Table S1: 735 ORFs over-represented in the sorted fraction

|  |
| --- |
| YAL003w |
| YAL012w |
| YAL022c |
| YAL024c |
| YAL025c |
| YAL026c |
| YAL029c |
| YAL053w |
| YAL061w |
| YAL065c |
| YAL068c |
| YAR003w |
| YBL004w |
| YBL006c |
| YBL035c |
| YBL056w |
| YBL078c |
| YBL079w |
| YBL082c |
| YBL084c |
| YBL087c |
| YBL091c-a |
| YBR001c |
| YBR002c |
| YBR012c |
| YBR030w |
| YBR063c |
| YBR067c |
| YBR074w |
| YBR076w |
| YBR077c |

|  |
| --- |
| YBR085w |
| YBR086c |
| YBR104w |
| YBR106w |
| YBR107c |
| YBR121c |
| YBR135w |
| YBR138c |
| YBR143c |
| YBR145w |
| YBR146w |
| YBR148w |
| YBR150c |
| YBR153w |
| YBR162w-a |
| YBR165w |
| YBR166c |
| YBR168w |
| YBR171w |
| YBR175w |
| YBR181c |
| YBR191w |
| YBR262c |
| YBR268w |
| YBR276c |
| YBR289w |
| YCL001w |
| YCL004w |
| YCL010c |
| YCL035c |
| YCL055w |

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| --- |
| YCL056c |
| YCL058c |
| YCL069w |
| YCR002c |
| YCR008w |
| YCR012w |
| YCR051w |
| YCR075c |
| YCR088w |
| YCR091w |
| YCR100c |
| YCR101c |
| YCR102c |
| YCR105w |
| YCR107w |
| YDL005c |
| YDL024c |
| YDL028c |
| YDL031w |
| YDL033c |
| YDL044c |
| YDL046w |
| YDL049c |
| YDL056w |
| YDL060w |
| YDL067c |
| YDL088c |
| YDL100c |
| YDL116w |
| YDL119c |
| YDL121c |

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| --- |
| YDL130w-a |
| YDL134c |
| YDL136w |
| YDL154w |
| YDL156w |
| YDL157c |
| YDL169c |
| YDL191w |
| YDL194w |
| YDL199c |
| YDL212w |
| YDL214c |
| YDL224c |
| YDL233w |
| YDL240w |
| YDR004w |
| YDR028c |
| YDR030c |
| YDR037w |
| YDR072c |
| YDR089w |
| YDR093w |
| YDR098c |
| YDR104c |
| YDR110w |
| YDR121w |
| YDR123c |
| YDR125c |
| YDR129c |
| YDR130c |
| YDR132c |

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| --- |
| YDR134c |
| YDR137w |
| YDR153c |
| YDR156w |
| YDR161w |
| YDR169c |
| YDR197w |
| YDR205w |
| YDR222w |
| YDR235w |
| YDR238c |
| YDR242w |
| YDR249c |
| YDR292c |
| YDR302w |
| YDR311w |
| YDR314c |
| YDR329c |
| YDR330w |
| YDR334w |
| YDR350c |
| YDR365c |
| YDR371w |
| YDR373w |
| YDR380w |
| YDR395w |
| YDR397c |
| YDR404c |
| YDR419w |
| YDR420w |
| YDR429c |

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| --- |
| YDR438w |
| YDR463w |
| YDR465c |
| YDR479c |
| YDR480w |
| YDR481c |
| YDR482c |
| YDR516c |
| YDR518w |
| YDR519w |
| YDR523c |
| YDR527w |
| YDR534c |
| YEL013w |
| YEL017w |
| YEL019c |
| YEL031w |
| YEL042w |
| YEL047c |
| YEL051w |
| YEL058w |
| YEL071w |
| YER002w |
| YER003c |
| YER014w |
| YER022w |
| YER025w |
| YER028c |
| YER041w |
| YER044c |
| YER048c |

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| --- |
| YER049w |
| YER050c |
| YER061c |
| YER063w |
| YER074w |
| YER080w |
| YER089c |
| YER095w |
| YER103w |
| YER114c |
| YER120w |
| YER123w |
| YER124c |
| YER137c |
| YER145c |
| YER147c |
| YER161c |
| YER171w |
| YER176w |
| YER178w |
| YER179w |
| YER187w |
| YFL004w |
| YFL026w |
| YFL030w |
| YFL041w |
| YFL052w |
| YFR003c |
| YFR007w |
| YFR009w |
| YFR017c |

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| --- |
| YFR042w |
| YFR047c |
| YFR051c |
| YGL009c |
| YGL014w |
| YGL025c |
| YGL030w |
| YGL086w |
| YGL107c |
| YGL115w |
| YGL135w |
| YGL147c |
| YGL148w |
| YGL153w |
| YGL167c |
| YGL169w |
| YGL173c |
| YGL181w |
| YGL209w |
| YGL211w |
| YGL216w |
| YGL221c |
| YGL222c |
| YGL236c |
| YGL247w |
| YGL259w |
| YGR004w |
| YGR007w |
| YGR008c |
| YGR012w |
| YGR028w |
| YGR031w |
| YGR036c |

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| --- |
| YGR038w |
| YGR043c |
| YGR044c |
| YGR049w |
| YGR055w |
| YGR083c |
| YGR092w |
| YGR109c |
| YGR122w |
| YGR124w |
| YGR168c |
| YGR171c |
| YGR179c |
| YGR193c |
| YGR195w |
| YGR200c |
| YGR201c |
| YGR205w |
| YGR207c |
| YGR216c |
| YGR220c |
| YGR222w |
| YGR227w |
| YGR239c |
| YGR243w |
| YGR244c |
| YGR245c |
| YGR251w |
| YGR252w |
| YGR258c |
| YGR260w |
| YGR262c |
| YGR284c |

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| --- |
| YGR285c |
| YGR287c |
| YHL023c |
| YHL041w |
| YHL046c |
| YHR003c |
| YHR005c |
| YHR008c |
| YHR010w |
| YHR015w |
| YHR024c |
| YHR025w |
| YHR033w |
| YHR041c |
| YHR049w |
| YHR064c |
| YHR075c |
| YHR088w |
| YHR092c |
| YHR101c |
| YHR111w |
| YHR113w |
| YHR120w |
| YHR121w |
| YHR126c |
| YHR131c |
| YHR132c |
| YHR140w |
| YHR148w |
| YHR170w |
| YHR196w |
| YHR209w |
| YIL006w |

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| --- |
| YIL010w |
| YIL014w |
| YIL017c |
| YIL018w |
| YIL022w |
| YIL023c |
| YIL029c |
| YIL052c |
| YIL054w |
| YIL059c |
| YIL070c |
| YIL072w |
| YIL073c |
| YIL078w |
| YIL085c |
| YIL088c |
| YIL091c |
| YIL108w |
| YIL111w |
| YIL116w |
| YIL120w |
| YIL132c |
| YIL135c |
| YIL164c |
| YIL171w |
| YIR009w |
| YIR010w |
| YIR011c |
| YIR015w |
| YIR016w |
| YIR027c |
| YJL001w |
| YJL007c |

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| --- |
| YJL011c |
| YJL014w |
| YJL023c |
| YJL033w |
| YJL038c |
| YJL042w |
| YJL050w |
| YJL058c |
| YJL059w |
| YJL066c |
| YJL073w |
| YJL074c |
| YJL079c |
| YJL080c |
| YJL094c |
| YJL123c |
| YJL127c |
| YJL140w |
| YJL158c |
| YJL173c |
| YJL199c |
| YJL213w |
| YJL214w |
| YJL216c |
| YJR001w |
| YJR014w |
| YJR022w |
| YJR034w |
| YJR059w |
| YJR063w |
| YJR078w |
| YJR108w |
| YJR113c |

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| --- |
| YJR119c |
| YJR121w |
| YJR122w |
| YJR135c |
| YJR150c |
| YKL015w |
| YKL029c |
| YKL031w |
| YKL045w |
| YKL052c |
| YKL061w |
| YKL071w |
| YKL080w |
| YKL094w |
| YKL097c |
| YKL100c |
| YKL102c |
| YKL110c |
| YKL113c |
| YKL117w |
| YKL127w |
| YKL130c |
| YKL133c |
| YKL140w |
| YKL151c |
| YKL160w |
| YKL162c |
| YKL173w |
| YKL193c |
| YKL194c |
| YKL201c |
| YKL208w |
| YKL210w |

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| --- |
| YKL222c |
| YKR005c |
| YKR007w |
| YKR009c |
| YKR019c |
| YKR029c |
| YKR041w |
| YKR042w |
| YKR046c |
| YKR048c |
| YKR051w |
| YKR054c |
| YKR055w |
| YKR069w |
| YKR072c |
| YKR076w |
| YKR084c |
| YKR086w |
| YKR090w |
| YKR092c |
| YLL012w |
| YLL013c |
| YLL016w |
| YLL031c |
| YLL041c |
| YLL043w |
| YLL045c |
| YLL056c |
| YLR008c |
| YLR009w |
| YLR022c |
| YLR032w |
| YLR054c |

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| --- |
| YLR081w |
| YLR088w |
| YLR107w |
| YLR111w |
| YLR112w |
| YLR122c |
| YLR135w |
| YLR149c |
| YLR164w |
| YLR172c |
| YLR177w |
| YLR186w |
| YLR187w |
| YLR191w |
| YLR197w |
| YLR201c |
| YLR203c |
| YLR211c |
| YLR219w |
| YLR236c |
| YLR239c |
| YLR240w |
| YLR243w |
| YLR250w |
| YLR253w |
| YLR263w |
| YLR267w |
| YLR308w |
| YLR311c |
| YLR312w-a |
| YLR321c |
| YLR344w |
| YLR346c |

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| --- |
| YLR348c |
| YLR359w |
| YLR360w |
| YLR367w |
| YLR368w |
| YLR371w |
| YLR373c |
| YLR380w |
| YLR390w-a |
| YLR394w |
| YLR398c |
| YLR399c |
| YLR404w |
| YLR406c |
| YLR407w |
| YLR408c |
| YLR415c |
| YLR438c-a |
| YML006c |
| YML009c |
| YML058w |
| YML061c |
| YML062c |
| YML075c |
| YML078w |
| YML084w |
| YML087c |
| YML091c |
| YML094w |
| YML113w |
| YMR004w |
| YMR020w |
| YMR028w |

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| --- |
| YMR029c |
| YMR037c |
| YMR047c |
| YMR057c |
| YMR077c |
| YMR102c |
| YMR117c |
| YMR122c |
| YMR123w |
| YMR128w |
| YMR129w |
| YMR140w |
| YMR145c |
| YMR148w |
| YMR153w |
| YMR159c |
| YMR170c |
| YMR171c |
| YMR173w |
| YMR175w |
| YMR178w |
| YMR189w |
| YMR192w |
| YMR194w |
| YMR199w |
| YMR203w |
| YMR206w |
| YMR211w |
| YMR220w |
| YMR232w |
| YMR237w |
| YMR238w |
| YMR241w |

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| --- |
| YMR244c-a |
| YMR262w |
| YMR264w |
| YMR269w |
| YMR272c |
| YMR276w |
| YMR279c |
| YMR287c |
| YMR292w |
| YMR294w |
| YMR298w |
| YMR301c |
| YMR304w |
| YMR305c |
| YMR309c |
| YMR312w |
| YNL010w |
| YNL047c |
| YNL080c |
| YNL097c |
| YNL102w |
| YNL118c |
| YNL121c |
| YNL127w |
| YNL134c |
| YNL138w |
| YNL141w |
| YNL182c |
| YNL185c |
| YNL196c |
| YNL201c |
| YNL207w |
| YNL211c |

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| --- |
| YNL233w |
| YNL238w |
| YNL242w |
| YNL244c |
| YNL249c |
| YNL258c |
| YNL259c |
| YNL268w |
| YNL270c |
| YNL271c |
| YNL290w |
| YNL306w |
| YNL315c |
| YNL320w |
| YNL326c |
| YNL327w |
| YNL329c |
| YNL335w |
| YNL339c |
| YNR001c |
| YNR002c |
| YNR004w |
| YNR006w |
| YNR029c |
| YNR044w |
| YNR048w |
| YNR056c |
| YNR058w |
| YNR063w |
| YOL003c |
| YOL005c |
| YOL009c |
| YOL010w |

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| --- |
| YOL016c |
| YOL036w |
| YOL043c |
| YOL053w |
| YOL063c |
| YOL072w |
| YOL085c |
| YOL087c |
| YOL098c |
| YOL116w |
| YOL123w |
| YOL141w |
| YOL143c |
| YOL166c |
| YOR002w |
| YOR003w |
| YOR005c |
| YOR010c |
| YOR011w |
| YOR027w |
| YOR043w |
| YOR047c |
| YOR063w |
| YOR064c |
| YOR067c |
| YOR070c |
| YOR073w |
| YOR075w |
| YOR101w |
| YOR131c |
| YOR140w |
| YOR147w |
| YOR166c |

|  |
| --- |
| YOR167c |
| YOR179c |
| YOR183w |
| YOR184w |
| YOR197w |
| YOR206w |
| YOR211c |
| YOR215c |
| YOR223w |
| YOR229w |
| YOR230w |
| YOR231w |
| YOR244w |
| YOR245c |
| YOR253w |
| YOR268c |
| YOR270c |
| YOR273c |
| YOR274w |
| YOR275c |
| YOR276w |
| YOR294w |
| YOR298c-a |
| YOR310c |
| YOR315w |
| YOR319w |
| YOR322c |
| YOR334w |
| YOR343c |
| YOR349w |
| YOR369c |
| YOR375c |
| YOR380w |

|  |
| --- |
| YOR382w |
| YOR383c |
| YOR385w |
| YPL036w |
| YPL041c |
| YPL042c |
| YPL043w |
| YPL057c |

|  |
| --- |
| YPL058c |
| YPL059w |
| YPL067c |
| YPL071c |
| YPL081w |
| YPL090c |
| YPL093w |
| YPL099c |

|  |
| --- |
| YPL100w |
| YPL103c |
| YPL105c |
| YPL112c |
| YPL115c |
| YPL128c |
| YPL140c |
| YPL145c |

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| --- |
| YPL172c |
| YPL173w |
| YPL178w |
| YPL186c |
| YPL187w |
| YPL193w |
| YPL199c |
| YPL215w |

|  |
| --- |
| YPL220w |
| YPL224c |
| YPL226w |
| YPL230w |
| YPL239w |
| YPL256c |
| YPL263c |
| YPR008w |

|  |
| --- |
| YPR013c |
| YPR031w |
| YPR035w |
| YPR037c |
| YPR042c |
| YPR046w |
| YPR056w |
| YPR064w |

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| --- |
| YPR079w |
| YPR095c |
| YPR098c |
| YPR101w |
| YPR110c |
| YPR135w |
| YPR140w |
| YPR151c |

These genes were analysed using MIPS FunCat:

<http://mips.helmholtz-muenchen.de/proj/funcatDB/search_main_frame.html>

by selecting “Functional Distribution of Gene Lists” and then pasting in the list of ORFs.

The output shows ORFs associated with each of the top level and sub level categories. For example:

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| FUNCTIONAL CATEGORY | abs SET | rel SET | genes SET | abs  GENO ME | rel  GENO ME | rel  SET/rel GENOME | P-VALUE |
| 42 BIOGENESIS  OF CELLULAR COMPONENTS | 124 | 16.8 | YBR146w YDR420w YGL115w YGL216w YHR075c YCL055w YGR220c YJL014w YML091c YOL009c YKR055w YDR371w YJL073w YMR047c YMR192w YNL242w YJL033w YBR002c YMR276w YBR067c YAR003w YCL001w YNL306w YDL116w YDR125c YIL085c YML058w YML009c YPL256c YDL028c YIL072w YKR048c YNL326c YPR140w YBR175w YDL134c YLR054c YOL116w YBR268w YCL010c YHR101c YLR191w YOR244w YGR239c YMR238w YER114c YMR294w YNL329c YCL069w YLR263w YNL315c YCR002c YMR153w YGR216c YKR009c YPL173w YKR019c YNL138w YPL059w YHR132c YKL052c YNL233w YJL042w YBL006c YDR089w YJL158c YNL339c YER095w YER124c YOR211c YCR088w YNL271c YDR129c YLR368w YOR197w YDL194w YGR245c YKR042w YKR076w YDL088c YDR479c YMR129w YOR043w YMR145c YOR064c YLR312w-a YPL112c YEL013w YGR004w YDL240w YER003c YCL004w YER176w YGL247w YGR252w YMR128w YPL140c YFL004w YGR036c YGR195w YNL047c YDR329c YBR076w YLR390w-a YOR147w YBL079w YER050c YJR113c YOR206w YPL115c YDR072c YLR321c YLR380w YML094w YGR008c YJR108w YBR168w YDR004w YAL029c  YML061c YLR371w YMR117c YNR001c YNL185c | 862 | 14 | 1.2 | 0.013120  721 |
| 42.01 cell wall | 36 | 4.89 | YBR067c YJL042w YOL116w YLR371w YER003c YGR008c YJL033w YBR076w YDL194w YGR216c YBL006c YDR125c YKR019c YMR238w YDR371w YBR002c YKR009c YCL004w YLR380w YLR390w-a YER176w YGR195w YDL240w YJL158c YLR054c YGR036c  YDR072c YER124c YDR420w YMR128w YHR101c YHR132c YIL085c YCR002c YPL140c YKR076w | 214 | 3.49 | 1.401146  132 | 0.021329  589 |
| 42.02  eukaryotic plasma membrane | 1 | 0.13 | YDR089w | 6 | 0.09 | 1.444444  444 | 0.535957  553 |
| 42.04 | 28 | 3.8 | YJR108w YNL271c YMR294w YDL134c YLR371w YOR197w YNL233w YGR245c YCR088w YDR129c YMR276w YKL052c YMR192w | 252 | 4.11 | 0.924574 | 1 |

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| --- | --- | --- | --- | --- | --- | --- | --- |
| cytoskeleton/s  tructural proteins |  |  | YJL014w YMR117c YNL138w YDL028c YER114c YPL256c YOR043w YPL115c YGL216w YML094w YNL047c YKR055w YJL042w YMR238w YCR002c |  |  | 209 |  |
| 42.04.03 actin  cytoskeleton | 10 | 1.35 | YNL271c YGR245c YMR192w YDL134c YKR055w YNL047c YCR088w YLR371w YDR129c YOR043w | 96 | 1.56 | 0.865384  615 | 1 |
| 42.04.05  microtubule cytoskeleton | 6 | 0.81 | YGL216w YJR108w YMR117c YJL042w YMR276w YDL028c | 47 | 0.76 | 1.065789  474 | 0.502738  858 |
| 42.05  centrosome | 1 | 0.13 | YMR117c | 2 | 0.03 | 4.333333  333 | 0.225732  078 |
| 42.07  endoplasmic reticulum | 2 | 0.27 | YAL029c YCL001w | 11 | 0.17 | 1.588235  294 | 0.387638  82 |
| 42.10 nucleus | 23 | 3.12 | YLR321c YMR047c YLR263w YMR129w YDR004w YCL010c YMR153w YIL072w YOR064c YNL339c YOR244w YER095w YJL073w  YBL079w YGL247w YGR252w YKR048c YML061c YAR003w YDL088c YCL055w YBR175w YDL116w | 149 | 2.43 | 1.283950  617 | 0.121541  144 |
| 42.10.03  organization of chromosome  structure | 14 | 1.9 | YCL010c YIL072w YER095w YLR321c YBR175w YAR003w YKR048c YLR263w YOR064c YOR244w YNL339c YDR004w YML061c YGR252w | 90 | 1.46 | 1.301369  863 | 0.186592  195 |
| 42.10.05  nuclear membrane | 7 | 0.95 | YBL079w YDL116w YMR153w YMR129w YDL088c YGL247w YMR047c | 30 | 0.48 | 1.979166  667 | 0.060290  725 |
| 42.16  mitochondrion | 24 | 3.26 | YML009c YNL185c YNL315c YML091c YPL059w YBR268w YLR368w YPR140w YML058w YMR145c YHR075c YOR147w YOR211c  YGR220c YNL306w YOL009c YCL004w YBR146w YKR042w YLR312w-a YNR001c YER050c YJR113c YPL173w | 171 | 2.78 | 1.172661  871 | 0.234918  743 |
| 42.19  peroxisome | 10 | 1.35 | YDR479c YGL115w YGR239c YPL112c YGR004w YLR191w YNL242w YDR329c YBR168w YNL329c | 35 | 0.57 | 2.368421  053 | 0.006477  77 |
| 42.25 vacuole  or lysosome | 4 | 0.54 | YEL013w YNL326c YFL004w YCL069w | 44 | 0.71 | 0.760563  38 | 1 |
| 42.29 bud /  growth tip | 5 | 0.67 | YDL134c YLR371w YNL271c YKR048c YPL115c | 30 | 0.48 | 1.395833  333 | 0.288361  051 |