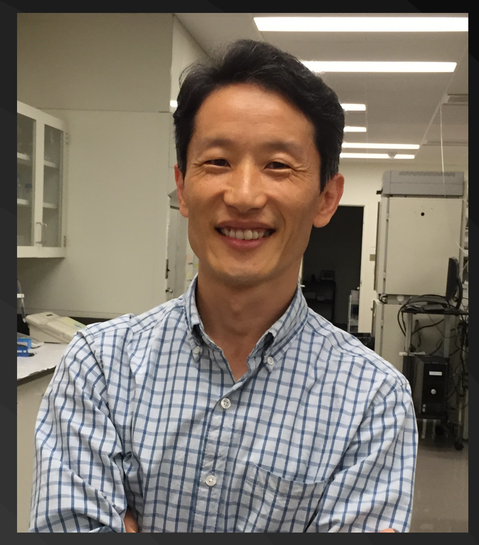
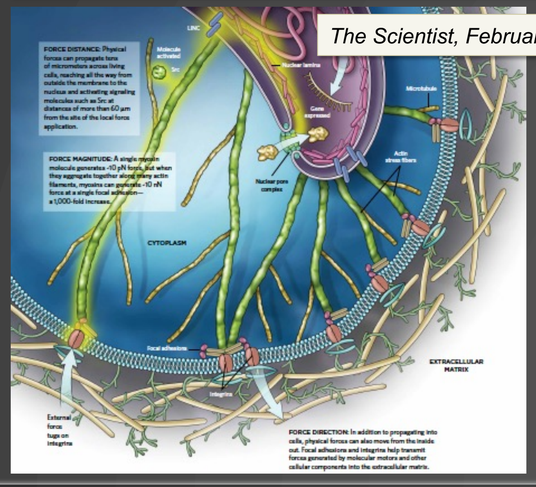
*Laboratory for Cellular Mechanotransduction and Reprogramming*

**Principal Investigator**
**Sungsoo Na, PhD**

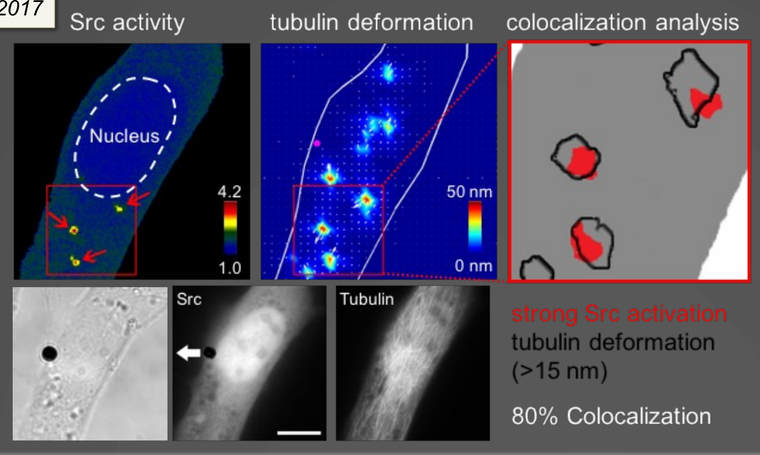


The primary objective of our research group is to understand the biophysical mechanism by which cells sense and respond to specific physical stimuli in the environment, including dimensionality and rigidity of the extracellular matrix as well as mechanical forces. It is becoming increasingly recognized that the fundamental question of how cells function cannot be solved by focusing exclusively on individual genes and proteins; it also depends on mechanical cues, local microenvironment, and system level integration, which has collectively led to the fascinating new field: Mechanotransduction.

## How cells respond to their physical environments?




*The Scientist, February 2017*

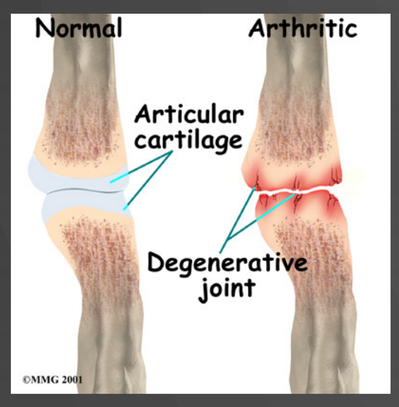


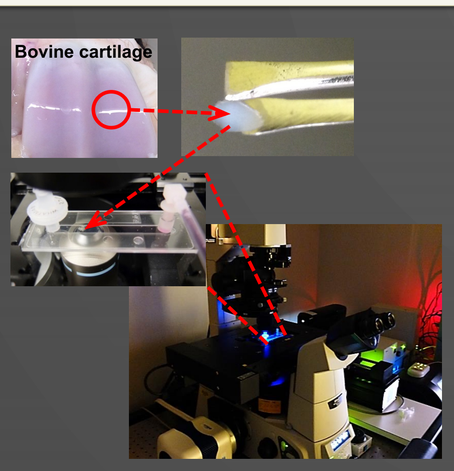

strong Src activation
tubulin deformation (>15 nm)

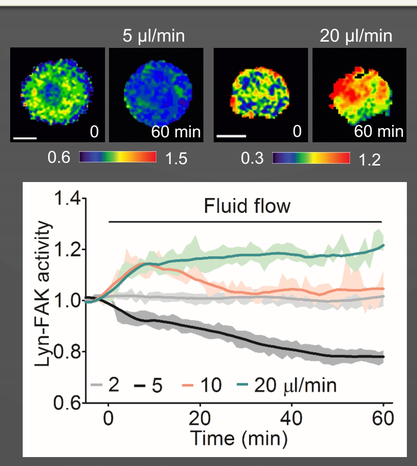
80% Colocalization

Mechanical force directly dissociates protein complexes in a nuclear body


## How to block inflammatory signaling in osteoarthritis?

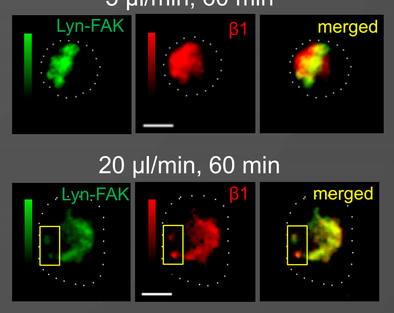


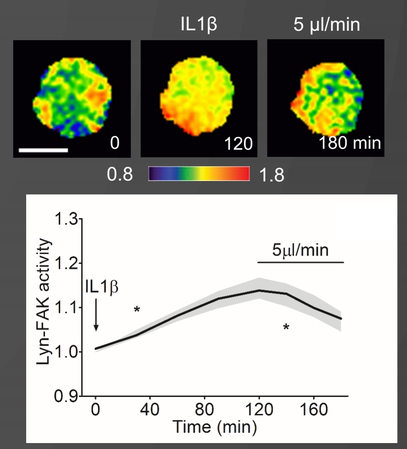




Lyn-FAK: lipid raft-targeting FAK

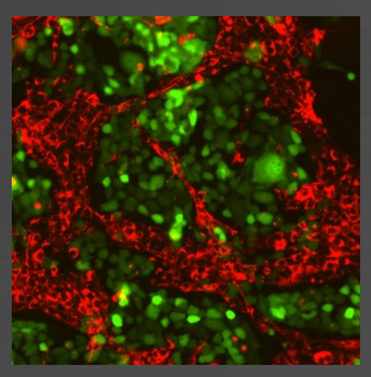
FAK–integrin clustering colocalization




Suppression of inflammatory signaling by interstitial flow

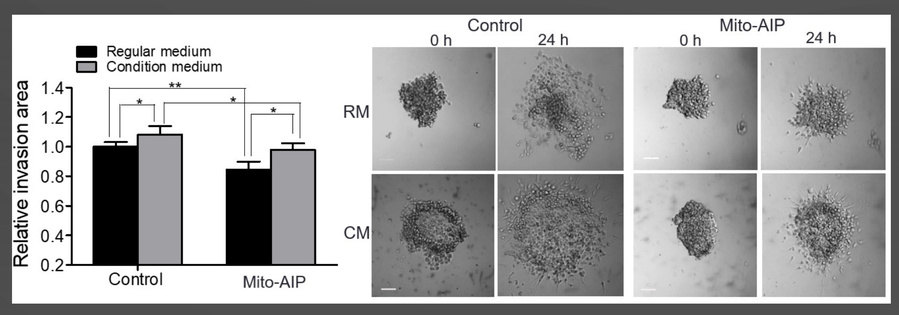



## How to block cancer progression?

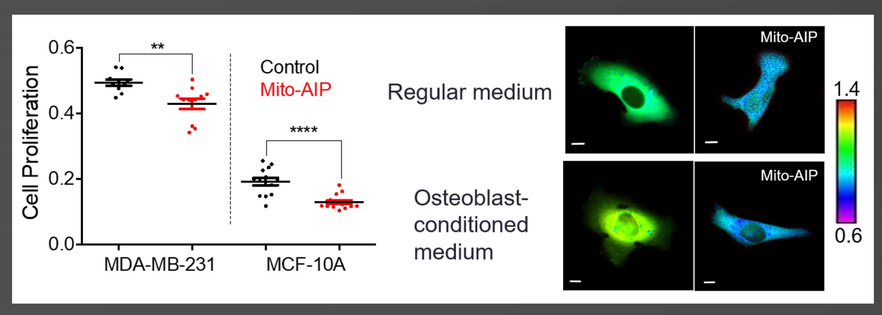


breast cancer cells
bone cells

Mitochondrial AMPK inhibition reduces invasion of cancer cells




Mitochondrial AMPK inhibition suppresses cancer cell proliferation and associated signaling




**Interested in research opportunities?**

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