

Supplementary Material

***Nicotiana benthamiana* as a transient expression host to produce auxin analogues**

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1 Supplementary Tables

Table S1. Sequences of the TAA and YUC genes used in this investigation. ^A sequences from TAIR (<https://www.arabidopsis.org>), respective accession numbers for AtTAA1, AtTAR2 and AtYUC6, ^B sequences retrieved from pea seed transcriptome. Genbank accession numbers of the *PsYUC* sequences are the following: *PsYUC1* (MW158556), *PsYUC2* (MW158557), *PsYUC3* (MW158558), *PsYUC4* (MW158559), *PsYUC5* (MW158560), *PsYUC6* (MW158561), *PsYUC7* (MW158562), *PsYUC8* (MW158563).

Gene	Sequence
<i>AtTAA1^A</i>	<p>ATGGTGAAACTGGAGAACTCGAGGAAACCCGAAAAAATTTTGAACAAGAACATCCCC ATGTCCGATTTTCGTGGTCAATCTGGATCATGGTGATCCAACGGCGTACGAAGAATACT GGAGGAAGATGGGTGACAGGTGTACGGTGACGATACGTGGTTGTGATCTCATGAGTTA CTTCAGCGACATGACGAACTTGTGTTGGTTCCTTGAGCCAGAGCTTGAAGATGCGATC AAGGACTTGACGGTGTGTTGGTAACGCTGCGACGGAGGATCGGTACATAGTGTTG GGACCGGTTTCGACGCAGCTTTGTCAAGCCGCCGTCCACGCACTCTTCTACTAGCCAG GAGTCAACCTGTCAGCGTCGTCGCCGCCGCTCCTTTTTACTCCACATATGTGGAGGAGA CGACATATGTTTCGGTTCGGTATGTACAAGTGGGAAGGAGACGCATGGGGTTTCGACAA AAAGGGTCCGTACATCGAGCTAGTGACGTCACCTAATAACCCTGACGGAACCATCAGA GAGACGGTGGTGAACCGTCCAGACGACGACGAAGCCAAAGTGATCCATGACTTTGCTT ATTACTGGCCCCACTACACTCCCATCACTCGCCGTCAAGACCATGACATCATGCTCTTC ACTTTCTCAAGATCACAGGCCACGCTGGGTCCCCTATTGGGTGGGCATTGGTGAAGG ACAAGGAGGTAGCTAAGAAGATGGTTGAGTATATTATTGTGAACTCGATTGGTGTGTC TAAGGAGTACAGGTTTCGAACAGCTAAGTACTCAACGTTCTAAAGGAGACTTGTAAAG AGCGAGTCCGAGTCTGAGAATTTCTTCAAGTATGGTTCGTGAGATGATGAAGAATCGGT GGGAGAAGCTACGTGAAGTTGTGAAAGAGAGCGATGCTTTCACTTCCCAAGTACCC TGAAGCATTTTGCAACTACTTTGGAAAATCACTCGAATCTTACCCTGCGTTTTCGCTGGC TAGGGACGAAGGAAGAGACGGATCTGGTAAGTGAATTGAGGAGACACAAGGTAATGA GCAGAGCTGGAGAGCGTTGTGGATCTGACAAGAAGCATGTCCGAGTCAGCATGCTTAG TCGTGAAGACGTTTTCAATGTCTTTCTCGAGAGACTCGCCAACATGAAGCTCATTA GCATTGACCTTTAG</p>
<i>AtTAR2^A</i>	<p>ATGGGACAGATTCAGGTTTCTTTCTTGGAGGAATATGTTGGTCCCTCTCGTTGGCCAT CAACTTCAGCTTGATTCTAAAGATTTTGAAGGGTGATAGAGAACGAGGAGATTCATGG GACAGAACAGCGTATGTTAGCATATGGCCCCGTGGTATCCACCACGGCTTCAGAATCTT CTTCGTTGTCTTCAGCATCTTGCAACTATAGCAAGATTGAAGAAGACGATGATAGAAT TATCAATCTCAAATTTGGTGATCCAACGGTGTATGAGAGATATTGGCAGGAAAATGGA GAGGTGACAACAATGGTGATACCTGGATGGCAATCTCTTAGCTATTTTTAGATGAAA ACAACCTCTGTTGGTTTCTTGAGCCAGAGCTTGCCAAAGAGATTGTGAGGGTGCATAA GGTTGTTGGGAATGCTGTAACGCAAGACCGCTTCATTGTTGTTGGCACTGGCTCAACAC AATTGTATCAGGCTGCTCTCTATGCTCTCTCCCCACATGATGACTCCGGTCCCATAAT GTCGTGTCAGCCACACCCTATTATAGTACTACCCGTTGATTACAGACTGCCCTAAATC AGGTTTATATCGATGGGGTGGAGATGCAAAGACGTACAAAGAAGATGGTCCATACATT GAACTTGTTACATCTCCAAACAACCCTGATGGGTTCTTGAGAGAATCAGTAGTGAACA GTACTGAAGGTATATTGATCCATGATTTGGCTTACTATTGGCCACAGTATACACCGATA ACATCACCAGCTGATCACGATGTTATGCTCTTCACTGCTTCAAAGAGCACTGGCCATGC AGGGATACGGATTGGATGGGCTTTGGTGAAGACAGAGAGACGGCTAGGAAAATGAT AGAGTACATTGAACTCAACACGATTGGGGTTTCAAAGGACTCACAGCTTAGAGTAGCC AAGGTTCTTAAGGTTGTGTCAGACAGTTGTGGGAATGTAACGGGCAAATCTTTCTTTGA</p>

	CCATAGTTATGATGCTATGTATGAGAGGTGGAAACTATTGAAACAAGCAGCAAAGGAT ACTAAACGTTTTCAAGTGTTCCTGATTTTCGTCTCTCAACGTTGCAATTTCTTTGGCAGGGTC TTTGAGCCACAACCAGCATTGTCATGGTTAAGTGTGAAGAAGGGATAGTGGATTGTG AGAAGTTTCTTAGAGAGGAGAAGAAGATTCTAACTAAAAGTGGAAAAGTACTTCGGAG ATGAGCTAAGTAATGTGAGGATAAGCATGTTGGATAGAGATACTAACTTTAATATTT CCTTCACAGGATTACATCTTCTTTAATTCAACTTTGTAA
<i>PsYUC1^B</i>	ATGGATCCTTTCAAACA AAAACCTAAGTCTTTATTCATTCATGGACCTATCATTGTAGG TGCTGGTCCTTCTGGTATAGCAGTTGCTGCTTGTATCAGAACAAGGTGTTCCGAGTC TTATTCTTGAGAGAAGTGACTGTATAGCTTCCCTTTGGCAAAATAGAACCTATGACCGT TTGAAACTTCATTTACCTAAACATTTTTGTGAGCTTCTTTGATGAGTTTTCTCAAGAT TTTCTATGTATCCTACCAAACATCAGTTCATTTCTTACATGGAATCCTATGCTGATCA GTTTGGTATTTCGTCTAGGTTCAATCAAACCTGTTGTTACTGCTGAGTTTGATCCAAGT CGGAAATTTGGAATGTTAAAACACTAGATGGTTTTTCAGTATTCTTCACCTGGCTTGT GTTGCTACCGGTGAAAATGCTGAACCTGTTATTCCTAAGATTCATGGTATGGAACATTT TCATGGTCCTGTTGTTTCATACTTGTGACTATAAATCTGGTTCTCAATACAAAAACAAGA AGGTTTTGGTCATTGGTTGCGGTAATTCTGGTATGGAAGTTAGCTTGGATCTTTGTAGA CACAATGCTCTACCTCACTTGGTTGCTAGAAACACAGTACACATGCTTCCAAGAGATA TCTTTGGGTTCTCAACATTTGGAGTAGCTATGACATTAACAATGGCTTCCATTA AAA TTAGTAGACAAGTTCCTCTTATTAGTTTCAAGCTTCTTCTTAGGAAACACCAATCACTA TGGTATCAAAAGGCCTAAAACCTGGTCCTATAGAGCTTAAGCTTGCAACAGGAAAAACT CCTGTA CTTGATGTTGGTCAAATGCTCAAATTAATCCGGTAACATTAAGGTGATGGA AGGTGTGAAGGAGATAACAAGGAATGGTGCAAAATTTATGGATGGACAAGAAAAGGA ATTTGAAGCAATAATCTTAGCAACAGGTTACAAGAGCAATGTGCCTAGTTGGCTTAAG GGAAGTGATTTTTCTAAAGATGGAATGCCGAAAACACCCTTCTCATGGATGGA AAGGAGAGCAAGGATTGTATACGGTAGGGTTCACGAGAAGAGGTCTACATGGAACAT ATTTTGATGCTATCAAAATATCTGAAGATATTACAAGTCAATGGA AAAACAGTTAAGAG CAAGAGTTGTAGTGATTACATATCATAAACCTTATTAGTACTACTCTTAATAATG TTTAG
<i>PsYUC2^B</i>	ATGGAGA ACTTGTTTCGCCTAGTTGATAACCAACAAGACTCAATCTCACCTCGTTGCAT TTGGGTTAACGGTCCTATAATCGTAGGAGCAGGACCATCAGGTTTAGCAGCAGCGGCA TGTCTCAAACAAAAAACATTCATCCATAATTCTCGAAAGATCCAATGCATAGCT CATTATGGCAACTCAAACCTACGATCGGTTACGTCTCCACCTGCCAAAACAATTCTGC GAACACTACCCTTCATGGAATTTCCATCGAATTTCCCAACATACCCTTCAAAGCAACAGTT CATTAAGTACCTGGAGAATTACGCGGAAACGTTCCATATTCGTCCGAAATTC AATGAG ACAGTGAAAAATGCCGAATTCGATAGTAAAATCGGTTGCTGGAAGTTGAAGTGTCAA GTAGTTTTAAAGGCGATGTTACGACGGAGTATGTTTGTGCGTGGTTGATCGTCGCGACC GGAGAGAATGCCGAGGCTGTTGTGCCTGATATTGAAGGTGCAGATGAGTTTGAAGGAG TTATAAGACATACAAGTTTGTATAAAAAGTGGTGAAGAGTTTAGAGGGAAGAGAGTTTT GGTTGTTGGGTGTGGAAATTTCTGGTATGGAAGTTTGTGGATCTTTGTAACCATGATG CTACTCCTTCTCTGGTCGTTAGAGATTCAGTACACGTTCTACCACGAGAGATGCTAGGA AAATCAACTTTTGGGTTGTCCATGTGGTACTAAAGTGGTTTCCATTGAGACTTGTGCA TCGTTTCTTGCTGTTAGTGTCATGGCTTTTGTCTGGTGACACTTCTCAACTGGTTTGG TCGTCTACTTTGGGTCCCCTTCAACTCAAAAACCTCACGGGAAAAACTCCTGTCCTAG ATGTGGGTACCCTTGCCAAGATTAAGCTGGACACATTAAGGTAAGGCCAAGCATAAAA GAAGTTAAAACGTCATACAGTGAATTTGTAGATGGAAGATCAGAGAATTTTGATGGC ATCATATTGGCAACTGGTTACAAAAGCAATGTACCCTATTGGCTCAAGGAAGAGGATA TGTTTTCTATGAAAGATGGATTCCCTATGAAGCCATTTCCAATGGATGGA AAGGTAA AAATGGACTCTATGCAATAGGTTTTACAAAAGAGGACTATTAGGTGCATCAATGGAT GCAAAAAGAATAGCTAATGACATTGAACAATGTTTAAAAGCTGAGGCAAAAACATGGA TCA
<i>PsYUC3^B</i>	ATGCTCATGAACTACTTAAAGGAACTAGAATGCAAAAATGGTACATGATCATCAAAAAG AAGGACAAAATGGTAACTTCAATATTGGTTCAAGGACCAATTATAGTAGGAGCTGGTC CATCAGGATTAGCAGCAGCAGCATGTCTTAAACAAAAAGGAATTC AAAGCTTAATCCT TGAAAGAGCAAATTGTTTAGCTTCAATGTGGCAACTCAAAACCTATGATAGATTAAG

	<p>CTTCATCTCCAAAACAATTTTGTCAATTACCTCTTATGCCATTCCAAAAGGGTTACC ATCATATCCAACAAGCAACAATTTTATCTTACTTAAAAGCCTATGCTAATCACTTTG ATATTAATCCTATTTTGGTAAACAAGTTGTGAATGCTGAATTTGATCTTACTTGTGGA GTTTGGAGAGTGAAGACTCAAGAAATTATTATGAAAAAGTGTATTGTTATTGAGTATG TTTGTCAATGGTTGATTGTTGCTAGTGGTGA AAAATGCTGAGGAAGTTATGCCATCAATT GAAGGGATGGAACAATTTCAAGGACCTATTTTGCATACTAGTTTGTATAAAAAGTGGAA GCATGTTTTGTGGGAAGAATGTTTTGGTGGTGGGGTGTGGAAATTCAGGCATGGAGGT GTGTTTAGATCTTTGCAACCATAATGCTCATCCTTCCTTAGTTGTTAGAGATACGGTAC ATATCTTGCCACAACAATATTTGGAAAATCAACTTTTGGTTTATCTATGTGGTTACTT AAATGGTCTCAGTACATTTTGTGGATCAATTTTACTTCTAATGTCATATTTCATACTT GGTGACACATCTCAATATGGAATTCAAAGGCCAAAAATGGTCCTTTAGAGCTTAAGA ATTTGTATGGAAAAACACCAGTTTTAGATGTTGGGACAGTAGCTCAAATCAAACACTGG CAAATTAAGGTCTGCAAAGGAATTAACGACTAGCACATAATGCAGTGGAGTTTGT GATGGAAAAGTAGAGAACTTTGATGCAATCATTTTAGCTACTGGTTACAAAAGCAATG TGCCCTCTGGTTAAAGGGAAAGTGACATGTTTAGTGAGAAAGATGGTTTTCCAAGGAA ACCATCCCAAATGGATGGAAAGGTGAAAAAGGATTATATGCTGTTGGTTTACCAA CGTGGCTTACTTGGTTCATCTATTGATGCAAAGAGAATTGCTGAAGATATTGAACATA GCTGGAAAGCTCTTAAGGCCAAGCCACTTGCA</p>
<i>PsYUC4^B</i>	<p>ATGAAAAACAAAACCATGGAAATCCAAATGCCAGTTGTGATTGTAGGTGCTGGGCCTG CTGGGTTAGCAACCTCTGCATGCTCAACAACTTTCAATCCAAAACATTGACTAGAA AGAGATGACTGTCATTCTCTCTTTGGAGGAAAAGAACCTATGATCGTTTGAAACTTCA CTTAGGTAAGGCTTTTGTAACTACCTCACATGCCATTTTCTCTGATCTCCAGTGT TATCCCTAGGGTTGATTTCTTTCGGTATTTGGATGATTATGTGAGTACTTTAAGATCTT CATCCGCTACAACCGGTATGTCCACGAAGCTTCTTTCGATGTCAAGACCGGAAAATGG AGGTTTGTGTGATGGATAGTGTCTGTAATGTTGGTGAAGTTTATGTTGCTGATTATT AGTGGTTGCTTCCGGAGAGAGCTGTGATGCTTATATTCGAAGATAACCGGCTTTGAT AAGTTTGAAGGTGAATTCTTTCATTGCACCAAGTATCAGAATGGAAGCCTTTTTATGA TAAGAATGTGTTGGTTGTTGGTAGTGAAATCTGGTATGGAGATTGGTTATGATCTCT CTACTTGGGGTGCAAATACCTCCATGGTTATAAGAAAGTCCGGTACATTTTTTAATAAAA GAAATGGTGTACATTGGAATGTCTTTGCTGAAATATGTAAGTGTGAAAATGTGGACA AGCTTATGTTGGTTATGAGCAAATTGTTGTATGGAGATTTGTCTAAGTATGGCTTGATT AGGCCAAAGGAAGGACCCTTTGCATTGAAATGAAAGGGTGGTCGGACTCCTACAGTTG ATGTCGGTACCATCAAACACATCAAAGAAGGAAAAATAAAGGTACTCTGAAATTTT AAGCATAAAAAACGGCAAGACCATTGAATTTGTAGATGGAAAAACTGGTCAATTTGAC GTCATAATCTTTGCTACGGGATACAGAACCAATGTGCACAAGTGGCTTAAGGATTACA AAGATTTGTTAATGAAAATGGAATGCCAAAACCTGCTTATCCAAATCACTGGAAAGG AGAGAATGGAATCTACTGTGTTGGATTCTCAAAAAGGGGATTACAAGGCATTA ACTATGATGCTCAGAAAGTAGCAAGGGATATCAGTGTCACTATCAATGCAAGGAAGA GATACTTACAGCTGATGAGGCCAATGATGCTCAAATCAAGCTATTAGAT</p>
<i>PsYUC5^B</i>	<p>ATGGAGAATTTGTTTCGTCTTGCTGATCACGAAGATTTTATCTCACGCCGTTGCATTTG GGTCAATGGACCTGTGATCATTGGCGCAGGTCCATCTGGCCTAGCAACGGCGGCATGT CTTAGAGAACAAGGAGTACCATTCTTGTGTCGAAAGAGCTGATTGCATAGCATCAC TTTGGCAAAGAAGAACCTATGACAGGTTGAAACTTAACTCCAAAACAATTCTGTCA ACTCCCTAACCTTCCATTCCCTGATGATTTCCCTGAATACCTTCAAAGAAACAGTTCA TAAACTACCTTGAACCTATGCTAACAATTTGAAATCAAGCCGCAATTCACCAGTG TGTTCAATCTGCTAAGTATGATGAAACCAGTGGATTATGGAGGGTGA AAAACCAATGAA GTTGAGTATAATTTGCAGGTGGCTTGTGTTGCTACCGGCGAAAATGCTGAGTGTGTTAT TCCTGAAATTGAAGGACTTTCTGAGTTCAAAGGTAAAGTTGTTTATGCTTGTGATTACA AGTCAGGCGAAAATTTCAAAGGAAAGAAAGTTCTCGTTGTTGGTTGTGGAAATTCAGG ATTGGACATCTCACTTGTGATCTTAGCAACCACCATGCTTTACCTTCTATGGTTGTT CGTA GCTCGGTTTATGTTACCTTCAATGGGTCTTTGCAGCTGAAGAACACAGAAGGAAA AATACCTGTTTTGAATATTGGTACCTTGGAGAAAATTAGATCTGGAGATATAAAAGTT GTCCCTGGAATCAAGAAGTTTAAACAAAACGGCGAAGTCCAGCTTGTTAATGGCGAAA</p>

	AGATTGATGTTGATGCAGTTGTTCTTGCTACCGGTTATAGGAGCAATGTTCCCTTCTTGG CTTCAGGAAGGTGAATTTTTCTCGAAAAACGGATACCCGAAAGATGCCATTTCCACATG GATGGAAAGGAAATTCAGGACTATATGCTGTAGGGTTCACAAAGATAGGGCTTTTTGG TGCTTCATATGATGCTGTTAAAATTGCACAAGATATTGGAAATGTTTGAAACATGAG ACTAAACAGAAGAAACAACGCTTGTC
<i>PsYUC6^B</i>	ATGCAGGTAGCACCGGTGATAATAATCGGAGCCGGAACCTCCGGCATAGCCACGGCA GCTTCTTTAACAAAACAATCCATACCATTATCATTCTCGAAAGAGAAAACTGTTTTGC TTCTCTATGGCAAAACTACACCTATGATCGTCTTCATCTTCATCTAAGAAAGCAAATTT GCGAGTTACCATATTTTCCATTTCCATCTTCTTATCCTAACTACGTACCAAAAAAGCAG TTCATACAGTATCTAGACAGCTATGTTAAAAAATTCAACATCGATCCTTTATAACAACAG AAAGGTTGTGTTAGCGGAGTATTTTGAGGATGATGAGAAATGGAGGGTGTGAGGCTGAG AATAGAAGTTCGGTGAAGTTGAAGAATATTCTGGAAGGTTCTTGGTGGTGGCTAGTG GCGAAACGGCTGAGCCTCGTGTACCGGAAGTTTTAGGGTGGAGAGTTTCAATGGGAA AGTGATGCATTCGACTGGGTATAAAAAATGGGAGAGAGTTTAAAGATAAACATGTTCTT GTTGTTGGTTCTGGGAATTCTGGTATGGAGATTTCTTTAGATTTGGCTAATTTTGGTGCC AAACCTTCTATCATTGTTAGAAGTCCGGTTCATTTTCTTTCAAGGGATATGATGTATTA TGCTGGTGTGTTGATGAGTTATCTGTACTAAGCACAGTGGAGAACTAGTTGTGATAG TTAGCAGAATTGTGTATGGAGATCTGAGTAAATATGGTATACCTTCCCTAGTGAGGGT CCTTTCATATGAAGAATAAGTATGGAAAATTTCTATAATTGATTTGGGAACGGTTAA GAAAATCAAATCTGGAGAGATACAGGTGTTGGGAGCTGAAATAGAGAGTATAAGAGG TAATCAAGTGTGTTCCGTGATGGAAAATCCTACCCATTTGACTCCATTATATTCTGTA CAGGCTTCAGCAGATCAACTCAAAAATGGCTTAAGGGAGGTGATGATCTTTTGAATGA GGATGGTTTTCCAAAGCCTGGTTTACCATACAATTGGAAGGGTAAGAATGGTTTGTAC TGCGTTGGATTGTCAAGGAGGGGGTTTTATGGAGCTAACCTTGATGCTCAAAAATGTAG CAAATGATATTGCCTTGTTAGTTCTCAAGACGAAAGAAAA
<i>PsYUC7^B</i>	ATGCAAGAATTCACAGTTGTAATTGTTGGTGGTGGTCCTTCTGGCCTAGCAATTTCCAGC TTTACTAATACAAAACCTCAATCTCTCACACTATACTCGAAAAAGAAGATTGTAATGCTT CTCTTTGGAGGAAAAATGCTTACGATCGTCTAAACCTCCATTTAGCTAGTGAGTTTTGC TCTTTACCTCTCGTGCCGCATCCACCTCAGGCCAACATACCTAACCAAGATCAATT TCTCCAATACATAGATGAATATGTCGATCATTGTTGACATAAAACCTCGTTATTATCGTG TCGTTGAGTCCGCTAACTACGATAATGTTCAAAAACAATGGGTTGTTGAAGCCAAAAA CACCTTAGAAGGTACCTTGAAGTTTATGGGGCAAAGTTTCTAGTCATTGCCTCTGGCG AAAATAGTGAAGTTTTATTCCCAATGTTTCATGGATTAGGGAAATTTGAAGGAGAGGT GGTACTACTCAAGTACTACAAATCTGGTTCAAAAATACAAATCAAAGATGTTTTGGTT GTTGGCTGTGGTAACTCAGGAATGGAGATTGCATATGATCTCCATAACTGGGGTGCTA ACACTTCCATTGTCATTGCAAAATCCGCTTCATGCTTACCAGAGATATGATTTCGTATA GGGATGCGTTTTGGTGCAATATTTTCTGTTTATATTGCTGATACAATCATTACAATTCT AGCAAAGTTAAAATATGGTGATCTGTCAAAAATACGGGATTCATCGTCTAAAGATGGA CCTTTATATCTCAAAAACAGTACAGGAAAATCTGCAGTTATTGACGTAGGAACCATTG AAAAGATTATGGAAGGATCCATAAAGGTCGTTCTTTCAGGTATCAAGAAAATCGAGAA GAAGAATGTTATCTTTGAAAACAATATGGAGAAAGAGTTTGTGATGCCATTGTTTTGCTA CCGGCTACAAAAGCGTAGCTAATGAATGGCTAAAGGATTACAAATATGCGCTTAATGA GAAAGGGTCCCTAAAAATCCTTTTCCGAAACATTGGAAGGGAGATCATGGATTGTAC TGTGCAGGACTAGCAAGGAAAGGTTTGTGTTGGAGTCAAAAAGGATGCTGAGGCAATTG CAGAAGACATCAACCGAACTCTTAAGTTGGAGAAT
<i>PsYUC8^B</i>	ATGAAGAAAGAGAATCAAACAGTGATCATTGTTGGAGCAGGCCCTTCTGGTCTCTCTG TAGCAGCATCCTTAACAAACCAATCCATTCTTACATAATCCTCGAAAGAGAAAACTG TTTTGCGTCTCTATGGAAAAAATATGCATACGACCGTCTTCATCTTCACCTCAAAAAGC AATTTTGTGAGCTTCCACATAAGCCATTTCCACCTTCTTTCCATCATAACATTCCTAAGG AAAAGTTTTTGCAGTATTTAGAAGACTATGTATCTCACTTCAAGATCAATCCTGTGTAT CAGAGGACAGTGGAGTATGCGGAGTTTGTGATGAAGGCTGTGAGAAATGGAAGGTGAAG GCTGTGAATAAGGATTCCGGCGAAGTTGAGGAATACGATGGAAGGTTTTTGGTTGTGG

	<p>CTAGTGGTGAAACTAGTGACCCTTTGTACCTGAGATTGAAGGGTTGAAGAGTTTTGGT GGGAAGGTGATTCAATTCAACCAGGTTAAGAATGGGAAAGAGTTTAAAGATGAACAT GTTCTTGTGTTGGGTCTGGGAATTCTGGTATGGAATGTCATTGGATCCTTATCAACCA TGGTGCTAAAACCTCAATCCTCGTTCGAAGCCCGGTTTCATATATTGTCAAAGGAATGC TGAATTTAGGCTTATTTATGATGAAGTATTTGTCAATGAAGATAGTGGATTCAATTAATG GTGATGCTTAGTAAACTGGTTTATGGTGAATGACTAATTATGGAGTTGGTAGGCCTAA TGAGGGACCTTTTTACATGAAAGTTAAGTACGGCAAGTATCCAGTTGTTAATGTTGGA ACCTATCAGAAAATTAATCTAAAGAGTTAAAGGTGTTGCCAACGGAGATAGAATGCT TAAGTGGCAATAATGTGTTGTTCAAGAATGGTGAATTGCATACTTTTGACTCTATTATT TTCTGCACTGGTTTTCAAGAGATCGACACATAAGTGGCTTAAGGGAGATGATTATCTTTT GAGTGATGATGGTATTCCGAAGCAAAGTTACCTTTTCATTGGAAGGGAAAGAATGGT TTGTATTGTGTTGGATTATCAAGGAGAGGCTTATATGGAGCTGCTCAAGATGCTGAAA ATGTAGCAAATGATGTTAGATCCATCATGCAAGAAATCATA</p>
<i>AtYUC6^A</i>	<p>ATGGATTTCTGTTGGAAGAGAGAGATGGAAGGTAAACTAGCACATGACCACCGCGGC ATGACGTCACCGCGTCGTATCTGCGTCGTCACCGGTCCGGTGATCGTAGGCGCCGGAC CGTCCGGACTAGCCACGGCAGCATGTTTAAAGAGAGAGGTATCACGTCCGTTACTACT AGAGAGATCAAACCTGTATAGCATCACTATGGCAGCTCAAGACTTATGACCGTCTTCAT CTTCACCTTCCTAAACAATTCTGTGAACTTCCGATTATACCTTCCCCGGAGATTTCCCT ACCTACCCGACGAAGCAACAGTTCATCGAGTACCTTGAGGACTACGCTCGGAGGTTTG ACATAAAGCCGGAGTTAACCACCGGTTGAGTCGGCTGCGTTTGATGAAAACCTTG GATGTGGCGCGTGACTAGCGTGGGAGAAGAAGGCACGACGGAGTATGTTTGTGCGGTG GTTAGTGGCGGCGACGGGGGAGAATGCGGAGCCGGTGGTACCTAGGTTTGAGGGGAT GGATAAGTTTGCAGCCGCCGGGGTAGTTAAGCACACGTGTCATTATAAAACCGGTGGA GATTCGCCGGAAAAAGGGTTCTTGTGTCGTCGGATGTGGAAACTCCGGTATGGAGGTTT GTTTGGATCTCTGCAACTTCGGTGCTCAGCCTTCTCTCGTTGTCAGAGACGCTGTGCAC GTCCTACCACGAGAGATGTTGGGTACTTCAACTTTTGGGCTGTCCATGTTCTTACTGAA ATGGCTGCCCATCCGGCTTGTGACCGTTTCTTTTGGTTGTTTCCCGGTTTCATCCTCGG GGATACTACCTTTTAGGTCTTAACAGGCCCGGTTAGGTCCACTCGAGCTCAAAAAT ATCTCCGGTAAACTCCGGTTCTCGACGTTGGCACGCTAGCCAAAATCAAAACCGGAG ACATTAAGGTGTGTTTCGGGGATAAGAAGGTTAAAACGACATGAAGTTGAGTTCGATAA CGGAAAAACAGAGAGATTTGACGCCATTATATTAGCAACTGGCTACAAAAGCAACGT ACCTCTTGCTAAAGGAGAATAAAAATGTTTAGTAAGAAAAGATGGATTTCCAATACAA GAGTCCCTGAGGGATGGAGAGGGGAATGTGGGCTATACGCGGTCGGATTCACAAAA CGTGGGATTAGTGGAGCATCAATGGATGCAAAGAGAATAGCTGAAGACATACACAAG TGTTGAAACAAGACGAGCAACTGCAATGCAAATTGGGGAAAAGAATGAAAAGGAAA TTTAGTGAGAGTGATTGTGGTGGGAATTGA</p>

Table S2. Sequences of forward and reverse primers for each of the TAR and YUC genes featured in this report. Underlined sequences are the cloning overhangs.

Gene	Forward primer	Reverse primer
<i>AtTAA1</i>	<u>AAGTTCTGTTTCAGGGCCCGTGAAAC</u> TGGAGAACTCG AGGA	<u>ATGGTCTAGAAAGCTTTAAAGGTCAATGC</u> TTTTAATGAGCTTCA
<i>AtTAR2</i>	<u>AAGTTCTGTTTCAGGGCCCGGACAG</u> ATTCCGAGGTTT CTTTCT	<u>ATGGTCTAGAAAGCTTTACAAAGTTGAAT</u> TAAAGGAAGATGTAATC
<i>PsYUC1</i>	<u>AAGTTCTGTTTCAGGGCCCGGATCCTT</u> TCAAACAAAAACCT	<u>ATGGTCTAGAAAGCTTTAAACATTATTA</u> GAGTAGTAGTCTAATAAGG
<i>PsYUC2</i>	<u>AAGTTCTGTTTCAGGGCCCGGAGAACT</u> TGTTTCGCCTAGTTG	<u>ATGGTCTAGAAAGCTTTATGATCCATGTTT</u> TGCTCAGCTTTTAAAC
<i>PsYUC3</i>	<u>AAGTTCTGTTTCAGGGCCCGCTCATGA</u> ACTACTTAAAGGAACTAG	<u>ATGGTCTAGAAAGCTTTATGCAAGTGGCT</u> TGGC
<i>PsYUC4</i>	<u>AAGTTCTGTTTCAGGGCCCGAAAAACA</u> AAACCATGGAAATC	<u>ATGGTCTAGAAAGCTTTAATCTAATAGCT</u> TGATTTGAGCA
<i>PsYUC5</i>	<u>AAGTTCTGTTTCAGGGCCCGGAGAATT</u> TGTTTCGTCTTGC	<u>ATGGTCTAGAAAGCTTTATGACAAGCGTT</u> GTTTCTTCT
<i>PsYUC6</i>	<u>AAGTTCTGTTTCAGGGCCCGCAGGTAG</u> CACCGGTGATA	<u>ATGGTCTAGAAAGCTTTATTTTCTTTCGTC</u> TTGAGGAAC
<i>PsYUC7</i>	<u>AAGTTCTGTTTCAGGGCCCGCAAGAAT</u> TCACAGTTGTAATTGT	<u>ATGGTCTAGAAAGCTTTAATTCTCCA</u> AAGATTTCG
<i>PsYUC8</i>	<u>AAGTTCTGTTTCAGGGCCCGAAGAAAG</u> AGAATCAAACAGTGAT	<u>ATGGTCTAGAAAGCTTTATATGATTTCTTG</u> CATGATGGA
<i>AtYUC6</i>	<u>AAGTTCTGTTTCAGGGCCCGGATTTCT</u> GTTGGAAGAGAGAGATGG	<u>ATGGTCTAGAAAGCTTTAGATTTTTTTTAC</u> TTGCTCGTCTTGTTTC

Table S3. MRM transitions, collision energy (CE) and retention times of compounds identified in metabolite extractions during this investigation.

Compound	MRM transition	CE (eV)	Retention time (min)
IAA	176.1 > 130.1	18	3.61
4-Cl-Trp	239.2 > 222.2	12	2.70
5-Cl-Trp	239.2 > 222.2	12	2.73
6-Cl-Trp	239.2 > 222.2	12	2.77
7-Cl-Trp	239.2 > 222.2	12	2.69
4-Cl-IAA	210.1 > 164.1	18	4.21
5-Cl-IAA	210.1 > 164.1	18	4.55
6-Cl-IAA	210.1 > 164.1	18	4.59
7-Cl-IAA	210.1 > 164.1	18	4.50
1-CH ₃ -Trp	190.1 > 144.1	18	2.58
5-CH ₃ -Trp	190.1 > 144.1	18	2.48
6-CH ₃ -Trp	190.1 > 144.1	18	2.48
5-CH ₃ O-Trp	235.2 > 218.2	10	2.05
5-CH ₃ O-IAA	190.0 > 158.0	10	4.82
5-OH-Trp	221.2 > 204.2	10	1.30
5-Br-Trp	283.0 > 266.0	18	2.82
6-Br-Trp	283.0 > 266.0	18	2.86

7-Br-Trp	283.0 > 266.0	18	2.75
5-Br-IAA	255.0 > 209.0	18	4.70
6-Br-IAA	255.0 > 209.0	18	4.74
7-Br-IAA	255.0 > 209.0	18	4.62

2 Supplementary Figures

Figure S1. UPLC chromatograms in MRM mode of free IAA in *N. benthamiana* leaves following infiltration with *AtTARs* and *PsYUC7*.

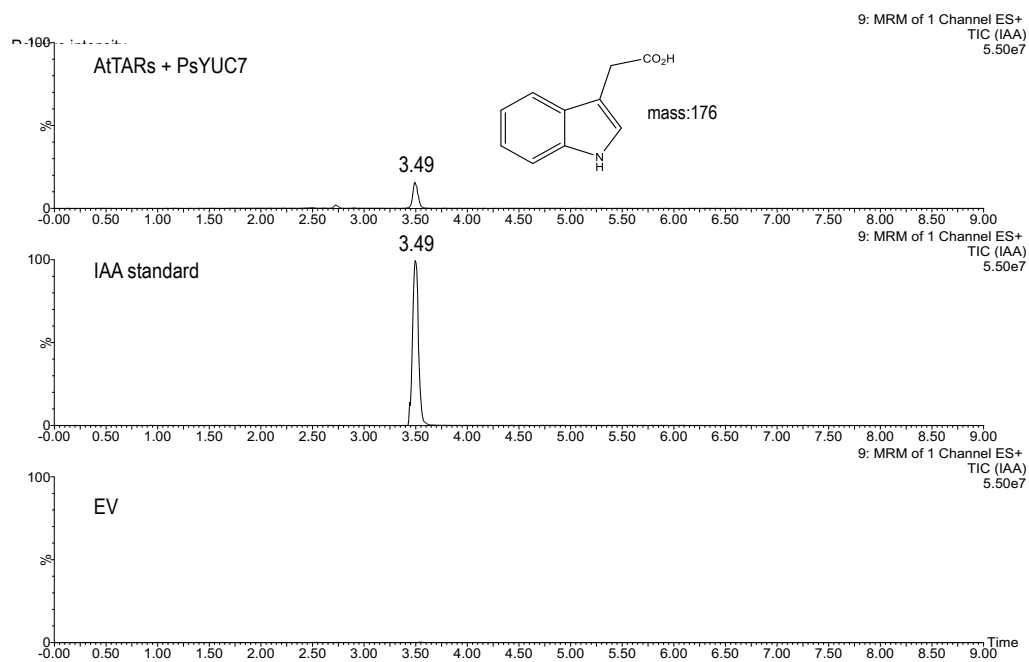


Figure S2. *N. benthamiana* plant following Agrobacterium-mediated infiltration with *AtTAA1*, *AtTAR2* and *PsYUC7*. The transformed leaf is exhibiting a curled phenotype, characteristic of auxin over-production.



Figure S3. UPLC chromatograms in MRM mode of Cl-trp production in *N. benthamiana* following infiltration with the bacterial halogenase, A) RebH, B) PrnA, C) ThdH, D) PyrH with the partner reductase, RebF. In each case, upper panel: MRM trace of Cl-IAA from the harvested leaf extract, middle panel: MRM trace of the relevant Cl-IAA standard for each halogenase, bottom panel: empty vector (EV) negative control.

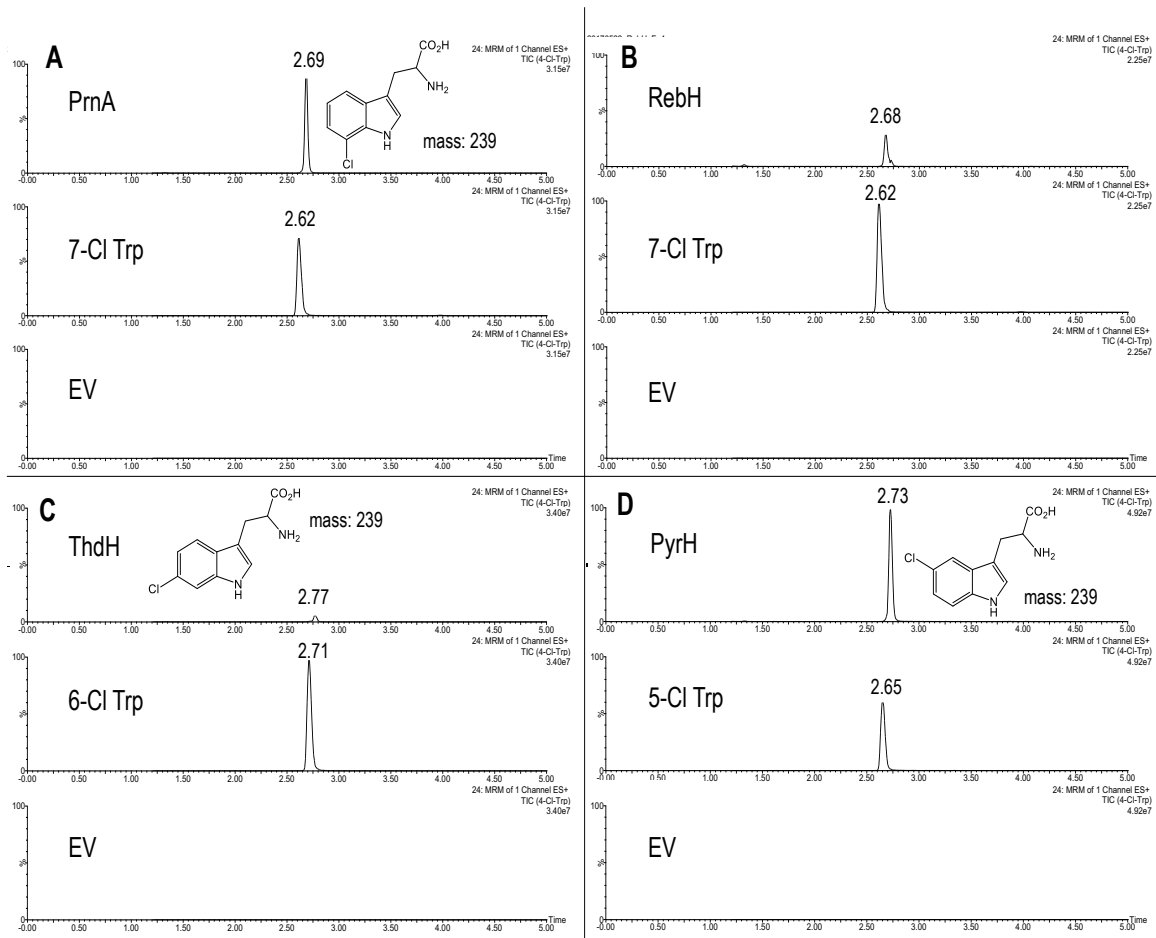


Figure S4. UPLC chromatograms in MRM mode of Cl-IAA from *N. benthamiana* leaves infiltrated with *AtTARs*, *PsYUC7* and one of four bacterial halogenase genes; A) RebH, B) PrnA, C) ThdH, D) PyrH with the partner reductase, RebF. In each case, upper panel: MRM trace of Cl-IAA from the harvested leaf extract, middle panel: MRM trace of the relevant Cl-IAA standard for each halogenase, bottom panel: empty vector (EV) negative control.

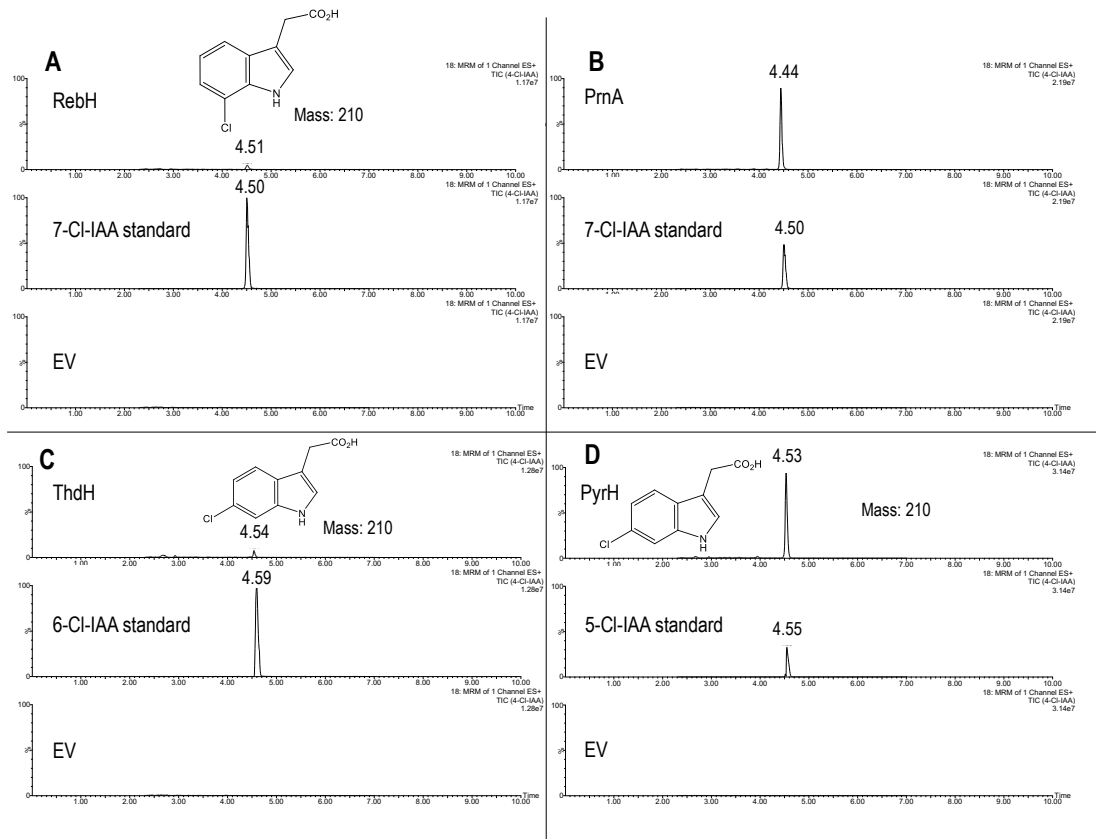


Figure S5. UPLC chromatograms in MRM mode of Br-IAA production following infiltration of *AtTARs*, *PsYUC7* and a halogenase gene, A) *PrnA*, B) *PyrH*, with *RebF* in KBr buffer. In each case, the top panel: MRM trace of Br-IAA from leaf tissue. Middle panel: trace of Br trp from leaf tissue. Bottom panel: MRM trace of a 7-Br-trp standard.

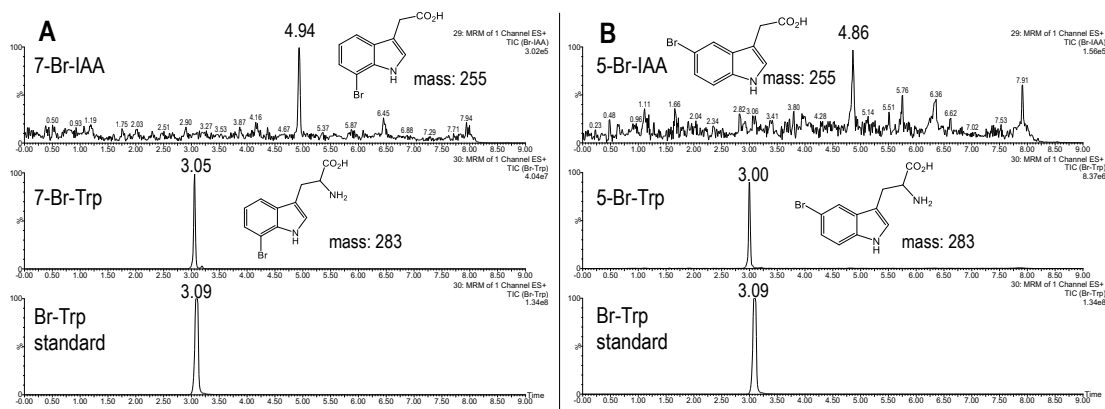


Figure S6. UPLC chromatograms in MRM mode of X-IAA production by *N. benthamiana* leaves following infiltration with X-trp. In each case A, B, C, D, the first panel: MRM trace of the X-IAA product, second panel: MRM trace of the infiltrated substrate. For C and D, third panel: MRM trace of the X-IAA product standard. 6-Br-IAA and 6-CH₃-IAA standards were unavailable.

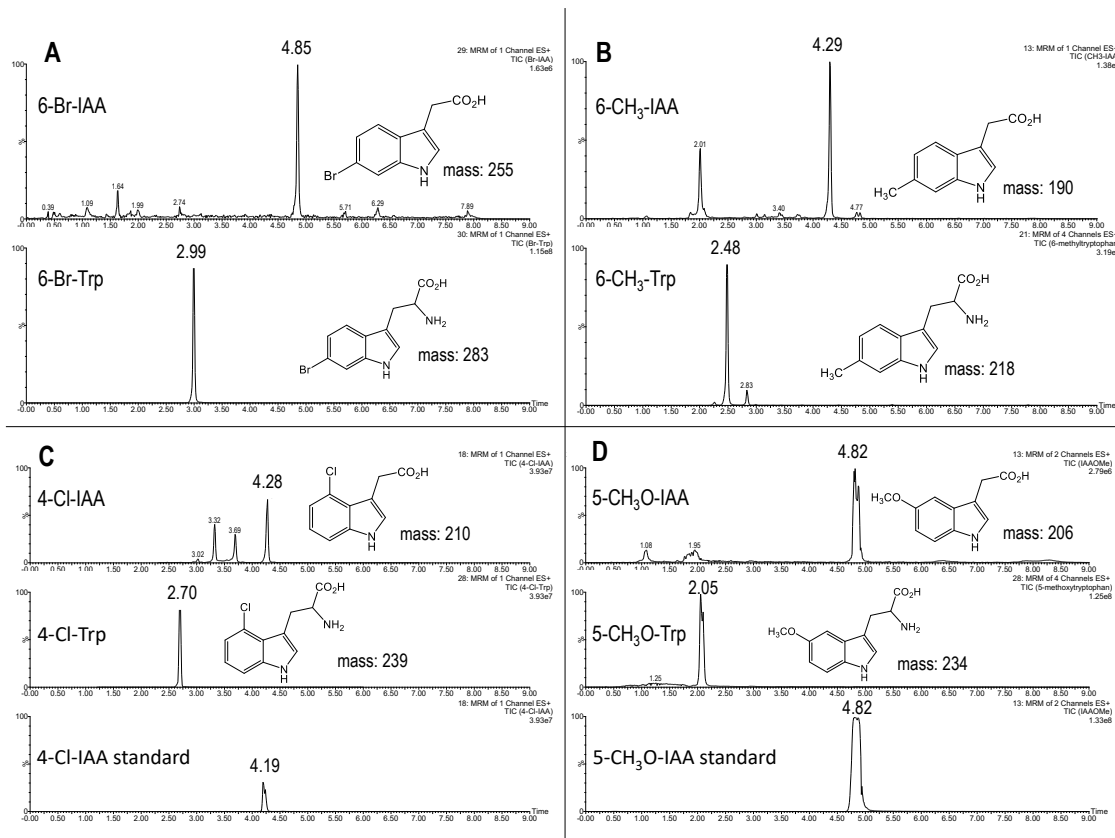


Figure S7. Cl-IAA production in *N. benthamiana* leaves from infiltration of *AtTARs*, *PsYUC7* and bacterial halogenases in the presence of RebF, in KBr buffer. Bars represent mean \pm SEM, n = 4.

