Supplemental Figures

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CYP82E2      ATGGTTTTTCCCATAGAAGCCTTTGTAGGACTAGTAACCTT---CACATTTCTCTTATAC    57
131A_A02     ATGGTTTTTCCCATAGAAGCCATTGTAGGAGCAGTAACCCTAATTACATTTCTCTTATAC    60
3D_C12-15    ATGGTTTTTCCCATAGAAGCCTTTGTAGGACTAGTAACCTT---CACATTTCTCTTATAC    57
CYP82E4v2    ATGCTTTCTCCCATAGAAGCCATTGTAGGACTAGTAACCTT---CACATTTCTCTTCTTC    57
CYP82E4v1    ATGGTTTTTCCCATAGAAGCCATTGTAGGACTAGTAACCTT---CACATTTCTCTTCTTC    57
CYP82E3      ATGGTTTTTCCGGTAGAAGCCATTGTAGGGCTAGTGACCTT---CACATTTCTCTTCTAC    57
             ***-***-***--********-*******---***-***-*----***********-*-*

CYP82E2      TTCCTATGGACAAAAAAATCTCAAAAACTTCCAAAACCCTTACCACCGAAAATCCCCGGA    117
131A_A02     TTCCTATGTACAAAAAAATCTCAAAAACATTCAAAGCCCTTACCAACGAAAATCCCCGGA    120
3D_C12-15    TTCCTATGGACAAAAAAATCTCAAAAACTTCCAAAACCCTTACCACCGAAAATCCCCGGA    117
CYP82E4v2    TTCCTATGGACAAAAAAATCTCAAAAACCTTCAAAACCCTTACCACCGAAAATCCCCGGA    117
CYP82E4v1    TTCCTATGGACAAAAAAATCTCAAAAACCTTCAAAACCCTTACCACCGAAAATCCCCGGA    117
CYP82E3      TTCCTATGGACAAAAAAATCTCAAAAACCTTCAAAACCCTTACCACCGAAAATCCCGGGA    117
             *******-********************-*-****-*********-***********-***

CYP82E2      GGATGGCCGGTAATCGGCCATCTTTTTCACTTCAATAACGACGGCGACGACCGTCCATTA    177
131A_A02     GGATGGCCGGTAATCGGCCATCTTTTCCACTTCAATAACGACGGCGACGACCGTCCATTT    180
3D_C12-15    GGATGGCCGGTAATCGGCCATCTTTTTCACTTCAATAACGACGGCGACGACCGTCCATTA    177
CYP82E4v2    GGATGGCCGGTAATCGGCCATCTTTTCCACTTCAATGACGACGGCGACGACCGTCCATTA    177
CYP82E4v1    GGATGGCCGGTAATCGGCCATCTTTTCCACTTCAATGACGACGGCGACGACCGTCCATTA    177
CYP82E3      GGATGGCCGGTAATCGGCCATCTTTTCTACTTCGATGACGACGGCGACGACCGTCCATTA    177
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CYP82E2      GCTCGAAAACTCGGAGACTTAGCTGATAAATACGGCCCCGTTTTCACTTTTCGGCTAGGT    237
131A_A02     GCTCGAAAACTCGGAGACTTAGCTGATAAATACGGCCCCGTTTTCACTTTTCGGCTAGGT    240
3D_C12-15    GCTCGAAAACTCGGAGACTTAGCTGATAAATACGGCCCCGTTTTCACTTTTCGGCTAGGT    237
CYP82E4v2    GCTCGAAAACTCGGAGACTTAGCTGACAAATACGGCCCCGTTTTCACTTTTCGGCTAGGC    237
CYP82E4v1    GCTCGAAAACTCGGAGACTTAGCTGACAAATACGGCCCCGTTTTCACTTTTCGGCTAGGC    237
CYP82E3      GCTCGAAAACTCGGAGACTTAGCTGACAAATACGGACCCGTTTTCACTTTTCGGCTAGGC    237
             ***************************-********-************************-

CYP82E2      CTTCCCCTTGTGCTAGTTGTAAGCAGTTACGAAGCTATAAAAGATTGCTTCTCTACAAAT    297
131A_A02     CTTCCCCTTGTGCTAGTTGTAAGCAGTTACGAAGCTATAAAAGATTGCTTCTCTACAAAT    300
3D_C12-15    CTTCCCCTTGTGCTAGTTGTAAGCAGTTACGAAGCTATAAAAGATTGCTTCTCTACAAAT    297
CYP82E4v2    CTTCCCCTTGTCTTAGTTGTAAGCAGTTACGAAGCTGTAAAAGACTGTTTCTCTACAAAT    297
CYP82E4v1    CTTCCCCTTGTCTTAGTTGTAAGCAGTTACGAAGCTGTAAAAGACTGTTTCTCTACAAAT    297
CYP82E3      CTTCCCCTTGTGTTAGTTGTAAGCAGTTACGAAGCTATAAAAGATTGTTTCTCTACAAAT    297
             ***********--************************-*******-**-************

CYP82E2      GACGCCATTTTCTCCAATCGTCCAGCTTTTCTTTACGGCGAATACCTTGGCTACAATAAT    357
131A_A02     GACGCCATTTTCTCCAATCGTCCAGCTTTTCTTTACGGCGAATACCTTGGCTACAATAAT    360
3D_C12-15    GATGCCATTTTCTCCAATCGTCCAGCTTTTCTTTATGGCGAATACCTTGGCTACAGTAAT    357
CYP82E4v2    GACGCCATTTTTTCCAATCGTCCAGCTTTTCTTTACGGCGATTACCTTGGCTACAATAAT    357
CYP82E4v1    GACGCCATTTTTTCCAATCGTCCAGCTTTTCTTTACGGCGATTACCTTGGCTACAATAAT    357
CYP82E3      GACGCCATTTTCTCCAATCGTCCAGCTTTTCTTTACGGCGAATACCTTGGCTACAAAAAT    357
             **-********-************************-*****-**************--***

CYP82E2      ACAATGCTTTTTCTAGCAAATTACGGACCTTACTGGCGAAAAAATCGTAAATTAGTCATT    417
131A_A02     ACAATGCTTTTTCTAGCAAATTACGGACCTTACTGGCGAAAAAATCGTAAATTAGTCATT    420
3D_C12-15    GCCATGCTATTT-TGACAAAATACGGACCTTACTGGCGAAAAAATAGAAAATTAGTCATT    416
CYP82E4v2    GCCATGCTATTTTTGGCCAATTACGGACCTTACTGGCGAAAAAATCGAAAATTAGTTATT    417
CYP82E4v1    GCCATGCTATTTTTGGCCAATTACGGACCTTACTGGCGAAAAAATCGAAAATTAGTTATT    417
CYP82E3      GCCATGCTATTTTTGGCAAATTACGGATCTTACTGGCGAAAAAATCGTAAATTAATTATT    417
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CYP82E2      CAGGAAGTTCTCTCTGCTAGTCGTCTCGAAAAATTCAAACAAGTGAGATTCACCAGAATT    477
131A_A02     CAGGAAGTTCTCTCTGCTAGTCGTCTCGAAAAATTCAAACAAGTGAGATTCACCAGAATT    480
3D_C12-15    CAGGAAGTTCTCTGTGCTAGTCGTCTCGAAAAATTGAAGCACGTGAGATTTGGTGAAATT    476
CYP82E4v2    CAGGAAGTTCTCTCCGCTAGTCGTCTCGAAAAATTCAAACACGTGAGATTTGCAAGAATT    477
CYP82E4v1    CAGGAAGTTCTCTCCGCTAGTCGTCTCGAAAAATTCAAACACGTGAGATTTGCAAGAATT    477
CYP82E3      CAGGAAGTTCTCTCTGCTAGTCGTCTCGAAAAATTCAAACACGTGAGATTCGCCAGAATT    477
             *************--********************-**-**********------****

CYP82E2      CAAACGAGCATTAAGAATTTATACACTCGAATTAATGGAAATTCGAGTACGATAAATCTA    537
131A_A02     CAAACGAGCATTAAGAATTTATACACTCGAATTAATGGAAATTCGAGTACGATAAATCTA    540
3D_C12-15    CAGACGAGCATTAAGAATTTATACACTCGAATTGATGGAAATTCGAGTACGATAAATCTA    536
CYP82E4v2    CAAGCGAGCATTAAGAATTTATATACTCGAATTGATGGAAATTCGAGTACGATAAATTTA    537
CYP82E4v1    CAAGCGAGCATTAAGAATTTATATACTCGAATTGATGGAAATTCGAGTACGATAAATTTA    537
CYP82E3      CAAACGAGCATTAAGAATTTATACACTCGAATTGATGGAAATTCGAGTACGATAAATTTA    537
             **--********************-*********-************************-**

CYP82E2      ACTGATTGGTTAGAAGAATTGAATTTTGGTCTGATCGTGAAAATGATCGCTGGGAAAAAT    597
131A_A02     AGTGATTGGTTAGAAGAATTGAATTTTGGTCTGATCGTGAAAATGATCGCTGGGAAAAAT    600
3D_C12-15    ACA                                                              539
CYP82E4v2    ACTGATTGGTTAGAAGAATTGAATTTTGGTCTGATCGTGAAGATGATCGCTGGAAAAAAT    597
CYP82E4v1    ACTGATTGGTTAGAAGAATTGAATTTTGGTCTGATCGTGAAGATGATCGCTGGAAAAAAT    597
CYP82E3      ACTGATTGGTTAGAAGAATTGAATTTTGGTCTGATCGTGAAAATGATCGCTGGGAAAAAT    597
             *--****************************************-***********-******

CYP82E2      TATGAATCCGGTAAAGGAGATGAACAAGTGGAAAGATTTAAGAATGCGTTTAAGGATTTT    657
131A_A02     TATGAATCCGGTAAAGGAGATGAACAAGTGGAAAGATTTAAGAATGCGTTTAAGGATTTT    660
CYP82E4v2    TATGAATCCGGTAAAGGAGATGAACAAGTGGAGAGATTTAAGAAAGCGTTTAAGGATTTT    657
CYP82E4v1    TATGAATCCGGTAAAGGAGATGAACAAGTGGAGAGATTTAAGAAAGCGTTTAAGGATTTT    657
CYP82E3      TATGAATCCGGTAAAGGAGATGAACAAGTGGAGAGATTTAAGAAAGCGTTTAAGGATTTT    657
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CYP82E2      ATGGTTTTATCAATGGAATTTGTATTATGGGATGCATTTCCAATTCCATTATTTAAATGG    717
131A_A02     ATGGTT                                                          666
CYP82E4v2    ATGATTTTATCAATGGAGTTTGTGTTATGGGATGCATTTCCAATTCCATTATTTAAATGG    717
CYP82E4v1    ATGATTTTATCAATGGAGTTTGTGTTATGGGATGCATTTCCAATTCCATTATTTAAATGG    717
CYP82E3      ATGATTTTATCAATGGAGTTTGTGTTATGGGATGCATTTCCAATTCCATTATTTAAATGG    717
             ***-*************-*****-************************************

CYP82E2      GTGGATTTTCAAGGTCATATTAAGGCAATGAAAAGGACATTTAAGGATATAGATTCTGTT    777
CYP82E4v2    GTGGATTTTCAAGGGCATGTTAAGGCTATGAAAAGGACTTTTAAAGATATAGATTCTGTT    777
CYP82E4v1    GTGGATTTTCAAGGGCATGTTAAGGCTATGAAAAGGACTTTTAAAGATATAGATTCTGTT    777
CYP82E3      GTGGATTTTCAAGGGCATGTTAAGGCTATGAAAAGGACTTTTAAAGATATAGATTCTGTT    777
             **************-***-*******-***********-*****-***************

CYP82E2      TTTCAGAACTGGTTAGAGGAACATATTAATAAAAGAGAAAAAAT---GGAGGTTGGTGCA    834
CYP82E4v2    TTTCAGAATTGGTTAGAGGAACATATTAATAAAAGAGAAAAAAT---GGAGGTTAATGCA    834
CYP82E4v1    TTTCAGAATTGGTTAGAGGAACATATTAATAAAAGAGAAAAAAT---GGAGGTTAATGCA    834
CYP82E3      TTTCAGAATTGGTTAGAGGAACATATTAAGAAAAGAGAAAAAATAATGGAGGTTGGTACA    837
             *******-**********************-**************---********--*-**

CYP82E2      GAAGGGAATGAACAAGATTTCATTGATGTGGTGCTTTCAAAATTGAGTAAAGAATATCTT    894
CYP82E4v2    GAAGGGAATGAACAAGATTTCATTGATGTGGTGCTTTCAAAAATGAGTAATGAATATCTT    894
CYP82E4v1    GAAGGGAATGAACAAGATTTCATTGATGTGGTGCTTTCAAAAATGAGTAATGAATATCTT    894
CYP82E3      GAAGGGAATGAACAAGATTTTATAGATGTGGTGCTTTCAAAAATGAGTAATGAATATCTT    897
             ********************-**-******************-*******-*********

CYP82E2      GATGAAGGTTACTCTCGTGATACTGTCATTAAAGCAACAGTTTTTAGTTTGGTCTTGGAT    954
CYP82E4v2    GGTGAAGGTTACTCTCGTGATACTGTCATTAAAGCAACGGTGTTTAGTTTGGTCTTGGAT    954
CYP82E4v1    GGTGAAGGTTACTCTCGTGATACTGTCATTAAGGCAACGGTGTTTAGTTTGGTCTTGGAT    954
CYP82E3      GGCGAAGGTTACTCTCGCGATACTGTCATAAAAGCAACAGTATTTAGTTTGGTCTTGGAT    957
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CYP82E2      GCAGCAGACACAGTTGCTCTTCACATAAATTGGGGAATGACATTATTGATAAACAATCAA    1014
CYP82E4v2    GCAGCAGACACAGTTGCTCTTCACATAAATTGGGGAATGGCATTATTGATAAACAATCAA    1014
CYP82E4v1    GCAGCAGACACAGTTGCTCTTCACATAAATTGGGGAATGGCATTATTGATAAACAATCAA    1014
CYP82E3      GCAGCAGACACAGTTGCTCTTCACATAAATTGCGGAATGGCATTATTGATAAACAATCAA    1017
             ********************************-******-********************

CYP82E2      AATGCCTTGATGAAAGCACAAGAAGAGATAGACACAAAAGTTGGTAAGGATAGATGGGTA    1074
CYP82E4v2    AAGGCCTTGACGAAAGCACAAGAAGAGATAGACACAAAAGTTGGTAAGGACAGATGGGTA    1074
CYP82E4v1    AAGGCCTTGACGAAAGCACAAGAAGAGATAGACACAAAAGTTGGTAAGGACAGATGGGTA    1074
CYP82E3      AATGCCTTGAAGAAAGCACAAGAAGAGATAGACACAAAAGTTGGTAAGGATAGATGGGTA    1077
             **-*******-*******************************************-*********

CYP82E2      GAAGAGAGTGATATTAAGGATTTAGTATACCTCCAAGCTATTGTTAAAAAGGTGTTACGA    1134
CYP82E4v2    GAAGAGAGTGATATTAAGGATTTGGTATACCTCCAAGCTATTGTTAAAGAAGTGTTACGA    1134
CYP82E4v1    GAAGAGAGTGATATTAAGGATTTGGTATACCTCCAAGCTATTGTTAAAGAAGTGTTACGA    1134
CYP82E3      GAAGAGAGTGATATTAAGGATTTGGTATACCTCCAAGCTATTGTTAAAGAAGTGTTACGA    1137
             ************************-************************-*-*********

CYP82E2      TTATATCCACCAGGACCTTTGTTAGTACCACATGAAAATGTAAAGGATTGTGTTGTTAGT    1194
CYP82E4v2    TTATATCCACCAGGACCTTTGTTAGTACCACACGAAAATGTAGAAGATTGTGTTGTTAGT    1194
CYP82E4v1    TTATATCCACCAGGACCTTTGTTAGTACCACACGAAAATGTAGAAGATTGTGTTGTTAGT    1194
CYP82E3      TTATATCCACCGGGACCTTTGTTAGTACCACACGAAAATGTAGAAGATTGTGTTGTTAGT    1197
             ***********-**********************-*********-*-***************

CYP82E2      GGATATCACATTCCTAAAGAGACTAGATTATTCGCAAACGTCATGAAACTGCAGCGCGAT    1254
CYP82E4v2    GGATATCACATTCCTAAAGGGACAAGATTATTCGCAAACGTCATGAAACTGCAACGTGAT    1254
CYP82E4v1    GGATATCACATTCCTAAAGGGACAAGATTATTCGCAAACGTCATGAAACTGCAACGTGAT    1254
CYP82E3      GGATATCACATTCCTAAAGGAACTAGACTATTCGCAAATGTAATGAAACTACAACGTGAT    1257
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CYP82E2      CCTAAACTCTTGTCAAATCCTGATAAGTTCGATCCAGAGAGATTCATCGCTGGTGATATT    1314
CYP82E4v2    CCTAAACTCTGGTCTGATCCTGATACTTTCGATCCAGAGAGATTCATTGCTACTGATATT    1314
CYP82E4v1    CCTAAACTCTGGTCTGATCCTGATACTTTCGATCCAGAGAGATTCATTGCTACTGATATT    1314
CYP82E3      CCTAAACTCTGGTCAAATCCTGATAAGTTCAATCCAGAGAGATTCATCGCTCGTGATATT    1317
             **********-***--*********--***-****************-***--*******

CYP82E2      GACTTCCGTGGTCACCACTATGAGTTTATCCCATTTGGTTCTGGAAGACGATCTTGTCCG    1374
CYP82E4v2    GACTTTCGTGGTCAGTACTATAAGTATATCCCGTTTGGTTCTGGAAGACGATCTTGTCCA    1374
CYP82E4v1    GACTTTCGTGGTCAGTACTATAAGTATATCCCGTTTGGTTCTGGAAGACGATCTTGTCCA    1374
CYP82E3      GACTTTCATGGTCAGCACTATGAGTATATCCCGTTTGGTTCTGGAAGACGCTCTTGTCCG    1377
             *****-*-******--*****-***-******-****************-********-

CYP82E2      GGGATGACTTATGCATTGCAAGTGGAACACCTAACAATGGCACATTTAATCCAGGGTTTC    1434
CYP82E4v2    GGGATGACTTATGCATTGCAAGTGGAACACTTAACAATGGCACATTTGATCCAAGGTTTC    1434
CYP82E4v1    GGGATGACTTATGCATTGCAAGTGGAACACTTAACAATGGCACATTTGATCCAAGGTTTC    1434
CYP82E3      GGGATGACTTATGCATTGCAAGTGGAACACCTAACAATGGCACATTTGATCCAGGGTTTC    1437
             ******************************-****************-*****-******

CYP82E2      AATTACAAAACTCCAAATGACGAGGCCTTGGATATGAAGGAAGGTGCAGGCATAACAATA    1494
CYP82E4v2    AATTACAGAACTCCAAATGACGAGCCCTTGGATATGAAGGAAGGTGCAGGCATAACTATA    1494
CYP82E4v1    AATTACAGAACTCCAAATGACGAGCCCTTGGACATGAAGGAAGGTGCAGGCATAACTATA    1494
CYP82E3      AATTACAGAACTCCAACTGATGAGCCCTTGGATATGAAAGAAGGTGCAGGCATAACTATA    1497
             *******-********-***-***-*******-*****-*****************-***

CYP82E2      CGTAAGGTAAATCCAGTGGAATTGATAATAACGCCTCGCTTGGCACCTGAGCTTTACTAA    1554
CYP82E4v2    CGTAAGGTAAATCCTGTGGAACTGATAATAGCGCCTCGCCTGGCACCTGAGCTTTATTAA    1554
CYP82E4v1    CGTAAGGTAAATCCTGTGGAACTGATAATAGCGCCTCGCCTGGCACCTGAGCTTTATTAA    1554
CYP82E3      CGTAAGGTAAATCCTGTGAAAGTGATAATTACGCCTCGCTTGGCACCTGAGCTTTATTAA    1557
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CYP82E2      AACCTAAGATCTTTCATCTTGGTTGATCATTGTTTAATACTCCTAGATGGGTATTCATTT    1614
CYP82E4v2    AACCTAAGATCTTTCATCTTGGTTGATCATTGTATAATACTCCTAAATGGATATTCATTT    1614
CYP82E4v1    AACCTAAGATCTTTCATCTTGGTTGATCATTGTATAATACTCCTAAATGGATATTCATTT    1614
CYP82E3      AATCTAAGATGTTTCATCTTGGTTGATCATTGTTTAATACTCCTAGATGGGTATTCATCT    1617
             **-*******-***********************-***********-****-********-*

CYP82E2      ACCTTTTTTCAATTAATTGCATGTACGAGCTTTTTTAATTTGGTATATTTGTAACAATAA    1674
CYP82E4v2    ACCTTTTATCAATTAATTGTCAGTACGAGTTTTTCTAATTTGGTACATTTGTAATAATAA    1674
CYP82E4v1    ACCTTTTATCAATTAATTGTCAGTACGAGTTTTTCTAATTTGGTACATTTGTAATAATAA    1674
CYP82E3      ACCTTTTTTCAATTAGTTGTCGGTACGTATTTTTTTAATTTGGTAAGTTTGTAATAATAA    1677
             *******-*******-***---*****---****-**********--*******-*****

CYP82E2      GTAAAGAATGATTGTGCTAATATATAAAGATTTGCAGAAGATAATTGACTGATTGTCCC     1733
CYP82E4v2    GTAAAGAATAATTGTGCTAATATATAAAGGTTTGTAGAAGATAATTGACTGATTGTCCC     1733
CYP82E4v1    GTAAAGAATAATTGTGCTAATATATAAAGGTTTGTAGAAGATGATTGACTGATTGTCCC     1733
CYP82E3      GTAAAGAAGGATTGTGCTAATATATAATGGT--GCATAAAATAATTGAAATG            1727
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Figure 5. Nucleotide sequence alignment of members of the CYP82E2 gene family. Asterisks denote positions where sequence identity is conserved among all sequences compared. Positions where differences are found are indicated with dashes and the corresponding residues are shaded gray. The 3D_C12-15 and 131A_A02 entries are partial length DNA sequences. The 99 bp region of CYP82E2 that was used in to make the RNAi-based construct is underlined.