

# HIV-Avr data set

| System                | Gene Category                                                          | Bonferroni |
|-----------------------|------------------------------------------------------------------------|------------|
| GO Biological Process | nucleobase\, nucleoside\, nucleotide and nucleic acid metabolism       | 5.77E-12   |
| GO Biological Process | metabolism                                                             | 1.41E-07   |
| GO Biological Process | cell cycle                                                             | 1.70E-07   |
| GO Biological Process | mitotic cell cycle                                                     | 1.06E-06   |
| GO Biological Process | DNA metabolism                                                         | 6.72E-06   |
| GO Biological Process | RNA processing                                                         | 8.36E-06   |
| GO Biological Process | RNA metabolism                                                         | 2.69E-05   |
| GO Biological Process | transcription                                                          | 9.12E-04   |
| GO Biological Process | nuclear organization and biogenesis                                    | 9.56E-04   |
| GO Biological Process | nuclear division                                                       | 1.03E-03   |
| GO Biological Process | M phase                                                                | 1.05E-03   |
| GO Biological Process | chromosome organization and biogenesis (sensu Eukarya)                 | 1.05E-03   |
| GO Biological Process | transcription\, DNA-dependent                                          | 2.17E-03   |
| GO Biological Process | intracellular transport                                                | 2.28E-03   |
| GO Biological Process | establishment and/or maintenance of chromatin architecture             | 2.93E-03   |
| GO Biological Process | intracellular protein transport                                        | 5.72E-03   |
| GO Biological Process | modification-dependent protein catabolism                              | 5.90E-03   |
| GO Biological Process | cell proliferation                                                     | 7.71E-03   |
| GO Biological Process | DNA packaging                                                          | 9.46E-03   |
| GO Biological Process | ubiquitin-dependent protein catabolism                                 | 1.04E-02   |
| GO Biological Process | M phase of mitotic cell cycle                                          | 1.21E-02   |
| GO Biological Process | protein transport                                                      | 1.21E-02   |
| GO Biological Process | mitosis                                                                | 1.48E-02   |
| GO Biological Process | mRNA processing                                                        | 2.21E-02   |
| GO Biological Process | regulation of transcription\, DNA-dependent                            | 2.54E-02   |
| GO Biological Process | mRNA metabolism                                                        | 2.55E-02   |
| GO Biological Process | regulation of transcription                                            | 2.84E-02   |
| GO Biological Process | chromatin modification                                                 | 5.82E-02   |
| GO Biological Process | nuclear mRNA splicing\, via spliceosome                                | 8.06E-02   |
| GO Biological Process | RNA splicing\, via transesterification reactions                       | 8.06E-02   |
| GO Biological Process | RNA splicing\, via transesterification reactions with bulged adenosine | 8.06E-02   |
| GO Biological Process | DNA replication and chromosome cycle                                   | 8.37E-02   |
| GO Biological Process | obsolete biological process                                            | 1.09E-01   |
| GO Biological Process | RNA splicing                                                           | 1.13E-01   |
| GO Biological Process | ubiquitin cycle                                                        | 2.78E-01   |
| GO Biological Process | response to DNA damage stimulus                                        | 5.15E-01   |
| GO Biological Process | DNA replication                                                        | 6.28E-01   |
| GO Biological Process | nucleocytoplasmic transport                                            | 6.30E-01   |
| GO Biological Process | cell organization and biogenesis                                       | 6.41E-01   |
| GO Biological Process | S phase of mitotic cell cycle                                          | 6.49E-01   |
| GO Biological Process | regulation of transcription from Pol II promoter                       | 7.32E-01   |
| GO Cellular Component | intracellular                                                          | 7.48E-41   |
| GO Cellular Component | nucleus                                                                | 2.07E-21   |
| GO Cellular Component | cytoplasm                                                              | 2.32E-06   |
| GO Cellular Component | cell                                                                   | 5.09E-06   |
| GO Cellular Component | chromosome                                                             | 1.53E-04   |
| GO Cellular Component | ribonucleoprotein complex                                              | 3.93E-03   |
| GO Cellular Component | obsolete cellular component                                            | 1.33E-02   |
| GO Cellular Component | nucleoplasm                                                            | 2.29E-02   |

|                       |                                    |          |
|-----------------------|------------------------------------|----------|
| GO Cellular Component | spliceosome complex                | 9.53E-02 |
| GO Cellular Component | chromatin                          | 3.34E-01 |
| GO Cellular Component | mitochondrion                      | 5.04E-01 |
| GO Cellular Component | nuclear membrane                   | 5.41E-01 |
| GO Cellular Component | endomembrane system                | 7.61E-01 |
| GO Cellular Component | nuclear pore                       | 8.95E-01 |
| GO Cellular Component | pore complex                       | 8.95E-01 |
| GO Molecular Function | nucleic acid binding               | 2.01E-18 |
| GO Molecular Function | DNA binding                        | 1.36E-07 |
| GO Molecular Function | RNA binding                        | 9.83E-05 |
| GO Molecular Function | binding                            | 1.65E-03 |
| GO Molecular Function | protein transporter activity       | 2.63E-02 |
| GO Molecular Function | ligase activity                    | 3.66E-02 |
| GO Molecular Function | transcription cofactor activity    | 6.45E-02 |
| GO Molecular Function | transcription regulator activity   | 6.93E-02 |
| GO Molecular Function | transcription factor binding       | 9.37E-02 |
| GO Molecular Function | chaperone activity                 | 1.80E-01 |
| GO Molecular Function | ATP dependent helicase activity    | 8.00E-01 |
| GO Molecular Function | transcription coactivator activity | 9.15E-01 |
| GO Molecular Function | ubiquitin thiolesterase activity   | 9.34E-01 |

# HIV-Mse data set

| System                | Gene Category                                                    | Bonferroni |
|-----------------------|------------------------------------------------------------------|------------|
| GO Biological Process | nucleobase\, nucleoside\, nucleotide and nucleic acid metabolism | 1.07E-09   |
| GO Biological Process | cell cycle                                                       | 4.54E-09   |
| GO Biological Process | mitotic cell cycle                                               | 7.79E-09   |
| GO Biological Process | DNA metabolism                                                   | 1.12E-07   |
| GO Biological Process | metabolism                                                       | 3.50E-06   |
| GO Biological Process | M phase                                                          | 1.42E-05   |
| GO Biological Process | nuclear division                                                 | 3.97E-05   |
| GO Biological Process | RNA processing                                                   | 1.22E-04   |
| GO Biological Process | RNA metabolism                                                   | 1.67E-04   |
| GO Biological Process | M phase of mitotic cell cycle                                    | 1.69E-04   |
| GO Biological Process | mitosis                                                          | 3.48E-04   |
| GO Biological Process | DNA replication and chromosome cycle                             | 1.29E-03   |
| GO Biological Process | cell proliferation                                               | 9.79E-03   |
| GO Biological Process | response to DNA damage stimulus                                  | 9.84E-03   |
| GO Biological Process | DNA repair                                                       | 1.48E-02   |
| GO Biological Process | nuclear organization and biogenesis                              | 1.56E-02   |
| GO Biological Process | obsolete biological process                                      | 2.04E-02   |
| GO Biological Process | DNA packaging                                                    | 2.07E-02   |
| GO Biological Process | chromosome organization and biogenesis (sensu Eukarya)           | 2.54E-02   |
| GO Biological Process | response to endogenous stimulus                                  | 2.59E-02   |
| GO Biological Process | establishment and/or maintenance of chromatin architecture       | 2.90E-02   |
| GO Biological Process | transcription                                                    | 5.81E-02   |
| GO Biological Process | translation                                                      | 8.88E-02   |
| GO Biological Process | protein biosynthesis                                             | 1.71E-01   |
| GO Biological Process | S phase of mitotic cell cycle                                    | 2.08E-01   |
| GO Biological Process | transcription\, DNA-dependent                                    | 2.95E-01   |
| GO Biological Process | chromatin modification                                           | 3.07E-01   |
| GO Biological Process | DNA replication                                                  | 3.65E-01   |
| GO Biological Process | regulation of cell cycle                                         | 4.05E-01   |
| GO Biological Process | regulation of transcription                                      | 4.91E-01   |
| GO Biological Process | RNA splicing                                                     | 9.07E-01   |
| GO Cellular Component | intracellular                                                    | 5.14E-34   |
| GO Cellular Component | nucleus                                                          | 1.09E-19   |
| GO Cellular Component | cytoplasm                                                        | 5.53E-06   |
| GO Cellular Component | ribonucleoprotein complex                                        | 2.27E-05   |
| GO Cellular Component | cell                                                             | 9.84E-05   |
| GO Cellular Component | chromosome                                                       | 1.84E-03   |
| GO Cellular Component | ribosome                                                         | 2.23E-01   |
| GO Cellular Component | nuclear membrane                                                 | 2.67E-01   |
| GO Cellular Component | endomembrane system                                              | 3.58E-01   |
| GO Cellular Component | nucleoplasm                                                      | 7.89E-01   |
| GO Cellular Component | DNA-directed RNA polymerase II\, holoenzyme                      | 8.45E-01   |
| GO Cellular Component | obsolete cellular component                                      | 8.68E-01   |
| GO Molecular Function | nucleic acid binding                                             | 1.60E-13   |
| GO Molecular Function | DNA binding                                                      | 3.90E-06   |
| GO Molecular Function | RNA binding                                                      | 5.26E-04   |
| GO Molecular Function | transcription factor binding                                     | 6.74E-02   |
| GO Molecular Function | transcription cofactor activity                                  | 2.91E-01   |
| GO Molecular Function | structural constituent of ribosome                               | 3.21E-01   |

|                       |                                 |          |
|-----------------------|---------------------------------|----------|
| GO Molecular Function | helicase activity               | 3.22E-01 |
| GO Molecular Function | protein transporter activity    | 3.41E-01 |
| GO Molecular Function | nucleotide binding              | 7.17E-01 |
| GO Molecular Function | purine nucleotide binding       | 7.36E-01 |
| GO Molecular Function | ATP binding                     | 7.82E-01 |
| GO Molecular Function | ATP dependent helicase activity | 9.68E-01 |
| GO Molecular Function | adenyl nucleotide binding       | 9.79E-01 |