Supplemental Figure 1: Scheme of experimental arm. **A**) Intraperitoneal delivery of drugs for WT mice including aortic perfusion of elastase alone (n=7), perfusion with heat inactivated elastase alone (n=9), flutamide (50 mg/kg) (n=9), and ketoconazole tablet (150mg/kg over 14 days) (n=9). **B**) Pharmacologic androgen receptor blockade and androgen synthesis disruption significantly attenuate experimental aneurysm formation. Aortic diameter measured with video micrometry of mice treated with intraperitoneal flutamide and ketoconazole revealing significant

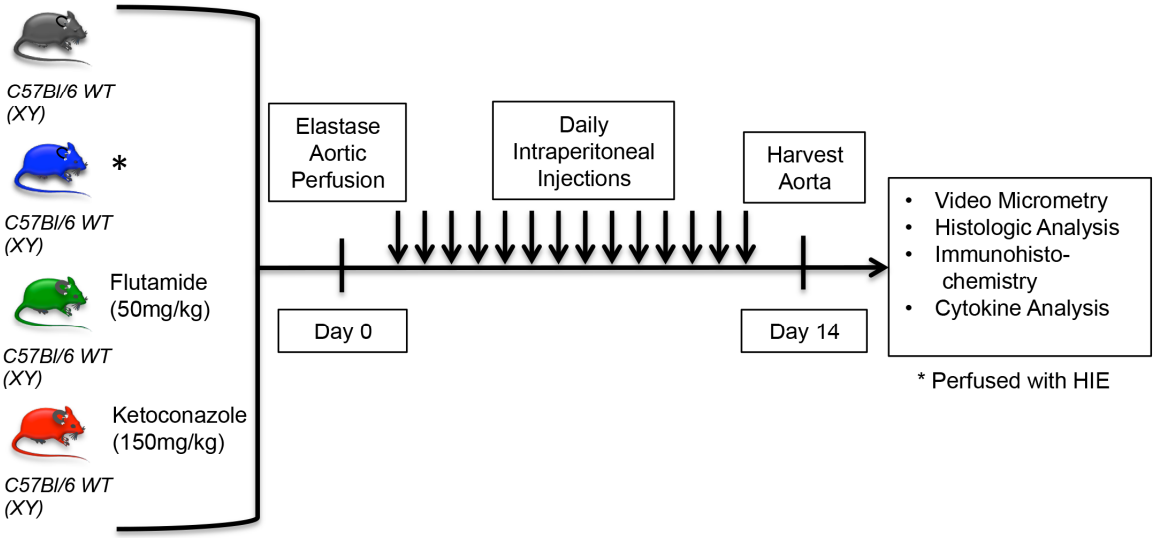
attenuation of aneurysm development when compared to elastase ($p=0.003$, $p=0.018$, respectively).

Supplemental Figure 2: Immunohistochemistry staining of androgen receptors in human aortic tissues. Androgen receptor levels are increased in AA tissue when compared to normal aorta (arrows).

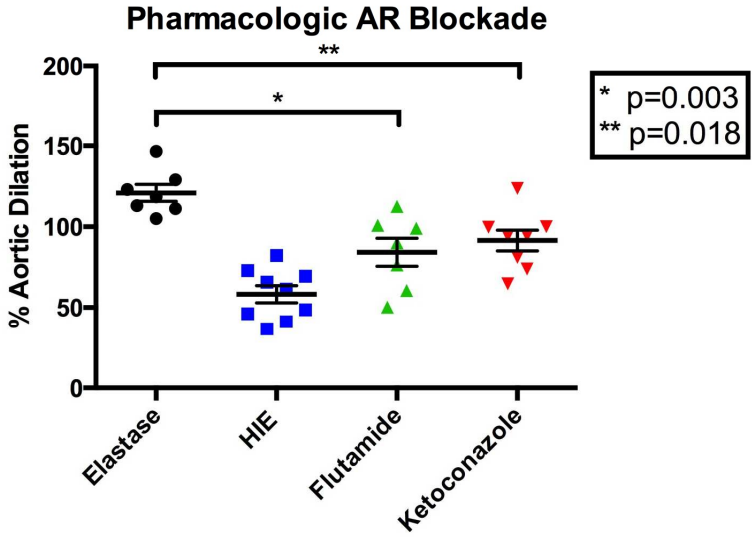
Supplemental Figure 3: Immunohistochemistry staining densities of aortic tissues. Macrophages stained significantly less dense in tissues that underwent pharmacologic blockade and genetic deletion of androgen receptors. No significant differences were detected between immunohistochemistry staining densities between treatment groups with regards to elastin degradation, SMC staining density, nor T-cell staining density. Macrophages stained significantly less dense in tissues that underwent pharmacologic blockade and genetic deletion of androgen receptors.

Supplemental Figure I

A. Pharmacologic Androgen Receptor Blockade



B) Aortic Dilation Data



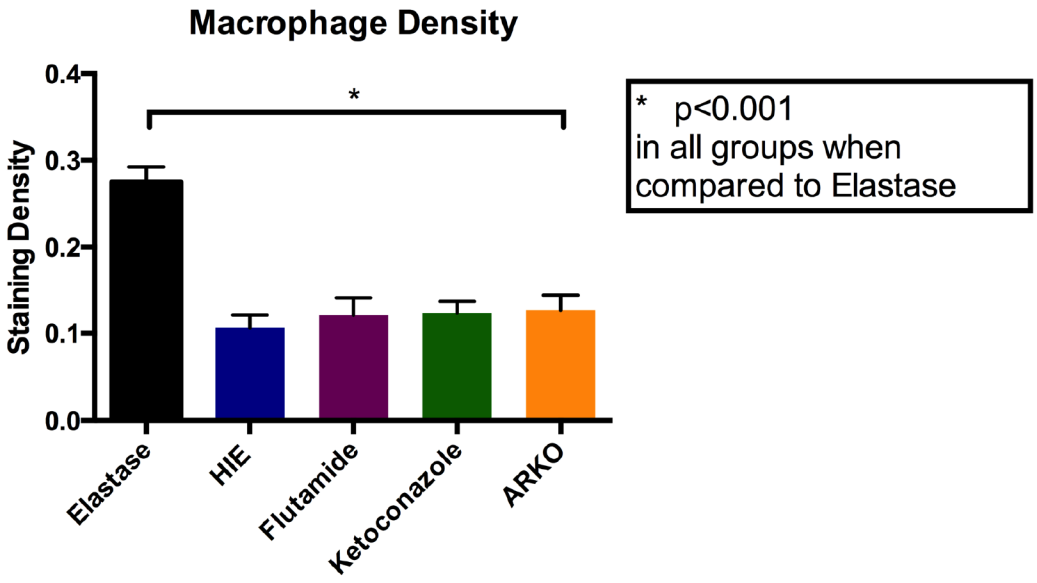
Supplemental Figure II

Immunohistochemistry Staining Densities of Aortic Tissues

	Flutamide	Ketoconazole	AR-/-
Elastin	P=NS	P=NS	P=NS
Macrophage*	P<0.001	P<0.001	P<0.001
SMC	P=NS	P=NS	P=NS
T-cell	P=NS	P=NS	P=NS
IFN - Gamma	P=NS	P=NS	P=NS
Interleukin - 6	P=NS	P=NS	P=NS

(All compared to Elastase)

*



Supplemental Figure III

Immunohistochemistry Staining of Androgen Receptors in Human Aortic Tissues