

# *Cours 3-Lamellipodes et Kératocytes*

J.F. Joanny

Cours 3, Collège de France, 22 novembre 2021



COLLÈGE  
DE FRANCE  
— 1530 —

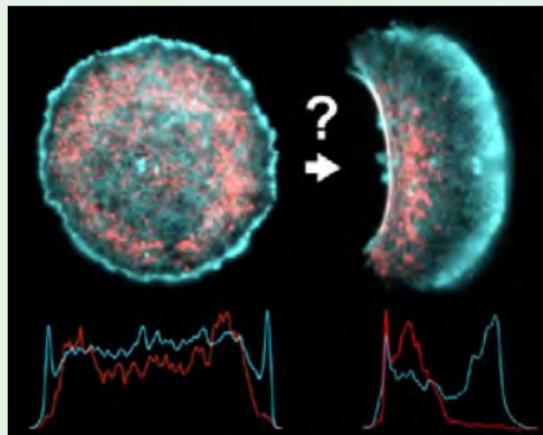
# Fragments de kératocytes

## Mouvements de kératocytes

Mouvement rapide:  $10\mu\text{m}/\text{min}$ .

J. Theriot

## Fragments cellulaires



Fragments: actine +myosine //

# Mouvement de fragments *Blanch Mercader, Casademunt*

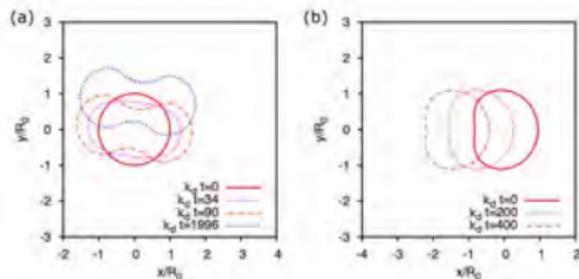
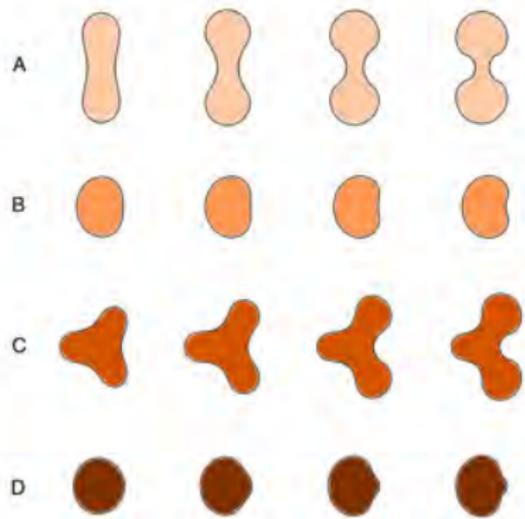
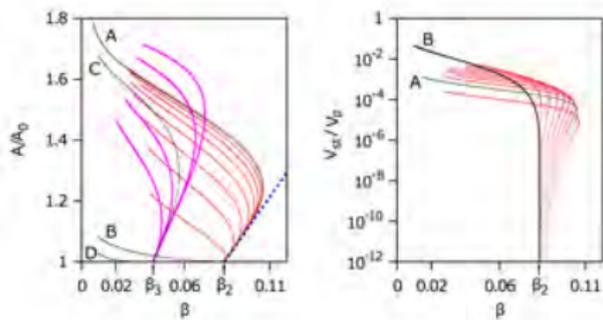
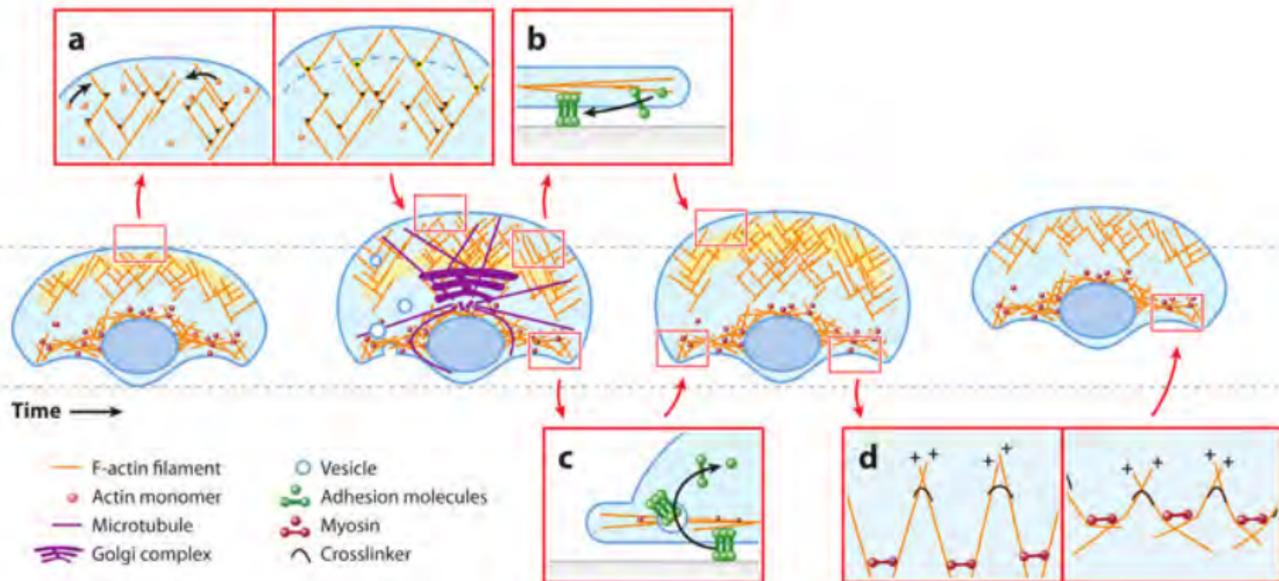


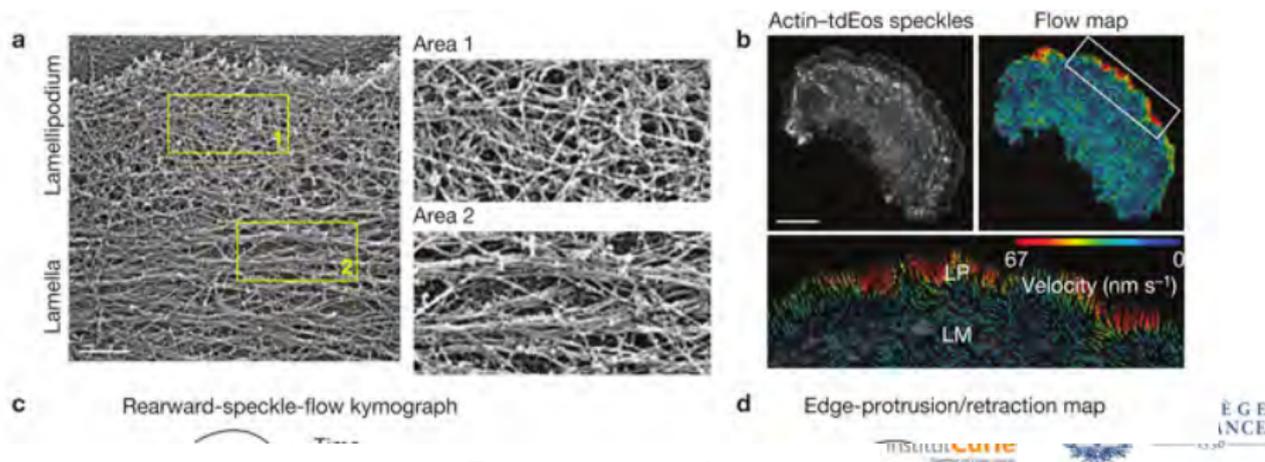
Figure 2.15: (a) Time evolution of a randomly perturbed circular interface for  $\beta = 0.06$ .  
 (b) Time evolution of a randomly perturbed beam-shaped solution for  $\beta = 0.04$ .

# Abercrombie Croonian Lecture 1978



# Lamella and lamellipodium

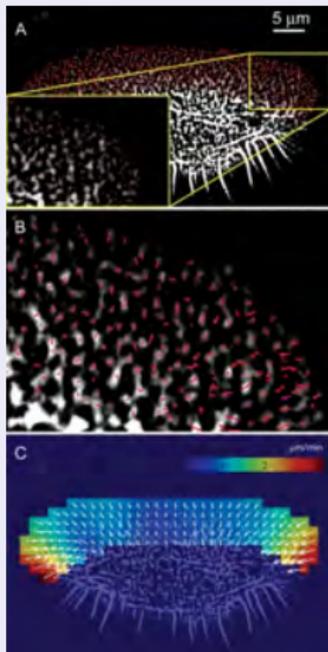
Alexandrova et al.



Burnette et al.

# Mouvement de lamellipodes *Verkhovsky*

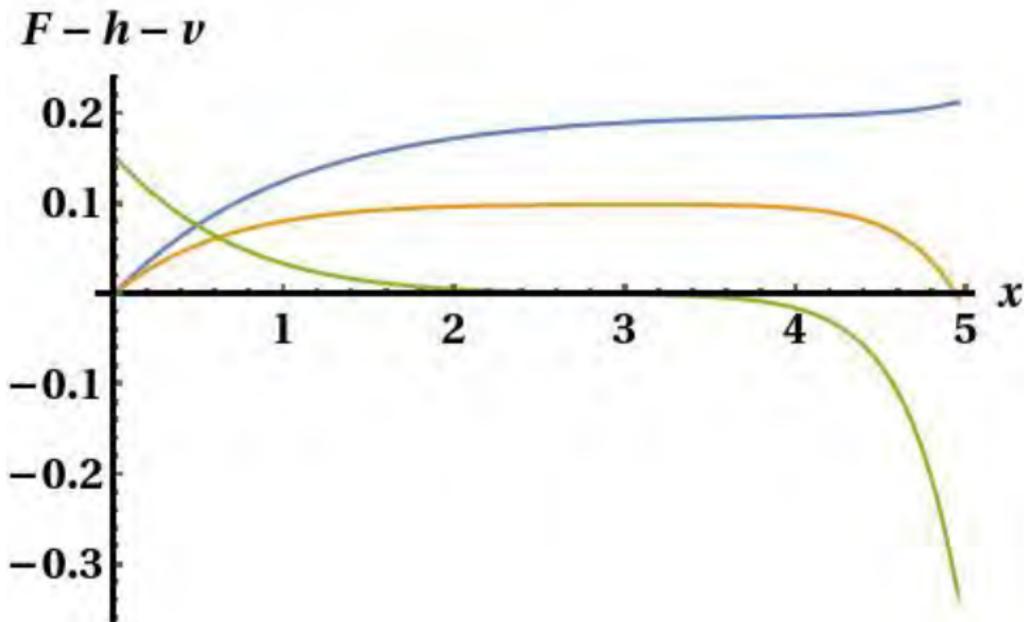
## Champ de vitesse de l'actine



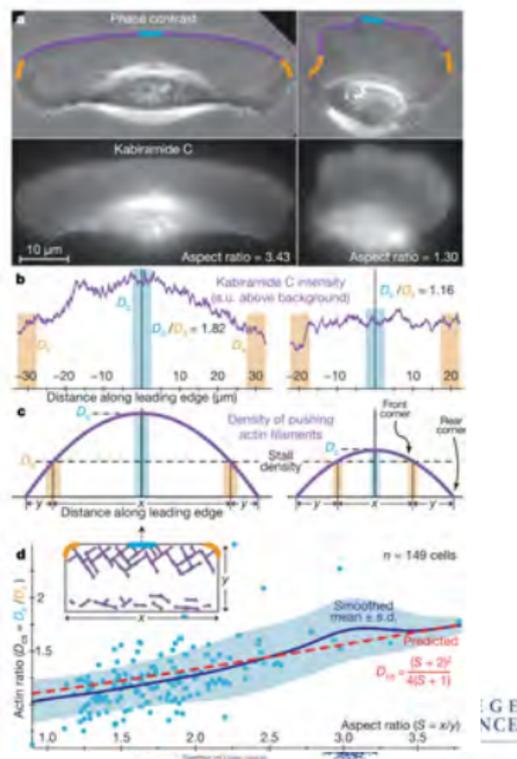
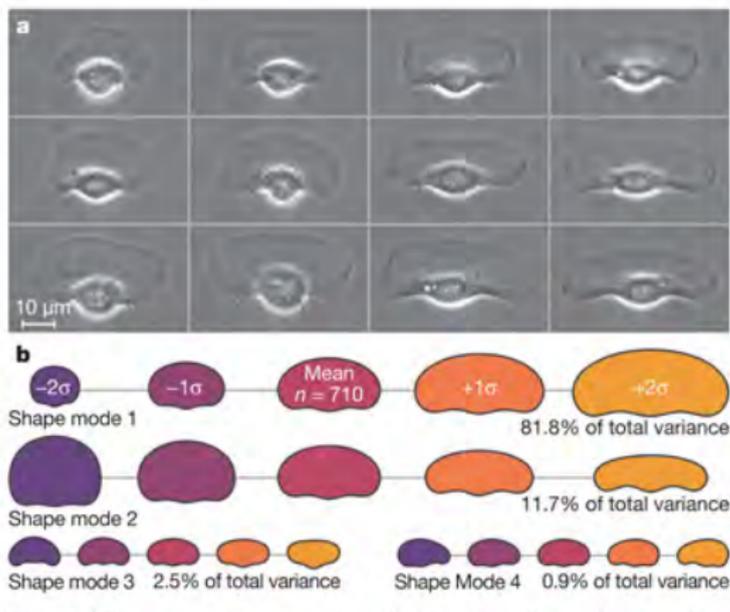
## Contrainte sur le substrat

- Champ de vitesse microscopie de speckle **Vallotton et al.**
- Vitesse de la cellule  
 $U = 10 \mu\text{m}/\text{min}$ .
- Écoulement rétrograde  
 $v = 1 \mu\text{m}/\text{min}$ .
- Distribution de contrainte sur le substrat: "traction force microscopy"  
 $\sigma_{xz} = 4 \cdot 10^2 \text{N}/\text{m}^2$  **Oliver et al.**
- Viscosité de l'actine  
 $\eta = 10^5 \text{Pa}\cdot\text{s}$  **Kaes et al.**

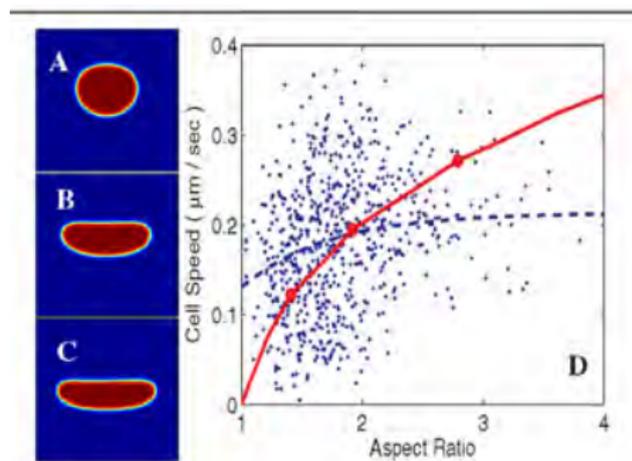
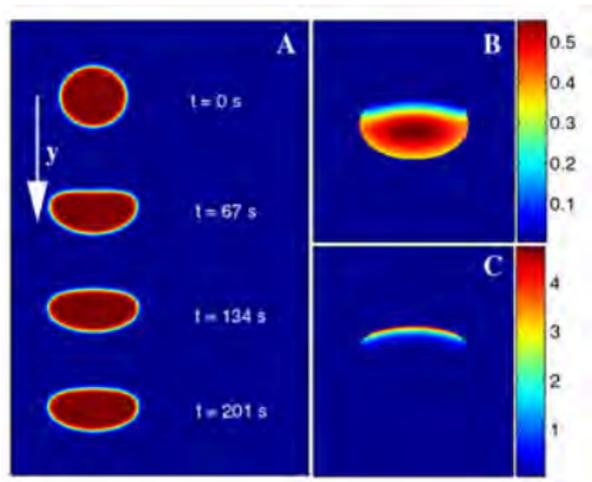
# Lamellipode



# Forme des kératocytes *K. Keren*

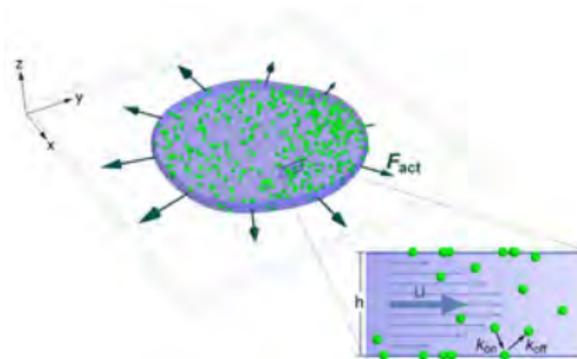
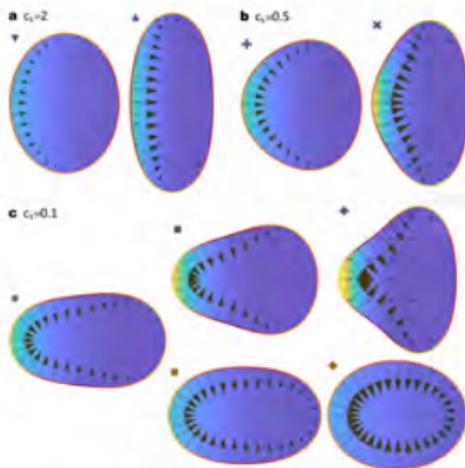
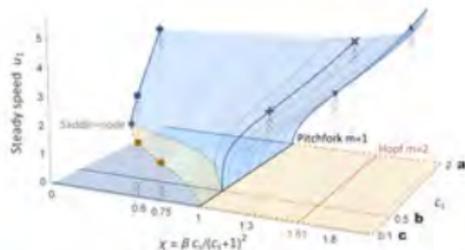


# Théorie de Champ de phase *Shao et al.*

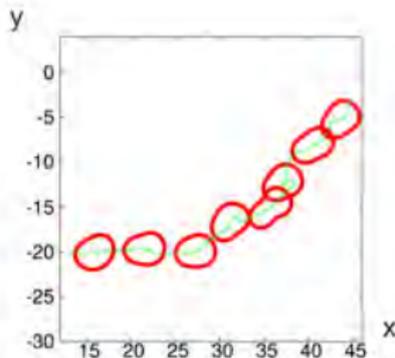
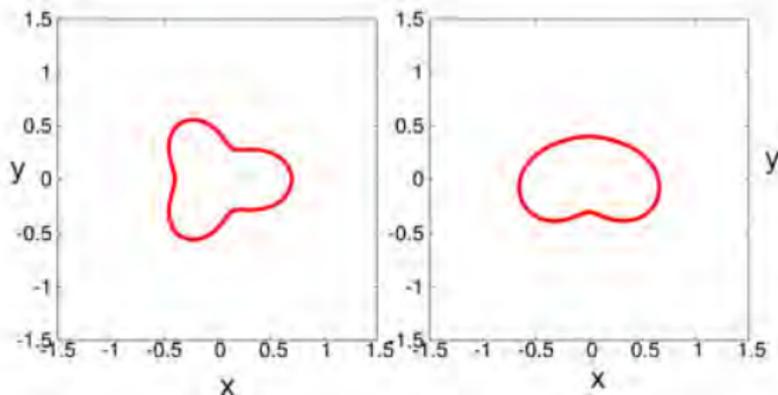


# Morphodynamique de cellules confinées entre deux plans

*Lavi et al.*



# Symmétries et formes de cellules en migration *Ohta et al.*



# Efficacité du mouvement cellulaire *Recho et al.*

