**Table S3.** **List of genes that were directly regulated by Cir1 in response to iron availability.**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Genes | Growth conditiona | Transcriptome (*cir1Δ* vs WT) | | | |
| Low-iron | | High-iron | |
| foldb | *p*-valuec | fold | *p*-value |
| CNAG\_00123 | H | 1.1420 | 0.7296 | 6.0984 | 0.0000 |
| CNAG\_00336 | H | 0.8782 | 0.6064 | 0.4016 | 0.0002 |
| CNAG\_00349 | H | 2.1917 | 0.0033 | 16.7350 | 0.0000 |
| CNAG\_00407 | H | 6.7238 | 0.0000 | 2.9451 | 0.0342 |
| CNAG\_00451 | H | 4.0704 | 0.0000 | 2.4055 | 0.0000 |
| CNAG\_00639 | H | 3.4656 | 0.0000 | 2.8523 | 0.0000 |
| CNAG\_00791 | H | 1.6679 | 0.0019 | 2.0769 | 0.0365 |
| CNAG\_00796 | H | 0.9287 | 0.6885 | 4.3133 | 0.0000 |
| CNAG\_00854 | H | 0.8569 | 0.5042 | 0.4918 | 0.0019 |
| CNAG\_00869 | H | 1.7239 | 0.0166 | 4.5646 | 0.0000 |
| CNAG\_00886 | H | 0.7580 | 0.1652 | 0.3624 | 0.0023 |
| CNAG\_00921 | H | 1.4759 | 0.0924 | 2.3730 | 0.0457 |
| CNAG\_01112 | H | 1.6376 | 0.0308 | 2.1843 | 0.0423 |
| CNAG\_01150 | H | 1.9481 | 0.0015 | 2.6666 | 0.0005 |
| CNAG\_01242 | H | 1.3921 | 0.1215 | 7.8428 | 0.0000 |
| CNAG\_01279 | H | 0.6782 | 0.0645 | 0.4448 | 0.0014 |
| CNAG\_01354 | H | 0.1540 | 0.0000 | 2.6552 | 0.0167 |
| CNAG\_01490 | H | 1.0033 | 0.9897 | 6.8259 | 0.0000 |
| CNAG\_01681 | H | 1.2977 | 0.3102 | 0.4881 | 0.0108 |
| CNAG\_01689 | H | 2.9862 | 0.0000 | 2.0988 | 0.0008 |
| CNAG\_01751 | H | 1.3658 | 0.4878 | 2.9070 | 0.0368 |
| CNAG\_01802 | H | 0.3638 | 0.0032 | 3.1680 | 0.0005 |
| CNAG\_01836 | H | 2.0700 | 0.0103 | 3.2659 | 0.0000 |
| CNAG\_01953 | H | 1.3395 | 0.3696 | 4.0493 | 0.0103 |
| CNAG\_01994 | H | 1.2143 | 0.5010 | 4.3239 | 0.0002 |
| CNAG\_02104 | H | 1.7817 | 0.0441 | 6.6691 | 0.0000 |
| CNAG\_02214 | H | 2.6125 | 0.0000 | 8.0131 | 0.0000 |
| CNAG\_02225 | H | 4.7431 | 0.0000 | 4.3635 | 0.0040 |
| CNAG\_02226 | H | 4.0085 | 0.0000 | 7.3026 | 0.0001 |
| CNAG\_02264 | H | 1.9218 | 0.0003 | 8.3377 | 0.0000 |
| CNAG\_02361 | H | 0.7152 | 0.2661 | 0.4043 | 0.0000 |
| CNAG\_02464 | H | 1.2843 | 0.2322 | 2.6160 | 0.0013 |
| CNAG\_02697 | H | 1.5844 | 0.0371 | 3.1017 | 0.0009 |
| CNAG\_02839 | H | 3.4787 | 0.0000 | 28.4208 | 0.0000 |
| CNAG\_02903 | H | 1.4998 | 0.0416 | 3.4301 | 0.0010 |
| CNAG\_02958 | H | 1.3306 | 0.1800 | 2.2080 | 0.0065 |
| CNAG\_02959 | H | 1.9728 | 0.0151 | 2.5204 | 0.0001 |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Genes | Growth conditiona | Transcriptome (*cir1Δ* vs WT) | | | | |
| Low-iron | | High-iron | | |
| foldb | *p*-valuec | | fold | *p*-value | |
| CNAG\_03107 | H | 0.6290 | 0.1677 | | 0.4607 | 0.0405 | |
| CNAG\_03128 | H | 1.7369 | 0.0055 | | 10.7401 | 0.0000 | |
| CNAG\_03141 | H | 1.3296 | 0.3038 | | 4.6011 | 0.0000 | |
| CNAG\_03169 | H | 0.8501 | 0.5907 | | 2.6169 | 0.0218 | |
| CNAG\_03420 | H | 3.5398 | 0.0000 | | 2.2263 | 0.0302 | |
| CNAG\_03455 | H | 0.8412 | 0.5855 | | 4.3096 | 0.0000 | |
| CNAG\_03498 | H | 1.0581 | 0.8747 | | 6.6765 | 0.0000 | |
| CNAG\_03623 | H | 1.7211 | 0.0013 | | 2.4448 | 0.0000 | |
| CNAG\_03666 | H | 0.9697 | 0.9347 | | 5.4072 | 0.0000 | |
| CNAG\_03716 | H | 0.5368 | 0.0089 | | 0.1814 | 0.0000 | |
| CNAG\_03733 | H | 1.3574 | 0.2092 | | 2.2648 | 0.0052 | |
| CNAG\_03746 | H | 0.8531 | 0.4606 | | 12.8777 | 0.0000 | |
| CNAG\_03874 | H | 0.9837 | 0.9388 | | 6.3428 | 0.0000 | |
| CNAG\_04262 | H | 1.4941 | 0.0613 | | 2.2384 | 0.0011 | |
| CNAG\_04521 | H | 3.2473 | 0.0000 | | 11.7947 | 0.0000 | |
| CNAG\_04571 | H | 0.5126 | 0.0170 | | 0.3469 | 0.0119 | |
| CNAG\_04594 | H | 2.3166 | 0.0000 | | 3.2016 | 0.0000 | |
| CNAG\_04599 | H | 1.1784 | 0.5489 | | 2.5826 | 0.0000 | |
| CNAG\_04784 | H | 1.2238 | 0.5034 | | 6.7643 | 0.0000 | |
| CNAG\_04832 | H | 0.9723 | 0.8426 | | 0.4635 | 0.0000 | |
| CNAG\_04909 | H | 1.4695 | 0.0165 | | 2.8384 | 0.0004 | |
| CNAG\_04944 | H | 1.9186 | 0.0064 | | 2.0855 | 0.0331 | |
| CNAG\_05053 | H | 0.6972 | 0.0521 | | 0.4358 | 0.0138 | |
| CNAG\_05079 | H | 0.4409 | 0.0853 | | 0.1105 | 0.0000 | |
| CNAG\_05090 | H | 0.7110 | 0.0503 | | 3.0816 | 0.0000 | |
| CNAG\_05114 | H | 3.6952 | 0.0000 | | 3.2145 | 0.0001 | |
| CNAG\_05119 | H | 2.2480 | 0.0608 | | 2.8222 | 0.0175 | |
| CNAG\_05170 | H | 1.8217 | 0.0283 | | 2.0918 | 0.0425 | |
| CNAG\_05264 | H | 0.7105 | 0.1731 | | 0.3778 | 0.0032 | |
| CNAG\_05277 | H | 2.4102 | 0.0001 | | 2.6574 | 0.0002 | |
| CNAG\_05279 | H | 2.2182 | 0.0002 | | 53.7881 | 0.0000 | |
| CNAG\_05330 | H | 1.4927 | 0.0896 | | 4.5320 | 0.0011 | |
| CNAG\_05345 | H | 5.6775 | 0.0000 | | 7.5492 | 0.0000 | |
| CNAG\_05479 | H | 0.8694 | 0.3702 | | 4.4283 | 0.0010 | |
| CNAG\_05723 | H | 1.2750 | 0.1805 | | 2.8589 | 0.0002 | |
| CNAG\_05939 | H | 1.7401 | 0.1494 | | 5.5038 | 0.0025 | |
| CNAG\_06009 | H | 8.4681 | 0.0000 | | 20.2402 | 0.0000 | |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Genes | Growth conditiona | Transcriptome (*cir1Δ* vs WT) | | | |
| Low-iron | | High-iron | |
| foldb | *p*-valuec | fold | *p*-value |
| CNAG\_06074 | H | 1.2724 | 0.4390 | 2.9992 | 0.0120 |
| CNAG\_06186 | H | 2.0673 | 0.0072 | 2.7552 | 0.0000 |
| CNAG\_06238 | H | 2.8977 | 0.0153 | 13.3919 | 0.0000 |
| CNAG\_06239 | H | 4.8377 | 0.0000 | 8.0292 | 0.0000 |
| CNAG\_06249 | H | 1.2549 | 0.2680 | 2.2560 | 0.0154 |
| CNAG\_06291 | H | 20.7630 | 0.0000 | 15.3292 | 0.0000 |
| CNAG\_06294 | H | 1.9752 | 0.0015 | 3.3399 | 0.0000 |
| CNAG\_06404 | H | 1.2679 | 0.6037 | 2.5109 | 0.0199 |
| CNAG\_06412 | H | 0.5307 | 0.0346 | 0.4975 | 0.0339 |
| CNAG\_06556 | H | 28.1966 | 0.0000 | 20.7179 | 0.0000 |
| CNAG\_06557 | H | 11.0302 | 0.0000 | 25.3273 | 0.0000 |
| CNAG\_06559 | H | 5.1162 | 0.0000 | 2.3749 | 0.0036 |
| CNAG\_06617 | H | 1.6849 | 0.0055 | 3.2983 | 0.0000 |
| CNAG\_06661 | H | 0.7317 | 0.2419 | 0.4601 | 0.0096 |
| CNAG\_06722 | H | 1.4093 | 0.2854 | 3.4584 | 0.0003 |
| CNAG\_06723 | H | 1.0337 | 0.9260 | 2.2235 | 0.0005 |
| CNAG\_06745 | H | 0.7276 | 0.3686 | 0.2440 | 0.0000 |
| CNAG\_06776 | H | 0.8470 | 0.3770 | 2.1915 | 0.0010 |
| CNAG\_06817 | H | 10.9132 | 0.0000 | 5.8811 | 0.0002 |
| CNAG\_06827 | H | 4.2506 | 0.0004 | 3.9043 | 0.0051 |
| CNAG\_06963 | H | 0.7474 | 0.2873 | 0.4433 | 0.0092 |
| CNAG\_07387 | H | 1.0346 | 0.9168 | 2.7407 | 0.0092 |
| CNAG\_07751 | H | 3.2914 | 0.0000 | 10.4084 | 0.0000 |
| CNAG\_07797 | H | 2.0030 | 0.1205 | 9.0762 | 0.0000 |
| CNAG\_07876 | H | 1.2545 | 0.2532 | 4.0004 | 0.0000 |
| CNAG\_07911 | H | 0.9610 | 0.8843 | 10.5496 | 0.0000 |
| CNAG\_00053 | L | 2.2447 | 0.0033 | 1.5962 | 0.0037 |
| CNAG\_00161 | L | 7.9728 | 0.0000 | 1.6619 | 0.2295 |
| CNAG\_00162 | L | 12.6208 | 0.0000 | 2.0351 | 0.1365 |
| CNAG\_00235 | L | 3.7864 | 0.0007 | 1.0484 | 0.9059 |
| CNAG\_00597 | L | 2.6050 | 0.0027 | 1.1941 | 0.5126 |
| CNAG\_00815 | L | 0.2699 | 0.0000 | 1.0695 | 0.8521 |
| CNAG\_01055 | L | 2.4003 | 0.0001 | 1.4350 | 0.2678 |
| CNAG\_01061 | L | 5.8087 | 0.0000 | 2.1626 | 0.0702 |
| CNAG\_01367 | L | 0.4562 | 0.0093 | 0.9043 | 0.6867 |
| CNAG\_01499 | L | 3.7139 | 0.0025 | 1.5749 | 0.0150 |
| CNAG\_01702 | L | 2.9512 | 0.0000 | 1.4791 | 0.0028 |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Genes | Growth conditiona | Transcriptome (*cir1Δ* vs WT) | | | |
| Low-iron | | High-iron | |
| foldb | *p*-valuec | fold | *p*-value |
| CNAG\_01845 | L | 2.2775 | 0.0000 | 0.9029 | 0.5298 |
| CNAG\_01993 | L | 0.4945 | 0.0110 | 1.0430 | 0.8955 |
| CNAG\_02080 | L | 0.4374 | 0.0017 | 1.4158 | 0.1598 |
| CNAG\_02083 | L | 0.1475 | 0.0000 | 0.4422 | 0.1072 |
| CNAG\_02454 | L | 0.4767 | 0.0068 | 0.9015 | 0.6456 |
| CNAG\_02752 | L | 2.9268 | 0.0000 | 1.5383 | 0.1333 |
| CNAG\_02775 | L | 2.3561 | 0.0040 | 1.9158 | 0.0385 |
| CNAG\_03176 | L | 2.1038 | 0.0074 | 1.7195 | 0.0094 |
| CNAG\_03859 | L | 0.4615 | 0.0001 | 0.9867 | 0.9311 |
| CNAG\_03914 | L | 2.2749 | 0.0012 | 1.1695 | 0.5420 |
| CNAG\_03951 | L | 0.3552 | 0.0036 | 0.4557 | 0.1093 |
| CNAG\_03960 | L | 2.2562 | 0.0000 | 1.5724 | 0.0668 |
| CNAG\_04632 | L | 5.4940 | 0.0000 | 1.0825 | 0.8447 |
| CNAG\_04758 | L | 12.0353 | 0.0000 | 1.0202 | 0.9630 |
| CNAG\_04869 | L | 2.4848 | 0.0043 | 0.8690 | 0.7615 |
| CNAG\_05089 | L | 3.3261 | 0.0001 | 1.1797 | 0.7556 |
| CNAG\_05263 | L | 0.3401 | 0.0000 | 0.8075 | 0.5750 |
| CNAG\_05889 | L | 2.3860 | 0.0011 | 1.0027 | 0.9933 |
| CNAG\_06241 | L | 0.2805 | 0.0000 | 0.9698 | 0.9396 |
| CNAG\_06541 | L | 2.8776 | 0.0161 | 1.9708 | 0.1546 |
| CNAG\_06632 | L | 2.3065 | 0.0170 | 1.9800 | 0.0772 |
| CNAG\_06698 | L | 2.1861 | 0.0110 | 0.9707 | 0.9138 |
| CNAG\_06727 | L | 2.0630 | 0.0002 | 1.7442 | 0.0633 |
| CNAG\_07448 | L | 3.2019 | 0.0004 | 0.4767 | 0.1178 |
| CNAG\_07540 | L | 0.4035 | 0.0184 | 0.4894 | 0.0707 |
| CNAG\_07776 | L | 0.2524 | 0.0000 | 0.6231 | 0.1179 |
| CNAG\_07784 | L | 0.1848 | 0.0000 | 1.1337 | 0.7998 |
| CNAG\_07902 | L | 4.4382 | 0.0000 | 1.1819 | 0.6541 |
| CNAG\_07982 | L | 2.1295 | 0.0002 | 1.5824 | 0.2250 |
| CNAG\_00540 | L/Hd | 21.9058 | 0.0000 | 70.1743 | 0.0000 |
| CNAG\_00587 | L/H | 24.0330 | 0.0000 | 103.7214 | 0.0000 |
| CNAG\_00654 | L/H | 4.2674 | 0.0000 | 11.3952 | 0.0000 |
| CNAG\_00735 | L/H | 6.7844 | 0.0000 | 8.8962 | 0.0000 |
| CNAG\_00765 | L/H | 3.7465 | 0.0000 | 2.4426 | 0.0000 |
| CNAG\_00844 | L/H | 14.0254 | 0.0000 | 76.0569 | 0.0000 |
| CNAG\_00849 | L/H | 6.3848 | 0.0000 | 6.0149 | 0.0000 |
| CNAG\_00904 | L/H | 5.1427 | 0.0000 | 2.6012 | 0.0004 |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Genes | Growth conditiona | Transcriptome (*cir1Δ* vs WT) | | | |
| Low-iron | | High-iron | |
| foldb | *p*-valuec | fold | *p*-value |
| CNAG\_00909 | L/H | 3.0419 | 0.0000 | 3.7402 | 0.0000 |
| CNAG\_01075 | L/H | 23.1658 | 0.0000 | 21.9710 | 0.0000 |
| CNAG\_01076 | L/H | 4.0258 | 0.0000 | 13.0887 | 0.0000 |
| CNAG\_01138 | L/H | 116.5653 | 0.0000 | 15.4085 | 0.0000 |
| CNAG\_01239 | L/H | 4.4234 | 0.0000 | 4.9922 | 0.0000 |
| CNAG\_01430 | L/H | 0.4736 | 0.0000 | 0.2566 | 0.0000 |
| CNAG\_01653 | L/H | 0.2988 | 0.0000 | 5.4055 | 0.0000 |
| CNAG\_01846 | L/H | 2.0715 | 0.0060 | 6.1718 | 0.0000 |
| CNAG\_01964 | L/H | 4.3725 | 0.0022 | 3.0842 | 0.0000 |
| CNAG\_01989 | L/H | 2.3695 | 0.0006 | 2.2929 | 0.0258 |
| CNAG\_02049 | L/H | 226.6707 |  | 443.5731 |  |
| CNAG\_02525 | L/H | 4.5897 | 0.0000 | 2.8623 | 0.0000 |
| CNAG\_02526 | L/H | 32.7036 | 0.0000 | 65.0286 | 0.0000 |
| CNAG\_02570 | L/H | 7.3163 | 0.0000 | 5.2470 | 0.0000 |
| CNAG\_02603 | L/H | 2.3847 | 0.0019 | 5.4648 | 0.0002 |
| CNAG\_02935 | L/H | 9.6210 | 0.0000 | 5.5762 | 0.0000 |
| CNAG\_02944 | L/H | 2.1062 | 0.0000 | 13.3969 | 0.0000 |
| CNAG\_02968 | L/H | 3.9517 | 0.0000 | 5.2176 | 0.0000 |
| CNAG\_02969 | L/H | 3.7311 | 0.0000 | 4.4825 | 0.0000 |
| CNAG\_03011 | L/H | 9.6578 | 0.0000 | 12.6774 | 0.0000 |
| CNAG\_03346 | L/H | 0.4482 | 0.0216 | 0.3238 | 0.0050 |
| CNAG\_03454 | L/H | 2.7046 | 0.0000 | 0.1901 | 0.0005 |
| CNAG\_03465 | L/H | 59.0914 | 0.0000 | 20.2840 | 0.0000 |
| CNAG\_03482 | L/H | 5.0702 | 0.0000 | 9.4576 | 0.0000 |
| CNAG\_03912 | L/H | 2.8570 | 0.0000 | 7.0992 | 0.0000 |
| CNAG\_04025 | L/H | 22.9064 | 0.0000 | 27.5874 | 0.0000 |
| CNAG\_04103 | L/H | 4.0980 | 0.0000 | 6.3196 | 0.0000 |
| CNAG\_04325 | L/H | 7.2903 | 0.0000 | 11.8032 | 0.0000 |
| CNAG\_04417 | L/H | 2.9558 | 0.0018 | 2.6877 | 0.0106 |
| CNAG\_04469 | L/H | 24.4251 | 0.0000 | 31.6238 | 0.0000 |
| CNAG\_04470 | L/H | 5.9997 | 0.0000 | 14.0649 | 0.0000 |
| CNAG\_04471 | L/H | 2.8014 | 0.0002 | 2.7006 | 0.0002 |
| CNAG\_04472 | L/H | 2.6296 | 0.0000 | 5.0278 | 0.0000 |
| CNAG\_04576 | L/H | 2.9515 | 0.0000 | 3.7470 | 0.0000 |
| CNAG\_04603 | L/H | 0.3637 | 0.0002 | 0.3460 | 0.0080 |
| CNAG\_04617 | L/H | 6.5231 | 0.0000 | 4.1607 | 0.0009 |
| CNAG\_04862 | L/H | 2.0742 | 0.0009 | 3.7444 | 0.0008 |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Genes | Growth conditiona | Transcriptome (*cir1Δ* vs WT) | | | |
| Low-iron | | High-iron | |
| foldb | *p*-valuec | fold | *p*-value |
| CNAG\_04988 | L/H | 79.6442 | 0.0000 | 9.3507 | 0.0000 |
| CNAG\_05015 | L/H | 4.6359 | 0.0000 | 7.2445 | 0.0000 |
| CNAG\_05329 | L/H | 3.2991 | 0.0001 | 57.5997 | 0.0000 |
| CNAG\_05383 | L/H | 2.3692 | 0.0074 | 8.3008 | 0.0000 |
| CNAG\_05449 | L/H | 3.7686 | 0.0000 | 8.0397 | 0.0000 |
| CNAG\_05654 | L/H | 8.4262 | 0.0000 | 2.9029 | 0.0453 |
| CNAG\_05724 | L/H | 3.3685 | 0.0000 | 2.5958 | 0.0000 |
| CNAG\_05727 | L/H | 3.4547 | 0.0000 | 4.5980 | 0.0000 |
| CNAG\_05774 | L/H | 3.8735 | 0.0000 | 2.3145 | 0.0172 |
| CNAG\_05847 | L/H | 24.9191 | 0.0000 | 17.8566 | 0.0000 |
| CNAG\_06331 | L/H | 2.9847 | 0.0000 | 2.4606 | 0.0001 |
| CNAG\_06346 | L/H | 0.3497 | 0.0084 | 0.2908 | 0.0051 |
| CNAG\_06554 | L/H | 2.7876 | 0.0097 | 3.0703 | 0.0072 |
| CNAG\_06555 | L/H | 4.0833 | 0.0000 | 2.7538 | 0.0000 |
| CNAG\_06650 | L/H | 5.3823 | 0.0000 | 10.9818 | 0.0000 |
| CNAG\_06651 | L/H | 9.0043 | 0.0000 | 60.1444 | 0.0000 |
| CNAG\_06743 | L/H | 4.0347 | 0.0000 | 8.2279 | 0.0000 |
| CNAG\_06777 | L/H | 2.1326 | 0.0005 | 4.0612 | 0.0001 |
| CNAG\_06818 | L/H | 4.5735 | 0.0000 | 3.3563 | 0.0000 |
| CNAG\_06923 | L/H | 2.3446 | 0.0419 | 3.0811 | 0.0280 |
| CNAG\_07367 | L/H | 14.6543 | 0.0000 | 3.8359 | 0.0162 |
| CNAG\_07405 | L/H | 2.7572 | 0.0000 | 2.7285 | 0.0028 |
| CNAG\_07516 | L/H | 0.1798 | 0.0002 | 0.3170 | 0.0081 |
| CNAG\_07779 | L/H | 2.1081 | 0.0028 | 10.4666 | 0.0000 |
| CNAG\_07798 | L/H | 11.8653 | 0.0000 | 24.6382 | 0.0000 |
| CNAG\_07802 | L/H | 15.4968 | 0.0000 | 10.5569 | 0.0000 |

a Growth conditions: low-iron (L) or high-iron (H) medium.

b The values indicate the ratio of expression level as follow: *cir1Δ*/WT: the *cir1* mutant versus the wild-type strain.

c Values indicate statistical significance.

d L/H indicates the gene that was identified as a binding target of Cir1 in both low- and high-iron media.