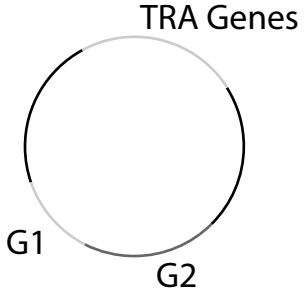
Introductory Handouts

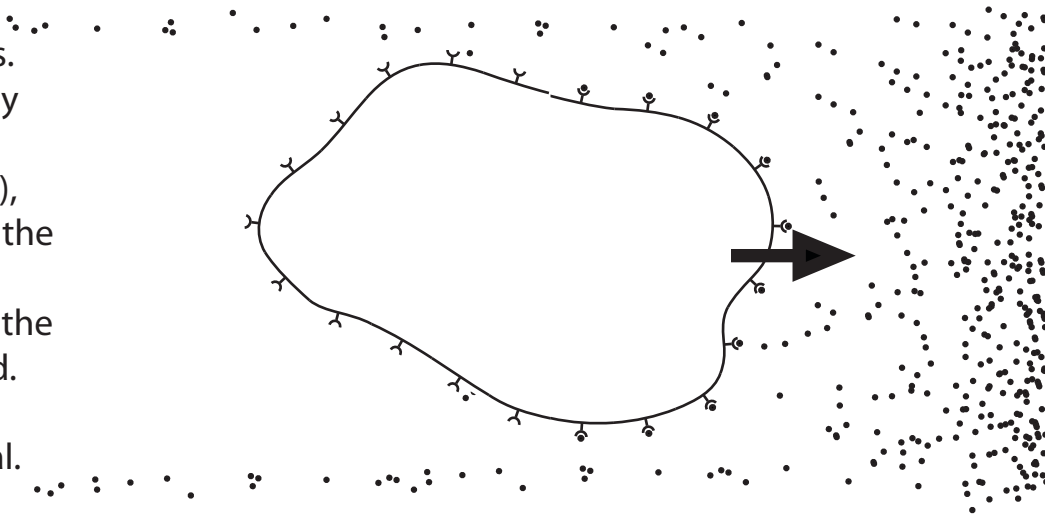
For Lecture #1



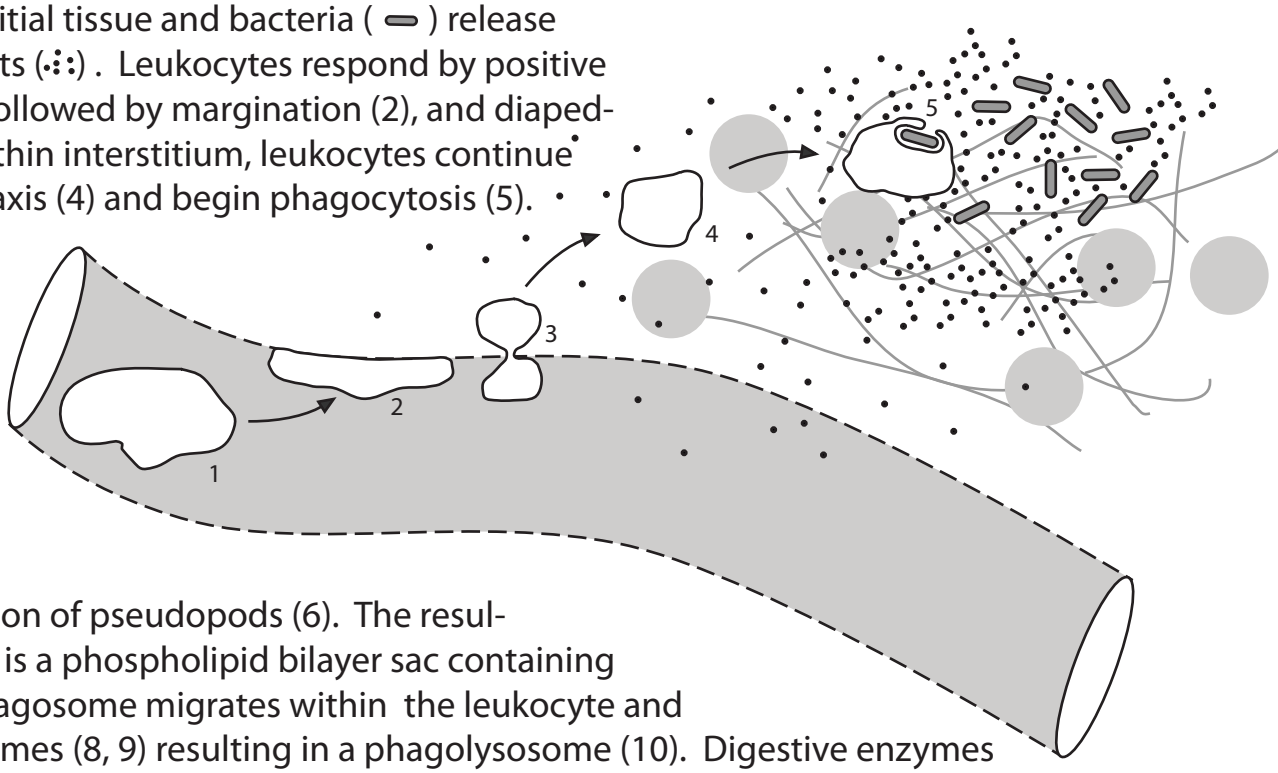
By Noel Ways

Leukocyte Activity

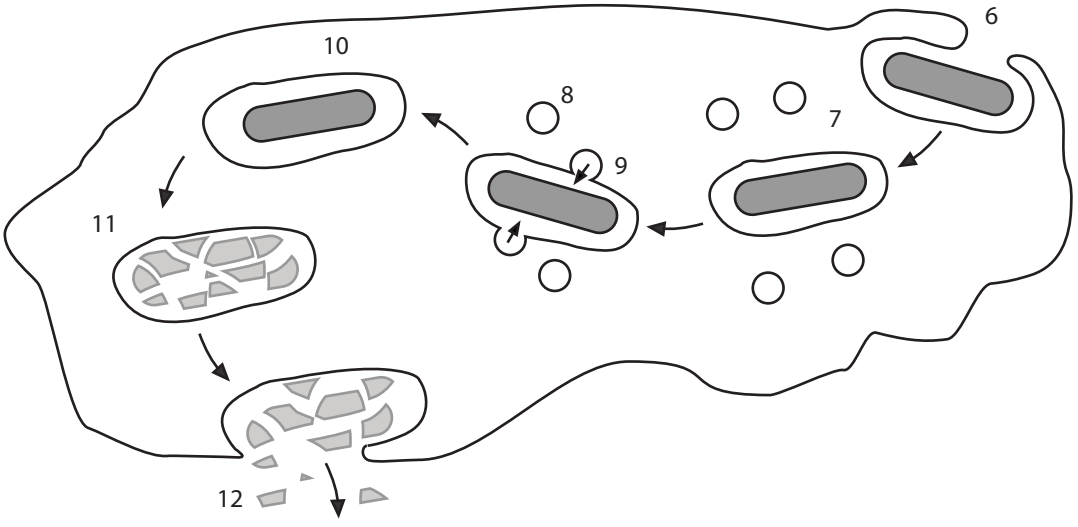
Leukocytes move by chemotaxis. Cell surface receptors (⊥) may bind to a chemo-attractant (∴). When the complex forms (⊥), the cell responds my moving. If the leukocyte moves towards the source of the chemo-attractant, the term positive chemotaxis is used. Negative chemotaxis would be moving aware from the chemical.



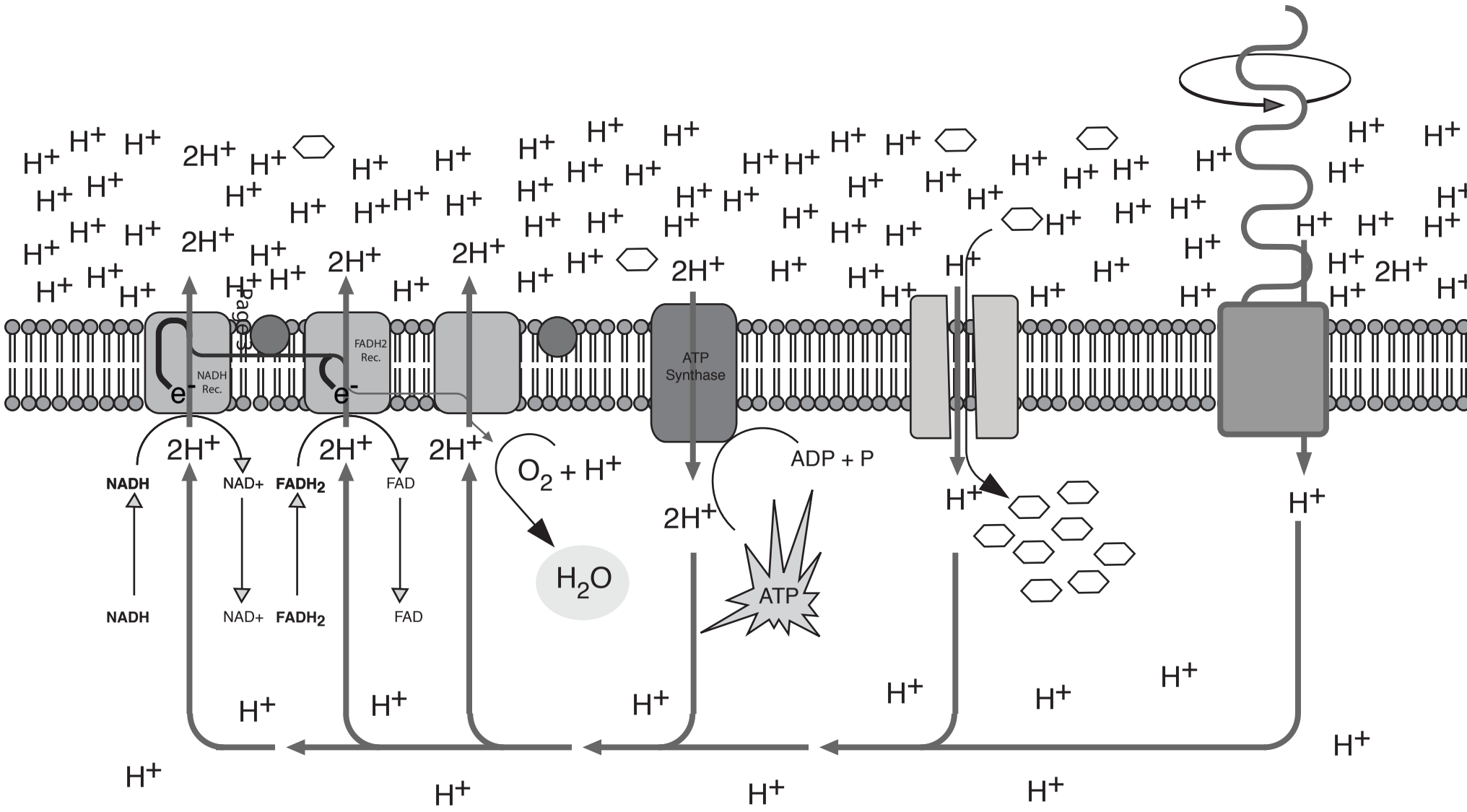
Damaged interstitial tissue and bacteria (▬) release chemo-attractants (∴) . Leukocytes respond by positive chemotaxis (1), followed by margination (2), and diapedesis (3). Once within interstitium, leukocytes continue positive chemotaxis (4) and begin phagocytosis (5).

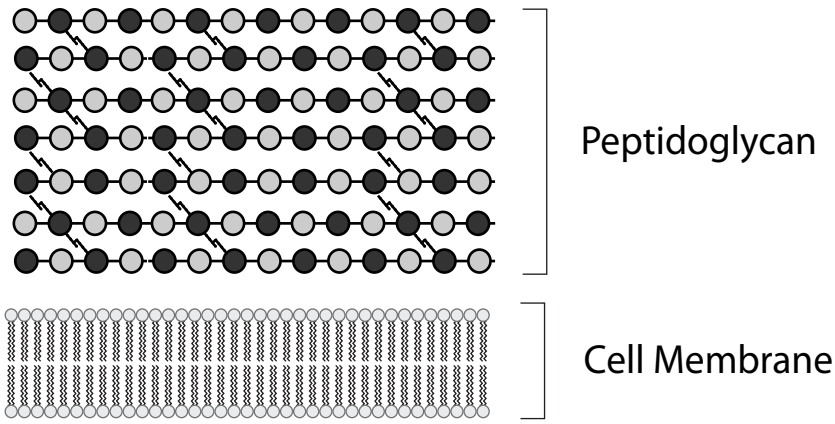


Phagocytosis results in the fusion of pseudopods (6). The resultant phagosome is a phospholipid bilayer sac containing bacteria. The Phagosome migrates within the leukocyte and fuses with lysosomes (8, 9) resulting in a phagolysosome (10). Digestive enzymes (such as lysozyme) digest bacteria (11), and this vesicle may now be considered a residual body. Elimination by exocytosis (12) of debris concludes the process.

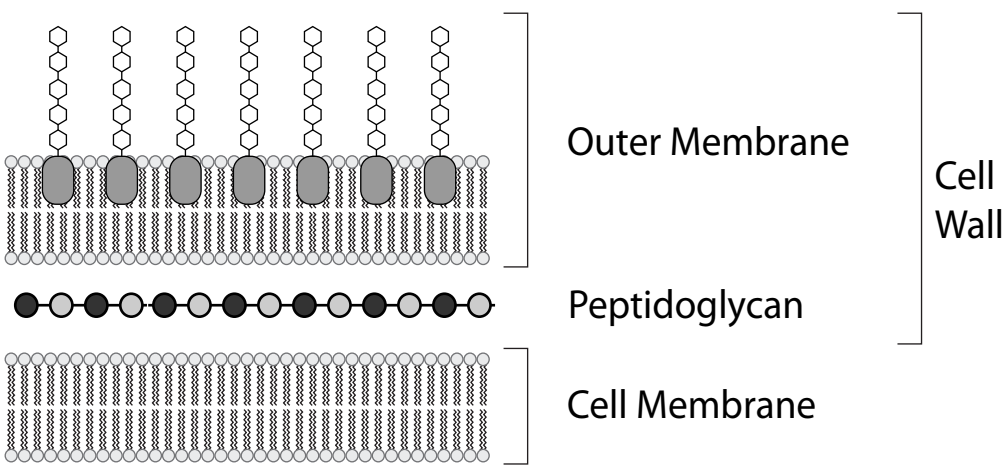


Protomotive Force



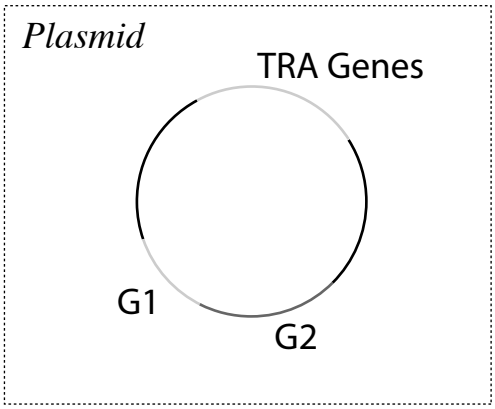


Gram Positive



Gram Negative

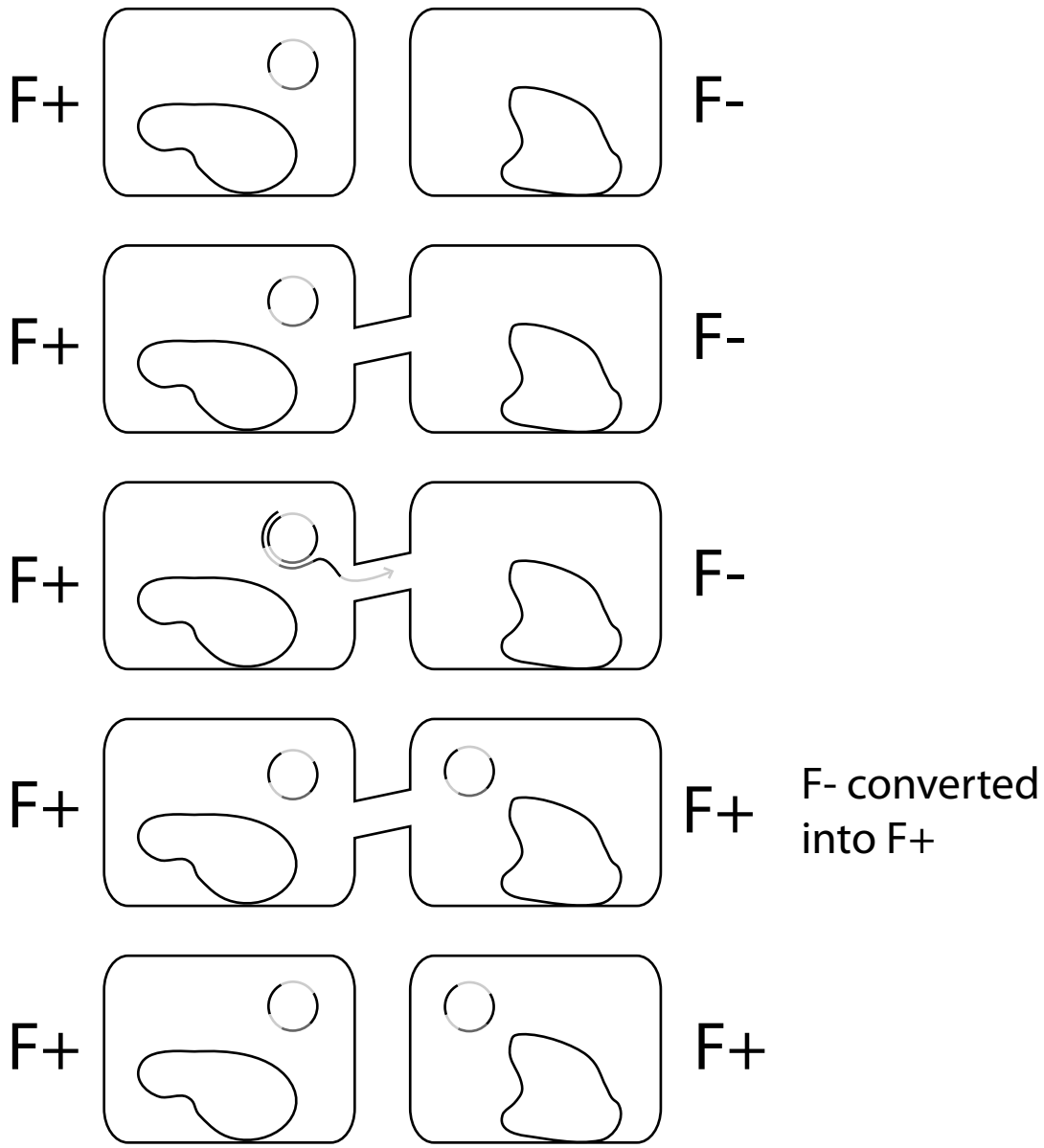
Plasmids and Pili

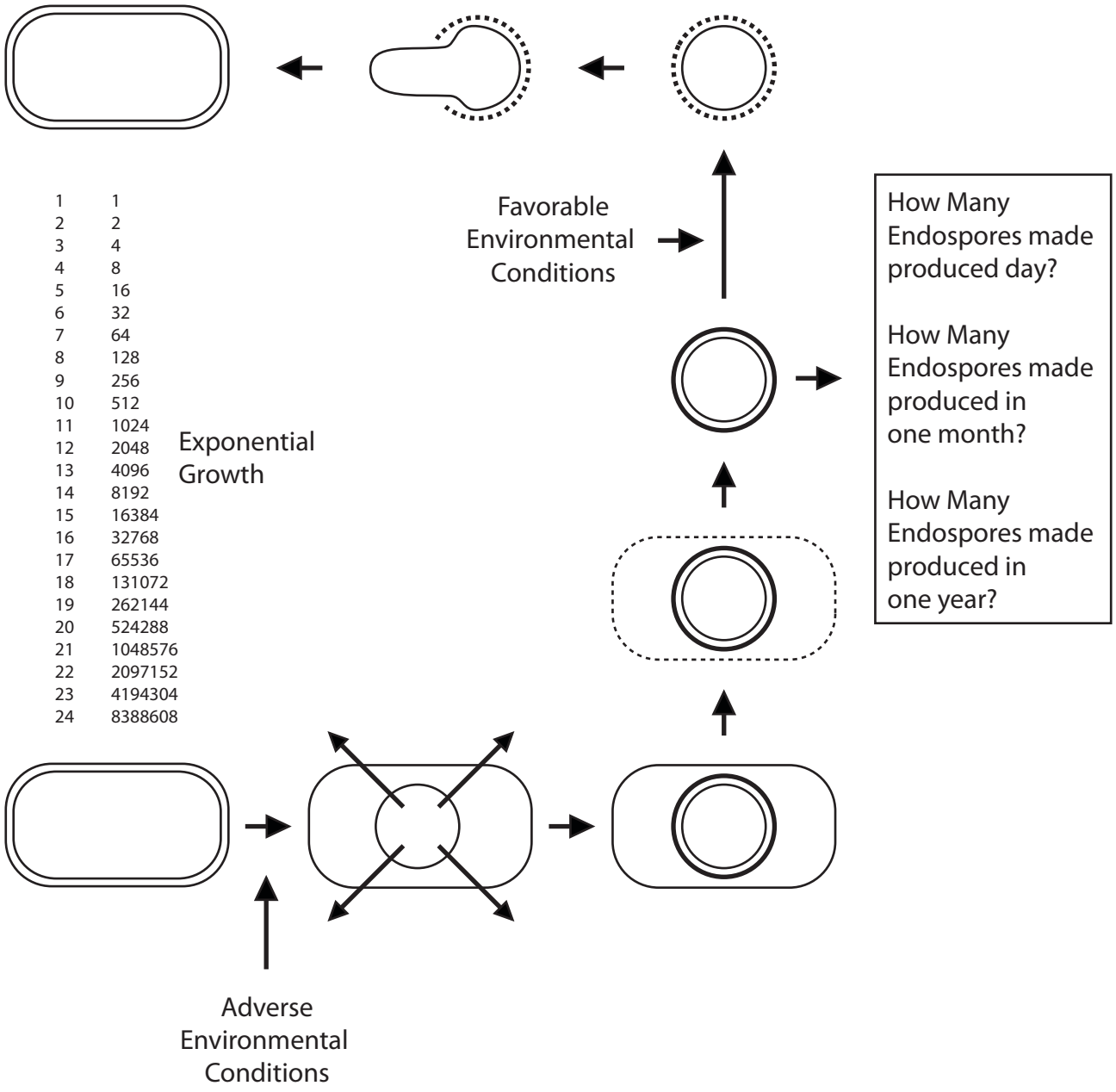


TRA genes (or transfer genes, transfer operon, etc.) code for necessary compounds for plasmid transfer from the F+ to the F- cell; as well as for the maintenance of the plasmid within a host cell.

All plasmids will, of necessity, have the TRA genes. Other genes may also be present that may or may not provide auxiliary functions for the cell, or substances toxic the bacteria host.

Because of their ability to transfer genetic material, they are particular interest and utility to the genetic engineer. Plasmids are used to transfer DNA from one bacteria to another for genetic engineering purposes.




1 1
2 2
3 4
4 8
5 16
6 32
7 64
8 128
9 256
10 512
11 1024
12 2048
13 4096
14 8192
15 16384
16 32768
17 65536
18 131072
19 262144
20 524288
21 1048576
22 2097152
23 4194304
24 8388608
Exponential Growth
Favorable Environmental Conditions
How Many Endospores made produced day?
How Many Endospores made produced in one month?
How Many Endospores made produced in one year?
Adverse Environmental Conditions

Chlamydial Life Cycle