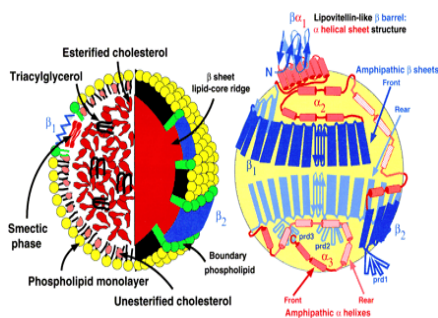
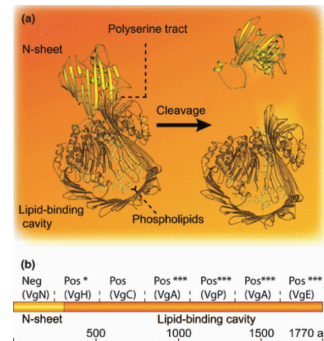


Apo-Bee

Apo-B (apolipoprotein B) is a chain of 4,563 amino acids, one of the largest proteins in the human body. Synthesized in the liver, apo-B combines with triglyceride and cholesterol to allow transport of these lipids to tissues for use in metabolism and in membrane synthesis. As triglycerides are metabolized away, this package of protein and lipid is transformed into low density lipoprotein - LDL - a.k.a. “bad” cholesterol - the *badness* referring to cholesterol deposition into artery walls that occurs when increased levels are present . Note, however, that *all lipoproteins* - LDL included - are vital for normal function in humans and other vertebrates.



Structure of apolipoprotein B in LDL
Segrest et al., UAB Medical Center
Birmingham, AL

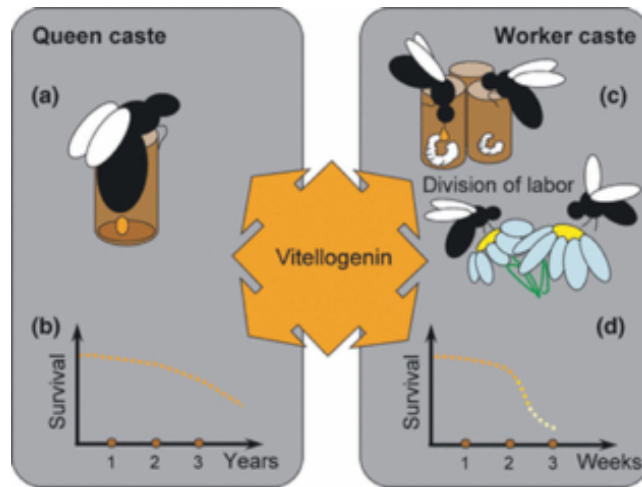


Structure of honey bee vitellogenin (VTG)
Amdam et al. Arizona State U.,
Tempe, AZ

In a striking example of the *connectedness of all life-forms on our planet*, **vitellogenin (VTG)**, a large lipid-transport protein with similar structure and amino acid sequence homology to human apo-B, plays a major role associating with lipids in the yolks of eggs in birds and invertebrates ... including bees. In the case of the honey bee, where social organization of the hive relegates egg laying to one individual, **VTG** levels are profoundly elevated in the circulatory fluid (endolymph, not blood) of the queen, whose ovaries may produce thousands of eggs a day during the heat of spring and summer colony expansion, as foragers are needed to bring in the seasonal harvest.



For the multitude of female workers, whose ovaries never fully develop, however, **VTG** plays an important role in delivering protein to the glands of nurse bees that secrete bee milk [*royal jelly*], which is fed to all of their newly-hatched sisters for the first few days of life and given perpetually to the queen. Modulation of **VTG** levels among members of the colony determines the roles individuals play in the work of the hive. ... **Apo-Bee**



Here are two references:

- 1) <http://www.jlr.org/content/40/8/1401.full.pdf>
- 2) <http://onlinelibrary.wiley.com/store/10.1111/j.1365-294X.2011.05351.x/asset/j.1365-294X.2011.05351.x.pdf?v=1&t=hg0p77fy&s=0d9efbd0b510fe4dd8e6fb02ee14ba8d47ed4073>