PROGESTERONE PROMOTES SPONTANEOUS CORONARY ARTERY DISSECTION

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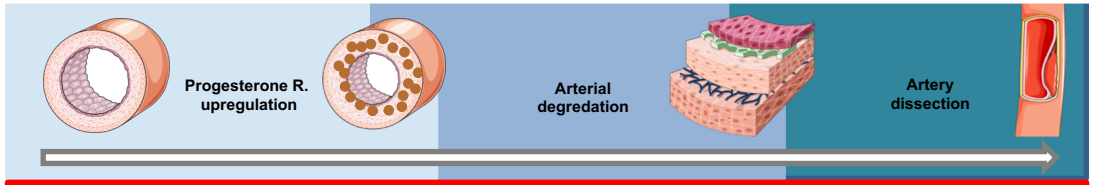
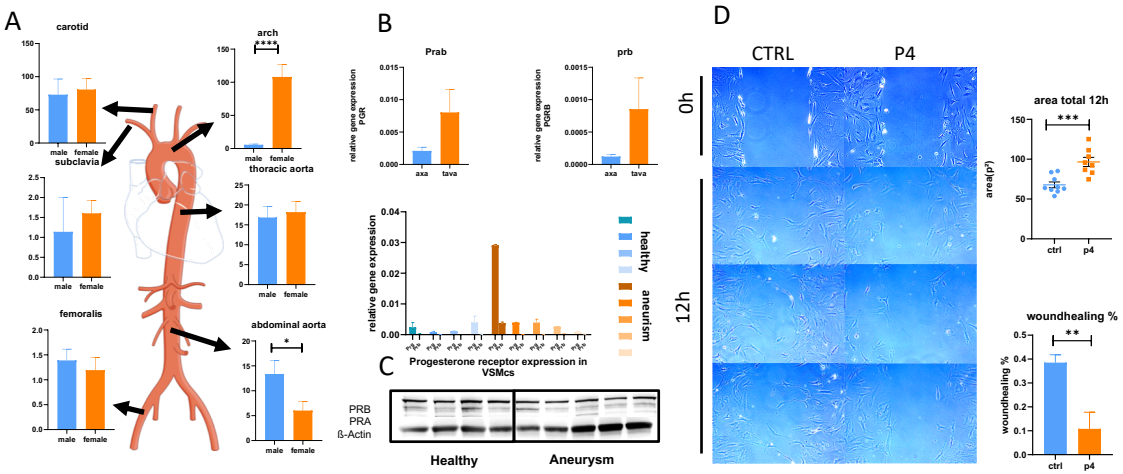
CARE
Cardiac Regeneration Research

Hypothesis

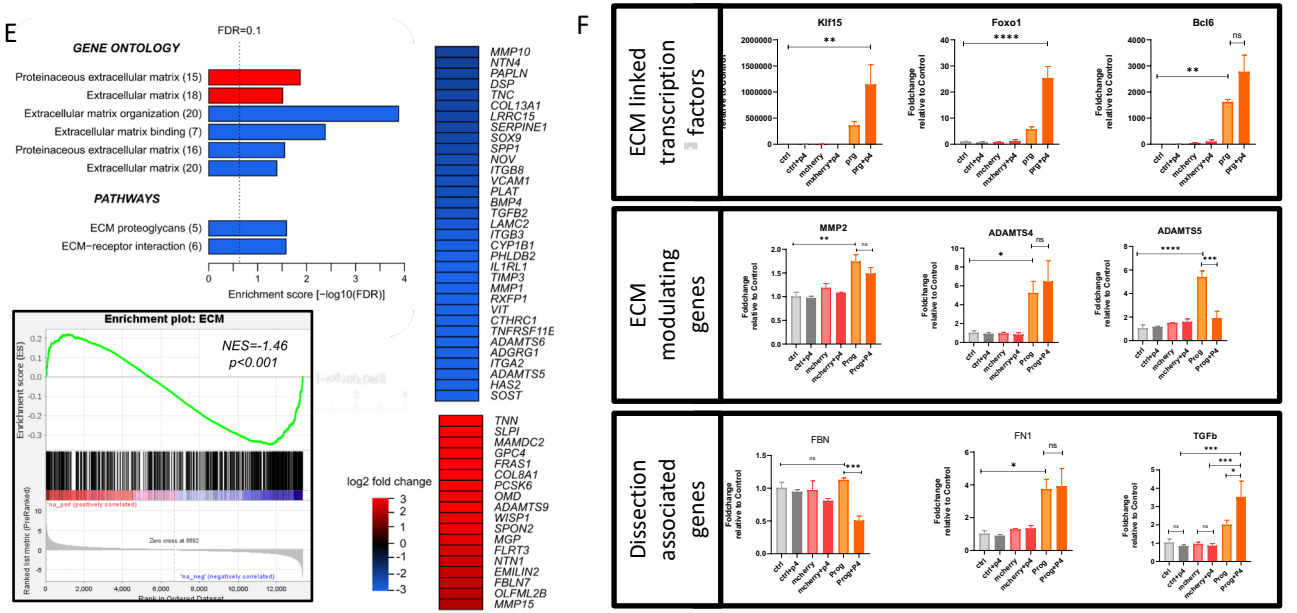


Progesterone facilitates arterial extracellular matrix degradation and thereby dissection.

Spontaneous coronary artery dissection (**SCAD**) is the primary cause of myocardial infarction in young and pregnant women. The Patho-mechanism of SCAD is still unknown. In the uterus the **Progesterone receptor** facilitates **vessel softening** to facilitate oocyte Implantation and pregnancy. Accordingly this receptor was recently found in arteries of patients suffering from SCAD. We thereby came up with our hypothesis, that the vascular progesterone receptor mediates arterial softening and thereby dissection.



A, We first demonstrate that the progesterone receptor (PGR) is not specific to organs of the reproductive system and can be found in vessels of male and female mice. **B,C** Vascular smooth muscle cells of Patients also harbour both populations of the progesterone receptor. Furthermore a trend wise increase of PGR can be seen in patients who suffered from an aneurism compared to healthy (HTX) controls. This suggest a link between PGR and vascular diseases. **D** , Activation of the progesterone receptor in vitro leads to decreased migration and proliferation of Vascular smooth muscle cells, a hallmark of impaired regeneration.



E, Activation of the progesterone receptor leads to genetic responses targeted at the extracellular matrix (ECM). **F,** Viral overexpression of the progesterone receptor and subsequent treatment with progesterone reveals, transcriptomic chances in ECM linked transcription factors, ECM modulation genes and dissection associated genes. Showing a distinct role of the progesterone receptor in vessel constitution and makeup.

Highlights

The progesterone receptor is elevated in **aneurismatic vessels**, its activation **inhibits regeneration**, induces **extracellular matrix degradation** and is tied to **dissection associated genes.**