PARTICLE IMAGE VELOCIMETRY
OF OPTICALLY STRETCHED
HUMAN MAMMARY EPITHELIAL
CELLS

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Optical Stretcher

Are metastatic cells “stretchier?”

- HMEC-GFP (Less cancerous)
- HMEC-TWIST (More cancerous)

Guck et al. Biophysical Journal 81 2001 pg. 767-784
So Far

Shape Analysis
  • Long axis over time

What about cell interior?
  • Cytoskeleton

Goal: Analyze stretched cells using Particle Image Velocimetry
Particle Image Velocimetry (PIV)
GFP vs. TWIST

GFP:
- One or two strong stretches
- Stretches mostly at the beginning

TWIST:
- More consistent stretch
- Weaker, but longer stretch
Conclusions

- Stretchiness: Inconclusive

- Viscoelastic Actin model
  - GFP: More elastic
  - TWIST: More viscous

- PIV is a viable analysis technique for optical stretcher cells