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How do mechanical forces impact macrophages in the processes of mechanosensing and mechanotransduction?

Key words: Macrophage polarization; Mechanical force; Mechanosensing; Mechanotransduction; Integrin; Transient receptor potential (TRP); Piezo1; Signaling pathway

This review mainly focused on the role of mechanically sensitive integrins and ion channels (PIEZO and TRPV4) in the mechanical signal sensing of macrophages, and three very closely related downstream signaling pathways: NF- κ B pathway, MAPK pathway and YAP/TAZ pathway.

Aim 1: Conclude the mechanical sensitivity and conduction mechanisms of macrophages.

Mechanical forces

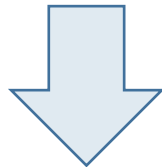
mechanosensing



Integrin
Ion channels

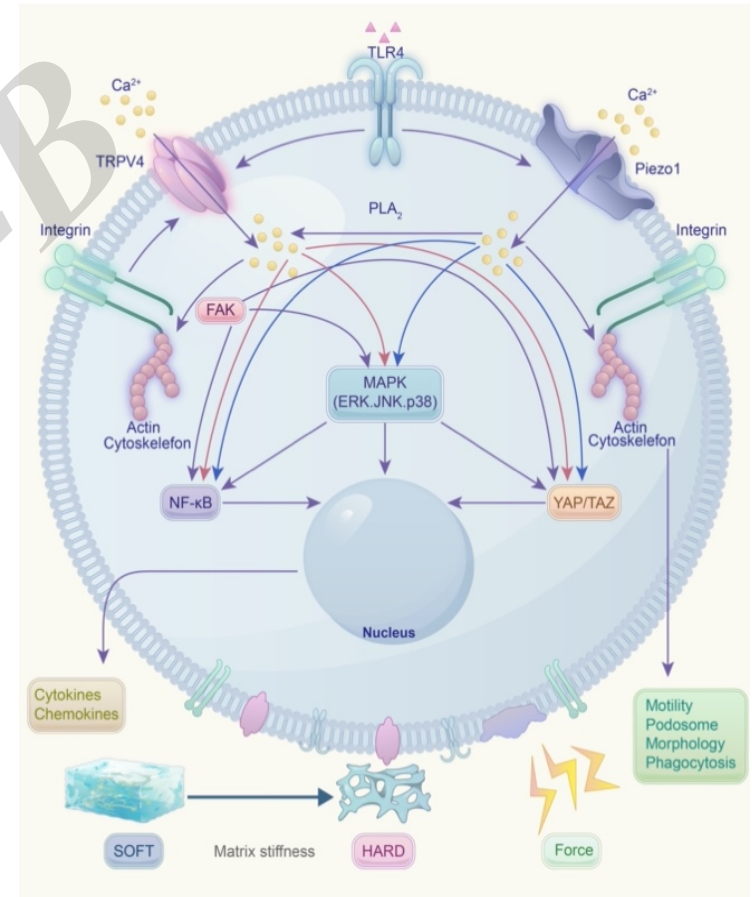
Macrophages

mechanotransduction



NF- κ B
MAPK
YAP/TAZ

Cell phagocytosis, migration, polarization ...



Aim 2: Summarize some current cell models and some commonly used force application devices used in invitro studies.

Cell models



Force devices

