

# The mechanosensitive channel Piezo1 is a mediator of mechanical forces in bone marrow endothelial cells

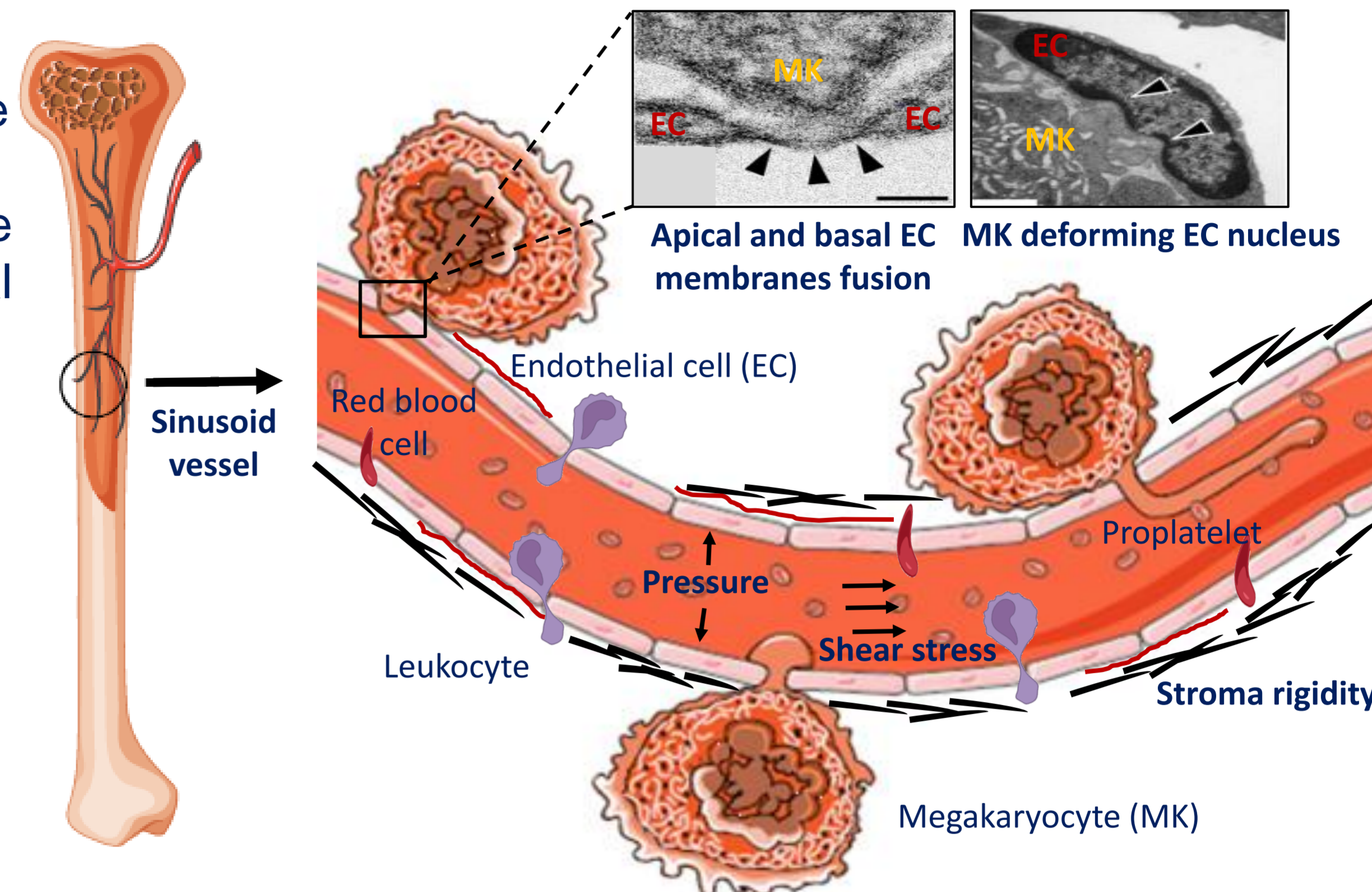
## Introduction

- Every day 500 billions of cells enter the circulation via specialized capillaries in the bone marrow : **the sinusoid vessels**.
- Sinusoid vessels constitute the **Blood-Bone Marrow Barrier (BBMB)**, and are composed of a monolayer of endothelial cells and a thin discontinuous basal membrane.
- **Mechanosensitive channels (MSC)** are expressed in various endothelial cells and are able to increase their opening probability in response to mechanical cues.
- Among them, **Piezo1** is known to be a regulator of **endothelial barrier integrity**.

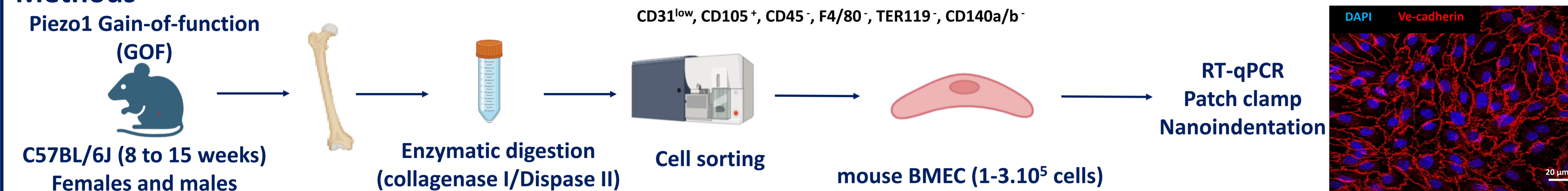
How does Piezo1 regulates the Blood-Bone Marrow barrier permeability ?

## Aims

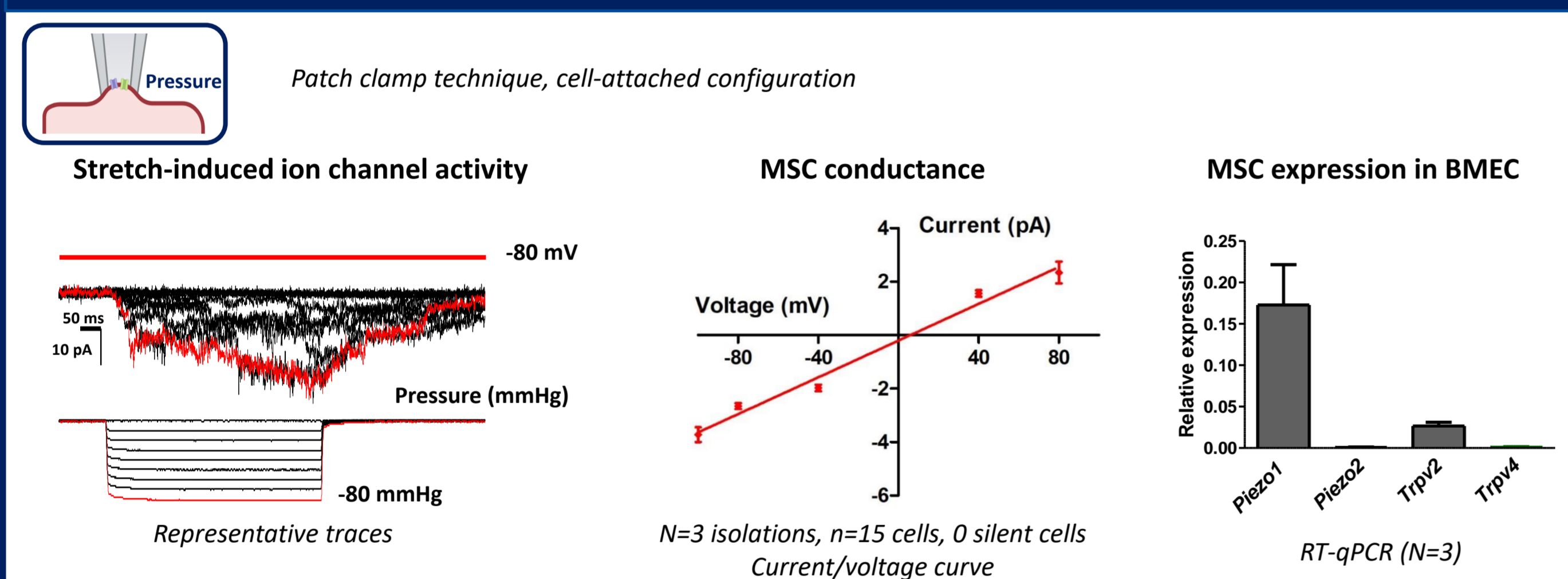
- Characterizing Piezo1 in Bone Marrow Endothelial Cells (BMEC).
- Identifying Piezo1 involvement in BBMB permeability.



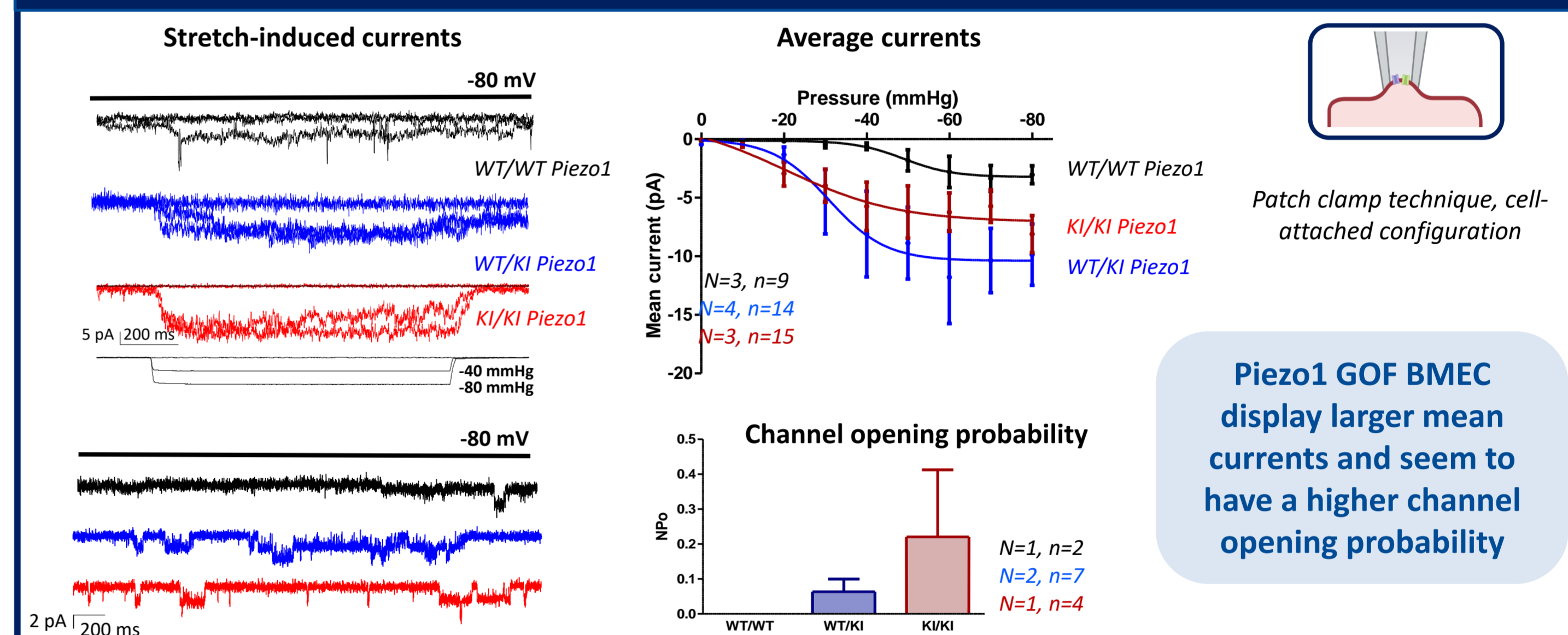
## Methods



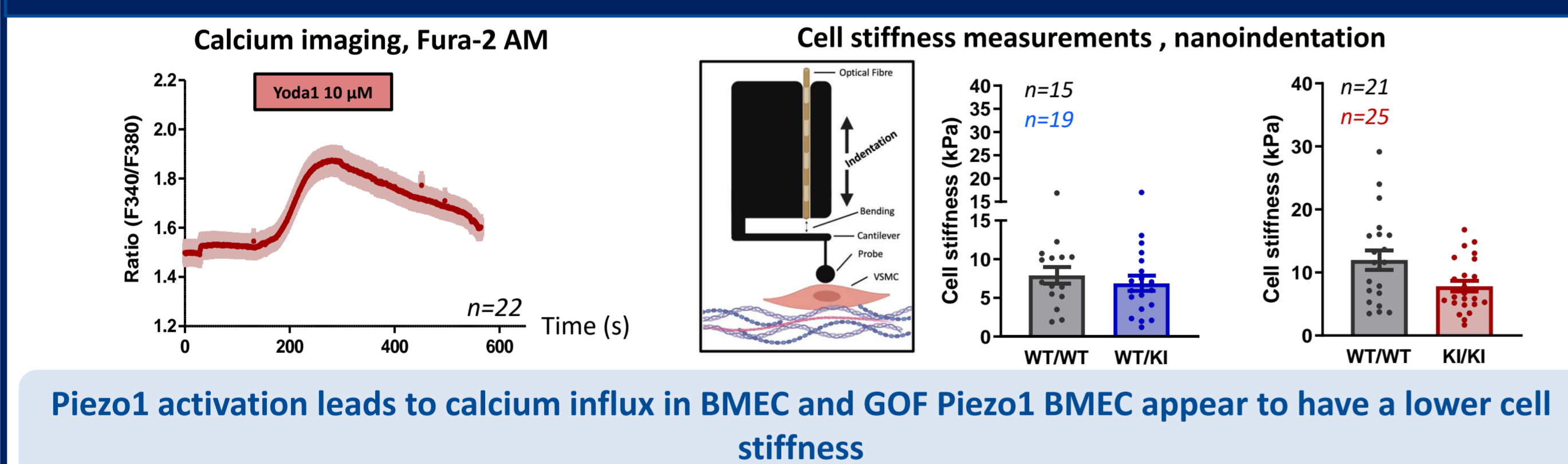
### 1. MSC are expressed in BMEC



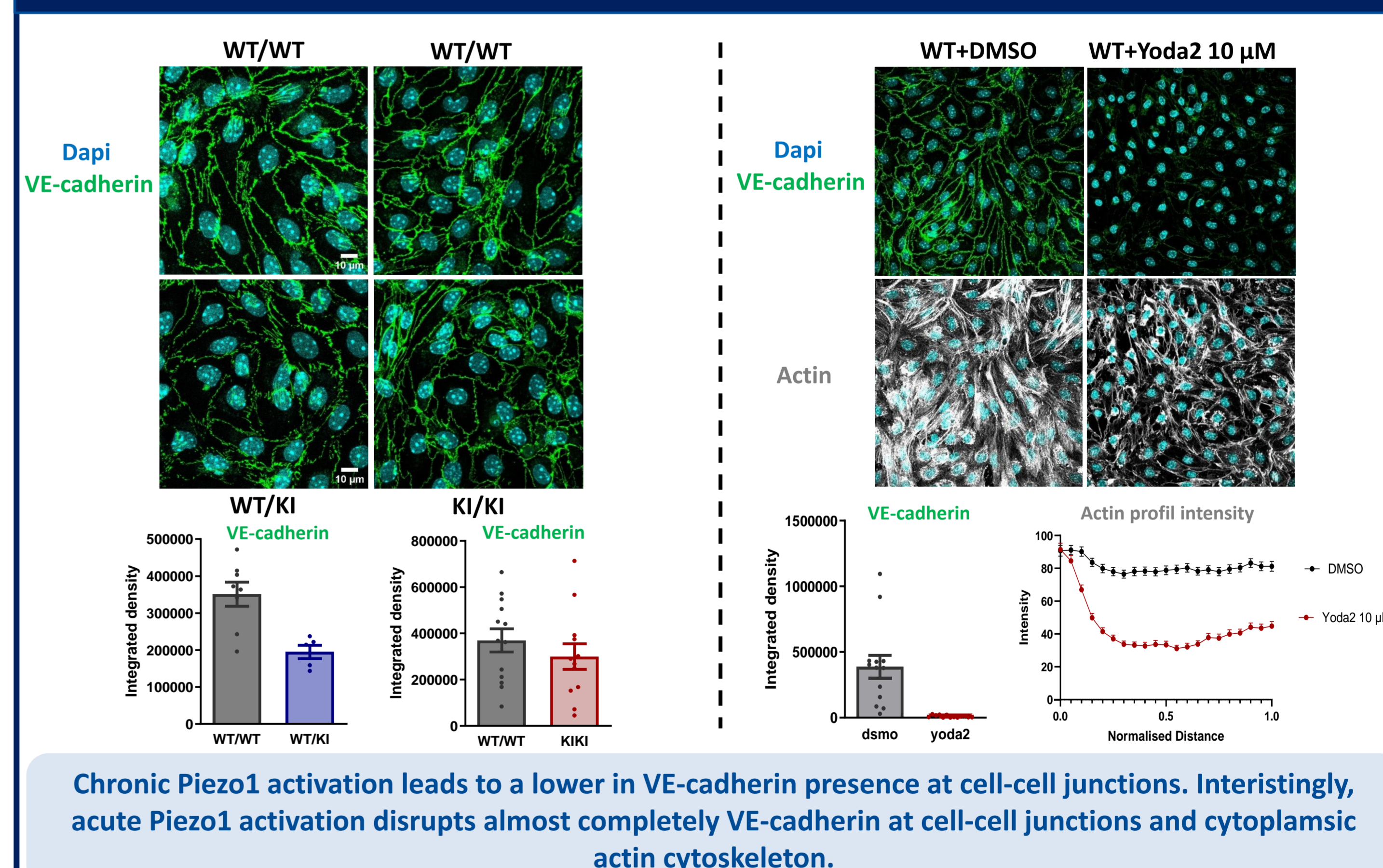
### 2. Piezo1 GOF BMEC leads to larger currents in BMEC



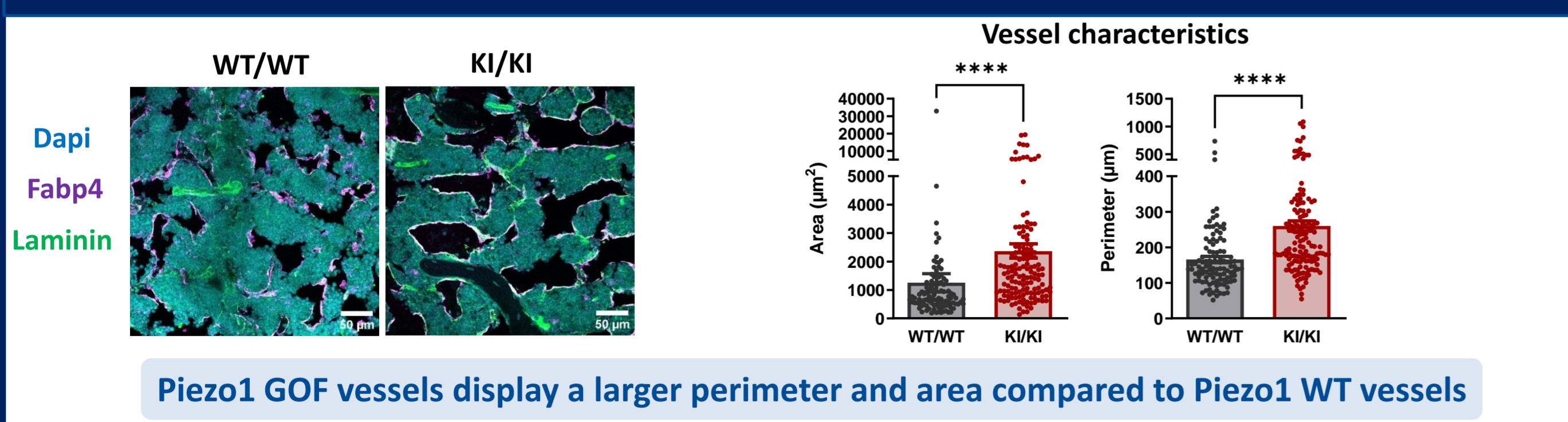
### 3. Piezo1 GOF leads to a lower cell stiffness in BMEC



### 4. Piezo1 activation disrupts adherens junctions in BMEC



### 5. Piezo1 GOF in BMEC leads to larger vessels compared to WT mice



## Conclusions

- MSC are expressed and functional in BMEC. Piezo1 is highly expressed and functional in BMEC
- **Piezo1 activity** leads to a lower cell stiffness and a **desorganised actin cytoskeleton and VE-cadherin network**.
- Piezo1 activation leads to a modification in **vessel morphology** in bone marrow.

## Outlook :

How does Piezo1 modulate **BMEC permeability** ? How BMEC mechanical properties are impacted by **Piezo1 knock out** ?

## Acknowledgements:

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## Supported by:

