

Supplementary Material

High throughput screening identifies microRNAs regulating human PCSK9 and hepatic LDL receptor expression

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| | miRWalk | MicroT4 | miRanda | miRDB | miRMap | PITA | RNA22 | RNAhybrid | Targetscan | Sum |
|-------------|---------|---------|---------|-------|--------|------|-------|-----------|------------|-----|
| miR-224 | | | | | | | | | | 7 |
| miR-342-5p | | | | | | | | | | 7 |
| miR-601 | | | | | | | | | | 7 |
| miR-650 | | | | | | | | | | 7 |
| miR-128 | | | | | | | | | | 6 |
| miR-191 | | | | | | | | | | 6 |
| miR-221-5p | | | | | | | | | | 6 |
| miR-26a | | | | | | | | | | 6 |
| miR-4419a | | | | | | | | | | 6 |
| miR-4721 | | | | | | | | | | 6 |
| miR-552 | | | | | | | | | | 6 |
| miR-621 | | | | | | | | | | 6 |
| miR-646 | | | | | | | | | | 6 |
| miR-765 | | | | | | | | | | 6 |
| miR-129* | | | | | | | | | | 5 |
| miR-335 | | | | | | | | | | 5 |
| miR-561 | | | | | | | | | | 5 |
| miR-609 | | | | | | | | | | 5 |
| miR-15b | | | | | | | | | | 4 |
| miR-3064 | | | | | | | | | | 4 |
| miR-3165 | | | | | | | | | | 4 |
| miR-3177-5p | | | | | | | | | | 4 |
| miR-363-5p | | | | | | | | | | 4 |
| miR-4667-5p | | | | | | | | | | 4 |
| miR-4700-5p | | | | | | | | | | 4 |
| miR-4779 | | | | | | | | | | 4 |
| miR-491-5p | | | | | | | | | | 4 |
| miR-498 | | | | | | | | | | 4 |
| miR-524-3p | | | | | | | | | | 4 |
| miR-4448 | | | | | | | | | | 3 |
| miR-206 | | | | | | | | | | 2 |
| miR-3689d | | | | | | | | | | 2 |
| miR-4512 | | | | | | | | | | 2 |
| miR-612 | | | | | | | | | | 2 |
| miR-381 | | | | | | | | | | 1 |
| miR-4655-5p | | | | | | | | | | 1 |
| miR-4790-5p | | | | | | | | | | 1 |
| miR-548ai | | | | | | | | | | 1 |

Supplementary Figure I. Prediction of miRNA binding to the human *PCSK9* 3'-UTR for the top 35 miRNAs identified from the primary screen. Green squares indicate a positive prediction of miRNA binding using the indicated miRNA target prediction algorithms. Candidates were ranked based on the sum of positive predictions of miRNA binding sites in the *PCSK9* 3'-UTR.

Supplementary Table I. Top 100 miRNAs identified from primary screen of human miRNA mimics that repress PCSK9 3'-UTR-luciferase reporter activity

| Rank | Accession Number(s) | Gene Symbol | Ambion_mirna_id | Ambion_miProd_ID | Mature_Sequence |
|------|---------------------|-----------------|-----------------|------------------|-------------------------|
| 1 | MIMAT0019721 | hsa-miR-4655-5p | 21783 | MC21783 | CACCGGGGAUGGCAGAGGGUGC |
| 2 | MIMAT0003277 | hsa-miR-609 | 11618 | MC11618 | AGGGUUUUUCUUCUUCUUCU |
| 3 | MIMAT0019049 | hsa-miR-4512 | 22380 | MC22380 | CAGGGCCUACUAGUUAUGCCCA |
| 4 | POS CONTROL | hsa-miR-224 | POS CONTROL | POS CONTROL | UCAAGUACUAGUGUUCUUUAG |
| 5 | MIMAT0019881 | hsa-miR-4746-3p | 22383 | MC22383 | AGCGGUGUCUCUGCGGGCGGA |
| 6 | MIMAT0019961 | hsa-miR-4790-5p | 22723 | MC22723 | AUCGUUUUJCCAUUAUUGU |
| 7 | MIMAT0019008 | hsa-miR-3689d | 22098 | MC22098 | GGGAGGUGUAUCUACACUCUG |
| 8 | MIMAT0019024 | hsa-miR-548al | 21878 | MC21878 | AACGGCAUAGCAGUUUUAUCCA |
| 9 | MIMAT0018932 | hsa-miR-378f | 21788 | MC21788 | ACUGGACUUGGAGCAGAAAG |
| 10 | MIMAT0019215 | hsa-miR-3177-5p | 22218 | MC22218 | UGUUAACACAGGUCGAGCGGCU |
| 11 | MIMAT0003385 | hsa-miR-363* | 11353 | MC11353 | CGGGUGGAUCAGUAGCAUUU |
| 12 | MIMAT0000226 | hsa-miR-196a | 10068 | MC10068 | UAGGUUUAUUUUAUUGUUGGG |
| 13 | MIMAT0002807 | hsa-miR-491-5p | 11479 | MC11479 | AGUGGGGAUCCUUCUAGGAG |
| 14 | MIMAT0018967 | hsa-miR-4448 | 22317 | MC22317 | GGUUCUUGGUCUAGGGGUUA |
| 15 | MIMAT0003280 | hsa-miR-612 | 11461 | MC11461 | GCUUGGGCAGGGUUCUAGUUCUU |
| 16 | MIMAT0003215 | hsa-miR-552 | 11431 | MC11431 | AACAGGUGACUGGUUAGACAA |
| 17 | MIMAT0019796 | hsa-miR-4700-5p | 22042 | MC22042 | UCUGGGGAUGAGGACAGUGUGU |
| 18 | MIMAT0019728 | hsa-miR-4660 | 22726 | MC22726 | UGGAGUUCUUGGUGAAUUGGAG |
| 19 | MIMAT0019743 | hsa-miR-4667-5p | 21789 | MC21789 | ACUGGGGAGCAGAAAGGAAACC |
| 20 | MIMAT0019041 | hsa-miR-4505 | 21694 | MC21694 | AGGCUUGGUCUGGAGCGGA |
| 21 | MIMAT0019766 | hsa-miR-4681 | 21695 | MC21695 | AACGGGAUAGCAGGUCUUAUCU |
| 22 | MIMAT0000426 | hsa-miR-132 | 10166 | MC10166 | UAAACAGUCUACAGCCAUGGUCG |
| 23 | MIMAT0019029 | hsa-miR-4494 | 22041 | MC22041 | CCAAGUCUGGUCUAGCAGAGG |
| 24 | MIMAT0019046 | hsa-miR-4509 | 22384 | MC22384 | ACUAAAGGAUUAUGAAAGUUUU |
| 25 | MIMAT0019782 | hsa-miR-4691-3p | 21517 | MC21517 | CCAGCCACGGACUGAGUGCAU |
| 26 | MIMAT0019786 | hsa-miR-4694-5p | 22219 | MC22219 | AGGUUUUAUCCUUAUUAUUGC |
| 27 | MIMAT0019938 | hsa-miR-4779 | 22573 | MC22573 | UAGGAGGAAUUAUAAAAGCAG |
| 28 | MIMAT0001541 | hsa-miR-449a | 11127 | MC11127 | UGGCAUGUUAUUGUUAUGUUGU |
| 29 | MIMAT0019737 | hsa-miR-4664-5p | 21667 | MC21667 | UGGGGUGCCUCCCGCAAGUU |
| 30 | MIMAT0000082 | hsa-miR-26a | 10249 | MC10249 | UUCAAGUUAUCCAGGAUAGGCU |
| 31 | MIMAT0000687 | hsa-miR-299-3p | 10448 | MC10448 | UAUUGGGGAUUGAAUCCGCUU |
| 32 | MIMAT0018992 | hsa-miR-4465 | 22714 | MC22714 | CUCAAGUAGUUGUACAGGGGA |
| 33 | MIMAT0019357 | hsa-miR-3972 | 21943 | MC21943 | CUGCCAGCCCCUUCAGGGCA |
| 34 | MIMAT0019715 | hsa-miR-4651 | 22425 | MC22425 | CGGGUGGUGGAGGUCGCGGC |
| 35 | MIMAT0002804 | hsa-miR-488* | 10241 | MC10241 | CCCAAGUUAUUGCCACUCUCAA |
| 36 | MIMAT0003320 | hsa-miR-650 | 11602 | MC11602 | AGGAGGCACGCUUCUACGAC |
| 37 | MIMAT0004762 | hsa-miR-486-3p | 12986 | MC12986 | CGGGCAGCUCUAGUACAGGAU |
| 38 | MIMAT0019735 | hsa-miR-4663 | 22073 | MC22073 | AGGUGAGUCUAGGACUGGCAU |
| 39 | MIMAT0003309 | hsa-miR-639 | 11645 | MC11645 | AUCGUCGGUUGGCGGCGUUGU |
| 40 | MIMAT0000073 | hsa-miR-19a | 10649 | MC10649 | UGUGCAAAUUCUAGCAAAUCUGA |
| 41 | MIMAT0019846 | hsa-miR-4726-3p | 21639 | MC21639 | ACCCAGGUUCCUUCUGCCGCA |
| 42 | MIMAT0018952 | hsa-miR-4436a | 22608 | MC22608 | GCAAGCAGGCAAGAGUUGAU |
| 43 | MIMAT0019844 | hsa-miR-4725-3p | 21937 | MC21937 | UGGGGAAGGCUACUAGUUGGG |
| 44 | MIMAT0004498 | hsa-miR-25* | 12401 | MC12401 | AGGCGGAGACUUGGCAUUG |
| 45 | MIMAT0019711 | hsa-miR-4649-5p | 21525 | MC21525 | UGGGCAGGGGUGGCUUCAGAG |
| 46 | MIMAT0003219 | hsa-miR-555 | 11635 | MC11635 | AGGUUAAGCUGAAUCUCUGAU |
| 47 | MIMAT0019958 | hsa-miR-4788 | 21698 | MC21698 | UUAAGGACAGUUAAGGAGGCG |
| 48 | MIMAT0004568 | hsa-miR-221* | 12613 | MC12613 | ACUUGGCAUACAAGUUAUUAUU |
| 49 | MIMAT0003250 | hsa-miR-585 | 11554 | MC11554 | UGGGGUAUCUGUAGUUA |
| 50 | MIMAT0003335 | hsa-miR-657 | 11637 | MC11637 | GGCAGGUUCCUCCUUCUUAAG |
| 51 | MIMAT0019077 | hsa-miR-1587 | 21951 | MC21951 | UUGGGCUGGGGUGGUGGUG |
| 52 | MIMAT0000266 | hsa-miR-205 | 11015 | MC11015 | UCCUUAUUAUCCAGGAGUUGC |
| 53 | MIMAT0019835 | hsa-miR-4721 | 22385 | MC22385 | UGAGGGUCCAGGUGACGGUGG |
| 54 | MIMAT0000462 | hsa-miR-206 | 10409 | MC10409 | UGGAAUGUAAGGAAUGUGUGG |
| 55 | MIMAT0000765 | hsa-miR-335 | 10063 | MC10063 | UCAAGAGCAUUAACGAAAAUUGU |
| 56 | MIMAT0002850 | hsa-miR-524-3p | 10729 | MC10729 | GAAGGCGUUCUUCUUGGAGU |
| 57 | MIMAT0002872 | hsa-miR-501-5p | 10266 | MC10266 | AAUCCUUUGUCCUUGGGUAGGA |
| 58 | MIMAT0002824 | hsa-miR-498 | 11121 | MC11121 | UUUUAAGCCAGGGGGGCUUUUUC |
| 59 | MIMAT0019218 | hsa-miR-3194-3p | 22083 | MC22083 | AGGUCUGUCUUCUACUGGCAU |
| 60 | MIMAT0004694 | hsa-miR-342-5p | 13066 | MC13066 | AGGGGUCUUAUCUGUAUUGA |
| 61 | MIMAT0019830 | hsa-miR-4717-3p | 21882 | MC21882 | ACACUUGGUGGUCUUGGCGCU |
| 62 | MIMAT0004697 | hsa-miR-151-5p | 11537 | MC11537 | UCGAGGAGUCUACAGUUAUGU |
| 63 | MIMAT0004819 | hsa-miR-671-3p | 12333 | MC12333 | UCCGGUUCUAGGGUCCACC |
| 64 | MIMAT0000267 | hsa-miR-210 | 10516 | MC10516 | CUGUGCGUGUACGCGGUGGA |
| 65 | MIMAT0001412 | hsa-miR-18b | 10466 | MC10466 | UAAGGUGCAUUAUGGAGUUAUG |
| 66 | MIMAT0000077 | hsa-miR-22 | 10203 | MC10203 | AAGUCGCAUUGUAGAAUCUGU |
| 67 | MIMAT0000736 | hsa-miR-381 | 10242 | MC10242 | UAUACAAGGCAAGCUCUUCUGU |
| 68 | MIMAT0003269 | hsa-miR-601 | 11482 | MC11482 | UGGUCUAGGUAUUGUUGGAGGAG |
| 69 | MIMAT0000417 | hsa-miR-15b | 10904 | MC10904 | UAGCAGCAUCAUUGUUUUAUUA |
| 70 | MIMAT0003290 | hsa-miR-621 | 11609 | MC11609 | GGCUAGCAAGCAGGCUUAUCU |
| 71 | MIMAT0002879 | hsa-miR-507 | 10509 | MC10509 | UUUUGCACUUUUGGAGUGAA |
| 72 | MIMAT0003225 | hsa-miR-561 | 11540 | MC11540 | CAAGUUUAAGAUUCUUGAAGU |
| 73 | MIMAT0003316 | hsa-miR-646 | 11379 | MC11379 | AAGCAUCUGUCUUCGAGGC |
| 74 | MIMAT0019942 | hsa-miR-4781-5p | 22740 | MC22740 | UAGCGGGAUUCCAAUUAUUGG |
| 75 | MIMAT0003340 | hsa-miR-542-5p | 13010 | MC13010 | UCGGGUAUCAUAGUACAGAGA |
| 76 | MIMAT0004548 | hsa-miR-129* | 12962 | MC12962 | AAGCCUUUACCCAAAAGUAU |
| 77 | MIMAT0000440 | hsa-miR-191 | 11717 | MC11717 | CAACGGAAUCCAAAGCAGCUG |
| 78 | MIMAT0003294 | hsa-miR-625 | 12566 | MC12566 | AGGGGAAAGUUUUAUUAUUC |
| 79 | MIMAT0003945 | hsa-miR-765 | 11892 | MC11892 | UGGAGGAAAGGAAAGGUGAUG |
| 80 | MIMAT0003215 | hsa-miR-552 | 11431 | MC11431 | AACAGGUGACUGGUUAGACAA |
| 81 | MIMAT0014996 | hsa-miR-3131 | 16741 | MC16741 | UCGAGGACUGGUGAAAGGCGUU |
| 82 | MIMAT0012735 | hsa-miR-718 | 16440 | MC16440 | CUUCCGCCCCCGGGCGGCG |
| 83 | MIMAT0005950 | hsa-miR-1306 | 13206 | MC13206 | ACGUUGGUCUGGUGGUGUG |
| 84 | MIMAT0014995 | hsa-miR-3130-5p | 17993 | MC17993 | UACCGAGUCUCCGGUGCAGCC |
| 85 | MIMAT0018931 | hsa-miR-4419a | 20913 | MC20913 | UGAGGGAGGAGACUJGCA |
| 86 | MIMAT0015045 | hsa-miR-3170 | 18765 | MC18765 | CUGGGUUCUGAGCAGACAGU |
| 87 | MIMAT0005940 | hsa-miR-1282 | 13568 | MC13568 | UCGUUUUCCUUUUCUUCUUCU |
| 88 | MIMAT0015039 | hsa-miR-3165 | 18587 | MC18587 | AGGUGGAUGCAUUGUAGCCUCA |
| 89 | MIMAT0005920 | hsa-miR-1266 | 13349 | MC13349 | CCUACGGUCUAGAAACAGGGCU |
| 90 | MIMAT0005915 | hsa-miR-1263 | 13293 | MC13293 | AUGGUUACCCUGGUAUCUAGAGU |
| 91 | MIMAT0016901 | hsa-miR-4271 | 18627 | MC18627 | GGGGGAAAGAAAGGUGGGG |
| 92 | MIMAT0019859 | hsa-miR-4734 | 20995 | MC20995 | GCUUGGGUCUGGCUACAGGGCG |
| 93 | MIMAT0019873 | hsa-miR-4742-3p | 20629 | MC20629 | UCUUAUUCUUCUUGCCUGCAG |
| 94 | MIMAT0019981 | hsa-miR-4802-5p | 20718 | MC20718 | UAUGGAGGUUUCUAGCAUUGU |
| 95 | MIMAT0018931 | hsa-miR-4419a | 20913 | MC20913 | UGAGGGAGGAGACUJGCA |
| 96 | MIMAT0019864 | hsa-miR-3064-5p | 20900 | MC20900 | UCUUGGCUUUGGUGGUGCA |
| 97 | MIMAT0018359 | hsa-miR-3943 | 19620 | MC19620 | UAGCCCCAGGCUUACUUGGGCG |
| 98 | MIMAT0019811 | hsa-miR-4709-5p | 20934 | MC20934 | ACAACAGUAGUUCUUCUCAA |
| 99 | MIMAT0019062 | hsa-miR-4524 | 21326 | MC21326 | AUAGCAGUAGUACUUCUJCA |
| 100 | MIMAT0019873 | hsa-miR-4742-3p | 20629 | MC20629 | UCUUAUUCUUCUUGCCUGCAG |