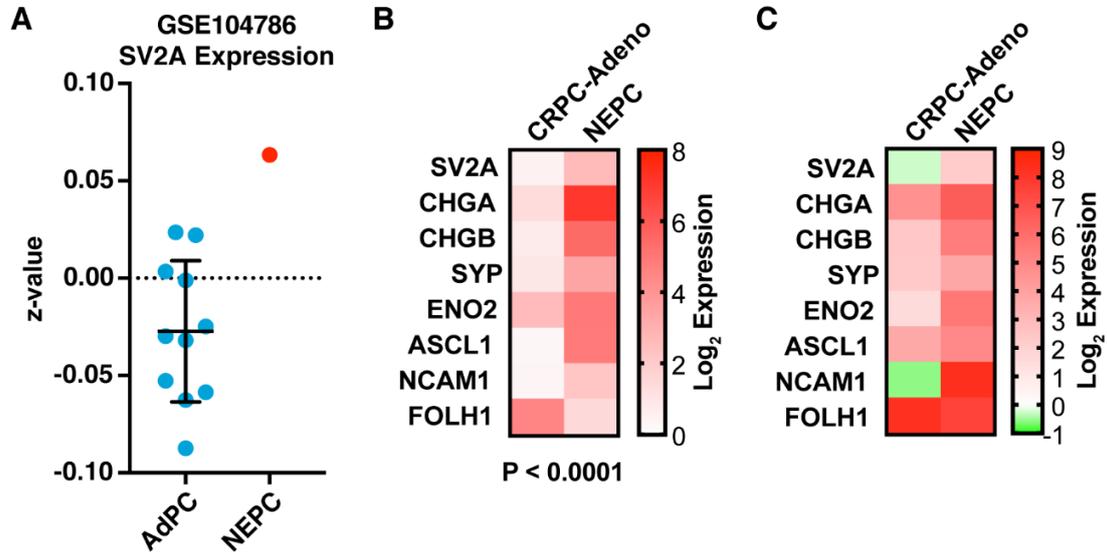
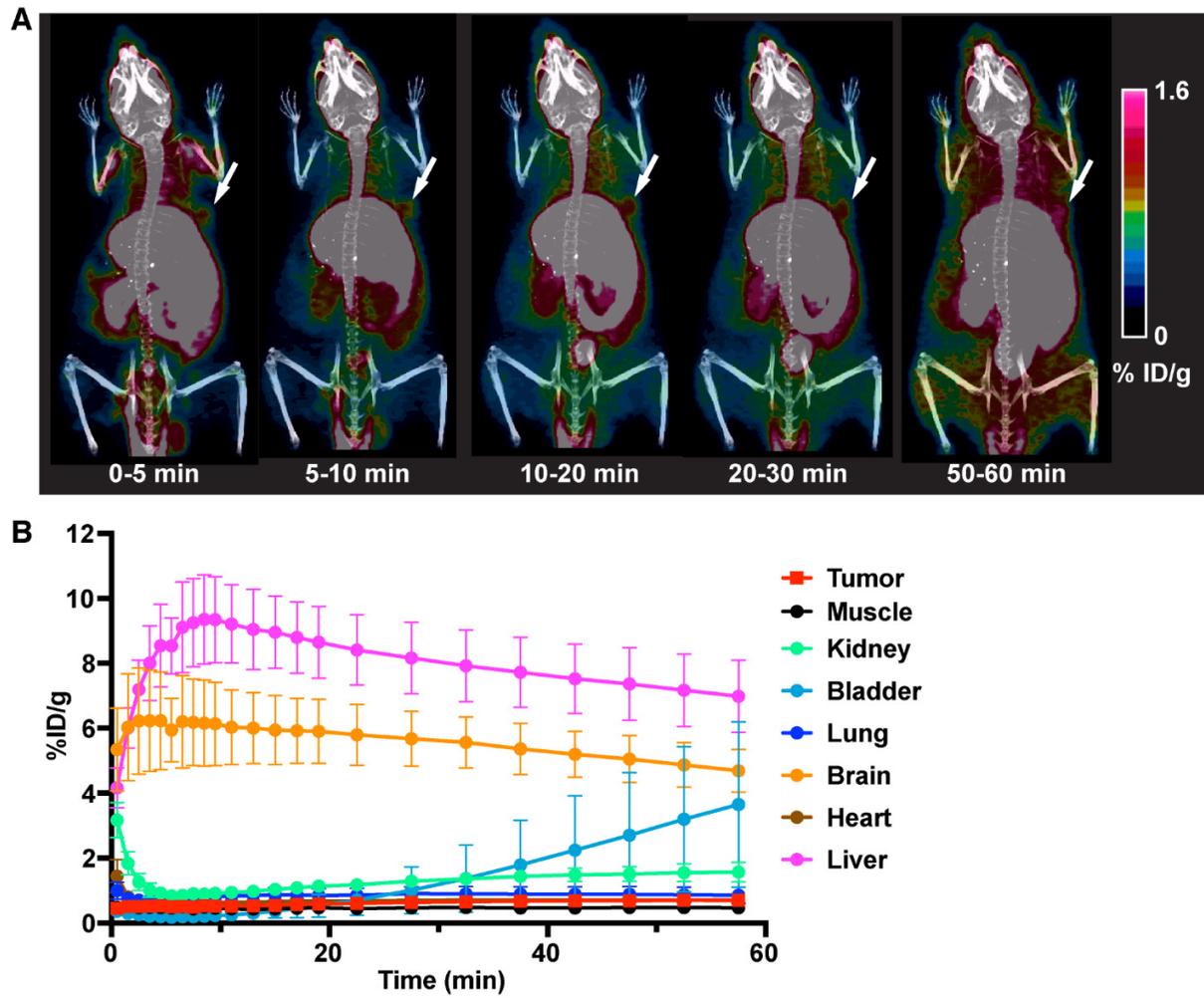


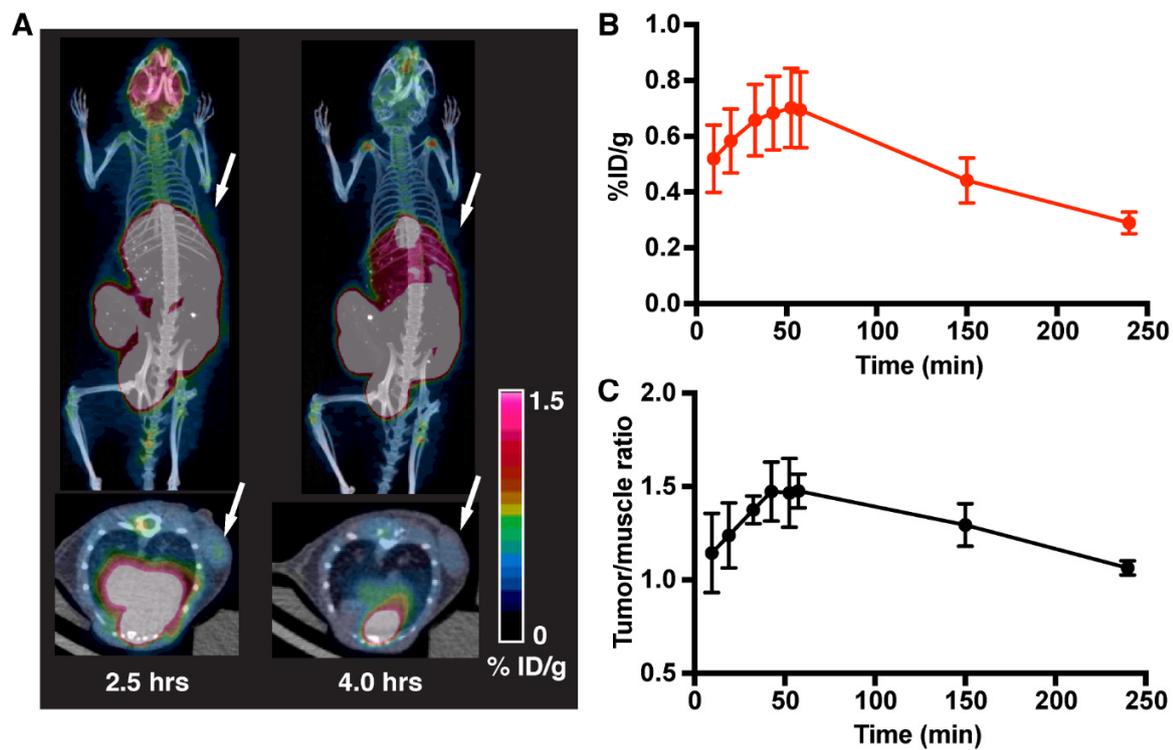
SUPPLEMENTARY INFORMATION



**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  $^{18}\text{F}$ -SynVesT-1 uptake in tissues/organs in the NOD-SCID mice bearing subcutaneous NCI-H660 tumor. **(A)** The representative  $^{18}\text{F}$ -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  $^{18}\text{F}$ -SynVesT-1 in tissues monitored in the first 60 min post injection of  $^{18}\text{F}$ -SynVesT-1. The data is presented as mean  $\pm$  SD ( $n = 3$ ).



**Figure S3. The time-activity curve of  $^{18}\text{F}$ -SynVesT-1 uptake in NCI-H660 subcutaneous tumor in NOD-SCID mice up to 4 h.** (A) Representative  $^{18}\text{F}$ -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  $^{18}\text{F}$ -SynVesT-1. The tumor location is indicated by white arrow. (B) The TAC of  $^{18}\text{F}$ -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 ( $n = 3$ ).