CONCEPT: ABC TRANSPORTERS

ABC Transporters Provide Multidrug Resistance

●***A****TP-****B****inding-****C****assette* (_____) *Transporters*: integral membrane proteins with > 1 ABC structural motif.

□ Pump substances across a membrane, _____ their concentration gradient.

●All ABC Transporters share _____ common *structural* elements:

1) _____ **T**rans-**M**embrane **D**omains (_____) which make the pore through the membrane.

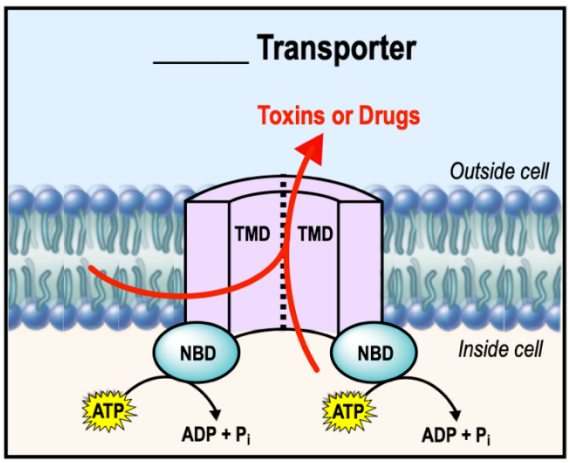
2) _____ *cytosolic* **N**ucleotide-**B**inding **D**omains (_____) that bind & hydrolyze ATP (**A**TP **b**inding **c**assette).

●Some called **m**ulti**d**rug **r**esistance (_____) *transporters*, since they're responsible for *resistance* to multiple _____.

□ In bacteria, MDR transporters confer *antibiotic* _____.

In humans, ***P-glycoprotein*** *(___-_____)* is an MDR transporter that removes *anti-cancer* drugs from tumor cells.

EXAMPLE: ABC Transporter.



PRACTICE: ABC transporters are a part of a superfamily of transporters that have two nucleotide binding domains that bind _____, which is necessary for primary active transport.

a) ADP. b) Phosphate. c) ATP. d) GTP. e) AMP.

PRACTICE: What side of a membrane has a higher concentration of the toxin Limbricide after ABC transporter activity?

a) Inside the cell. b) outside the cell.

PRACTICE: Which of the following statements is TRUE for BOTH P-type ATPases and ABC transporters?

a) They each have two ATP-binding protein domains.

b) They both contain a phosphorylated Asp residue.

c) They both are examples of multi-drug resistant proteins that pump toxins out of the cell.

d) They are both dependent on the presence of ATP.

e) They both require ATP binding before substrate binding and transport.