

Electronic Supplementary Information (ESI)

A simple microfluidic platform for rapid and efficient production of the radiotracer [¹⁸F]fallypride

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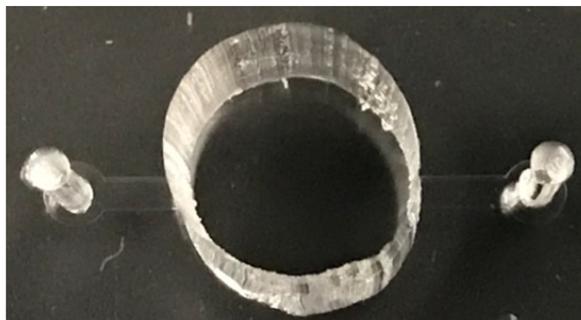
Volume of Beads (μl)	Initial syringe radioactivity (mCi)	Final syringe radioactivity (mCi)	Waste vial radioactivity (mCi)	Radioactivity trapped on chip (mCi)	Efficiency
0.62	10.3	0.6	0.9	8.93	90.1%
0.62	8.7	0.6	0.7	7.5	92.2%
0.62	35.8	1.8	12.6	21.5	65%
0.62	39.1	1.5	14.3	20.9	59.7%
3	95.7	0.34	0.01	93.0	97.7%
3	128.6	4.8	0.1	123.0	95.9%

Table S1 The relationship between the volume of anion exchange beads inside the concentration column and the radioactivity trapped on the microfluidic chip. All listed values are decay-corrected to the time point of initial radioactivity in the syringe.

Volume of K_{222} (μl)	On-chip radioactivity (mCi)	Released radioactivity (mCi)	radioactivity left on-chip (mCi)	Efficiency
50	7.5	4.8	1.7	74%
50	4.6	3.58	0.94	77%
75	4.25	3.84	0.23	95%
100	6.2	5.48	0.1	98%

Table S2 The relationship between the volume of K_{222}/K_2CO_3 used for releasing trapped [^{18}F]fluoride off the concentration column and the releasing efficiency. The efficiency is calculated accounting for the decay of the radionuclide over time.

(a)



(b)



Fig. S1 Photograph of on-chip reaction cavity with no reagent inside (a) and after water evaporation (b).

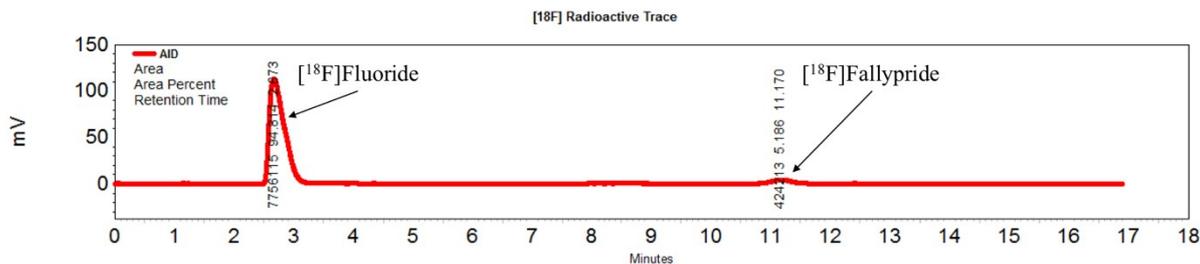


Fig. S2 Radio-HPLC analysis of the waste mixture passed through the C₁₈ column. This injection was taken using the mixture solution flowing out from the purification column after labelling reaction. 95% [¹⁸F]Fluoride was washed off the purification column, and only 5% [¹⁸F]fallypride was lost at this step.

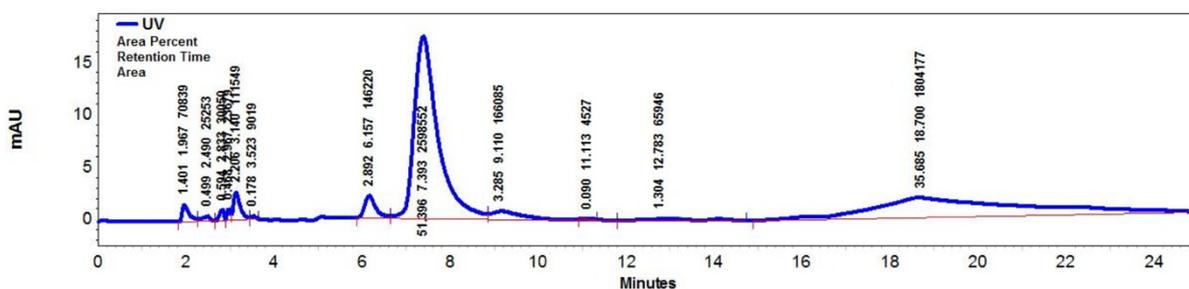


Fig. S3 A typical UV spectrum for the purified [¹⁸F]fallypride, showing product peak at 11.11 min. The presence of minor impurities is observed throughout the spectrum.