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**Milo et al.**

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(54) **ENZYMATIC SYSTEMS FOR CARBON FIXATION AND METHODS OF GENERATING SAME**

(58) **Field of Classification Search**  
None  
See application file for complete search history.

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(65) **Prior Publication Data**

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(51) **Int. Cl.**

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(57) **ABSTRACT**

A system for carbon fixation is provided. The system comprises enzymes which catalyze reactions of a carbon fixation pathway, wherein at least one of the reactions of the carbon fixation pathway is a carboxylation reaction, wherein products of the reactions of the carbon fixation pathway comprise oxaloacetate and malonyl-CoA, wherein an enzyme which performs the carboxylation reaction is selected from the group consisting of phosphoenolpyruvate (PEP) carboxylase, pyruvate carboxylase and acetyl-CoA carboxylase and wherein an export product of the carbon fixation pathway is glyoxylate. Additional carbon fixation pathways are also provided and methods of generating same.