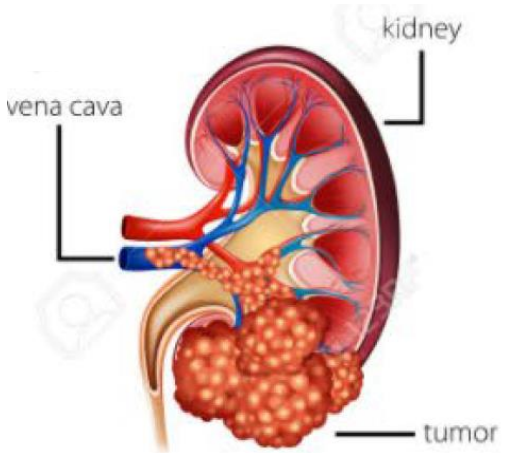
Introduction of new human *ex vivo* model systems to study tumorigenesis in kidney cancer



Kirsten Madsen

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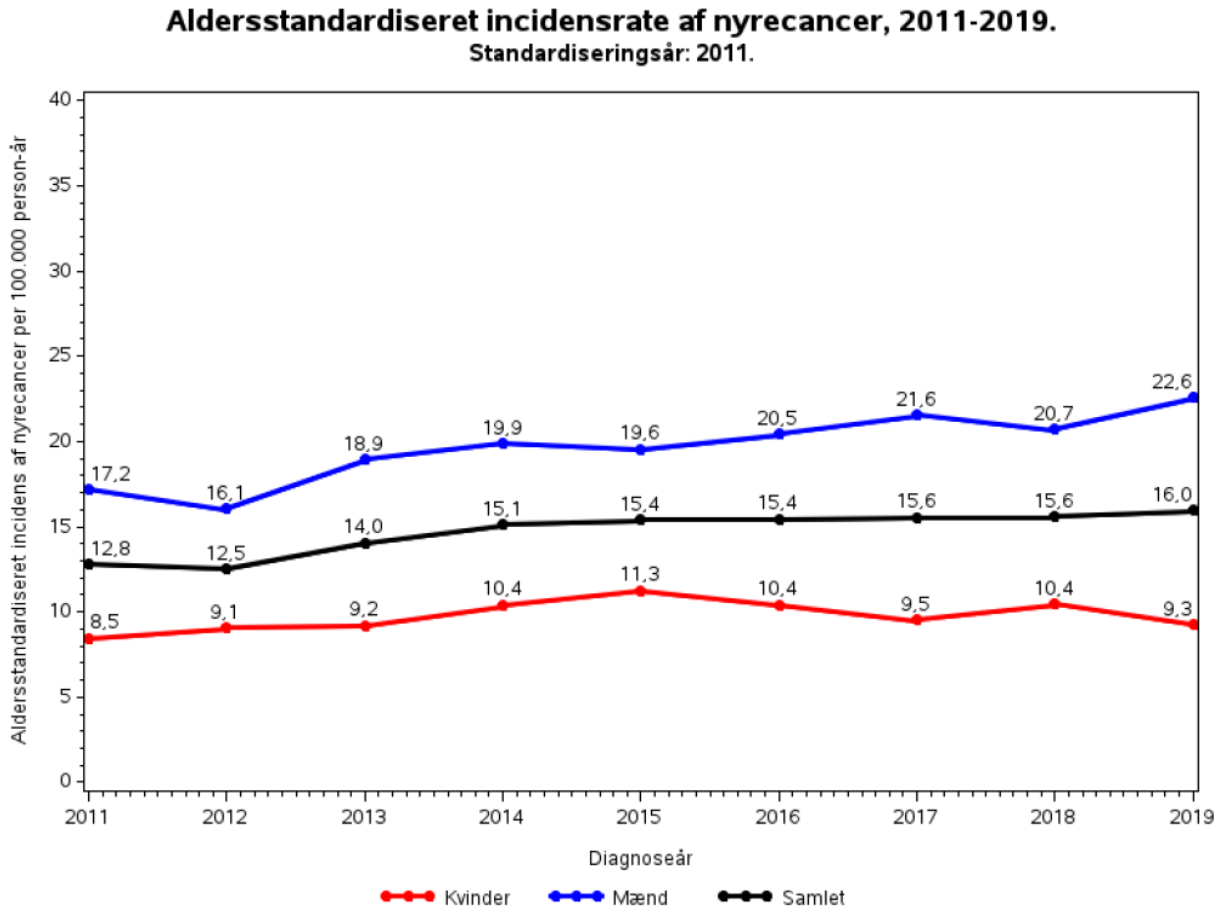
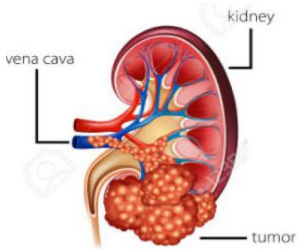
Kidney cancer in Denmark





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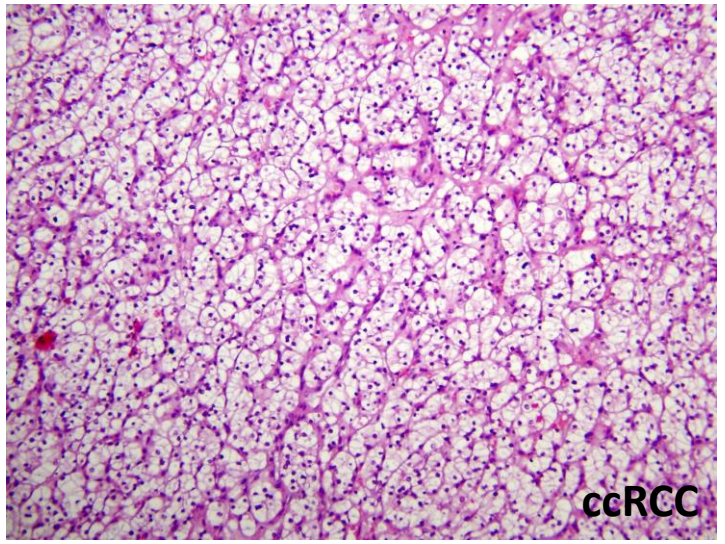
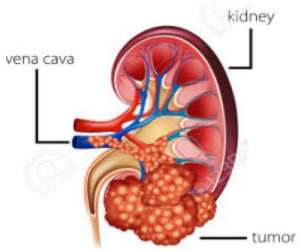
Subtypes of kidney cancer

- ❑ Clear cell renal cell carcinoma (75-90%)
- ❑ Papillary renal cell carcinoma (10-15%)
- ❑ Chromophobe renal cell carcinoma (4-5%)
- ❑ Rare type of renal cell carcinoma (<1%)





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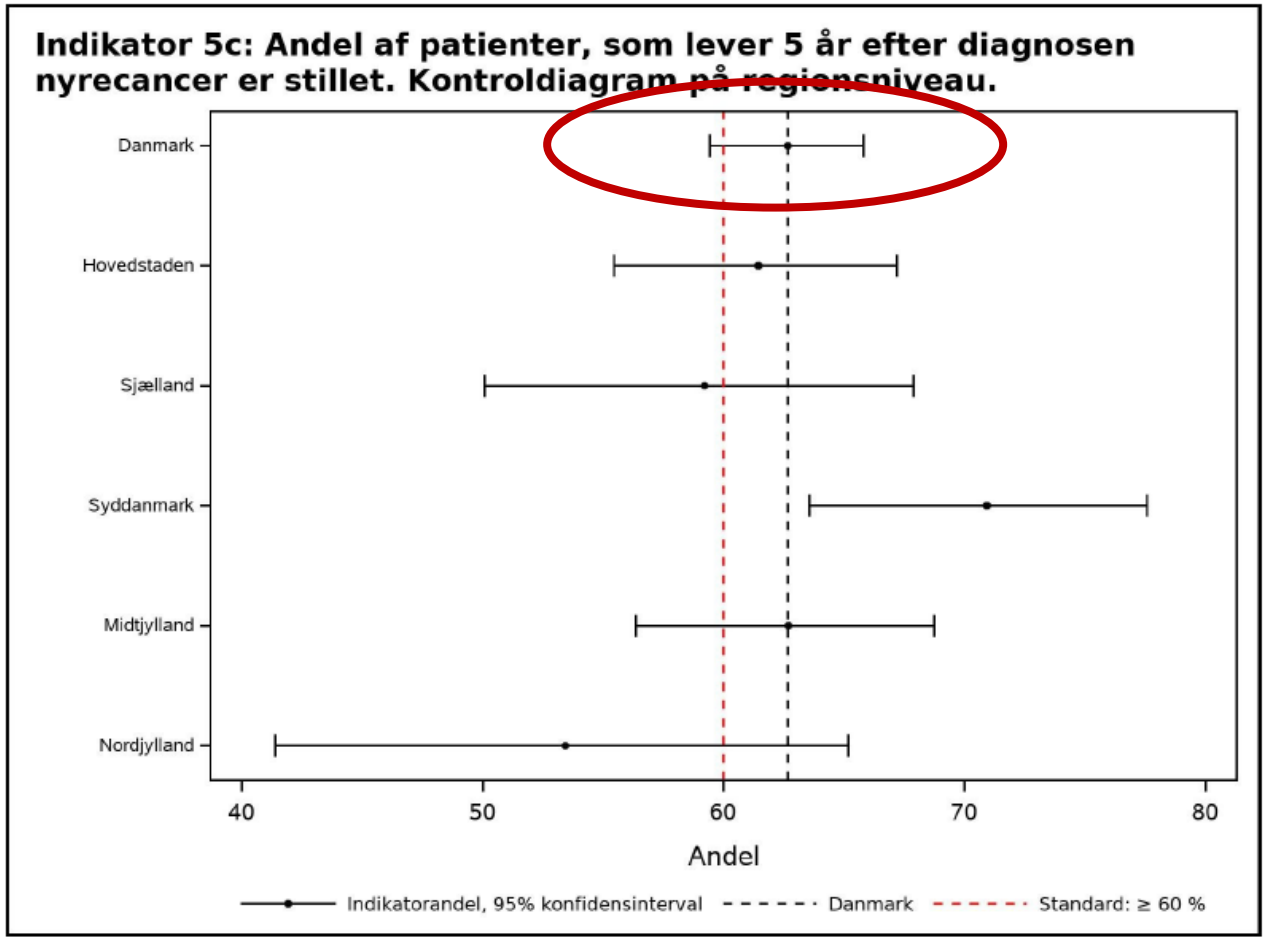
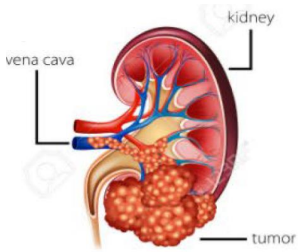
5-year survival of patients with kidney cancer





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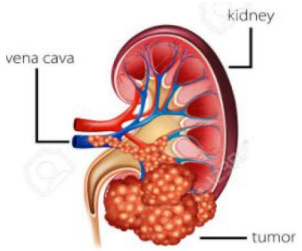
Treatment of kidney cancer in Denmark

- Disease restricted to the kidney
  → Surgical intervention (nephrectomy, partial nephrectomy, cryotherapy)

- Advanced disease
  → Medical intervention (tyrosine kinase inhibitor treatment, immunotherapy)



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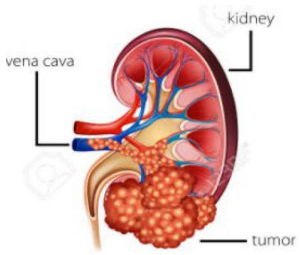
What is new within cancer treatment

”One drug for all”

”Individualized treatment”



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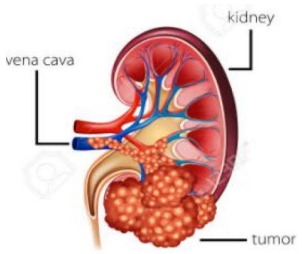
Aims of the project

- ❑ Establish and validate new *ex vivo* model systems based on freshly removed tumor tissue from kidney cancer patients that can be used to identify drug targets
- ❑ Test the vasopressin receptor type 2 signaling pathway that has recently been described to be involved in tumor cell proliferation in animal studies
- ❑ Replace and reduce the number of animals used for experimental research of kidney cancer



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Methodology

Patient diagnosed with kidney cancer

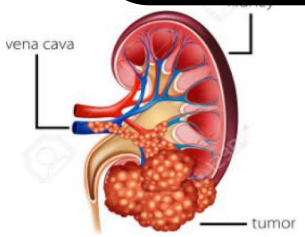
Surgical treatment (nephrectomy/partial nephrectomy) at Department of Urology, OUH

Kidney transferred to Department of Pathology, OUH immediately after removal

A piece of tumor tissue is removed after initial pathological inspection

Tissue is transferred Department of Cardiovascular and Renal Research, University of Southern Denmark for processing

Ex vivo systems:
- Primary cultures
- Tumor tissue slice cultures
- 3D spheroids



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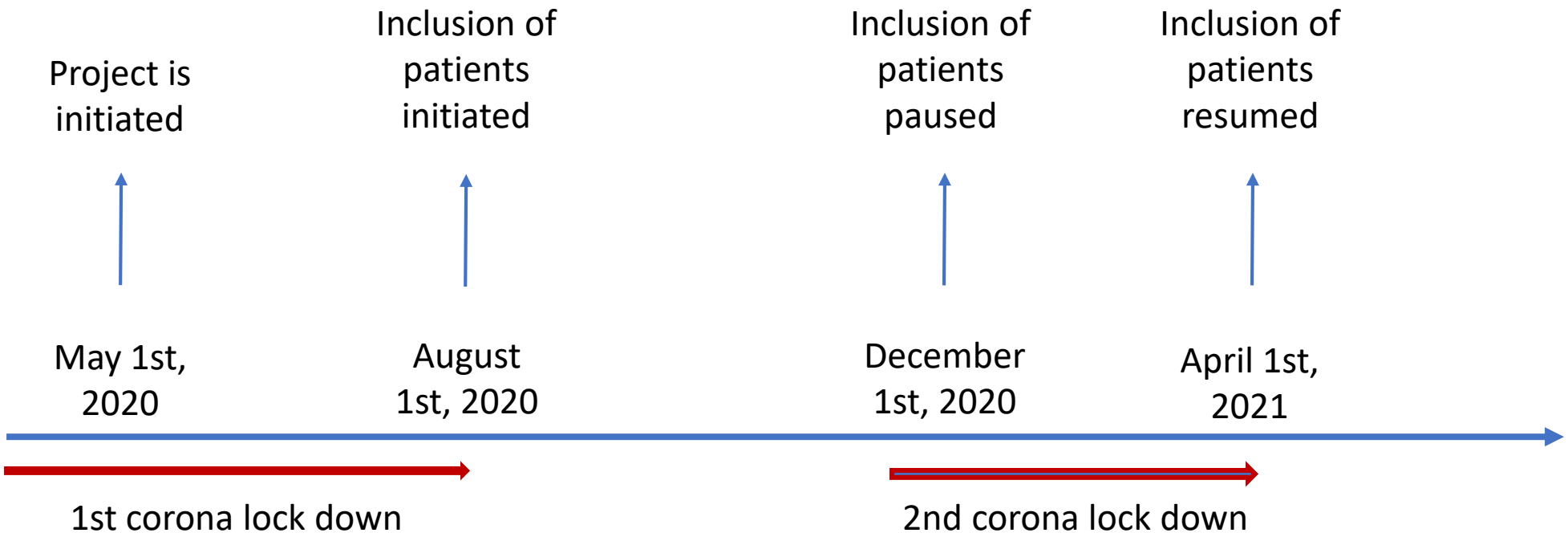
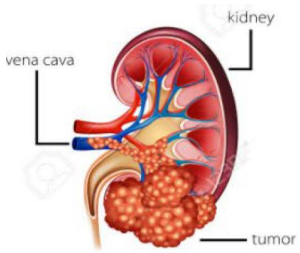
The corona pandemic and how it affects the project





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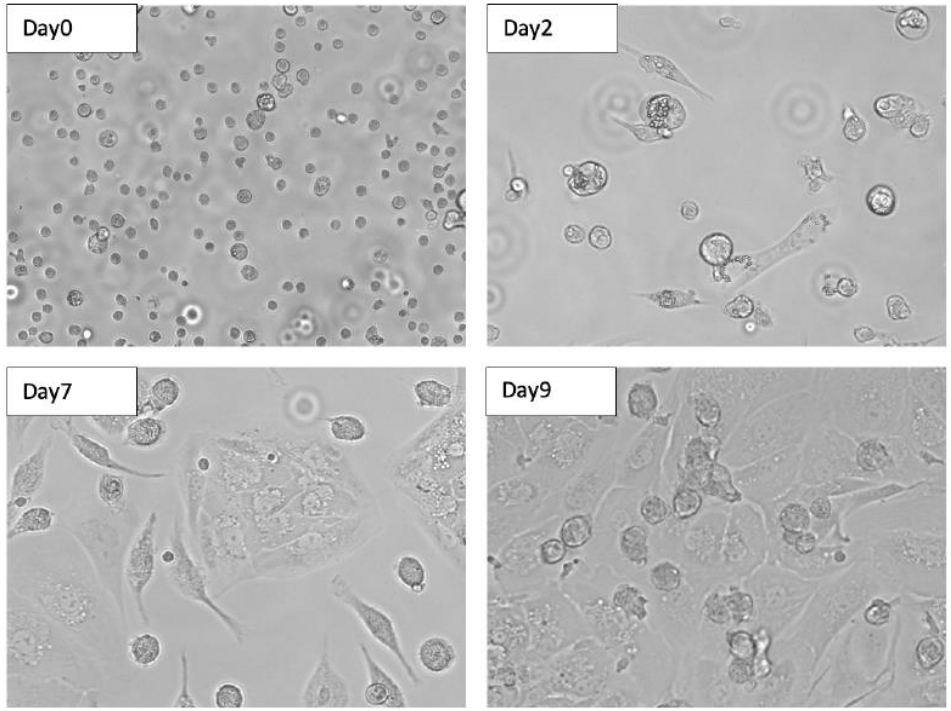
Preliminary results

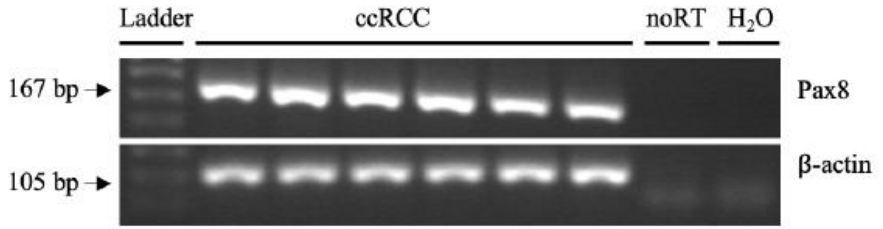
Protocol for primary cultures of tumor cells established

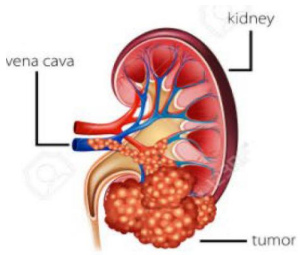
Upcoming:

Characterize the cellular composition of the culture

Determine if cellular characteristics are maintained over time







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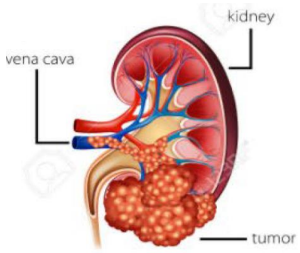
Preliminary results

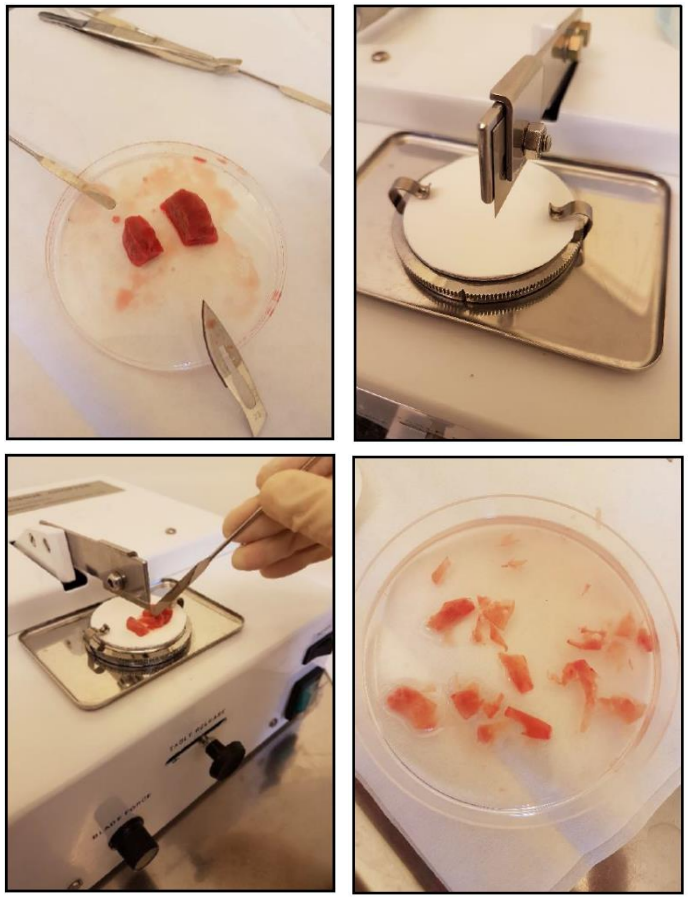
Protocol for precision cut tumor slice cultures has been establish

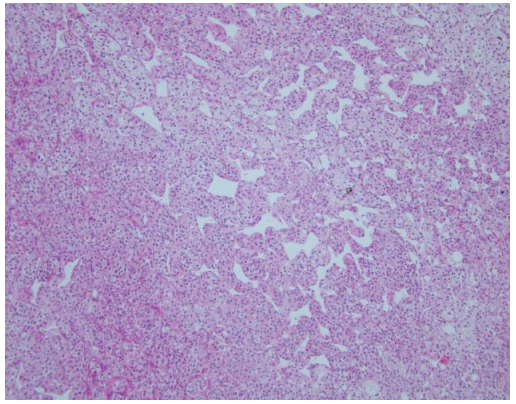
Upcoming:

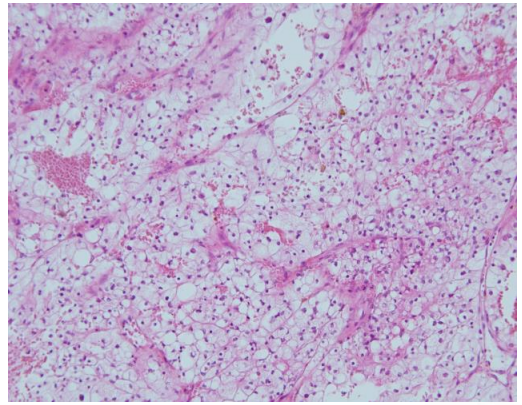
Characterize the viability of the tissue slices over time

Determine if cellular characteristics are maintained over time









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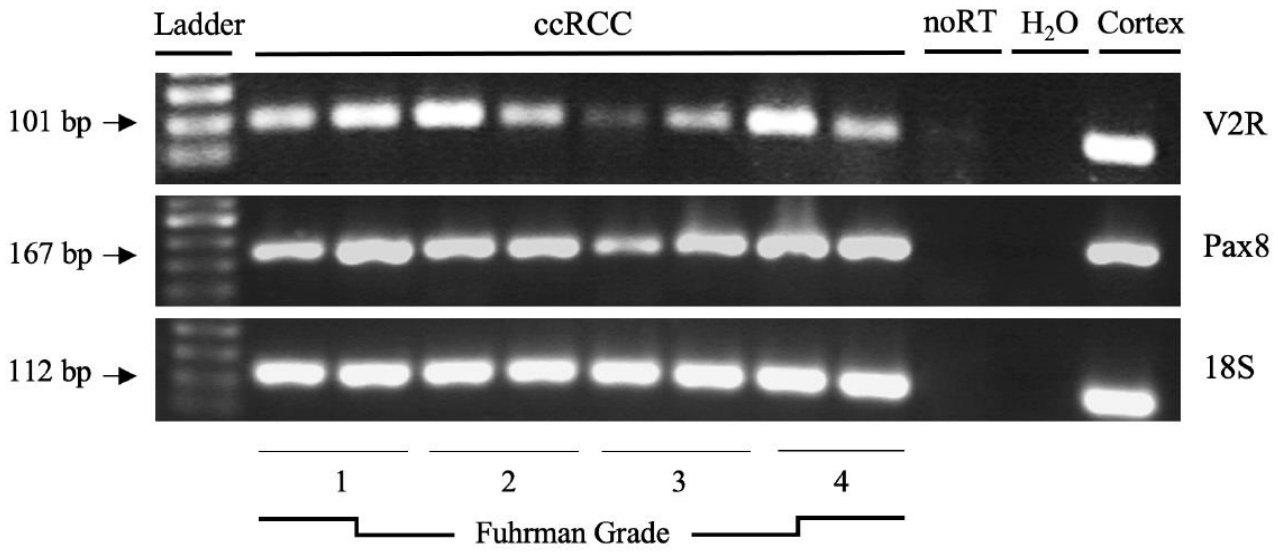
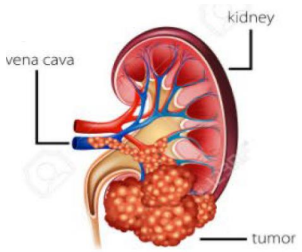
Preliminary results

Established a cohort of clear cell renal cell carcinoma patients from local biobank(n=113)

Analysed expression profile of the vasopressin receptor type 2 in tumor tissue

Ongoing:
Correlation studies of vasopressin receptor type 2 abundance and prognostic characteristics of tumor aggressiveness





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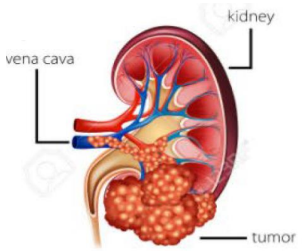

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