

## Supplemental Information

# Optimization of Precursor Synthesis Conditions of (2S,4S)4-[<sup>18</sup>F]FPAg and Its Application in Glioma Imaging

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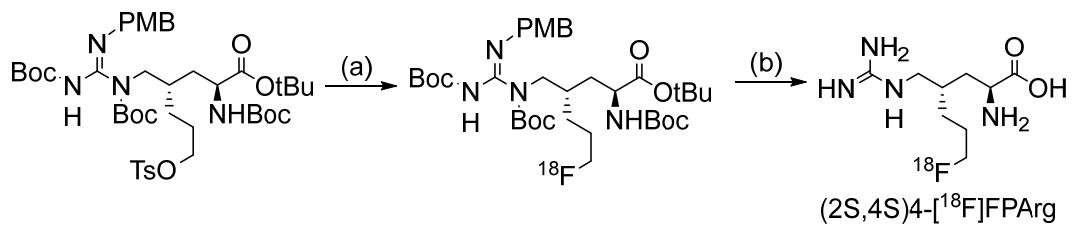
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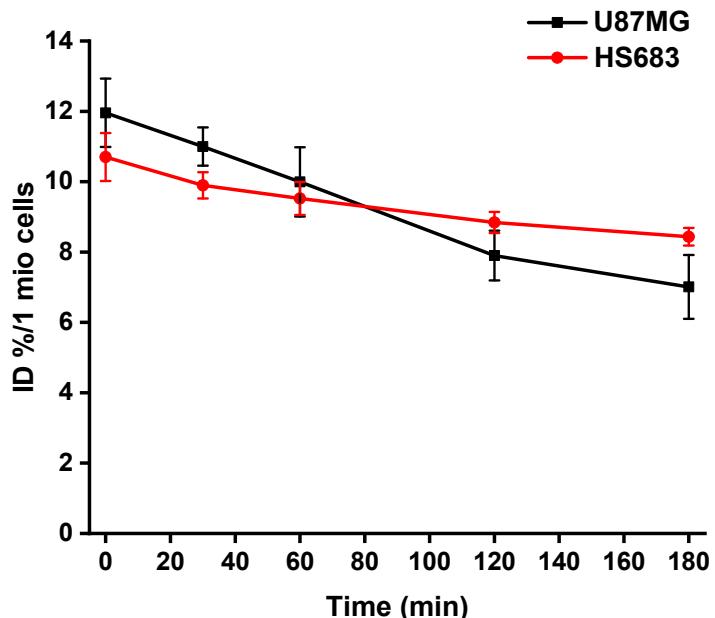
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## 1. Radiolabeling and Efflux Experiments

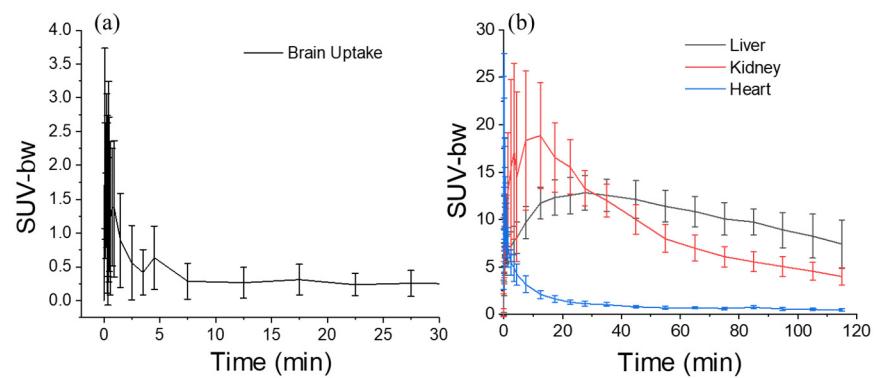


**Scheme S1.** Radiosynthesis of (2S,4S)4-[<sup>18</sup>F]FPArg, Reagents and conditions: (a) 1 mL of 18-crown-6/KHCO<sub>3</sub> (320 mg of 18-crown-6 in 18.6 mL of ACN/58 mg of KHCO<sub>3</sub> in 3.4 mL of water), 100 °C, 15 min, tert-amyl alcohol and acetonitrile (9/1); (b) TFA, anisole, 60 °C, 5 min.

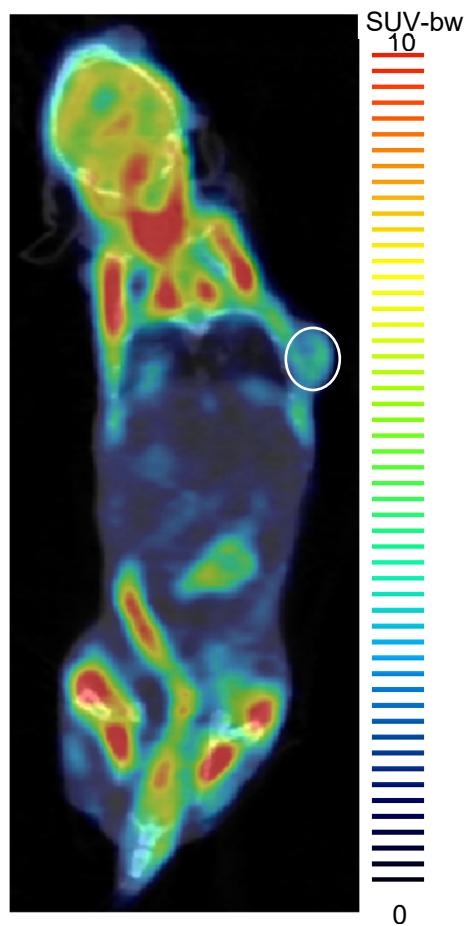


**Figure S1.** Efflux kinetics of (2S,4S)4-[<sup>18</sup>F]FPArg after incubation of U87MG and HS683-Luc cells with radiolabeled compounds for 60 min followed by incubation with a compound-free medium for 0-180 min.

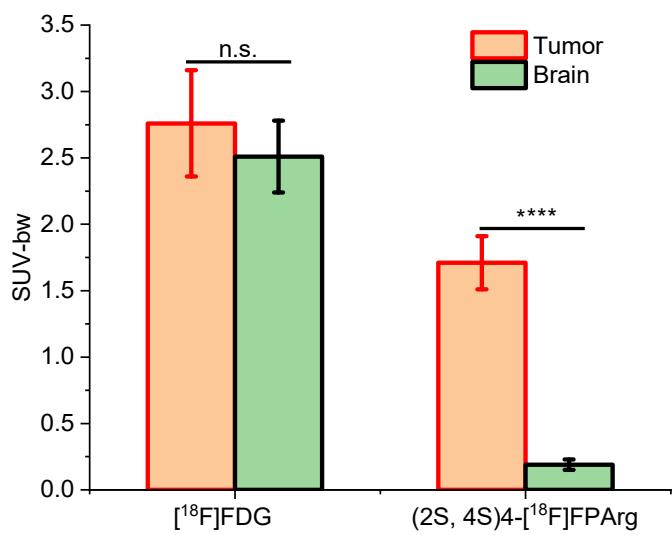
## 2. MicroPET-CT imaging.



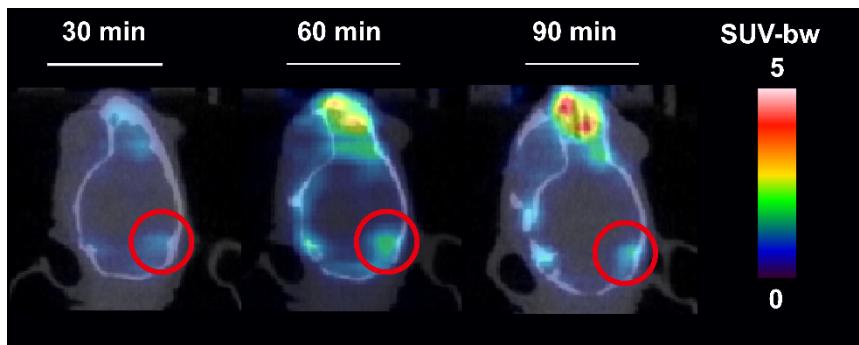
**Figure S2.** Time-activity curves of  $(2S,4S)$ - $[^{18}\text{F}]$ FPArg uptake in U87MG tumor-bearing nude mice brain (a), liver, kidney and heart (b).



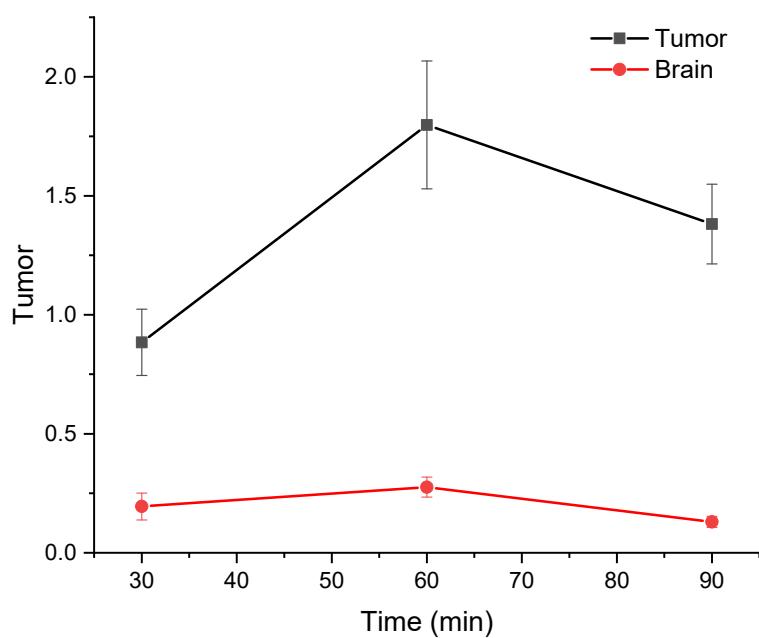
**Figure S3.** The microPET-CT image of  $[^{18}\text{F}]$ FDG in U87MG tumor-bearing nude mice, where white circle indicates glioma area.



**Figure S4.** The SUV of  $[^{18}\text{F}]$ FDG and  $(2\text{S}, 4\text{S})4-[^{18}\text{F}]$ FPArg uptake in brain and tumor of nude mice bearing HS683-Luc tumor at 60 min point (n.s.= no significance, \*\*\*\*,  $p < 0.0001$ ).



**Figure S5.** The microPET-CT coronal image of  $(2\text{S}, 4\text{S})4-[^{18}\text{F}]$ FPArg in HS683-Luc tumor-bearing nude mice at 30, 60 and 90 min point; where red circle indicates glioma area.



**Figure S6.** Time-activity curves of (2S,4S)4-[<sup>18</sup>F]FPAArg uptake in HS683-Luc tumor-bearing nude mice brain and tumor.

### 3. Estimated human dosimetry of (2S,4S)4-[<sup>18</sup>F]FPArg.

**Table S1.** Estimated human dosimetry data of (2S,4S)4-[<sup>18</sup>F]FPArg in mSv/MBq(male).

Target Organ	Total	EDE Cont.	ED Cont.
Adrenals	2.56E-03	0.00E+00	6.41E-06
Brain	5.39E-04	0.00E+00	1.35E-06
Breasts	1.80E-03	2.70E-04	9.00E-05
Gallbladder Wall	2.85E-03	1.71E-04	0.00E+00
LLI Wall	2.47E-03	0.00E+00	2.97E-04
Small Intestine	3.73E-03	2.24E-04	9.33E-06
Stomach Wall	2.41E-03	0.00E+00	2.89E-04
ULI Wall	2.73E-03	1.64E-04	6.82E-06
Heart Wall	2.00E-03	0.00E+00	0.00E+00
Kidneys	8.67E-03	5.20E-04	2.17E-04
Liver	4.09E-03	2.46E-04	2.05E-04
Lungs	2.40E-03	2.88E-04	2.88E-04
Muscle	1.46E-03	0.00E+00	3.65E-06
Ovaries	2.56E-03	6.41E-04	5.13E-04
Pancreas	2.64E-03	0.00E+00	6.60E-06
Red Marrow	1.93E-03	2.32E-04	2.32E-04
Osteogenic Cells	3.14E-03	9.41E-05	3.14E-05
Skin	1.50E-03	0.00E+00	1.50E-05
Spleen	1.85E-03	0.00E+00	4.62E-06
Testes	1.95E-03	0.00E+00	0.00E+00
Thymus	2.05E-03	0.00E+00	5.13E-06
Thyroid	1.96E-03	5.87E-05	9.78E-05
Urinary Bladder Wall	2.41E-03	0.00E+00	1.20E-04
Uterus	2.63E-03	0.00E+00	6.56E-06
Total Body	2.12E-03	0.00E+00	0.00E+00
Effective Dose Equivalent (mSv/MBq)		2.91E-03	
Effective Dose (mSv/MBq)			2.44E-03

#### 4. NMR of compound 4.

