

AngII/PE mouse model

Mouse model of angiotensin II/phenylephrine-induced cardiac dysfunction and myocardial fibrosis

Angiotensin II/phenylephrine-induced cardiac dysfunction and myocardial fibrosis

The AngII/PE mouse model exhibits key hallmarks of hypertension-induced cardiac dysfunction including hypertrophy, reduced ejection fraction and development of extensive perivascular/interstitial myocardial fibrosis.

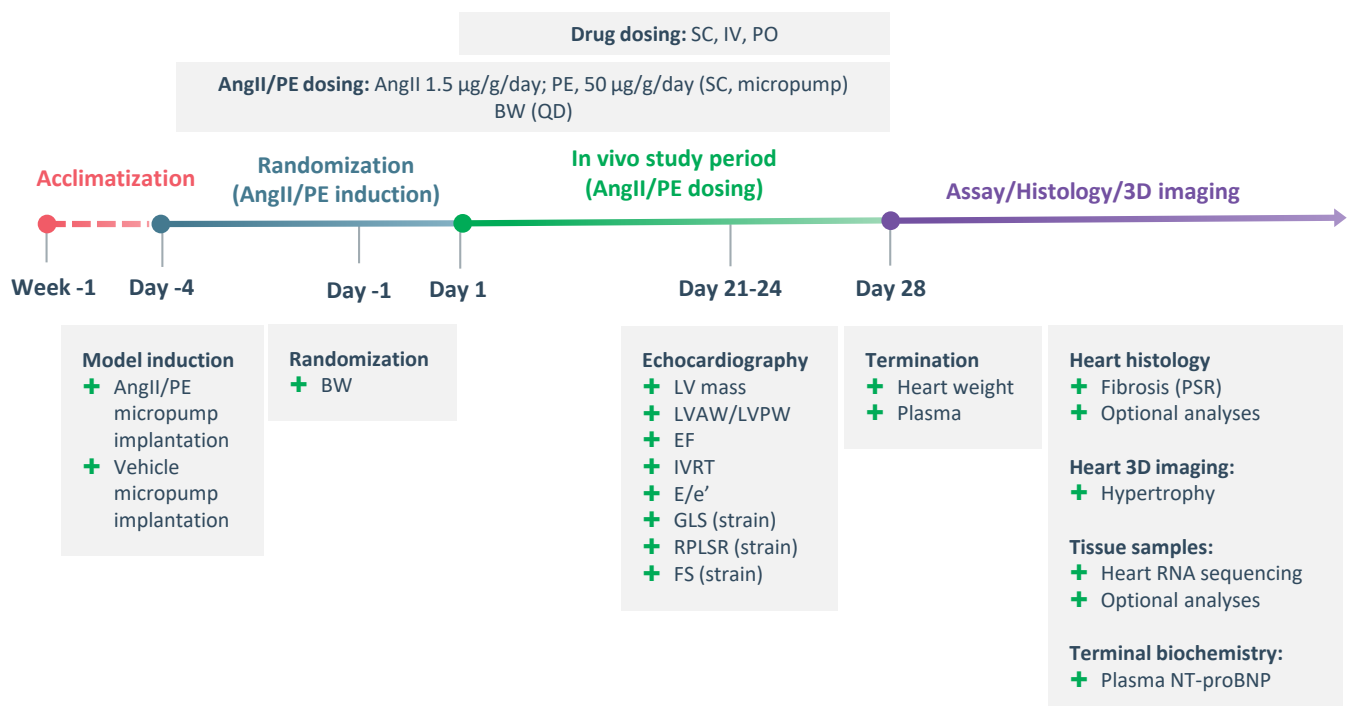
AngII/PE mouse model is ideally suited for rapid evaluation of therapeutic drug efficacy using a combination of echocardiography, 3D imaging, quantitative histology and RNA-seq to provide a detailed view of cardiac pathological changes.

Key model traits

- Co-infusion with angiotensin II and α -adrenergic agonist phenylephrine.
- Cardiac hypertrophy with systolic and diastolic dysfunction including reduced ejection fraction.
- Extensive perivascular and interstitial myocardial fibrosis.
- Therapeutic evaluation of drug efficacy.

Model induction	Chronic dosing of angiotensin II (1.5 ug/d/day) and phenylephrine (50 ug/g/day) using subcutaneous osmotic minipump for total of 28 days.
Strain	Male C57BL/6J mice

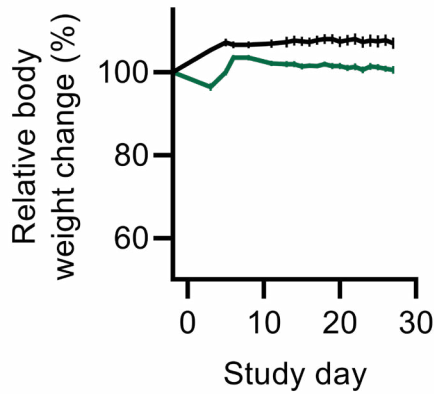
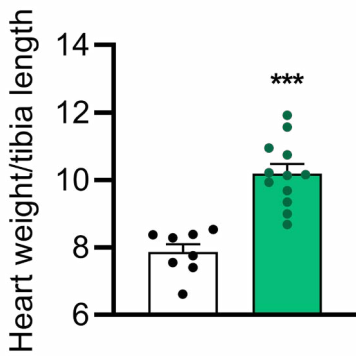
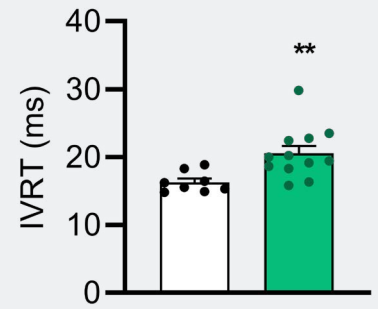
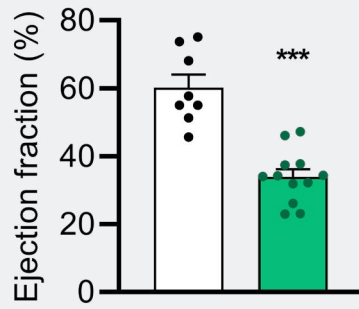
Study outline



Cardiac dysfunction

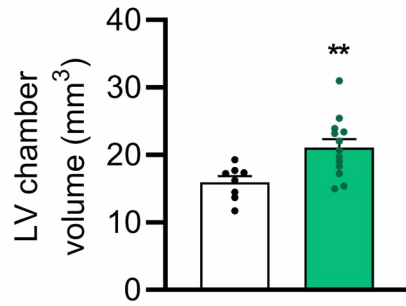
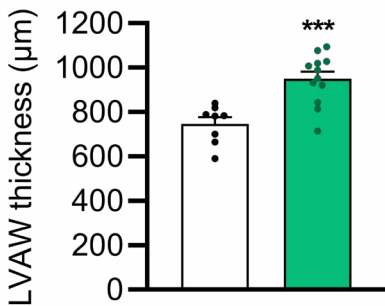
The AngII/PE mouse model develop characteristics of heart failure (HF) including systolic and diastolic dysfunction. AngII/PE-induced mice demonstrate reduced ejection fraction (HFrEF) and prolonged isovolumic relaxation time (IVRT).

AngII/PE Control



Cardiac hypertrophy

The AngII/PE mouse model develop HFrEF associated cardiac hypertrophy. AngII/PE-induced mice demonstrate increased relative heart weight in addition to increased left ventricle anterior wall (LVAW) thickness and LV chamber.

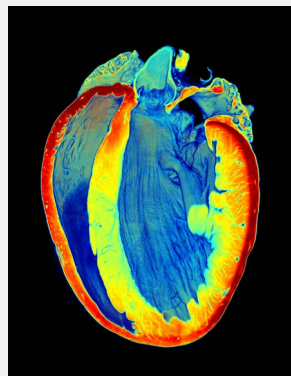


AngII/PE Control

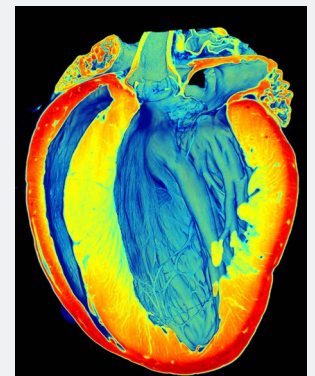
Light sheet imaging

3D imaging provides accurate quantification of cardiac morphology.

Control



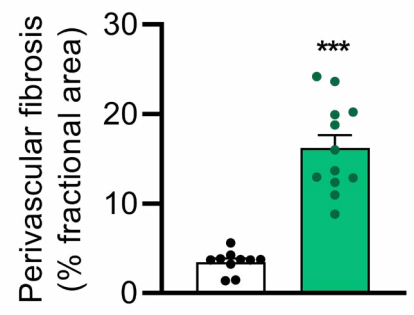
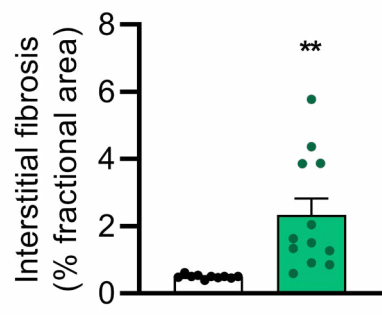
AngII/PE



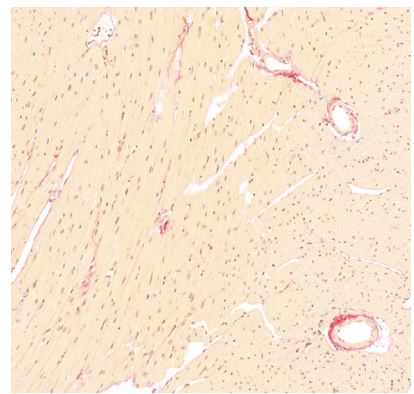
AngII/PE Control

Myocardial fibrosis

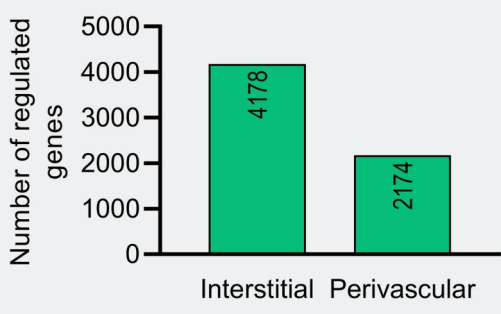
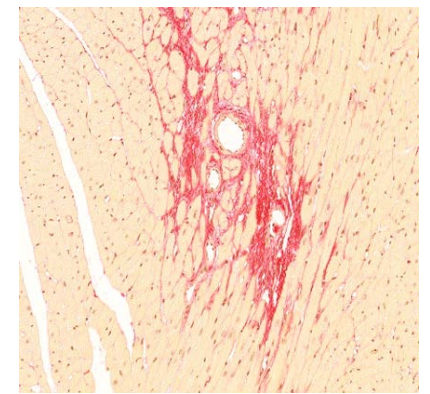
The AngII/PE mouse model develop extensive myocardial fibrosis. AngII/PE-induced mice demonstrate increased interstitial and perivascular fibrosis, evaluated by quantitative image analysis of Picro Sirius Red-stained histological sections.



Control



AngII/PE



Transcriptomic profile in myocardial fibrosis

The AngII/PE mouse model develop profound transcriptomic profile for myocardial fibrosis. AngII/PE-induced mice demonstrate distinct gene-signature for perivascular and interstitial myocardial fibrosis, evaluated by laser capture microdissection (LCM) and RNA-sequencing with bioinformatic analysis.

