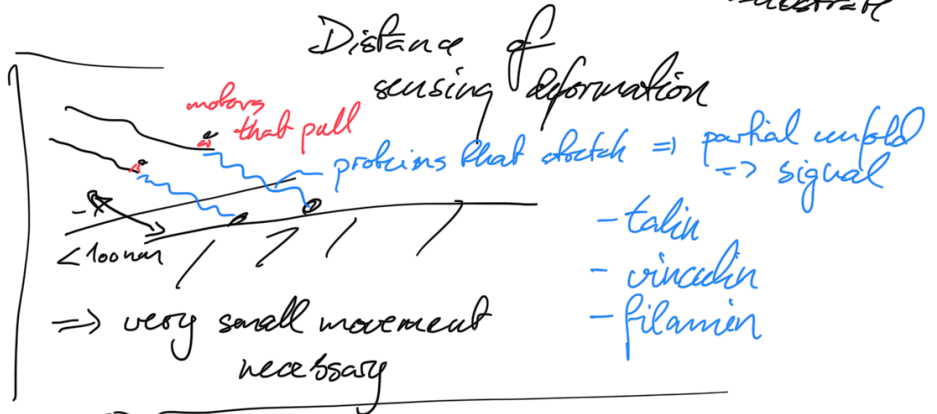


Mechanosensing  
 Janney & Miller 2011

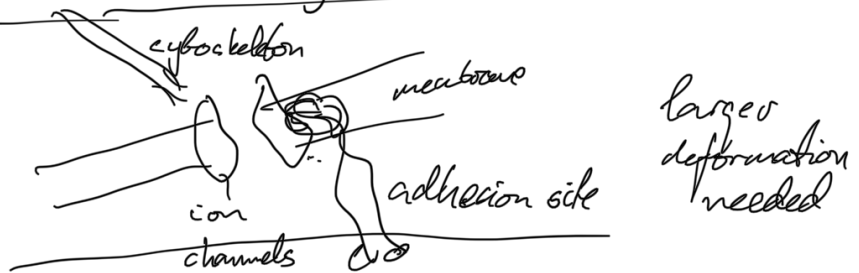
Rheology  
 Cell Substrate  
 Force → Deform.



Local model



Intermediate distance model



distributed model

delocalized sites × in actin network?  
 ⇒ mechano sensors

Nucleus as mechano-sensor

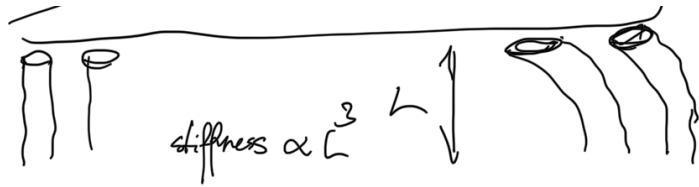


(not Janney)

Tensegrity structures

2011 Deformation of pads





$\Rightarrow$  greater than micrometer scale of stiffness sensing

$\Rightarrow$  large complexes / focal adhesions are stiffness sensors

### Time dependence

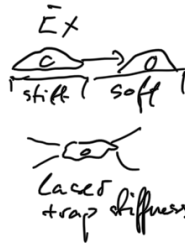
Observable properties  
result of mechano-sensing

- \* shape
- \* stiffness
- \* cytoskeleton assembly
- \* focal adhesion
- \* protein phosphorylation

detectable change  
 $\propto \epsilon^2$

Followed by transduction mech sign  $\rightarrow$  chemical sign

Response to change  
in mech properties  
of substrate



$t > 10s$  - minutes

Smallest  $\Delta t$  : fastest active movement

ex: cycling time of molecular motor  
 $\Delta t \sim 1ms$

Rheology of real tissues : stress relaxation (creep?)

