

Table S20 - IPA biological functions unique to BL-Down super-group

Categories	Functions Annotation	p-value ^a	Z-score ^b	Activation State	Total DEGs	Sub-Group
Digestive System Development and Function	Development of gastrointestinal tract	3.06E-03			4	BL-Down-1
Cardiovascular System Development and Function, Hematological System Development and Function	Blood pressure	2.63E-02			4	BL-Down-1
Cellular Growth and Proliferation, Reproductive System Development and Function	Colony formation of breast cell lines	1.78E-03			2	BL-Down-1
Cell Morphology	Permeabilization of mitochondrial outer membrane	3.30E-03			2	BL-Down-1
Cellular Growth and Proliferation, Hair and Skin Development and Function	Colony formation of epithelial cell lines	7.09E-03			2	BL-Down-1
Cardiovascular System Development and Function, Cell-To-Cell Signaling and Interaction	Activation of vascular endothelial cells	7.60E-03			2	BL-Down-1
Cellular Assembly and Organization	Shortening of telomeres	7.60E-03			2	BL-Down-1
Molecular Transport	Transport of Na ⁺	8.12E-03			2	BL-Down-1
Cell-To-Cell Signaling and Interaction, Hematological System Development and Function, Humoral Immune Response	Response of B lymphocytes	8.65E-03			2	BL-Down-1
Lymphoid Tissue Structure and Development	Frequency of B lymphocytes	8.65E-03			2	BL-Down-1
Behavior	Exploratory behavior	9.20E-03			2	BL-Down-1
Cell-To-Cell Signaling and Interaction, Cell-mediated Immune Response, Cellular Development, Cellular Function and Maintenance, Cellular Growth and Proliferation, Embryonic Development, Hematological System Development and Function, Hematopoiesis, Lymphoid Tissue Structure and Development, Organ Development, Organismal Development, Tissue Development	Selection of T lymphocytes	9.20E-03			2	BL-Down-1
Cell Morphology, Cellular Compromise	Multinucleation of tumor cell lines	9.20E-03			2	BL-Down-1
Cell Cycle, Cell Morphology, Cellular Assembly and Organization, Cellular Function and Maintenance	Length of telomeres	1.48E-02			2	BL-Down-1
Cell Cycle	G1 phase of bone cancer cell lines	2.08E-02			2	BL-Down-1
Cell-mediated Immune Response, Cellular Movement, Hematological System Development and Function, Immune Cell Trafficking	NK cell migration	2.08E-02			2	BL-Down-1
Cellular Function and Maintenance	Movement of organelle	3.21E-02			2	BL-Down-1
Cell Death and Survival	Cell death of gastrointestinal cells	3.81E-02			2	BL-Down-1
Organ Morphology, Reproductive System Development and Function, Tissue Morphology	Quantity of male germ cells	4.01E-02			2	BL-Down-1
Cellular Assembly and Organization	Formation of membrane ruffles	4.12E-02			2	BL-Down-1
Cell Death and Survival	Cell death of fibrosarcoma cell lines	4.65E-02			2	BL-Down-1

a) The p-value: statistical overlap of differentially expressed gene list and gene set

b) Z-score: $z > 1.96$ to be significantly activated or increased, and those with $z < -1.96$ to be significantly inhibited