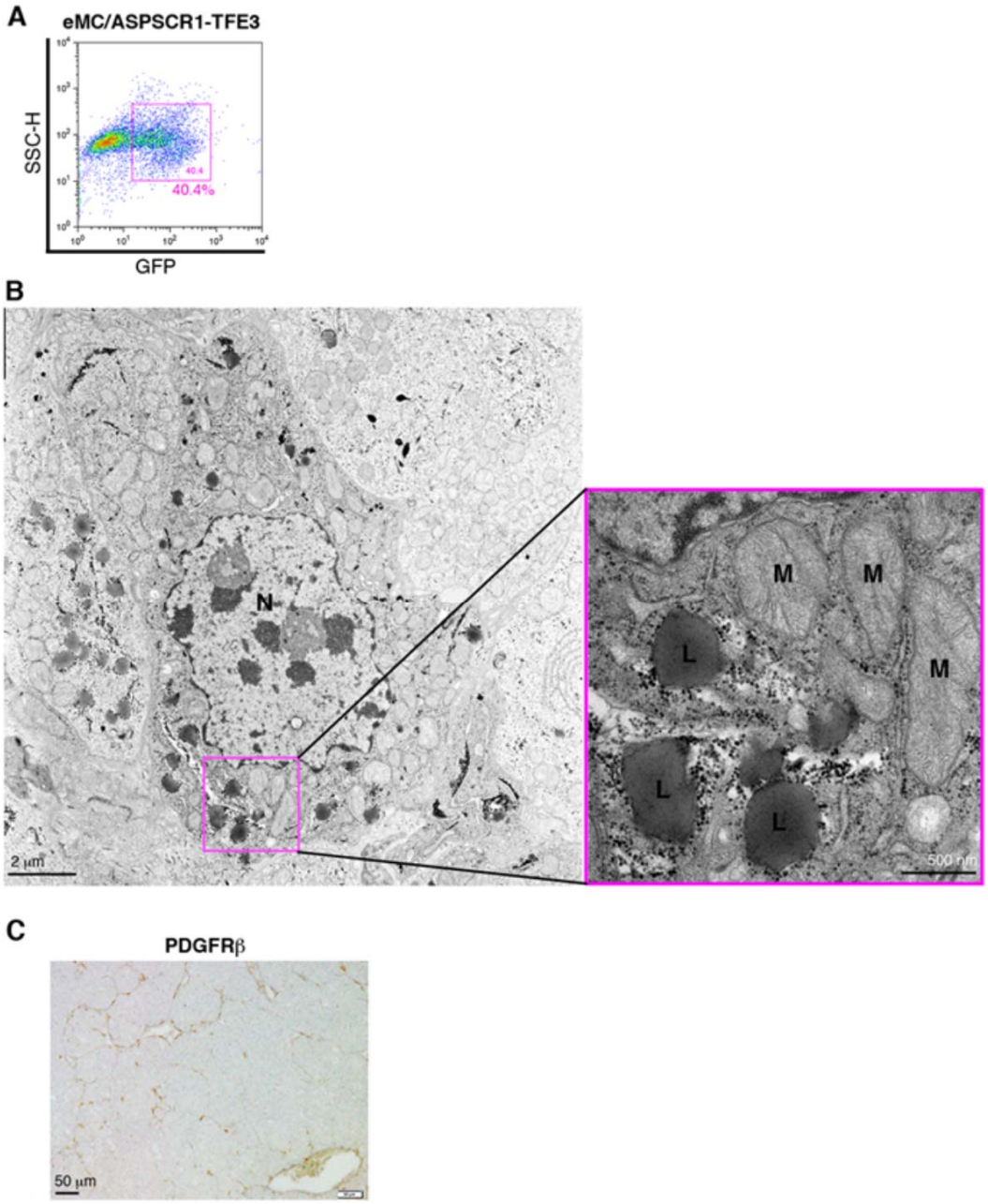
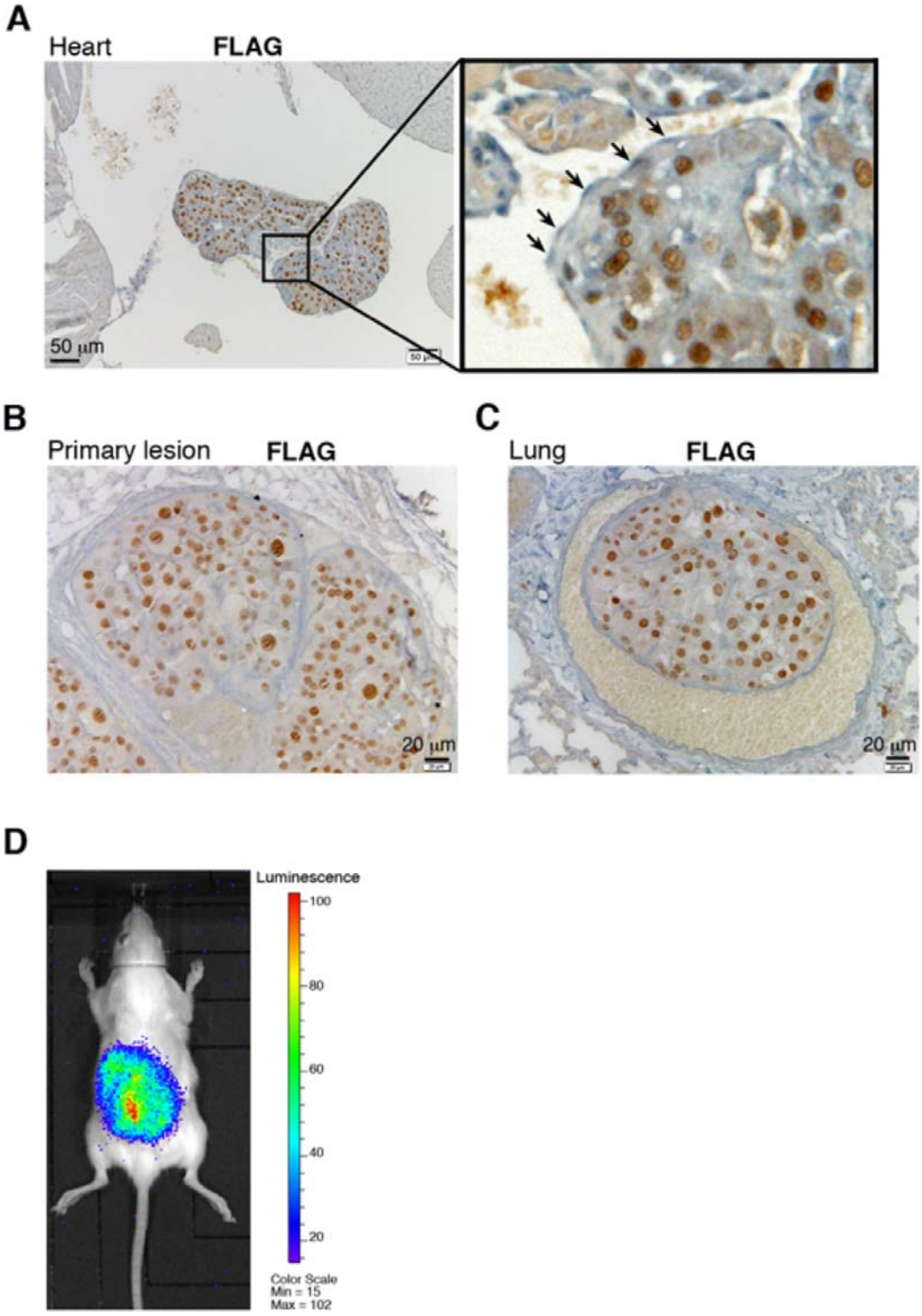


Supplemental Figure S1.

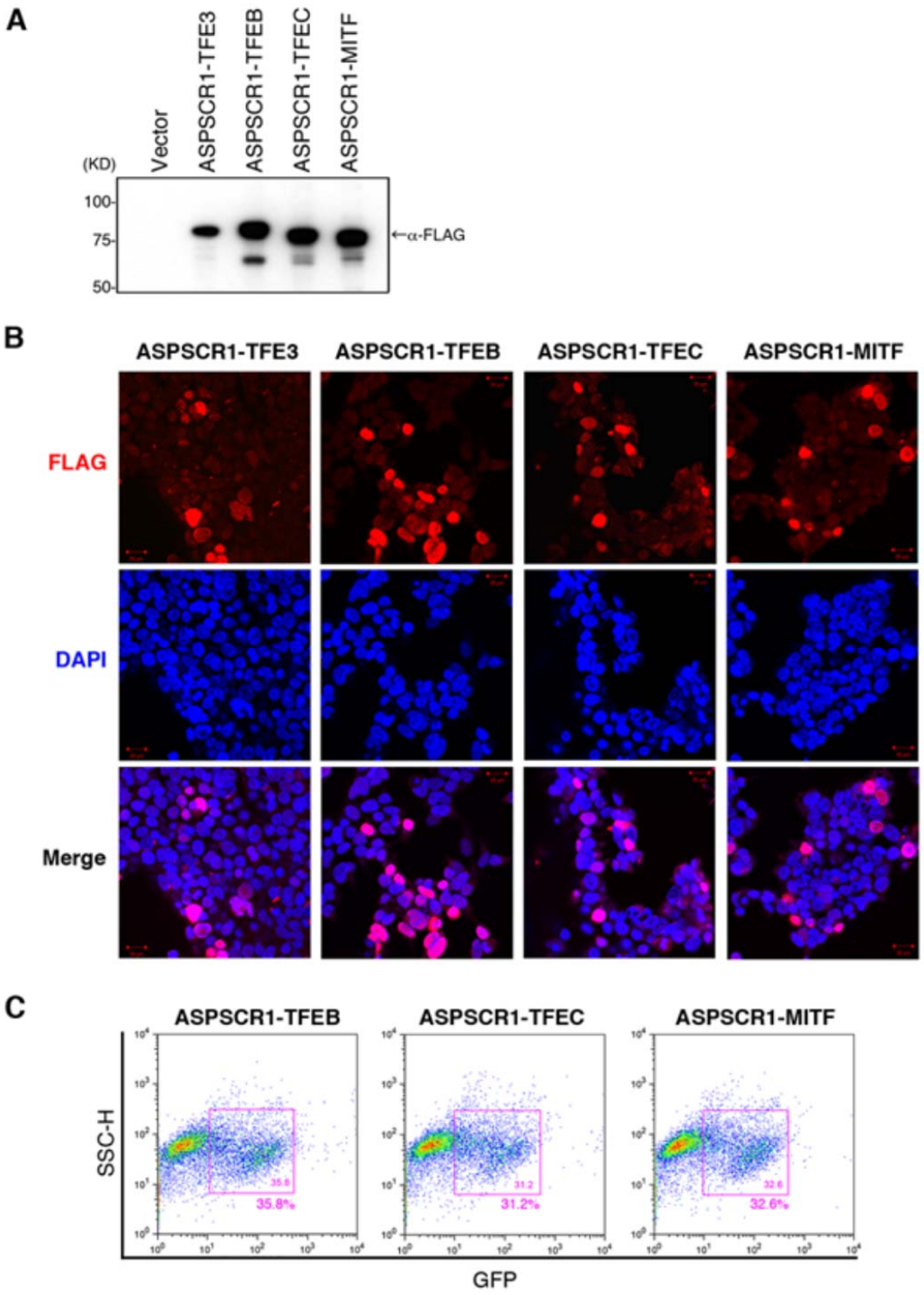
Development of the mouse ASPS model. **A,** Transduction efficiency of eMCs by the pMYs-ASPSCR1-TFE3 retrovirus. The positive fraction of infected cells is shown. **B,** Electron microscopy of mouse ASPS tumor cells. The inset shows abundant mitochondria (M) and lysosomes (L). **C,** Intra-tumor blood vessels are positive for PDGFRB, a marker for hemangiopericytes.



Supplemental Figure S2.

Anti-FLAG immunostaining of tumor emboli covered with non-neoplastic cells. **A,** Intracardiac tumor emboli. The inset shows FLAG-negative

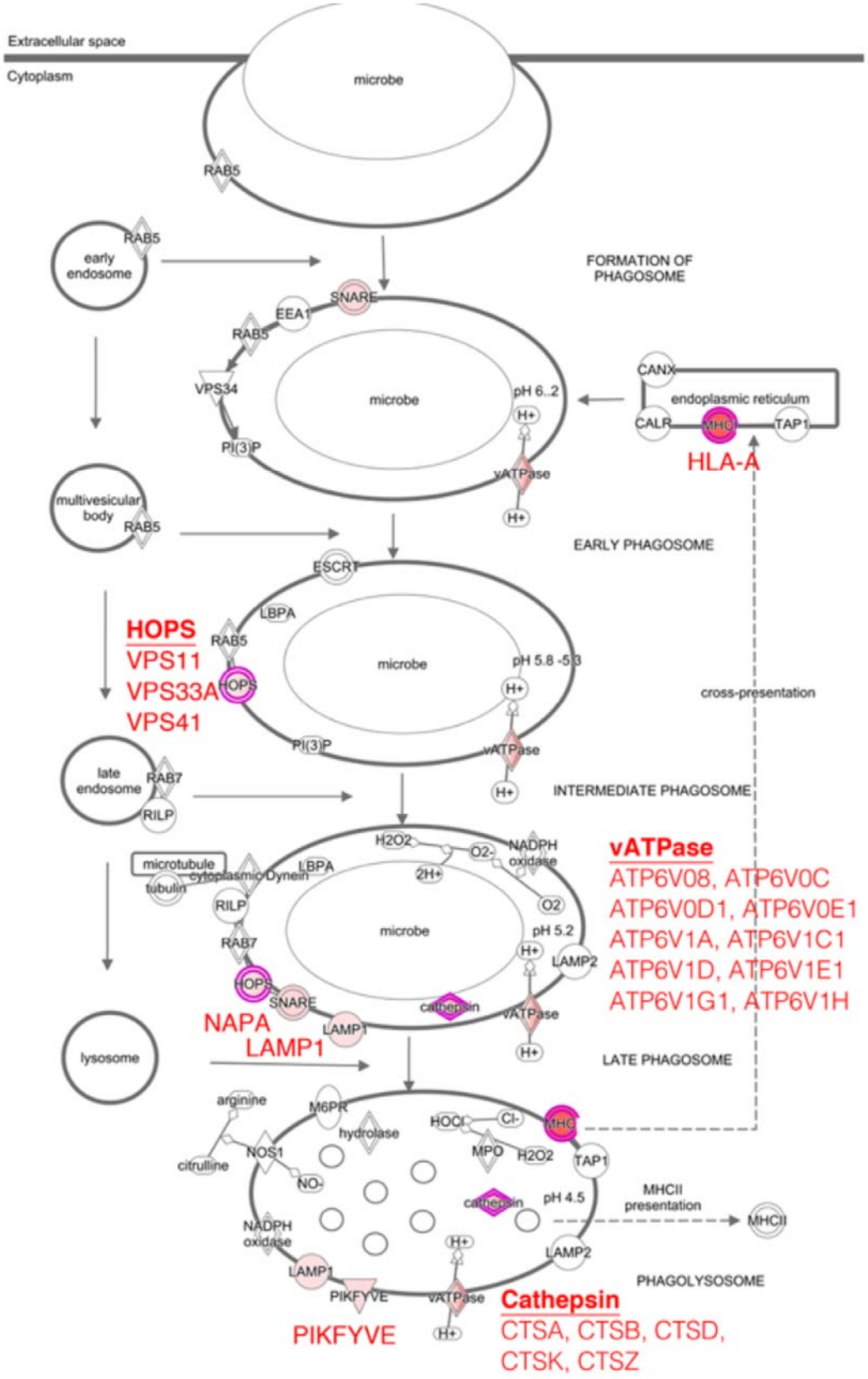
epithelium-like cells on the surface. **B** and **C,** FLAG-negative flat cells were also present in the intravasation of tumor at the primary lesion (**B**) and in lung metastasis (**C**). **D,** *In vivo* imaging of ASPS infected with the pMYs-ASPSCR1-TFE3-IRES-Luc retrovirus and transplanted into GFP tg mice on a Balb/c background.



Supplemental Figure S3.

eMCs transduced with ASPSCR1 fusion genes. **A,** Western blotting of 293T cells transfected with pMYs vectors bearing the indicated fusion genes.

Flag-tagged fusion proteins are indicated. **B**, Immunofluorescence of 293T cells transfected with *ASPSCR1* fusion genes. Nuclear localization of fusion proteins was confirmed for all transfectants. **C,** Transduction efficiencies of eMCs infected with mutant ASPSCR1 fusion retroviruses.


Extracellular space
Cytoplasm
microbe
RAB5
early endosome
FORMATION OF PHAGOSOME
SNARE
EEA1
VPS34
PI(3)P
pH 6..2
H+
vATPase
CANX
endoplasmic reticulum
CALR
MHC I
TAP1
HLA-A
multivesicular body
EARLY PHAGOSOME
ESCRT
LBPA
HOPS
VPS11
VPS33A
VPS41
pH 5.8 -5.3
cross-presentation
late endosome
RAB7
RILP
INTERMEDIATE PHAGOSOME
H2O2
O2-
NADPH oxidase
2H+
O2
microtubule
tubulin
cytoplasmic Dynein
pH 5.2
LAMP2
SNARE
cathepsin
NAPA
LAMP1
lysosome
LATE PHAGOSOME
vATPase
ATP6V08, ATP6V0C
ATP6V0D1, ATP6V0E1
ATP6V1A, ATP6V1C1
ATP6V1D, ATP6V1E1
ATP6V1G1, ATP6V1H
arginine
M6PR
hydrolase
HOCl
Cl-
MHC
citrulline
NOS1
NO·
MPO
H2O2
TAP1
pH 4.5
MHCII presentation
MHCII
PHAGOLYSOSOME
PIKFYVE
Cathepsin
CTSA, CTSB, CTSD,
CTSK, CTSZ

Supplemental Figure S4.

Genes involved in the phagosome maturation pathway are upregulated in ASPS tumors and eMCs expressing ASPSCR1-TFE3. Upregulated genes are indicated in red. The illustration was made by using the IPA software.