# Skeletal muscle extracellular matrix (ECM) and cytoskeleton in chronic kidney disease (CKD) – a role in insulin resistance?

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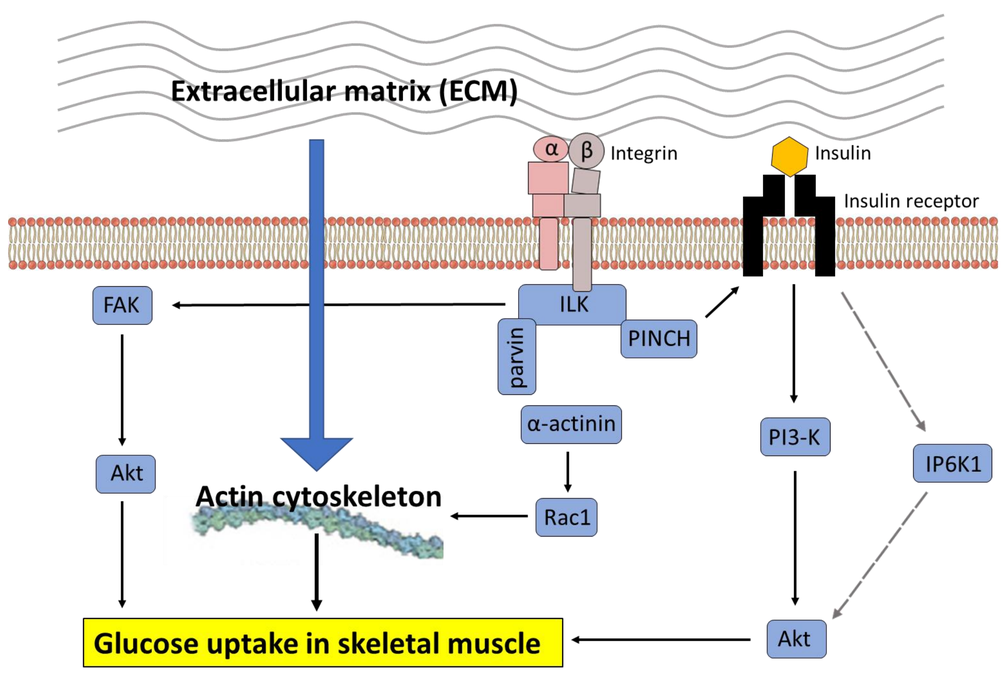
## Background and Aim

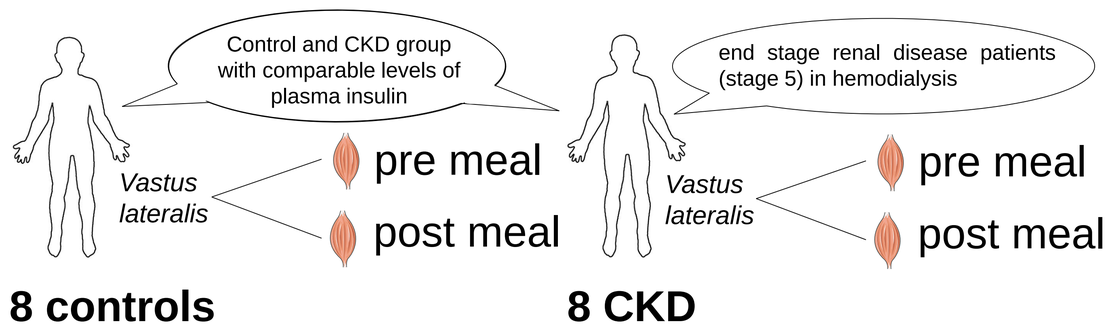
- **Chronic kidney disease (CKD)** is a worldwide public health problem associated with insulin resistance and muscle wasting.
- Novel research suggests that alterations or disruption to the linkage binding the cytoskeleton and the extracellular matrix (ECM) may contribute to muscle atrophy and insulin resistance in skeletal muscle.
- This research aims to investigate which proteins of the ECM could contribute to muscle wasting and insulin resistance development in CKD patients, among which:
  - The Rho GTPase **Rac1**,
  - The **ILK**-**PINCH**-**parvin** (IPP) complex,
  - The focal adhesion kinase (**FAK**),
  - The serine/threonine-specific protein kinase **Akt**
  - and the inositol phosphatase **IP6K1**.

## Hypothesis

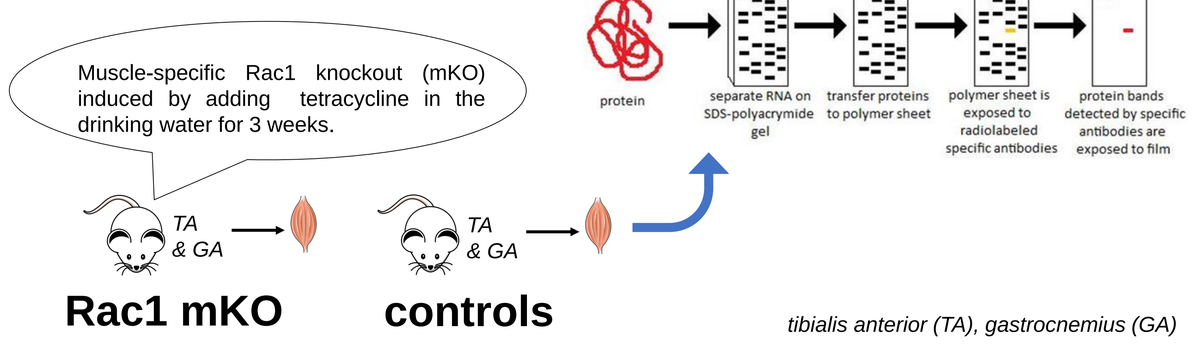



## Methods

### Human muscle samples



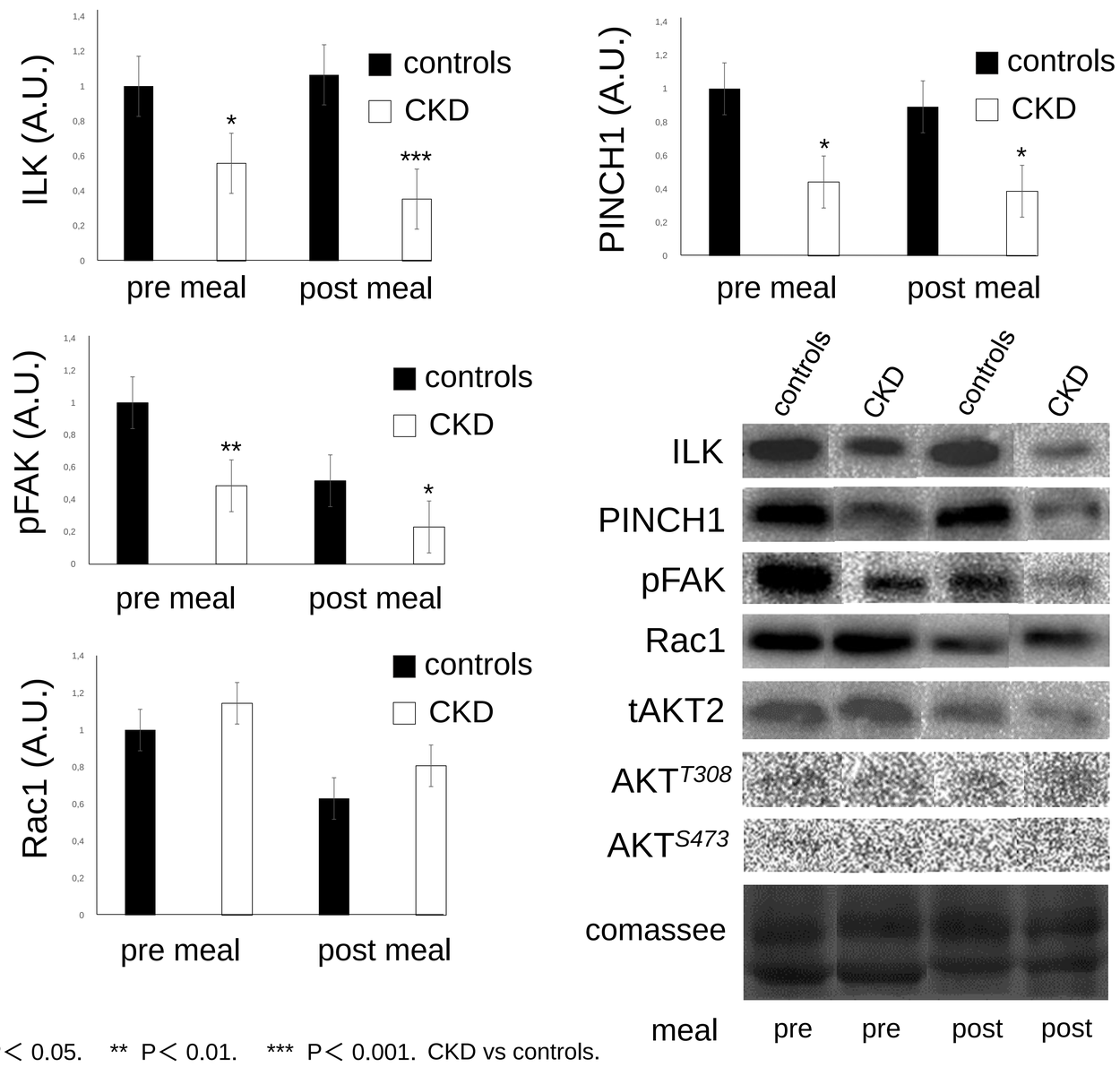

### Mouse muscle samples




*tibialis anterior (TA), gastrocnemius (GA)*

## Results

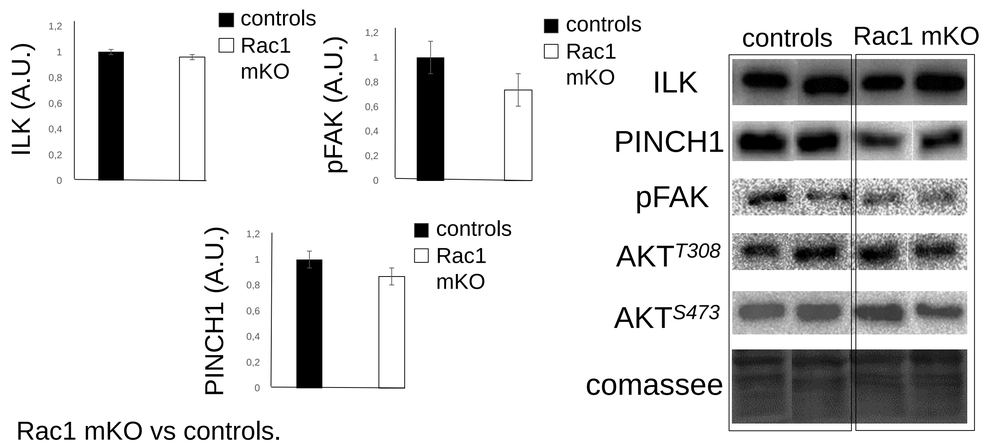
### Human muscle samples




* P< 0.05. ** P< 0.01. *** P< 0.001. CKD vs controls.

### Mouse muscle samples

*tibialis anterior (TA)*




Rac1 mKO vs controls.

## Conclusions

- ILK, PINCH1 and pFAK levels are decreased in CKD muscles, which may contribute to the muscle degeneration and development of insulin resistance in people on hemodialysis.
- Rac1 is not altered in CKD subjects.
- Rac1 protein does not regulate ILK, PINCH1 or pFAK protein expression.

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