissues are mixtures of multiple cell types:

1. Tumor cells
2. Stromal cells
3. Microvasculature – mainly endothelial cells
4. Other specialized cell types
   (e.g., Tumor Infiltrating Lymphocytes)

Compartmentalization of tissue to disentangle tissue heterogeneity and sensitive analytical methods are essential to obtain interpretable results from tissue analysis.

Pancreas Ductal Adenocarcinoma (PDAC)

Stromal Tumor (ST)

$R^2 = 0,99792$ $R^2 = 0,9948$ $R^2 = 0,99788$
$R^2 = 0,99107$

- miR-21-5p
- miR-126-3p
- miR-34a-5p
- U6

How low can we go

We can isolate high quality RNA successfully even from small $(1\times10^4 – 2\times10^6\ \mu m^2)$ tissue samples

Using this protocol we have demonstrated:

- a profound difference in RNA expression signatures between whole tumor and subsets of cell types within the tumor and

- large heterogeneity in RNA expression signatures between tumor, stroma and tumor endothelial cells*.
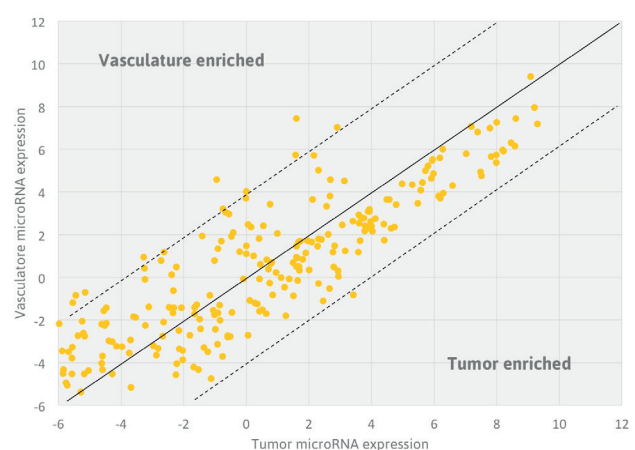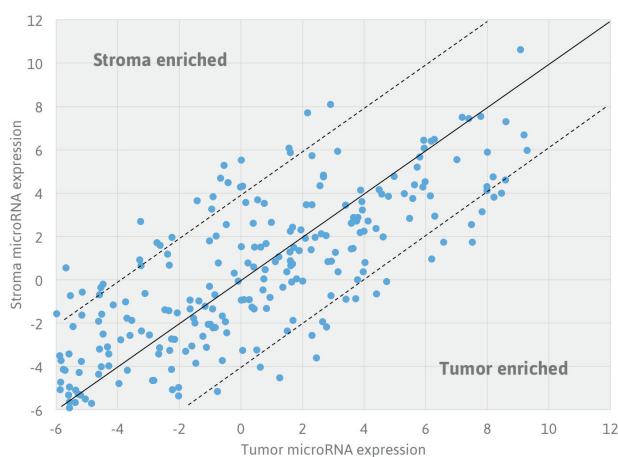
* Note: the technology can be utilized for almost any tumor tissue sample.

Vivomicx ⟶ **TAmiRNA**

has developed validated protocols to process preclinical and clinical tissue samples using Laser Microdissection (LMD)
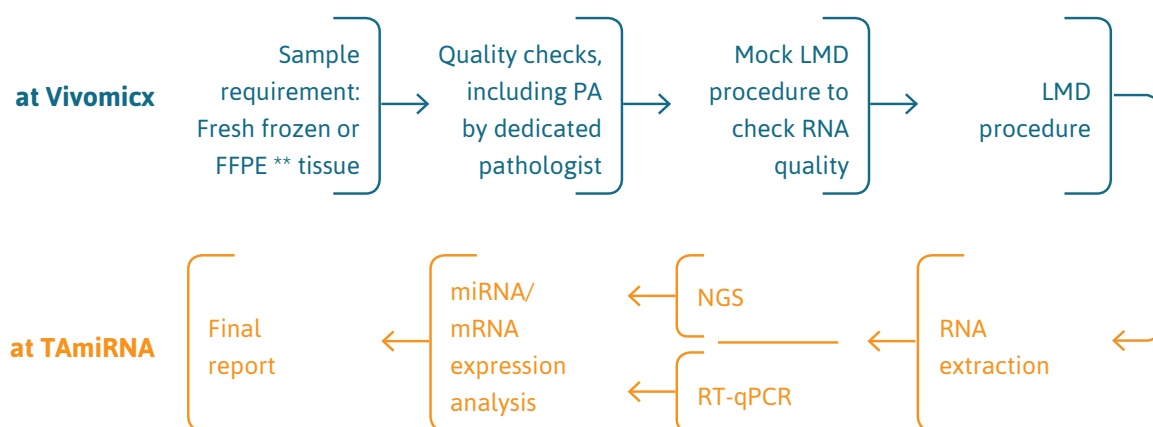
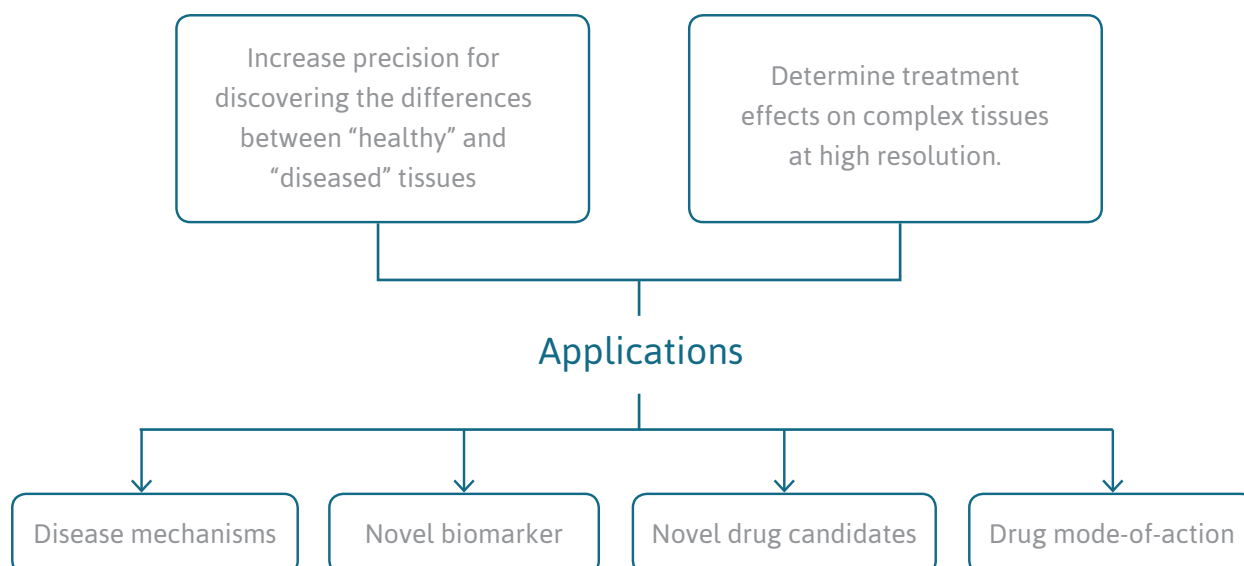offers high quality RNA services performed by experts:
• targeted microRNA and mRNA analysis (RT-qPCR)
• microRNA screening (RT-qPCR and NGS)

Workflow

at Vivomicx

Sample requirement: Fresh frozen or FFPE ** tissue → Quality checks, including PA by dedicated pathologist → Mock LMD procedure to check RNA quality → LMD procedure

at TAmiRNA

Final report ← miRNA/ mRNA expression analysis ← NGS / RT-qPCR ← RNA extraction

** For FFPE samples – please contact us!

LMD & RNA expression analyses enables to:

Increase precision for discovering the differences between "healthy" and "diseased" tissues

Determine treatment effects on complex tissues at high resolution.

Applications

| Disease mechanisms | Novel biomarker | Novel drug candidates | Drug mode-of-action |

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