

# First-in-human evaluation of $^{68}\text{Ga}$ - FAP-2286, a fibroblast activation protein targeted radioligand

Brad Kline

Rahul Aggarwal, Mallika Dhawan, Robin Kate Kelley, Robert Flavell,  
Courtney Lawhn-Heath, Yan Li, Sima Porten, Hope Rugo, Sue Yom,  
Robin Ippisch, Vadim Koshkin, Thomas Hope



University of California  
San Francisco



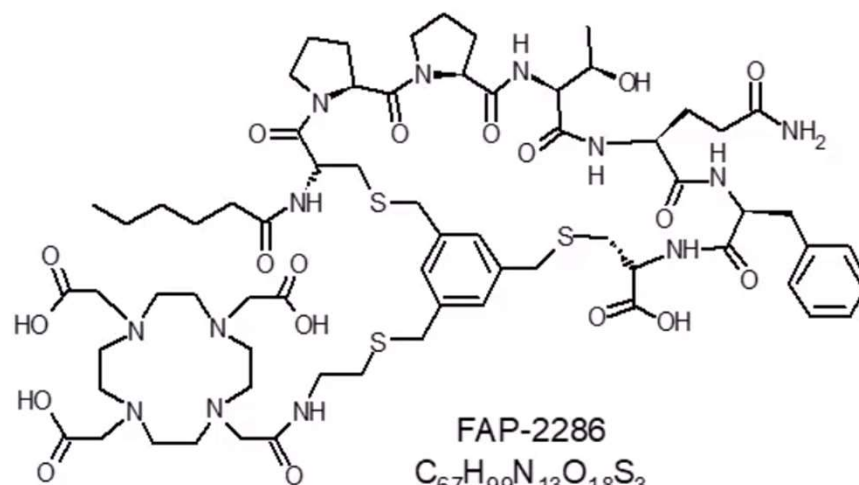


No relevant disclosures

This work is funded by an investigator-initiated trial grant from Clovis Oncology

# FAP-2286

- Cyclic polypeptide linked to a DOTA chelator
  - Does not share the quinolone motif used in the FAPI family of molecules
- Is potent and selective for FAP, and is stable in plasma



FAP-2286  
 $C_{67}H_{99}N_{13}O_{18}S_3$   
MW: 1470.8 amu

# Imaging of Solid Tumors Using $^{68}\text{Ga}$ -FAP-2286

- Three cohorts:
  - Cohort 1 (n=10): Metastatic disease present on conventional imaging defined as having RECIST 1.1 measurable disease or multiple bone metastases.
    - Agnostic to tumor type.
  - Cohort 2 (n=40): Metastatic disease present on conventional imaging defined as having RECIST 1.1 measurable disease or multiple bone metastases.
    - Pathologically confirmed breast cancer, pancreatic adenocarcinoma, sarcoma, castrate resistant prostate cancer, bladder cancer, or colon cancer.
    - Basket subgroup (n=10)
  - Cohort 3 (n=30): No evidence of metastatic disease as defined as the absence of RECIST 1.1 measurable disease or bone metastases.

NCT04621435

# Materials and Methods

- Inclusion criteria:
  - Age  $\geq 18$  years
  - Confirmed solid tumor as defined by one of the three cohorts
- 48 patients enrolled from December 2020 to June 2022

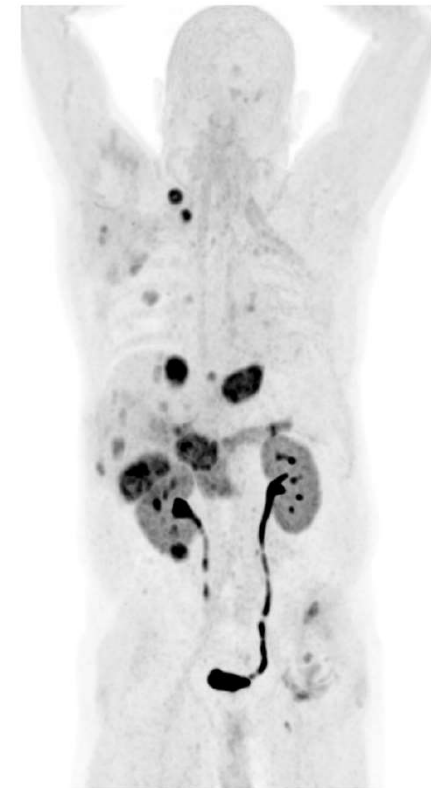
---

Tumor type	# Enrolled
Breast	4
Bladder	17
Prostate	5
Colon	2
Head/neck	6
Pancreas	1
Sarcoma	7
Cholangio/HCC	5
Lung	1
<b>Total</b>	<b>48</b>

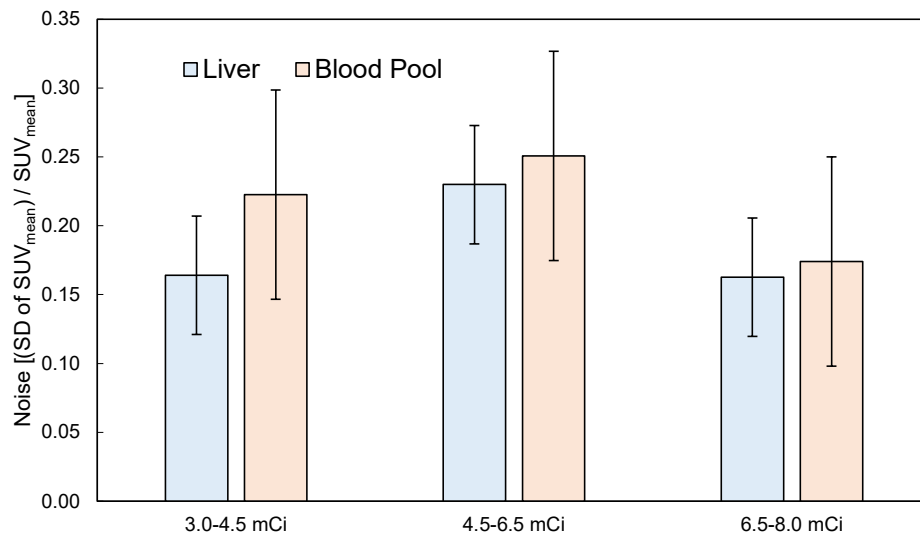
---

# Materials and Methods

- On average, patients received  $5.9 \pm 1.3$  mCi of  $^{68}\text{Ga}$ -FAP-2286 and were imaged  $64 \pm 7$  minutes after injection.
- Reconstructed images were evaluated by a board-certified nuclear medicine physician.
- Tumor-to-background ratio (TBR):  $\text{SUV}_{\text{max lesion}} / \text{SUV}_{\text{mean blood pool}}$
- Image quality:
  - Qualitative: 5-point Likert scale (1 – non-diagnostic to 5 – good image quality)
  - Quantitative:  $\text{Noise} = (\text{SD of } \text{SUV}_{\text{mean}}) / \text{SUV}_{\text{mean}}$
- Biodistribution: Mean SUVs were recorded from VOIs placed on the right lobe of the liver, middle of the spleen, right and left kidneys, and mediastinum (blood pool).
- Scanners: Siemens Vision PET/CT and GE Signa PET/MRI.



# Results: Image Quality and Noise



Dose did not significantly impact noise.

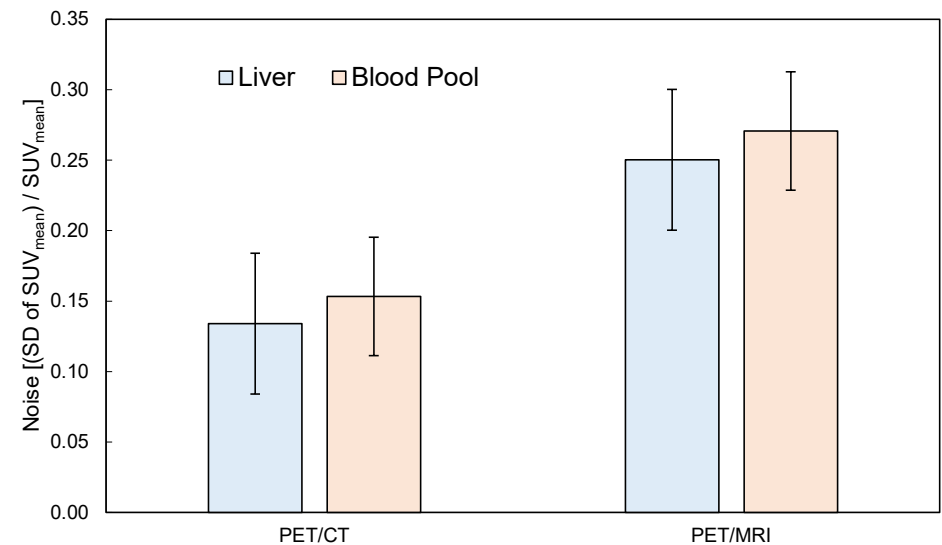
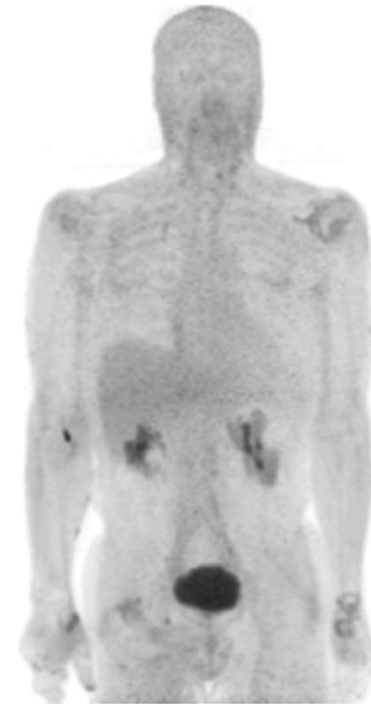
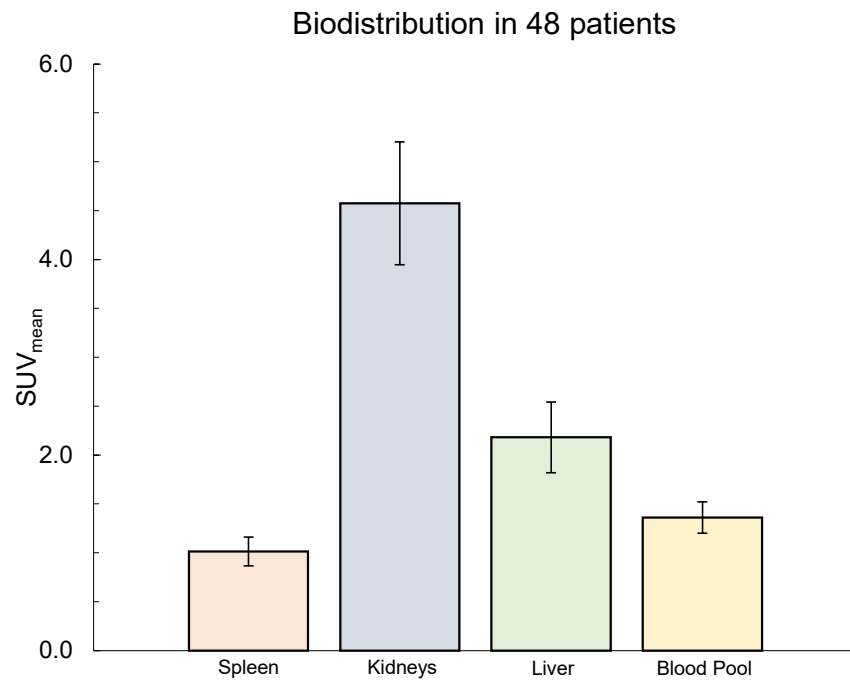


Image reconstruction did impact noise.

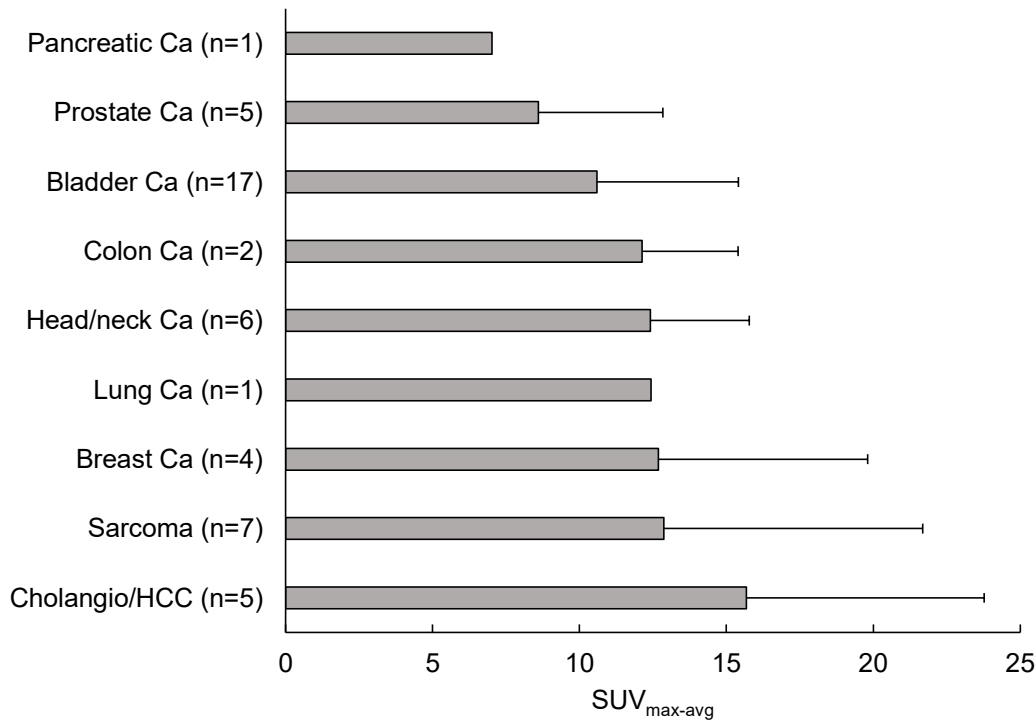
# Results: Biodistribution



Representative bladder cancer patient



# Results: Tumor Uptake

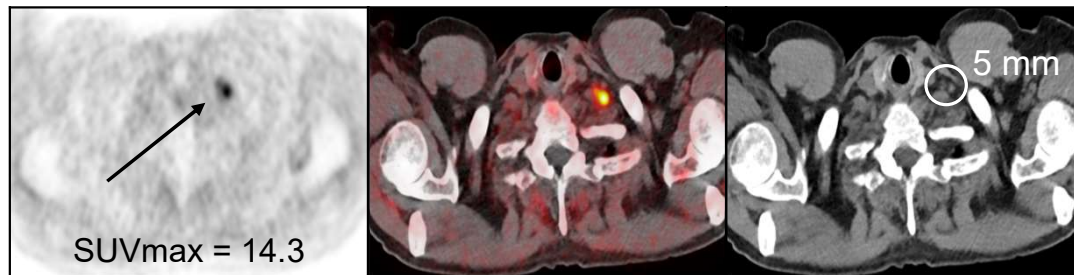
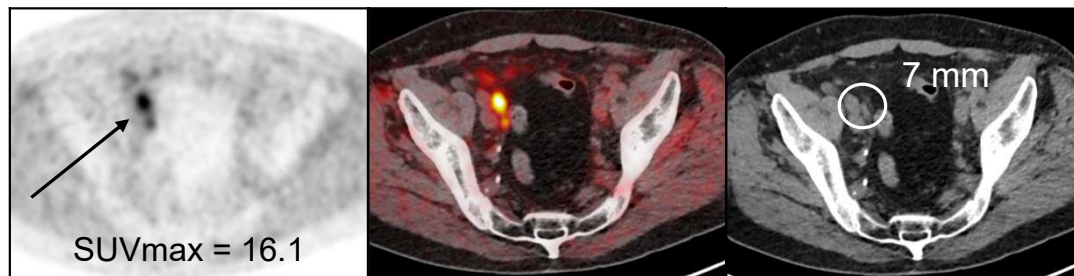


CRPC



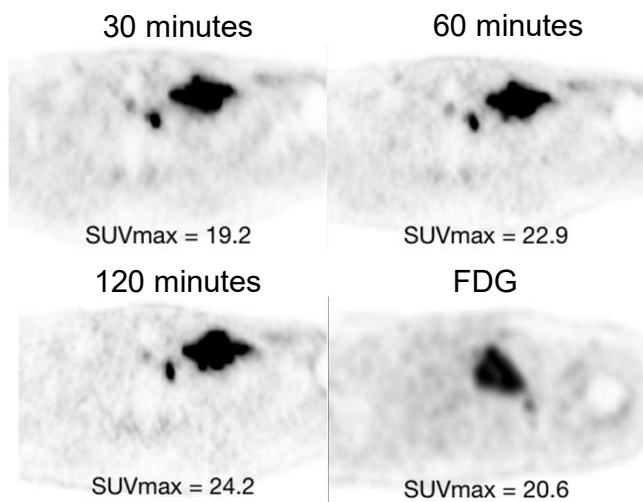
Sarcoma

# Case Example #1: 76-year-old male with bladder cancer



\*No FDG PET comparison available

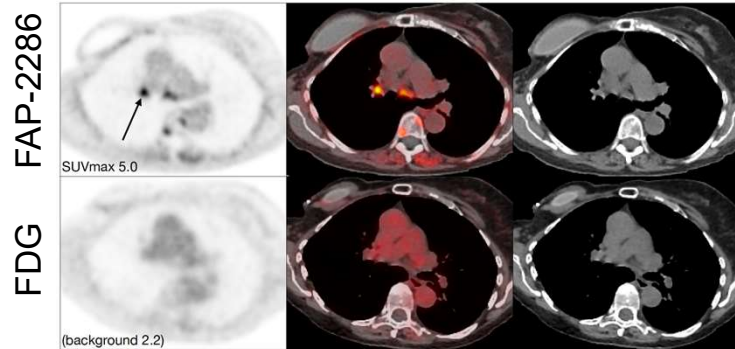
## Case Example #2: 72-year-old male with cholangiocarcinoma



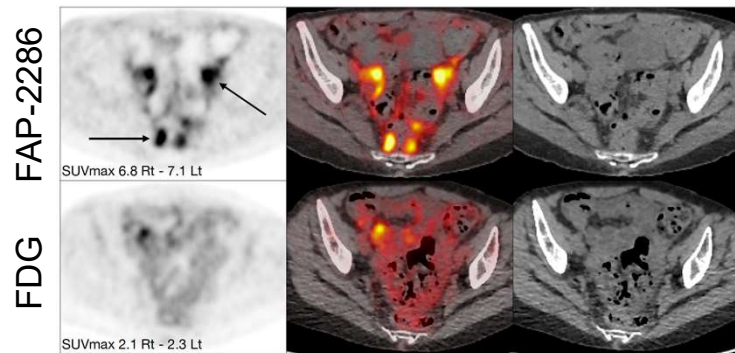
	SUV <sub>mean</sub>		
	30 min	60 min	120 min
Kidney	3.42	3.53	3.76
Liver	3.73	3.16	2.49
Blood pool	1.98	1.44	1.43

# Case Example #3: 72-year-old female with invasive lobular breast cancer

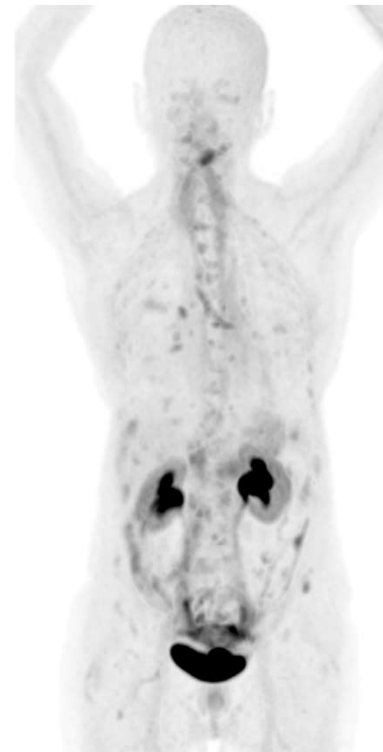
Mediastinal nodes and thoracic spine lesions



Peritoneal carcinomatosis

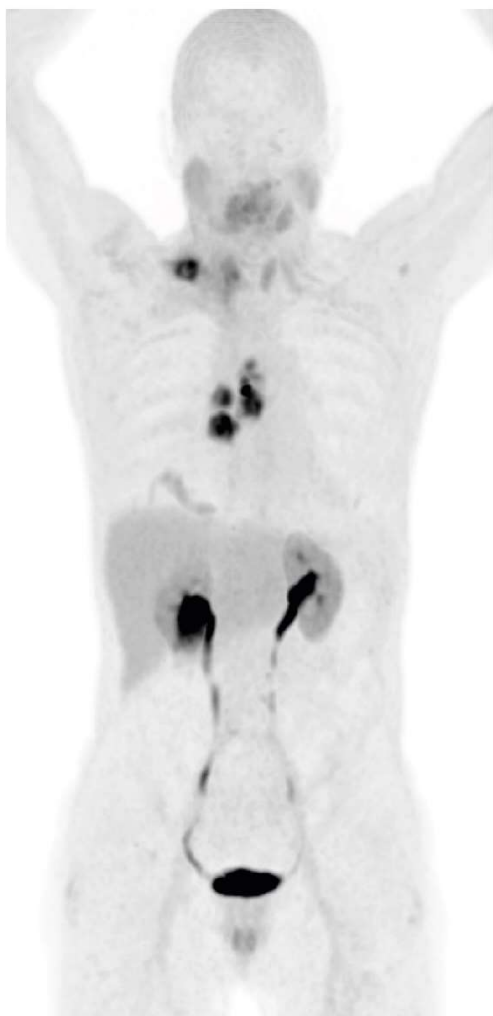


FAP PET



FDG PET





## Summary

- The dose of  $^{68}\text{Ga}$ -FAP-2286 did not have a significant impact on image quality.
- Biodistribution mimics FAPI compounds, with the highest activity in the kidneys consistent with renal excretion.
- $^{68}\text{Ga}$ -FAP-2286 PET is a promising tool for staging patients across cancer types.

# Thank you!

Brad Kline  
brad.kline@ucsf.edu

Rahul Aggarwal, Mallika Dhawan, Robin Kate Kelley, Robert Flavell, Courtney Lawhn-Heath, Yan Li, Sima Porten, Hope Rugo, Sue Yom, Robin Ippisch, Vadim Koshkin, Thomas Hope



This work is funded by an investigator-initiated trial grant from  
Clovis Oncology

University of California  
San Francisco

