### Top 10 GO Biological Process Gene Sets Ranked by Potency of Perturbation (Sorted by BMD Median)

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| --- | --- | --- | --- | --- | --- | --- | --- |
| **Category Name** | Input Genes/Platform Genes in Gene Set | % Gene Set Coverage | Active Genes | BMD1std Median of Gene Set Transcripts (mg/kg) | Median BMDL1Std-BMDU1Std (mg/kg) | Genes with Changed Direction Up | Genes with Changed Direction Down |
| **GO:0046364**monosaccharide biosynthetic process | 5/33 | 15% | Pck2; Sds; Gulo; Atf3; Per2 | 28.8 | 14.6-87.4 | 3 | 2 |
| **GO:0042308**negative regulation of protein import into nucleus | 3/55 | 5% | Tmsb4x; Ppm1b; Pde2a | 32.1 | 13.7-109.8 | 1 | 2 |
| **GO:1904590**negative regulation of protein import | 3/55 | 5% | Tmsb4x; Ppm1b; Pde2a | 32.1 | 13.7-109.8 | 1 | 2 |
| **GO:0070989**oxidative demethylation | 3/12 | 25% | Cyp3a18; Cyp1a2; Cyp3a23/3a1 | 32.2 | 20.1-60.0 | 2 | 1 |
| **GO:0051782**negative regulation of cell division | 4/15 | 27% | Aspm; Chmp4c; Txnip; Aurkb | 33.1 | 15.1-98.7 | 3 | 1 |
| **GO:0046823**negative regulation of nucleocytoplasmic transport | 4/65 | 6% | Tmsb4x; Sox4; Ppm1b; Pde2a | 36.2 | 15.9-130.7 | 1 | 3 |
| **GO:0090317**negative regulation of intracellular protein transport | 5/35 | 14% | Tmsb4x; Sirt4; Ppm1b; Nol3; Pde2a | 40.3 | 14.3-151.6 | 3 | 2 |
| **GO:1901222**regulation of NF-kappaB import into nucleus | 3/35 | 9% | Tmsb4x; Ppm1b; Nol3 | 40.3 | 18.2-109.8 | 2 | 1 |
| **GO:0050710**negative regulation of cytokine secretion | 3/45 | 7% | Cidea; Tmsb4x; Tnfrsf9 | 40.3 | 18.2-109.8 | 1 | 2 |
| **GO:0060416**response to growth hormone | 3/30 | 10% | Ugt2b1; Orm1; Igfbp3 | 41.4 | 17.6-117.3 | 2 | 1 |

Official gene symbols from the Rat Genome Database are shown in the “Active Genes” column. Definitions of Gene Ontology terms were provided by the Gene Ontology Resource (http://geneontology.org/).

**GO process description version:** https://cebs.niehs.nih.gov/cebs/study/002-00600-0002-000-0 V04132020

**GO:0046364 monosaccharide biosynthetic process:** The chemical reactions and pathways resulting in the formation of monosaccharides, polyhydric alcohols containing either an aldehyde or a keto group and between three to ten or more carbon atoms.

**GO:0042308 negative regulation of protein import into nucleus:** Any process that stops, prevents, or reduces the frequency, rate or extent of the movement of proteins from the cytoplasm into the nucleus.

**GO:1904590 negative regulation of protein import:** Any process that stops, prevents or reduces the frequency, rate or extent of protein import.

**GO:0070989 oxidative demethylation:** The process of removing one or more methyl groups from a molecule, involving the oxidation (i.e. electron loss) of one or more atoms in the substrate.

**GO:0051782 negative regulation of cell division:** Any process that stops, prevents, or reduces the frequency, rate or extent of cell division.

**GO:0046823 negative regulation of nucleocytoplasmic transport:** Any process that stops, prevents, or reduces the frequency, rate or extent of the directed movement of substances between the cytoplasm and the nucleus.

**GO:0090317 negative regulation of intracellular protein transport:** Any process that decreases the frequency, rate or extent of the directed movement of proteins within cells.

**GO:1901222 regulation of NIK/NF-kappaB signaling:** Any process that modulates the frequency, rate or extent of NIK/NF-kappaB signaling.

**GO:0050710 negative regulation of cytokine secretion:** Any process that stops, prevents, or reduces the frequency, rate or extent of the regulated release of cytokines from a cell.

**GO:0060416 response to growth hormone:** Any process that results in a change in state or activity of a cell or an organism (in terms of movement, secretion, enzyme production, gene expression, etc.) as a result of a growth hormone stimulus. Growth hormone is a peptide hormone that binds to the growth hormone receptor and stimulates growth.