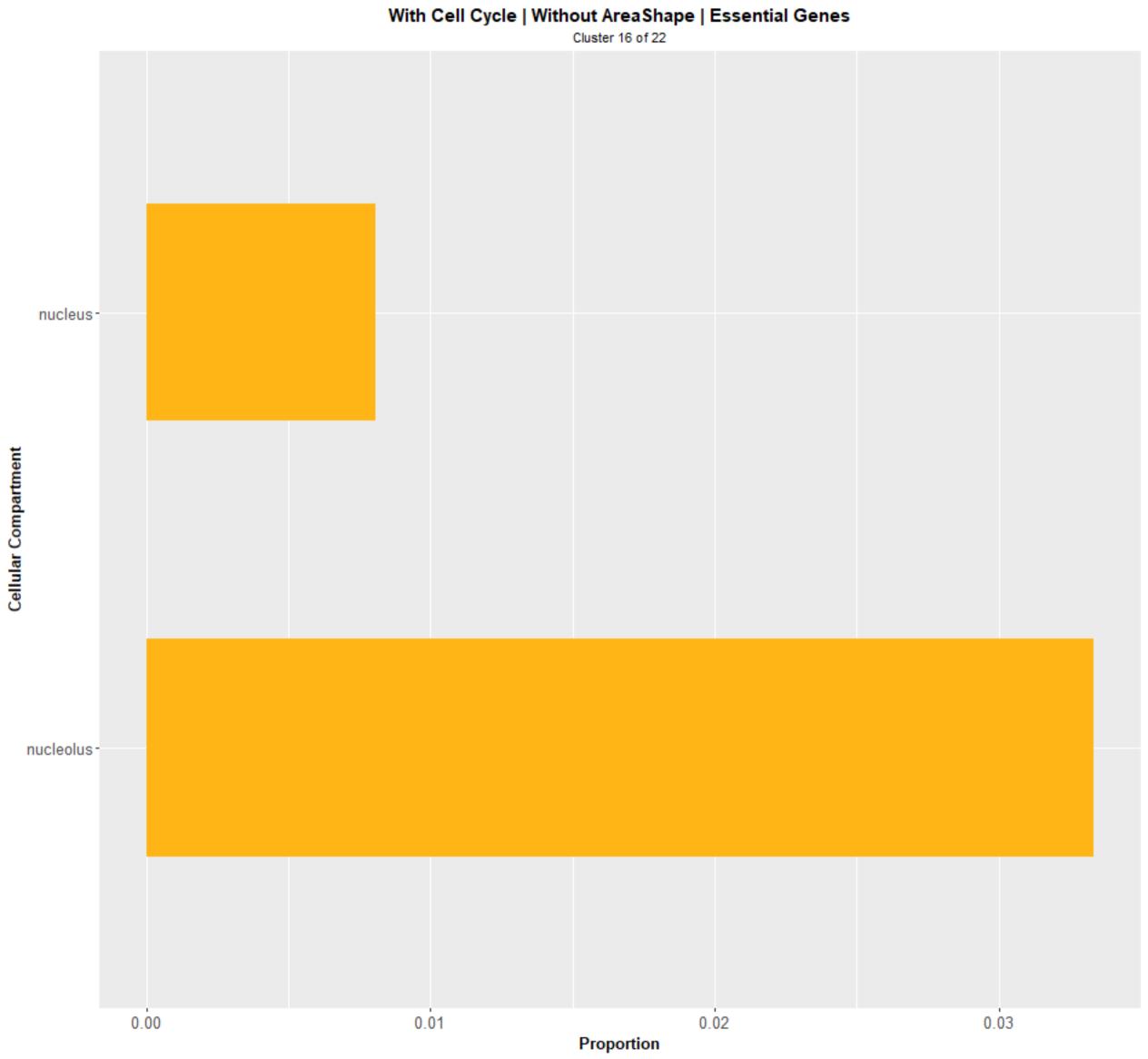
# With Cell Cycle | Without AreaShape | Essential Genes Cluster 6 of 22 nucleus-Cellular Compartment nucleolus-0.01 0.02 0.03 0.00 Proportion

#### With Cell Cycle | Without AreaShape | Essential Genes Cluster 6 of 22 rRNA processing RNA catabolic process Biological Process ribosome assembly ribosomal large subunit\_ biogenesis 0.00 0.02 0.04 0.08 Proportion

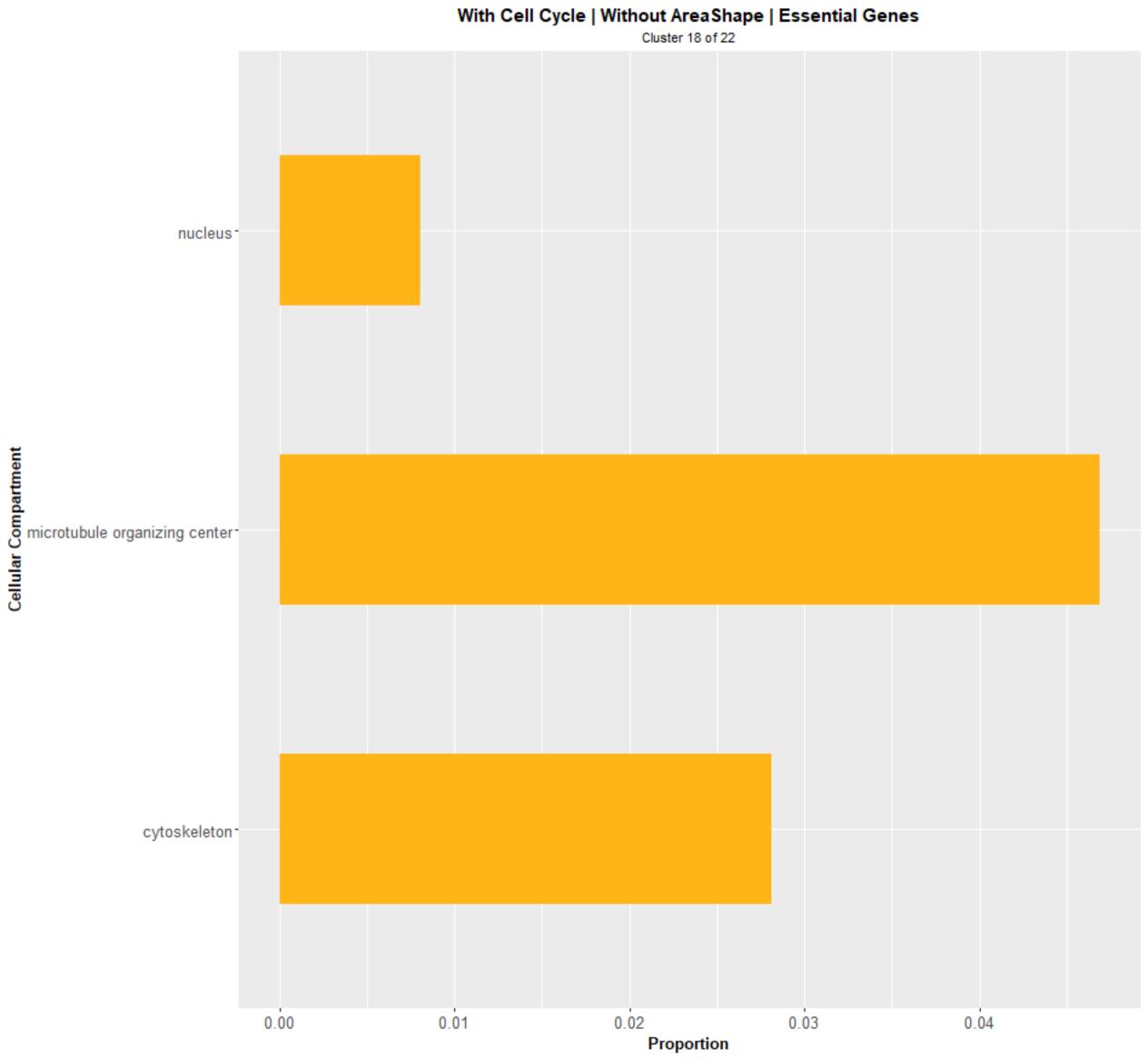
### With Cell Cycle | Without AreaShape | Essential Genes Cluster 11 of 22 transcription from RNA\_ polymerase II promoter Biological Process organelle assembly DNA-templated transcription, \_ initiation 0.00 0.02 0.04 0.06 Proportion

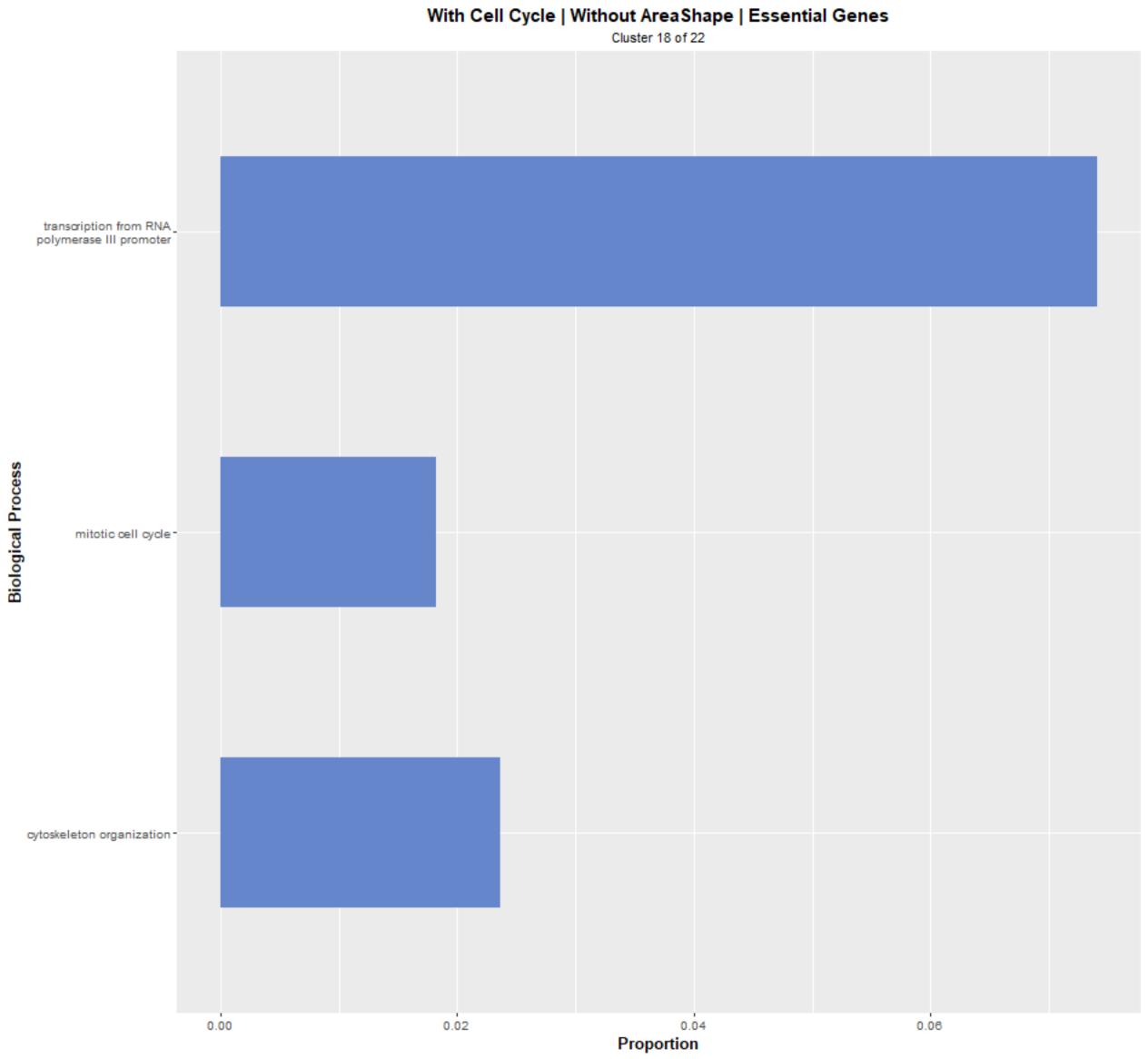


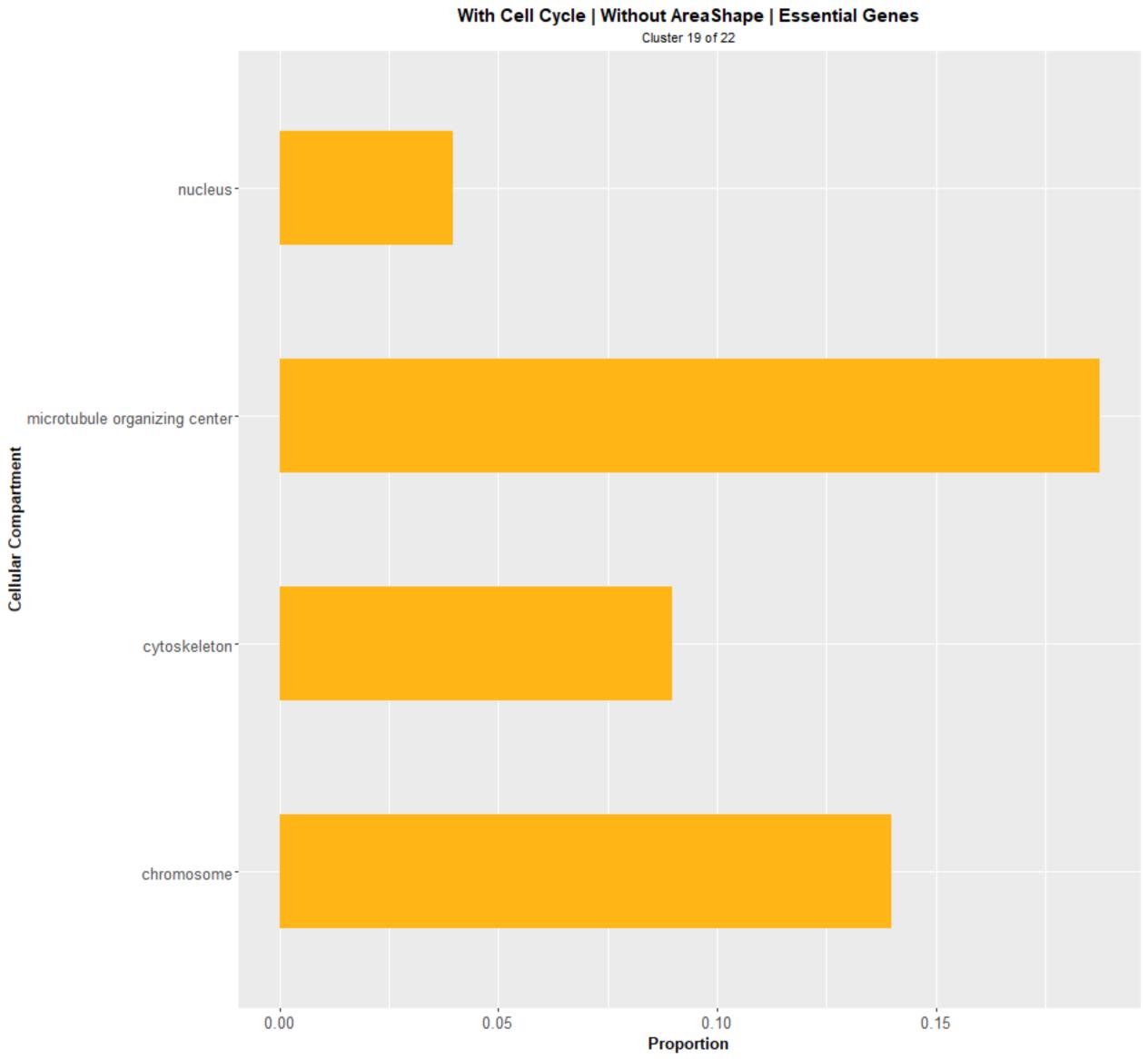
## With Cell Cycle | Without AreaShape | Essential Genes Cluster 16 of 22 snoRNA processing Biological Process rRNA processing -DNA replication -0.04 0.00 0.02 0.08 Proportion

# With Cell Cycle | Without AreaShape | Essential Genes Cluster 17 of 22 nucleus-Cellular Compartment nucleolus-0.02 0.04 0.00 0.06 Proportion

#### With Cell Cycle | Without AreaShape | Essential Genes Cluster 17 of 22 transcription from RNA polymerase III promoter rRNA processing ribosomal subunit export from nucleus Biological Process ribosomal small subunit biogenesis ribosomal large subunit\_ biogenesis nuclear transport DNA-templated transcription, \_ termination 0.00 0.05 0.10 0.15 Proportion

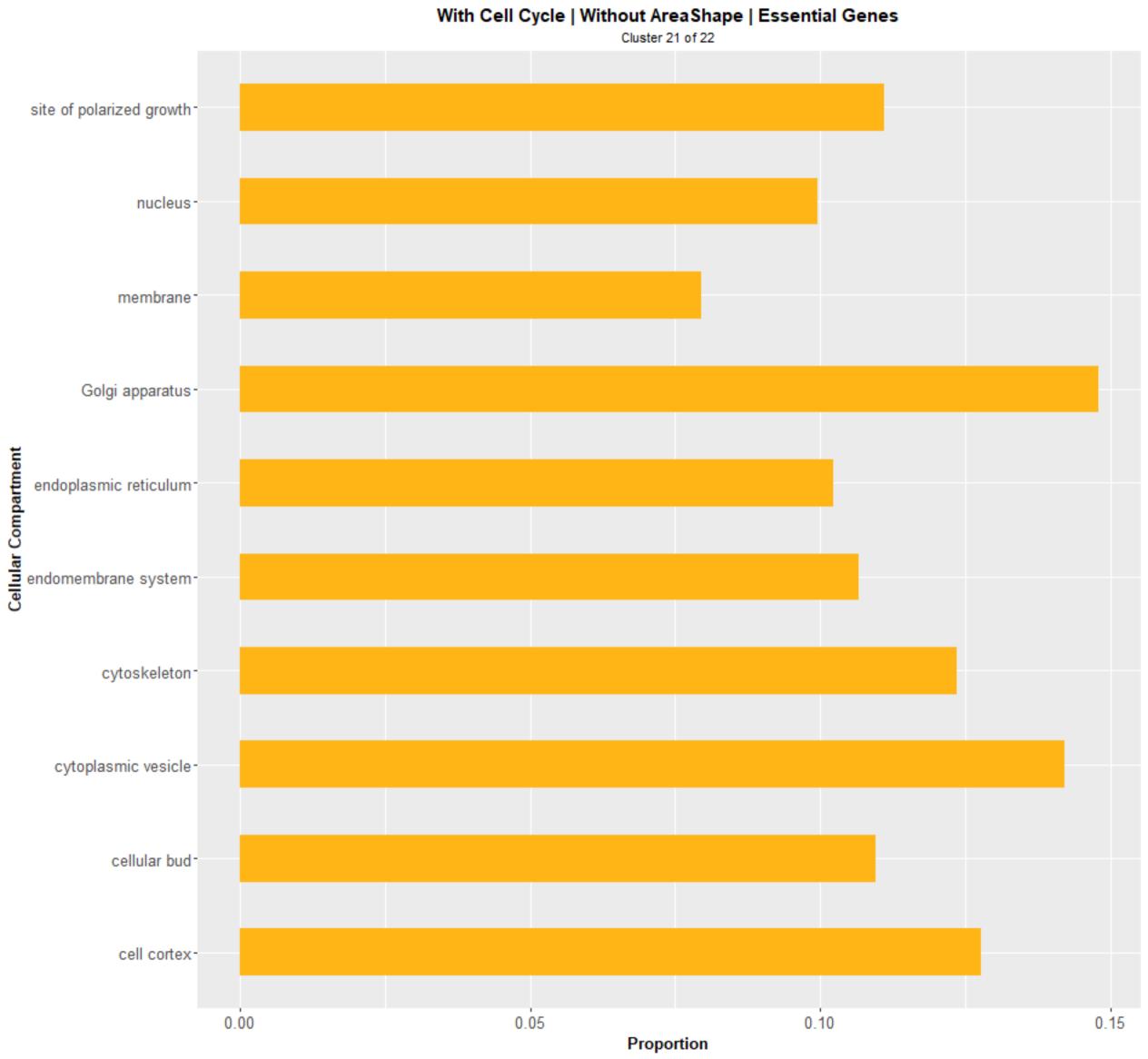






#### With Cell Cycle | Without AreaShape | Essential Genes

Cluster 19 of 22 telomere organization regulation of organelle organization regulation of DNA metabolic\_ regulation of cell cycle proteolysis involved in cellular protein catabolicprocess protein modification by small protein conjugation or removal protein complex biogenesis **Biological Process** organelle fission mitotic cell cycle meiotic cell cycle -DNA replication -DNA repair -DNA recombination cytoskeleton organization chromosome segregation chromatin organization cellular response to DNA\_ damage stimulus 0.05 0.10 0.15 0.20 0.00 Proportion



With Cell Cycle | Without AreaShape | Essential Genes Cluster 21 of 22

vesicle organization translational initiation transcription from RNA\_ polymerase II promoter snoRNA processing rRNA processing RNA splicing ribosomal subunit export from nucleus regulation of organelle organization protein targeting protein lipidation protein complex biogenesis protein acylation peptidyl-amino acid\_ modification **Biological Process** organelle inheritance organelle fusion nucleus organization nucleobase-containing compound transport nuclear transport mRNA processing membrane fusion lipid metabolic process Golgi vesicle transport exocytosis -DNA repair DNA-templated transcription, \_ termination DNA-templated transcription, \_ initiation DNA-templated transcription, elongation cytoskeleton organization = cytokinesis chromatin organization 0.0 0.2 0.1 0.3 0.4 Proportion