**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.