

a)

| 19 MF ključnih reči sa najznačajnijom predviđenom uređenošću (org. 2007) |                           |        |            |         |         |         |
|--|---------------------------|--------|------------|---------|---------|---------|
| #  | name                      | n prot | n families | avg_len | Z-score | P-value |
| 0  | Oxidoreductase            | 14995  | 992        | 376.63  | -29.54  | 0       |
| 1  | Transferase               | 26525  | 1606       | 445.17  | -24.25  | 0       |
| 2  | Lyase                     | 7262   | 347        | 377.92  | -22.64  | 0       |
| 3  | Hydrolase                 | 20464  | 1995       | 430.68  | -21.75  | 0       |
| 4  | Isomerase                 | 4487   | 220        | 383.98  | -14.18  | 0       |
| 5  | Glycosidase               | 1826   | 244        | 444.73  | -13.98  | 0       |
| 6  | Glycosyltransferase       | 2950   | 261        | 437.53  | -12.51  | 0       |
| 7  | Acyltransferase           | 2239   | 179        | 402.83  | -10.85  | 0       |
| 8  | Methyltransferase         | 3524   | 224        | 349.60  | -10.53  | 0       |
| 9  | Kinase                    | 7017   | 322        | 448.29  | -10.22  | 0       |
| 10   | Ligase                    | 8010   | 230        | 529.41  | -10.06  | 0       |
| 11   | Decarboxylase             | 1293   | 63         | 345.26  | -9.66   | 0       |
| 12   | Monoxygenase              | 1668   | 73         | 444.87  | -9.26   | 0       |
| 13   | Metalloprotease           | 1100   | 109        | 553.73  | -7.89   | 0       |
| 14   | Aminopeptidase            | 452    | 39         | 509.17  | -7.55   | 0       |
| 15   | Dioxygenase               | 360    | 66         | 433.20  | -7.32   | 0       |
| 16   | Aminoacyl-tRNA synthetase | 3402   | 37         | 571.83  | -7.15   | 0       |
| 17   | Protease                  | 4423   | 380        | 549.70  | -7.1    | 0       |
| 18   | Aminotransferase          | 955    | 28         | 420.27  | -6.02   | 0       |

| Predviđene uređene MF ključne reči iz ovoga rada (z-skor < -0.2) |                            |      |         |         |        |   |
|--|----------------------------|------|---------|---------|--------|---|
| #  | name                       | n    | avg_len | avg_dis | z      | p |
| 0  | Oxidoreductase             | 4126 | 472.25  | 0.28    | -41.35 | 0 |
| 1  | Hydrolase                  | 7564 | 614.81  | 0.51    | -26.99 | 0 |
| 2  | Lyase                      | 1431 | 481.37  | 0.30    | -23.62 | 0 |
| 3  | Monoxygenase               | 555  | 503.36  | 0.20    | -20.29 | 0 |
| 4  | Transferase                | 8846 | 631.95  | 0.55    | -19.72 | 0 |
| 5  | Ligase                     | 995  | 693.30  | 0.46    | -18.05 | 0 |
| 6  | Glycosyltransferase        | 1134 | 551.26  | 0.40    | -17.04 | 0 |
| 7  | Glycosidase                | 697  | 570.50  | 0.37    | -16.81 | 0 |
| 8  | Isomerase                  | 931  | 422.72  | 0.35    | -13.60 | 0 |
| 9  | Protease                   | 1863 | 674.42  | 0.54    | -13.20 | 0 |
| 10   | Transducer                 | 1703 | 482.28  | 0.41    | -12.56 | 0 |
| 11   | G-protein coupled receptor | 1385 | 465.62  | 0.39    | -12.45 | 0 |
| 12   | Acyltransferase            | 867  | 531.58  | 0.42    | -11.28 | 0 |
| 13   | Decarboxylase              | 195  | 488.21  | 0.25    | -10.70 | 0 |
| 14   | Aminotransferase           | 202  | 451.05  | 0.24    | -10.23 | 0 |
| 15   | Aminopeptidase             | 130  | 668.72  | 0.37    | -9.10  | 0 |
| 16   | Serine protease            | 460  | 700.07  | 0.50    | -8.87  | 0 |
| 17   | Metalloprotease            | 507  | 688.25  | 0.56    | -8.43  | 0 |
| 18   | Methyltransferase          | 874  | 611.22  | 0.47    | -8.33  | 0 |
| 19   | Carboxypeptidase           | 116  | 631.16  | 0.37    | -8.25  | 0 |
| 20   | Threonine protease         | 138  | 246.88  | 0.18    | -7.50  | 0 |
| 21   | Dioxygenase                | 366  | 622.32  | 0.48    | -7.39  | 0 |

b)

| Predviđene uređene MF ključne reči iz ovoga rada (z-skor < -0.2) |                                |      |         |         |        |      |
|--|--------------------------------|------|---------|---------|--------|------|
| #  | name                           | n    | avg_len | avg_dis | z      | p    |
| 0  | Oxidoreductase                 | 4126 | 472.25  | 0.28    | -41.35 | 0    |
| 1  | Hydrolase                      | 7564 | 614.81  | 0.51    | -26.99 | 0    |
| 2  | Lyase                          | 1431 | 481.37  | 0.30    | -23.62 | 0    |
| 3  | Monoxygenase                   | 555  | 503.36  | 0.20    | -20.29 | 0    |
| 4  | Transferase                    | 8846 | 631.95  | 0.55    | -19.72 | 0    |
| 5  | Ligase                         | 995  | 693.30  | 0.46    | -18.05 | 0    |
| 6  | Glycosyltransferase            | 1134 | 551.26  | 0.40    | -17.04 | 0    |
| 7  | Glycosidase                    | 697  | 570.50  | 0.37    | -16.81 | 0    |
| 8  | Isomerase                      | 931  | 422.72  | 0.35    | -13.60 | 0    |
| 9  | Protease                       | 1863 | 674.42  | 0.54    | -13.20 | 0    |
| 10   | Transducer                     | 1703 | 482.28  | 0.41    | -12.56 | 0    |
| 11   | G-protein coupled receptor     | 1385 | 465.62  | 0.39    | -12.45 | 0    |
| 12   | Acyltransferase                | 867  | 531.58  | 0.42    | -11.28 | 0    |
| 13   | Decarboxylase                  | 195  | 488.21  | 0.25    | -10.70 | 0    |
| 14   | Aminotransferase               | 202  | 451.05  | 0.24    | -10.23 | 0    |
| 15   | Aminopeptidase                 | 130  | 668.72  | 0.37    | -9.10  | 0    |
| 16   | Serine protease                | 460  | 700.07  | 0.50    | -8.87  | 0    |
| 17   | Metalloprotease                | 507  | 688.25  | 0.56    | -8.43  | 0    |
| 18   | Methyltransferase              | 874  | 611.22  | 0.47    | -8.33  | 0    |
| 19   | Carboxypeptidase               | 116  | 631.16  | 0.37    | -8.25  | 0    |
| 20   | Threonine protease             | 138  | 246.88  | 0.18    | -7.50  | 0    |
| 21   | Dioxygenase                    | 366  | 622.32  | 0.48    | -7.39  | 0    |
| 22   | Serine esterase                | 141  | 423.09  | 0.28    | -7.21  | 0    |
| 23   | Receptor                       | 3424 | 647.92  | 0.59    | -7.09  | 0    |
| 24   | Nucleotidyltransferase         | 600  | 969.68  | 0.63    | -6.18  | 0    |
| 25   | Peroxidase                     | 221  | 457.61  | 0.40    | -5.50  | 0    |
| 26   | Serine protease inhibitor      | 182  | 497.66  | 0.38    | -4.92  | 0    |
| 27   | Porin                          | 63   | 318.84  | 0.21    | -4.55  | 0    |
| 28   | Dipeptidase                    | 22   | 522.27  | 0.23    | -4.43  | 0    |
| 29   | Integrin                       | 71   | 1038.25 | 0.70    | -4.29  | 0    |
| 30   | Protease inhibitor             | 284  | 446.29  | 0.41    | -4.15  | 0    |
| 31   | RNA-directed RNA polymerase    | 62   | 2506.11 | 0.87    | -4.11  | 0    |
| 32   | Neurotoxin                     | 66   | 209.62  | 0.17    | -3.80  | 0    |
| 33   | Hemagglutinin                  | 23   | 281.22  | 0.13    | -3.37  | 0    |
| 34   | Retinal protein                | 47   | 384.06  | 0.28    | -3.37  | 0    |
| 35   | Myosin                         | 185  | 1275.20 | 0.72    | -3.29  | 0    |
| 36   | Photoreceptor protein          | 77   | 540.68  | 0.47    | -3.02  | 0.01 |
| 37   | Prenyltransferase              | 39   | 376.21  | 0.31    | -2.59  | 0.01 |
| 38   | Elongation factor              | 106  | 467.68  | 0.48    | -2.59  | 0.01 |
| 39   | Endonuclease                   | 443  | 728.14  | 0.60    | -2.59  | 0.01 |
| 40   | Toxin                          | 214  | 412.51  | 0.39    | -2.56  | 0    |
| 41   | Bacteriolytic enzyme           | 35   | 434.66  | 0.31    | -2.53  | 0.01 |
| 42   | Nuclease                       | 703  | 668.54  | 0.60    | -2.49  | 0.01 |
| 43   | Platelet aggregation activa... | 8    | 197.12  | 0       | -2.48  | 0.02 |

| Predviđeni uređeni MF termini dobijeni iz direktnog i izvedenog mapiranja |                                 |       |         |         |        |      |
|---|---------------------------------|-------|---------|---------|--------|------|
| #   | name                            | n     | avg_len | avg_dis | z      | p    |
| 0   | catalytic activity              | 28179 | 569.86  | 0.48    | -52.25 | 0    |
| 1   | oxidoreductase activity         | 4986  | 450.49  | 0.30    | -39.62 | 0    |
| 2   | hydrolase activity              | 11097 | 623.94  | 0.53    | -27.76 | 0    |
| 3   | lyase activity                  | 1624  | 480.74  | 0.31    | -24.47 | 0    |
| 4   | monoxygenase activity           | 633   | 511.13  | 0.22    | -21.40 | 0    |
| 5   | transporter activity            | 5388  | 621.16  | 0.53    | -19.15 | 0    |
| 6   | transferase activity            | 10428 | 619.96  | 0.56    | -18.80 | 0    |
| 7   | transferase activity, trans...  | 1343  | 545.86  | 0.41    | -18.49 | 0    |
| 8   | ligase activity                 | 1097  | 675.42  | 0.46    | -16.68 | 0    |
| 9   | hydrolase activity, acting ...  | 934   | 548.13  | 0.39    | -16.32 | 0    |
| 10  | isomerase activity              | 1046  | 425.93  | 0.35    | -14.19 | 0    |
| 11  | transferase activity, trans...  | 1235  | 540.97  | 0.43    | -13.31 | 0    |
| 12  | carboxy-lyase activity          | 292   | 494.47  | 0.26    | -13.09 | 0    |
| 13  | peptidase activity              | 2211  | 644.11  | 0.53    | -13.05 | 0    |
| 14  | G-protein coupled receptor ...  | 1473  | 465.64  | 0.40    | -12.30 | 0    |
| 15  | carboxylester hydrolase ...     | 628   | 482.21  | 0.37    | -12.01 | 0    |
| 16  | serine-type peptidase activity  | 708   | 614.43  | 0.46    | -10.79 | 0    |
| 17  | aminopeptidase activity         | 177   | 633.80  | 0.35    | -10.74 | 0    |
| 18  | transaminase activity           | 230   | 459.43  | 0.26    | -10.46 | 0    |
| 19  | methyltransferase activity      | 947   | 607.08  | 0.48    | -8.77  | 0    |
| 20  | carboxypeptidase activity       | 143   | 596.81  | 0.34    | -8.54  | 0    |
| 21  | metallopeptidase activity       | 632   | 663.90  | 0.56    | -8.44  | 0    |
| 22  | ATP binding                     | 7585  | 801.90  | 0.69    | -8.22  | 0    |
| 23  | dioxygenase activity            | 419   | 604.98  | 0.48    | -7.83  | 0    |
| 24  | peroxidase activity             | 282   | 414.57  | 0.34    | -7.11  | 0    |
| 25  | antioxidant activity            | 499   | 344.42  | 0.36    | -6.89  | 0    |
| 26  | threonine-type endopeptidas...  | 139   | 247.87  | 0.19    | -6.79  | 0    |
| 27  | nucleotidyltransferase acti...  | 892   | 805.20  | 0.59    | -6.07  | 0    |
| 28  | porin activity                  | 76    | 369.24  | 0.22    | -5.22  | 0    |
| 29  | serine-type endopeptidase i...  | 218   | 485.65  | 0.40    | -4.99  | 0    |
| 30  | phospholipase A2 activity       | 93    | 377.39  | 0.30    | -4.93  | 0    |
| 31  | phospholipase D activity        | 37    | 778.27  | 0.43    | -4.87  | 0    |
| 32  | prenyltransferase activity      | 128   | 369.37  | 0.32    | -4.70  | 0    |
| 33  | toxin activity                  | 285   | 349.98  | 0.32    | -4.59  | 0    |
| 34  | dipeptidase activity            | 41    | 557.73  | 0.34    | -4.23  | 0    |
| 35  | metalloendopeptidase activity   | 369   | 711.73  | 0.63    | -4.22  | 0    |
| 36  | phospholipase A2 activity (...) | 70    | 365.39  | 0.30    | -3.90  | 0    |
| 37  | endonuclease activity           | 773   | 658.33  | 0.59    | -3.85  | 0    |
| 38  | antigen binding                 | 277   | 345.87  | 0.38    | -3.68  | 0    |
| 39  | translation elongation fact...  | 116   | 464.12  | 0.46    | -3.35  | 0    |
| 40  | nuclease activity               | 1124  | 659.17  | 0.61    | -3.20  | 0    |
| 41  | G-protein coupled photorece...  | 44    | 390.23  | 0.30    | -2.99  | 0    |
| 42  | chloride channel activity       | 195   | 622.49  | 0.62    | -2.67  | 0.01 |
| 43  | RNA-directed 5'-3' RNA poly...  | 75    | 2341.31 | 0.87    | -2.57  | 0.02 |
| 44  | tRNA binding                    | 247   | 566.35  | 0.57    | -2.39  | 0.01 |