

Urinary extracellular vesicle mRNA panel to diagnose prostate cancer

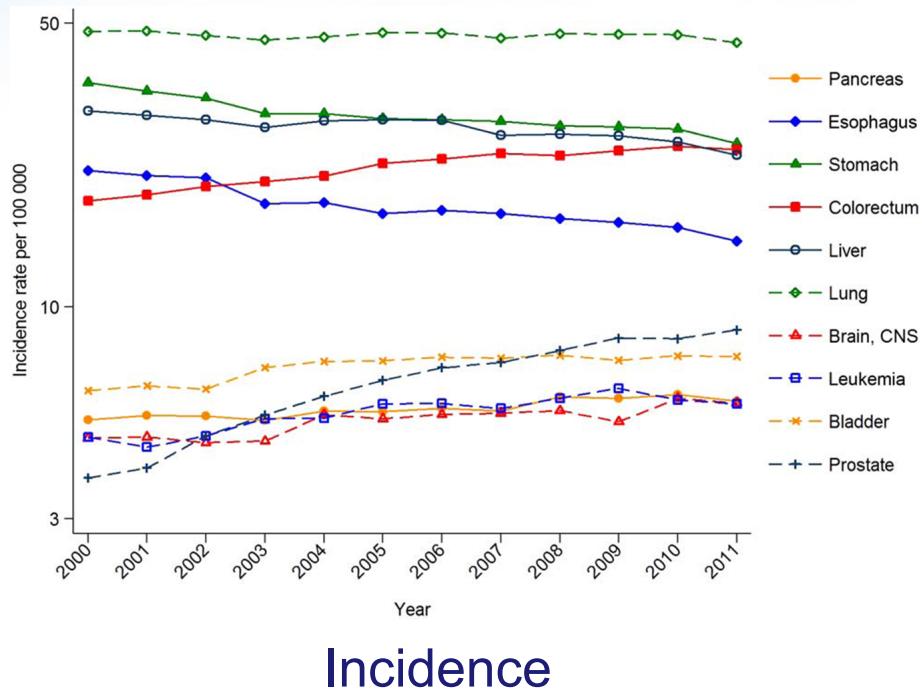
Fubo Wang

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Epidemiology of PCa in China

1. Incidence increased sharply

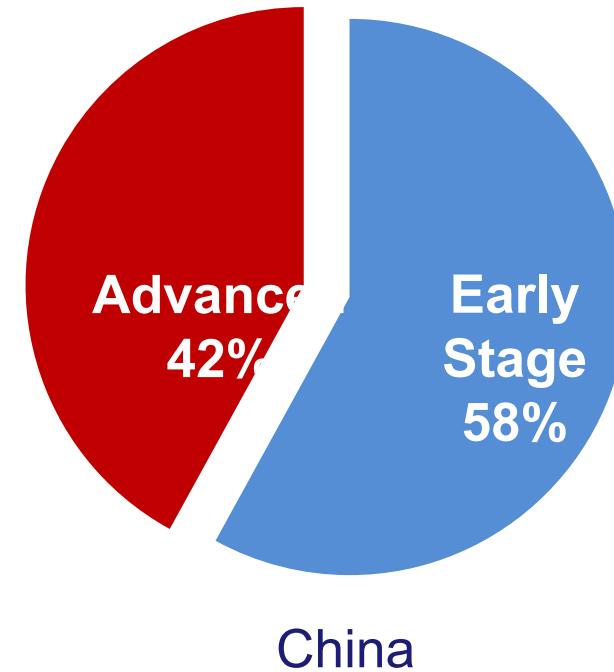
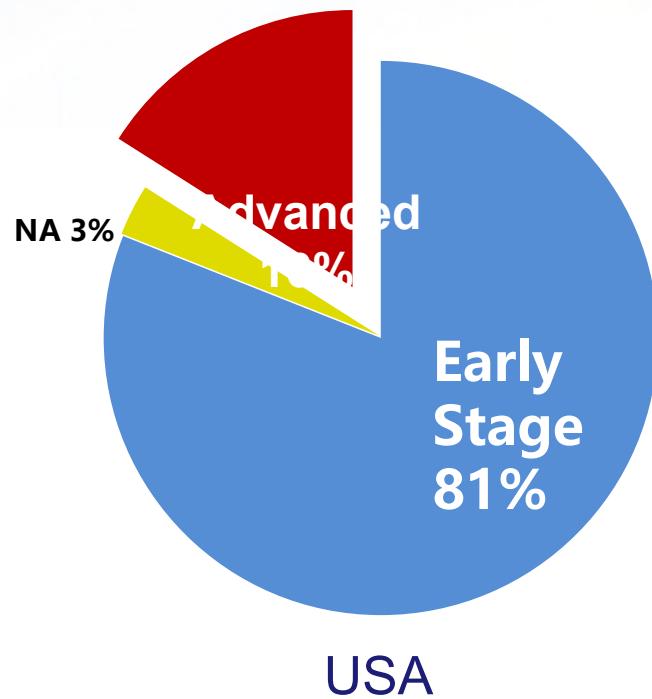


Rank	1997	Rank	2009
1	Lung	1	Lung
2	Stomach	2	Stomach
3	Liver	3	Liver
4	Colon	4	Colon
5	Rectum	5	Prostate
6	Bladder	6	Rectum
7	Pancreas	7	Bladder
8	Nasopharynx	8	Pancreas
9	Leukemia	9	Kidney
10	NHL		
11	Nervous System		
12	Larynx		
13	Prostate		

- The incidence increasing rate per year is 12.6%
- Number one in urological cancers since 2000

Epidemiology of PCa in China

2. More patients were diagnosed at advanced stages

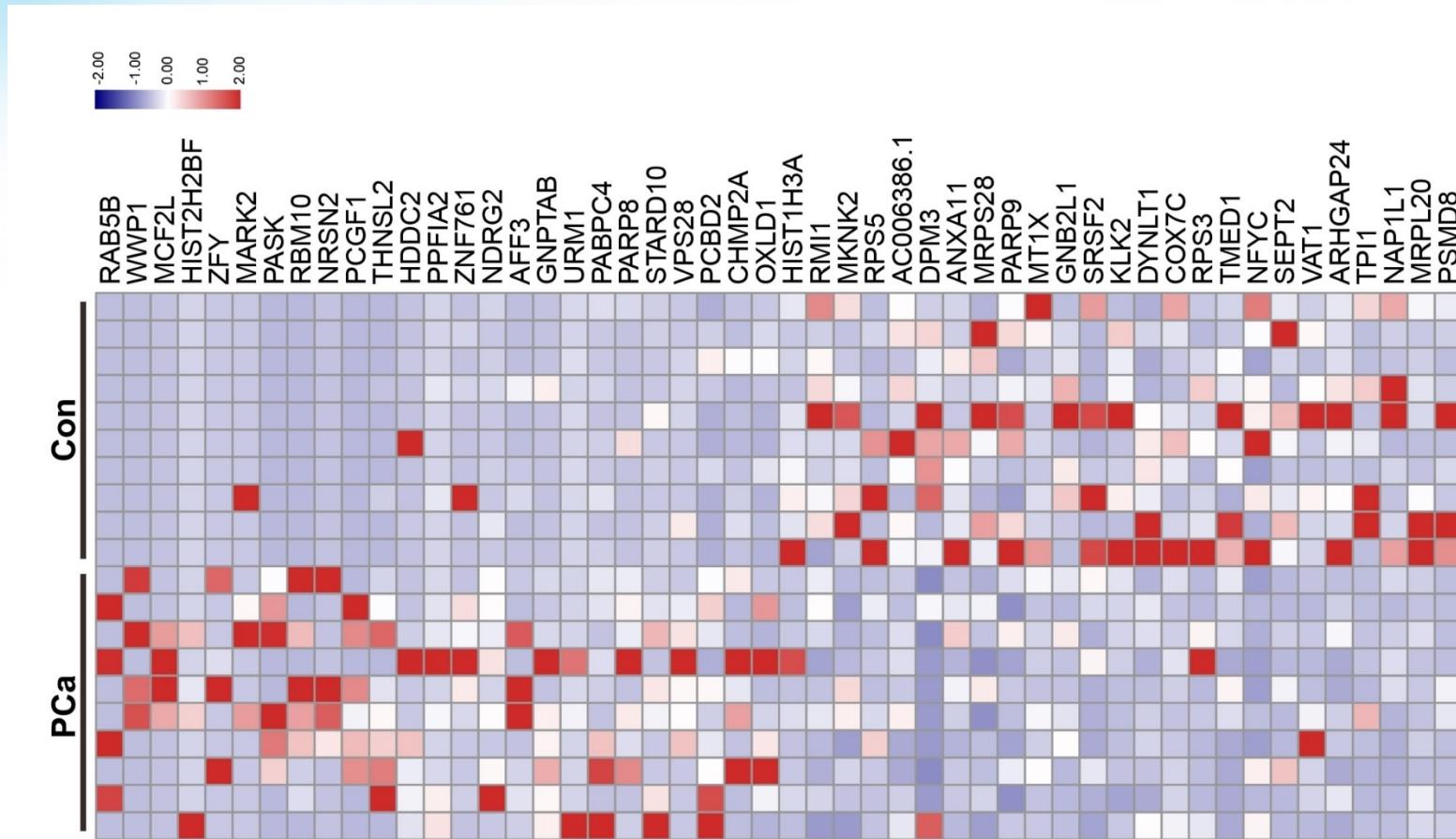


- More than 40% in China
- Less than 20% in USA

Urinary extracellular vesicle biomarkers ?

- Urine: non-invasive and easy to collect
- Urine: prostate cancer release EV post-DRE
- EV: reflect the characteristics of cancer
- EV: stable detection

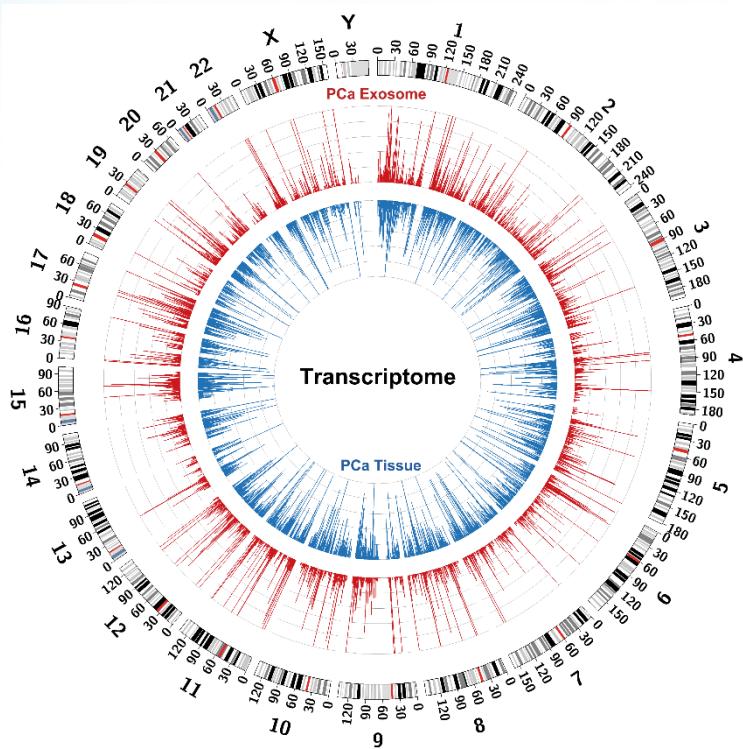
Prostate cancer associated EV mRNA (emRNA)



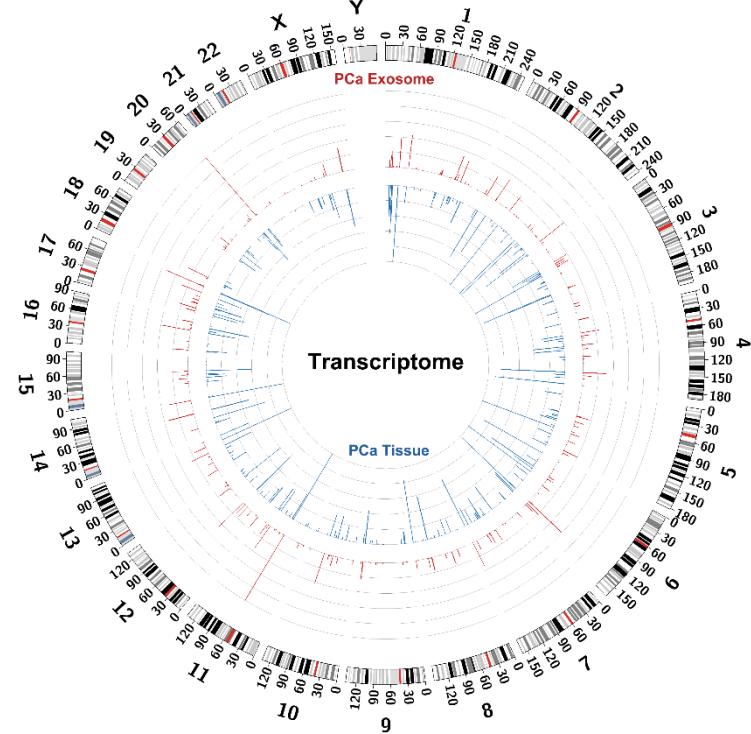
- EmRNA expression profiles were investigated with 10 pairs of urine small extracellular vesicles (sEV) by RNA-Seq

Characteristics of emRNA

mRNA

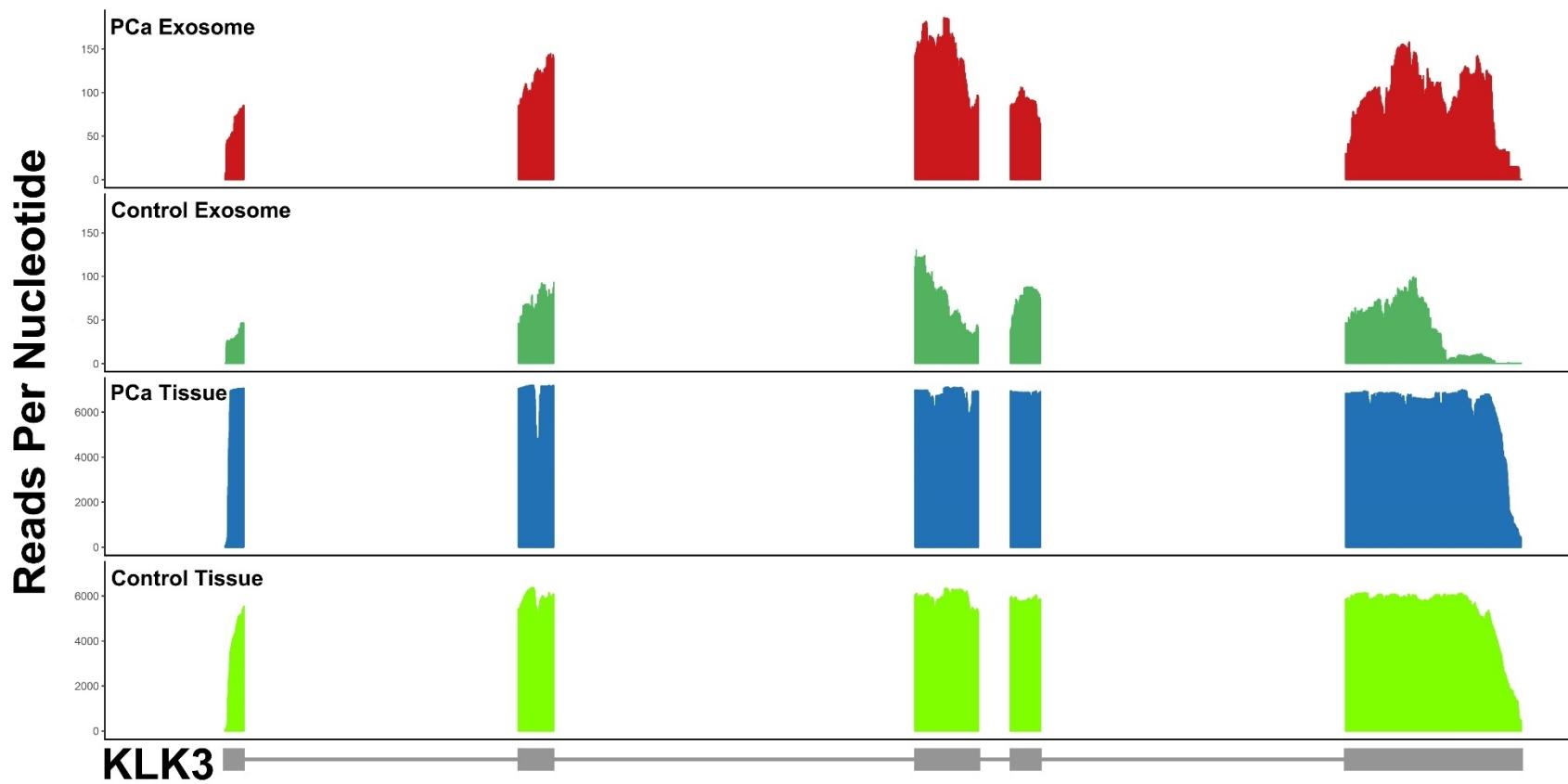


mRNA of oncogenes



- EmRNA could reflect the tissue mRNA profile

Characteristics of emRNA



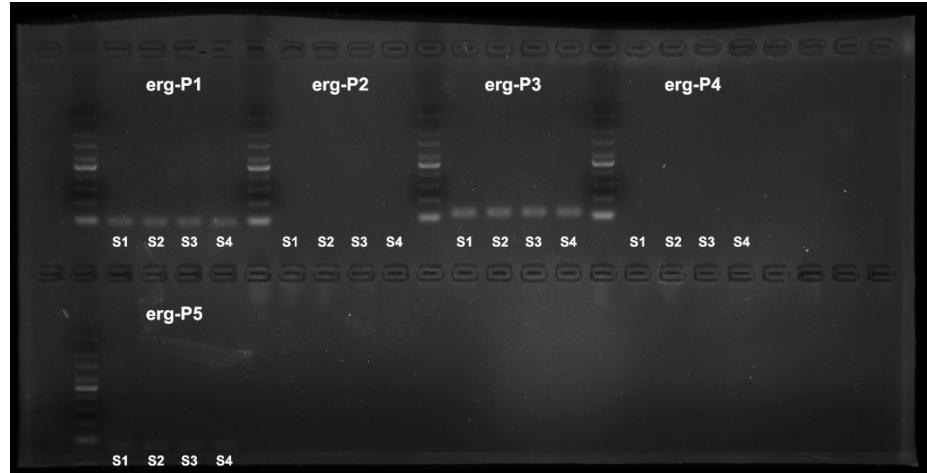
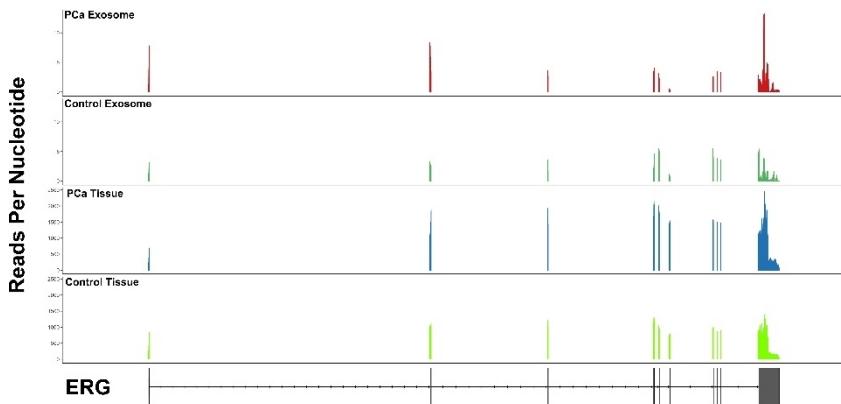
- More variants or fragments in EV than in tissue

Optimized emRNA detection

PCa associated emRNA identified by RNA-seq

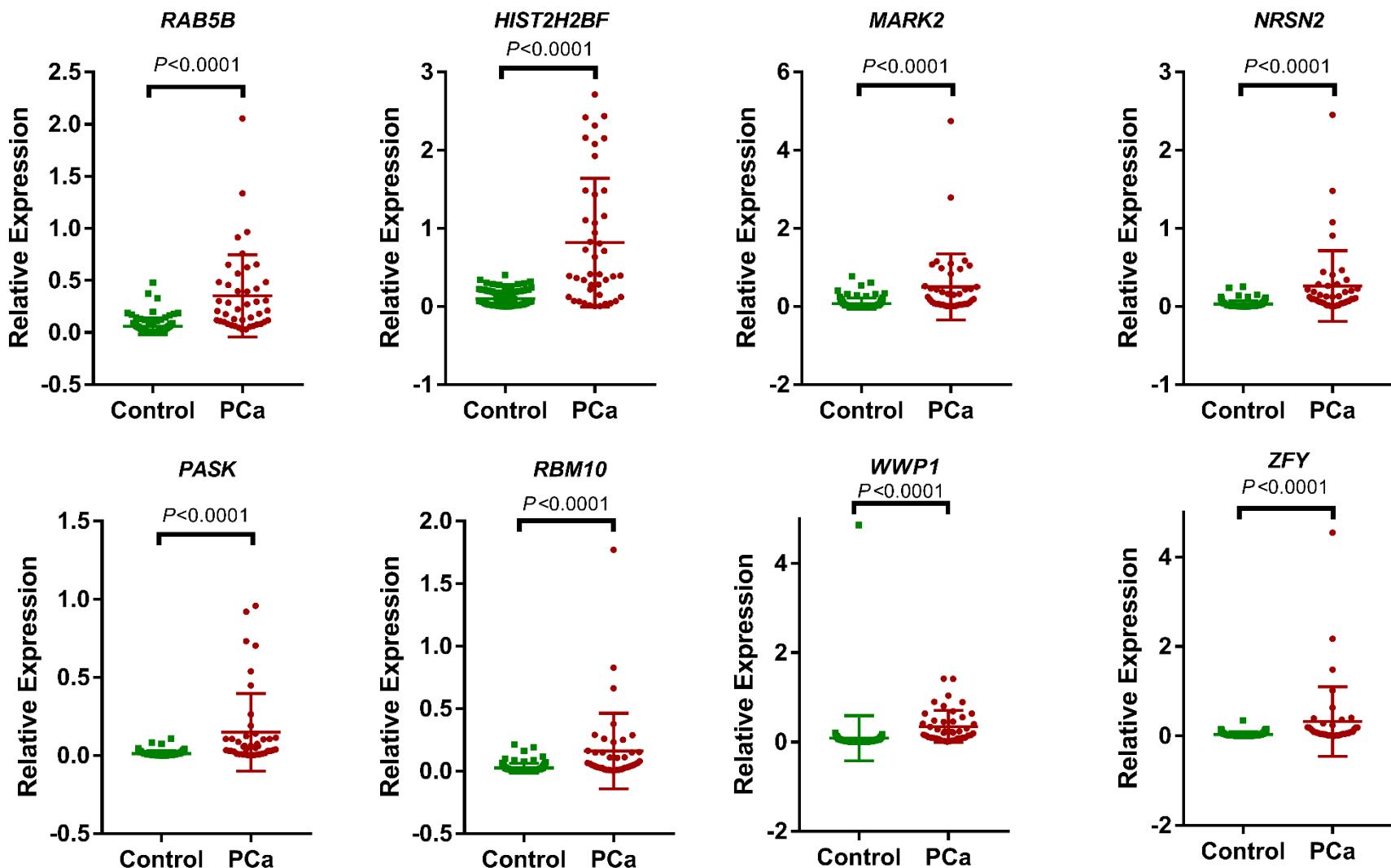
→ Reads distribution by IGV →

Primers validated by RT-PCR



Unpublished data

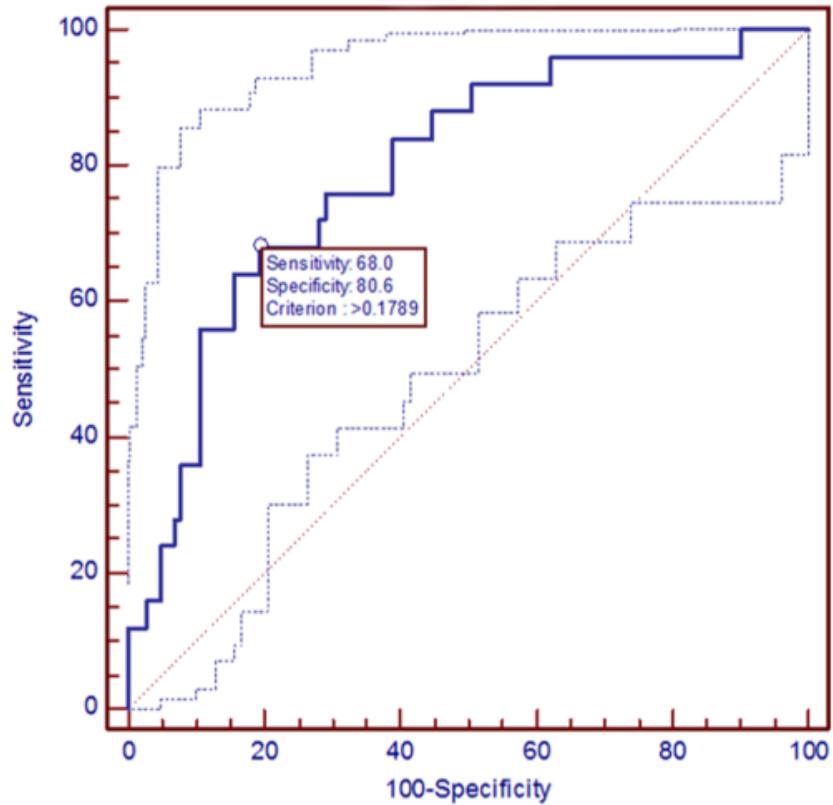
Validation of emRNA candidates



➤ 8 upregulated emRNAs were validated

Unpublished data

Urinary emRNA-based diagnostic model



- Urinary emRNA-based diagnostic model was superior to the serum PSA in detecting prostate cancer (AUC: 0.798 vs. 0.524; $p < 0.01$)

Unpublished data

Limitations

- Sample size
- Need more urinary emRNA candidates
- Further optimize detection method

Acknowledge

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