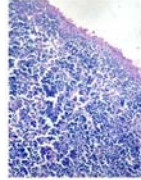
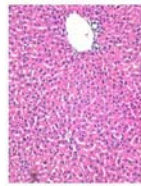


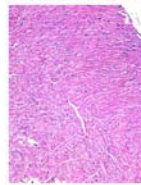
Lung



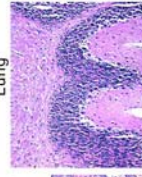
Spleen



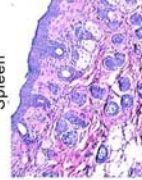
Liver



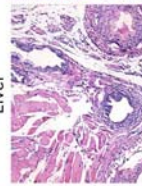
Heart



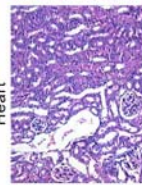
Brain



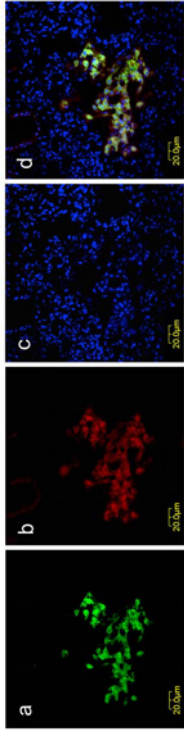
Skin



Prostate



Kidney



SUPPLEMENTARY FIGURE LEGEND

Fig.1. Whole-body optical imaging of mice received FITC-svTMTP1. Mice with MKN-45sci orthotopic gastric tumor were received 210 μ g FITC-conjugated svTMTP1 peptide intravenously at day 21 post orthotopic transplantation. The mice were then anesthetized 2 h later and examined for fluorescence under a whole-body optical imaging system. The whole-body external imaging (*a*) and the abdominal cavity internal imaging (*b*) were performed. The gastric tumor, metastatic tumor, lung, liver, spleen, and kidney were removed (*c*) for fluorescence imaging (*d*).

Fig. 2. Long term toxicity assay of TMTP1 in PC-3M-1E8 tumor-bearing mice. 800 μ g TMTP1 peptide was injected intraperitoneally to tumor-bearing mice (n=4) twice a week for total 4 weeks. The organs including heart, liver, spleen, lung, kidney, prostate, skin and brain were removed, and prepared for H&E staining. No obvious damage was found in all the organs. Magnification: $\times 200$.

Fig.3. TMTP1 peptide specifically recognizes early stage cancer metastases. MKN-45sci orthotopic gastric tumor-bearing mice were injected with 210 μ g FITC-TMTP1 peptide intravenously at D16 post tumor implantation. 24 h later, the mice were necropsied, and the livers were removed and prepared for fluorescence examination or immunostaining. *a-d*, showed the same microscopic field with different staining. *a*, FITC-TMTP1 was present in an atypical metastatic focus with heavy lymph-cell infiltration and infrequent pyknotic neoplastic cells (green). *b*, the tumor cells were identified by anti-CA72-4 antibody staining (red). *c*, the nuclei of

the tumor cells were visualized by DAPI staining (blue). *d*, the merged image of a, b and c.

Magnification: $\times 400$.

Supplementary table 1. Paired metastatic cell lines and their metastatic potential (34)

Cell line	Origin	Tumorigenicity frequency in nude mice	Spontaneous metastasis frequency in nude mice
PC-3M-1E8	Highly metastatic variant from human prostate carcinoma (PC-3M)	100%	100%
PC-3M-2B4	Non-metastatic cancer variant from human prostate carcinoma (PC-3M)	87.5%	0%
PG-BE1	Highly metastatic variant from human giant cell carcinoma (PG)	100%	100%
PG-LH7	Non-metastatic cancer variant from human giant cell carcinoma (PG)	100%	0%