

# Cancer depth assessment using Optical Coherence Tomography



**Scinvivo**

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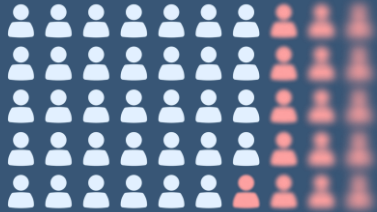
# We've built the next generation cancer discovery tech that will drastically improve cancer treatment and care

It's a minimally invasive imaging catheter that allows doctors to see cancerous tissue otherwise hidden within the organ walls.

With our device doctors will be able to discover **bladder, colon, lung** and **prostate** cancer already at the 1st consult, in real time.

Patented

# We focus on the bladder cancer first because that's where the need is the biggest

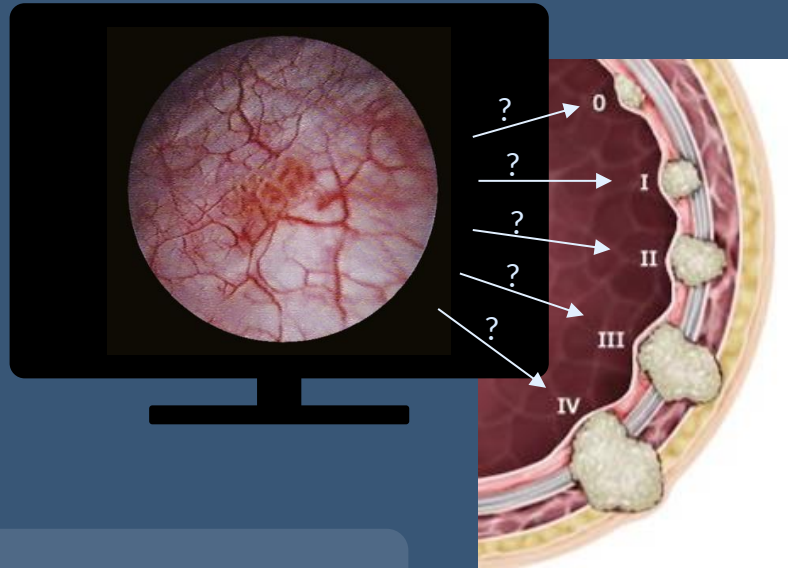


This year alone, more than **500.000** people will be diagnosed, **160.000** will not survive

Out of all cancers, bladder cancer is the most taxing on the health system due to life-long follow-ups and unnecessary surgeries

# Urologists today simply can not see the structure of the bladder wall to determine the stage of cancer

They can only see the surface through the camera



## Bladder Cancer Staging System (TNM Classification)

**Stage 0:** Cancer cells found on the inner surface of the bladder.

**Stage I:** Cancer cells have penetrated the inner lining of the bladder but not muscle.

### Muscle-invasive stages

**Stage II:** Cancer cells have spread into the muscle layer.

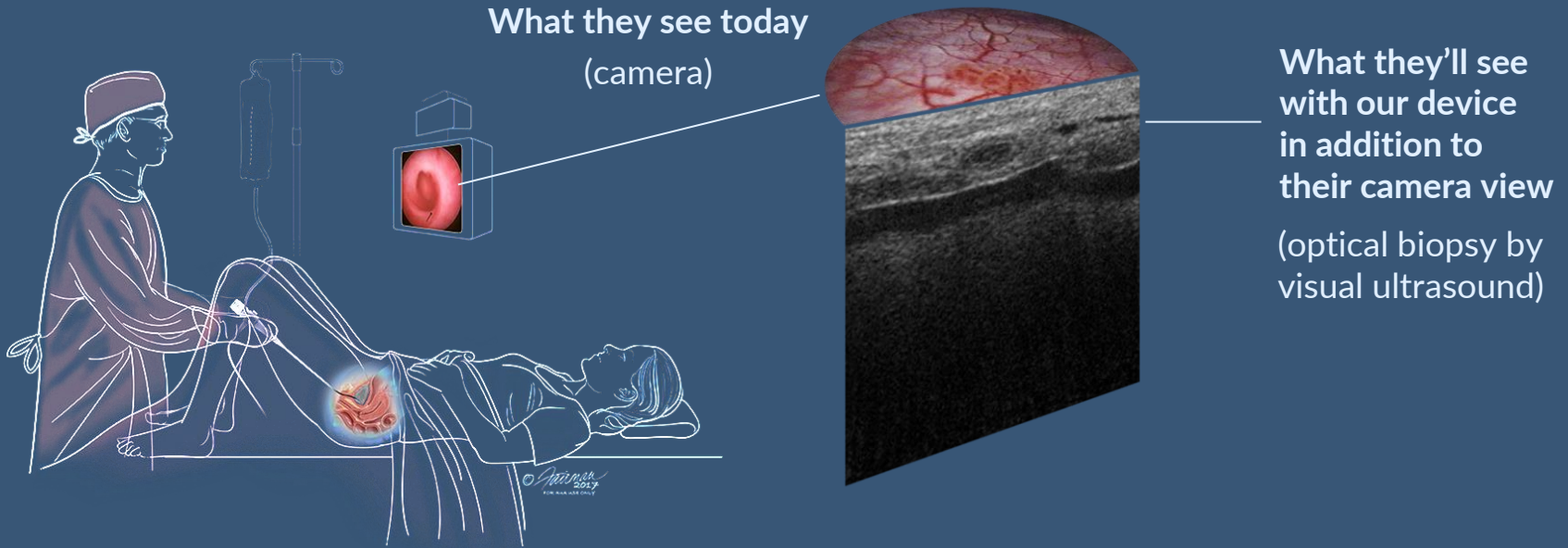
**Stage III:** Cancer cells have spread beyond the bladder and into the outer layer.

**Stage IV:** Cancer cells have spread towards the abdominal or pelvic wall.

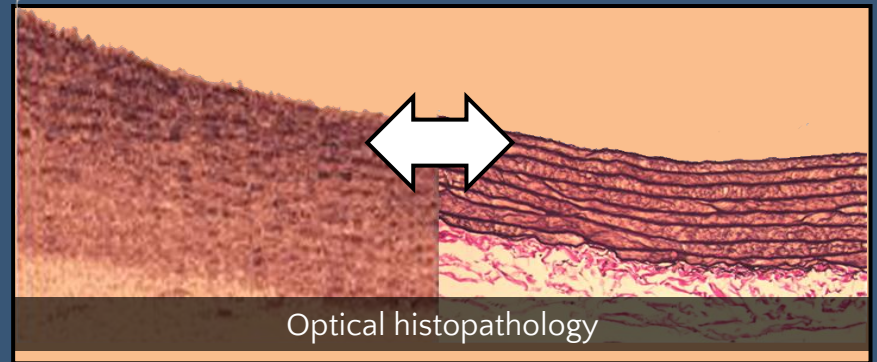
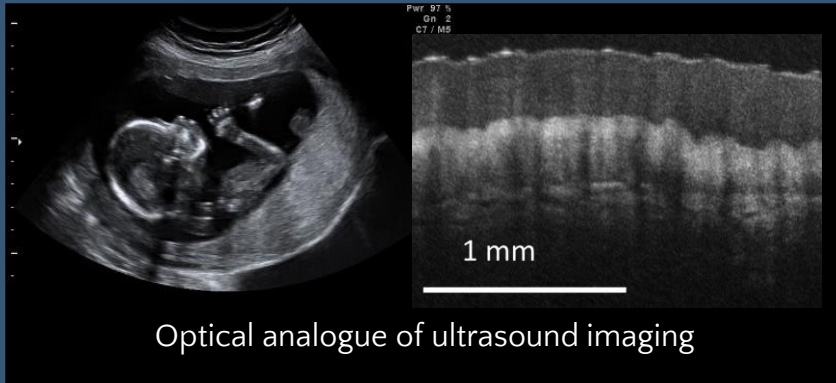


MRI/CT techniques are unusable due to low resolution  
(1mm while the entire bladder wall is 2mm thick)

# With our product urologists will be able to see into the depth of the bladder wall instead of just looking at the surface



# Optical coherence tomography



# With image guided therapy, we expect to prevent 1 in 2 TURBT surgeries and spare 1 in 5 bladders



**1 in 5 bladders  
can be spared**

No one wants to carry a bag to collect urine everywhere they go because the doctor wasn't sure enough. Not to mention re-surgeries, lifelong checkups, skin irritations, infections.



**1 in 2 TURBT surgeries  
can be prevented**

Besides being painful for the patient and costly for the health system, those unnecessary surgeries come with a risk of complications and death



**3 in 10 lives can  
be saved**

In the long term, enabling faster diagnosis of muscle-invasive bladder cancer can result in saving 3 out of 10 lives

# Our OCT base and disposable catheters are used as compatible add-ons to standard hospital equipment



Patented

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Standard, available at hospitals

## Scinvivo OCT Base

will be parked in the room, comes as a turn-key solution with our software and interface

## Scinvivo catheters

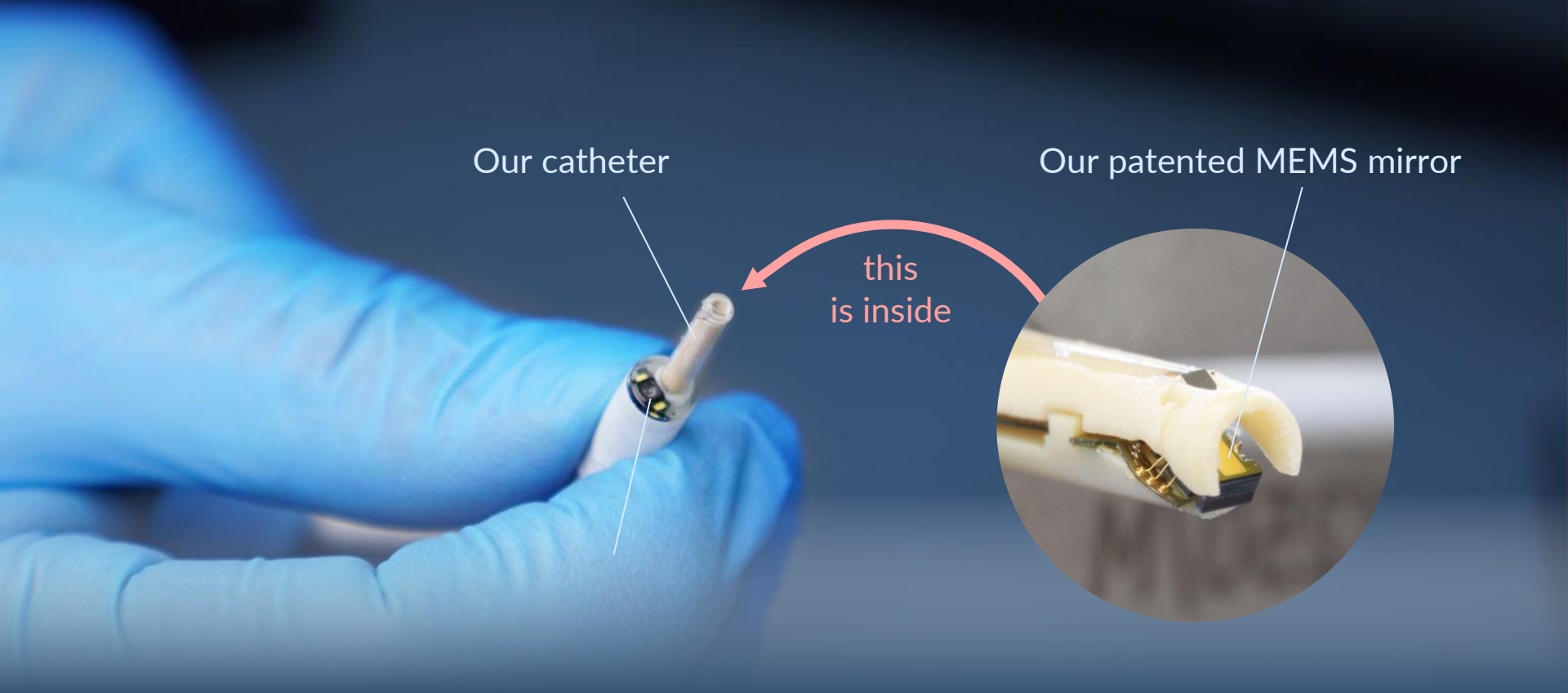
also in the room, sterile and disposable (we take them back for our sustainability program)

## Standard cystoscope

not only is it available at the hospital but it's already ideally positioned in patient's body at the moment Scinvivo is needed



**We managed to make our catheter so small that it fits within the working channel of a standard cystoscope**

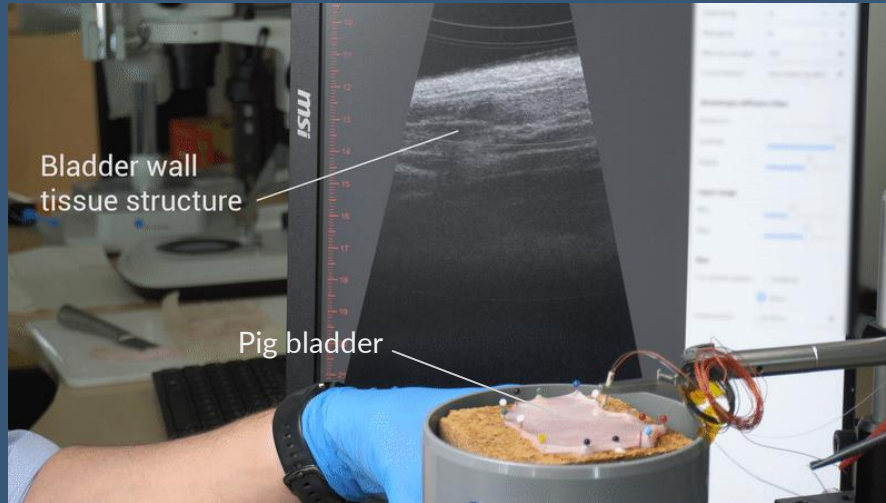


Our catheter

Our patented MEMS mirror

this  
is inside

After seeing our working demo, 10 out of 10 urologists want to participate in our early adopter program!










*“The bladder wall appears to be clearly visible and it's even possible to see the lumina of blood vessels!”*

Dr. Pascal Stijns, uroloog St. Antonius hospital

Click to see our 20-second video:

<https://youtu.be/luD4SgnXX18>

# OCT catheter game changer in BC diagnostics

	Technology	Resolution	Penetration depth	Field of View	Sensitivity/specificity	Notification	Companies
	OCT	✓ 10-50µm	✓ 1-3mm	■ mm	✓ 100%/89%	Can be combined with other technologies	Scinvivo & partners
	Traditional Cystoscopy	✗ mm-cm	✗ None	✓ Wide field	✗ 70%/70%	Currently most used technique	Olympus (JP) Karl Stotz (DE) Cogentin Medical (NL)
	Photodynamic Diagnostics (PDD)	✗ mm-cm	✗ None	✓ Wide field	✗ 97%/59%	Potential toxic contrast agent needed	Karl Stotz (DE)
	Narrow Band Imaging (NBI)	✗ mm-cm	✗ None	✓ Wide field	■ 94%/85%	High costs (€60,000 – €90,000)	Olympus (JP)
	Confocal Light Endomicroscopy (CLE)	■ 1-5µm	■ 120µm	✗ <600µm	✓ 94%/85%	Potential toxic contrast agent needed	Mauna Kea (FR) Stryker (USA)
	Magnetic Resonance Imaging (MRI)	✗ µm-mm	✓ 10-20 cm	✓ Wide field	✓ 84%/91%	High costs	Siemens (DE) Philips (NL)
	Ultrasound (US)	✓ ~70µm	✓ Cm range	✓ Wide field	✗ No differentiation between Ta/T1 tumors	No detection of bladder tumors < 4mm; impossible to see front of bladder	Exact Imaging (US)

Only OCT provides the needed depth information.  
A game changer in combination with the standard Cystoscopy.

# Proven advantage of OCT for BC diagnostics

OCT <i>in-vivo</i> studies of Bladder Cancer					
Source	#lesions	Sensitivity	Specificity	False negative rate	False positive rate
Manyak et al.	87	100%	89%	0%	11%
Lerner et al.	38	Superficial: 90% Muscle invasive: 100%	Superficial: 89% Muscle invasive: 90%	Superficial: 10% Muscle invasive: 0%	Superficial: 11% Muscle invasive: 10%
Ren et al.	68	94.4%	81.3%	5.6%	18.7%
Karl et al.	102	100%	65%*	0%	35%

- **Standard** cystoscopy: sensitivity = **70%**, specificity = **70%**; FNV = 30%; FPV = 30%
- Studies have been performed with catheter from Imalux (not on the market anymore):
  - smaller field of view (<2 mm, Scinvivo: 5mm)
  - lower image acquisition rate (8 Hz, Scinvivo: 800 Hz)
  - Slightly, but significant larger diameter (2.7 mm, Scinvivo: 2.45 mm)

\* The high rate of drop-outs in our study, lesions in which biopsy and scanning area could not be matched sufficiently using later video-analysis, can be explained by the need to change the cystosope sheath and biopsy sheath between each lesion within the bladder. To

# Outlook

- We performed a dry run, to test our system in the Amsterdam UMC
- First *in vivo* clinical trials ready to start!
- We're looking for collaborations:
  - Clinical trials
  - Technical development



The Scinvivo logo features the word "Scinvivo" in a dark blue, sans-serif font. A red triangle is positioned behind the letter "i", pointing to the right.

# Get in touch:



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