



**Figure 1.5** Structure of the ALG biosynthetic complex [33].

membrane protein AlgE. Alg8 is thought to be the bottleneck for ALG biosynthesis. Alg8 has a large cytoplasmic glycosyltransferase (GT) domain and four transmembrane (TM) domains [36, 37]. It contains two closely abutting  $\beta/\alpha/\beta$  Rossmann-like nucleotide binding domains or a GT-A fold. The protein has been classified as a member of a family of inverting glycosyltransferases (GT-2 family) that include cellulose, chitin, and hyaluronan synthases [38].

Another cytoplasmic membrane protein needed for ALG production is Alg44. It has a single transmembrane domain located near the middle of the protein. The protein contains a cytoplasmic N-terminal PilZ domain [39], which plays an important role in binding the secondary messenger bis-(3-5)-cyclic dimeric guanosine monophosphate and suggests an additional regulatory role for Alg44. In the assembly of the multiprotein complex, the C-terminal periplasmic domain of Alg44 plays a role that, therefore, functions as a part of the periplasmic scaffold and provides a bridge between the cytoplasmic membrane proteins.