

CONCEPT: PROTON MOTIVE FORCE DRIVES FLAGELLAR MOTILITY

● **Proton Motive Force** (_____): energy generated from the transport of _____ (H^+) across a plasma membrane.

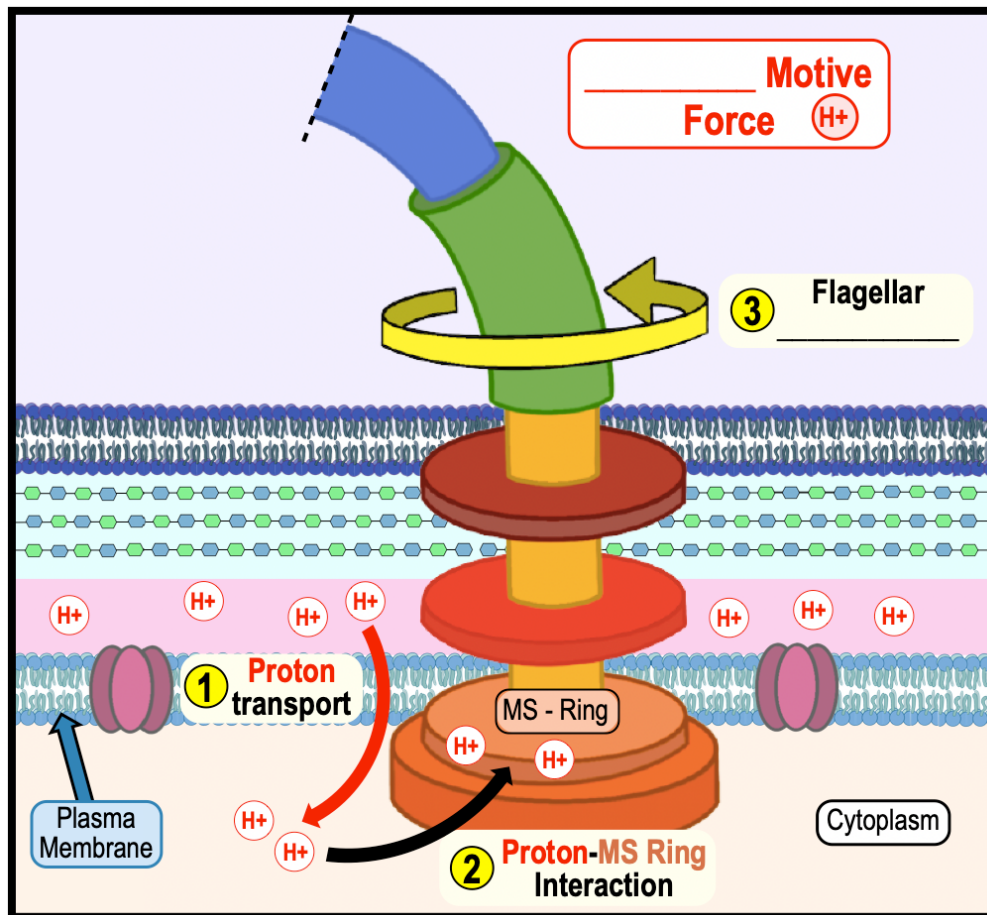
① Protons are pumped from the periplasm _____ the cell cytoplasm.

② _____ interact with *charged* amino acids on MS ring proteins.

③ Interaction with the MS ring causes the _____ to rotate.

● The _____ that protons are pumped into the cell controls the *rotational speed* of the flagella.

EXAMPLE: Protons pumped into the cell cause the flagellar motor to rotate.



● Energy from the *PMF* is used to move the cell towards a more *favorable* environment.

PRACTICE: Energy generated from a proton motive force (PMF) can be used to power:

- Twitching motility.
- Flagellar rotation.
- Gliding motility.
- Conjugation.
- Flagellar synthesis.