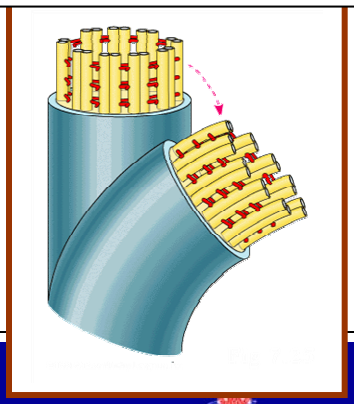
Cilia Induced Hydrodynamics
Project Overview

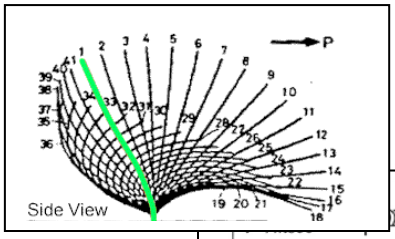
Molecular Motors/Cilia

- Elston (AM):stochastic models of motor proteins
- Mitran (AM): Multiscale modeling, from molecular level to cilia scale
- Prins (CS): large scale simulations, algorithm development
- Superfine (Phy): force/step measurements on individual motors/motor systems (cilia)
- Larry Ostrowski (CF) Mol Bio Dynein
- Davis (CF) imaging Cilia Dynamics
- Dokholyan (BioC): molecular modeling



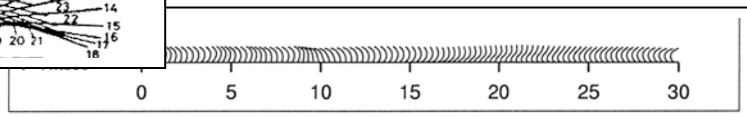
Cilia Dynamics/Hydro Coupling

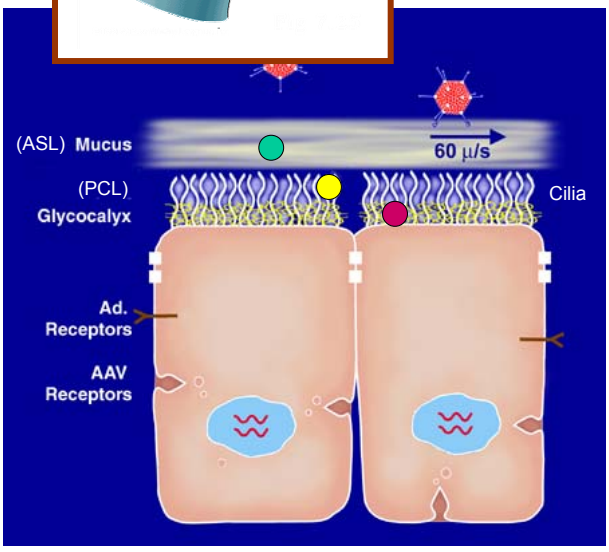
- Minion (AM): Slender Body Theory
- Davis (CF):Flow/Cilia coupling imaging
- Superfine (CF) Bead mapping hydro/cilia force measurements



Hydrodynamics

- McLaughlin (AM): stratified flows
- Camassa (AM): stratified flows
- Davis (CF): layer mixing/flow imaging





Ion and Water Transport

- Boucher (CF)
- Davis (CF)
- Jack Stutts
- Barb Grubb
- Sherif Gabriel

Mucus BioChem/Rheology

- Sheehan (CF): mucus purification/diffusion/rheology
- Rubinstein (Ch):modeling rhoelogy of biopolymers
- Forest (AM) rheology of thick stuff
- Sheiko (CF) polymer imaging/rheology
- Matthews (CF) Mucin functionaland structural AFM imaging
- Superfine (Phy) microbead rheology mapping
- Hiro Matsui (CF) mucus imaging

Biochemical Networks:

- Elston (AM) : stochastic modeling/biochem networks
- Huang (AM): biochemical networks
- Davis (CF): CF regulation biochemistry (Cilia, Mucus)
- Superfine (Phy): mechanosensatory regulation measurements

Infrastructure:

- Stotts (CS) : Program Interoperability
- Prins (CS): Algorthm development
- Taylor (CS) : Instrumentation, Visualization, Analysis