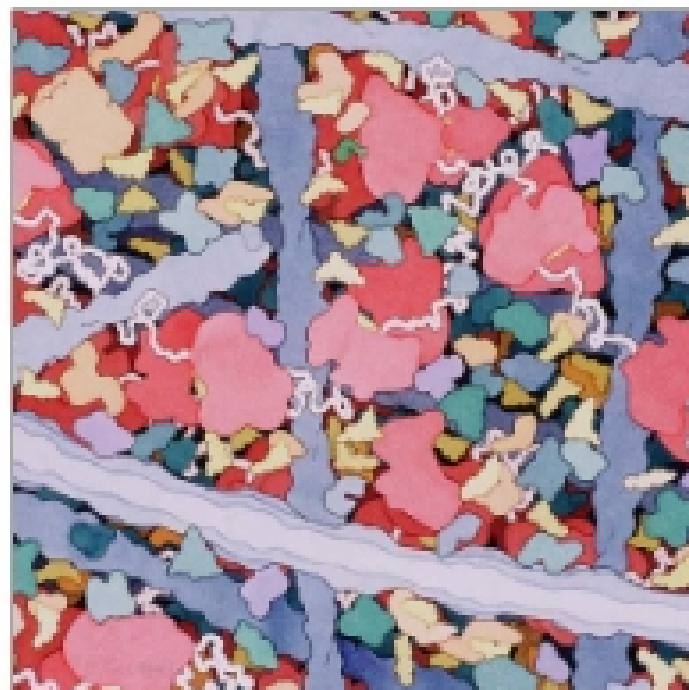


Today's lecture

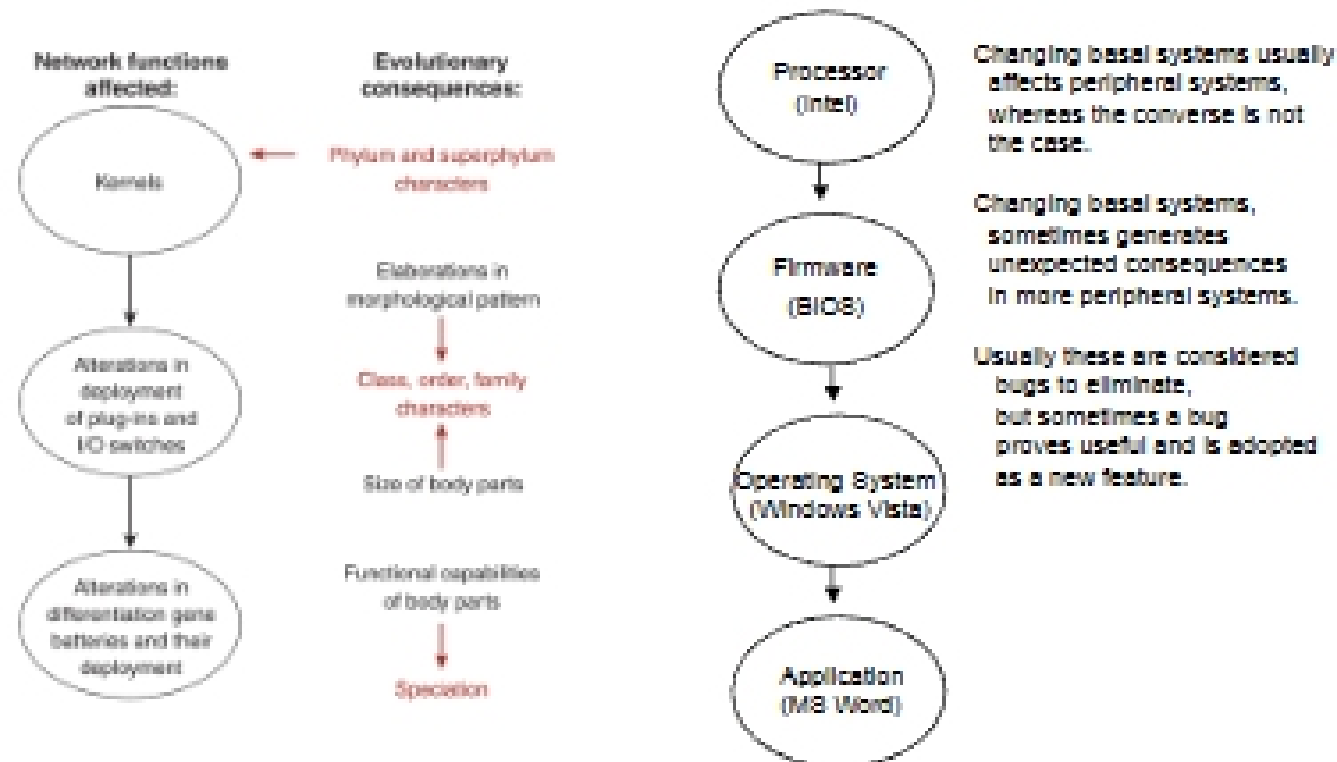
- Responses to some narrative comments
- The evolution of awareness

How do molecules find each other in the cell?



The cytoplasm is very crowded

Embryo :: Computer analogies



Evolution, counter to widespread misunderstanding, is not a random process

- With a few well-understood exceptions, mutations occur randomly.
- However, natural selection is NOT random: it is highly discriminating and sets the ultimate high bar: a genome is propagated or not-propagated.
- When randomly generated variation is subject to selection using stringent criteria --> the outcome is not random.

Trivial example: randomly generated numbers
select only those ending in 317
no longer a random set of numbers

- Evolution: Run new ideas up the flagpole, see if anyone salutes.

Genomes are the handmaidens,
not the blueprints, of life

Awareness