Table S9 - IPA biological functions unique to maternal super-group

Categories	Functions Annotation	p-value[a]	Z-score[b]	Activation State	Total DEGs	Sub-Group
Cellular Development, Cellular Growth and Proliferation, Nervous System Development and Function, Tissue Development	Development of neurons	7.48E-10	-4.334	Inhibited	95	M-1
Cellular Development, Cellular Growth and Proliferation, Nervous System Development and Function, Tissue Development	Proliferation of neuronal cells	3.01E-07	-4.68	Inhibited	81	M-1
Embryonic Development, Organismal Development	Development of body axis	3.16E-04	-3.996	Inhibited	67	M-1
Nervous System Development and Function	Morphology of nervous system	8.62E-03			56	M-1
Cell Morphology	Shape change of neurites	2.38E-07	-3.48	Inhibited	54	M-1
Cell Morphology	Shape change of neurons	4.60E-07	-3.157	Inhibited	54	M-1
Cell-To-Cell Signaling and Interaction	Interaction of tumor cell lines	8.02E-03	-2.157	Inhibited	51	M-1
Cell Cycle	Cell cycle progression of tumor cell lines	1.23E-06	1.611		48	M-1
Cellular Growth and Proliferation	Cytostasis	4.35E-05	-2.968	Inhibited	44	M-1
Cell Morphology, Cellular Assembly and Organization, Cellular Development, Cellular Function and Maintenance, Cellular Growth and Proliferation, Embryonic Development, Nervous System Development and Function, Organismal Development, Tissue Development	Dendritic growth/branching	1.57E-06	-3.662	Inhibited	42	M-1
Cellular Development, Cellular Growth and Proliferation, Hematological System Development and Function, Hematopoiesis, Tissue Development	Differentiation of hematopoietic cells	1.98E-04	-0.868		39	M-1
Behavior	Cognition	9.02E-04	-3.414	Inhibited	38	M-1
Cellular Development, Cellular Growth and Proliferation, Hematological System Development and Function, Hematopoiesis, Tissue Development	Differentiation of hematopoietic progenitor cells	3.55E-04	-0.903		37	M-1
Cellular Movement, Nervous System Development and Function	Migration of neurons	1.76E-08	-2.883	Inhibited	36	M-1
Cellular Growth and Proliferation, Lymphoid Tissue Structure and Development	Proliferation of lymphatic system cells	9.95E-03	-2.84	Inhibited	36	M-2
Embryonic Development, Nervous System Development and Function, Organ Development, Organismal Development, Tissue Development	Formation of brain	2.35E-03	-2.726	Inhibited	35	M-1
Cellular Development, Cellular Growth and Proliferation, Hematological System Development and Function, Lymphoid Tissue Structure and Development	Proliferation of immune cells	1.05E-02	-2.636	Inhibited	35	M-2
Cellular Development, Cellular Growth and Proliferation, Hematological System Development and Function, Lymphoid Tissue Structure and Development	Proliferation of lymphocytes	5.46E-03	-2.625	Inhibited	34	M-2
Cellular Assembly and Organization, Cellular Function and Maintenance, Tissue Development	Formation of actin filaments	8.31E-04	-1.835		33	M-1
Cellular Assembly and Organization	Formation of plasma membrane	5.53E-06	-3.763	Inhibited	30	M-1
Cell-To-Cell Signaling and Interaction, Cellular Assembly and Organization	Formation of cell-cell contacts	8.74E-05	-2.917	Inhibited	28	M-1
Cellular Development, Cellular Growth and Proliferation	Proliferation of leukemia cell lines	7.67E-03	-1.286		28	M-1
Cellular Growth and Proliferation	Arrest in proliferation of cells	7.29E-03			28	M-1
Cell-To-Cell Signaling and Interaction, Cellular Assembly and Organization	Formation of intercellular junctions	1.15E-04	-3.06	Inhibited	27	M-1
Cellular Growth and Proliferation	Cytostasis of tumor cell lines	1.15E-04	-2.359	Inhibited	27	M-1
Embryonic Development, Organismal Development	Development of body axis	1.02E-02	-0.724		27	M-2
Cell-To-Cell Signaling and Interaction, Cellular Assembly and Organization, Cellular Function and Maintenance	Assembly of intercellular junctions	4.72E-05	-3.397	Inhibited	26	M-1
Cellular Development, Cellular Growth and Proliferation, Hematological System Development and Function, Lymphoid Tissue Structure and Development	Cell proliferation of T lymphocytes	2.05E-02	-2.234	Inhibited	26	M-2
Cell-To-Cell Signaling and Interaction, Cellular Assembly and Organization, Cellular Function and Maintenance	Development of gap junctions	5.11E-06	-3.251	Inhibited	24	M-1
Nervous System Development and Function, Tissue Morphology	Density of neurons	9.00E-05	-1.95		24	M-1
Cell Cycle, Cell-To-Cell Signaling and Interaction, Cellular Growth and Proliferation	Contact growth inhibition	1.48E-03	-1.682		24	M-1

Cellular Movement, Connective Tissue Development and Function	Cell movement of fibroblasts	6.84E-03	-1.63		23	M-1
Cellular Movement	Cell movement of central nervous system cells	6.44E-06	-1.16		23	M-1
Cell-To-Cell Signaling and Interaction, Cellular Assembly and Organization, Cellular Development, Cellular Function and Maintenance, Cellular Growth and Proliferation, Nervous System Development and Function, Tissue Development	Developmental process of synapse	8.09E-06	-3.11	Inhibited	22	M-1
Respiratory System Development and Function	Respiratory system development	4.18E-04	-1.265		22	M-1
Cardiovascular System Development and Function, Tissue Morphology	Permeability of vascular system	3.89E-03	-1.054		21	M-1
DNA Replication, Recombination, and Repair	Recombination	3.84E-03	-1.57		20	M-1
Cellular Movement	Cell movement of brain cells	2.59E-05	-1.367		20	M-1
Cell Death and Survival	Cell death of gonadal cells	5.77E-03	1.089		18	M-1
Cellular Movement	Migration of central nervous system cells	5.40E-04	-1.738		17	M-1
Cell Morphology, Cellular Assembly and Organization, Cellular Development, Cellular Function and Maintenance, Cellular Growth and Proliferation, Embryonic Development, Nervous System Development and Function, Organismal Development, Tissue Development, Tissue Morphology	Density of dendritic spines	1.58E-04	-1.023		17	M-1
Cell-To-Cell Signaling and Interaction, Cellular Assembly and Organization	Cell-cell adhesion	8.37E-04	-0.423		17	M-1
Lipid Metabolism, Molecular Transport, Small Molecule Biochemistry	Concentration of acylglycerol	1.04E-02	-1.852		16	M-2
Cellular Movement	Migration of brain cells	3.89E-04	-1.555		16	M-1
Cellular Growth and Proliferation, Lymphoid Tissue Structure and Development	Proliferation of lymphatic system cells	2.63E-03	-1.545		16	M-3
Cell Cycle, Cell-To-Cell Signaling and Interaction, Cellular Growth and Proliferation	Contact growth inhibition of tumor cell lines	7.08E-04	-1.522		16	M-1
Lipid Metabolism, Small Molecule Biochemistry, Vitamin and Mineral Metabolism	Synthesis of steroid	1.35E-03	1.052		16	M-2
Cell Morphology	Morphology of tumor cell lines	7.06E-03			16	M-2
Post-Translational Modification	Ubiquitination	1.92E-04	-3.552	Inhibited	15	M-1
Endocrine System Development and Function, Organ Morphology, Tissue Morphology	Quantity of endocrine cells	1.30E-03	-1.885		15	M-1
Cell Death and Survival	Cell death of fibroblasts	1.24E-02	-0.069		15	M-2
Cell Morphology, Cellular Assembly and Organization, Cellular Development, Cellular Function and Maintenance, Cellular Growth and Proliferation, Embryonic Development, Nervous System Development and Function, Organismal Development, Tissue Development, Tissue Morphology	Morphology of dendritic spines	5.39E-05			15	M-1
Cell Morphology, Cellular Assembly and Organization, Cellular Development, Cellular Function and Maintenance, Cellular Growth and Proliferation, Embryonic Development, Nervous System Development and Function, Organismal Development, Tissue Development	Growth of dendrites	5.67E-04	-2.723	Inhibited	14	M-1
Cellular Assembly and Organization, Cellular Function and Maintenance, Tissue Development	Formation of actin filaments	1.17E-02	-2.154	Inhibited	14	M-2
Cellular Development, Embryonic Development, Organismal Development, Tissue Development	Differentiation of mesenchymal cells	6.87E-03	-2.032	Inhibited	14	M-1
Cell Death and Survival	Cell death of germ cells	3.59E-03	1.436		14	M-1
Cellular Development, Cellular Growth and Proliferation, Hematological System Development and Function, Lymphoid Tissue Structure and Development	Proliferation of lymphocytes	5.79E-03	-0.976		14	M-3
Cell Cycle	Interphase of cervical cancer cell lines	2.94E-03	-0.863		14	M-1
Cell-To-Cell Signaling and Interaction	Binding of carcinoma cell lines	6.34E-05	-0.496		14	M-1
Cell Death and Survival	Cell death of blood cells	1.19E-02	-0.137		14	M-3
Connective Tissue Development and Function, Skeletal and Muscular System Development and Function, Tissue Development	Volume of bone	1.36E-03			14	M-1
Cell-To-Cell Signaling and Interaction	Interaction of tumor cell lines	3.18E-04	-2.135	Inhibited	13	M-3

Lipid Metabolism, Small Molecule Biochemistry	Synthesis of eicosanoid	1.75E-02	-1.887		13	M-2
Cellular Development, Embryonic Development, Organismal Development, Tissue Development	Differentiation of mesenchymal stem cells	1.58E-03	-1.833		13	M-1
Cell Death and Survival	Cell death of lymphoma cell lines	1.80E-02	1.433		13	M-2
Cell Cycle, Connective Tissue Development and Function	Cell cycle progression of fibroblast cell lines	5.81E-03	1.411		13	M-1
Lipid Metabolism, Molecular Transport, Small Molecule Biochemistry	Concentration of phospholipid	6.87E-03	1.098		13	M-2
Cell-To-Cell Signaling and Interaction, Hematological System Development and Function	Interaction of lymphocytes	4.45E-03	-0.631		13	M-2
Cell Death and Survival	Necrosis of prostate cancer cell lines	1.35E-02	0.066		13	M-2
Cellular Assembly and Organization	Remodeling of cytoskeleton	5.02E-04	-2.028	Inhibited	12	M-1
Cellular Assembly and Organization	Quantity of vesicles	5.75E-03	-1.975	Inhibited	12	M-1
Cell-To-Cell Signaling and Interaction	Adhesion of breast cancer cell lines	4.66E-03	-1.578		12	M-1
Cellular Development, Cellular Growth and Proliferation, Nervous System Development and Function, Tissue Development	Development of neurons	1.35E-02	-1.455		12	M-3
Lipid Metabolism, Small Molecule Biochemistry	Synthesis of prostaglandin	5.27E-03	-1.442		12	M-2
Cellular Development, Cellular Growth and Proliferation, Hematological System Development and Function, Lymphoid Tissue Structure and Development	Cell proliferation of T lymphocytes	5.63E-03	-0.365		12	M-3
Cellular Development	Differentiation of carcinoma cell lines	6.20E-03	-2.066	Inhibited	11	M-1
Cellular Assembly and Organization, Nervous System Development and Function, Tissue Morphology	Quantity of dendritic spines	2.02E-04	-1.941		11	M-1
Cellular Development, Cellular Growth and Proliferation, Hematological System Development and Function, Lymphoid Tissue Structure and Development	NK cell proliferation	6.36E-04	-1.681		11	M-2
Cell-To-Cell Signaling and Interaction	Aggregation of tumor cell lines	2.36E-03	-1.258		11	M-1
Carbohydrate Metabolism, Lipid Metabolism, Molecular Transport, Small Molecule Biochemistry	Concentration of phosphatidic acid	8.19E-03	1.23		11	M-2
Cellular Assembly and Organization, Cellular Compromise, Nervous System Development and Function	Retraction of neurites	4.95E-03	-0.905		11	M-1
Cell-To-Cell Signaling and Interaction, Hematological System Development and Function	Binding of lymphocytes	1.27E-02	-0.268		11	M-2
Cell Cycle, Cell Morphology, Cellular Assembly and Organization, DNA Replication, Recombination, and Repair	Morphology of chromosomes	3.61E-04			11	M-1
Cellular Movement, Skeletal and Muscular System Development and Function	Migration of smooth muscle cells	1.59E-02	-2.778	Inhibited	10	M-2
Cellular Development	Maturation of cells	7.51E-03	-1.912		10	M-3
Lipid Metabolism, Molecular Transport, Small Molecule Biochemistry	Accumulation of phospholipid	5.82E-03	-1.866		10	M-1
Cellular Development	Differentiation of germ cell tumor cell lines	3.50E-03	-1.831		10	M-1
Cellular Assembly and Organization	Remodeling of actin cytoskeleton	5.03E-04	-1.793		10	M-1
Amino Acid Metabolism	Quantity of amino acids	8.25E-03	0.949		10	M-2
Cell-To-Cell Signaling and Interaction, Cellular Assembly and Organization	Quantity of focal adhesions	1.23E-03	-0.853		10	M-1
Cell Death and Survival	Apoptosis of hepatoma cell lines	2.02E-02	0.317		10	M-2
Carbohydrate Metabolism, Lipid Metabolism, Molecular Transport, Small Molecule Biochemistry	Accumulation of phosphoinositide	1.24E-03	-2.209	Inhibited	9	M-1
Cellular Movement	Cell movement of dermal cells	3.19E-03	-2.025	Inhibited	9	M-2
Cellular Growth and Proliferation	Cytostasis of breast cancer cell lines	5.94E-03	-1.36		9	M-1
Cell Morphology	Ruffling	2.68E-03	-1.242		9	M-2
Cellular Movement	Migration of ovarian cancer cell lines	8.69E-03	-1.024		9	M-1
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	Development of regulatory T lymphocytes	4.22E-05	-0.671		9	M-2
Skeletal and Muscular System Development and Function	Relaxation of muscle	7.68E-03	-0.488		9	M-1

Cellular Development, Cellular Growth and Proliferation	Proliferation of prostate cancer cell lines	6.18E-03	-0.176		9	M-3
Cell-To-Cell Signaling and Interaction, Hematological System Development and Function	Binding of leukocytes	1.54E-02	-0.103		9	M-3
Connective Tissue Development and Function, Skeletal and Muscular System Development and Function, Tissue Development	Volume of trabecular bone	4.52E-03			9	M-1
Cardiovascular System Development and Function, Embryonic Development, Organ Development, Organismal Development, Tissue Development	Formation of coronary vessel	6.77E-03			9	M-1
Amino Acid Metabolism, Post-Translational Modification, Small Molecule Biochemistry	Phosphorylation of L-amino acid	7.73E-03	-2.784	Inhibited	8	M-1
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	NK cell development	1.92E-03	-2.178	Inhibited	8	M-2
Cellular Movement, Hair and Skin Development and Function	Cell movement of keratinocytes	5.98E-03	-1.82		8	M-2
Cell-To-Cell Signaling and Interaction	Adhesion of epithelial cells	1.88E-02	-1.39		8	M-2
Cellular Growth and Proliferation	Expansion of cells	1.16E-02	-0.832		8	M-3
Tissue Morphology	Remodeling of blood vessel	7.73E-03	0.478		8	M-1
Cell Cycle	Interphase of kidney cell lines	6.70E-03			8	M-1
Organismal Development	Delay in growth of organism	5.13E-05			8	M-1
Embryonic Development, Nervous System Development and Function, Organ Development, Organismal Development, Tissue Development	Development of cerebral cortex	5.98E-03			8	M-2
Digestive System Development and Function, Hepatic System Development and Function, Organ Morphology, Organismal Development	Morphology of liver	1.96E-02			8	M-2
Embryonic Development, Nervous System Development and Function, Organ Development, Organismal Development, Tissue Development	Formation of brain	3.38E-03			8	M-3
Amino Acid Metabolism, Post-Translational Modification, Small Molecule Biochemistry	Phosphorylation of L-serine	1.21E-03	-2.619	Inhibited	7	M-1
Cellular Assembly and Organization, DNA Replication, Recombination, and Repair	Formation of chromosome components	7.32E-03	-2.219	Inhibited	7	M-1
Cardiovascular System Development and Function, Cell-To-Cell Signaling and Interaction	Adhesion of vascular endothelial cells	2.53E-02	-1.769		7	M-2
Nervous System Development and Function, Tissue Morphology	Quantity of interneurons	7.32E-03	-1.564		7	M-1
Nervous System Development and Function	Pathfinding	3.32E-06	-1.414		7	M-1
Amino Acid Metabolism, Small Molecule Biochemistry	Incorporation of amino acids	3.61E-03	-1.053		7	M-1
Cell Cycle, Cell-To-Cell Signaling and Interaction, Cellular Growth and Proliferation	Contact growth inhibition of breast cancer cell lines	1.94E-03	-1.01		7	M-1
Cell Signaling, Molecular Transport, Small Molecule Biochemistry	Release of nitric oxide	7.11E-03	-0.777		7	M-2
Lipid Metabolism, Molecular Transport, Small Molecule Biochemistry	Accumulation of triacylglycerol	2.43E-02	0.57		7	M-2
Protein Synthesis	Production of protein	5.89E-03	-0.148		7	M-2
Embryonic Development, Organismal Development	Patterning of embryo	8.58E-03			7	M-1
Cell Cycle, Cell Morphology, Cellular Assembly and Organization, DNA Replication, Recombination, and Repair	Abnormal morphology of chromosomes	5.22E-03			7	M-1
Organismal Development	Length of absolute anatomical region	3.17E-03			7	M-2
Cellular Assembly and Organization, Cellular Function and Maintenance	Organization of filaments	2.13E-02			7	M-2
Cardiovascular System Development and Function, Organismal Development	Development of artery	1.69E-02			7	M-2
Cardiovascular System Development and Function, Cell-To-Cell Signaling and Interaction	Adhesion of vascular endothelial cells	2.48E-04	-2.385	Inhibited	6	M-3
Cell-To-Cell Signaling and Interaction, Nervous System Development and Function	Long term depression of hippocampal CA1 region	5.04E-03	-2.236	Inhibited	6	M-1

Cellular Function and Maintenance, Cellular Growth and Proliferation, Hematological System Development and Function	Production of lymphocytes	3.17E-03	-2.15	Inhibited	6	M-2
Organ Morphology, Reproductive System Development and Function	Quantity of ovary	8.12E-03	-2.126	Inhibited	6	M-2
Cell-To-Cell Signaling and Interaction, Cellular Assembly and Organization, Cellular Function and Maintenance	Function of intercellular junctions	3.22E-03	-2	Inhibited	6	M-1
Nervous System Development and Function	Analgesia	1.53E-02	-1.781		6	M-2
Cellular Movement	Invasion of squamous cell carcinoma cell lines	8.12E-03	-1.706		6	M-2
Cell Death and Survival	Apoptosis of synovial cells	1.03E-03	1.467		6	M-2
Nervous System Development and Function	Pathfinding of neurons	2.94E-05	-1.414		6	M-1
DNA Replication, Recombination, and Repair	Breakage of double-stranded DNA	4.06E-03	-0.896		6	M-1
Cell Cycle, DNA Replication, Recombination, and Repair	Recombination of chromosomes	1.09E-03	0.849		6	M-1
Cardiovascular System Development and Function, Cellular Movement	Movement of vascular endothelial cells	9.42E-03	-0.557		6	M-3
Hematological System Development and Function, Tissue Morphology	Quantity of granulocytes	1.02E-02	0.447		6	M-3
Cellular Assembly and Organization, Cellular Compromise	Disruption of actin cytoskeleton	6.19E-03	-0.391		6	M-1
Cell-To-Cell Signaling and Interaction	Adhesion of squamous cell carcinoma cell lines	3.82E-04	-0.386		6	M-1
Carbohydrate Metabolism, Lipid Metabolism, Molecular Transport, Small Molecule Biochemistry	Concentration of choline-phospholipid	5.65E-03	0.365		6	M-2
Lipid Metabolism, Small Molecule Biochemistry, Vitamin and Mineral Metabolism	Metabolism of sterol	7.58E-03	0.247		6	M-2
Cellular Compromise	Fragmentation of Golgi apparatus	1.45E-03	-0.077		6	M-2
Cardiovascular System Development and Function, Organ Morphology, Organismal Development	Morphology of right ventricle	5.04E-03			6	M-1
Cell Cycle	Arrest in cell cycle progression of sarcoma cell lines	4.06E-03			6	M-1
Cell Morphology, Nervous System Development and Function, Organ Morphology, Organismal Development	Morphology of brain cells	7.58E-03			6	M-2
Organismal Development	Abnormal morphology of body cavity	8.70E-03			6	M-2
Nervous System Development and Function, Organ Morphology, Organismal Development	Morphology of brain	5.91E-03			6	M-3
Reproductive System Development and Function	Morphology of reproductive system	8.18E-03			6	M-3
Cellular Function and Maintenance	Function of blood cells	5.26E-03			6	M-3
Cellular Development	Differentiation of vasculature	3.03E-03	-2.236	Inhibited	5	M-1
Embryonic Development, Organ Development, Organismal Development, Respiratory System Development and Function, Tissue Development	Maturation of lung	4.24E-04	-2	Inhibited	5	M-1
Cell-To-Cell Signaling and Interaction, Nervous System Development and Function	Long term depression of CA1 neuron	3.03E-03	-2	Inhibited	5	M-1
RNA Post-Transcriptional Modification	Conformational modification of RNA	1.29E-04	-1.982	Inhibited	5	M-1
Carbohydrate Metabolism, Lipid Metabolism, Small Molecule Biochemistry	Phosphorylation of phosphatidylinositol phosphate	4.24E-04	-1.969	Inhibited	5	M-1
Cell Cycle, Cellular Assembly and Organization, DNA Replication, Recombination, and Repair	Formation of centriole	8.60E-03	-1.969	Inhibited	5	M-1
Lipid Metabolism, Small Molecule Biochemistry	Catabolism of lipid	2.47E-02	-1.941		5	M-2
Organ Morphology, Reproductive System Development and Function	Quantity of ovarian follicle	1.69E-02	-1.892		5	M-2
Cellular Movement, Embryonic Development	Cell movement of embryonic cells	2.08E-03	-1.387		5	M-3
Cellular Assembly and Organization, Cellular Compromise, Cellular Function and Maintenance	Destabilization of microtubules	4.06E-03	-1.359		5	M-1
Cell-mediated Immune Response, Lymphoid Tissue Structure and Development	Frequency of T lymphocytes	1.69E-02	1.248		5	M-2
Cardiovascular System Development and Function, Cell-To-Cell Signaling and Interaction	Activation of endothelial cells	2.19E-02	-1.242		5	M-2
Cellular Assembly and Organization, Cellular Function and Maintenance	Quantity of filopodia	2.61E-03	-1.172		5	M-2

Cell-To-Cell Signaling and Interaction, Hematological System Development and Function, Humoral Immune Response	Interaction of B lymphocytes	6.04E-03	-1.067		5	M-2
Tissue Development, Tissue Morphology	Expansion of epithelial tissue	4.52E-03	-0.882		5	M-2
Cell Cycle	Senescence of epithelial cell lines	3.03E-03	0.848		5	M-1
Lipid Metabolism, Molecular Transport, Small Molecule Biochemistry	Secretion of steroid hormone	9.34E-03	-0.346		5	M-2
Organ Morphology, Respiratory System Development and Function	Quantity of pulmonary alveolus	4.06E-03	0.343		5	M-1
Behavior	Anxiety	3.30E-03	0.277		5	M-3
Cell-To-Cell Signaling and Interaction, Connective Tissue Development and Function	Response of fibroblast cell lines	6.82E-03	-0.152		5	M-1
Cell-To-Cell Signaling and Interaction, Hematological System Development and Function	Response of CD4+ T-lymphocytes	7.45E-04	-0.152		5	M-2
Cell Morphology, Skeletal and Muscular System Development and Function	Contraction of muscle cells	1.27E-02	-0.152		5	M-2
Cardiovascular System Development and Function, Cellular Function and Maintenance, Tissue Development	Function of endothelial cells	1.05E-03			5	M-1
Cell-To-Cell Signaling and Interaction, Cellular Assembly and Organization, Cellular Function and Maintenance, Nervous System Development and Function, Tissue Development	Function of synapse	4.06E-03			5	M-1
Cell Morphology, Cellular Assembly and Organization, Cellular Function and Maintenance	Formation of microspikes	8.60E-03			5	M-1
Cell Cycle, DNA Replication, Recombination, and Repair	Synapsis	3.03E-03			5	M-1
Cell Morphology, Organ Morphology	Morphology of exocrine cells	6.82E-03			5	M-1
Cell-To-Cell Signaling and Interaction, Connective Tissue Development and Function	Response of fibroblasts	8.60E-03			5	M-1
Cell Cycle, DNA Replication, Recombination, and Repair	Homologous recombination of chromosomes	5.31E-03			5	M-1
Cell Morphology	Morphology of breast cancer cell lines	1.81E-02			5	M-2
Skeletal and Muscular System Development and Function	Mineralization of bone	6.62E-03			5	M-2
Organ Morphology, Reproductive System Development and Function	Size of genital organ	2.47E-02			5	M-2
Cell Morphology	Shape change of plasma membrane	1.27E-02			5	M-2
Molecular Transport, Protein Trafficking	Transport of protein	1.69E-02			5	M-2
Cell Death and Survival, Cell Morphology, Nervous System Development and Function, Organ Morphology, Organismal Development	Loss of brain cells	4.99E-03			5	M-2
Cell Morphology, Cellular Assembly and Organization	Morphology of actin cytoskeleton	1.47E-02			5	M-2
Cell-mediated Immune Response, Cellular Movement, Hematological System Development and Function, Immune Cell Trafficking	Cell movement of helper T lymphocytes	7.90E-03			5	M-2
Cell Cycle	G1 phase of carcinoma cell lines	4.07E-03			5	M-2
Cell-To-Cell Signaling and Interaction, Hematological System Development and Function	Binding of T lymphocytes	6.96E-03			5	M-3
Cell Cycle, DNA Replication, Recombination, and Repair	Double-stranded DNA break repair of DNA lesion	2.95E-03	-2	Inhibited	4	M-1
Cellular Movement, Connective Tissue Development and Function	Chemotaxis of fibroblasts	2.15E-02	-2	Inhibited	4	M-2
Tissue Development	Deposition of extracellular matrix	2.92E-03	-2	Inhibited	4	M-2
Cellular Assembly and Organization, Cellular Function and Maintenance	Nucleation of microtubules	3.95E-03	-1.982	Inhibited	4	M-2
Organismal Development	Secretion of mucus	7.53E-03	-1.964	Inhibited	4	M-2
Cellular Growth and Proliferation	Cytostasis of prostate cancer cell lines	6.24E-03	-1.091		4	M-1
Cellular Movement, Embryonic Development	Migration of embryonic cells	7.58E-03	-1.067		4	M-3
Cellular Assembly and Organization	Clustering of vesicles	2.95E-03	-1		4	M-1
Cellular Growth and Proliferation, Connective Tissue Development and Function, Tissue Development	Proliferation of synovial cells	2.51E-02	-1		4	M-2
Cellular Movement	Cell movement of lymphoma cell lines	3.14E-03	-1		4	M-3
Lipid Metabolism, Small Molecule Biochemistry	Activation of lipid	1.68E-02	-0.924		4	M-2
Endocrine System Development and Function, Lipid Metabolism, Molecular Transport, Small Molecule Biochemistry	Secretion of aldosterone	7.53E-03	-0.911		4	M-2
Cellular Development, Skeletal and Muscular System Development and Function, Tissue Development	Differentiation of skeletal muscle cells	4.39E-03	-0.762		4	M-1

Cell Death and Survival	Cell death of superior cervical ganglion neurons	6.24E-03	0.762	4	M-1
Cell-To-Cell Signaling and Interaction	Adhesion of lymphoma cell lines	1.12E-03	-0.689	4	M-3
Cell-To-Cell Signaling and Interaction, Cellular Assembly and Organization	Cell-cell contact of breast cancer cell lines	4.39E-03	-0.218	4	M-1
Cellular Growth and Proliferation	Cytostasis of carcinoma cell lines	2.10E-03	-0.192	4	M-2
Cell-To-Cell Signaling and Interaction, Cellular Assembly and Organization	Cell-cell adhesion of carcinoma cell lines	4.39E-03	-0.152	4	M-1
Cellular Assembly and Organization, Cellular Compromise	Disruption of cytoskeleton	2.53E-04	0.152	4	M-3
Protein Synthesis	Production of cytokine	1.16E-02	0.14	4	M-2
Cellular Movement	Cell movement of squamous cell carcinoma cell lines	5.66E-03	0.124	4	M-3
Cell-To-Cell Signaling and Interaction	Response of splenocytes	1.75E-03	-0.106	4	M-2
Cell Morphology, Cellular Development, Connective Tissue Development and Function	Branching of fibroblast cell lines	5.77E-04	0	4	M-1
Cellular Assembly and Organization, Hair and Skin Development and Function	Aggregation of melanosomes	6.24E-03	0	4	M-1
Organ Morphology, Respiratory System Development and Function, Tissue Morphology	Quantity of alveolar epithelium	6.24E-03	0	4	M-1
Cardiovascular System Development and Function, Organ Development, Organ Morphology, Skeletal and Muscular System Development and Function	Contraction of cardiac muscle	2.33E-02	0	4	M-2
Cell Morphology, Cellular Assembly and Organization, Cellular Development, Cellular Function and Maintenance, Cellular Growth and Proliferation, Embryonic Development, Nervous System Development and Function, Organismal Development, Tissue Development, Tissue Morphology	Size of dendritic spines	4.39E-03		4	M-1
Cell Cycle, Skeletal and Muscular System Development and Function	Mitosis of smooth muscle cells	6.24E-03		4	M-1
Behavior	Stereotypy	6.24E-03		4	M-1
Cell Cycle, DNA Replication, Recombination, and Repair	Homologous pairing of chromosomes	8.54E-03		4	M-1
Cell Morphology, Cellular Assembly and Organization, Cellular Development, Cellular Function and Maintenance, Cellular Growth and Proliferation, Nervous System Development and Function, Organismal Development, Tissue Development	Development of sensory projections	5.77E-04		4	M-1
Embryonic Development, Organismal Development, Tissue Development	Development of second branchial arch	6.24E-03		4	M-1
RNA Post-Transcriptional Modification	Unwinding of RNA	1.09E-03		4	M-1
Cell-To-Cell Signaling and Interaction, Cellular Assembly and Organization, Cellular Development, Cellular Function and Maintenance, Cellular Growth and Proliferation, Nervous System Development and Function, Tissue Development	Formation of excitatory synapses	2.95E-03		4	M-1
Cellular Movement, Nervous System Development and Function	Pathfinding of axons	5.77E-04		4	M-1
Endocrine System Development and Function, Organ Morphology, Organismal Development	Size of thyroid gland	2.61E-04		4	M-1
Cellular Movement	Distribution of cells	1.40E-02		4	M-2
Cell-mediated Immune Response, Cellular Movement, Hematological System Development and Function, Immune Cell Trafficking, Lymphoid Tissue Structure and Development	Homing of helper T lymphocytes	3.41E-03		4	M-2
Cell-To-Cell Signaling and Interaction, Hematological System Development and Function, Humoral Immune Response	Binding of B lymphocytes	2.33E-02		4	M-2
Reproductive System Development and Function	Size of reproductive tract	3.41E-03		4	M-2
Cell Death and Survival	Cell death of skin cancer cell lines	4.55E-03		4	M-2
Hair and Skin Development and Function	Re-epithelialization	1.16E-02		4	M-2
Cell Death and Survival	Apoptosis of intestinal cell lines	1.54E-02		4	M-2
Cellular Assembly and Organization	Engulfment of vesicles	1.16E-02		4	M-2
Cell Death and Survival, Nervous System Development and Function	Cell viability of hippocampal neurons	1.28E-02		4	M-2
Organismal Development	Production of mucus	2.33E-02		4	M-2
Amino Acid Metabolism, Molecular Transport, Small Molecule Biochemistry	Quantity of homocysteine	2.49E-03		4	M-2
Cell Death and Survival, Cellular Compromise	Fragmentation of nucleus	2.15E-02		4	M-2

Cell Morphology, Nervous System Development and Function, Organ Morphology, Organismal Development	Morphology of cerebral cortex cells	1.54E-02	4	M-2
Cellular Assembly and Organization	Quantity of cellular inclusion bodies	8.44E-03	4	M-2
Cellular Assembly and Organization, Cellular Function and Maintenance	Organization of microtubules	2.15E-02	4	M-2
Cell Morphology, Nervous System Development and Function	Morphology of central nervous system cells	6.34E-03	4	M-3
Lipid Metabolism, Small Molecule Biochemistry, Vitamin and Mineral Metabolism	Synthesis of steroid hormone	1.61E-03	4	M-3
Cell-To-Cell Signaling and Interaction, Hematological System Development and Function, Immune Cell Trafficking	Binding of antigen presenting cells	7.58E-03	4	M-3
Cellular Movement, Reproductive System Development and Function	Cell movement of gonadal cell lines	3.14E-03	4	M-3
Cellular Movement	Cell rolling of blood cells	3.76E-03	4	M-3
Organ Development, Reproductive System Development and Function	Growth of genital organ	1.02E-02	4	M-3
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	T cell development	5.55E-03	4	M-5
Organismal Development	Patterning of vessel	8.37E-03	3	M-1
Molecular Transport, RNA Trafficking	Nuclear export of mRNA	8.37E-03	3	M-1
Carbohydrate Metabolism, Drug Metabolism, Small Molecule Biochemistry	Synthesis of heparan sulfate	8.37E-03	3	M-1
Organ Morphology	Enlargement of third cerebral ventricle	1.11E-03	3	M-1
Cell-To-Cell Signaling and Interaction, Cellular Assembly and Organization, Reproductive System Development and Function	Cell-cell adhesion of breast cell lines	5.03E-03	3	M-1
Cellular Assembly and Organization, Hair and Skin Development and Function	Clustering of melanosomes	5.03E-03	3	M-1
Carbohydrate Metabolism, Lipid Metabolism, Small Molecule Biochemistry	Synthesis of phosphtidylinositol 5-phosphate	1.11E-03	3	M-1
Cardiovascular System Development and Function	Endothelial barrier function of vascular endothelial cells	5.03E-03	3	M-1
Embryonic Development, Organismal Development, Tissue Development	Formation of somites	2.64E-03	3	M-1
Nervous System Development and Function, Organ Morphology, Tissue Morphology	Quantity of hippocampal neurons	2.64E-03	3	M-1
Cell-To-Cell Signaling and Interaction, Cellular Assembly and Organization, Cellular Function and Maintenance, Nervous System Development and Function, Tissue Development	Function of excitatory synapses	2.64E-03	3	M-1
Amino Acid Metabolism, Post-Translational Modification, Small Molecule Biochemistry	Conversion of arginine	5.03E-03	3	M-1
Carbohydrate Metabolism, Lipid Metabolism, Small Molecule Biochemistry	Synthesis of phosphatidylserine	5.03E-03	3	M-1
Cellular Assembly and Organization, Nervous System Development and Function, Tissue Morphology	Quantity of neurofibrillary tangles	8.37E-03	3	M-1
Cell Morphology, Connective Tissue Development and Function, Hematopoiesis	Mineralization of bone marrow stromal cells	8.37E-03	3	M-1
Embryonic Development, Nervous System Development and Function, Organ Development, Organismal Development, Tissue Development	Development of ophthalmic branch of trigeminal ganglion	1.11E-03	3	M-1
Behavior	Hippocampal learning	8.37E-03	3	M-1
Cell-To-Cell Signaling and Interaction, Cellular Assembly and Organization, Renal and Urological System Development and Function	Cell-cell adhesion of kidney cell lines	8.37E-03	3	M-1
Cell Cycle	Mitotic index of tumor cell lines	5.03E-03	3	M-1
Cell-To-Cell Signaling and Interaction, Nervous System Development and Function	Activation of Muller glia	5.03E-03	3	M-1

Cell-To-Cell Signaling and Interaction, Hepatic System Development and Function	Adhesion of hepatocytes	5.03E-03	3	M-1
Carbohydrate Metabolism, Lipid Metabolism, Molecular Transport, Small Molecule Biochemistry	Quantity of phosphtidylinositol 5-phosphate	5.03E-03	3	M-1
Carbohydrate Metabolism, Lipid Metabolism, Molecular Transport, Small Molecule Biochemistry	Accumulation of phosphatidylinositol phosphate	1.11E-03	3	M-1
Connective Tissue Development and Function, Embryonic Development, Organ Development, Organismal Development, Skeletal and Muscular System Development and Function, Tissue Development	Formation of occipital bone	2.93E-04	3	M-1
Carbohydrate Metabolism, Lipid Metabolism, Small Molecule Biochemistry	Phosphorylation of phosphatidylinositol diphosphate	8.37E-03	3	M-1
Cell Death and Survival	Survival of kidney cancer cell lines	8.37E-03	3	M-1
Cellular Development, Nervous System Development and Function, Tissue Development	Differentiation of hair cells	5.03E-03	3	M-1
Cell-To-Cell Signaling and Interaction, Nervous System Development and Function	Long term depression of collateral synapses	8.37E-03	3	M-1
Carbohydrate Metabolism, Lipid Metabolism, Small Molecule Biochemistry	Phosphorylation of phosphatidylinositol 3-phosphate	8.37E-03	3	M-1
Cellular Movement	Rearrangement of cells	8.37E-03	3	M-1
Cell Cycle	Arrest in cell cycle progression of sarcoma cell lines	2.22E-02	3	M-2
Cardiovascular System Development and Function, Cell Morphology, Cellular Movement	Cell spreading of endothelial cells	2.22E-02	3	M-2
Cellular Assembly and Organization, Cellular Function and Maintenance, Cellular Movement, Nervous System Development and Function	Endocytosis of synaptic vesicles	1.17E-02	3	M-2
Cellular Movement, Hematological System Development and Function, Immune Cell Trafficking	Distribution of lymphocytes	8.31E-04	3	M-2
Cellular Assembly and Organization	Formation of endosomes	8.51E-03	3	M-2
Cell Death and Survival	Apoptosis of skin cancer cell lines	1.17E-02	3	M-2
Cell Morphology, Nervous System Development and Function, Organ Morphology, Organismal Development, Tissue Morphology	Morphology of pyramidal neurons	5.91E-03	3	M-2
Lipid Metabolism, Small Molecule Biochemistry	Transmission of sterol	1.71E-03	3	M-2
Cellular Development, Cellular Growth and Proliferation, Nervous System Development and Function, Tissue Development	Myelination of Schwann cells	3.86E-03	3	M-2
Cell Cycle	Ploidy of epithelial cells	1.00E-02	3	M-2
Cellular Movement, Hematological System Development and Function, Immune Cell Trafficking	Emigration of antigen presenting cells	3.86E-03	3	M-2
Cellular Movement	Release of blood cells	8.51E-03	3	M-2
Carbohydrate Metabolism, Molecular Transport	Efflux of carbohydrate	1.00E-02	3	M-2
Cell Cycle	G1 phase of epidermal cells	1.71E-03	3	M-2
Organ Morphology, Organismal Development, Reproductive System Development and Function	Size of preantral follicle	1.57E-04	3	M-2
Embryonic Development, Hair and Skin Development and Function, Organ Development, Organ Morphology, Organismal Development, Tissue Development	Morphogenesis of hair follicle	1.22E-03	3	M-2
Cellular Development	Epithelial-mesenchymal transition of colorectal cancer cell lines	1.98E-02	3	M-2
Organ Morphology, Reproductive System Development and Function	Morphology of seminal vesicle	1.75E-02	3	M-2
Behavior	Limb clasping	4.82E-03	3	M-2
Cell Death and Survival	Anoikis of intestinal cell lines	1.17E-02	3	M-2
Lipid Metabolism, Molecular Transport, Small Molecule Biochemistry	Quantity of ganglioside GM1	1.71E-03	3	M-2
Cellular Development, Cellular Growth and Proliferation, Connective Tissue Development and Function, Skeletal and Muscular System Development and Function, Tissue Development	Formation of colony forming unit osteoblasts	3.08E-04	3	M-2
Lipid Metabolism, Small Molecule Biochemistry	Synthesis of thromboxane B2	3.02E-03	3	M-2
Cell Morphology, Cellular Assembly and Organization	Morphology of Golgi apparatus	1.54E-02	3	M-2

Organ Morphology, Organismal Development, Reproductive System Development and Function	Morphology of uterus	1.17E-02	3	M-2
Cell Death and Survival, Hematological System Development and Function	Cell viability of natural killer cells	1.98E-02	3	M-2
Carbohydrate Metabolism, Lipid Metabolism, Small Molecule Biochemistry	Dephosphorylation of phosphoinositide	5.91E-03	3	M-2
Cell Cycle	Mitogenesis of leukocytes	1.17E-02	3	M-2
DNA Replication, Recombination, and Repair	Synthesis of genomic DNA	2.22E-02	3	M-2
Cellular Development, Cellular Growth and Proliferation, Embryonic Development	Arrest in proliferation of embryonic cell lines	1.75E-02	3	M-2
Cell-mediated Immune Response, Cellular Movement, Hematological System Development and Function, Immune Cell Trafficking	Cell movement of Th2 cells	1.17E-02	3	M-2
Cell Death and Survival	Apoptosis of endometrial cancer cell lines	8.51E-03	3	M-2
Amino Acid Metabolism, Hair and Skin Development and Function, Small Molecule Biochemistry	Synthesis of melanin	1.17E-02	3	M-2
Cellular Movement	Movement of myeloma cell lines	1.17E-02	3	M-2
Protein Synthesis	Expression of reporter protein	1.00E-02	3	M-2
Cellular Development, Cellular Growth and Proliferation, Embryonic Development, Hematological System Development and Function, Hematopoiesis, Humoral Immune Response, Lymphoid Tissue Structure and Development, Organ Development, Organismal Development, Tissue Development	Differentiation of Ab-secreting B cells	3.02E-03	3	M-2
Cell-To-Cell Signaling and Interaction, Cellular Growth and Proliferation	Co-stimulation of blood cells	7.14E-03	3	M-2
Organ Morphology, Reproductive System Development and Function	Quantity of antral follicle	2.48E-02	3	M-2
Cell-mediated Immune Response, Hematopoiesis, Lymphoid Tissue Structure and Development	Frequency of thymocytes	3.86E-03	3	M-2
Cell Morphology, Skeletal and Muscular System Development and Function	Contraction of smooth muscle cells	5.91E-03	3	M-2
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	Generation of Th1 cells	3.86E-03	3	M-2
Cellular Movement	Cell movement of prostate cell lines	4.82E-03	3	M-2
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	Differentiation of cytotoxic T cells	3.86E-03	3	M-2
Organismal Development	Oversecretion of mucus	5.91E-03	3	M-2
Cell Death and Survival, Cell Morphology, Nervous System Development and Function, Organ Morphology, Organismal Development	Loss of cerebral cortex cells	1.75E-02	3	M-2
Cell-To-Cell Signaling and Interaction, Cellular Growth and Proliferation, Hematological System Development and Function	Induction of antigen presenting cells	1.98E-02	3	M-2
Lipid Metabolism, Molecular Transport, Small Molecule Biochemistry	Accumulation of cholesterol ester	1.75E-02	3	M-2
Cell Death and Survival, Embryonic Development	Apoptosis of trophoblast cells	3.02E-03	3	M-2
Cell Cycle	Arrest in cell cycle progression of bone cancer cell lines	1.98E-02	3	M-2
Cell Morphology, Cellular Function and Maintenance	Permeability of colorectal cancer cell lines	1.35E-02	3	M-2
Lipid Metabolism, Small Molecule Biochemistry, Vitamin and Mineral Metabolism	Catabolism of sterol	8.31E-04	3	M-2
DNA Replication, Recombination, and Repair	Breakage of double-stranded DNA	8.13E-04	3	M-3

Cell-To-Cell Signaling and Interaction, Cellular Assembly and Organization	Cell-cell contact of tumor cell lines	1.34E-02	3	M-3
Cellular Development, Nervous System Development and Function, Tissue Development	Maturation of neurons	1.07E-02	3	M-3
Cell Morphology, Cellular Movement, Reproductive System Development and Function	Cell spreading of gonadal cell lines	1.92E-04	3	M-3
Cell Cycle	Delay in mitosis of tumor cell lines	1.16E-03	3	M-3
Cell-To-Cell Signaling and Interaction, Cellular Assembly and Organization, Embryonic Development, Organ Development, Organismal Development, Skeletal and Muscular System Development and Function, Tissue Development	Fusion of myoblasts	1.90E-03	3	M-3
Cellular Development, Embryonic Development, Organ Development, Organismal Development, Reproductive System Development and Function	Maturation of oocytes	3.89E-03	3	M-3
Cell-To-Cell Signaling and Interaction, Hematological System Development and Function, Hematopoiesis	Binding of hematopoietic progenitor cells	4.75E-03	3	M-3
Cell Cycle	Arrest in metaphase	2.35E-04	3	M-3
Cellular Assembly and Organization	Nucleation of filaments	3.13E-03	3	M-3
Cell Cycle, Reproductive System Development and Function	Meiosis of germ cells	5.72E-03	3	M-3
Cell Cycle	Aneuploidy	1.51E-02	3	M-3
Cellular Development, Embryonic Development, Organ Development, Organismal Development, Reproductive System Development and Function, Tissue Development	Differentiation of mammary gland	1.16E-03	3	M-3
Organismal Development	Morphogenesis of gland	3.89E-03	3	M-3
Hematological System Development and Function, Lymphoid Tissue Structure and Development, Tissue Morphology	Quantity of Th17 cells	7.58E-03	3	M-3
Organ Morphology, Reproductive System Development and Function	Size of gonad	9.30E-03	3	M-3
Cardiovascular System Development and Function, Tissue Morphology	Relaxation of artery	7.99E-03	3	M-3
Cell-To-Cell Signaling and Interaction, Cellular Movement, Immune Cell Trafficking	Attraction of phagocytes	7.99E-03	3	M-3
Cell Cycle, Connective Tissue Development and Function	S phase of fibroblast cell lines	9.30E-03	3	M-3
Cell Cycle, Embryonic Development	Senescence of embryonic cell lines	1.23E-02	3	M-3
Cell Morphology, Cellular Assembly and Organization	Morphology of filaments	1.51E-02	3	M-3
Cellular Assembly and Organization, Cellular Compromise	Disruption of filaments	2.68E-03	3	M-3
Cellular Assembly and Organization	Generation of filaments	1.58E-03	3	M-3
Organ Morphology, Reproductive System Development and Function, Tissue Development	Branching of mammary gland	3.37E-03	3	M-3
Cardiovascular System Development and Function, Cellular Movement	Chemotaxis of vascular endothelial cells	9.19E-04	3	M-3
Carbohydrate Metabolism	Depletion of polysaccharide	4.00E-04	3	M-3
Connective Tissue Development and Function, Skeletal and Muscular System Development and Function	Association of rib	4.41E-03	2	M-1
Cellular Movement, Nervous System Development and Function	Guidance of corticospinal axon	4.41E-03	2	M-1
Cell Cycle	Arrest in G2 phase of skin cancer cell lines	4.41E-03	2	M-1
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	Metabolism by thymocytes	4.41E-03	2	M-1
Cellular Development, Cellular Function and Maintenance, Cellular Growth and Proliferation	Assembly of mural cells	4.41E-03	2	M-1
Cellular Assembly and Organization	Quantity of tubulovesicular structures	4.41E-03	2	M-1
Cardiovascular System Development and Function, Organismal Development	Sprouting angiogenesis by endothelial cell lines	4.41E-03	2	M-1
Embryonic Development, Organismal Development, Tissue Development	Development of axial mesendoderm	4.41E-03	2	M-1

Organismal Development	Aging of brain	4.41E-03	2	M-1
Cellular Movement, Nervous System Development and Function	Guidance of corticothalamic axons	4.41E-03	2	M-1
Cellular Assembly and Organization, Cellular Function and Maintenance	Remodeling of basement membrane	4.41E-03	2	M-1
Drug Metabolism, Endocrine System Development and Function, Lipid Metabolism, Small Molecule Biochemistry	Binding of hydrocortisone	4.41E-03	2	M-1
Hair and Skin Development and Function	Pigmentation of retinal pigment epithelium	4.41E-03	2	M-1
Carbohydrate Metabolism, Lipid Metabolism, Molecular Transport, Small Molecule Biochemistry	Accumulation of phosphatidylinositol-3-phosphate	4.41E-03	2	M-1
Cellular Movement, Nervous System Development and Function	Migration of neocortical neurons	4.41E-03	2	M-1
Cellular Development, Cellular Growth and Proliferation, Hematological System Development and Function, Lymphoid Tissue Structure and Development	Clonal expansion of mononuclear phagocyte pogenitors	4.41E-03	2	M-1
Embryonic Development, Nervous System Development and Function, Organ Development, Organ Morphology, Organismal Development, Tissue Development, Visual System Development and Function	Morphogenesis of ciliary body	4.41E-03	2	M-1
Nervous System Development and Function	Pathfinding of olfactory receptor neurons	4.41E-03	2	M-1
Nervous System Development and Function	Shrinkage of cerebral cortex	4.41E-03	2	M-1
Cell Morphology, Nervous System Development and Function	Projection of olfactory receptor neurons	4.41E-03	2	M-1
Cell Cycle	Arrest in cell cycle progression of mesothelioma cell lines	4.41E-03	2	M-1
Digestive System Development and Function, Embryonic Development, Organismal Development	Development of secondary palate	4.41E-03	2	M-1
Carbohydrate Metabolism, Lipid Metabolism, Small Molecule Biochemistry	Conversion of choline-phospholipid	4.41E-03	2	M-1
Embryonic Development, Organismal Development, Tissue Development	Development of extraembryonic ectoderm	4.41E-03	2	M-1
Cellular Movement, Hair and Skin Development and Function	Transmigration of epithelial cell lines	4.41E-03	2	M-1
Cellular Assembly and Organization	Binding of membrane rafts	4.41E-03	2	M-1
Connective Tissue Development and Function, Skeletal and Muscular System Development and Function	Association of C6 vertebra	4.41E-03	2	M-1
Embryonic Development	Shrinkage of tail bud	4.41E-03	2	M-1
Cellular Assembly and Organization	Fusion of insulin granule	4.41E-03	2	M-1
Cardiovascular System Development and Function, Tissue Morphology	Morphology of aortic root	4.41E-03	2	M-1
Cellular Movement, Nervous System Development and Function	Guidance of corticocortical axons	4.41E-03	2	M-1
Cellular Movement, Nervous System Development and Function	Guidance of corticofugal fibers	4.41E-03	2	M-1
Cell Death and Survival	Delay in recovery of cells	4.41E-03	2	M-1
Cell Death and Survival	Survival of mononuclear phagocyte pogenitors	4.41E-03	2	M-1
Cell-To-Cell Signaling and Interaction, Nervous System Development and Function	Long term depression of striatopallidal neurons	4.41E-03	2	M-1
Cell-To-Cell Signaling and Interaction	Gap junctional intercellular communication of neuronal progenitor cells	4.41E-03	2	M-1
Cell-To-Cell Signaling and Interaction	Signaling of vascular smooth muscle cells	4.41E-03	2	M-1
Cellular Assembly and Organization, Cellular Function and Maintenance	Penetration of microtubules	4.41E-03	2	M-1
Cell Death and Survival	Mitochondrial cell death of squamous cell carcinoma cell lines	4.41E-03	2	M-1
Cellular Development	Transition of progenitor cells	4.41E-03	2	M-1
Cellular Development, Digestive System Development and Function, Organismal Development	Differentiation of bile duct	4.41E-03	2	M-1
Cell Death and Survival, Connective Tissue Development and Function	Survival of bone marrow stromal cells	4.41E-03	2	M-1

Cell Death and Survival	Anoikis of adenocarcinoma cell lines	6.44E-04	2	M-2
Cellular Movement, Connective Tissue Development and Function	Mobility of fibroblast cell lines	1.63E-02	2	M-2
Cellular Assembly and Organization	Trafficking of secretory vesicles	3.74E-03	2	M-2
Cell Morphology	Polarization of decidual macrophages	9.03E-03	2	M-2
Lipid Metabolism, Small Molecule Biochemistry	Acylation of phospholipid	3.74E-03	2	M-2
Cell Morphology, Cellular Movement, Nervous System Development and Function	Innervation of axons	1.63E-02	2	M-2
Cellular Assembly and Organization	Formation of late endosomes	6.12E-03	2	M-2
Cellular Function and Maintenance	Respiration of connective tissue cells	2.06E-02	2	M-2
Cardiovascular System Development and Function, Cellular Development, Cellular Function and Maintenance, Cellular Growth and Proliferation, Organismal Development, Tissue Development, Tissue Morphology	Expansion of endothelial cells	1.24E-02	2	M-2
Cellular Growth and Proliferation, Hematological System Development and Function	Inhibition of Th1 cells	3.74E-03	2	M-2
Behavior	Immobility behavior	1.90E-03	2	M-2
Cellular Function and Maintenance, Molecular Transport, Small Molecule Biochemistry	Exocytosis of histamine	2.06E-02	2	M-2
Cell Death and Survival, Hematological System Development and Function	Survival of invariant natural killer T cells	3.74E-03	2	M-2
Cellular Assembly and Organization, Cellular Function and Maintenance	Assembly of stress granule	9.03E-03	2	M-2
DNA Replication, Recombination, and Repair, Nucleic Acid Metabolism, Small Molecule Biochemistry	Metabolism of adenosine	1.63E-02	2	M-2
Lipid Metabolism, Molecular Transport, Small Molecule Biochemistry	Localization of cholesterol	9.03E-03	2	M-2
Cell-To-Cell Signaling and Interaction, Cellular Growth and Proliferation, Hematological System Development and Function	Induction of Th2 cells	1.24E-02	2	M-2
Cellular Development, Hematological System Development and Function	Inactivation of macrophages	1.90E-03	2	M-2
Endocrine System Development and Function	Regulation of hypothalamic pituitary thyroid axis	1.90E-03	2	M-2
Cell Cycle, Hematological System Development and Function	Mitogenesis of T lymphocytes	2.06E-02	2	M-2
Cell-To-Cell Signaling and Interaction, Cellular Growth and Proliferation, Hematological System Development and Function	Suppression of helper T lymphocytes	1.24E-02	2	M-2
Cell-mediated Immune Response, Lymphoid Tissue Structure and Development	Frequency of Th1 cells	3.74E-03	2	M-2
Amino Acid Metabolism, Small Molecule Biochemistry	Translocation of L-amino acid	2.06E-02	2	M-2
Behavior	Writhing	3.74E-03	2	M-2
Energy Production, Lipid Metabolism, Small Molecule Biochemistry	Beta-oxidation of very long chain fatty acid	6.12E-03	2	M-2
Cell Morphology, Cellular Function and Maintenance	Autophagy of pancreatic cancer cell lines	1.24E-02	2	M-2
Digestive System Development and Function, Organ Morphology, Organismal Development	Length of colon	1.63E-02	2	M-2
Cell-mediated Immune Response, Hematopoiesis, Lymphoid Tissue Structure and Development	Frequency of pre-T lymphocytes	9.03E-03	2	M-2
Cellular Development, Cellular Growth and Proliferation, Hematological System Development and Function, Hematopoiesis, Lymphoid Tissue Structure and Development, Tissue Development	Differentiation of M2c macrophages	3.74E-03	2	M-2
Cellular Development, Cellular Growth and Proliferation, Embryonic Development, Hematopoiesis, Lymphoid Tissue Structure and Development, Organ Development, Organismal Development, Tissue Development	Development of type 3 innate lymphoid cells	3.74E-03	2	M-2
Cellular Movement, Hematological System Development and Function, Humoral Immune Response, Immune Cell Trafficking	Distribution of B lymphocytes	1.90E-03	2	M-2
Cell Death and Survival	Apoptosis of BMMC cells	2.06E-02	2	M-2
Cellular Function and Maintenance, Connective Tissue Development and Function, Skeletal and Muscular System Development and Function	Regulation of osteoblasts	1.63E-02	2	M-2

Cell Morphology	Elongation of breast cancer cell lines	3.74E-03	2	M-2
Carbohydrate Metabolism, Lipid Metabolism, Molecular Transport, Small Molecule Biochemistry	Quantity of phosphatidylinositol 3,5-diphosphate	1.24E-02	2	M-2
Cellular Assembly and Organization	Activation of lamellipodia	6.12E-03	2	M-2
Cellular Assembly and Organization, Nervous System Development and Function, Tissue Morphology	Density of synaptic vesicles	9.03E-03	2	M-2
Digestive System Development and Function	Formation of palate	9.03E-03	2	M-2
Cell-To-Cell Signaling and Interaction, Hematological System Development and Function	Priming of leukocyte cell lines	6.44E-04	2	M-2
Cell-To-Cell Signaling and Interaction, Connective Tissue Development and Function	Adhesion of synovial fibroblasts	9.03E-03	2	M-2
Organ Morphology, Reproductive System Development and Function	Quantity of atretic ovarian follicle	6.12E-03	2	M-2
Cellular Development, Cellular Growth and Proliferation, Hematological System Development and Function, Lymphoid Tissue Structure and Development	Proliferation of induced regulatory T-lymphocyte	1.63E-02	2	M-2
Carbohydrate Metabolism, Drug Metabolism, Molecular Transport, Small Molecule Biochemistry	Accumulation of doxorubicin	2.06E-02	2	M-2
Molecular Transport	Excretion of chloride	6.12E-03	2	M-2
Cellular Development, Cellular Growth and Proliferation, Hematological System Development and Function, Lymphoid Tissue Structure and Development	Arrest in proliferation of leukocytes	2.53E-02	2	M-2
Cardiovascular System Development and Function, Tissue Development	Activation of vascular endothelial tissue	2.06E-02	2	M-2
Cell Morphology, Organ Morphology, Skeletal and Muscular System Development and Function, Tissue Morphology	Morphology of sarcomere	2.06E-02	2	M-2
Cellular Development, Cellular Growth and Proliferation, Organ Development, Reproductive System Development and Function, Tissue Development, Tissue Morphology	Expansion of cumulus cells	2.06E-02	2	M-2
Lipid Metabolism, Small Molecule Biochemistry	Transmission of cholesterol	1.63E-02	2	M-2
Cell Death and Survival	Survival of plasmacytoid dendritic cells	6.12E-03	2	M-2
Cellular Development, Cellular Growth and Proliferation, Hematological System Development and Function, Hematopoiesis, Lymphoid Tissue Structure and Development, Tissue Development	Differentiation of macrophage-like cells	6.12E-03	2	M-2
Cellular Assembly and Organization	Fusion of transport vesicles	1.90E-03	2	M-2
Cellular Development, Cellular Growth and Proliferation, Embryonic Development, Hematological System Development and Function, Hematopoiesis, Humoral Immune Response, Lymphoid Tissue Structure and Development, Organ Development, Organismal Development, Tissue Development	Differentiation of naive B cells	1.63E-02	2	M-2
Cellular Development, Cellular Growth and Proliferation	Outgrowth of breast cancer cell lines	2.06E-02	2	M-2
Cell-To-Cell Signaling and Interaction	Response of bronchial epithelial cells	6.44E-04	2	M-2
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	Development of memory natural killer cells	6.44E-04	2	M-2
Cellular Development	Onset of differentiation of cells	1.63E-02	2	M-2
Cellular Compromise	Injury of kidney cell lines	3.74E-03	2	M-2
Lipid Metabolism, Molecular Transport, Small Molecule Biochemistry	Accumulation of lactosylceramide	9.03E-03	2	M-2
Cell-To-Cell Signaling and Interaction, Cellular Growth and Proliferation, Connective Tissue Development and Function	Stimulation of synovial fibroblasts	1.24E-02	2	M-2
Energy Production, Lipid Metabolism, Small Molecule Biochemistry	Beta-oxidation of lignoceric acid	9.03E-03	2	M-2
Cell Cycle, Hair and Skin Development and Function	G1/S phase transition of epidermal cells	9.03E-03	2	M-2
Cardiovascular System Development and Function, Embryonic Development, Organismal Development	Development of aortic arch	9.03E-03	2	M-2
Embryonic Development, Organismal Development, Tissue Morphology	Thickness of embryonic tissue	2.06E-02	2	M-2

Cell Death and Survival	Killing of Leishmania major	2.06E-02	2	M-2
Cell-To-Cell Signaling and Interaction, Cellular Assembly and Organization, Tissue Development	Deposition of fibronectin matrix	3.74E-03	2	M-2
Lipid Metabolism, Molecular Transport, Small Molecule Biochemistry	Accumulation of ganglioside GM3	9.03E-03	2	M-2
Cell-To-Cell Signaling and Interaction, Cellular Growth and Proliferation, Hematological System Development and Function	Suppression of bone marrow-derived dendritic cells	6.44E-04	2	M-2
Molecular Transport, Nucleic Acid Metabolism, Small Molecule Biochemistry, Vitamin and Mineral Metabolism	Transport of thiamine	1.90E-03	2	M-2
Molecular Transport, Nucleic Acid Metabolism, Small Molecule Biochemistry, Vitamin and Mineral Metabolism	Uptake of thiamine	1.90E-03	2	M-2
Cellular Development, Cellular Growth and Proliferation, Tissue Development	Proliferation of bronchial epithelial cells	1.24E-02	2	M-2
Lipid Metabolism, Molecular Transport, Small Molecule Biochemistry	Concentration of eicosapentenoic acid	9.03E-03	2	M-2
Lipid Metabolism, Molecular Transport, Small Molecule Biochemistry	Localization of fatty acid	3.74E-03	2	M-2
Cell Cycle, Hair and Skin Development and Function	G1 phase of keratinocytes	1.63E-02	2	M-2
Cell-To-Cell Signaling and Interaction	Response of lung cancer cell lines	2.06E-02	2	M-2
Cell-To-Cell Signaling and Interaction, Cellular Growth and Proliferation, Hematological System Development and Function	Induction of PBMCs	3.74E-03	2	M-2
Cell-To-Cell Signaling and Interaction, Cellular Growth and Proliferation, Hematological System Development and Function	Induction of naive T lymphocytes	6.12E-03	2	M-2
DNA Replication, Recombination, and Repair, Gene Expression	Demethylation of DNA	2.06E-02	2	M-2
Amino Acid Metabolism, Small Molecule Biochemistry	Translocation of glutamine family amino acid	2.06E-02	2	M-2
Cell-To-Cell Signaling and Interaction, Nervous System Development and Function	Firing of Purkinje cells	3.74E-03	2	M-2
Embryonic Development, Hair and Skin Development and Function, Organ Development, Organismal Development, Tissue Development	Re-epithelialization of skin	9.03E-03	2	M-2
Carbohydrate Metabolism, Lipid Metabolism, Small Molecule Biochemistry	Dephosphorylation of phosphatidylinositol-3,4,5-triphosphate	9.03E-03	2	M-2
Lipid Metabolism, Molecular Transport, Nucleic Acid Metabolism, Small Molecule Biochemistry	Transport of acyl-coenzyme A	3.74E-03	2	M-2
Cell Morphology	Polarization of macrophage cancer cell lines	2.06E-02	2	M-2
Lipid Metabolism, Molecular Transport, Small Molecule Biochemistry	Accumulation of glucosylceramide	1.24E-02	2	M-2
Protein Trafficking	Sorting of protein	1.24E-02	2	M-2
Cell Death and Survival	Anoikis of prostate cancer cell lines	9.03E-03	2	M-2
Cell-mediated Immune Response, Cellular Movement, Hematological System Development and Function, Immune Cell Trafficking	Distribution of T lymphocytes	3.74E-03	2	M-2
Cellular Assembly and Organization, Skeletal and Muscular System Development and Function, Tissue Development	Formation of myosin stress fibers	6.12E-03	2	M-2
Protein Trafficking	Recruitment of protein	9.03E-03	2	M-2
Cell Cycle, Cell-To-Cell Signaling and Interaction, Cellular Growth and Proliferation	Contact growth inhibition of kidney cancer cell lines	3.74E-03	2	M-2
Cellular Development, Cellular Growth and Proliferation, Hematological System Development and Function, Hematopoiesis, Lymphoid Tissue Structure and Development, Tissue Development	Generation of monocyte-derived dendritic cells	1.90E-03	2	M-2
Connective Tissue Development and Function, Tissue Development	Accumulation of visceral fat	1.90E-03	2	M-2
Cellular Development, Cellular Growth and Proliferation, Hematological System Development and Function, Humoral Immune Response, Lymphoid Tissue Structure and Development	Proliferation of memory B cells	1.24E-02	2	M-2
Tissue Morphology	Quantity of Staphylococcus aureus	3.74E-03	2	M-2
Cell Morphology, Cellular Assembly and Organization, Cellular Development, Cellular Function and Maintenance, Cellular Growth and Proliferation, Nervous System Development and Function, Organismal Development, Tissue Development	Sprouting of sensory neurons	3.74E-03	2	M-2

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	Differentiation of effector cytotoxic T lymphocytes	1.63E-02	2	M-2
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	Generation of Tr1 cells	9.03E-03	2	M-2
Cellular Movement, Hair and Skin Development and Function	Chemotaxis of skin cell lines	3.12E-03	2	M-3
Cellular Compromise	Damage of filaments	5.08E-03	2	M-3
Cellular Function and Maintenance, Hematological System Development and Function	Function of neutrophils	5.83E-03	2	M-3
Cell Cycle, Connective Tissue Development and Function	G2/M phase transition of fibroblast cell lines	1.61E-03	2	M-3
Cell Cycle	Delay in mitosis of cervical cancer cell lines	1.46E-02	2	M-3
Behavior	Fear conditioning	5.08E-03	2	M-3
Embryonic Development, Nervous System Development and Function, Tissue Development	Accumulation of neuroblasts	1.77E-04	2	M-3
Cellular Assembly and Organization	Generation of actin filaments	6.63E-03	2	M-3
Cellular Movement, Hematological System Development and Function, Immune Cell Trafficking	Arrest in cell rolling of leukocytes	7.47E-03	2	M-3
Embryonic Development, Nervous System Development and Function, Organ Development, Organismal Development, Tissue Development	Development of internal granular layer of olfactory bulb	3.52E-04	2	M-3
Organ Morphology, Organismal Development, Reproductive System Development and Function	Size of ovary	8.36E-03	2	M-3
Behavior	Vocalization	4.37E-03	2	M-3
Organ Morphology, Organismal Development, Reproductive System Development and Function	Enlargement of prostate gland	5.84E-04	2	M-3
Cellular Development, Nervous System Development and Function, Tissue Development	Maturation of dendritic spines	4.37E-03	2	M-3
Cell-To-Cell Signaling and Interaction	Adhesion of sarcoma cell lines	1.46E-02	2	M-3
Cellular Movement	Arrest in cell movement of myeloid cells	4.37E-03	2	M-3
Cell-To-Cell Signaling and Interaction, Nervous System Development and Function	Neurotransmission of intercellular junctions	1.46E-02	2	M-3
Cardiovascular System Development and Function, Tissue Morphology	Relaxation of mesenteric artery	3.72E-03	2	M-3
Hair and Skin Development and Function, Organ Morphology	Quantity of hair follicle	2.06E-03	2	M-3
Cardiovascular System Development and Function, Cell-To-Cell Signaling and Interaction, Cellular Assembly and Organization	Cell-cell adhesion of vascular endothelial cells	7.47E-03	2	M-3
Nervous System Development and Function	Remyelination	1.46E-02	2	M-3
Cellular Movement, Hematological System Development and Function, Immune Cell Trafficking	Cell rolling of mononuclear leukocytes	1.13E-02	2	M-3
Endocrine System Development and Function, Lipid Metabolism, Small Molecule Biochemistry, Vitamin and Mineral Metabolism	Synthesis of pregnenolone	1.03E-02	2	M-3
Embryonic Development, Organismal Development, Tissue Morphology	Fusion of chorion	3.72E-03	2	M-3
Small Molecule Biochemistry	Synthesis of catecholamine	1.46E-02	2	M-3
Cardiovascular System Development and Function, Cellular Movement	Chemotaxis of endothelial cell lines	1.03E-02	2	M-3
Cell Morphology	Length of plasma membrane projections	5.83E-03	2	M-3
Embryonic Development, Organismal Development, Tissue Development	Development of ependymal layer	1.77E-04	2	M-3
Tissue Development	Formation of lumen	6.63E-03	2	M-3

Cellular Development, Cellular Growth and Proliferation, Nervous System Development and Function, Organ Development, Tissue Development	Outgrowth of dorsal root ganglion cells	3.52E-04	2	M-3
Cellular Movement, Nervous System Development and Function	Migration of oligodendrocyte precursor cells	4.37E-03	2	M-3
Embryonic Development, Organismal Development, Tissue Morphology	Fusion of allantois	3.72E-03	2	M-3
Embryonic Development, Tissue Development	Proliferation of embryonic tissue	7.47E-03	2	M-3
Embryonic Development, Organismal Development, Tissue Development	Formation of rostral migratory stream	3.52E-04	2	M-3
Cell Cycle	Metaphase of tumor cell lines	1.61E-03	2	M-3
Cell Cycle	Delay in cell cycle progression of tumor cell lines	1.13E-02	2	M-3
Cell-To-Cell Signaling and Interaction, Cellular Movement	Recruitment of leukemia cell lines	5.84E-04	2	M-3
Behavior	Nest building behavior	3.52E-04	2	M-3
Cellular Development	Differentiation of pulmonary alveolus	8.36E-03	2	M-3
Cell Cycle, Gene Expression	Binding of p53 consensus binding site	1.03E-02	2	M-3
Cell Morphology, Organ Morphology, Skeletal and Muscular System Development and Function, Tissue Morphology	Morphology of smooth muscle cells	7.47E-03	2	M-3
Carbohydrate Metabolism, Lipid Metabolism, Molecular Transport, Small Molecule Biochemistry	Concentration of phosphatidic acid	2.04E-02	2	M-5
Lipid Metabolism, Molecular Transport, Small Molecule Biochemistry	Accumulation of triacylglycerol	7.79E-03	2	M-5
Cell Death and Survival	Cytolysis	2.93E-02	2	M-5
Cell Death and Survival	Quantity of apoptotic cells	6.38E-03	2	M-5
Cellular Development, Hematological System Development and Function, Lymphoid Tissue Structure and Development	Maturation of leukocytes	4.33E-02	2	M-5
Cell Death and Survival	Cell death of rhabdomyosarcoma cell lines	5.79E-04	2	M-5
Cell-To-Cell Signaling and Interaction, Nervous System Development and Function	Long-term potentiation	3.01E-02	2	M-5
Molecular Transport, Protein Trafficking	Secretion of protein	1.67E-03	2	M-5
Cell Death and Survival	Killing of cells	4.03E-02	2	M-5
Cell Death and Survival, Cellular Compromise	Cytotoxicity of cells	3.48E-02	2	M-5
Cellular Development, Cellular Growth and Proliferation, Hematological System Development and Function, Lymphoid Tissue Structure and Development	Expansion of mononuclear leukocytes	2.74E-02	2	M-5
Embryonic Development, Hematological System Development and Function, Lymphoid Tissue Structure and Development, Organ Development, Organismal Development, Tissue Development	Formation of lymphoid organ	2.65E-02	2	M-5
Behavior	Motor learning	5.42E-04	2	M-4
Carbohydrate Metabolism	Binding of polysaccharide	5.60E-03	2	M-4

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