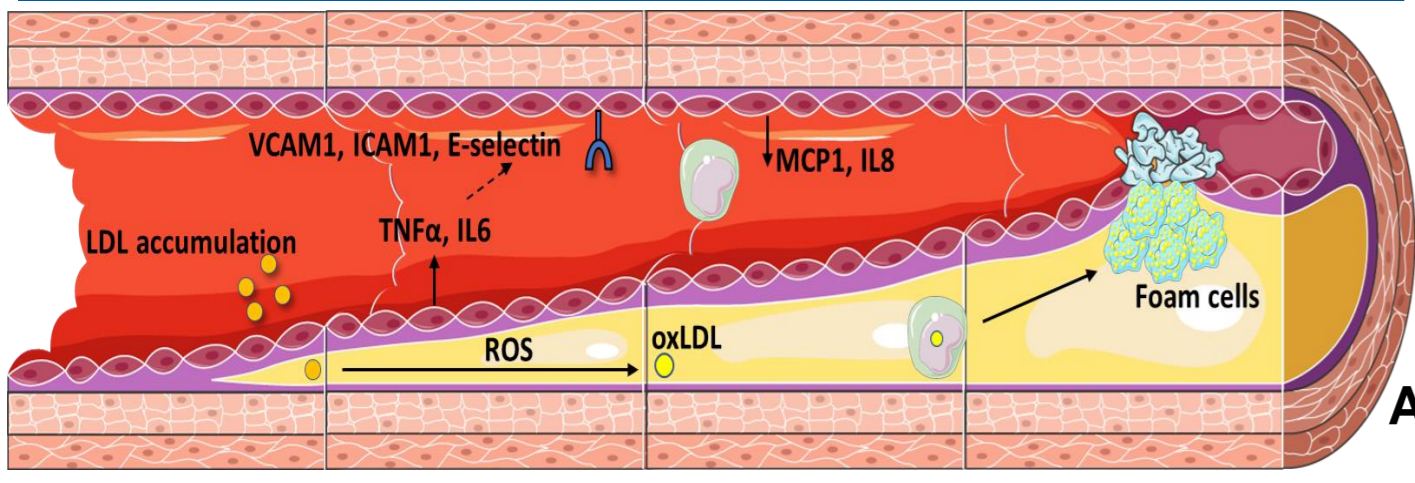


Background

Atherosclerosis: an inflammatory disease



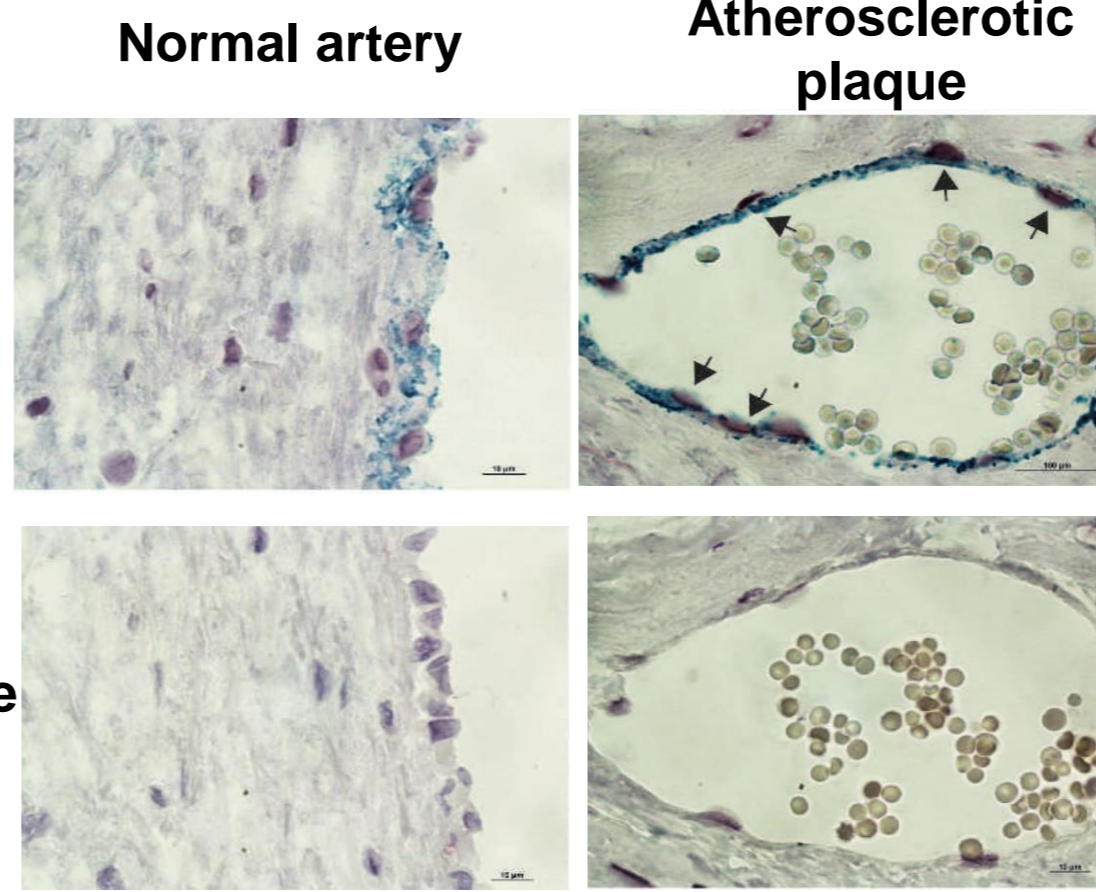
- Atherosclerosis is a chronic inflammatory disease of the vessels. Accumulation of cholesterol and inflammation lead to formation of plaques on the inside surface of the vessels called atheroma.

- NEAT1, a long non coding RNA until recently considered "junk", has been found to accumulate at atherosclerotic plaques but its role remains unknown.

ADAR1

negative control

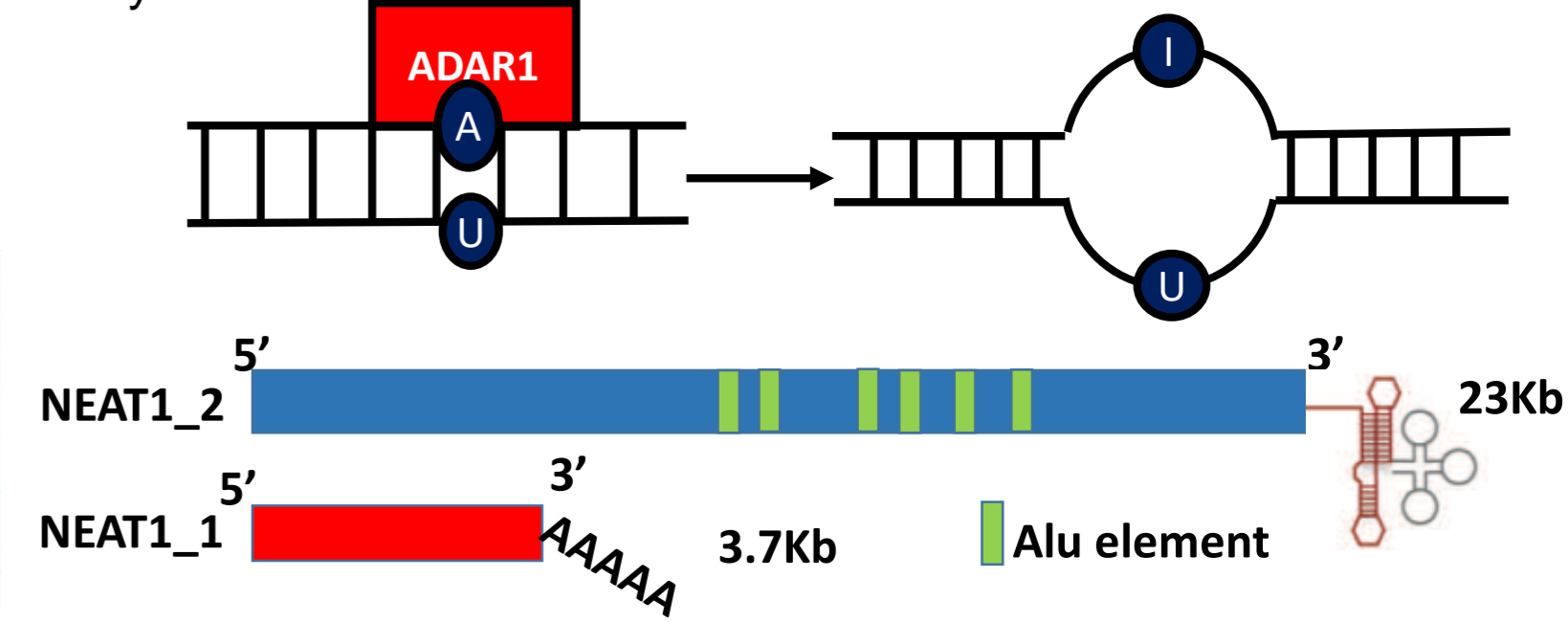
ADAR1 is increased in human atherosclerotic plaques



Stellos K et al, Nature Medicine, 2016

ADAR1 may control NEAT1 expression

The enzyme ADAR1 edits predominantly repetitive Alu elements, which comprise approximately 10% of the human genome. NEAT1 has 6 Alu elements, suggesting that it may be modified by ADAR1.



Adapted from T. Naganuma & Hirose, RNA Biol, 2013

Hypothesis and Aims

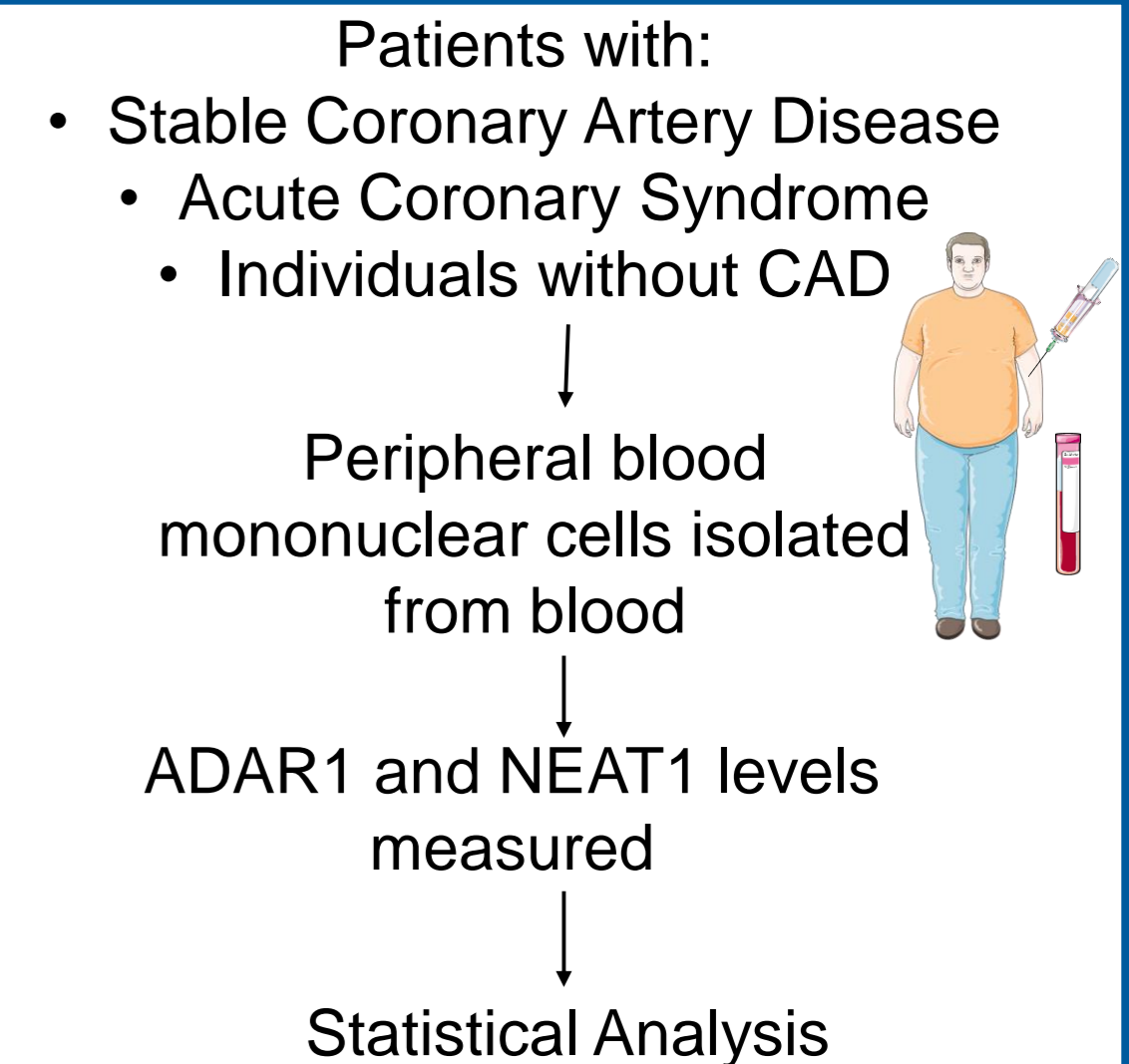
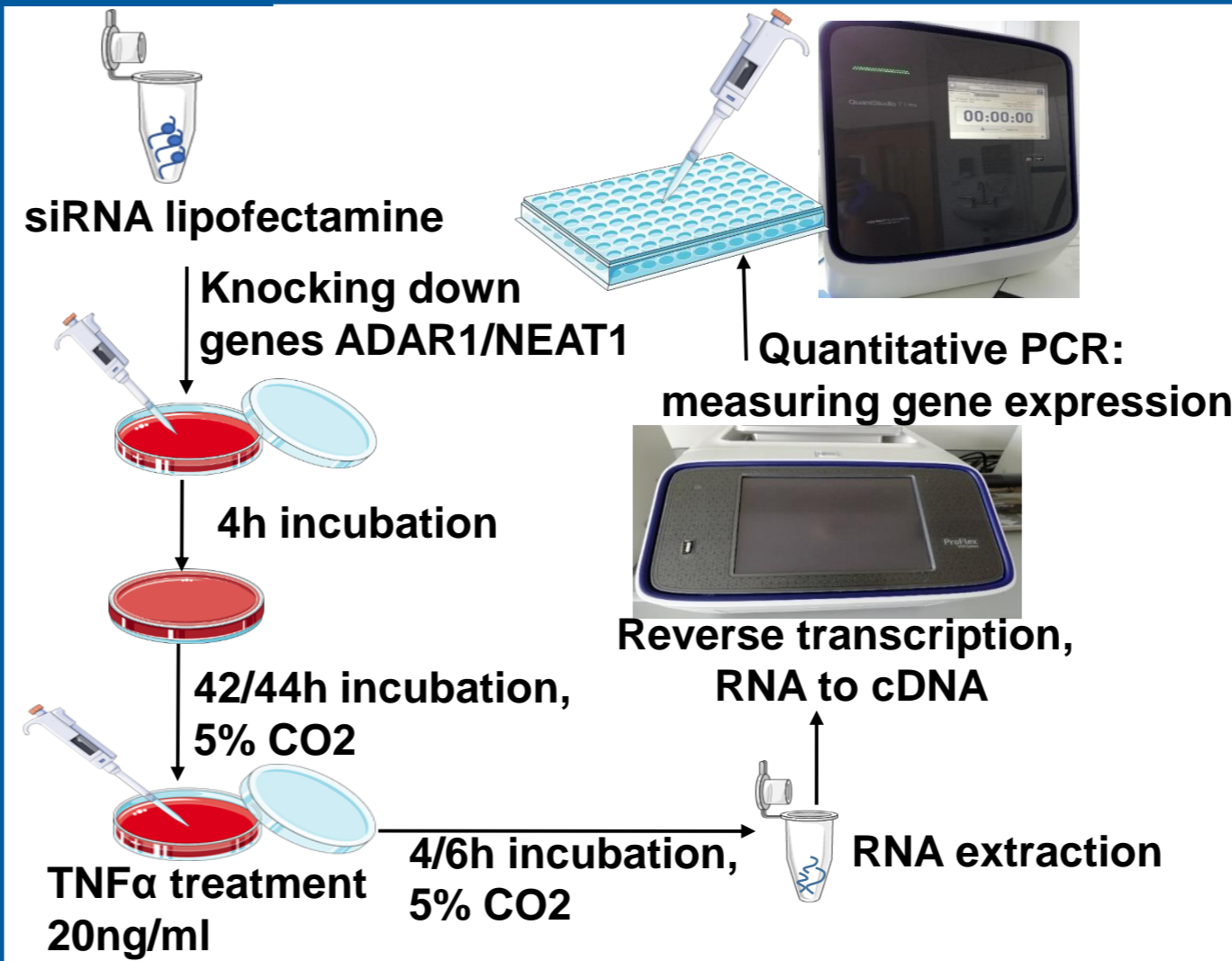
Hypothesis

- NEAT1 controls the pro-inflammatory response in endothelial cells
- ADAR1 modifies NEAT1 Alu elements controlling NEAT1 expression

Aims

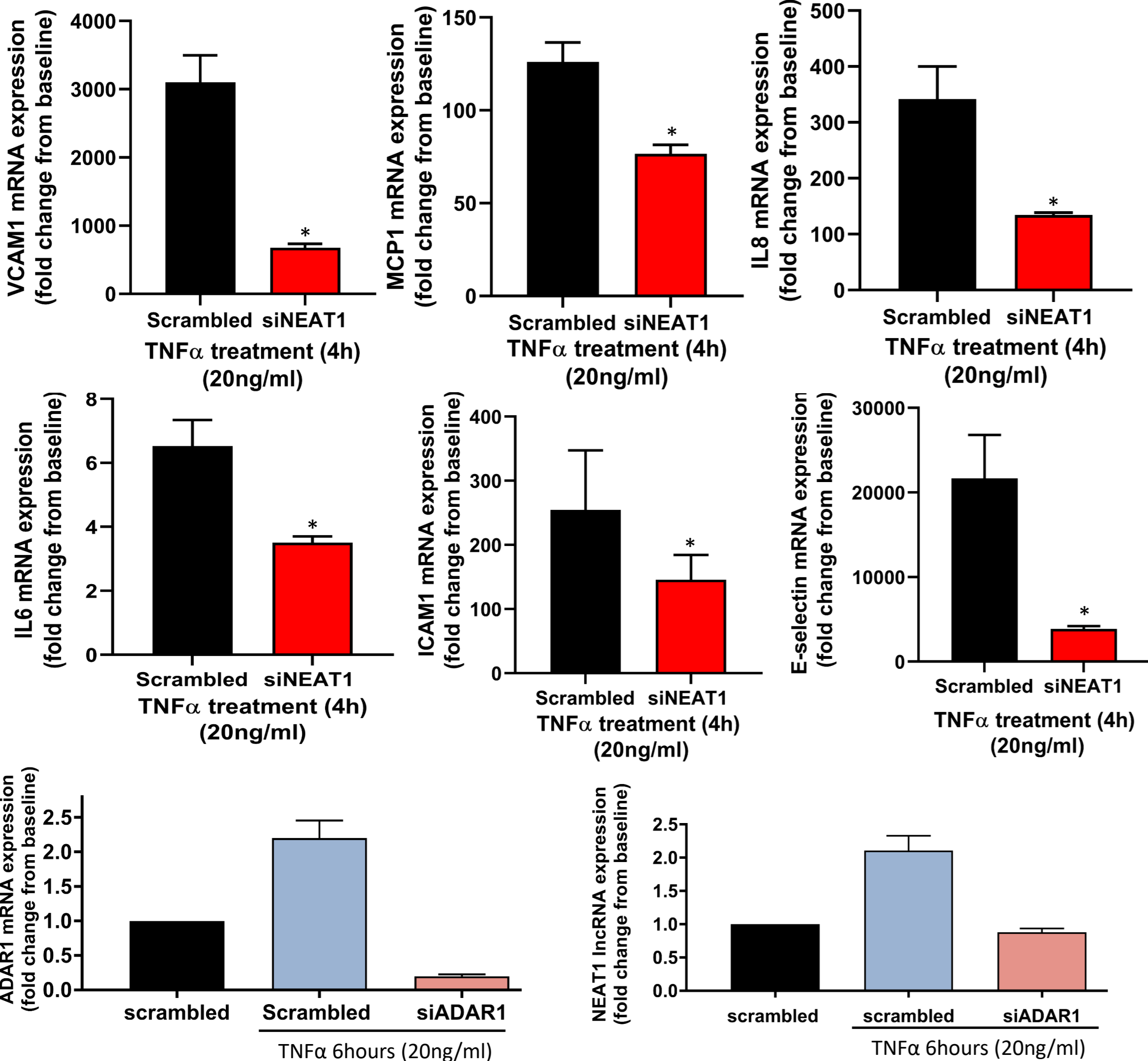
- To study the role of NEAT1 in vascular inflammation
- To examine the regulation of NEAT1 during pro-inflammatory conditions by ADAR1-mediated RNA editing

Methods



NEAT1 in endothelial cell inflammatory response

Knocking-down NEAT1 reduces endothelial inflammatory response



Conclusion

- Long noncoding RNA NEAT1 plays a role in driving pro-inflammatory response in endothelial cells.
- ADAR1 controls NEAT1 expression in endothelial cells.

ADAR1 and NEAT1 in human atherosclerotic heart disease

