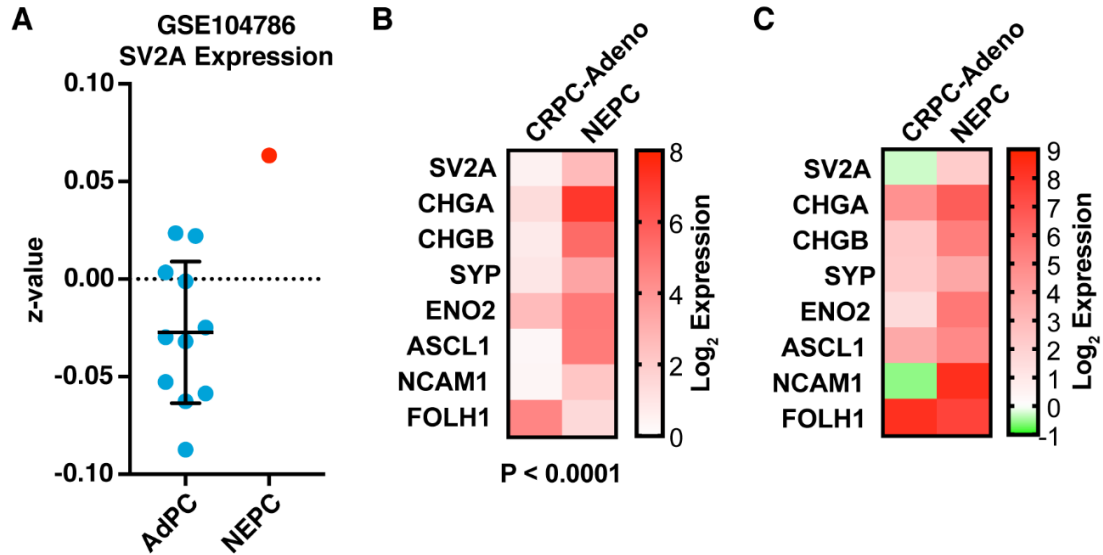


SUPPLEMENTARY INFORMATION



Supplementary Figure S1. The expression of SV2A is elevated with other neuronal biomarkers in the NEPC patient tumors. (A) The RNA expression of SV2A is higher in the NEPC patient tumors ($n = 1$) compared to the AdPC patient tumors ($n = 11$) in the GSE104786 study. (B) The expressions of neuronal biomarkers including SV2A are higher in the NEPC patient tumors ($n = 43$) than those in the CRPC-Adeno ($n = 53$) patient tumors in the combined study published in Beltran et. al in 2016. (C) A similar trend of elevated expressions of SV2A and other neuronal biomarkers in NEPC patient tumors was observed in SU2C 2015 study (CRPC-Adeno, $n = 113$; NEPC, $n = 5$). SV2A, Synaptic vesicle glycoprotein 2A; CHGA, Chromogranin A; CHGB, Chromogranin B; SYP, Synaptophysin; ENO2, Neural enolase; ASCL1, Achaete-Scute family BHLH transcription factor 1; NCAM1, CD56; FOLH1, Folate hydrolase 1, which is the gene that encodes prostate-specific membrane antigen (PSMA).

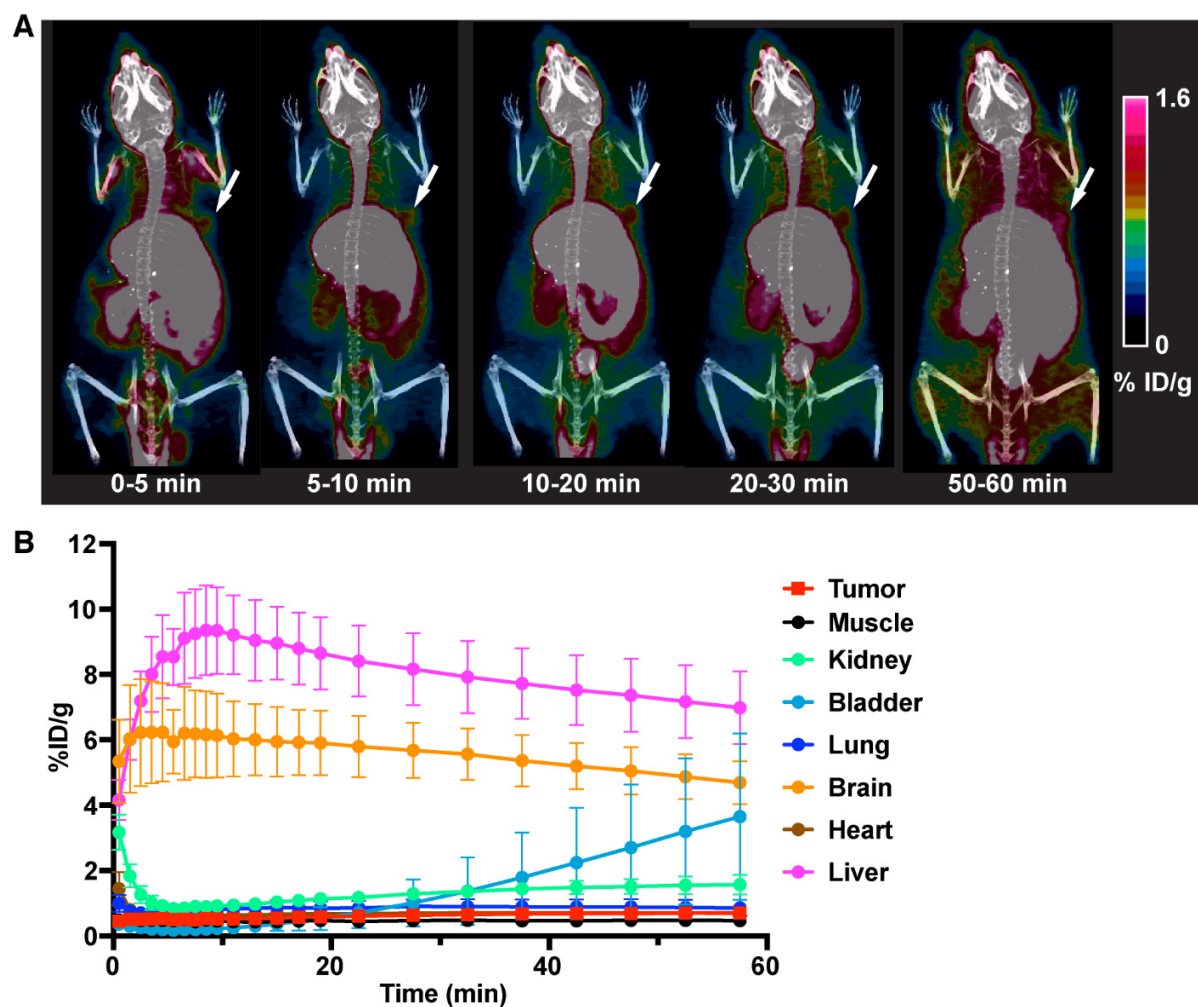


Figure S2. The time-activity curves of ^{18}F -SynVesT-1 uptake in tissues/organs in the NOD-SCID mice bearing subcutaneous NCI-H660 tumor. **(A)** The representative ^{18}F -SynVesT-1 PET images of NCI-H660 tumor-bearing NOD-SCID mouse. The location of tumor is indicated by white arrows. **(B)** The plot demonstrates the TAC curves of ^{18}F -SynVesT-1 in tissues monitored in the first 60 min post injection of ^{18}F -SynVesT-1. The data is presented as mean \pm SD ($n = 3$).

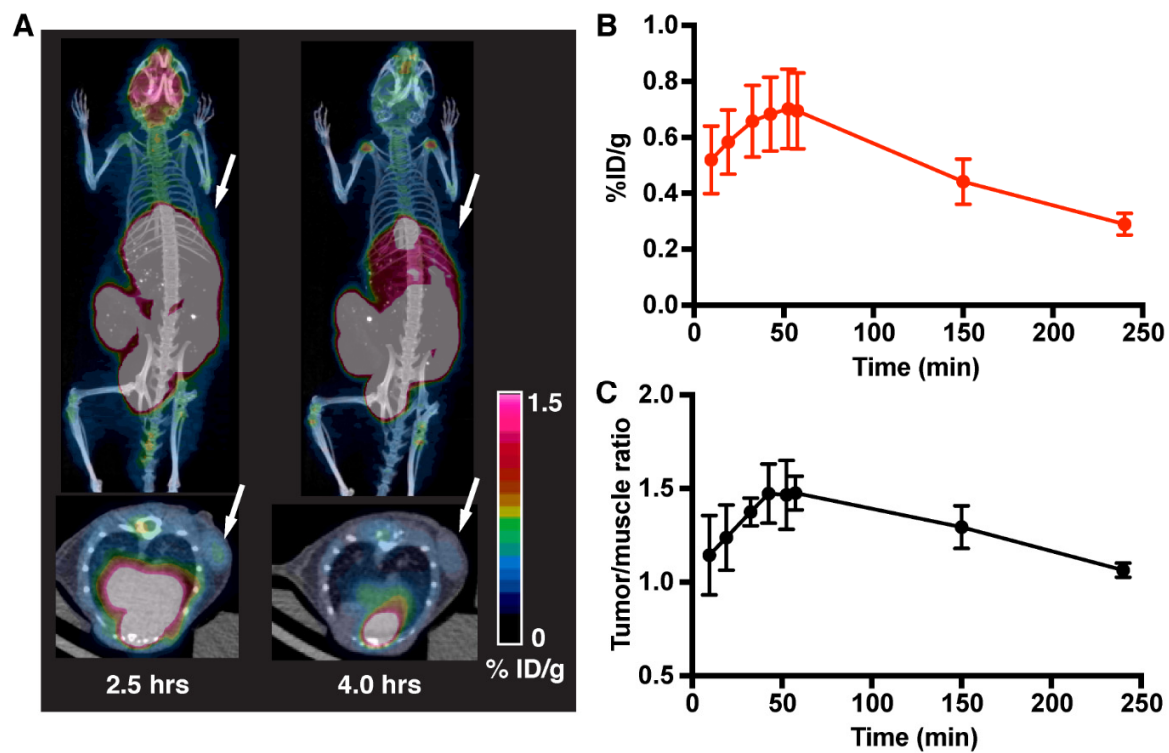


Figure S3. The time-activity curve of ^{18}F -SynVesT-1 uptake in NCI-H660 subcutaneous tumor in NOD-SCID mice up to 4 h. (A) Representative ^{18}F -SynVesT-1 PET images from the same NCI-H660 tumor-bearing mouse at 2.5 h (left) and 4.0 h (right) post injection of ^{18}F -SynVesT-1. The tumor location is indicated by white arrow. (B) The TAC of ^{18}F -SynVesT-1 uptake in NCI-H660 subcutaneous tumor up to 4 h p.i. (C) The tumor/muscle ratio curves along time up to 4 h p.i. The data is presented as mean \pm SD ($n = 3$).