

**Supplementary material 2. Sequence of designed  $\gamma$ -humulene synthase**

ATGGCTCAAATCAGCGAATCAGTGTCTCCAAGCACCGACCTAAAAGCACGGAATCTTCTATTACCA  
GCAACCGCCACGGTAACATGTGGGAAGATGACCGCATTAGAGCTTAAACAGCCCATATGGCGCACC  
CGCTTATCAGGAACGTAGCGAAAAATTGATTGAAGAAATTAAGCTCCTGTTTCTGTCCGATATGGAC  
GATAGTTGCAATGATTCCGATCGCGACTTGATCAAACGCCTGGAGATCGTAGATACGGTTGAGTGTC  
TGGCATTGATCGTCATTTCCAACCTGAAATTAAGCTGGCGCTGGATTACGTGTACCGTTGCTGGAA  
TGAGCGTGGCATCGGAGAAGGTAGCCGTGATAGCTTAAAAAGGACCTGAATGCGACCGCCTTGGGC  
TTTCGGGCTTTACGCTTACACCGTTATAATGTAAGCTCAGGAGTGCTGGAGAACTTCCGTGATGACA  
ATGGTCAATTCTTTTTCGGTTCTACTGTGGAGGAGGAAGGCGCGGAGGCCTACAATAAACATGTACG  
TTGCATGCTGTCCCTGTCCCGCGCTTCCAATATTTTATCCCGGGCGAGAAAGTGATGGAAGAAGCG  
AAGGCGTTTACGACCAACTATCTTAAGAAAGTCTGGCGGGTCTGAAGCAACTCATGTGACGAGA  
GTCTCCTTGGAGAGGTCAAGTATGCACTAGAATTTCCGTGGCATTGTTCCGTGCAGCGCTGGGAGGC  
ACGTTCTTTTATCGAAATTTTCGGTCAGATTGATAGTGAAGTGAAGCAACCTCTCTAAAAAATG  
CTCGAACTCGCAAAACTTGATTTTAACATACTCCAGTGTACGCATCAAAAAGAGCTCCAGATCATT  
GTCGATGGTTCCCGATTCAAGTATCGCAAGTCTGAACTTTTACCGTAAATGCTATGTGGAATTTTA  
CTTCTGGATGGCCGCGGCAATTTTCAAGAACGAAATTTAGTGGCTCTCGCGTGGCATTCACTAAAATT  
GCGATCTTGATGACAATGTTAGATGACTTATACGACACGCATGGGACGCTGGATCAATTGAAAATAT  
TTACCGAAGGTGTGCGCAGGTGGGACGTGTCGCTGGTGGAGGGCCTGCCGGATTCATGAAAATTGC  
CTTTGAGTTCTGGTTAAAGACCTCCAACGAACTGATTGCGGAGGCGGTTAAGGCCAAGGCCAGGAT  
ATGGCGGCCTATATCCGCAAAAACGCTTGGGAACGCTATCTGGAAGCGTATTTGCAGGATGCCGAAT  
GGATCGCCACCGGTCACGTTCCGACATTCGATGAATATCTGAACAATGGCACCCCAACACCGGTAT  
GTGTGTACTTAATCTGATCCCGTTGCTGCTTATGGGCGAACACTTGCCGATCGATATCTTGAACAG  
ATCTTTCTGCCGAGCCGGTCCACCATCTGATTGAACTGGCTAGCCGACTGGTCGATGATGCGAGAG  
ATTTTCAAGCCGAAAAAGATCATGGTGATTTATCCTGCATCGAATGCTACCTGAAAGACCATCCGGA  
ATCAACAGTTGAAGACGCCCTGAATCACGTCAACGGCCTGCTGGGGAATTGTTTGCTGGAAATGAAT  
TGAAAATTTCTGAAAAACAGGACTCGGTACCTCTGTCGTGTAATAATACTCATCCACGTCCTGG  
CGCGGTCGATTCAGTTTATGTATAACCAGGGGGACGGGTTTTTCGATTTTGAACAAAGTTATTAAGA  
CCAGGTCCAGAAAGTTCTAATCGTTCCGGTTCCCTATATAA