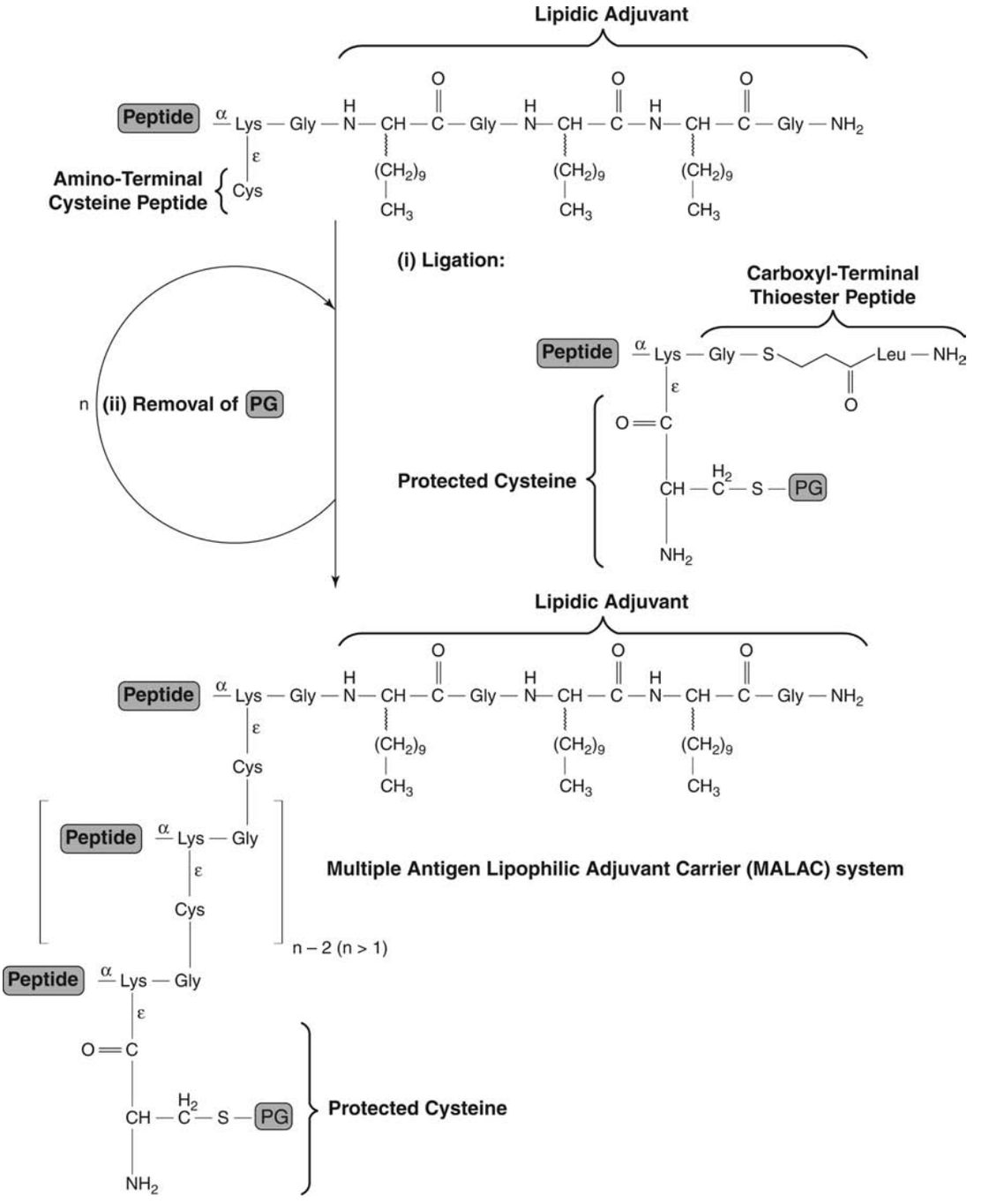

Figure 2 Scheme for the synthesis of the multiple antigen lipophilic adjuvant carrier system. Multiple peptide antigens, synthesized as carboxyl-terminal thioester peptides, are conjugated to an amino-terminal cysteine peptide containing the lipidic adjuvant. Ligation reactions are performed, followed by removal of cysteine protecting groups, until the lipopeptide vaccine of interest is synthesized. *Abbreviations*: PG, protecting group. MALAC, multiple antigen lipophilic adjuvant carrier.

oligolysine. The LCP system has been used to produce vaccines against various microorganisms including *Streptococcus pyogenes* of the GAS (94–97), *Chlamydia trachomatis* (98), and human papillomavirus type-16 (99). An alternate strategy to the LCP system is the MALAC system (94,95) mentioned above (Fig. 2), which provides a multiepitope vaccine-containing lipid that has been used to assemble GAS lipopeptide vaccines candidates (95).