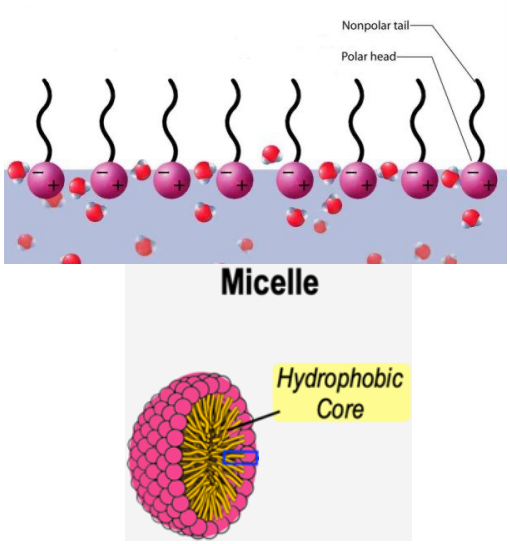
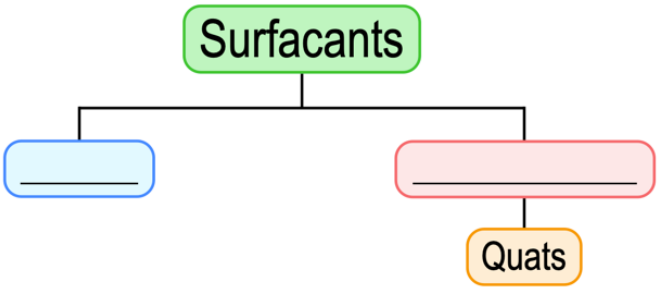
CONCEPT: LIQUID CHEMICALS: SURFACE-ACTIVE AGENTS

●**Surface-Active Agents (_____):** agents that *lower* surface tension of a liquid or solid in which it has dissolved.

- □ Surfactants consist of _____ molecules with a hydrophilic "head" & a long hydrophobic "tail".
- □ Addition of enough surfactant allows _____ to form (spherical shaped group of amphipathic molecules).
- □ Allows *hydrophobic* substances like _____ to be mechanically "washed away" using polar solvents like water.





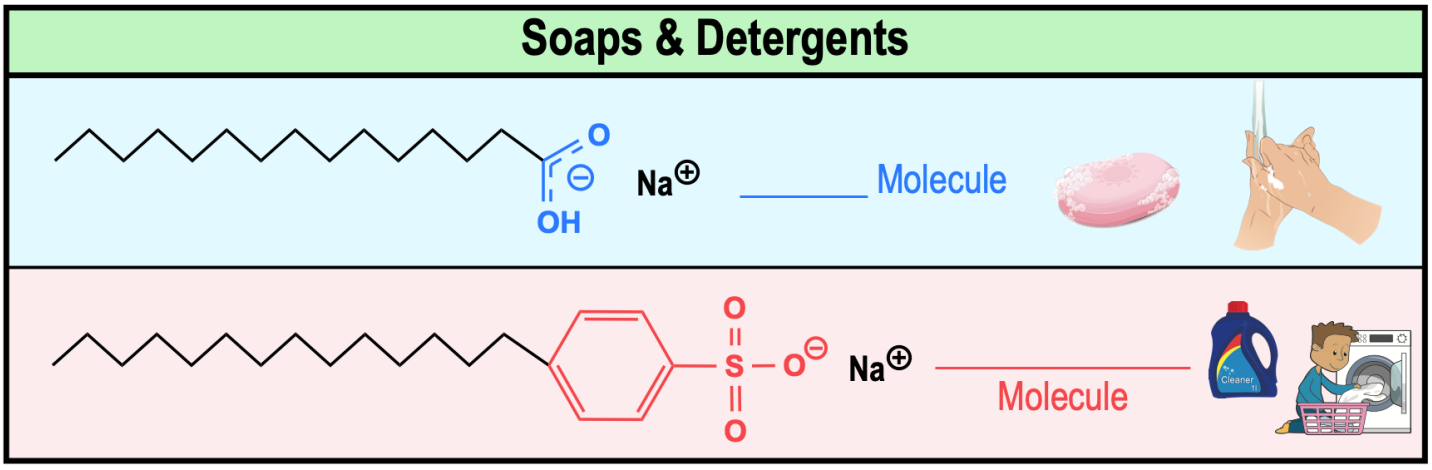
Soaps & Detergents

●**Soaps:** biodegradable, *natural,* surfactant molecules that are fatty acids containing a _____ atom (ex. Na^+ or K^+).

- □ Do NOT kill microbes; but effectively *de-germs* (_____ them from a surface).
- □ Forms soap _____ when it interacts with many minerals & salts found in "hard water".
- □ Soap *scum* can deteriorate fabrics & ruin clothing/surfaces.

●**Detergents:** nonbiodegradable, _____ surfactant molecules like soaps, BUT generally with *sulfonate* groups.

- □ Sulfonate group is _____ likely to bind minerals & salts in hard water; therefore, they do NOT form a scum.
- □ Can be anionic or _____ (Ex. quats).



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PRACTICE: Which of the following statements are FALSE?

a) Soaps are made from organic materials like animal fats.

b) Detergents are made from synthetic materials.

c) Soaps interact with salt molecules in water which leaves a residue after washing.

d) Soaps and Detergents kill microbes and are effective sterilants.

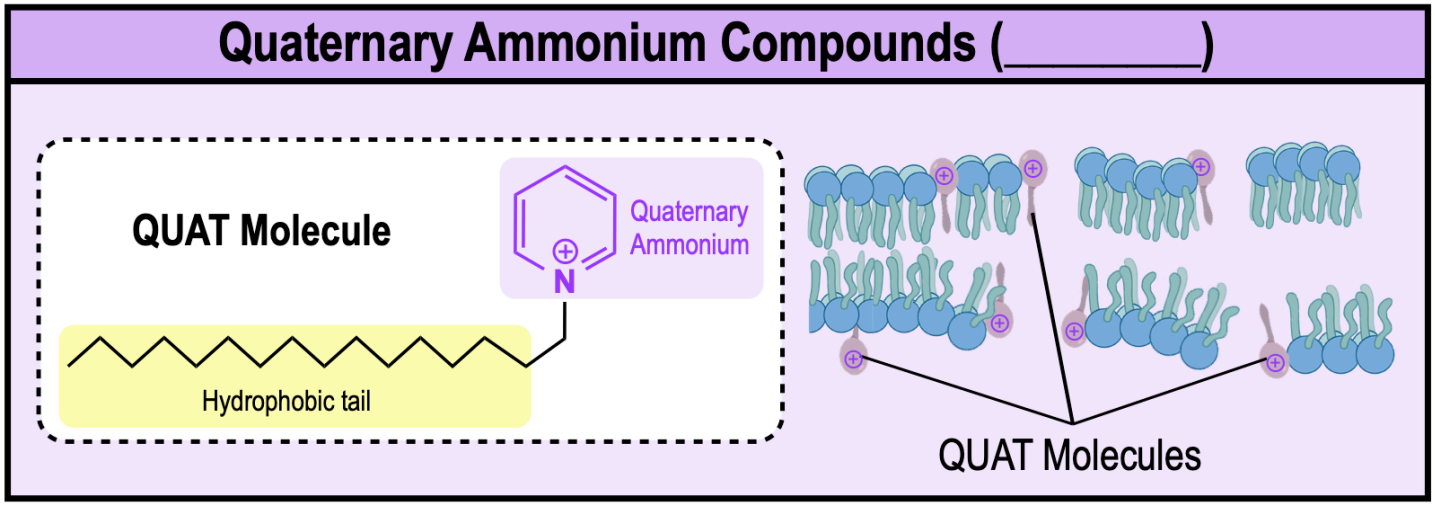
e) All of the following are true.

Quats

●**Quats (Quaternary Ammonium Compounds):** _____ detergents safe enough to use in food preparation.

□ Amphipathic molecules with a _____ charged quaternary _____ group.

□ _____ cytoplasmic membranes by *inserting* into the phospholipid bilayer.



PRACTICE: Quaternary ammonium compounds:

a) Are cationic detergents that help wash surfaces.

b) Are used as a 22% aqueous solution.

c) Are extremely toxic to humans.

d) Are amphipathic molecules with negatively charged hydrophilic portion.