

DANSKE KRÆFTFORSKNINGSDAGE 2022

Fremtid for kræft og billeddiagnostik PET-sporstoffer, terapi og AI

Malene Grubbe Hildebrandt

Ledende overlæge i forskning, klinisk lektor

Nuklearmedicinsk Afdeling, Odense Universitetshospital

Klinisk Institut, Syddansk Universitet

Seniorforsker i Center for Innovativ Medicinsk Teknologi (CIMT), OUH

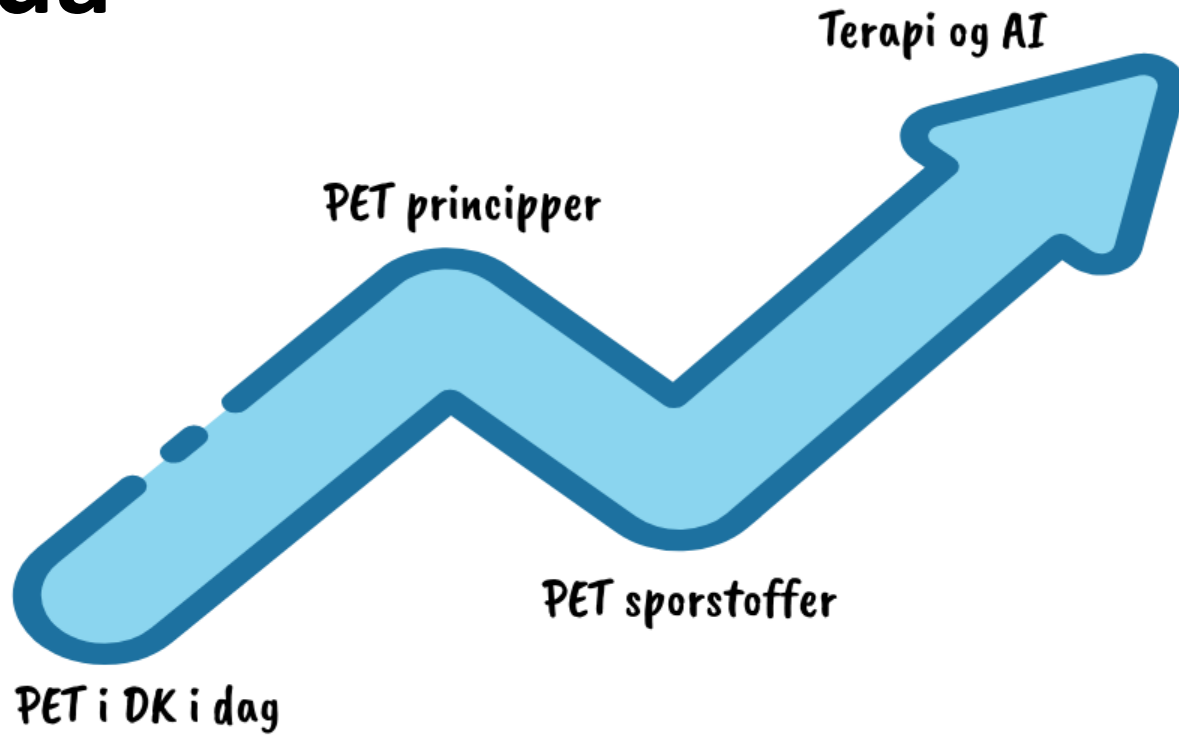
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#SamarbejdeOmKræft

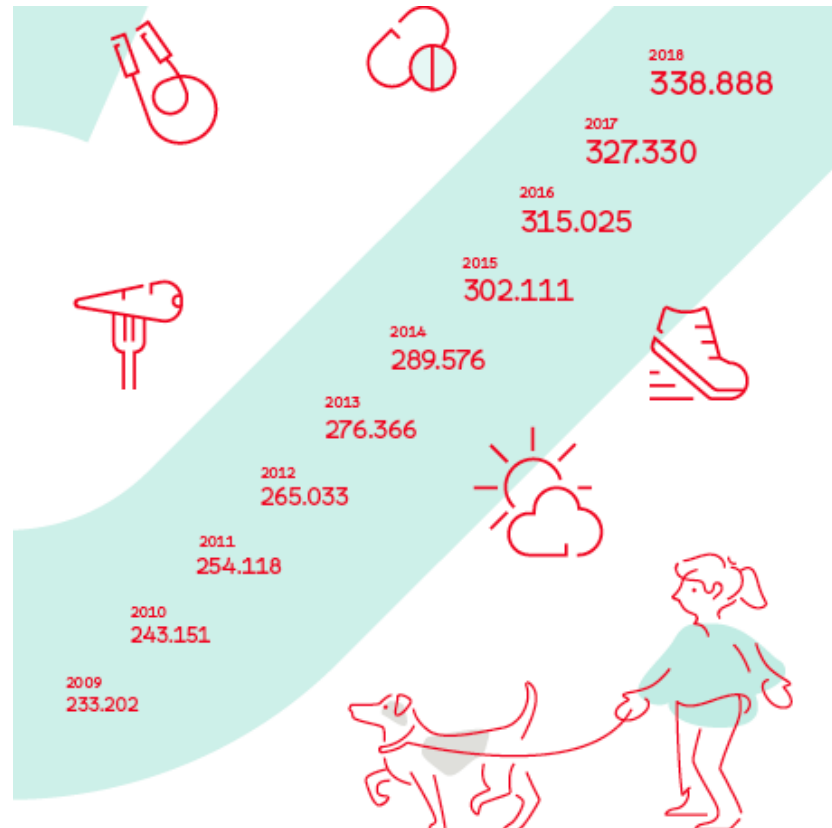
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Agenda



PET i Danmark i dag



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#SamarbejdeOmKræft

Kræft i tal – Kræftens Bekæmpelse

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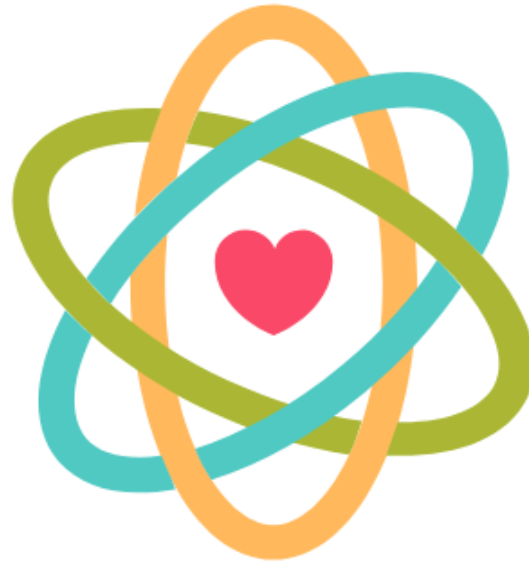
#SamarbejdeOmKræft



Hvornår bruges PET til kræftpatienten?

- ✓ Primær diagnostik
- ✓ **Stadieinddeling**
- ✓ Responseevaluering
- ✓ **Recidivudredning**
- ✓ Kontrol

PET principper



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PET = Positron Emission Tomography

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Radionuclide

(Diagnostic or
Therapeutic)



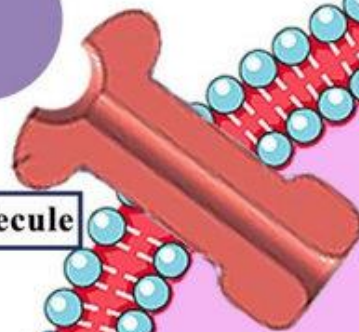
Linker Molecule



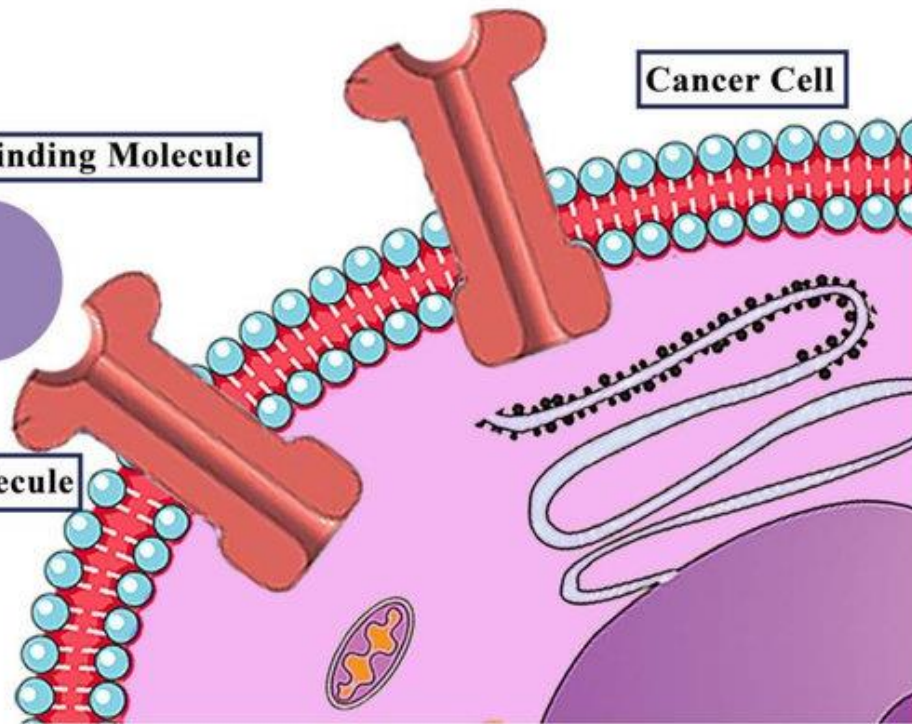
Binding Molecule

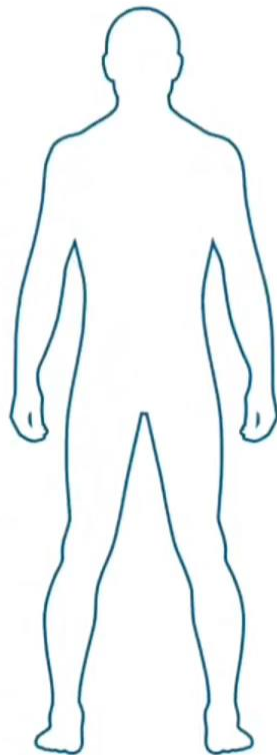


Target Molecule



Cancer Cell





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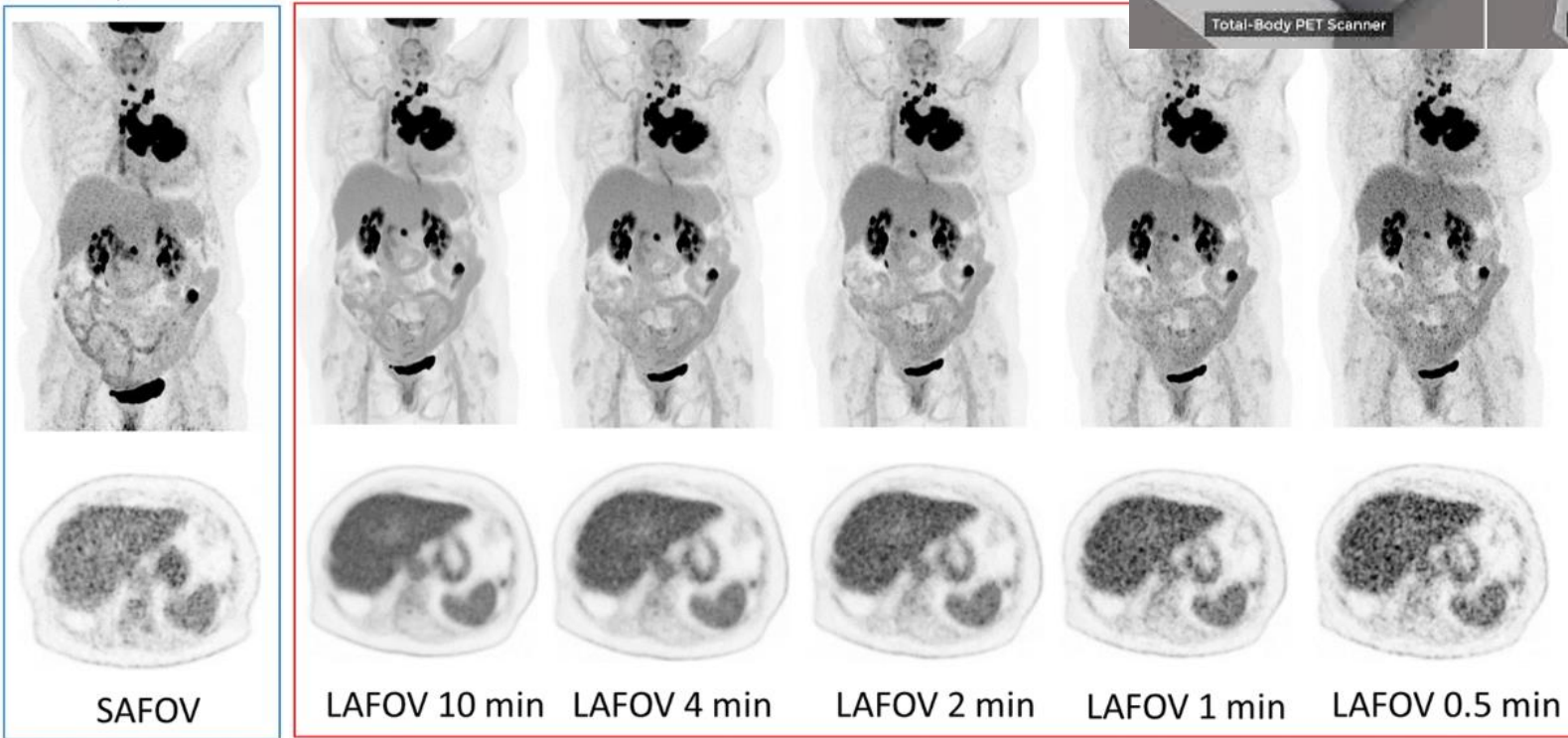
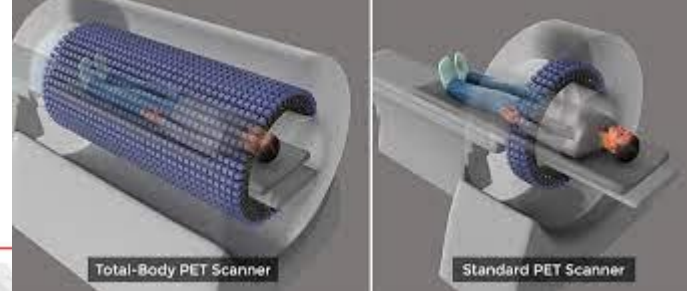
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Teknologiudvikling



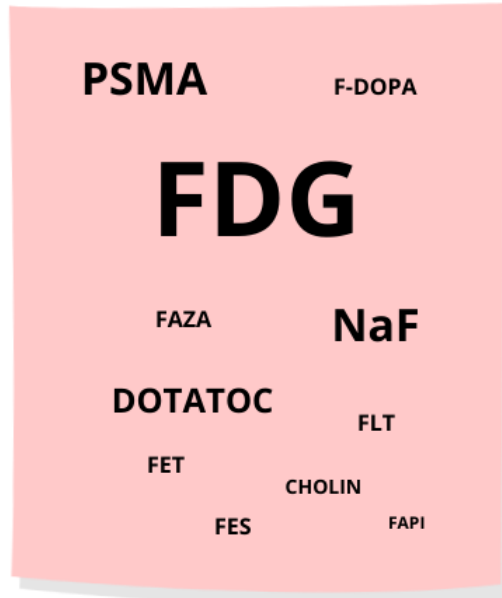
Alberts et al., Eur J Nucl Med Mol Imaging, 2021
<https://doi.org/10.1007/s00259-021-05282-7>

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PET sporstoffer

I dag



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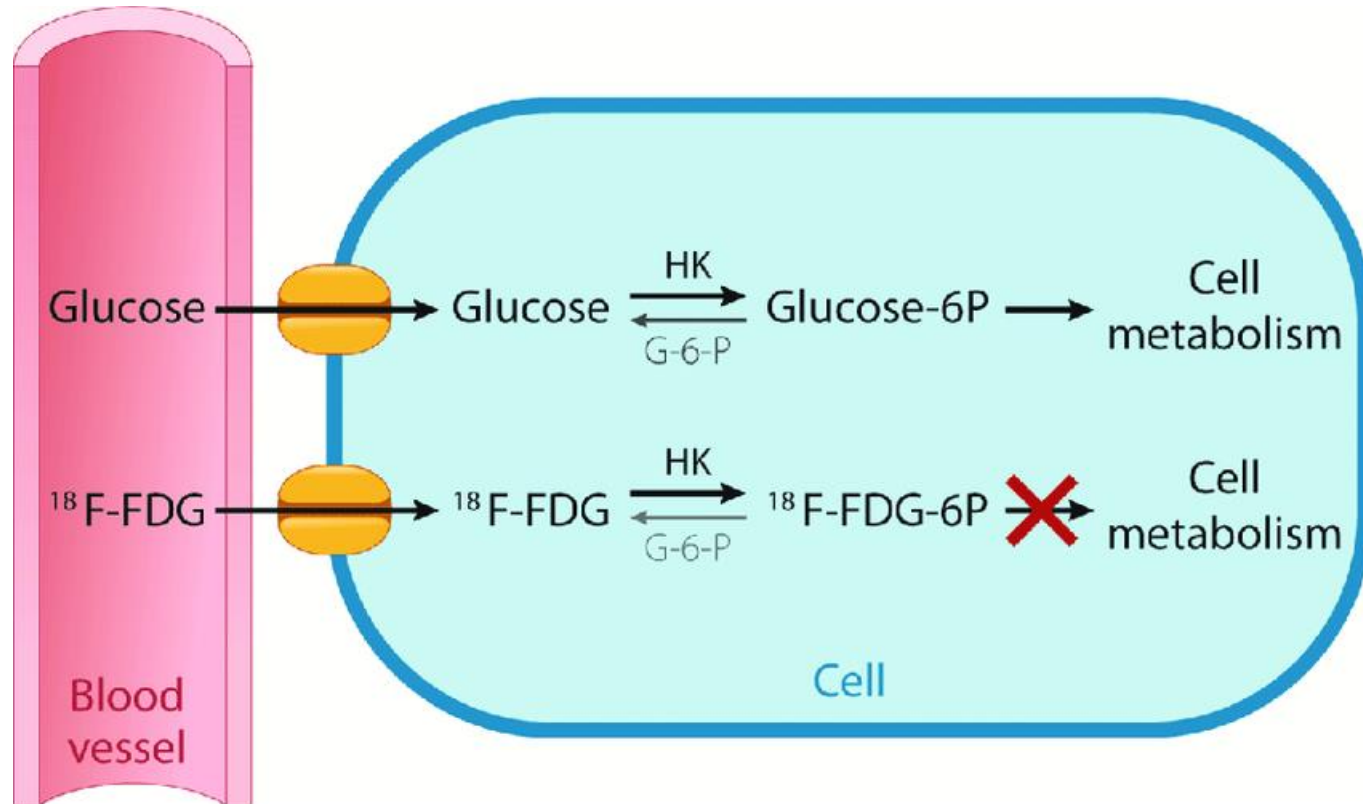
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PET = Positron Emission Tomography

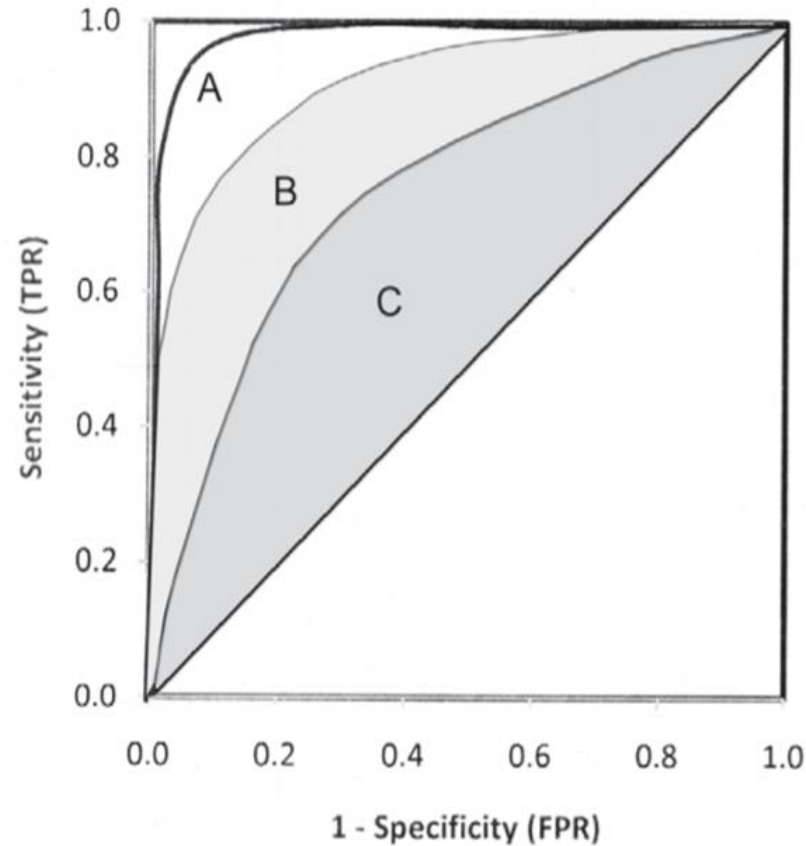
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FDG transport ind i kræftcellen



Diagnostiske studier



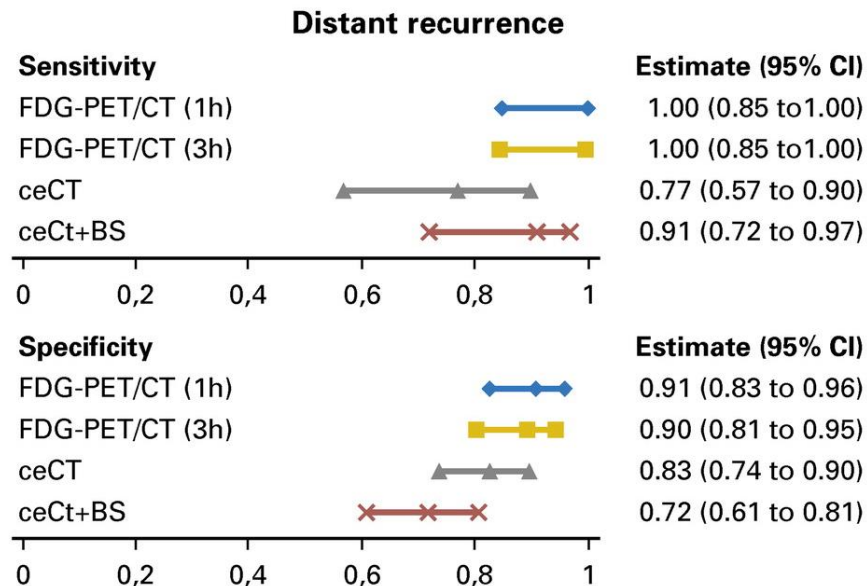
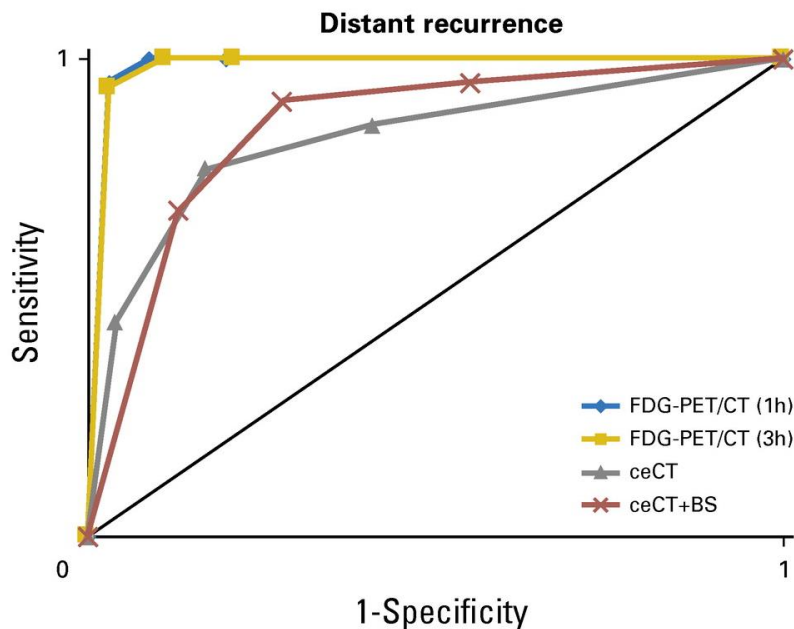
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Recidivudredning brystkræft



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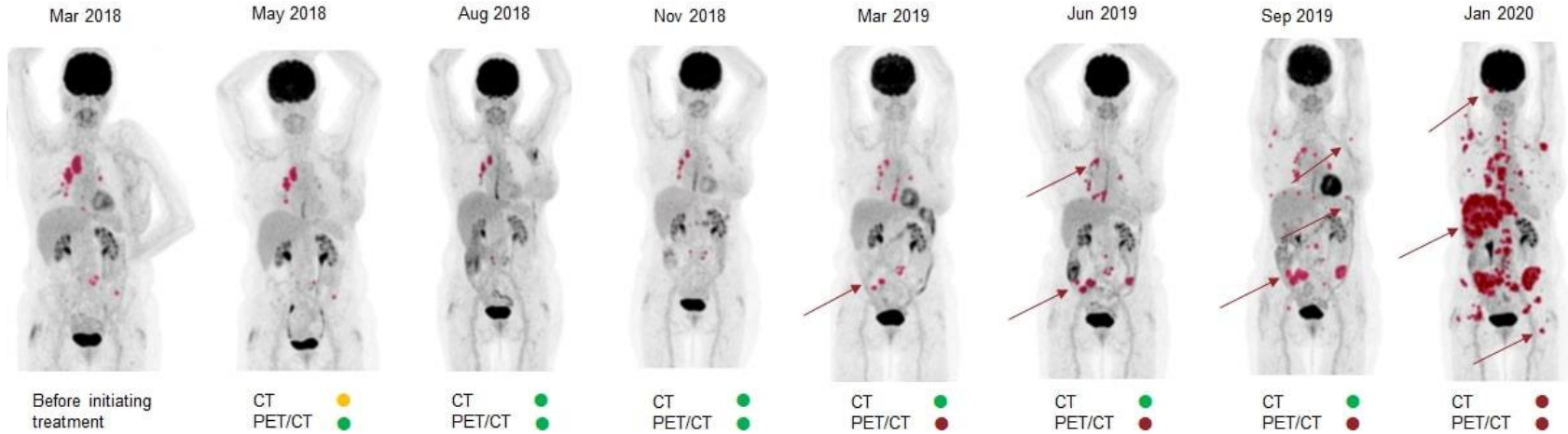
Hildebrandt et al., J Clin Oncol, 2016

<https://doi.org/10.1200/jco.2015.63.5185>

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Responseevaluering metastatisk brystkræft



Regression
No change
Progression



In 87 patients, progression was seen

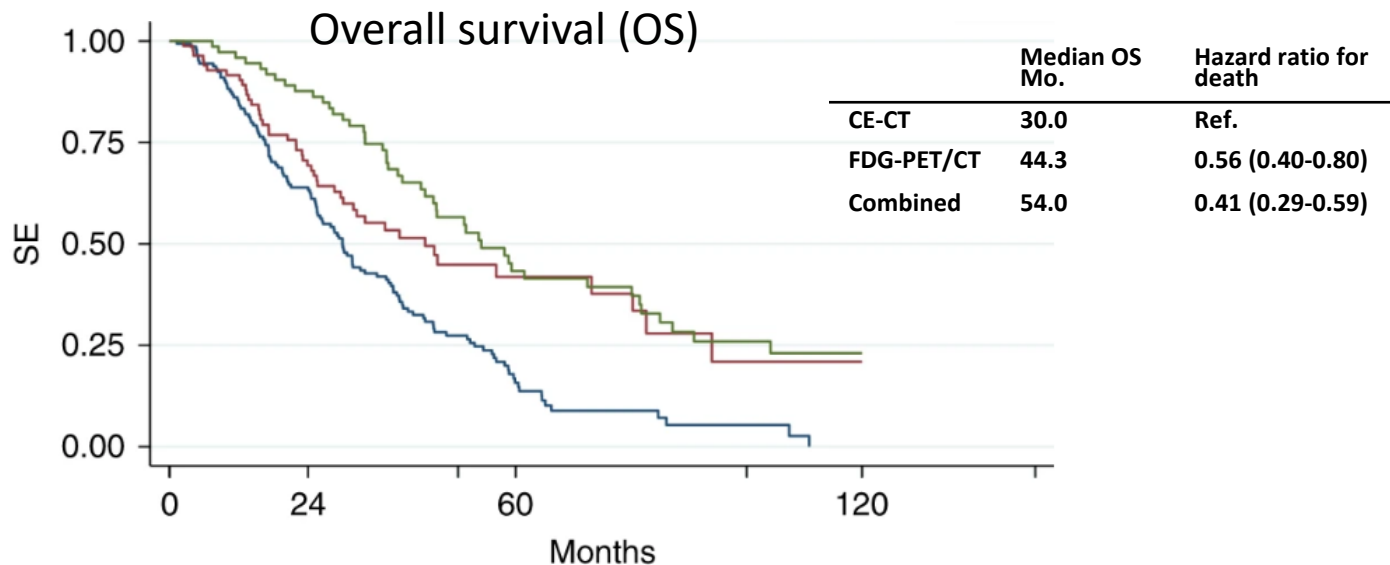
- first on PET/CT in 43 (49.4%) (a median of 6.0 mo. delay by CT)
- first on CT in 1 (1.2%)
- at the same time on both in 11 (12.6%)
- no progression was seen during follow-up in 32 (36.8%)

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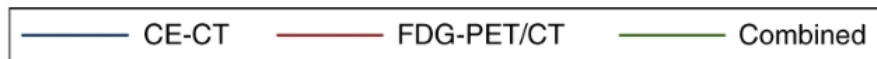
Vogsen et al., *In press, J Nucl Med*
Clinicaltrials.gov NCT03358589

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Responseevaluering metastatisk brystkræft



Number at risk				
	0	24	60	120
CE-CT	144	92	15	0
FDG-PET/CT	83	55	13	1
Combined	73	62	23	5



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#SamarbejdeOmKræft

Naghavi-Behzad et al., Br J Cancer, 2022

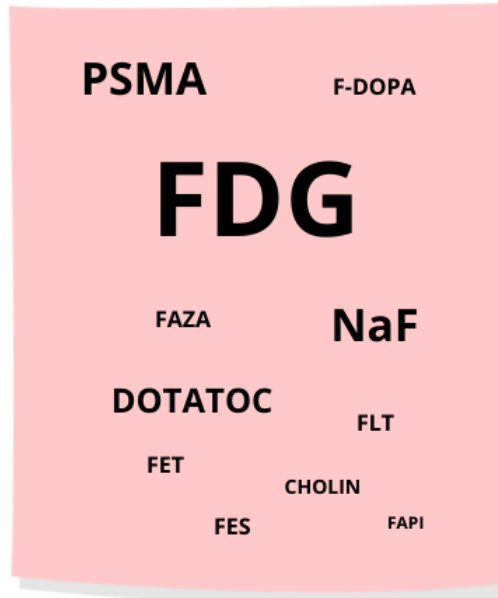
<https://doi.org/10.1038/s41416-021-01654-w>

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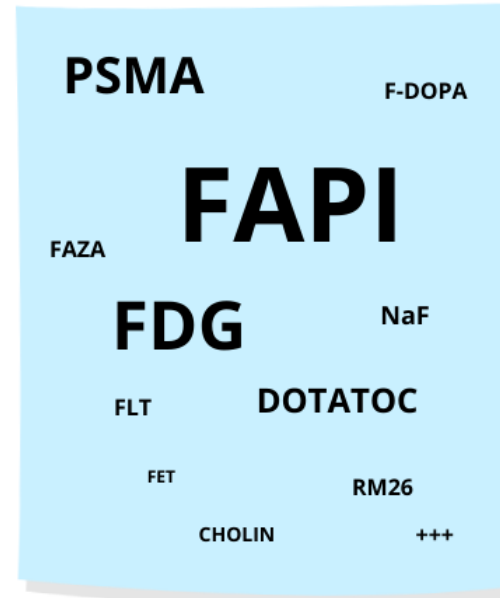
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PET sporstoffer

I dag



I fremtiden



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FDG udfordringer - kan de løses af FAPI?

Faste

Tid til scan

Blodsukker

Diabetes

Terapi

FDG

Min. 4 timer

1 time

< 10 mmol/l

Særlige krav

Ej potentiale

FAPI

Ingen faste

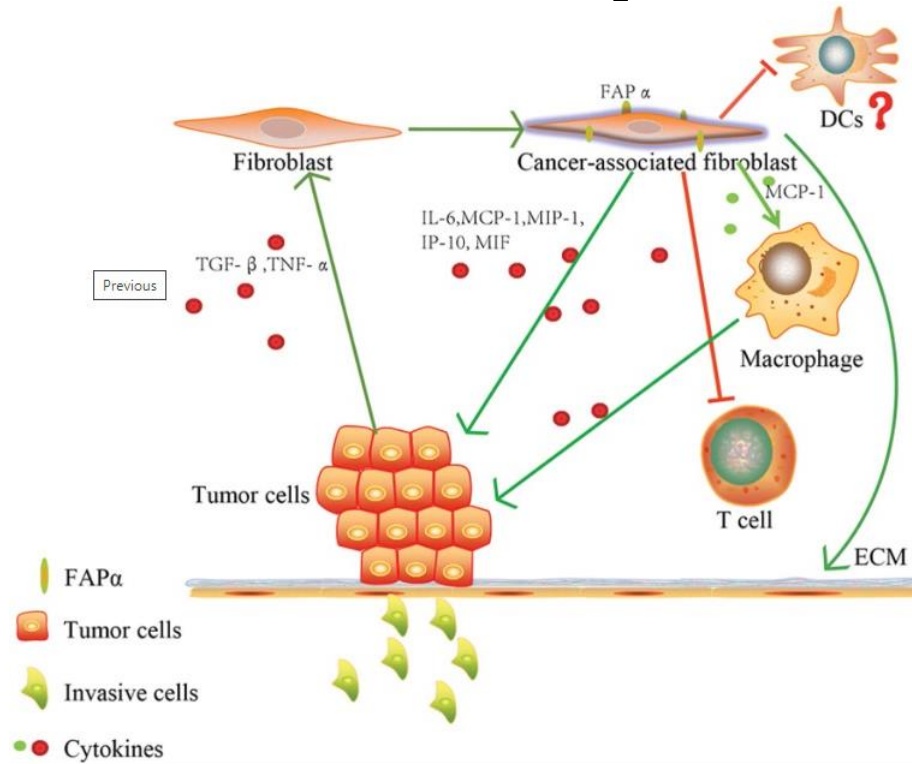
10 min

Ingen krav

Ingen krav

Potentiale

Fibroblast activation protein (FAP)



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Zi et al., Mol Med Rep, 2015

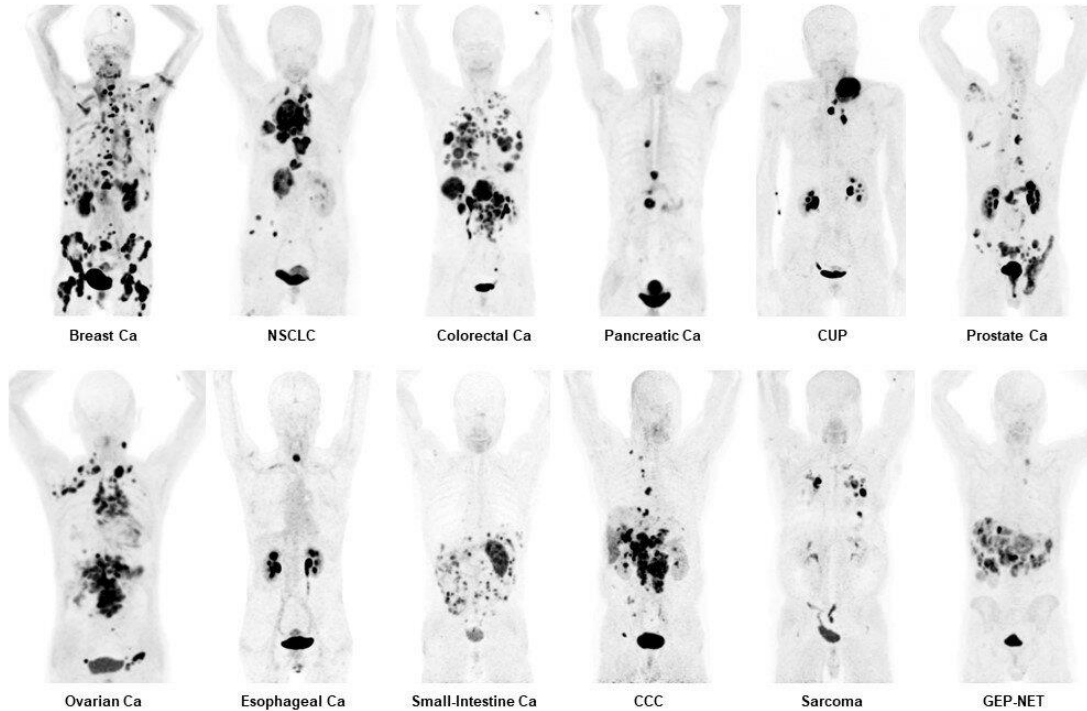
<https://doi.org/10.3892/mmr.2015.3197>

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FAPI – fremtidens FDG?

FAPI-PET in different kinds of cancer



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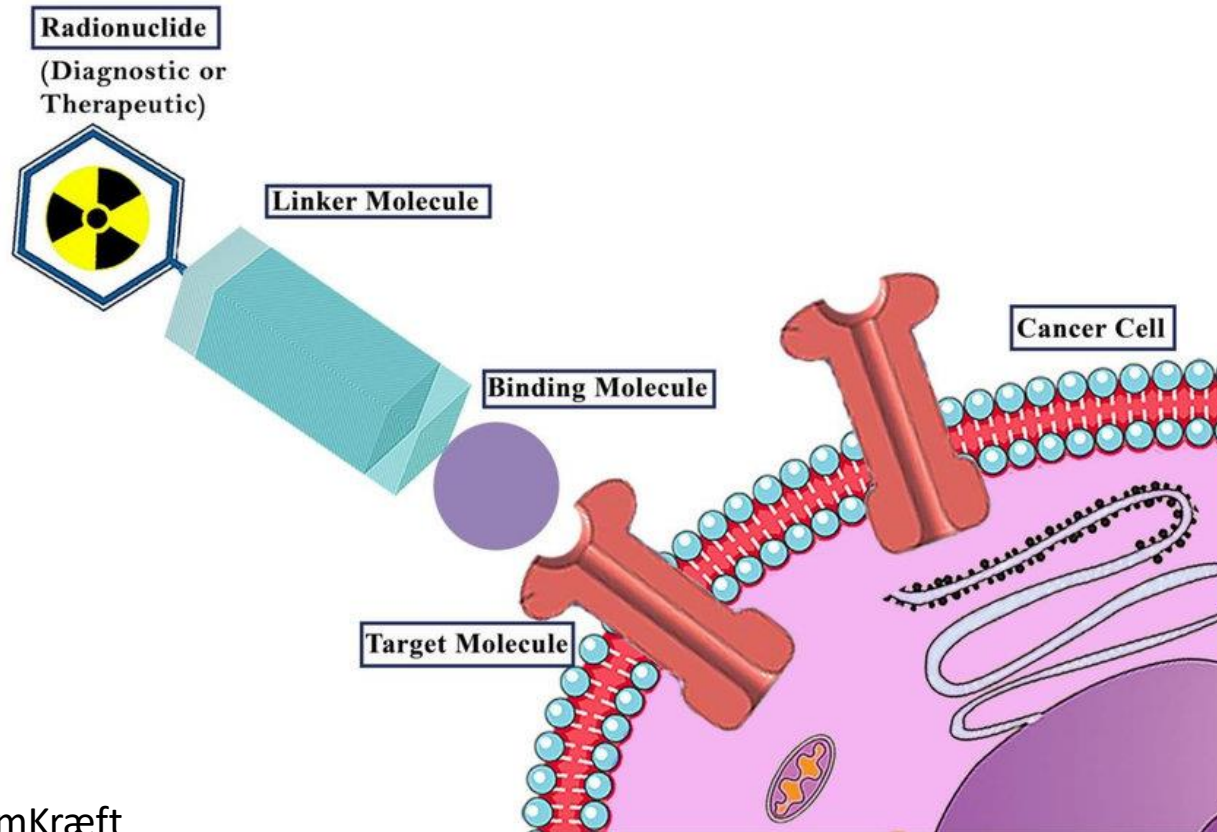
#SamarbejdeOmKræft

Image of the year SNMMI 2019

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Terapi



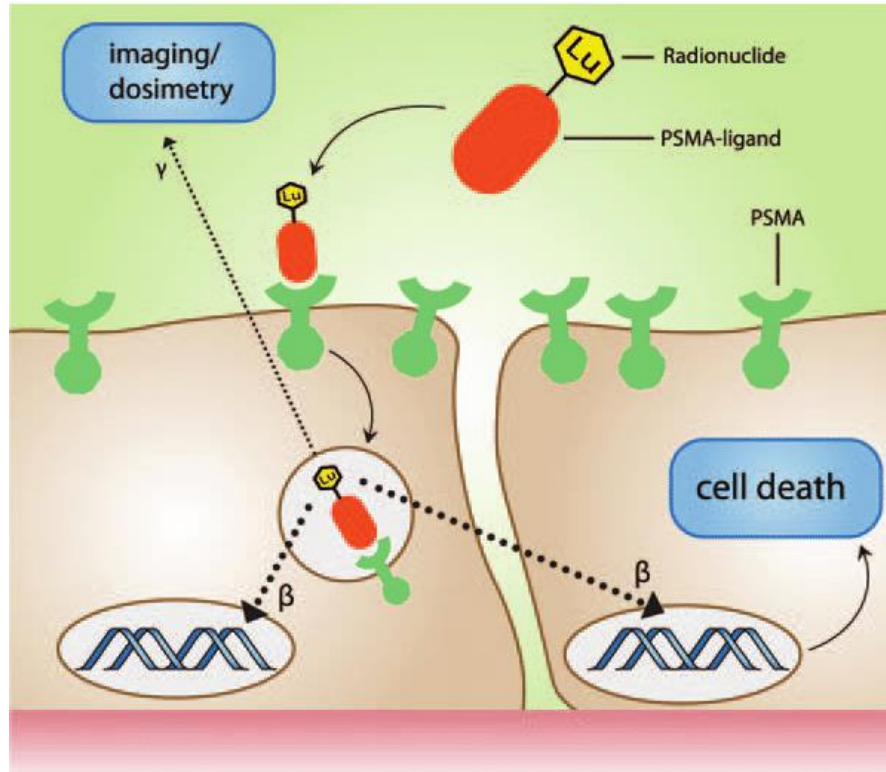
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Lu-PSMA-terapi til prostatakræft



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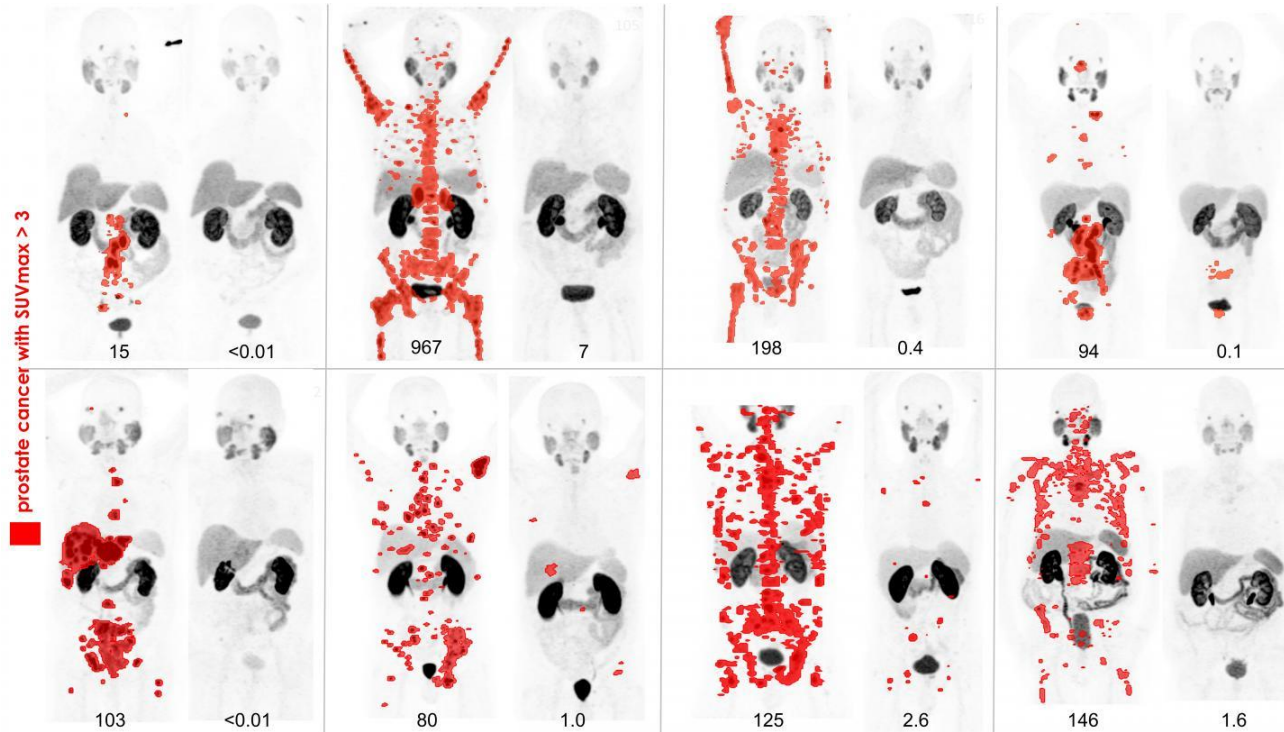
Ferdinandus et al., Curr Opin Urol, 2018

<http://dx.doi.org/10.1097/MOU.0000000000000486>

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Theragnostics – prostatakræft – PSMA



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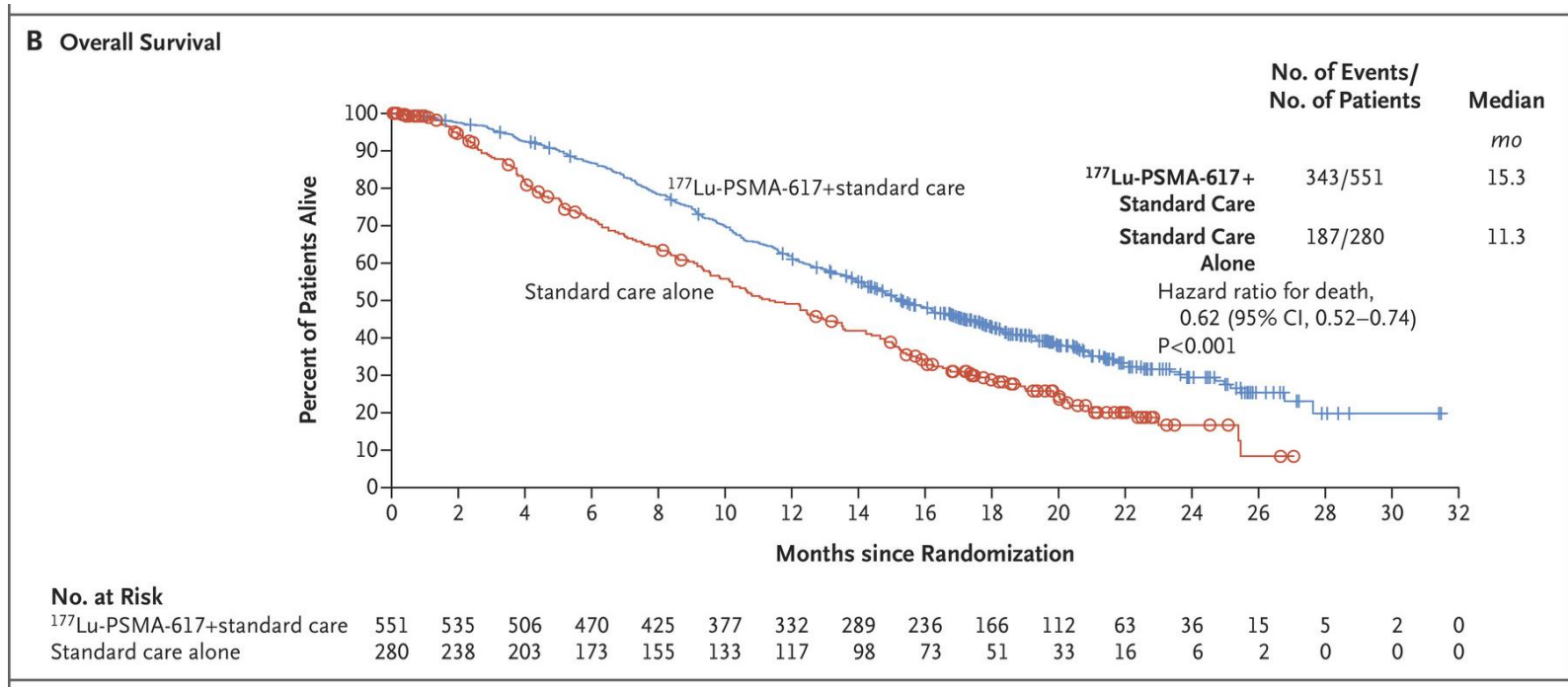
#SamarbejdeOmKræft

Image of the year SNMMI 2018

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Lu-PSMA behandling til mCRPC



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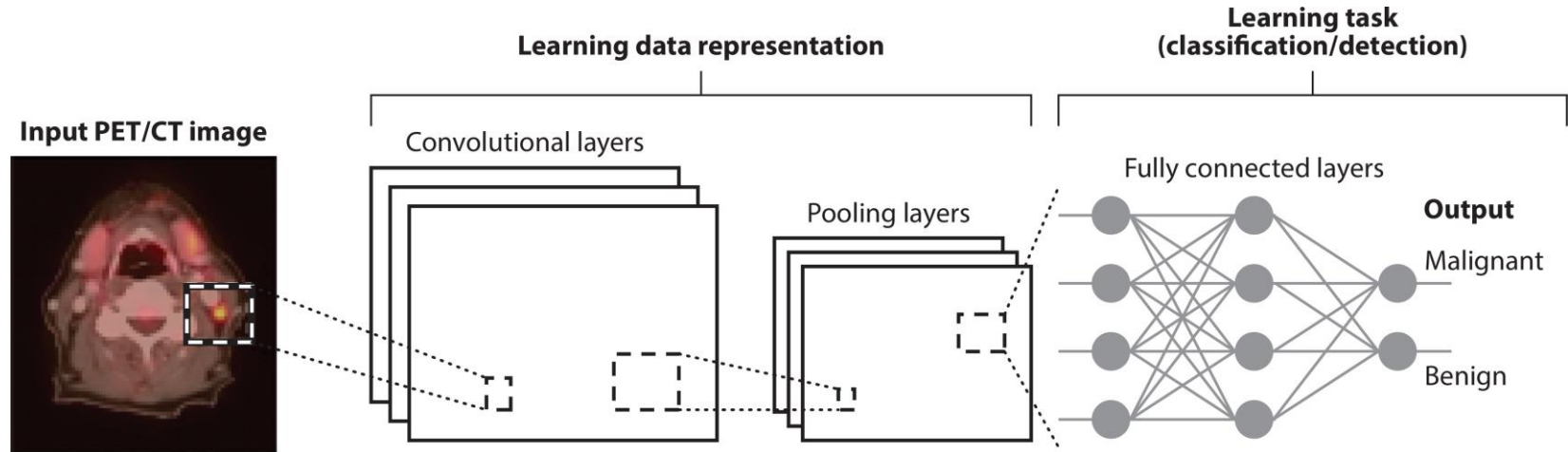
Sartor et al., N Engl J Med, 2021

<https://www.nejm.org/doi/full/10.1056/nejmoa2107322>

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Vil AI erstatte nuklearmedicineren?



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