

## Concepts/Topics

- Membrane anatomy
- Extracellular matrix
- Tight junctions - tight junctions, desmosomes, gap junctions
- Membrane transport - diffusion, osmosis, facilitated diffusion, cotransport/coupled transport active transport (pumps and endo/exocytosis), receptor-mediated endocytosis
- Cell signaling - generation (environmental or other cells), transmission (juxtacrine, autocrine, paracrine, synaptic, endocrine), receptors: memb-bound (kinase, ion channel, g-protein assoc.) or internal, transduction, response
- Signal transduction, kinases, second messengers (distribution, amplification)
- Cell response (eg ion channels, enzyme activity, gene expression)
- Cell response - diff. cells, same signal, diff. responses (receptor expression, cascade)

## Readings

*Principles of Life* (2013), Chpt. 4 (pp. 77-79), Chpt. 5  
“Synthetic Microbe Lives with Fewer than 500 genes” (*Science* - 24 Mar 2016)

## Homework/Activities

- Crossword: Membrane Transport Due: \_\_\_\_\_
- Article Questions: Science magazine Synthetic Microbe article Due: \_\_\_\_\_
- TBA: \_\_\_\_\_ Due: \_\_\_\_\_

## Helpful Web Links

Signal Transduction (Prof. Dave Explains) [www.youtube.com/watch?v=VatdTJka3\\_M](http://www.youtube.com/watch?v=VatdTJka3_M)  
Cell Signaling (John Chapman) [www.youtube.com/watch?v=8FJkjiNRLh8&list=PLyV\\_IM5FIqWpW17e8xRPaWUQip2o--uPC](http://www.youtube.com/watch?v=8FJkjiNRLh8&list=PLyV_IM5FIqWpW17e8xRPaWUQip2o--uPC)

## Videos/Tutorials

In Da Club (Crash Course) [www.youtube.com/watch?v=dPKvHrD1eS4](http://www.youtube.com/watch?v=dPKvHrD1eS4)  
Cell Transport (Amoeba Sisters) [www.youtube.com/watch?v=Ptmlvtei8hw](http://www.youtube.com/watch?v=Ptmlvtei8hw)  
Cell Membranes (Bozeman) [www.youtube.com/watch?v=y31DIJ6uGgE](http://www.youtube.com/watch?v=y31DIJ6uGgE)  
Membrane Transport (Bozeman) [www.youtube.com/watch?v=RPAZvs4hvGA](http://www.youtube.com/watch?v=RPAZvs4hvGA)  
Cell Wall / Membrane (Brightstorm) [www.youtube.com/watch?v=GalPFs52cUU](http://www.youtube.com/watch?v=GalPFs52cUU)  
Cell Diffusion (Brightstorm) [www.youtube.com/watch?v=r5ODmPu9if8](http://www.youtube.com/watch?v=r5ODmPu9if8)  
Osmosis (Brightstorm) [www.youtube.com/watch?v=OOV2SALAUow](http://www.youtube.com/watch?v=OOV2SALAUow)  
Cell Transport (Brightstorm) [www.youtube.com/watch?v=ls\\_mdBQVGJ4](http://www.youtube.com/watch?v=ls_mdBQVGJ4)  
Cell Signaling (5MinuteSchool) [www.youtube.com/watch?v=N1XcAaF\\_83U](http://www.youtube.com/watch?v=N1XcAaF_83U)  
Signal Transduction (Bozeman) [www.youtube.com/watch?v=D-usAds\\_-IU](http://www.youtube.com/watch?v=D-usAds_-IU)