CONCEPT: EUKARYOTIC CILIA & FLAGELLA

●*Microtubules* are a major structural component of _____ & _____, which provide cell *movement*.

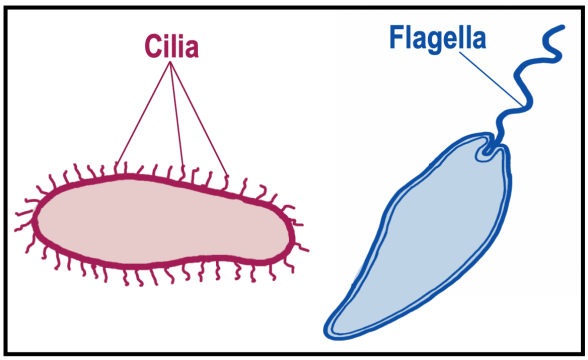
□ Extend _____ from the cell surface & are anchored to the cell by a *basal body*.

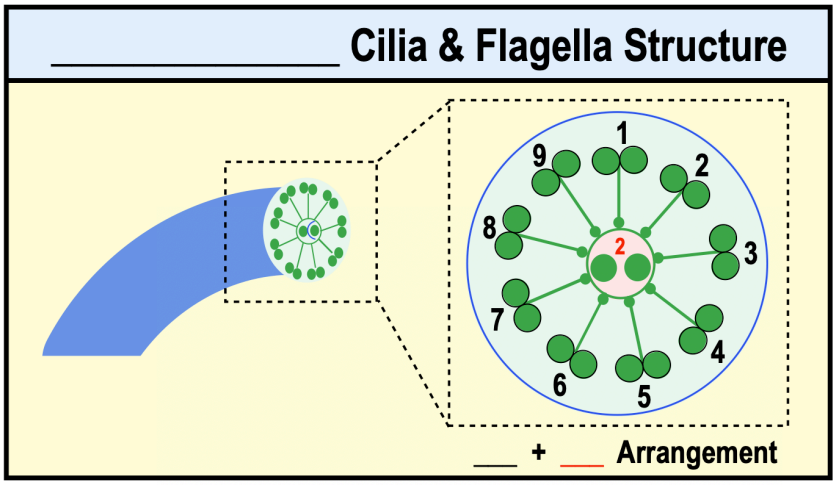
●**Cilia** are short, "_____-like" structures covering the cell & **flagella** are long, "_____-like" structures.

□ Both *cilia* & *flagella* made-up of long *microtubules* together in a *9 + _____ arrangement*.

□ **9 + 2 Arrangement:** 9 _____ of microtubules surrounding 2 central microtubules.

EXAMPLE: The 9 + 2 arrangement of microtubules in cilia and flagella.





PRACTICE: Eukaryotic cilia & flagella are made of:

a) Intermediate filaments.
b) Microtubules.
c) Chitin.
d) Phospholipids.
e) Cellulose.

PRACTICE: What does the 9 + 2 arrangement of microtubules refer to in structures of cilia and flagella?

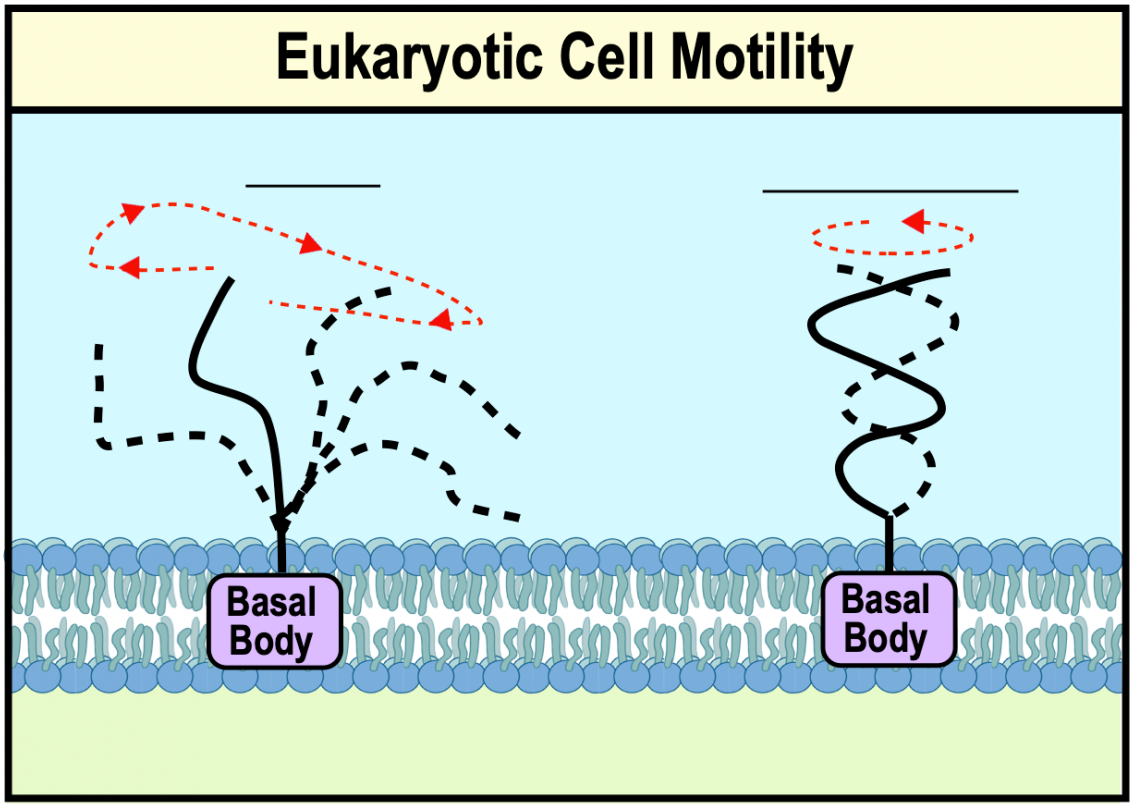
a) The microtubules' length.
b) The microtubules' association with the basal body.
c) The microtubules' arrangement in the axoneme.
d) The microtubules' arrangement embedded in the cytoplasmic membrane.

CONCEPT: EUKARYOTIC CILIA & FLAGELLA

Eukaryotic Cilia vs. Flagella Motility

- *Cilia* & *flagella* have similar overall structure, but each are associated with a different type of cell _____.
  - □ _____**:** move like "oars" to move objects around the cell or to provide cell movement.
  - □ _____**:** move in a "whip-like" motion propelling the cell; powered by *ATP hydrolysis.*

EXAMPLE: Cilia vs. Flagella motility.



PRACTICE: Which of the following is *not true* regarding cilia and flagella?

a) Both cilia and flagella can provide a form of locomotion for the cell.

b) Cilia are shorter and more "hair-like" while flagella are longer and more "tail-like".

c) Cilia move with a "whip-like" motion while flagella move like "oars" to propel the cell.

d) Cilia can cover the entire cell's surface while flagella are usually few in number and only at one end of the cell.