



Memorial Sloan Kettering
Cancer Center

Current Challenges and Opportunities: Biomarkers and Surrogate Endpoints Diagnostic Imaging

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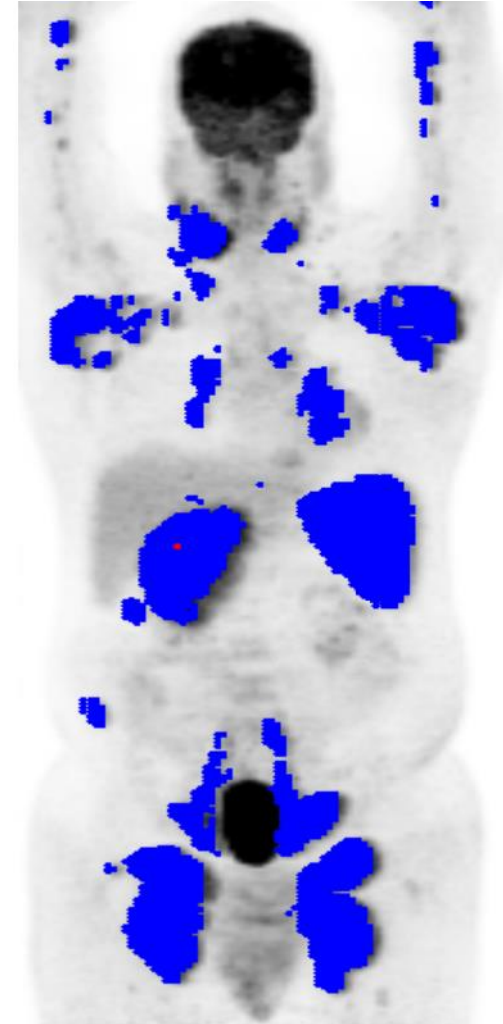
Disclosures

Marius Mayerhoefer received honoraria for lectures from:

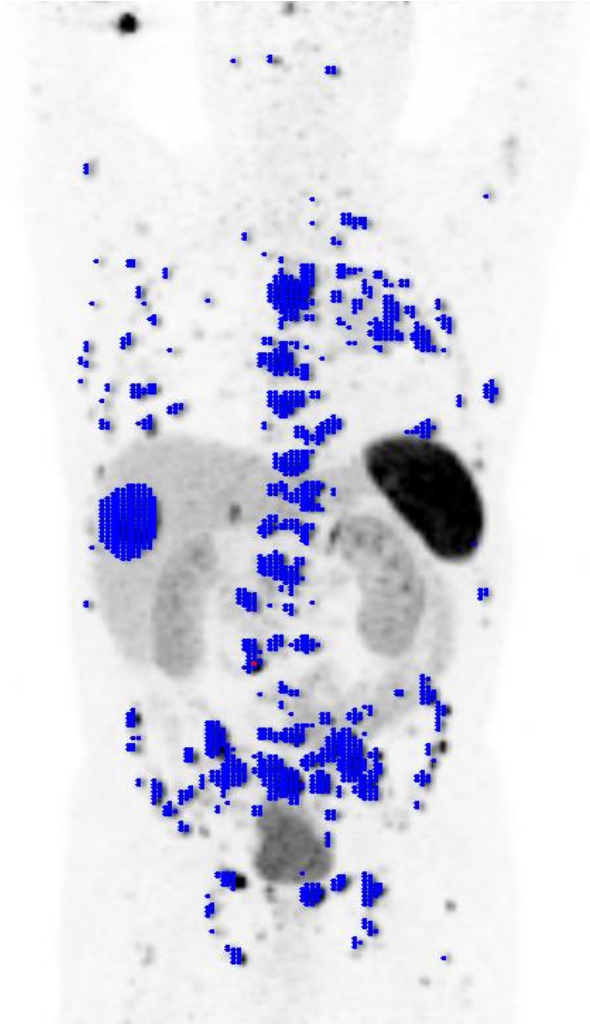
- Siemens Healthineers
- Bristol Myers Squibb
- GE Healthcare

Imaging biomarkers in oncology

- Functional and targeted imaging of cancer cells and immune cells in TME
- Whole-body disease burden assessment



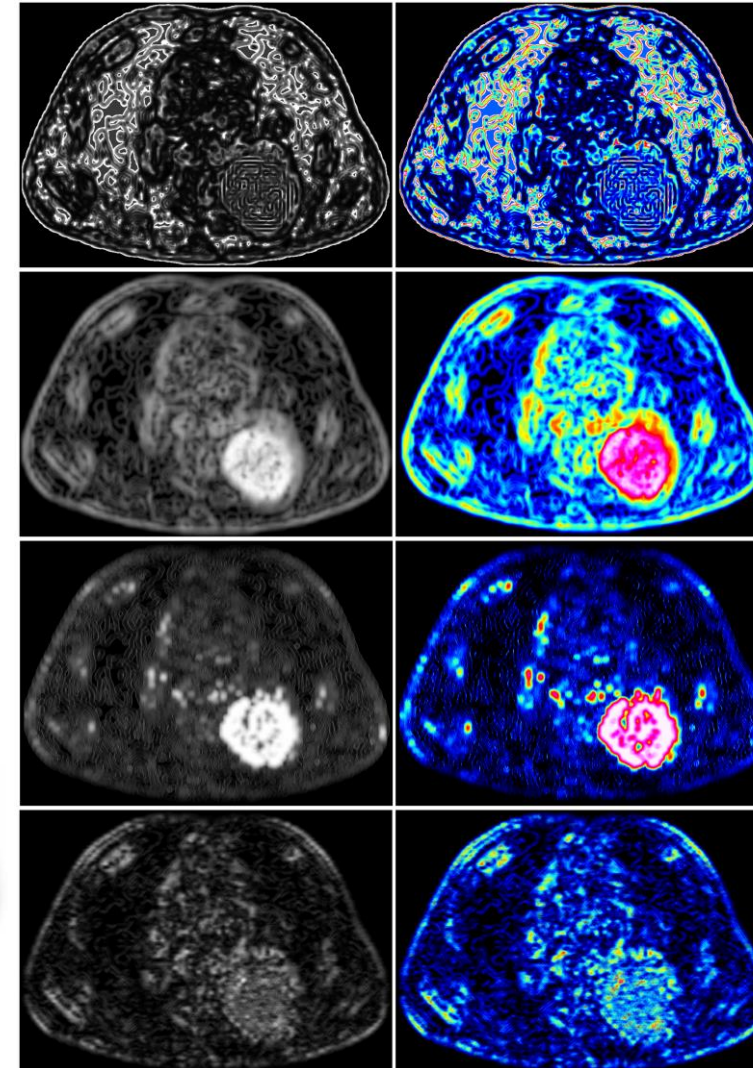
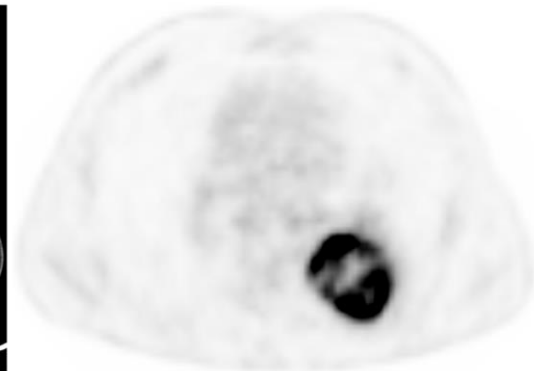
18F-FDG-PET



68Ga-DOTANOC-PET

Imaging biomarkers in oncology

- Functional and targeted imaging of cancer cells and immune cells in TME
- Whole-body disease burden assessment
- Quantification of tumor heterogeneity by radiomics and AI



Gradient
kurtosis

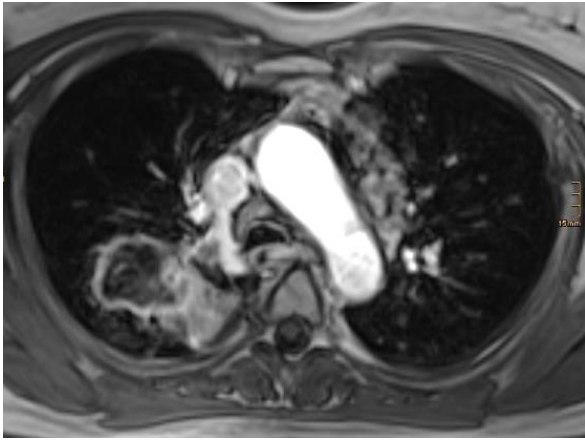
GLCM
Entropy

GLRLM short
run emphasis

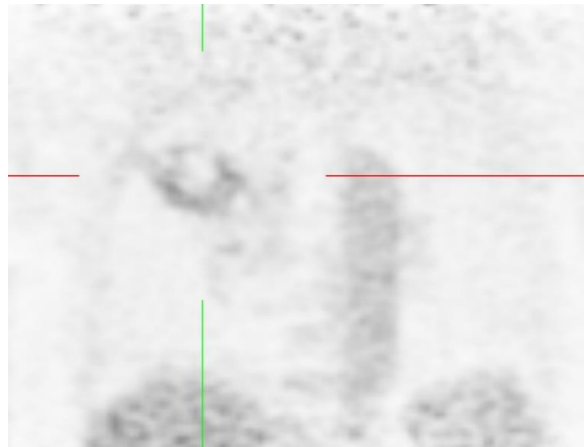
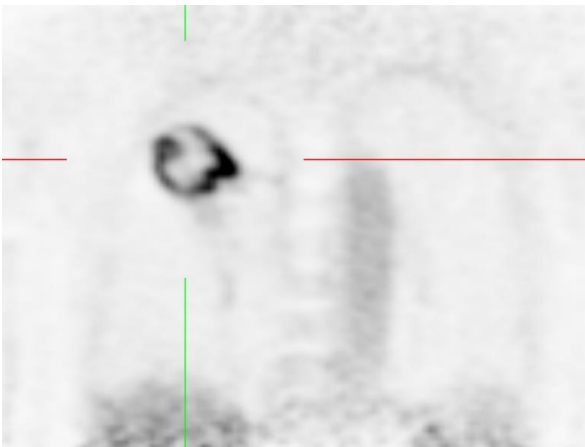
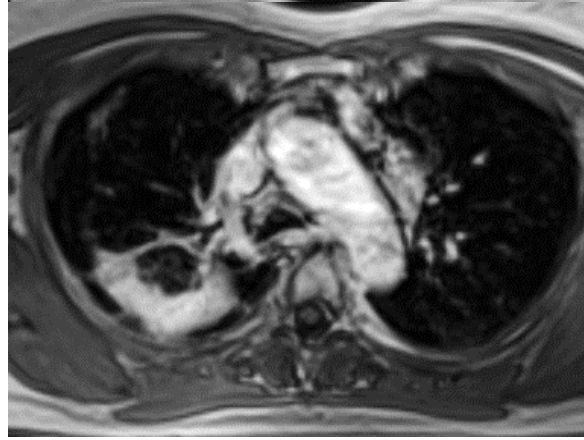
Haar wavelet
transform
energy

Immunotherapy: the challenge

baseline

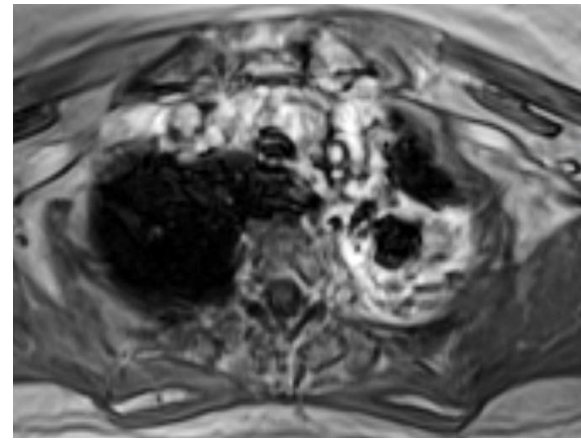


post pembrolizumab

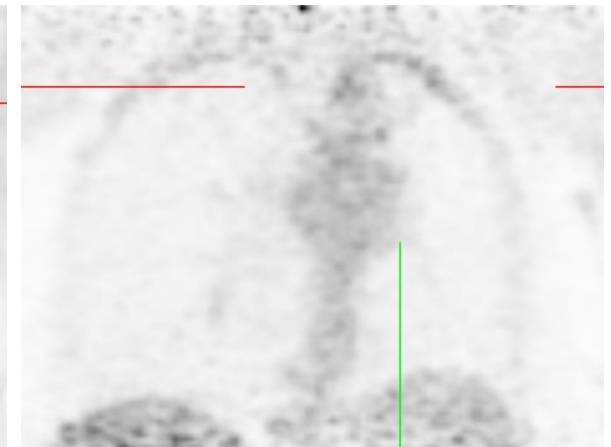
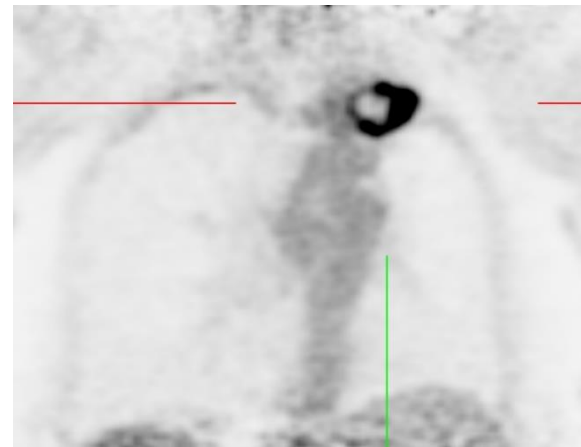
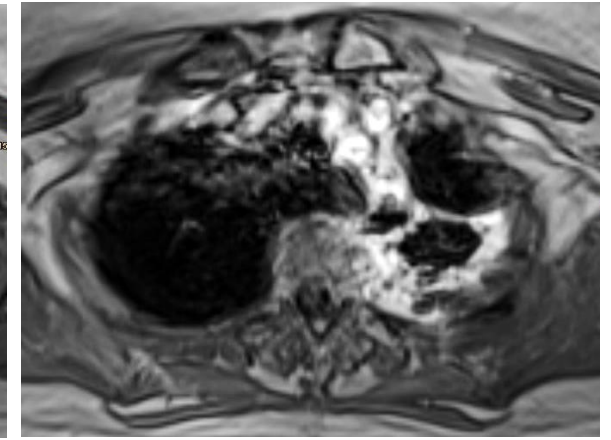


^{18}F -FDG-PET

baseline

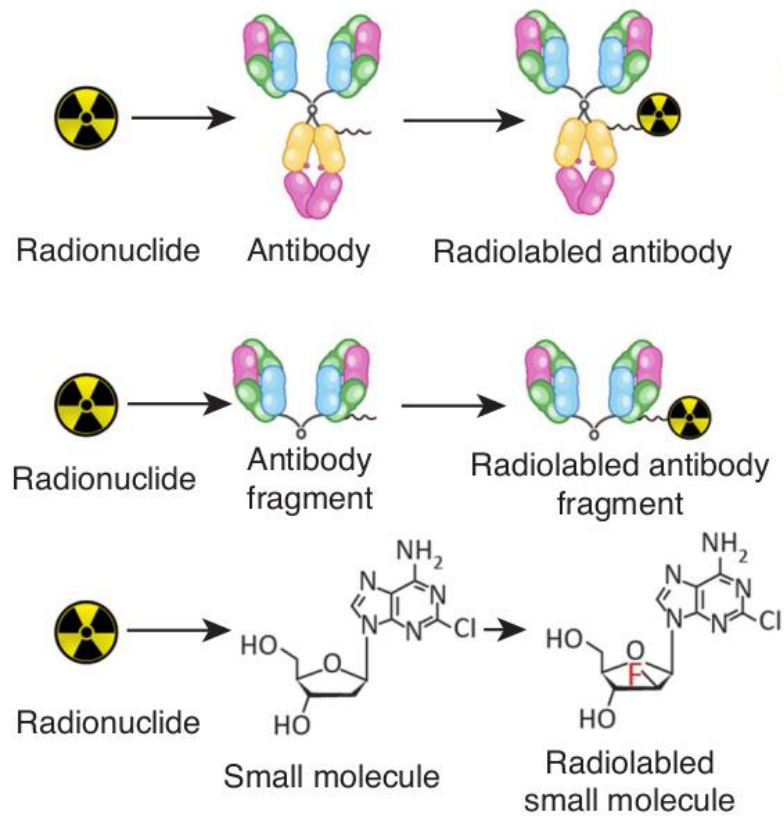


post pembrolizumab



^{18}F -FDG-PET

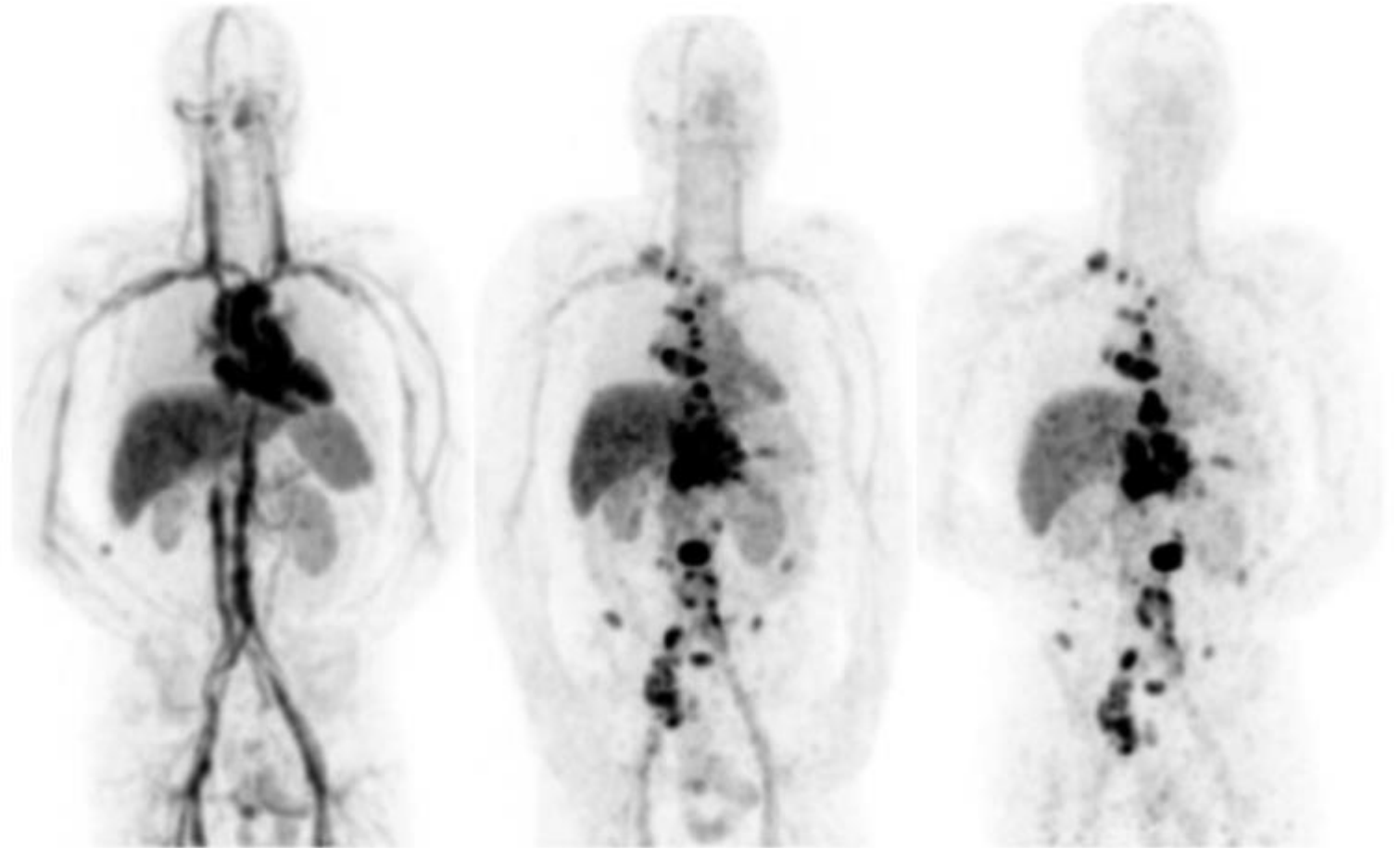
Immuno-PET: concept



Day 0

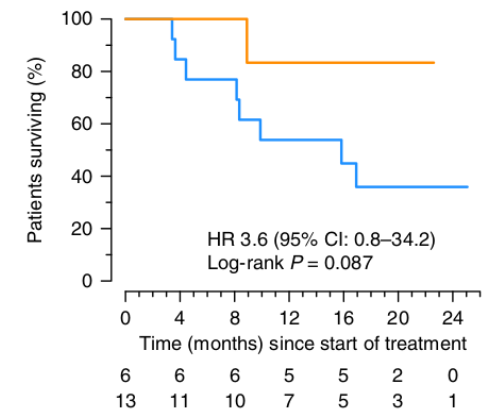
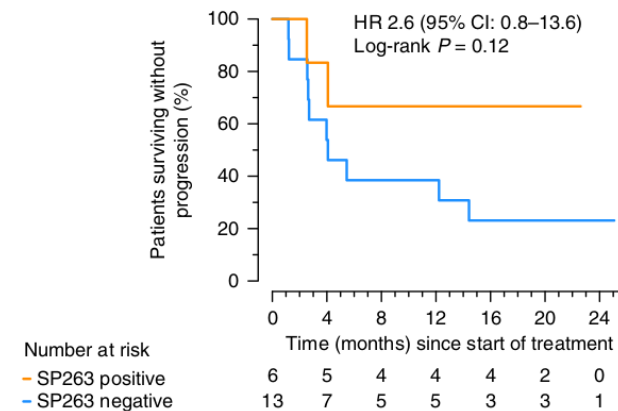
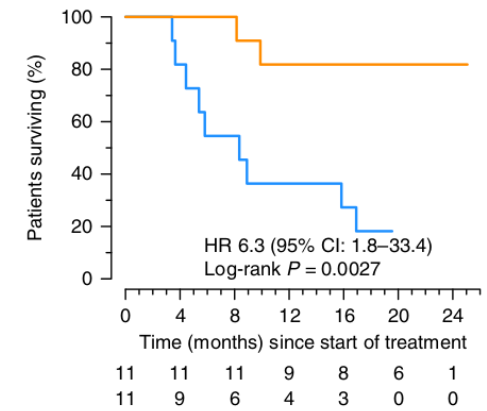
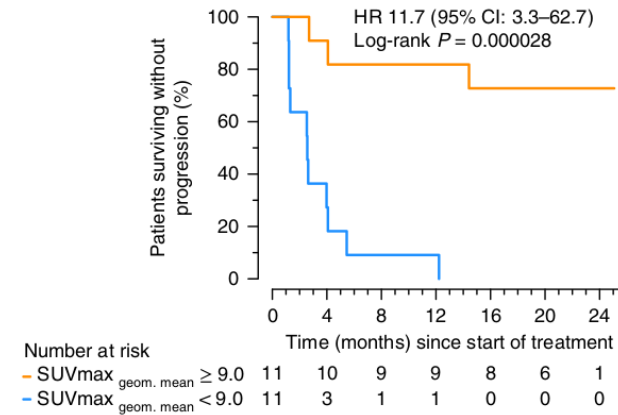
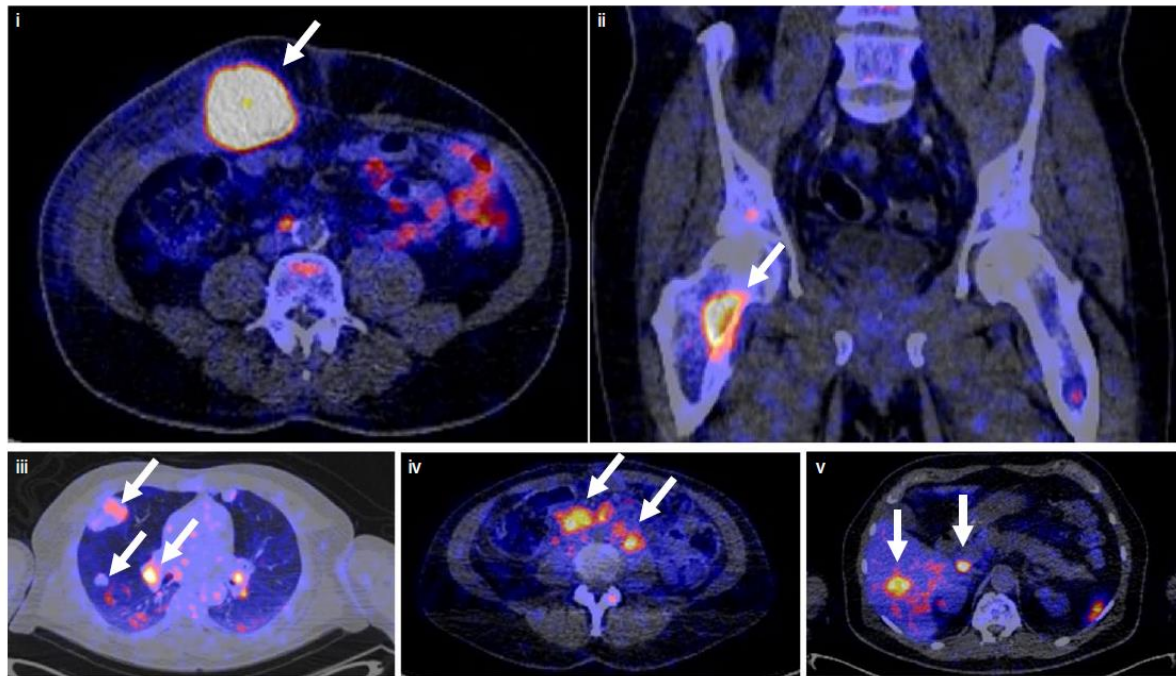
Day 3

Day 6



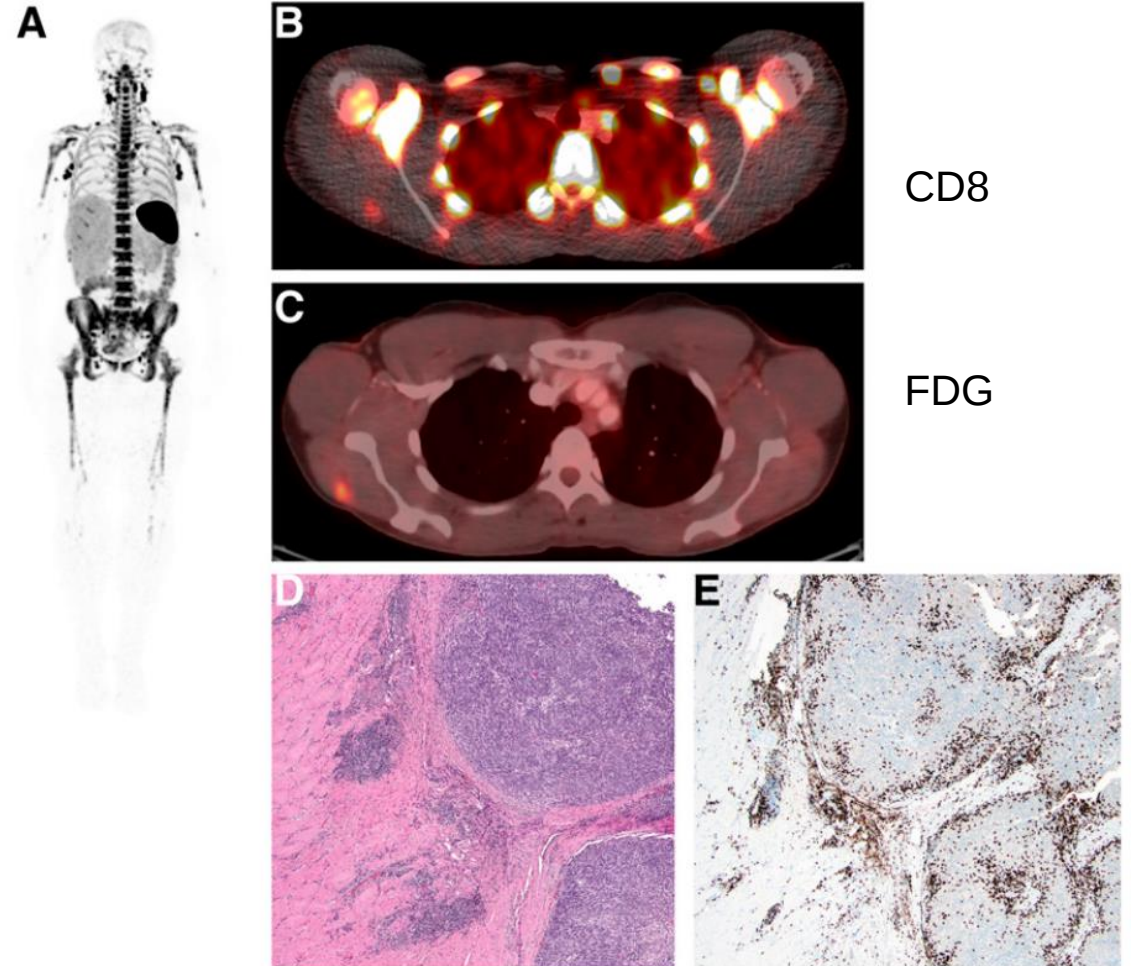
Immuno-PET: PD-1/PD-L1

- 89Zr-atezolizumab PET, performed on days 4 and 7

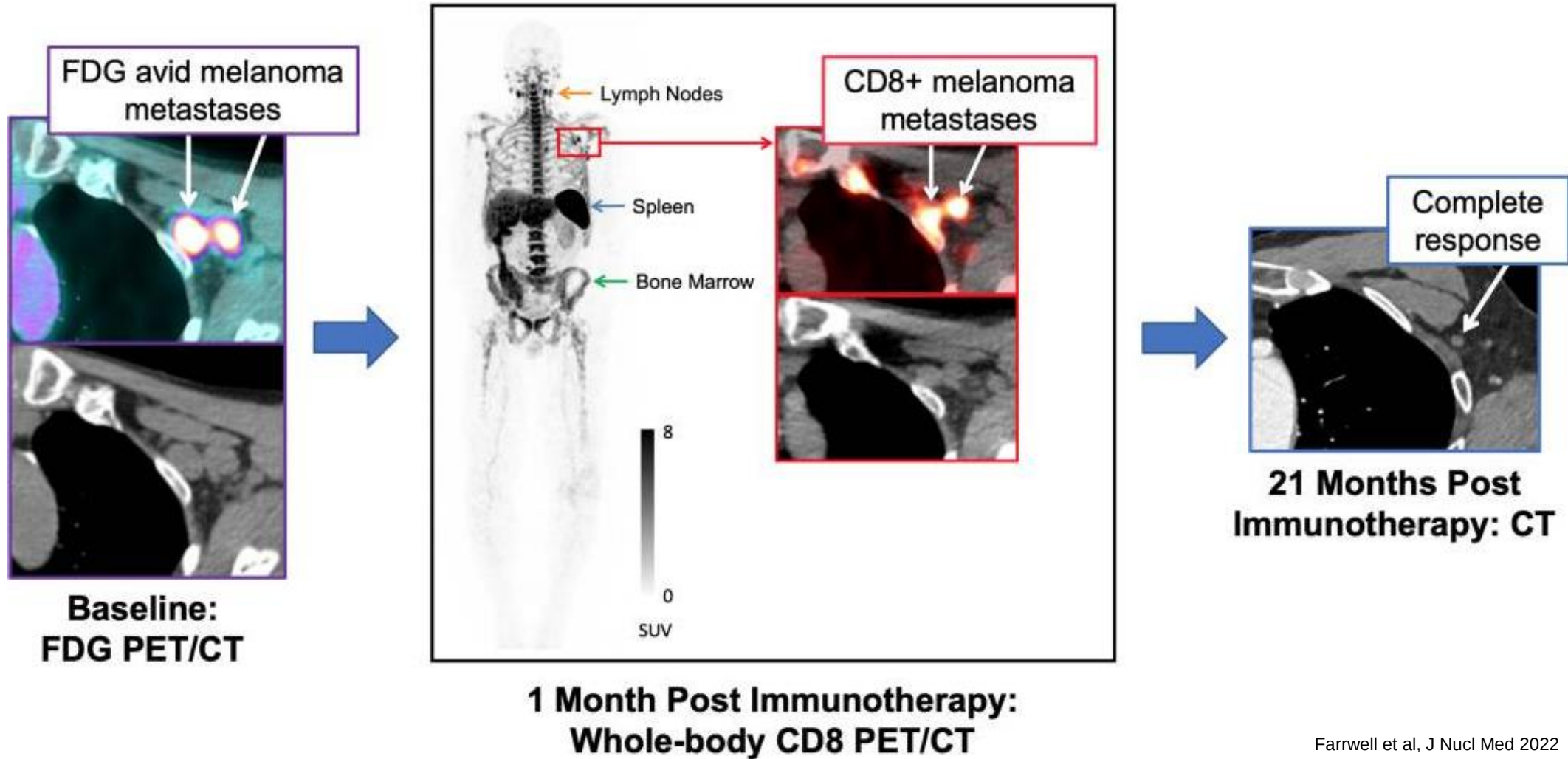


Immuno-PET: CD8+ TILs

- ^{89}Zr -Df-IAB22M2C CD8-targeting minibody
- PET 24h post injection

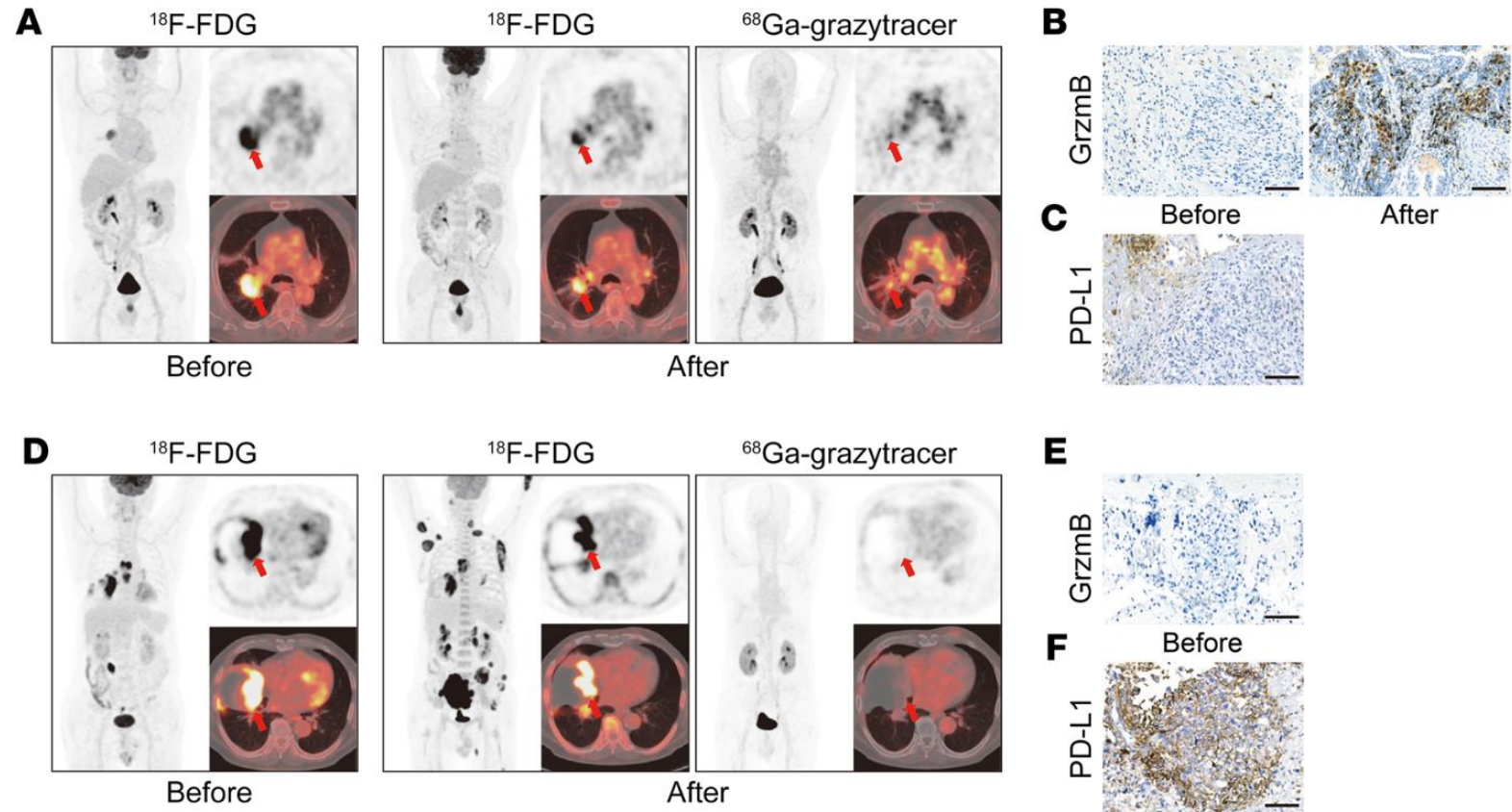
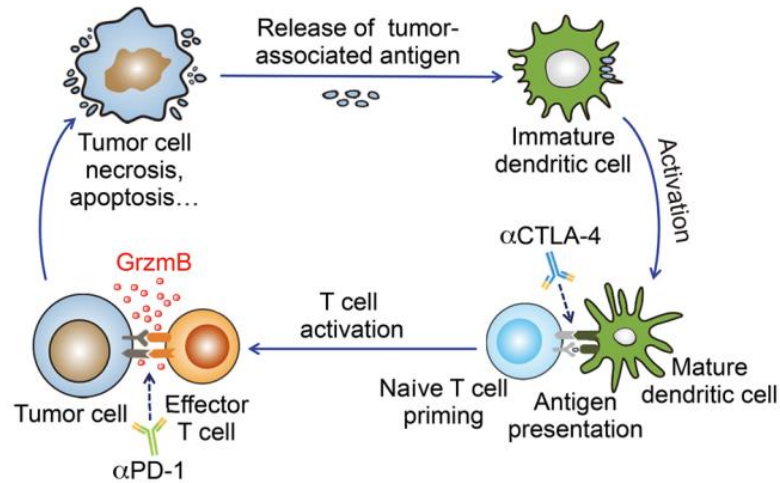


Immuno-PET: CD8+ TILs



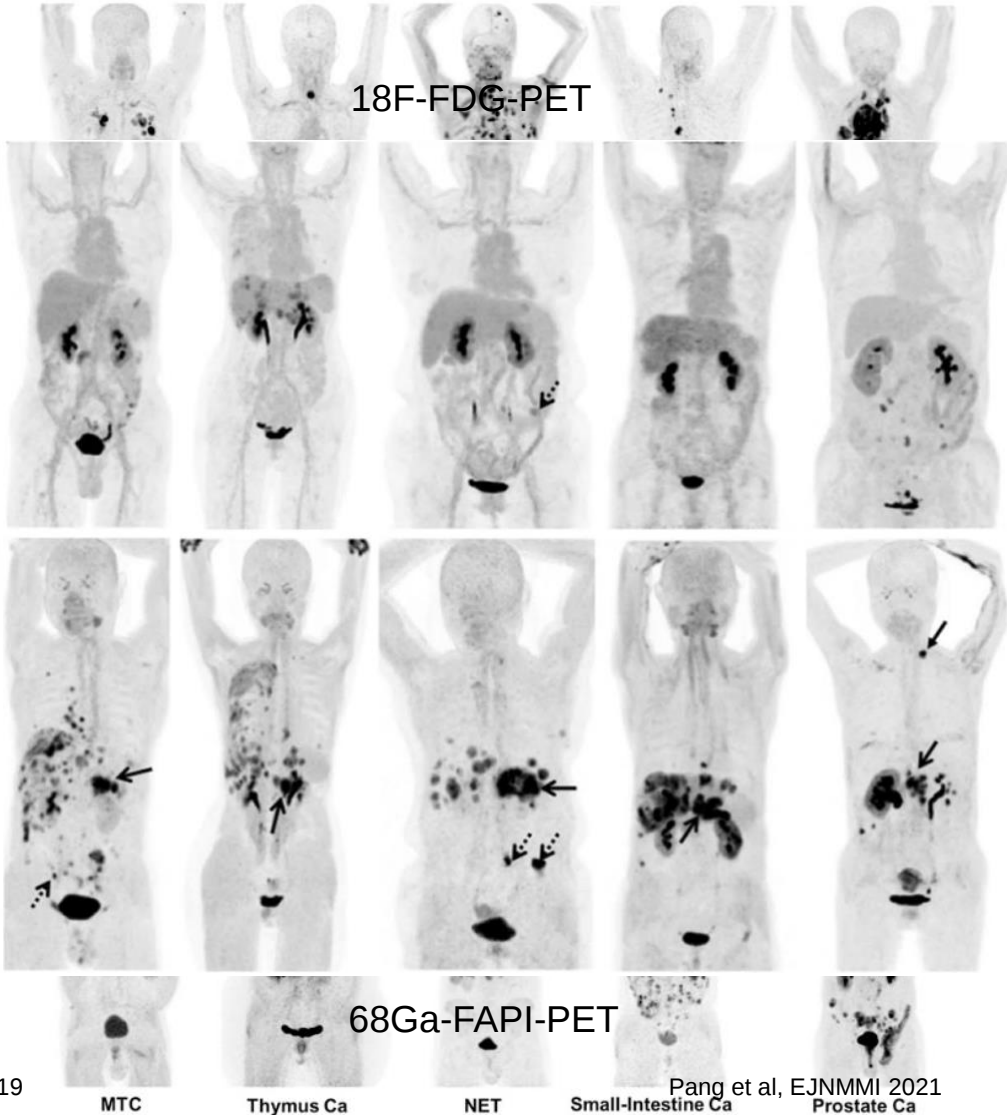
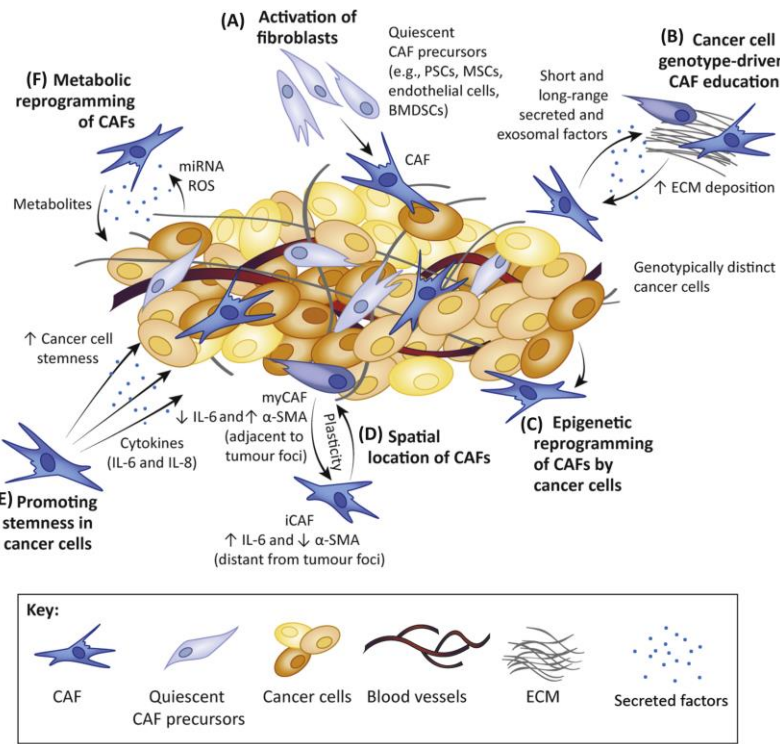
Immuno-PET: granzyme B

- ^{68}Ga -grazytracer (non-aldehyde peptidomimetic)
- PET 40 min post injection



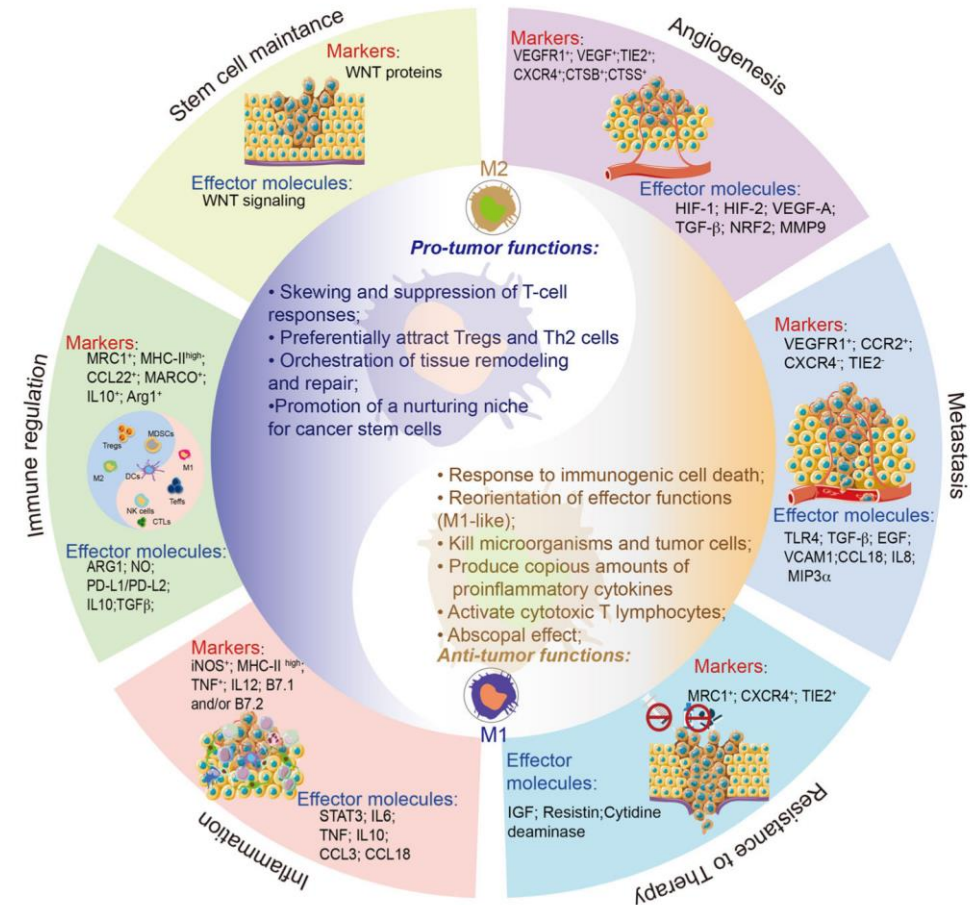
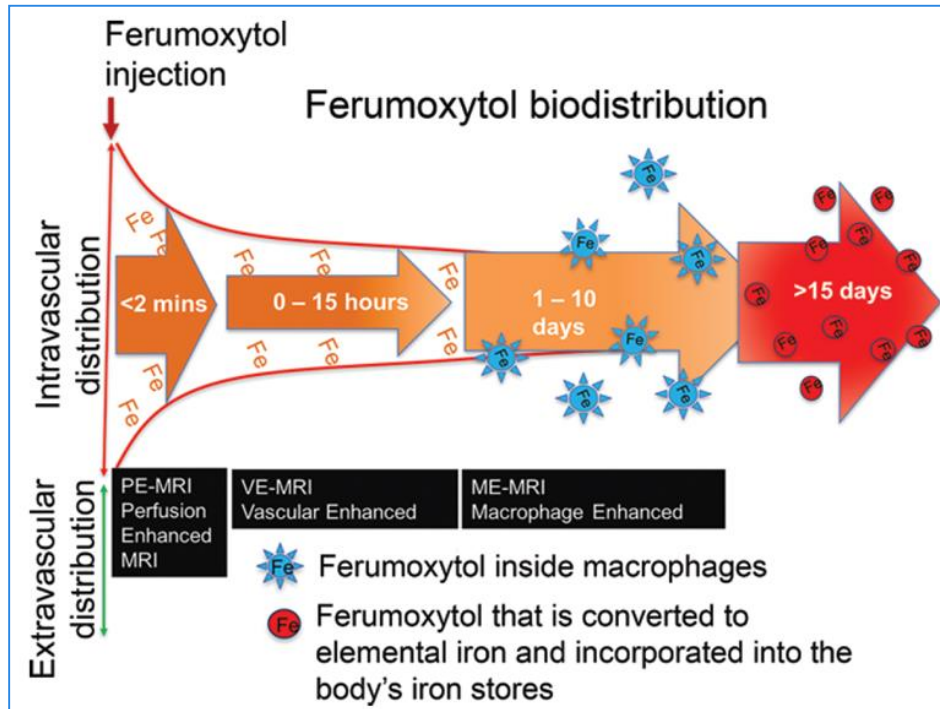
CAF imaging with FAPI-PET

- 68Ga-labeled fibroblast activation protein inhibitor-based small molecule



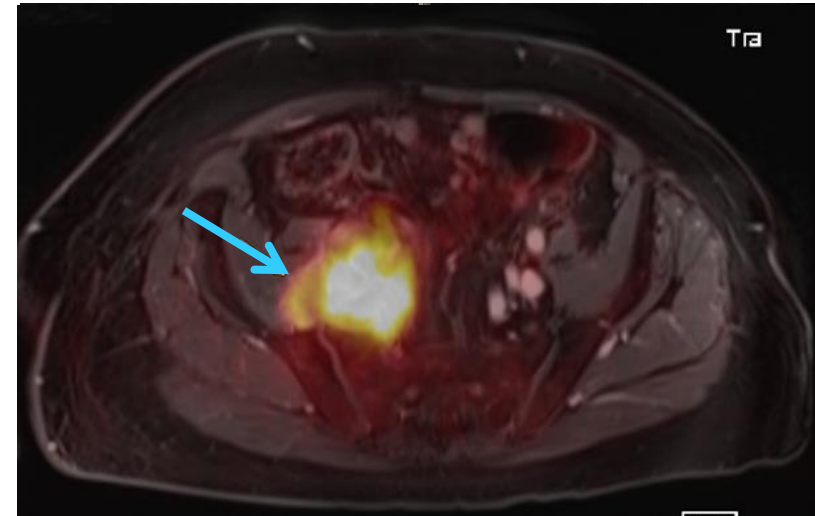
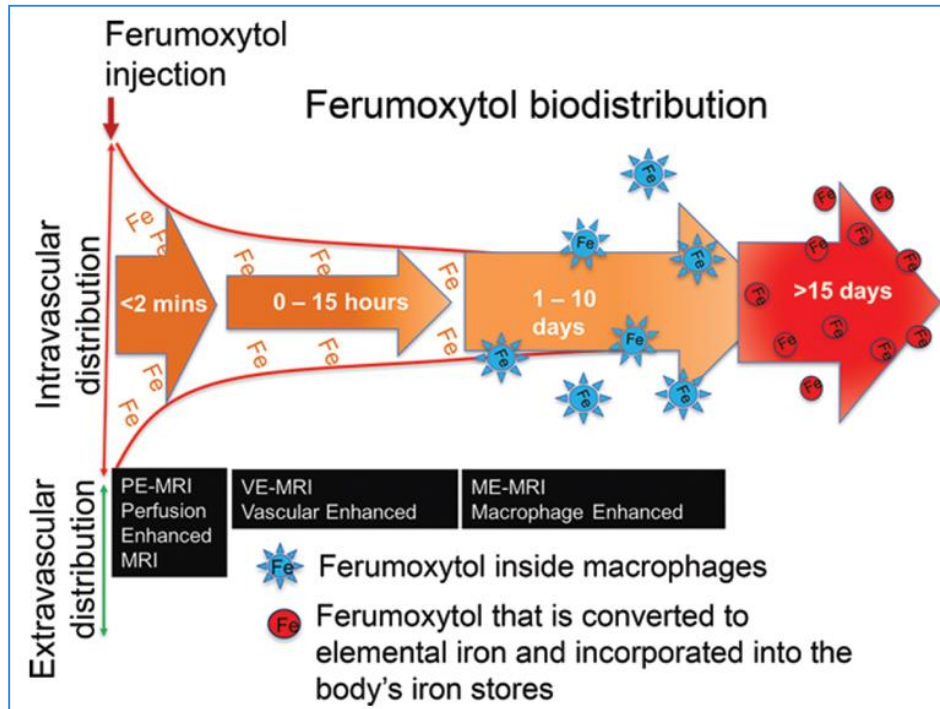
TAM imaging with ferumoxytol MRI

- Ultra-small superparamagnetic iron oxide particles (USPIO) as negative MRI contrast agent

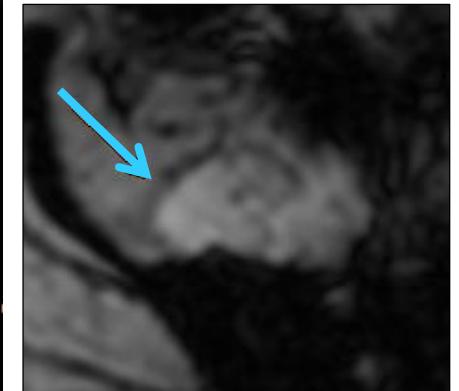
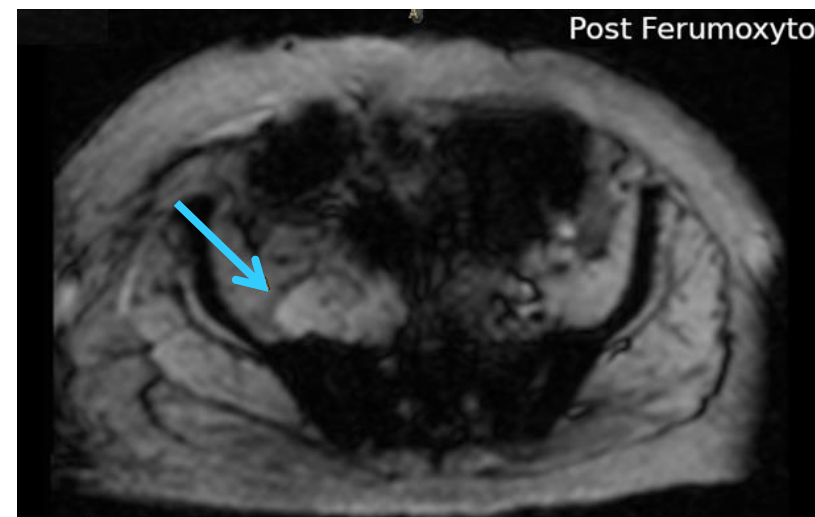
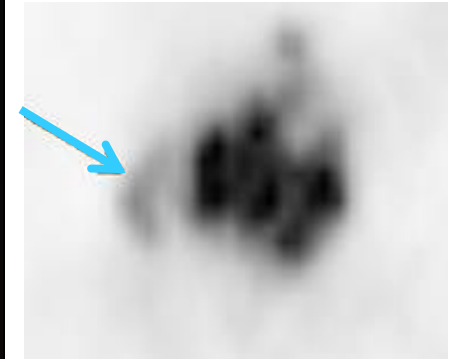


TAM imaging with ferumoxytol MRI

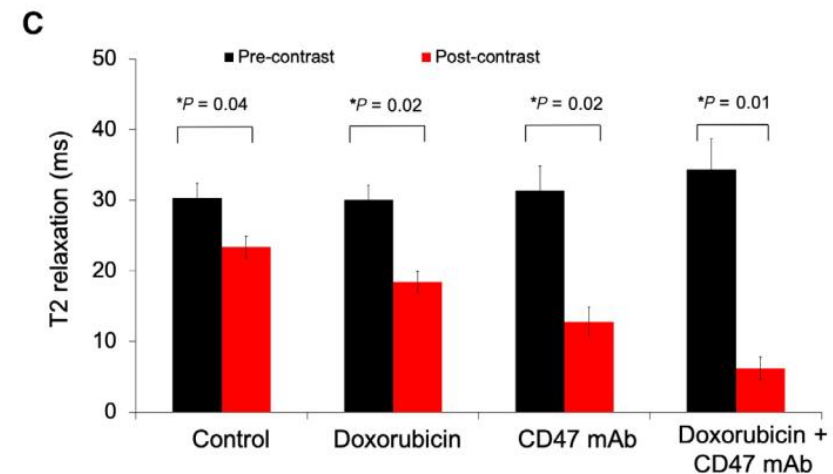
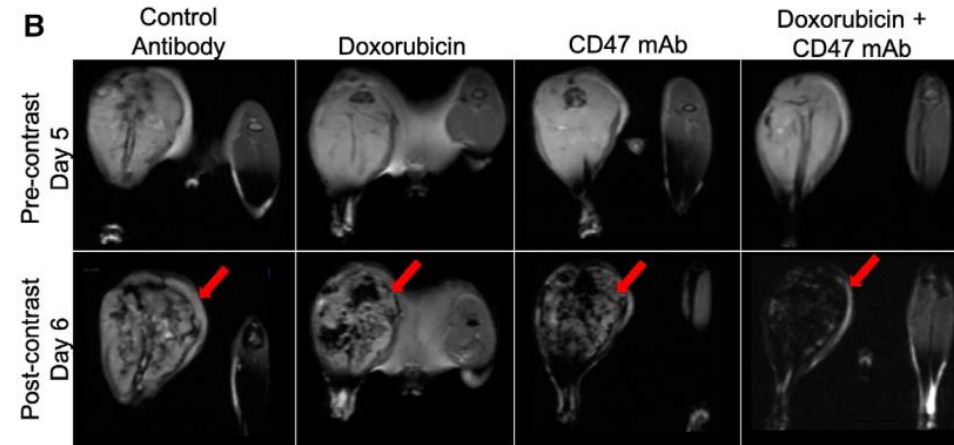
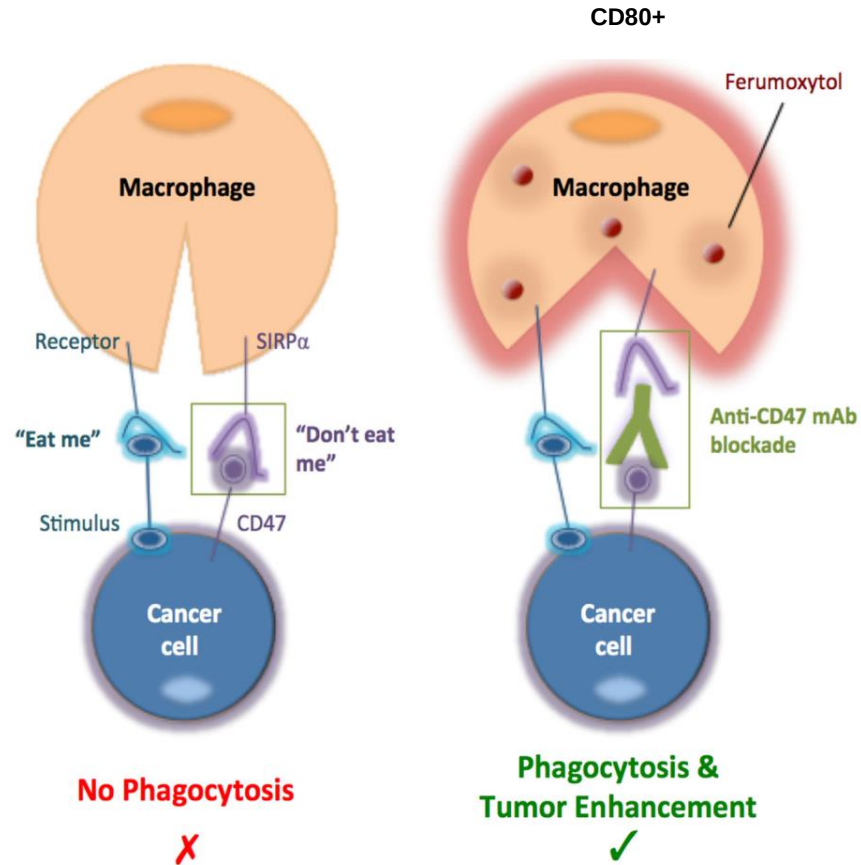
- Ultra-small superparamagnetic iron oxide particles (USPIO) as negative MRI contrast agent



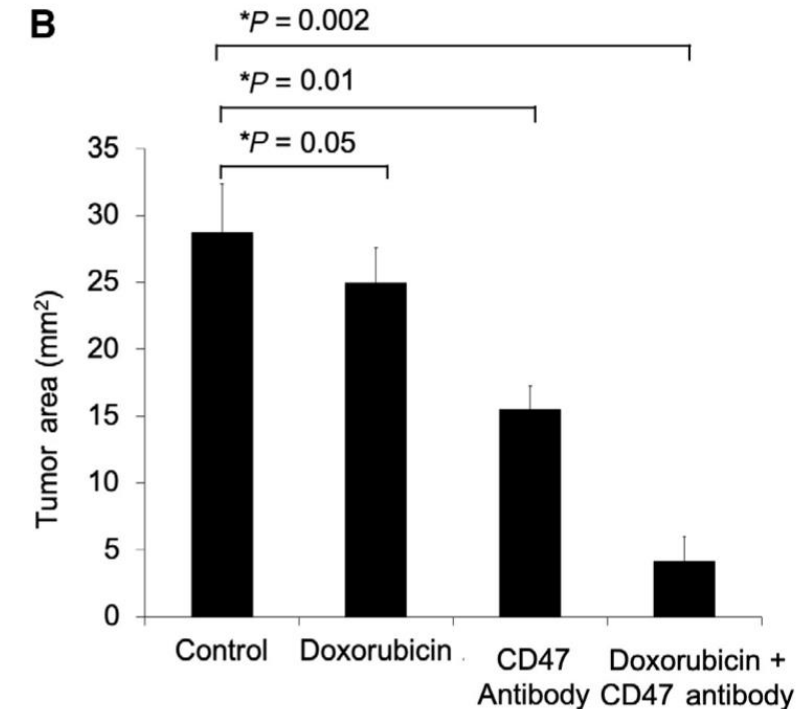
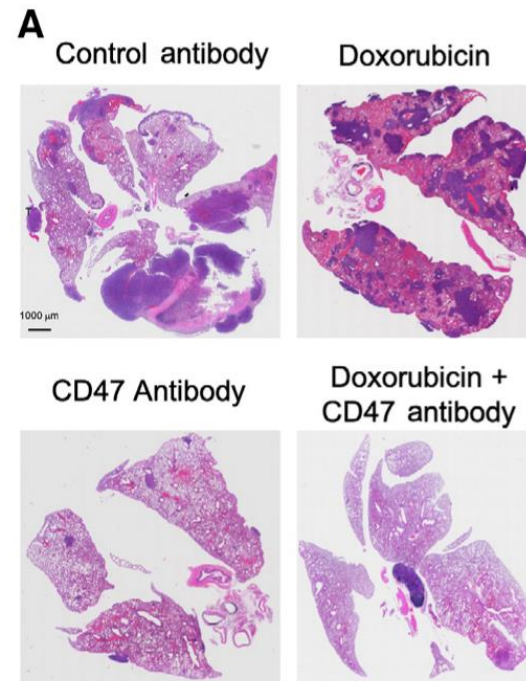
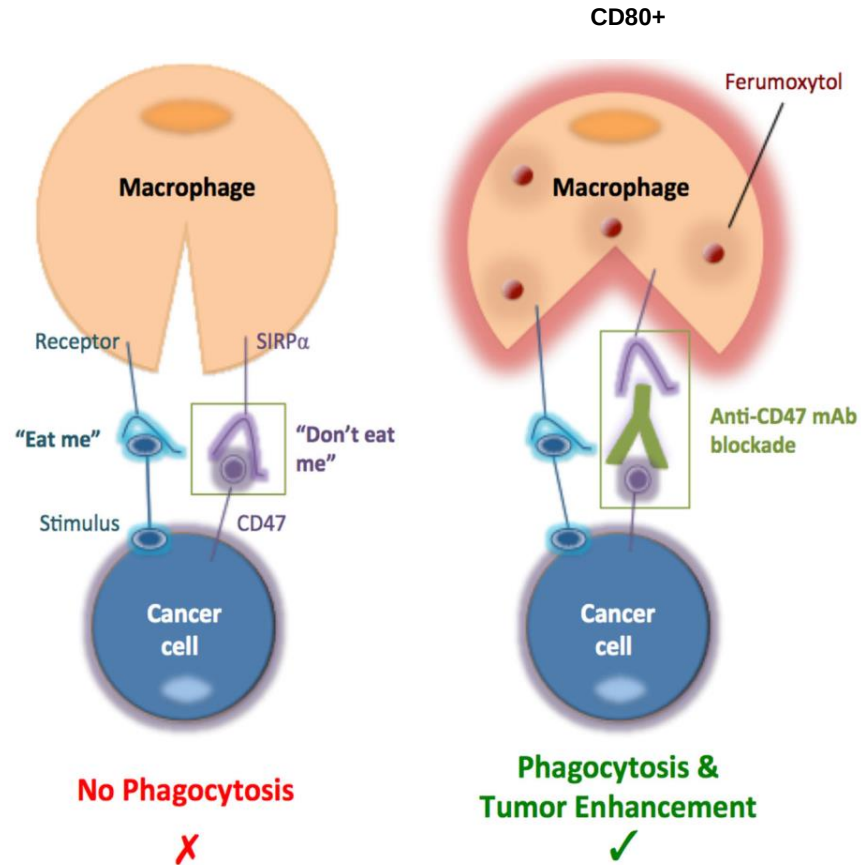
18F-FDG-PET/MR



TAM imaging with ferumoxytol



TAM imaging with ferumoxytol



The bigger picture...

