CLAIMS

We claim:

1. An engineered transaminase comprising a polypeptide sequence having at least 85%, 86%, 87%, 88%, 89%, 90%, 91%, 92%, 93%, 94%, 95%, 96%, 97%, 98%, 99%, or more sequence identity to SEQ ID NO:4, wherein said engineered transaminase comprises at least a 422A, 422G, or 422R substitution, wherein the amino acid positions of said polypeptide sequence are numbered with reference to SEQ ID NO: 4, and wherein the engineered transaminase exhibits improved activity on (R)-5-([1,1'-biphenyl]-4-yl)-2-methyl-4-oxopentanoic acid as compared to the transaminase of SEQ ID NO: 4.

2. The engineered transaminase of Claim 1, wherein:

(a) said engineered transaminase comprises a polypeptide sequence that is at least 85%, 86%, 87%, 88%, 89%, 90%, 91%, 92%, 93%, 94%, 95%, 96%, 97%, 98%, 99% or more identical to the sequence of at least one engineered transaminase variant set forth in Table 6.1, 7.1, 8.1, 9.1, 10.1, 11.1, 12.1, 13.1, 13.2, 14.1, 15.1, 16.1, 17.1, and/or 18.1; or

(b) said engineered transaminase is a variant engineered polymerase provided in Table 6.1, 7.1, 8.1, 9.1, 10.1, 11.1, 12.1, 13.1, 13.2, 14.1, 15.1, 16.1, 17.1.

3. The engineered transaminase of Claim 1, wherein:

(a) said engineered transaminase comprises a polypeptide sequence that is at least 85%, 86%, 87%, 88%, 89%, 90%, 91%, 92%, 93%, 94%, 95%, 96%, 97%, 98%, 99% or more identical to the sequence of at least one engineered transaminase variant set forth in SEQ ID NOS: 18, 20, 30, 48, 66, 70, 88, 110, 112, 120, 138, and/or 156; or

(b) said engineered transaminase is a variant engineered polymerase set forth in SEQ ID NOS: 30, 48, 66, 70, 88, 110, 112, 120, 138, and/or 156.

4. The engineered transaminase of Claim 1, wherein said engineered transaminase comprises a polypeptide sequence that is at least 85%, 86%, 87%, 88%, 89%, 90%, 91%, 92%, 93%, 94%, 95%, 96%, 97%, 98%, 99% or more identical to the sequence of at least one engineered transaminase variant set forth in the even numbered sequences of SEQ ID NOS: 6-172.

5. The engineered transaminase of Claim 1, wherein said engineered transaminase comprises a polypeptide sequence selected from: SEQ ID NO: 24, SEQ ID NO: 28, SEQ ID NO: 30 or the even numbered sequences of SEQ ID NOS: 38-172.

6. The engineered transaminase of any one of Claims 1 to 5, wherein said engineered transaminase is purified.

7. A composition comprising the engineered transaminase of any one of Claims 1 to 6.

8. A polynucleotide sequence encoding at least one engineered transaminase of any one of Claims 1 to 7, optionally wherein:

(a) said polynucleotide sequence is operably linked to a control sequence; and/or

(b) said polynucleotide sequence is codon optimized.

9. An expression vector comprising at least one polynucleotide sequence of Claim 8.

10. A host cell comprising at least one expression vector of Claim 8 or at least one polynucleotide sequence of Claim 9.

11. A method of producing an engineered transaminase in a host cell, comprising culturing the host cell of Claim 10, under suitable conditions, such that at least one engineered transaminase is produced, optionally wherein:

(a) the method further comprises recovering at least one engineered transaminase from the culture and/or host cell; and/or

(b) the method further comprises the step of purifying said at least one engineered transaminase.