SUPPLEMENTAL MATERIAL

Table S1. Major Resources.

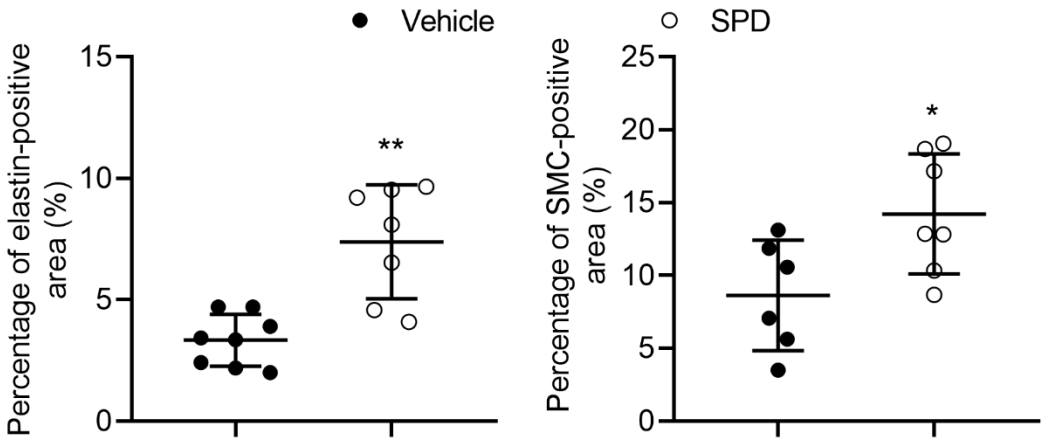
Animals (in vivo studies)

Species	Vendor or Source	Background Strain	Sex
Mice	Xiangya School of Medicine, CSU	C57BL/6	Male

Antibodies

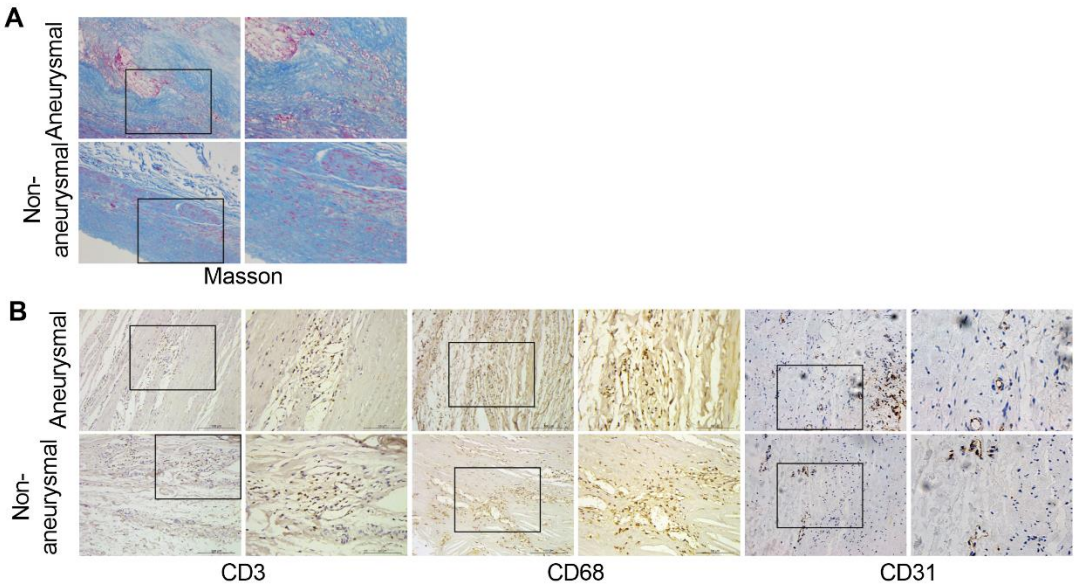
Target antigen	Vendor or Source	Catalog #	Working concentration
CD3	Abcam	ab16669	IHC 1:400
CD31	Abcam	ab28364	IHC 1:100
CD68	Abcam	ab125212	IHC 1:400
SMC α actin	Abcam	ab5694	IHC 1:800 IF 1:400
Myeloperoxidase	Abcam	ab208670	IHC 1:500
SQSTM1/p62	Abcam	ab91526	IHC 1:200 IF 1:100
SQSTM1/p62	Abcam	ab109012	WB 1:10000
LC3B	CST	3868T	WB 1:1000
Beclin1	proteintech	11306-1-AP	WB 1:1000
GAPDH	Abcam	ab181602	WB 1:10000
mTOR	CST	2983S	WB 1:4000
p-mTOR	Santa Cruz	sc-293133	WB 1:2000
Keap1	Abcam	ab227828	WB 1:1000
FITC anti-mouse CD45	Biolegend	103107	0.2ug/10^6 cells
PE/Cy7 anti-mouse CD11b	Biolegend	101216	0.2ug/10^6 cells
APC anti-mouse Ly-6G	Biolegend	127614	0.2ug/10^6 cells
PE anti-mouse Ly-6C	Biolegend	128007	0.2ug/10^6 cells
PE/Cy7 anti-mouse CD11b	Biolegend	101216	0.2ug/10^6 cells
Violet 421™ anti-mouse F4/80	Biolegend	123137	0.2ug/10^6 cells

Figure S1. Quantification of elastin and SMA in experimental AAA.



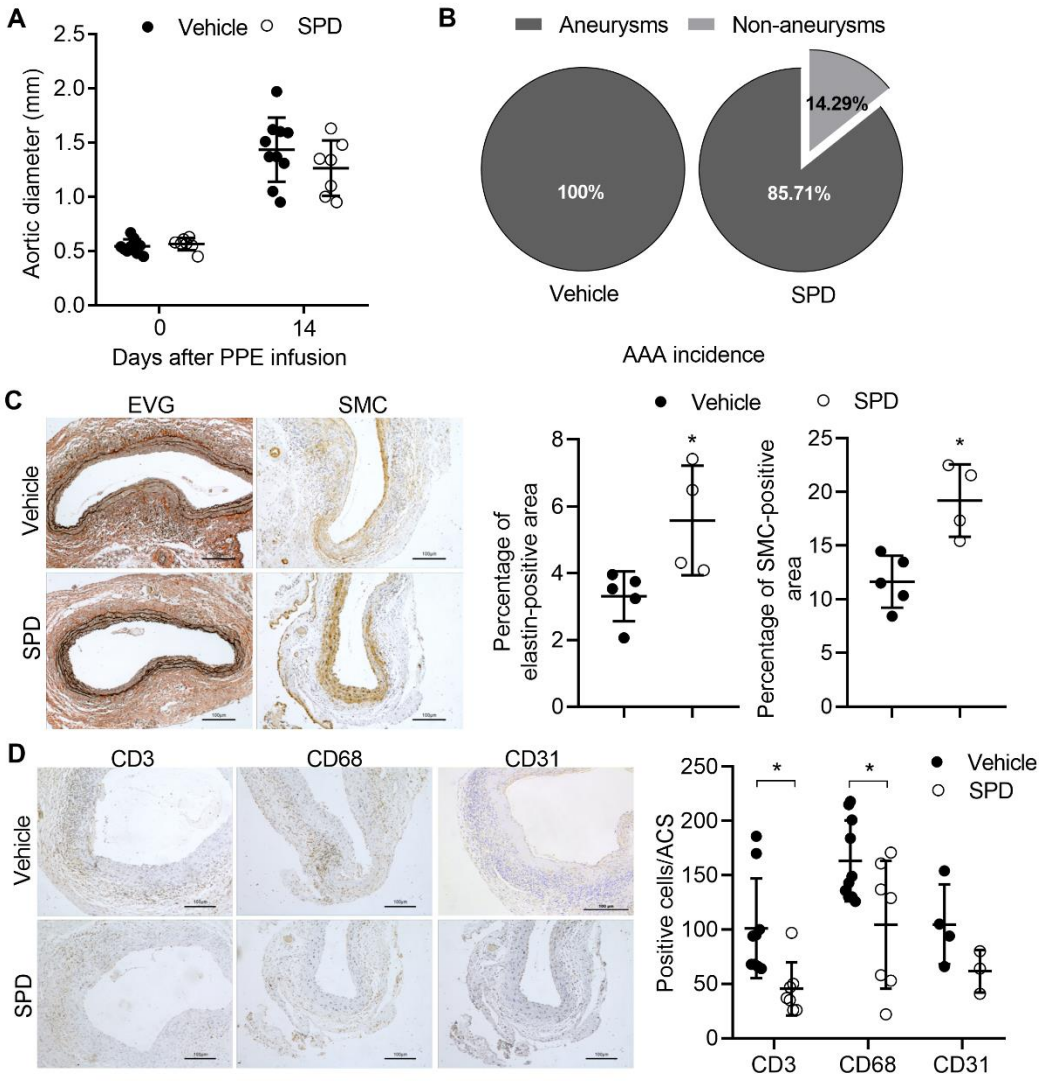
The percentage of elastin (P< 0.001) and SMC (P= 0.028) positive area in the total medial area was quantified with ImageJ software in each group. Data are presented as mean ± SD. unpaired *t* test, **P* < 0.05 *and* ***P* < 0.01 *vs*. vehicle group, n=4-7 in each group.

Figure S2. Masson and IHC staining in human AAA and aorta.



Human abdominal aneurysm and adjacent non-aneurysm aortic segments were conducted Masson and IHC staining. Representative images for muscle fiber (red), $CD3^+$ T cells, $CD68^+$ macrophages and $CD31^+$ blood vessels in each group were shown above.

Figure S3. Spermidine treatment reduces aortic remodeling in established experimental AAA.



Vehicle and SPD treatment was performed in established experimental AAA from 3 days after PPE infusion to execution. (A) Aortic diameter (mm) of mice treated with vehicle (n= 10) or SPD (n=7) at day 0 and day 14. Data are presented as mean ± SD. Unpaired *t* test, $P = 0.237$ *vs*. vehicle group. (B) AAAs developed in 10 mice (100%, 10/10) within 14 days in the vehicle group, whereas AAAs developed in 6 mice (85.71%, 6/7) within 14 days in the SPD group. Fisher's exact test, $P= 0.41$ *vs*. vehicle

group. (C) Representative images and positive area for elastin (P= 0.004) and SMC (P= 0.017) in each group. (D) Representative images for $CD3^+$ T cells (P= 0.012), $CD68^+$ macrophages (P= 0.023) and $CD31^+$ blood vessels (P= 0.128) and quantified as the positive stain cells per ACS and SMC in each group. Scale bar =100 μm. Data are presented as mean ± SD. Unpaired *t* test, ** $P < 0.01$ and *$P < 0.05$ *vs*. vehicle group, n= 3-8 in each group.