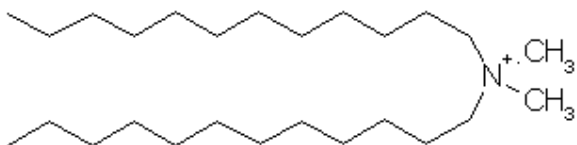
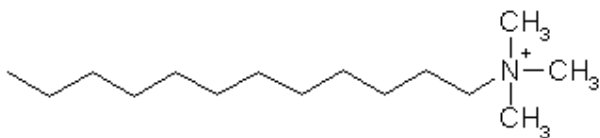
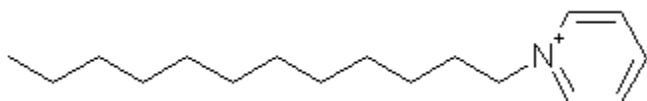


### 4.13 Cationic surfactants

The surfactants discussed so far all contain negatively charged hydrophilic groups, either carboxylate or sulfate ions. These types of surfactants are called **anionic surfactants**. Surfactants with positively charged hydrophilic groups (ammonium ions), called **cationic surfactants**, also exist, although they are less common.



What functional group is found in the above two molecules?

Cationic surfactants are used as hair conditioners, fabric softeners, and germicidal soaps. Shampoos typically contain one or more anionic surfactants which remove accumulated dirt and sluffed skin particles, but also remove some of the natural sebum oil that coats hair.

Hair conditioners add back oil to the hair after shampooing to keep it flexible and glossy. They often contain cationic surfactants because the hair has a negative charge which will attract and bind the cationic surfactant. Additional agents such as silicone products (e.g. dimethicone) are sometimes added to increase gloss.