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| Table S12. N3 clusters and their significantly enriched GO biological process terms | | |
| **Clusters** | | **Enriched GO Biological Processes (*p*-value < 0.01)** |
| **1** |  | |  | | --- | | negative regulation of chromatin silencing at rDNA | | regulation of chromatin silencing at rDNA | | negative regulation of chromatin silencing at silent mating-type cassette | | regulation of chromatin silencing at silent mating-type cassette | | negative regulation of chromatin silencing at telomere | | chromatin modification | | negative regulation of chromatin silencing | | positive regulation of gene expression, epigenetic | | regulation of chromatin silencing at telomere | | negative regulation of gene silencing | | negative regulation of transcription, DNA-templated | | negative regulation of RNA biosynthetic process | | negative regulation of nucleic acid-templated transcription | | negative regulation of RNA metabolic process | | chromatin organization | | negative regulation of gene expression | | chromatin silencing at rDNA | | negative regulation of cellular macromolecule biosynthetic process | | negative regulation of macromolecule biosynthetic process | | negative regulation of nucleobase-containing compound metabolic process | | negative regulation of chromatin modification | | negative regulation of nitrogen compound metabolic process | | negative regulation of biosynthetic process | | negative regulation of cellular biosynthetic process | | regulation of chromatin silencing | | regulation of gene silencing | | negative regulation of transcription from RNA polymerase I promoter | | negative regulation of macromolecule metabolic process | | chromatin silencing at silent mating-type cassette | | negative regulation of cellular metabolic process | | regulation of chromatin modification | | regulation of chromatin organization | | negative regulation of metabolic process | | chromosome organization | | negative regulation of cellular process | | negative regulation of chromosome organization | | negative regulation of biological process | | chromatin silencing at telomere | | regulation of DNA-dependent DNA replication initiation | | regulation of DNA metabolic process | | positive regulation of RNA biosynthetic process | | positive regulation of nucleic acid-templated transcription | | positive regulation of transcription, DNA-templated | | positive regulation of RNA metabolic process | | regulation of chromosome organization | | regulation of transcription, DNA-templated | | regulation of RNA biosynthetic process | | regulation of nucleic acid-templated transcription | | regulation of transcription from RNA polymerase I promoter | | positive regulation of nucleobase-containing compound metabolic process | | regulation of RNA metabolic process | | positive regulation of nitrogen compound metabolic process | | positive regulation of gene expression | | positive regulation of macromolecule biosynthetic process | | negative regulation of organelle organization | | positive regulation of biosynthetic process | | positive regulation of cellular biosynthetic process | | transcription, DNA-templated | | nucleic acid-templated transcription | | RNA biosynthetic process | | negative regulation of cellular component organization | | regulation of nucleobase-containing compound metabolic process | | regulation of nitrogen compound metabolic process | | regulation of DNA-dependent DNA replication | | negative regulation of gene expression, epigenetic | | chromatin silencing | | regulation of gene expression, epigenetic | | gene silencing | | regulation of cellular component organization | | regulation of cellular macromolecule biosynthetic process | | regulation of gene expression | | positive regulation of macromolecule metabolic process | | regulation of macromolecule biosynthetic process | | regulation of cellular biosynthetic process | | regulation of biosynthetic process | | positive regulation of cellular metabolic process | | macromolecular complex subunit organization | | DNA replication initiation | | nucleobase-containing compound biosynthetic process | | regulation of DNA replication | | positive regulation of metabolic process | | aromatic compound biosynthetic process | | positive regulation of cellular process | | transcription from RNA polymerase I promoter | |
| **2** |  | |  | | --- | | lipid biosynthetic process | | cellular lipid metabolic process | | lipid metabolic process | |
| **3** |  | |  | | --- | | chromatin remodeling | | chromatin modification | | chromatin organization | |
| **4** |  | |  | | --- | | cellular alcohol biosynthetic process | | ergosterol biosynthetic process | | cellular lipid biosynthetic process | | phytosteroid biosynthetic process | | ergosterol metabolic process | | phytosteroid metabolic process | | cellular alcohol metabolic process | | lipid biosynthetic process | | sterol biosynthetic process | | steroid biosynthetic process | | steroid metabolic process | | sterol metabolic process | | cellular lipid metabolic process | | lipid metabolic process | | alcohol biosynthetic process | | organic hydroxy compound biosynthetic process | | alcohol metabolic process | | organic hydroxy compound metabolic process | | oxidation-reduction process | | single-organism biosynthetic process | | small molecule biosynthetic process | |
| **5** |  |  |
| **6** |  | |  | | --- | | endocytosis | | vesicle-mediated transport | | transport | | establishment of localization | |
| **7** |  | |  | | --- | | SRP-dependent cotranslational protein targeting to membrane, translocation | | SRP-dependent cotranslational protein targeting to membrane | | cotranslational protein targeting to membrane | | protein folding | | protein targeting to ER | | establishment of protein localization to endoplasmic reticulum | | protein localization to endoplasmic reticulum | | protein targeting to membrane | |
| **8** |  | |  | | --- | | late endosome to vacuole transport | | endosomal transport | | late endosome to vacuole transport via multivesicular body sorting pathway | | vacuolar transport | | endosome transport via multivesicular body sorting pathway | | intralumenal vesicle formation | | protein retention in Golgi apparatus | | protein localization to Golgi apparatus | | cytoplasmic transport | | single-organism membrane budding | | protein transport | |
| **9** |  | |  | | --- | | transcription from RNA polymerase III promoter | | tRNA transcription from RNA polymerase III promoter | | tRNA transcription | | ncRNA transcription | |
| **10** |  | |  | | --- | | pyruvate metabolic process | | acetyl-CoA biosynthetic process from pyruvate | | acetyl-CoA biosynthetic process | | thioester biosynthetic process | | acyl-CoA biosynthetic process | | acetyl-CoA metabolic process | |
| **11** |  | protein folding |
| **12** |  | |  | | --- | | chromatin remodeling | | chromatin modification | | chromatin organization | |
| **13** |  | protein import |
| **14** |  | |  | | --- | | DNA-templated transcriptional start site selection | | transcriptional start site selection at RNA polymerase II promoter | |
| **15** |  |  |
| **16** |  | |  | | --- | | SRP-dependent cotranslational protein targeting to membrane, signal sequence recognition | | SRP-dependent cotranslational protein targeting to membrane | | cotranslational protein targeting to membrane | |
| **17** |  | |  | | --- | | maturation of SSU-rRNA from tricistronic rRNA transcript (SSU-rRNA, 5.8S rRNA, LSU-rRNA) | | maturation of SSU-rRNA | | ribosomal small subunit biogenesis | |
| **18** |  | |  | | --- | | pyridoxine metabolic process | | pyridoxine biosynthetic process | | vitamin B6 biosynthetic process | | vitamin B6 metabolic process | | pyridoxal phosphate metabolic process | | aldehyde biosynthetic process | | pyridoxal phosphate biosynthetic process | |
| **19** |  | |  | | --- | | energy coupled proton transmembrane transport, against electrochemical gradient | | ATP hydrolysis coupled proton transport | |
| **20** |  |  |
| **21** |  |  |
| **22** |  |  |
| **23** |  | |  | | --- | | vacuolar acidification | | pH reduction | | intracellular pH reduction | | regulation of cellular pH | | regulation of intracellular pH | | regulation of pH | | cellular monovalent inorganic cation homeostasis | | monovalent inorganic cation homeostasis | | cellular cation homeostasis | | cellular ion homeostasis | | inorganic ion homeostasis | | cation homeostasis | | cellular chemical homeostasis | | ion homeostasis | | chemical homeostasis | | cellular homeostasis | |
| **24** |  | |  | | --- | | ribosomal large subunit biogenesis | | ribosomal large subunit export from nucleus | |
| **25** |  |  |
| **26** |  |  |
| **27** |  | |  | | --- | | chromatin remodeling | | histone exchange | | chromatin modification | |
| **28** |  |  |
| **29** |  |  |
| **30** |  |  |
| **31** |  |  |