Mycoplasmas are arguably the most successful of all bacteria, causing chronic diseases in seemingly all animals including man. These small bacteria synthesize rhamnose and produce glycolipids, glycoproteins, and polysaccharides despite an absence of nucleotidyltransferases and genes required for the known pathways for rhamnose biosynthesis. The glycosylation of surface proteins occurs at a high number of sites involving many different types of amino acids. Some proteins are glycosylated with rhamnose, a sugar that appears to link protein to phospholipid with an essential role in protein trafficking.