The Claims defining the invention are as follows:

1. A method for glycosylation of a substrate to produce a beta-glycosylated product, comprising the steps of: providing at least one glycosyl group donor wherein said glycosyl group donor is glucose-1-phosphate, a least one glycosyl group acceptor, and at least one glycosyltransferase enzyme; contacting the glycosyl group donor and glycosyl group acceptor with the glycosyltransferase enzyme under conditions such that the glycosyl group acceptor is glycosylated to produce at least one product having beta-glucose linkages; wherein the conditions are *in vitro* or within an engineered host cell.

2. The method of Claim 1, wherein said glycosyl group acceptor is selected from glycosyl, alkoxy, carboxy, aminocarbonyl, heteroalkyl, heteroalkenyl, heteroalkynyl, carboxyalkyl, aminoalkyl, haloalkyl, alkylthioalkyl, heterocycloalkyl, heteroaryl, and heteroarylalkyl groups.

3. The method of Claim 1 or Claim 2, wherein said product having beta-glucose linkages is a steviol glycoside.

4. The method of any one of Claims 1 to 3, wherein said glycosyl group acceptor is stevioside, said glycosyl group donor is alpha-glucose-1-phosphate, and said product having beta-glucose linkages is rebaudioside A.

5. The method of any one of Claims 1 to 4, wherein said glycosyltransferase is selected from the polypeptides set forth in SEQ ID NOS:2, 4, 6, 8, 10, 12, and 14.

6. A method for production of glucose-1-phosphate, comprising the steps of: providing a phosphorylase, inorganic phosphate, and a disaccharide, trisaccharide, or oligosaccharide substrate of the phosphorylase; contacting said phosphorylase, inorganic phosphate, and saccharide under conditions such that said saccharide is cleaved to produce a monosaccharide and glucose-1-phosphate; wherein the method for production of glucose-1-phosphate is combined with the method of any one of Claims 1 to 5; wherein the conditions are *in vitro* or within an engineered host cell.

7. The method of Claim 6, wherein said glucosyl group acceptor is selected from glycosyl, alkoxy, carboxys, aminocarbonyl, heteroalkyl, heteroalkenyl, heteroalkynyl, carboxyalkyl, aminoalkyl, haloalkyl, alkylthioalkyl, heterocycloalkyl, heteroaryl, and heteroarylalkyl groups.

8. The method of Claim 6 or Claim 7, wherein said phosphorylase is sucrose phosphorylase, said saccharide is sucrose, said monosaccharide produced is sucrose, and said glucose-1-phosphate produced is α-glucose-1-phosphate.

9. The method of any one of Claims 6 to 8, wherein said phosphorylase comprises a polypeptide sequence selected from SEQ ID NOS:16, 18, 20, 22, 24,26, 28, 30, and 32.