

**TABLE S7 Complete List of Genes Increasing in Expression in *sir2Δ*, *sir3Δ*, and *sir4Δ***

Shown below are expression levels in FPKM for the 107 genes that significantly increased in expression across all three *sir* mutants (*sir2Δ*, *sir3Δ*, and *sir4Δ*). Genes are listed in alphabetical order by gene name. Expression changes were filtered based on a p-value < 0.05 and a false-discovery rate of < 0.10. Forty-two genes (bold-faced type) showed expression changes of 2-fold or greater in *sir* mutants relative to wild type as analyzed by DESeq in terms of read counts (NOT FPKM). Transcript quantification in terms of FPKM was done with Cufflinks.

| Gene         | Systematic Name | Wild type    | <i>sir2Δ</i> | <i>sir3Δ</i> | <i>sir4Δ</i> |
|--------------|-----------------|--------------|--------------|--------------|--------------|
| <b>AAD15</b> | <b>YOL165C</b>  | <b>2.1</b>   | <b>7.2</b>   | <b>10.1</b>  | <b>10.4</b>  |
| ADH7         | YCR105W         | 11           | 15.1         | 15.3         | 15.3         |
| ADI1         | YMR009W         | 146.4        | 182.5        | 264.1        | 287.1        |
| <b>AHP1</b>  | <b>YLR109W</b>  | <b>218.2</b> | <b>480.6</b> | <b>438.6</b> | <b>526.6</b> |
| ARO9         | YHR137W         | 62.4         | 75.7         | 116.2        | 91.7         |
| BNA2         | YJR078W         | 7.7          | 11.2         | 14.1         | 12.5         |
| BNA4         | YBL098W         | 27.3         | 37.9         | 42.7         | 45.7         |
| BNA5         | YLR231C         | 26.8         | 44.2         | 71           | 69.8         |
| CAR1         | YPL111W         | 47.6         | 84.3         | 73.4         | 83.5         |
| <b>CHA1</b>  | <b>YCL064C</b>  | <b>51.2</b>  | <b>148</b>   | <b>229.4</b> | <b>242.2</b> |
| CMC4         | YMR194C-B       | 12.5         | 14.8         | 20.7         | 23.5         |
| COA2         | YPL189C-A       | 64.4         | 152.4        | 128          | 140.4        |
| COS1         | YNL336W         | 134          | 191.3        | 252.7        | 302.1        |
| <b>COS4</b>  | <b>YFL062W</b>  | <b>5</b>     | <b>12.5</b>  | <b>15.3</b>  | <b>18.1</b>  |
| COS7         | YDL248W         | 36           | 51.3         | 67.6         | 71.9         |
| COS8         | YHL048W         | 115.6        | 161.5        | 233.2        | 266.9        |
| COX5A        | YNL052W         | 198.4        | 240.4        | 394.7        | 248.9        |
| COX6         | YHR051W         | 175.9        | 235.6        | 255.3        | 243.4        |
| COX7         | YMR256C         | 204.3        | 322.7        | 408.4        | 286.6        |
| CRC1         | YOR100C         | 1.4          | 3.3          | 3.2          | 3.1          |
| CYB5         | YNL111C         | 146.4        | 254.6        | 572          | 316.5        |
| <b>CYC1</b>  | <b>YJR048W</b>  | <b>130.8</b> | <b>444.2</b> | <b>513.5</b> | <b>267.8</b> |
| <b>CYC7</b>  | <b>YEL039C</b>  | <b>11.2</b>  | <b>26.8</b>  | <b>99.7</b>  | <b>62.9</b>  |
| CYT1         | YOR065W         | 55.5         | 82.3         | 172.5        | 105.1        |
| DLD1         | YDL174C         | 31           | 40           | 49.8         | 47           |
| EDC1         | YGL222C         | 17.4         | 21.9         | 23.2         | 23.6         |
| ERG13        | YML126C         | 302.4        | 372.5        | 544          | 388          |
| ERG6         | YML008C         | 161.4        | 188.7        | 219.9        | 206.6        |
| ERG8         | YMR220W         | 49.2         | 60.6         | 71.6         | 61.8         |
| <b>FDH1</b>  | <b>YOR388C</b>  | <b>1.4</b>   | <b>2.7</b>   | <b>2.5</b>   | <b>2.7</b>   |
| <b>FMP43</b> | <b>YGR243W</b>  | <b>1.3</b>   | <b>10.4</b>  | <b>8.5</b>   | <b>8.3</b>   |

|                  |                |             |              |              |              |
|------------------|----------------|-------------|--------------|--------------|--------------|
| <b>GEX1</b>      | <b>YCL073C</b> | <b>0.1</b>  | <b>0.4</b>   | <b>0.5</b>   | <b>0.5</b>   |
| <b>GTO3</b>      | <b>YMR251W</b> | <b>3.7</b>  | <b>7.6</b>   | <b>8.5</b>   | <b>10.6</b>  |
| HAP4             | YKL109W        | 53.7        | 96.6         | 124.1        | 92.8         |
| <b>HMLALPHA1</b> | <b>YCL066W</b> | <b>0</b>    | <b>20.7</b>  | <b>16.6</b>  | <b>14.1</b>  |
| <b>HMLALPHA2</b> | <b>YCL067C</b> | <b>0</b>    | <b>38.7</b>  | <b>32.3</b>  | <b>48.9</b>  |
| <b>HMRA1</b>     | <b>YCR097W</b> | <b>0</b>    | <b>40.6</b>  | <b>33.4</b>  | <b>39.5</b>  |
| <b>HMRA2</b>     | <b>YCR096C</b> | <b>0.1</b>  | <b>31.9</b>  | <b>23.9</b>  | <b>39.5</b>  |
| <b>HMX1</b>      | <b>YLR205C</b> | <b>6.7</b>  | <b>29.3</b>  | <b>44</b>    | <b>24.5</b>  |
| HOR2             | YER062C        | 52.9        | 98.8         | 137.2        | 133.8        |
| HPF1             | YOL155C        | 61.2        | 82.2         | 114.6        | 118.9        |
| HSP12            | YFL014W        | 51.7        | 126          | 113.8        | 80.1         |
| HSP31            | YDR533C        | 38.9        | 50.6         | 59.5         | 51.9         |
| ICY1             | YMR195W        | 97.8        | 209.9        | 154.8        | 175.8        |
| IDH2             | YOR136W        | 131.4       | 170.1        | 228.2        | 205.1        |
| IDI1             | YPL117C        | 97.6        | 140.3        | 143.1        | 128.8        |
| <b>IMD1</b>      | <b>YAR073W</b> | <b>0.1</b>  | <b>1.1</b>   | <b>1.1</b>   | <b>1.1</b>   |
| <b>IMD2</b>      | <b>YHR216W</b> | <b>61.5</b> | <b>234.2</b> | <b>331.9</b> | <b>352.5</b> |
| <b>JID1</b>      | <b>YPR061C</b> | <b>3.2</b>  | <b>9.1</b>   | <b>8.3</b>   | <b>8.5</b>   |
| MCR1             | YKL150W        | 126.7       | 171.6        | 266          | 258.6        |
| MET10            | YFR030W        | 18.4        | 24.5         | 37.1         | 29.2         |
| MET14            | YKL001C        | 69.2        | 119          | 151.7        | 129.4        |
| MET3             | YJR010W        | 25.7        | 40.1         | 81.4         | 56.8         |
| MMP1             | YLL061W        | 17.1        | 22.8         | 43.6         | 34.9         |
| <b>MTH1</b>      | <b>YDR277C</b> | <b>6.8</b>  | <b>14.3</b>  | <b>18.8</b>  | <b>16.6</b>  |
| MVD1             | YNR043W        | 202.2       | 242.2        | 333.8        | 252.7        |
| <b>NCA3</b>      | <b>YJL116C</b> | <b>10.1</b> | <b>24.4</b>  | <b>28.4</b>  | <b>25.8</b>  |
| NDE1             | YMR145C        | 204.4       | 523.2        | 487.4        | 351          |
| NSG2             | YNL156C        | 69.4        | 97.9         | 121.2        | 101          |
| <b>PAU4</b>      | <b>YLR461W</b> | <b>0.5</b>  | <b>1.1</b>   | <b>1.6</b>   | <b>1.9</b>   |
| PDH1             | YPR002W        | 2.1         | 3.4          | 4.7          | 3.2          |
| PET10            | YKR046C        | 229.5       | 282.1        | 381.2        | 322.5        |
| PRX1             | YBL064C        | 32.5        | 39.7         | 46.3         | 54.7         |
| PUT4             | YOR348C        | 4.8         | 12.2         | 13.2         | 9.3          |
| QCR10            | YHR001W-A      | 72.4        | 103.2        | 222.3        | 142.1        |
| QCR2             | YPR191W        | 76.7        | 97.3         | 149.9        | 110.3        |
| QCR6             | YFR033C        | 149.3       | 247.8        | 247.8        | 233.7        |
| QCR7             | YDR529C        | 200.4       | 255.1        | 390.8        | 288          |
| QCR8             | YJL166W        | 193.6       | 289.7        | 396.2        | 318.6        |
| QCR9             | YGR183C        | 238.2       | 301          | 606          | 344.7        |
| REX3             | YLR107W        | 20.5        | 33.5         | 28.5         | 31.6         |
| ROX1             | YPR065W        | 20.5        | 35.1         | 95           | 57.5         |

|                  |                  |             |              |               |              |
|------------------|------------------|-------------|--------------|---------------|--------------|
| RSB1             | YOR049C          | 21.9        | 45.5         | 45.6          | 49.3         |
| SER1             | YOR184W          | 148.1       | 195.8        | 192.6         | 198.8        |
| SER3             | YER081W          | 102.3       | 135.7        | 131.3         | 160.3        |
| <b>SFC1</b>      | <b>YJR095W</b>   | <b>0.8</b>  | <b>1.6</b>   | <b>1.4</b>    | <b>1.8</b>   |
| TGL2             | YDR058C          | 9           | 12.4         | 13.5          | 15.4         |
| <b>THI5</b>      | <b>YFL058W</b>   | <b>1.3</b>  | <b>4.4</b>   | <b>3.8</b>    | <b>3.1</b>   |
| UBX6             | YJL048C          | 86.8        | 119.6        | 218.7         | 162.9        |
| <b>VBA3</b>      | <b>YCL069W</b>   | <b>0.4</b>  | <b>3.5</b>   | <b>3.9</b>    | <b>4.5</b>   |
| <b>YAR075W</b>   | <b>YAR075W</b>   | <b>1.6</b>  | <b>26</b>    | <b>21.9</b>   | <b>25</b>    |
| YBR284W          | YBR284W          | 2.1         | 3            | 3.7           | 4            |
| <b>YCL065W</b>   | <b>YCL065W</b>   | <b>0</b>    | <b>14.9</b>  | <b>9.1</b>    | <b>9.2</b>   |
| <b>YCL068C</b>   | <b>YCL068C</b>   | <b>0.1</b>  | <b>4.8</b>   | <b>0.5</b>    | <b>7.4</b>   |
| <b>YCL074W</b>   | <b>YCL074W</b>   | <b>0</b>    | <b>4.5</b>   | <b>6.5</b>    | <b>4.9</b>   |
| <b>YCL075W</b>   | <b>YCL075W</b>   | <b>0</b>    | <b>1.9</b>   | <b>2.6</b>    | <b>2.8</b>   |
| <b>YCL076W</b>   | <b>YCL076W</b>   | <b>0</b>    | <b>3.3</b>   | <b>2.8</b>    | <b>3.5</b>   |
| YCR097W-A        | YCR097W-A        | 0           | 8.8          | 5.6           | 6.2          |
| YDR018C          | YDR018C          | 2.2         | 4.2          | 4.1           | 4.5          |
| <b>YDR042C</b>   | <b>YDR042C</b>   | <b>4.6</b>  | <b>19.4</b>  | <b>14.6</b>   | <b>10.7</b>  |
| <b>YDR119W-A</b> | <b>YDR119W-A</b> | <b>27</b>   | <b>70.8</b>  | <b>145.3</b>  | <b>136.2</b> |
| <b>YER053C-A</b> | <b>YER053C-A</b> | <b>0</b>    | <b>777.5</b> | <b>1640.7</b> | <b>371.2</b> |
| <b>YFL063W</b>   | <b>YFL063W</b>   | <b>0</b>    | <b>1.7</b>   | <b>1.2</b>    | <b>0.4</b>   |
| <b>YFR057W</b>   | <b>YFR057W</b>   | <b>0.2</b>  | <b>12</b>    | <b>9.7</b>    | <b>10.8</b>  |
| <b>YGL258W-A</b> | <b>YGL258W-A</b> | <b>3.4</b>  | <b>13.1</b>  | <b>27.8</b>   | <b>29.7</b>  |
| YGR182C          | YGR182C          | 44.8        | 55.8         | 48.5          | 56.5         |
| YILO14C-A        | YILO14C-A        | 19.4        | 28.6         | 29            | 23.5         |
| <b>YJL047C-A</b> | <b>YJL047C-A</b> | <b>0</b>    | <b>39.2</b>  | <b>9.5</b>    | <b>11.8</b>  |
| <b>YJL133C-A</b> | <b>YJL133C-A</b> | <b>67.2</b> | <b>183.8</b> | <b>152</b>    | <b>303.5</b> |
| <b>YJR115W</b>   | <b>YJR115W</b>   | <b>11.2</b> | <b>20.9</b>  | <b>21.3</b>   | <b>24.5</b>  |
| <b>YKR075C</b>   | <b>YKR075C</b>   | <b>8.1</b>  | <b>24.6</b>  | <b>36.1</b>   | <b>38.5</b>  |
| YLR312C          | YLR312C          | 2           | 3.6          | 4.8           | 5.4          |
| YLR460C          | YLR460C          | 2           | 3.5          | 4.4           | 4.1          |
| YMR206W          | YMR206W          | 2.2         | 4.9          | 4.9           | 6            |
| <b>YNL337W</b>   | <b>YNL337W</b>   | <b>0</b>    | <b>2.2</b>   | <b>0.4</b>    | <b>0.6</b>   |
| YNR064C          | YNR064C          | 6.1         | 9.5          | 9.1           | 10.7         |
| YPC1             | YBR183W          | 53.8        | 101.6        | 150.1         | 130.5        |
| <b>YPS5</b>      | <b>YGL259W</b>   | <b>0.2</b>  | <b>2.9</b>   | <b>3.3</b>    | <b>2.7</b>   |