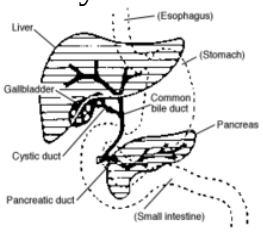
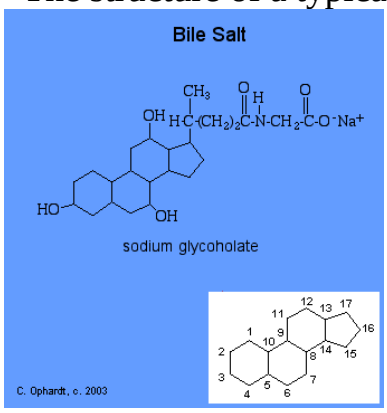
4.12 Bile Salts

Dietary fat has to be emulsified in the small intestine in order to be absorbed into the blood stream. The first step of this emulsification is done by bile salts which are synthesized in the liver and then secreted into the bile duct. They are normally concentrated in the gall bladder and released when dietary fat is detected.



The structure of a typical bile salt, sodium glycholate, is shown below.



Label the hydrophilic and hydrophobic portions of the molecule.

Bile salts are synthesized in the liver from cholesterol and are secreted into the small intestine via the bile duct. Their presence in the small intestine helps in the absorption of fats and other fat soluble substances (such as the fat soluble vitamins). If the bile duct is blocked by a gallstone severe pain can result. In addition dietary fats do not get as effectively emulsified and absorbed and end up being excreted in the stools. This results in fatty stools that have lower density than normal (because of the low density of fat), a condition called **steatorrhea**. The most common solution to gall stone problems is to remove the gall bladder. Bile salts are no longer stored in the gall bladder but enter the small intestine on a more continuous basis. Most patients do not have any problem with having their gall bladder removed, although their absorption of fats may not be as efficient, especially with a high fat diet.