

# THERMAL LIQUID BIOPSY (TLB): A NEW DIAGNOSTIC TECHNIQUE FOR THE DIFFERENTIATION OF BENIGN AND PREMALIGNANT PANCREATIC CYST DIAGNOSIS.

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## Background:

Current efforts in the identification of new biomarkers are directed towards an accurate differentiation between benign and premalignant cysts. Thermal Liquid Biopsy (TLB) refers to the analysis of serum samples by differential scanning calorimetry, providing a global picture of the proteins and their interactions, showing the difference in heat capacity between a biological fluid sample and reference buffer as a temperature function. It has been previously applied to inflammatory and tumor diseases and could offer an interesting point of view in this type of pathology.

## Methods:

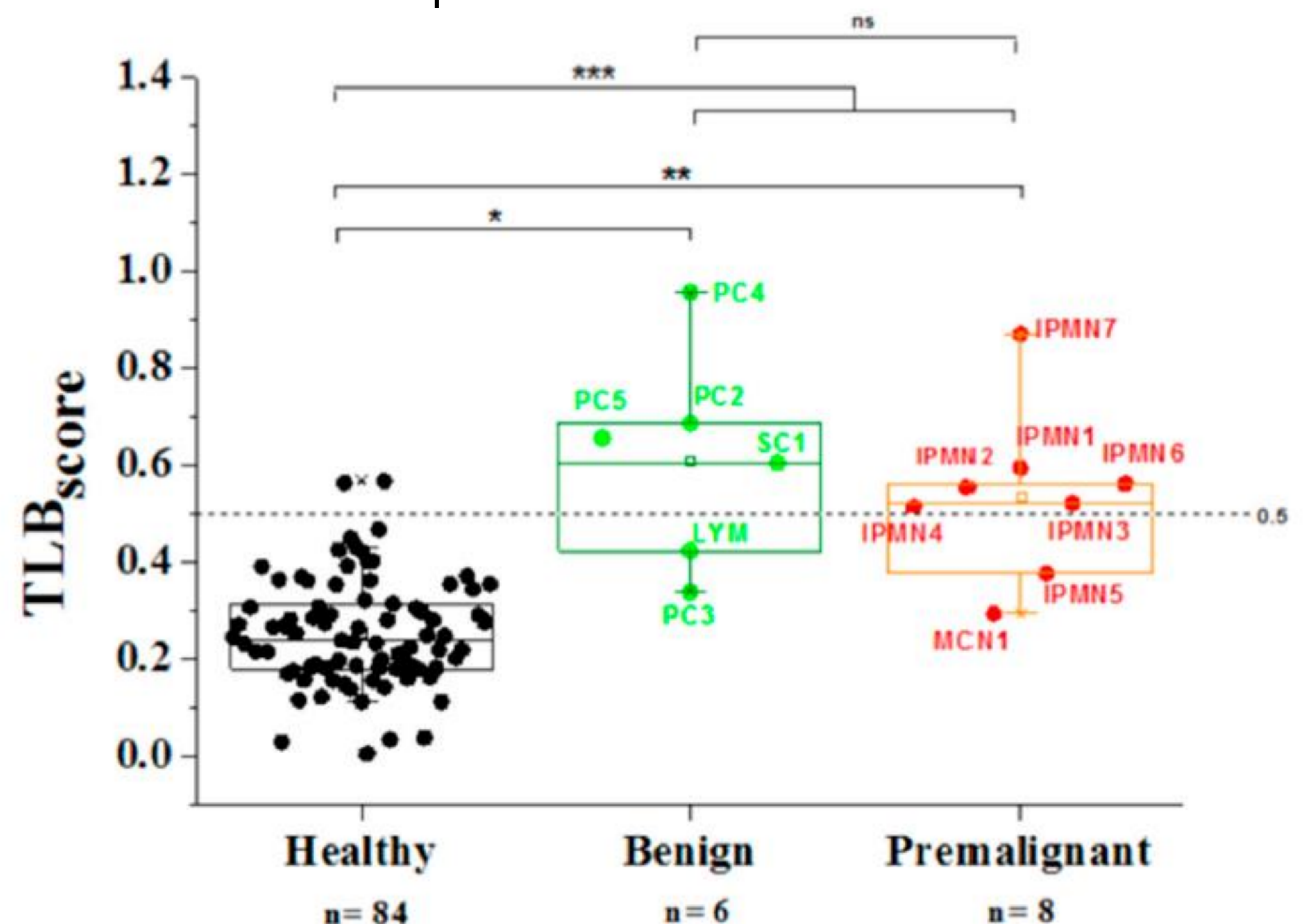
Twenty patients (60% males, average ages 62) diagnosed with a pancreatic cyst benign (10) and premalignant (10) cyst lesions were recruited, and biological samples were obtained during the endoscopic ultrasonography procedure. Also, we have obtained serum sample from 15 of these patients.

## Aim:

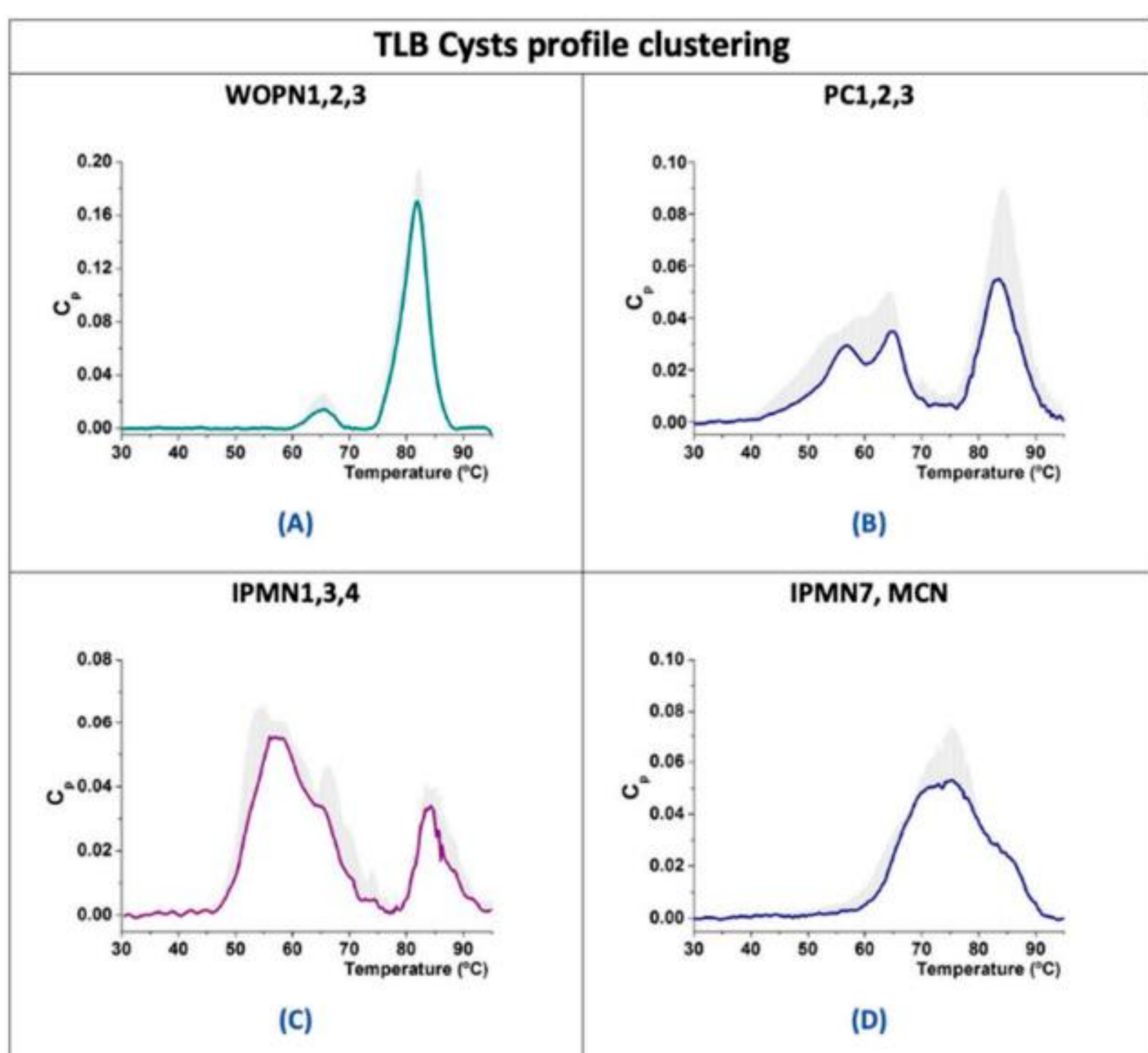
Analyze TLB thermograms from cysts liquid and serum sample to differentiate between benign and premalignant lesions.

## Results:

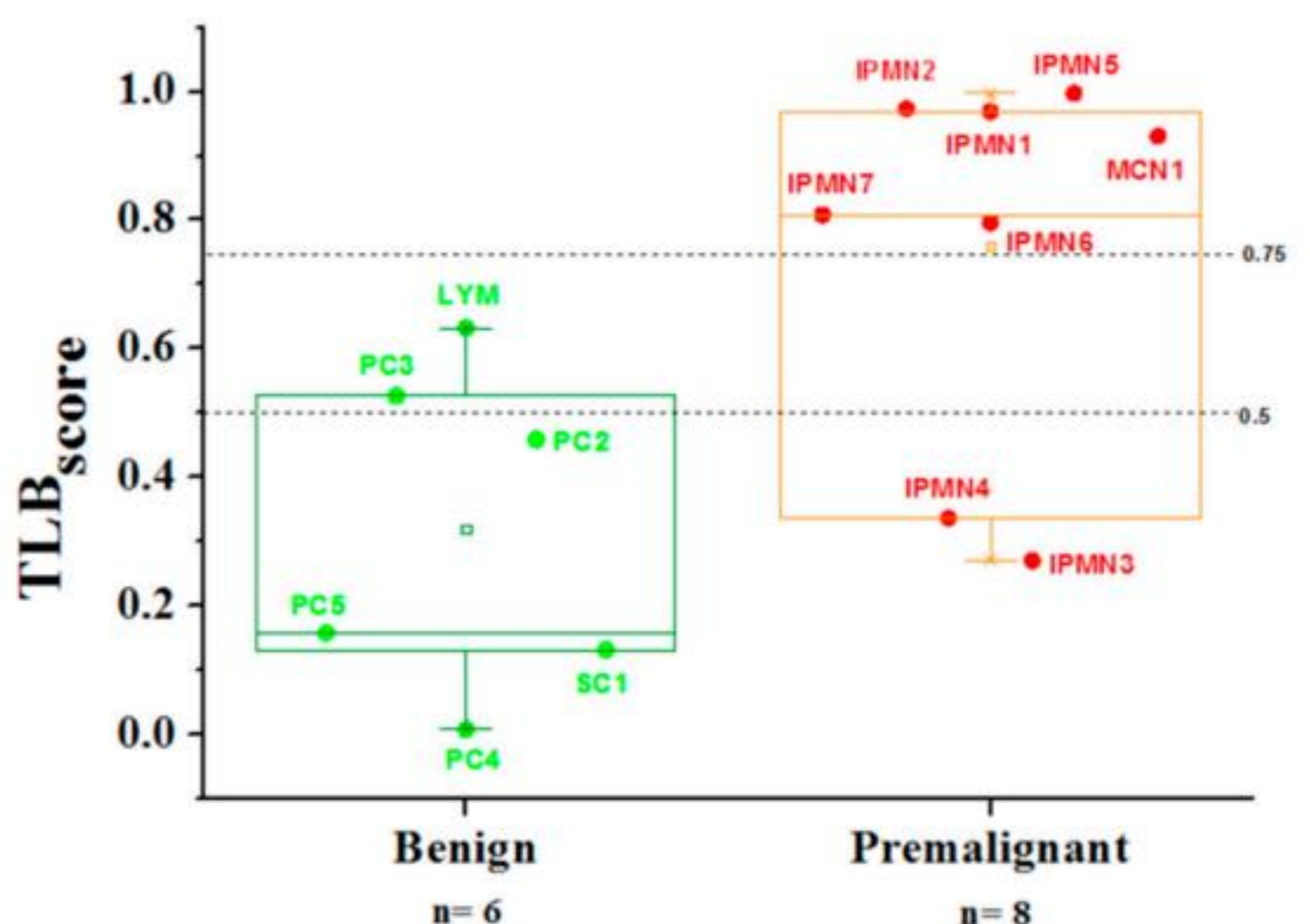
We have clustered TLB cyst profiles according to their clinical assessment (benign or premalignant nature) despite their high intra-group variability within them. In other hand, TLB serum score was able to discriminate between healthy and cysts patients (71% sensitivity and 98% specificity) and between benign and premalignant cysts (75% sensitivity and 67% specificity).



1. TLB serum score from serum TLB profiles from healthy controls and both types of cysts. Median values were compared using the Wilcoxon test: \*  $p$ -value<sub>healthybenign</sub> = 0.00026; \*\*  $p$ -value<sub>healthy-premalignant</sub> = 0.000057; \*\*\*  $p$ -value<sub>healthy-cysts</sub> = 0.0000012; ns  $p$ -value<sub>benignpremalignant</sub> = 0.501.



2. TLB thermograms from cystic liquid samples clustered by type.



3. TLB serum score parameters from serum TLB serum profiles from benign and premalignant cyst patients.

## Conclusion:

To our knowledge, this was the first time that pancreatic cyst fluid was characterized using a TLB technique. TLB analysis of serum sample, a quick, simple and non-invasive technique that can be easily implemented, reports valuable information on the observed pancreatic lesion. These preliminary results set the basis for a larger study to clearly define a common cyst thermogram for benign or premalignant cysts and to refine TLB serum score and move closer to the clinical application of TLB providing useful information to the gastroenterologist during patient diagnosis.