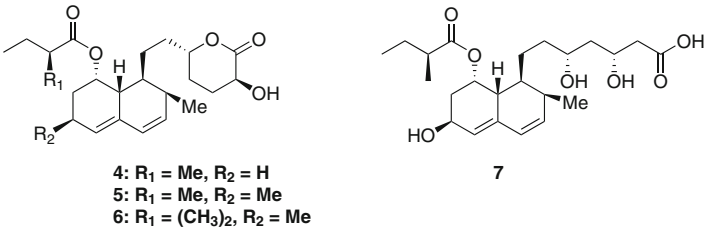

Fig. 3 Structures of natural products mevastatin (**4**) and lovastatin (**5**), and semisynthetic derivatives simvastatin (**6**) and pravastatin (**7**)

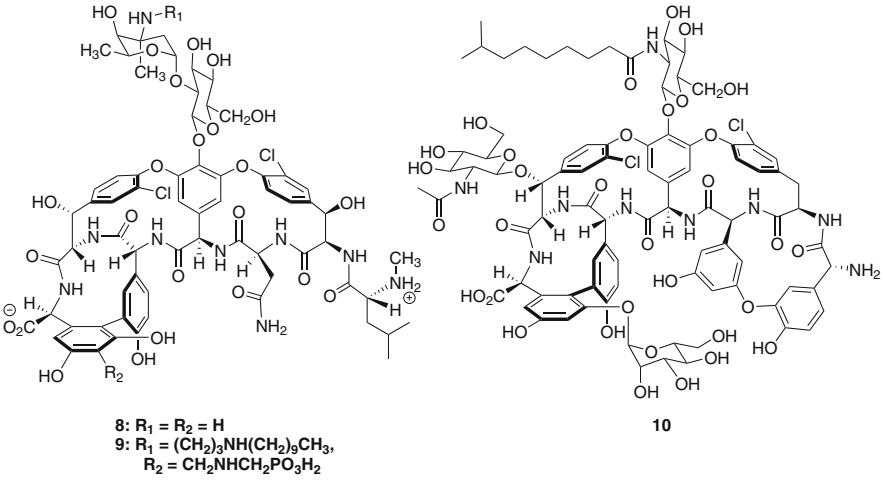

Fig. 4 Structures of the glycopeptide antibiotics vancomycin (**8**), teicoplanin (**10**), and the semisynthetic derivative telavancin (**9**)

2.1.3 Soil Bacteria

Vancomycin

Possibly one of the most important antibiotics for clinical use is vancomycin (**8**, Fig. 4). Vancomycin is a nonribosomally synthesized tricyclic glycopeptide which was originally isolated from the bacterial strain *Streptomyces orientalis* (Levine 2006). It has been approved for the treatment of various Gram-positive bacterial infections that show resistance against conventional antibiotics. Vancomycin inhibits bacterial cell wall synthesis by targeting and binding to bacterial cell membrane precursor lipid II. More specifically, it binds to the D-Ala-D-Ala moiety of the pentapeptide tail of lipid II, thereby preventing penicillin-binding proteins from cross-linking two peptidoglycans together. This in turn leads to a bactericidal cascade comparable to the β-lactams (Jordan 1961).