



FIRST FACULTY OF MEDICINE
CHARLES UNIVERSITY IN PRAGUE

GENERAL UNIVERSITY
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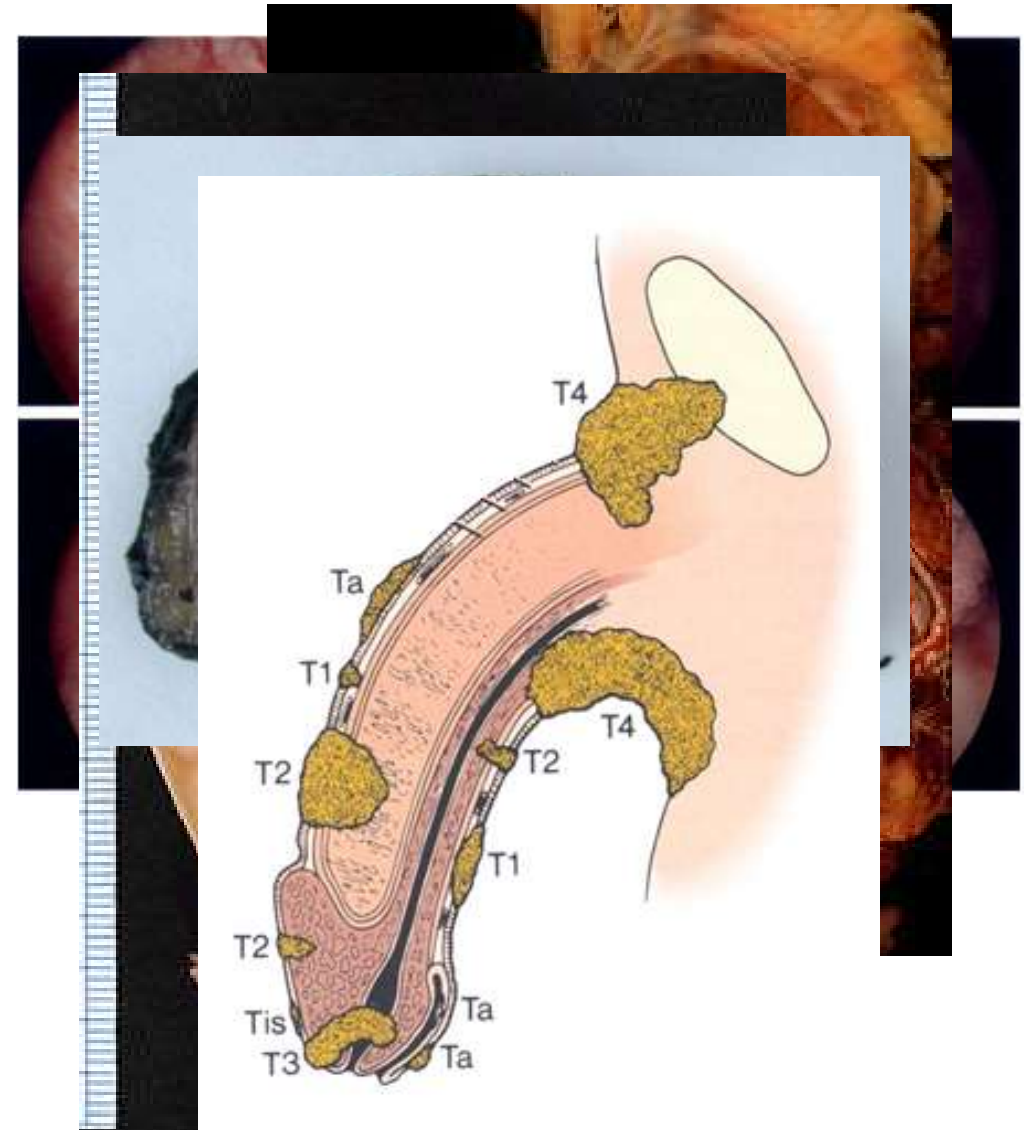
Circulating tumour cells in urological malignancies

Otakar Čapoun

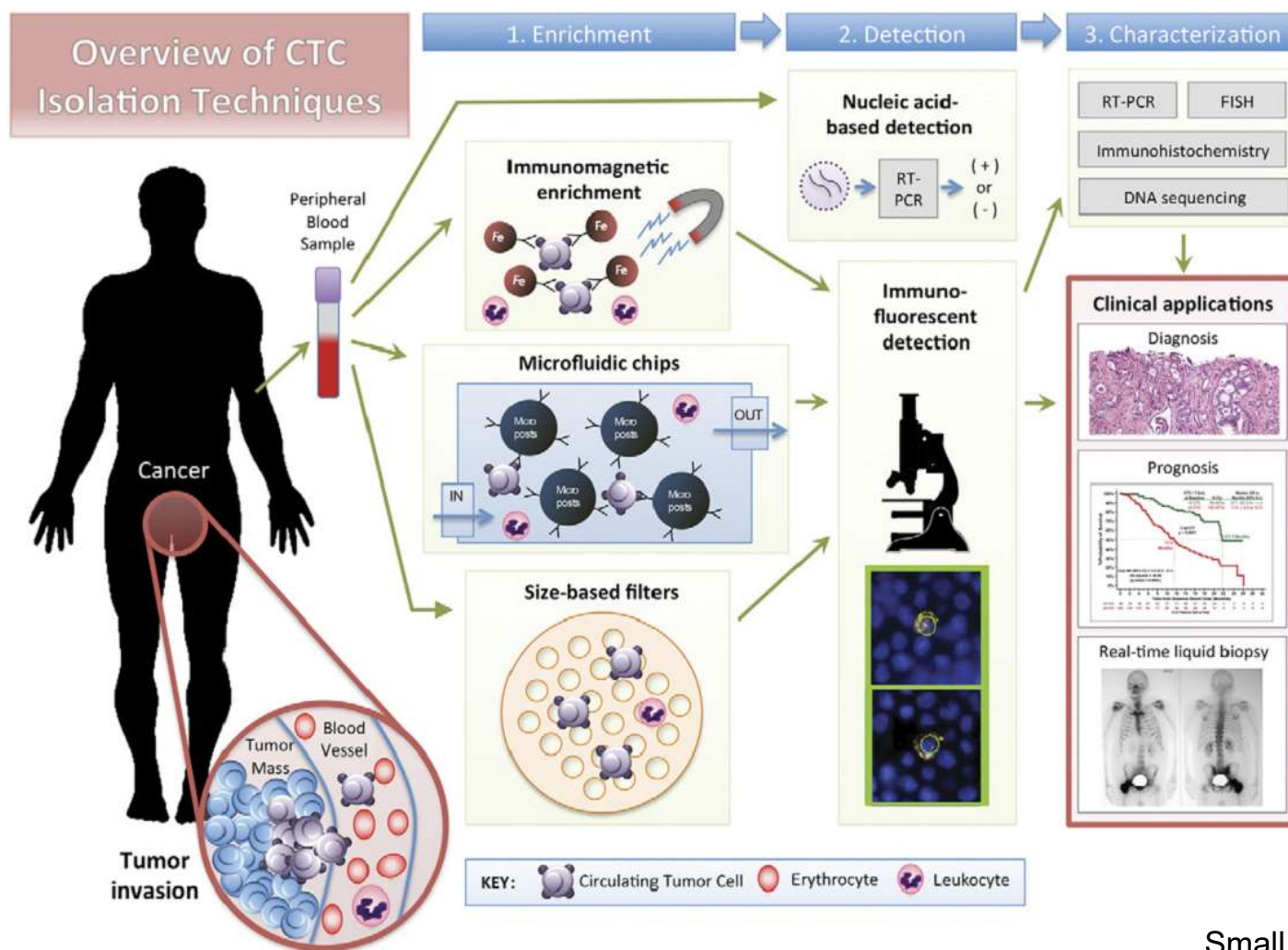
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Charles University, Prague

What is uro-oncology ?

- Prostate cancer
- Urothelial (bladder) cancer
- Renal cancer
- Testicular cancer
- Penile cancer

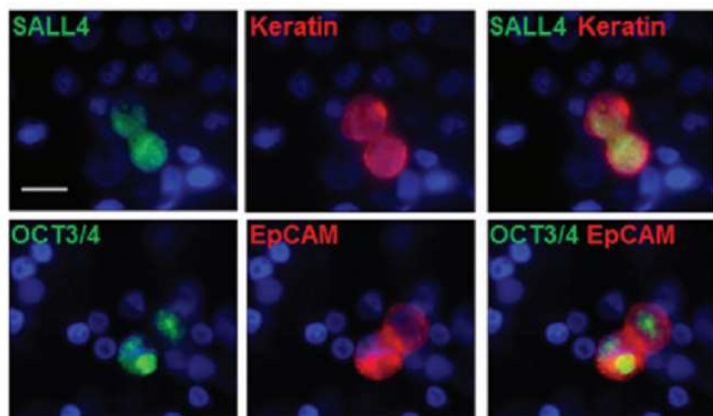


Principles and methods are the same



What has not been studied yet ?

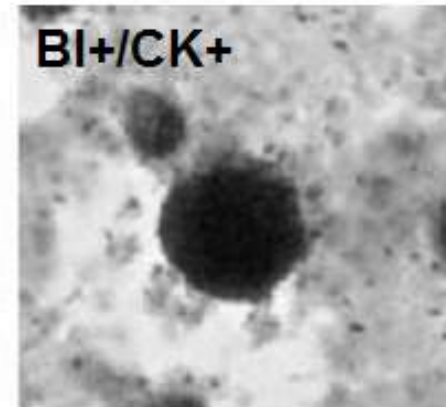
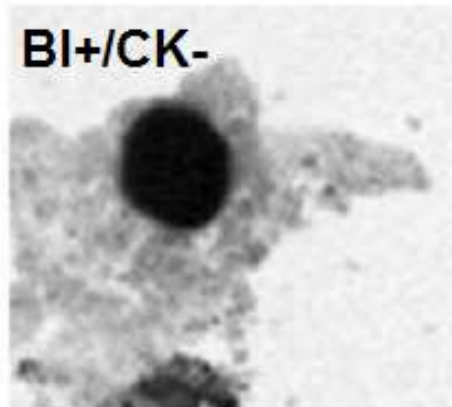
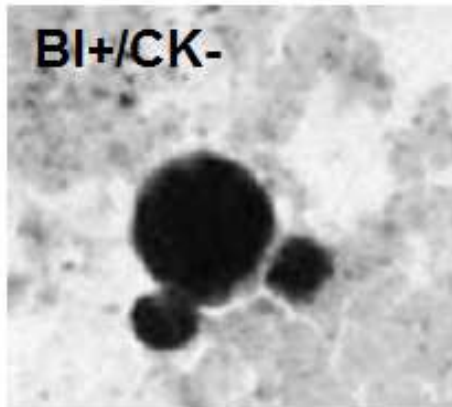
- **Penile cancer** – zero publications
- **Testicular cancer** - Ficoll density centrifugation / CellSearch
 - 25/143 pts. (17,5 %)



Parameter	CTC positive (n = 25)		CTC negative (n = 118)		P (Fisher exact test, 2-sided)
	Number	%	Number	%	
Clinical stage					
I	7	29.2	84	77.1	<0.001
II	7	29.2	20	18.3	
III	10	41.6	5	4.6	
Histology of primary lesion					
Pure seminoma	4	17.4	62	58.5	<0.001
Nonseminoma	19	82.6	44	41.5	

What has not been studied enough ?

- Renal cancer – The Czech Republic ranks 1st in incidence
 - Germany – Ficoll c., autoMACS depletion, IC staining
 - 81/154 pts. (53%)



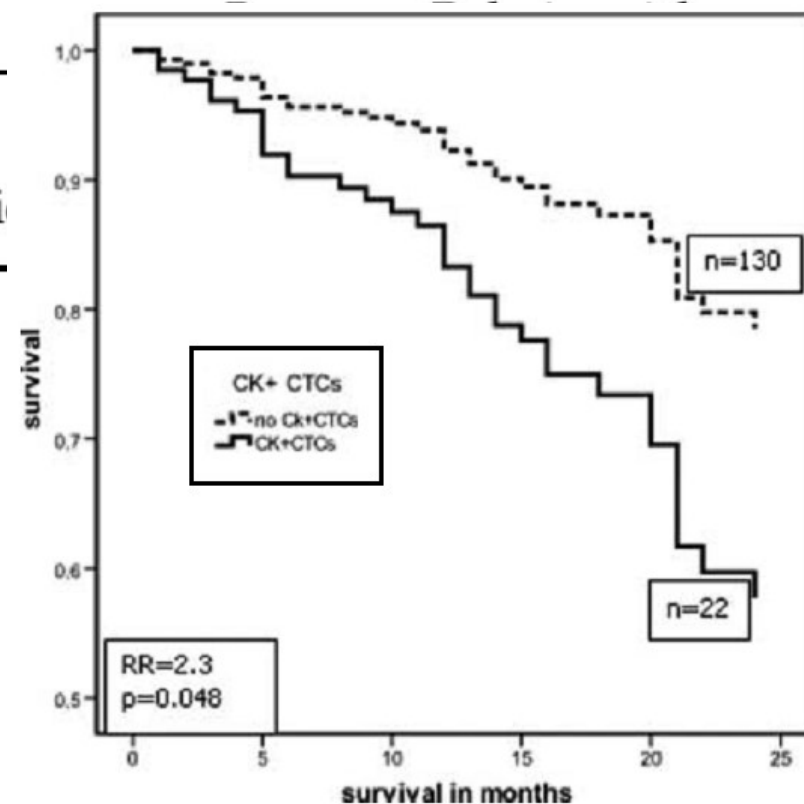


Presence of tumor cells	<i>n</i>	<i>P</i> (χ^2 test)
Presence of BI+ CTCs correlates with pN	153	<0.001
Presence of CK+/BI+ CTCs correlates with cN	153	<0.001
Presence of CK+/BI+ CTCs correlates with cM	152	0.014
Presence of BI+ CTCs correlates with cM	152	0.003

Multivariate Cox's regression hazard analysis

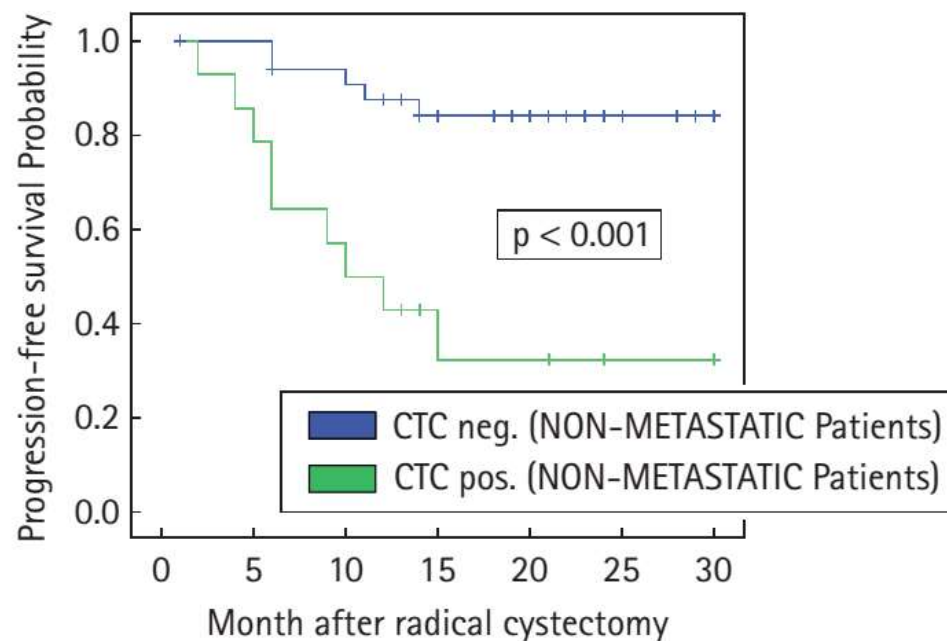
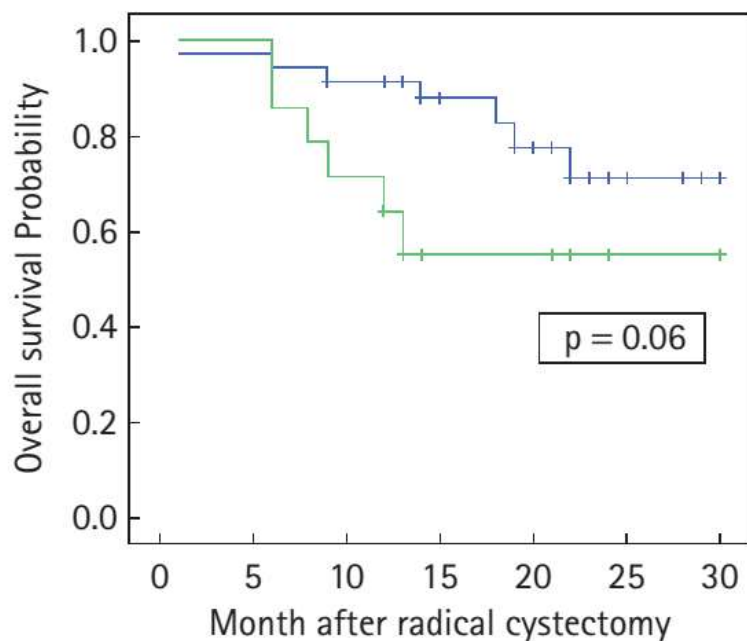
CK+ CTCs before primary tumor resection
CK+ CTCs after primary tumor resection
CK+ CTCs before and after primary tumor resection

Bluemke, Cancer Epidemiol Biomarkers Prev. 2009



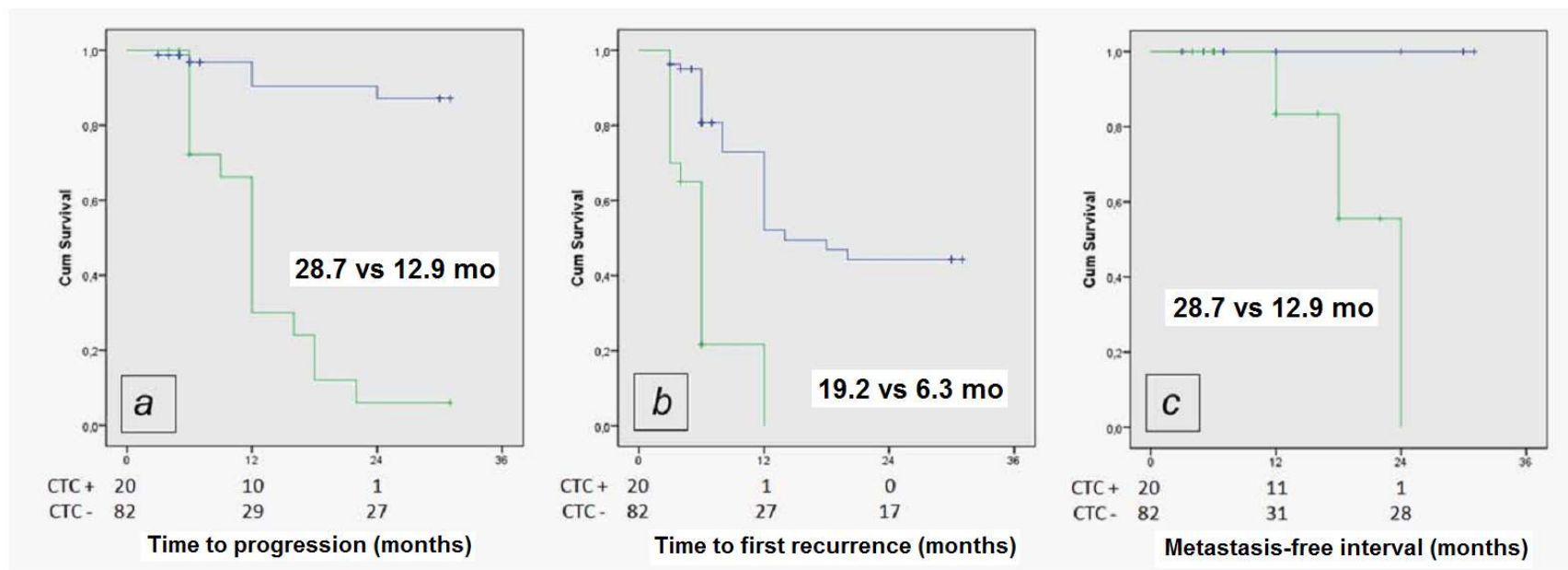
Bladder cancer goes further...

- 50-100% in M+ disease
- CellSearch, 15/50 pts. (30%) N0M0 before cystectomy



... in case of a non-muscle invasive disease

- 20/102 pts., pT1HG G3 + BCG instillation ... CellSearch



Gazzaniga, Int J Cancer. 2014

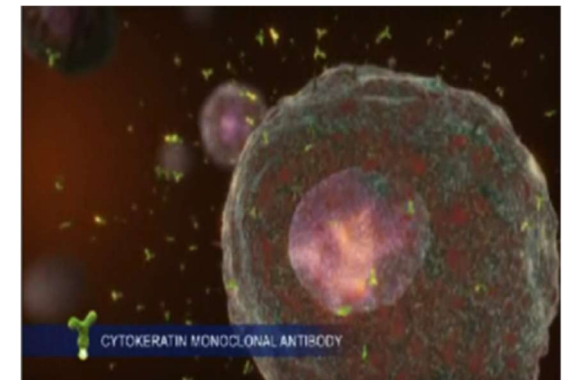
- CAVEAT : Neoadjuvant chemo – standard of care in pT2-4



And prostate cancer takes it all...

(in many areas of interest)

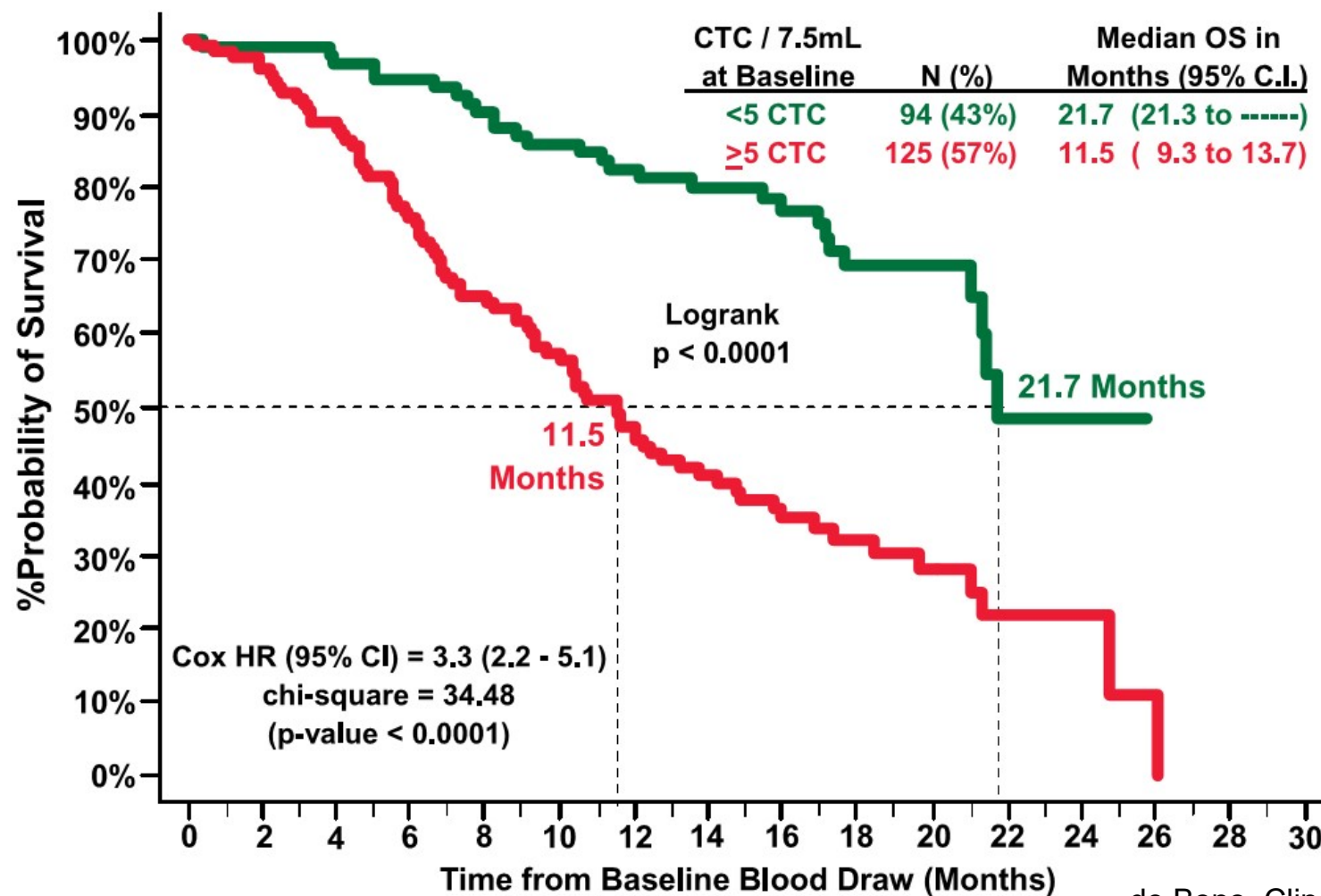
- a) high-risk localised/locally advanced PC before surgery/radiotherapy
- b) biochemical relapse after primary curative treatment
- c) primary metastatic prostate cancer
- d) CRPC
- e) as a part of clinical studies

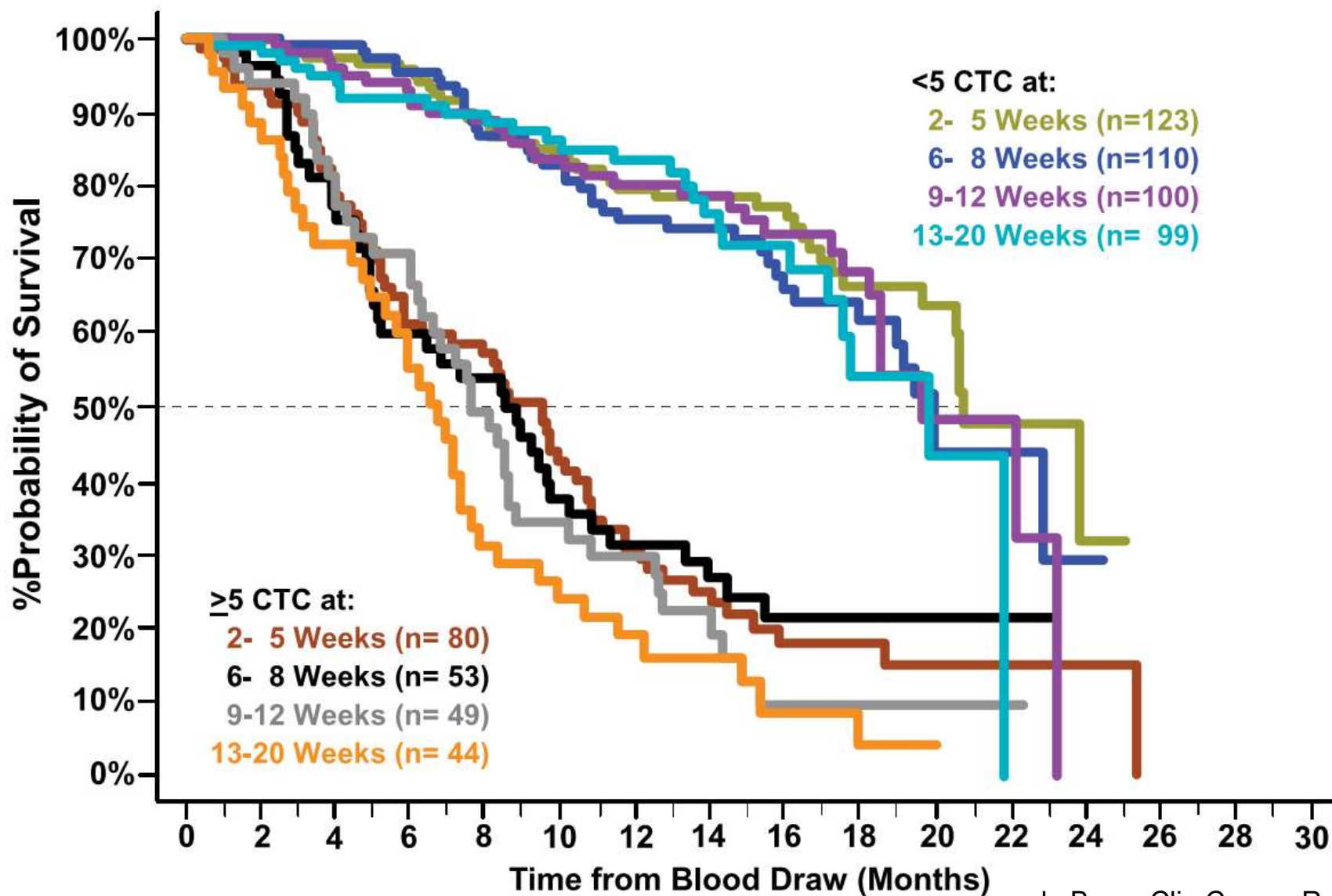




... with the only approved method

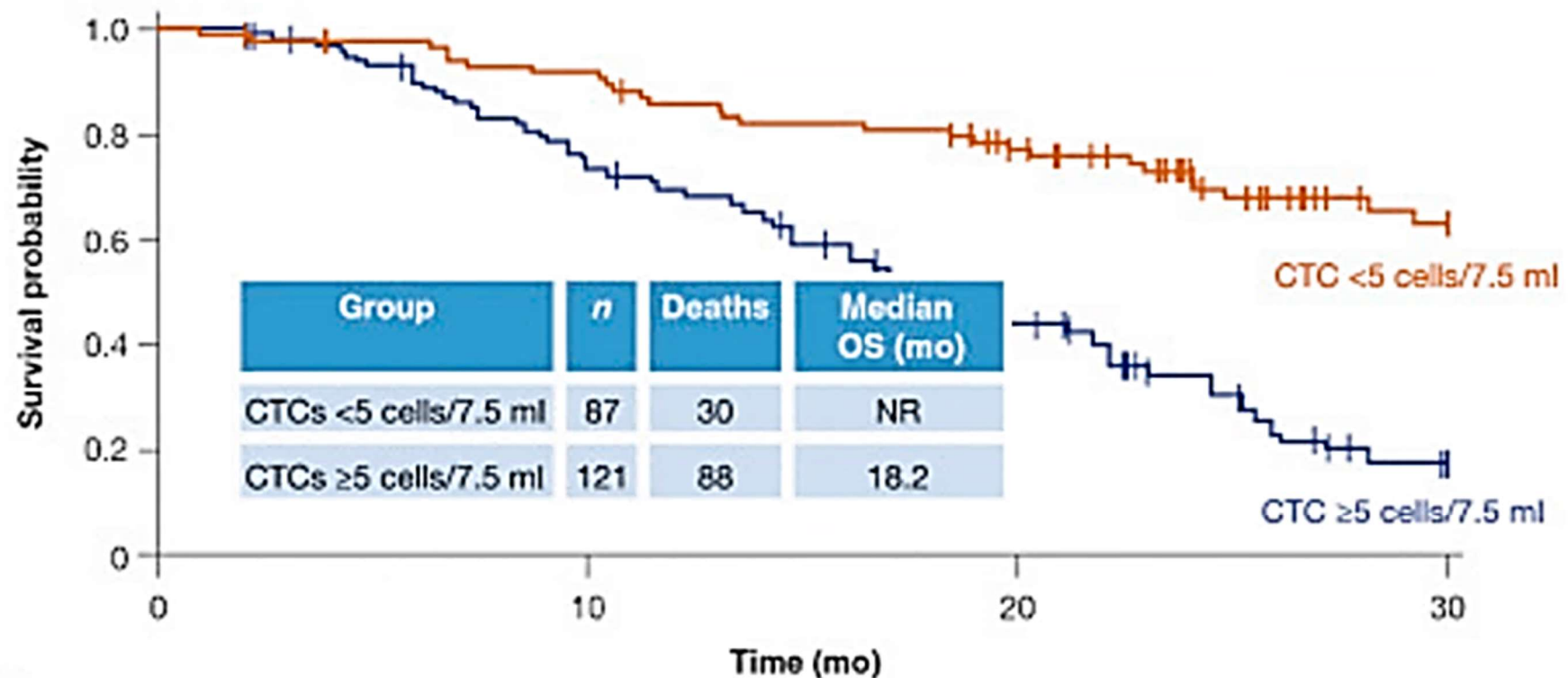
• 2C





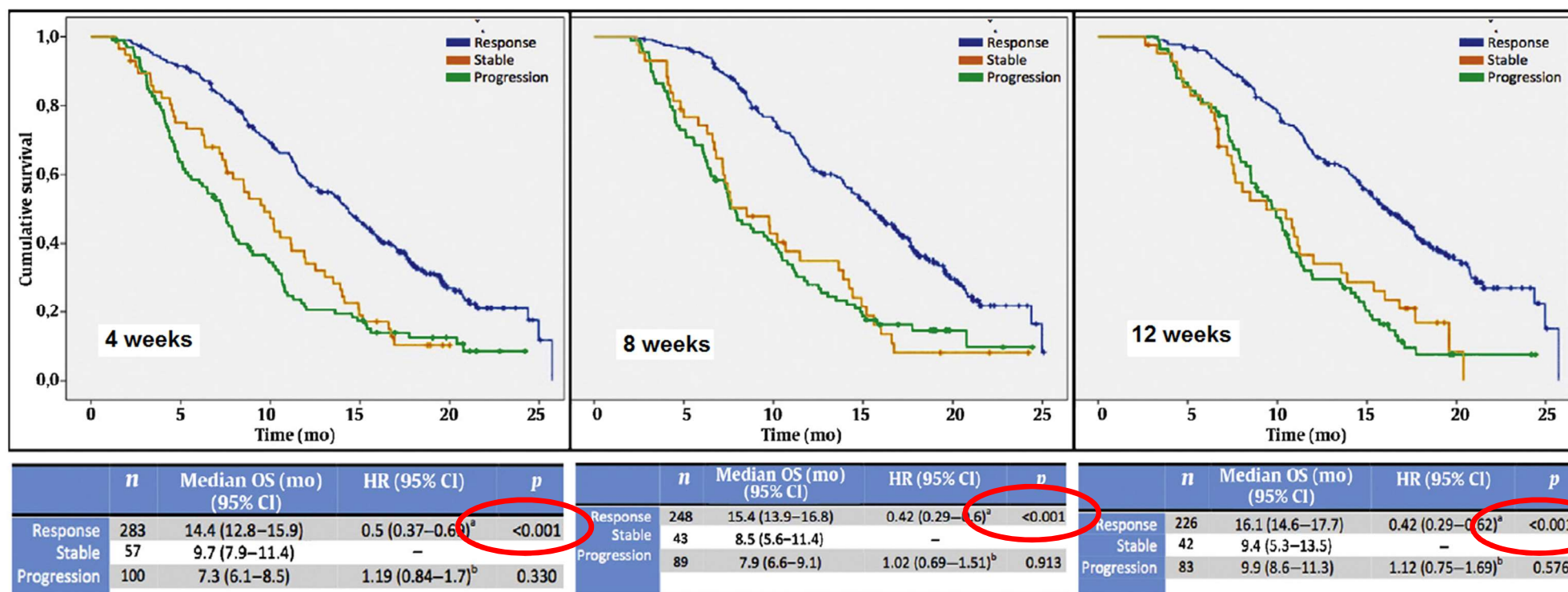
Last results in CRPC confirm the same

- MAINSAIL - Docetaxel + prednisone + lenalidomide/placebo



Last results in CRPC confirm the same

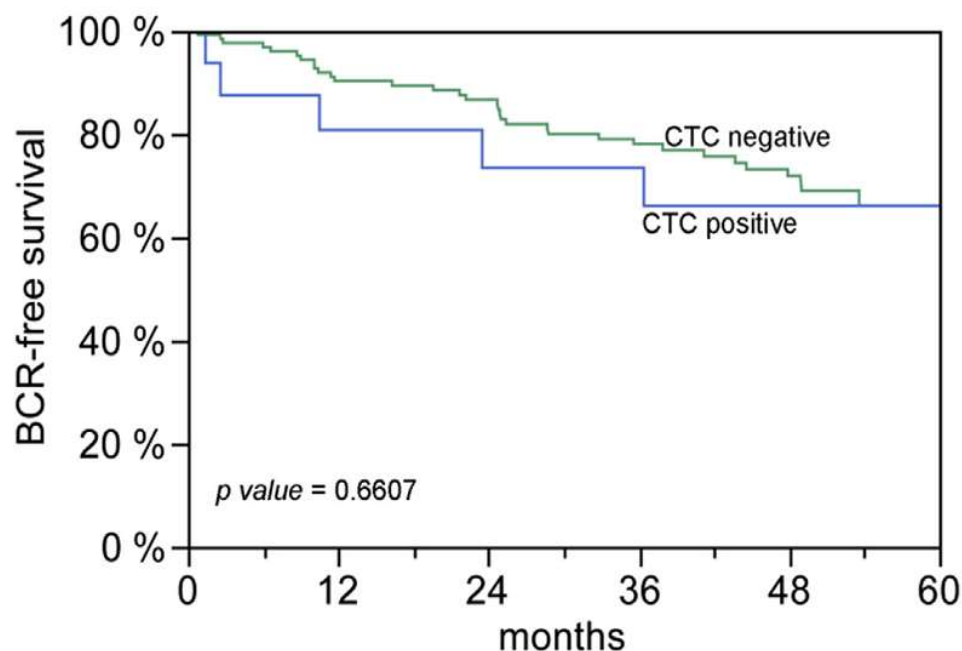
- COU-AA-301 + IMMC-38 trials





In other stages it is a bit worse...

- PSA relapse after RP : 1 / 29 pts. (1 CTC) Grisanti, Anticancer Res. 2016
- CTC before RP : 17 / 152 pts. (median 1 CTC)

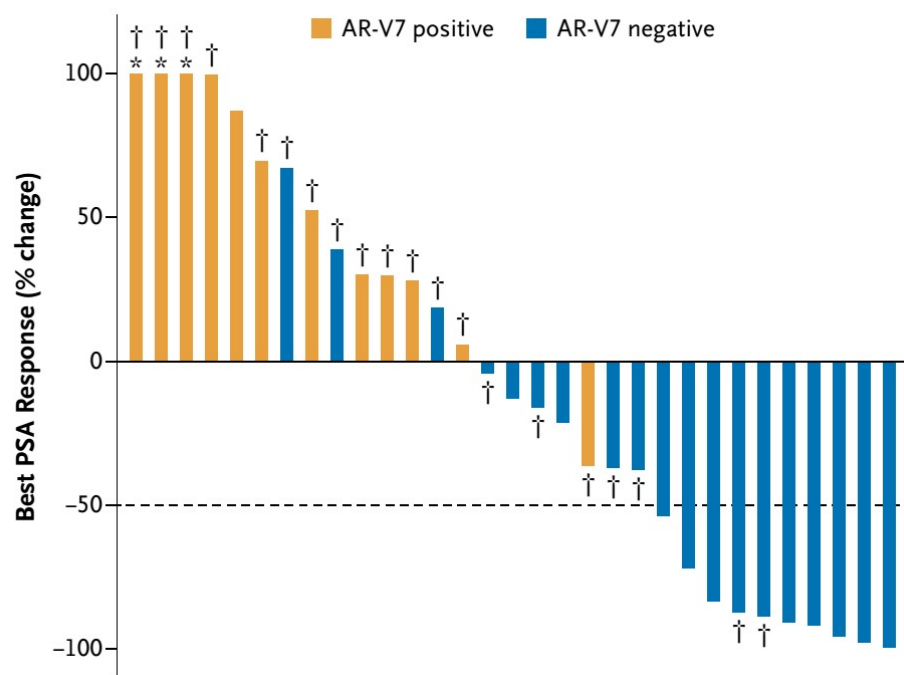


Meyer, Urol Oncol. 2016

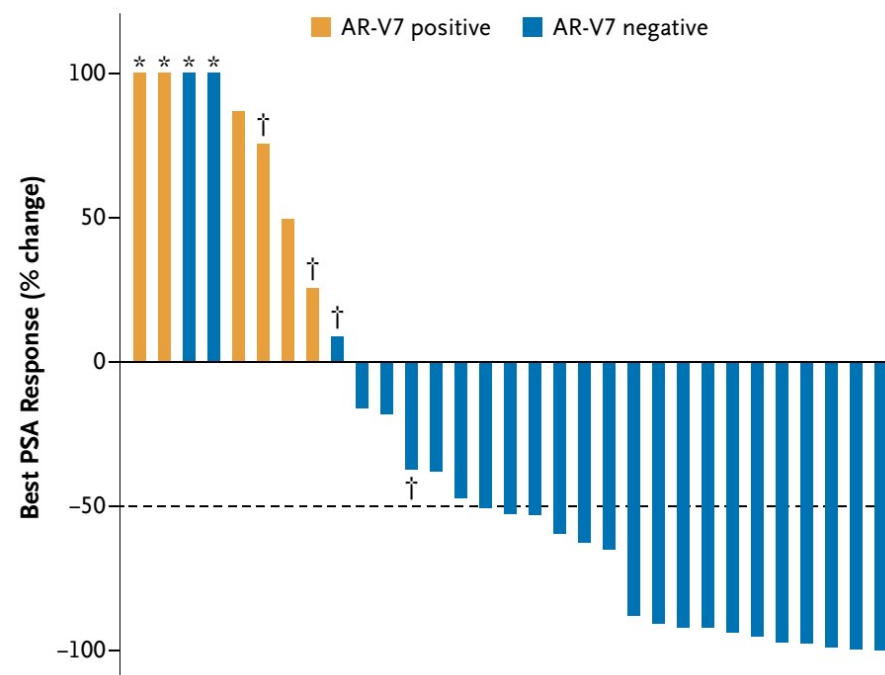


... but the future is bright

A Enzalutamide-Treated Patients



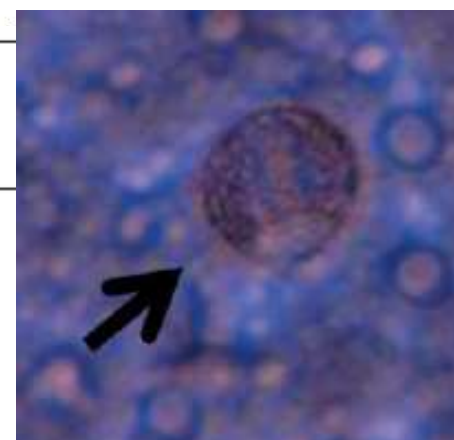
B Abiraterone-Treated Patients





Circulating Tumor Cells in Localized Prostate Cancer: Isolation, Cultivation *In Vitro* and Relationship to T Stage and Gleason Score

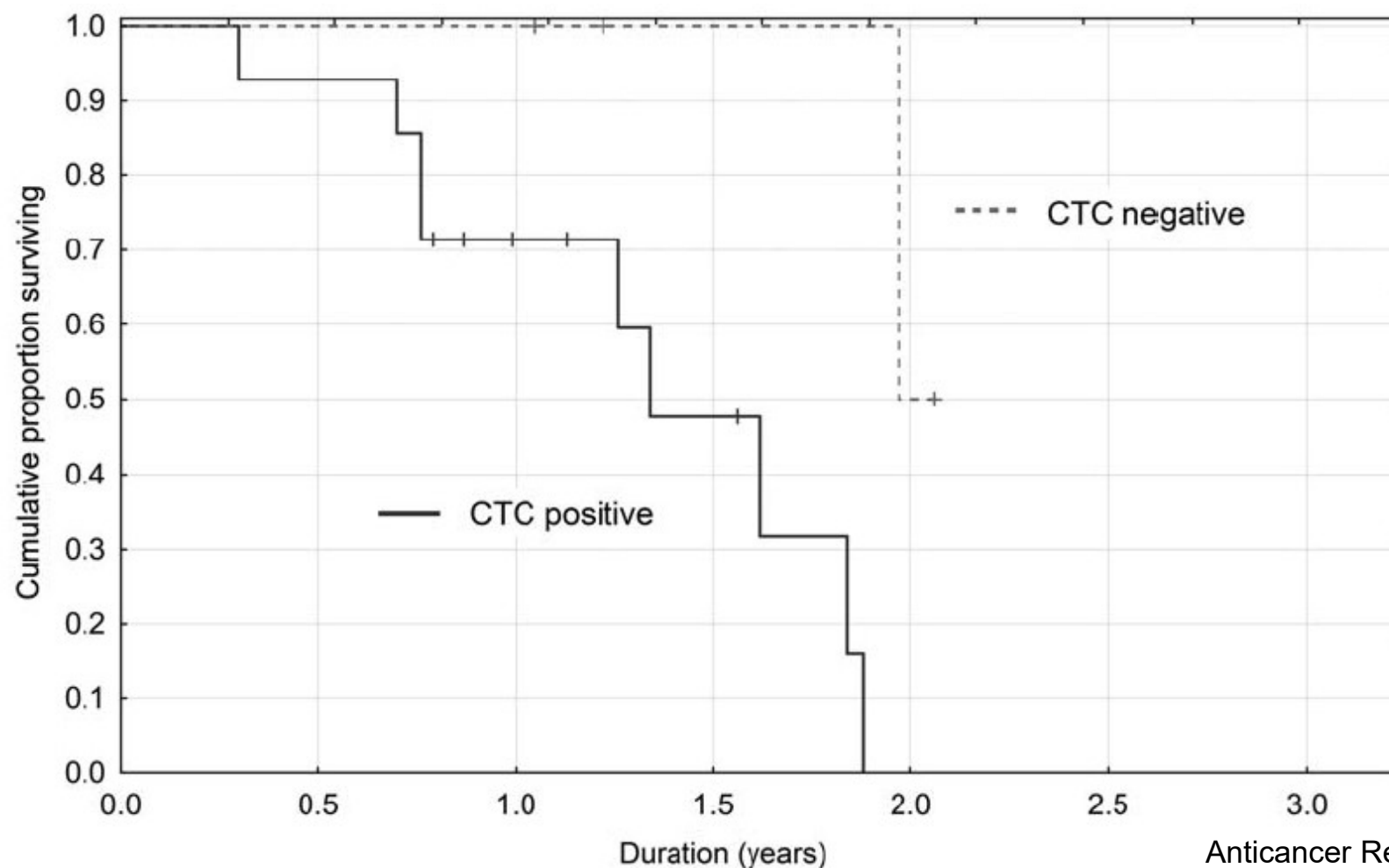
Patient characteristics	Total patients (n)	With detected CTCs (n)	%
	55	28	51.9
pT stage			
pT2a	10	5	50.0
pT2c	36	17	47.2
pT3a	7	5	71.4
pT3b	3	1	33.3
Gleason score			
Total 5 (2+3)	3	1	33.3
Total 6 (3+3)	23	13	56.6
Total 7(3+4)	19	8	42.1
Total 8	6	4	66.6
(3+5)	2	2	100
(4+4)	4	2	50.0
Total 9 (4+5)	4	2	50.0



Anticancer Res. 2014



Prognosis of Castration-resistant Prostate Cancer Patients – Use of the AdnaTest® System for Detection of Circulating Tumor Cells





Conclusion (projects proposal)

- Almost nothing done in **penile** and **testicular cancer**
- **Renal cancer** – we can have (sadly) thousands of participants
- **Bladder cancer** – prognosis of high risk non-invasive BC, invasive BC before cystectomy, metastatic cancer before platin-based chemo
- **Prostate cancer** – all stages and mostly high-risk PC, PSA relapse, primary metastatic PC, CRPC