Table S19 - IPA biological functions unique to EGA4 super-group

Categories	Functions Annotation	p-value[a]	Z-score[b]	Activation State	Total DEGs	Sub-Group
Cellular Movement	Cell movement of blood cells	1.97E-04	1.856		25	EGA4-1
Cellular Movement, Hematological System Development and Function, Immune Cell Trafficking	Cell movement of leukocytes	4.54E-04	1.87		22	EGA4-1
Cell-To-Cell Signaling and Interaction, Hematological System Development and Function	Activation of blood cells	6.80E-03	2.93	Activated	16	EGA4-1
Lipid Metabolism, Small Molecule Biochemistry	Fatty acid metabolism	1.66E-04	2.681	Activated	16	EGA4-1
Cellular Movement	Cell movement of myeloid cells	1.23E-03	1.202		16	EGA4-1
Cellular Movement	Cellular infiltration	3.05E-04	1.05		16	EGA4-1
Lymphoid Tissue Structure and Development, Tissue Morphology	Quantity of lymphatic system cells	4.47E-03	1.343		15	EGA4-1
Hematological System Development and Function, Tissue Morphology	Quantity of mononuclear leukocytes	3.21E-03	1.17		15	EGA4-1
Cellular Movement	Cellular infiltration by blood cells	2.14E-04	1.116		15	EGA4-1
Hematological System Development and Function, Lymphoid Tissue Structure and Development, Tissue Morphology	Quantity of lymphocytes	5.32E-03	1.628		14	EGA4-1
Cellular Movement, Hematological System Development and Function, Immune Cell Trafficking	Cellular infiltration by leukocytes	5.93E-04	1.446		14	EGA4-1
Cell-To-Cell Signaling and Interaction, Cellular Growth and Proliferation	Stimulation of cells	2.18E-04	2.316	Activated	12	EGA4-1
Skeletal and Muscular System Development and Function	Morphology of muscle	2.46E-04			12	EGA4-1
Carbohydrate Metabolism	Metabolism of carbohydrate	7.40E-03	3.095	Activated	11	EGA4-1
Connective Tissue Development and Function, Skeletal and Muscular System Development and Function, Tissue Development	Morphology of bone	1.51E-04			11	EGA4-1
Cell Morphology, Nervous System Development and Function, Tissue Morphology	Morphology of neurons	4.33E-03			11	EGA4-1
Carbohydrate Metabolism	Synthesis of carbohydrate	6.56E-03	3.089	Activated	10	EGA4-1
Cell-To-Cell Signaling and Interaction, Hematological System Development and Function	Activation of myeloid cells	4.07E-03	2.34	Activated	10	EGA4-1
Molecular Transport	Release of metal	1.20E-04	2.002	Activated	10	EGA4-1
Cardiovascular System Development and Function, Cellular Movement	Cell movement of endothelial cells	6.89E-03	1.704		10	EGA4-1
Cell Morphology, Organ Morphology, Skeletal and Muscular System Development and Function, Tissue Morphology	Morphology of muscle cells	9.62E-04			10	EGA4-1
Cardiovascular System Development and Function, Cellular Movement	Cell movement of endothelial cells	1.62E-04			10	EGA4-2
Connective Tissue Development and Function, Tissue Morphology	Quantity of connective tissue cells	1.64E-04	1.554		9	EGA4-1
Hematological System Development and Function, Tissue Morphology	Quantity of antigen presenting cells	1.79E-03	-0.513		9	EGA4-1
Post-Translational Modification	Phosphorylation of protein	5.00E-03	1.474		8	EGA4-1
Cellular Movement	Chemotaxis of myeloid cells	2.57E-03	1.302		8	EGA4-1
Cardiovascular System Development and Function, Cell-To-Cell Signaling and Interaction	Binding of endothelial cells	1.94E-03	0.7		8	EGA4-1
Connective Tissue Development and Function, Skeletal and Muscular System Development and Function, Tissue Development	Size of bone	9.58E-04			8	EGA4-1
Connective Tissue Development and Function, Skeletal and Muscular System Development and Function, Tissue Morphology	Quantity of bone cells	1.72E-04	1.969	Activated	7	EGA4-1
Lipid Metabolism, Molecular Transport, Small Molecule Biochemistry	Quantity of glycosphingolipid	1.13E-04	1.284		7	EGA4-1
Cell Signaling, Post-Translational Modification	Tyrosine phosphorylation of protein	4.95E-03	1.214		7	EGA4-1
Cellular Assembly and Organization	Quantity of filaments	7.27E-04	-1.085		7	EGA4-1

Carbohydrate Metabolism	Accumulation of carbohydrate	1.20E-03	-0.789		7	EGA4-1
Molecular Transport	Transport of metal	1.62E-03	0.625		7	EGA4-1
Cellular Movement, Hair and Skin Development and Function	Cell movement of epithelial cell lines	9.40E-04	0.625		7	EGA4-1
Cellular Movement, Hematological System Development and Function, Immune Cell Trafficking	Cellular infiltration by lymphocytes	2.20E-03	0.258		7	EGA4-1
Cell-To-Cell Signaling and Interaction	Signaling of cells	4.51E-04	0.115		7	EGA4-1
Lipid Metabolism, Small Molecule Biochemistry, Vitamin and Mineral Metabolism	Steroid metabolism	1.62E-03	0.099		7	EGA4-1
Organ Morphology	Morphology of gland	3.01E-03			7	EGA4-1
Cell Morphology	Morphology of cellular protrusions	5.58E-03			7	EGA4-1
Cellular Development	Differentiation of central nervous system cells	7.27E-04	2.414	Activated	6	EGA4-1
Cellular Movement	Cell movement of hepatoma cell lines	8.34E-04	2.375	Activated	6	EGA4-1
Cellular Assembly and Organization, Cellular Function and Maintenance, Nervous System Development and Function, Tissue Morphology	Quantity of neurites	2.42E-04	2.207	Activated	6	EGA4-1
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	Axonogenesis	3.63E-03	1.861		6	EGA4-1
Cell Death and Survival	Cell viability of central nervous system cells	1.89E-03	1.455		6	EGA4-1
Molecular Transport	Transport of ion	3.09E-03	1.452		6	EGA4-1
Embryonic Development, Organismal Development, Skeletal and Muscular System Development and Function	Limb development	4.92E-03	1.214		6	EGA4-1
Cell Death and Survival	Cell viability of connective tissue cells	4.11E-03	1.185		6	EGA4-1
Cellular Movement	Migration of prostate cancer cell lines	1.39E-03	1.165		6	EGA4-1
Cell Death and Survival	Cell death of eye cells	1.20E-04	0.97		6	EGA4-1
Cellular Growth and Proliferation, Nervous System Development and Function, Organ Development	Proliferation of brain cells	1.28E-04	-0.006		6	EGA4-1
Cardiovascular System Development and Function	Morphology of vessel	1.45E-03			6	EGA4-1
Cell Morphology	Polarization of cells	1.91E-03			6	EGA4-2
Hematological System Development and Function, Lymphoid Tissue Structure and Development, Tissue Morphology	Quantity of lymphocytes	8.93E-03		Inhibited	6	EGA4-3
Connective Tissue Development and Function, Tissue Morphology	Quantity of connective tissue cells	1.79E-05			6	EGA4-3
Cellular Movement, Hematological System Development and Function, Immune Cell Trafficking	Cell movement of granulocytes	1.34E-03			6	EGA4-3
Carbohydrate Metabolism, Small Molecule Biochemistry	Synthesis of D-glucose	2.20E-03	2.219	Activated	5	EGA4-1
Molecular Transport	Transport of carboxylic acid	1.82E-03	2.219	Activated	5	EGA4-1
Cellular Development	Differentiation of brain cells	5.66E-04	2.132	Activated	5	EGA4-1
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	Branching of axons	1.82E-03	1.871		5	EGA4-1
Molecular Transport	Transport of cation	3.66E-03	1.387		5	EGA4-1
Lipid Metabolism, Molecular Transport, Small Molecule Biochemistry	Quantity of glycosylceramide	1.67E-06	1.342		5	EGA4-1
Cell-To-Cell Signaling and Interaction, Connective Tissue Development and Function	Binding of fibroblast cell lines	5.33E-03	1.154		5	EGA4-1
Cell Death and Survival	Cell viability of brain cells	4.44E-03	1.126		5	EGA4-1
Cellular Assembly and Organization	Quantity of actin filaments	1.03E-03	-1.067		5	EGA4-1
Free Radical Scavenging, Small Molecule Biochemistry	Metabolism of hydrogen peroxide	5.33E-03	1.021		5	EGA4-1

Skeletal and Muscular System Development and Function	Quantity of muscle	4.96E-03	0.817		5	EGA4-1
Carbohydrate Metabolism	Accumulation of polysaccharide	2.39E-04	-0.669		5	EGA4-1
Cell Death and Survival	Cell death of retinal cells	5.66E-04	0.651		5	EGA4-1
Cellular Growth and Proliferation	Colony formation of breast cancer cell lines	2.41E-03	0.447		5	EGA4-1
Nervous System Development and Function, Organ Morphology, Tissue Morphology	Quantity of brain cells	1.28E-03	0.44		5	EGA4-1
Cell Death and Survival	Apoptosis of pheochromocytoma cell lines	1.91E-03	-0.407		5	EGA4-1
Cardiovascular System Development and Function, Tissue Morphology	Morphology of blood vessel	3.66E-03			5	EGA4-1
Digestive System Development and Function, Organ Morphology, Organismal Development	Morphology of pancreas	6.85E-04			5	EGA4-1
Cell Morphology	Area of cells	1.15E-03			5	EGA4-1
Cellular Movement	Migration of prostate cancer cell lines	8.79E-04			5	EGA4-2
Cellular Movement	Cell movement of sarcoma cell lines	6.32E-04		Inhibited	5	EGA4-2
Cardiovascular System Development and Function, Cellular Movement	Migration of vascular endothelial cells	7.00E-03		Inhibited	5	EGA4-2
Cellular Movement	Chemotaxis of tumor cell lines	2.98E-03		Inhibited	5	EGA4-2
Cell Morphology, Cellular Assembly and Organization, Cellular Function and Maintenance	Extension of cellular protrusions	3.72E-03			5	EGA4-2
Cellular Development, Cellular Growth and Proliferation, Embryonic Development, Organ Development, Organismal Development, Skeletal and Muscular System Development and Function, Tissue Development	Formation of muscle cells	1.40E-03			5	EGA4-2
Connective Tissue Development and Function, Skeletal and Muscular System Development and Function, Tissue Morphology	Quantity of bone cells	1.87E-05			5	EGA4-3
Cell-To-Cell Signaling and Interaction, Cellular Movement	Recruitment of cells	6.62E-03		Inhibited	5	EGA4-3
Cardiovascular System Development and Function, Organismal Development, Tissue Morphology	Quantity of blood vessel	6.15E-03	1.982	Activated	4	EGA4-1
Cellular Development, Cellular Growth and Proliferation, Connective Tissue Development and Function, Tissue Development	Proliferation of chondrocytes	7.66E-03	1.955		4	EGA4-1
Embryonic Development, Organismal Development, Skeletal and Muscular System Development and Function	Growth of limb	2.27E-04	1.192		4	EGA4-1
Cellular Assembly and Organization	Fusion of vesicles	2.83E-03	1.188		4	EGA4-1
Cellular Development, Nervous System Development and Function	Differentiation of oligodendrocytes	5.09E-03	1.154		4	EGA4-1
Cellular Assembly and Organization, Cellular Function and Maintenance, Organ Morphology, Skeletal and Muscular System Development and Function, Tissue Morphology	Quantity of smooth muscle cells	7.85E-04	1.131		4	EGA4-1
Cellular Function and Maintenance, Small Molecule Biochemistry	Homeostasis of ion	4.16E-03	1.067		4	EGA4-1
Lipid Metabolism, Molecular Transport, Small Molecule Biochemistry	Accumulation of glycosphingolipid	4.02E-04	-0.961		4	EGA4-1
Hematological System Development and Function, Lymphoid Tissue Structure and Development, Tissue Morphology	Quantity of CD4+ T-lymphocytes	1.70E-03	-0.943		4	EGA4-1
Lipid Metabolism, Molecular Transport, Small Molecule Biochemistry	Quantity of cerebroside	9.79E-06	0.832		4	EGA4-1
Cell Death and Survival	Apoptosis of bone marrow cell lines	4.16E-03	0.762		4	EGA4-1
Cell-To-Cell Signaling and Interaction, Cellular Growth and Proliferation, Nervous System Development and Function	Excitation of neurons	5.34E-03			4	EGA4-1

Connective Tissue Development and Function, Skeletal and Muscular System Development and Function, Tissue Development	Morphology of trabecular bone	7.66E-03	4	EGA4-1
Lipid Metabolism, Small Molecule Biochemistry, Vitamin and Mineral Metabolism	Metabolism of cholesterol	2.66E-03	4	EGA4-1
Cell-To-Cell Signaling and Interaction, Embryonic Development	Binding of embryonic cell lines	7.66E-03	4	EGA4-1
Digestive System Development and Function, Organ Morphology, Organismal Development	Size of pancreas	1.18E-03	4	EGA4-1
Cell-To-Cell Signaling and Interaction, Connective Tissue Development and Function	Binding of fibroblasts	4.85E-03	4	EGA4-1
Cell Death and Survival, Skeletal and Muscular System Development and Function	Cell viability of muscle cells	3.00E-03	4	EGA4-1
Behavior	Anxiety-like behavior	4.38E-03	4	EGA4-1
Organ Morphology, Skeletal and Muscular System Development and Function	Morphology of skeletal muscle	3.17E-03	4	EGA4-1
Skeletal and Muscular System Development and Function	Function of muscle	2.19E-02	4	EGA4-2
Cellular Movement	Cell movement of fibrosarcoma cell lines	2.65E-04	4	EGA4-2
Reproductive System Development and Function	Fertility	2.47E-02	4	EGA4-2
Cardiovascular System Development and Function, Organ Morphology, Organismal Development	Size of heart	2.68E-03	4	EGA4-2
Skeletal and Muscular System Development and Function	Size of muscle	5.78E-03	4	EGA4-2
Cell Morphology, Cellular Compromise	Collapse of growth cone	9.76E-04	4	EGA4-2
Cellular Movement	Cell movement of lung cancer cell lines	1.06E-02	4	EGA4-2
Cardiovascular System Development and Function, Cell-To-Cell Signaling and Interaction	Binding of endothelial cells	3.60E-03	4	EGA4-3
Cellular Development, Connective Tissue Development and Function, Tissue Development	Differentiation of bone cells	7.49E-03	4	EGA4-3
Cellular Development, Cellular Growth and Proliferation, Digestive System Development and Function, Hepatic System Development and Function, Organ Development	Proliferation of liver cells	2.25E-03	4	EGA4-3
Cellular Movement, Hematological System Development and Function, Immune Cell Trafficking	Cellular infiltration by granulocytes	6.32E-03	4	EGA4-3
Organ Development, Organ Morphology, Skeletal and Muscular System Development and Function	Mass of skeletal muscle	6.83E-03	3	EGA4-1
Embryonic Development, Nervous System Development and Function, Organ Development, Organismal Development, Tissue Development	Neurogenesis of hippocampus	2.30E-03	3	EGA4-1
Lipid Metabolism, Small Molecule Biochemistry	Distribution of lipid	4.73E-03	3	EGA4-1
Cell Morphology, Organ Morphology, Skeletal and Muscular System Development and Function, Tissue Morphology	Area of muscle cells	2.06E-03	3	EGA4-1
Cell Death and Survival, Connective Tissue Development and Function, Skeletal and Muscular System Development and Function	Survival of osteoclasts	1.65E-03	3	EGA4-1
Cell-To-Cell Signaling and Interaction, Cellular Assembly and Organization	Stabilization of intercellular junctions	8.45E-04	3	EGA4-1
Free Radical Scavenging, Small Molecule Biochemistry	Catabolism of hydrogen peroxide	1.72E-04	3	EGA4-1
Cell Morphology	Size of leukocytes	4.73E-03	3	EGA4-1
Cell Morphology	Diameter of cells	2.23E-04	3	EGA4-1
Lipid Metabolism, Small Molecule Biochemistry	Binding of phospholipid	2.06E-03	3	EGA4-1
Tissue Morphology	Modification of connective tissue	1.65E-03	3	EGA4-1
Carbohydrate Metabolism, Molecular Transport	Accumulation of glycogen	3.69E-03	3	EGA4-1
Cell Cycle, Connective Tissue Development and Function	Mitogenesis of fibroblast cell lines	4.37E-03	3	EGA4-1
Tissue Morphology	Density of macrophages	2.84E-05	3	EGA4-1

Cell-To-Cell Signaling and Interaction	Attachment of connective tissue cells	9.79E-04	3	EGA4-1
Cell-To-Cell Signaling and Interaction, Connective Tissue Development and Function, Skeletal and Muscular System Development and Function	Activation of osteoblasts	1.46E-03	3	EGA4-1
Connective Tissue Development and Function, Skeletal and Muscular System Development and Function, Tissue Morphology	Quantity of osteoblasts	7.30E-03	3	EGA4-1
Cellular Development, Cellular Growth and Proliferation, Embryonic Development	Generation of embryonic cell lines	6.37E-03	3	EGA4-1
Cell Signaling, Cellular Function and Maintenance, Small Molecule Biochemistry, Vitamin and Mineral Metabolism	Homeostasis of Ca2+	6.37E-03	3	EGA4-1
Cellular Growth and Proliferation, Nervous System Development and Function, Organ Development	Proliferation of cerebral cortex cells	8.45E-04	3	EGA4-1
Connective Tissue Development and Function, Skeletal and Muscular System Development and Function, Tissue Development, Tissue Morphology	Thickness of cortical bone	2.54E-03	3	EGA4-1
Lipid Metabolism, Molecular Transport, Small Molecule Biochemistry	Quantity of glucosylceramide	6.72E-05	3	EGA4-1
Cell-To-Cell Signaling and Interaction	Binding of cell surface	4.02E-03	3	EGA4-1
Cell-To-Cell Signaling and Interaction, Cellular Assembly and Organization, Nervous System Development and Function, Tissue Morphology	Density of synapse	5.94E-03	3	EGA4-1
Organismal Functions, Tissue Morphology	Healing of epithelial tissue	3.49E-04	3	EGA4-1
Cell-To-Cell Signaling and Interaction, Skeletal and Muscular System Development and Function	Adhesion of smooth muscle cells	3.49E-04	3	EGA4-1
Cell Morphology	Shape change of endothelial cell lines	1.13E-03	3	EGA4-1
Cell-To-Cell Signaling and Interaction, Cellular Growth and Proliferation	Stimulation of brain cells	3.09E-03	3	EGA4-1
Cellular Compromise	Calcification of cells	6.13E-04	3	EGA4-1
Connective Tissue Development and Function, Embryonic Development, Organ Development, Organismal Development, Skeletal and Muscular System Development and Function, Tissue Development	Growth of metatarsal bone	1.72E-04	3	EGA4-1
Digestive System Development and Function, Organ Morphology, Organismal Development	Size of islets of Langerhans	6.83E-03	3	EGA4-1
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	Branching of axons	1.61E-02	3	EGA4-2
Cell Death and Survival	Cell death of endothelial cell lines	5.02E-03	3	EGA4-2
Cellular Development, Cellular Growth and Proliferation, Embryonic Development, Organ Development, Organismal Development, Skeletal and Muscular System Development and Function, Tissue Development	Myogenesis of myotube	4.14E-03	3	EGA4-2
Cardiovascular System Development and Function	Morphogenesis of cardiovascular system	5.02E-03	3	EGA4-2
Cell Morphology, Renal and Urological System Development and Function	Shape change of kidney cell lines	6.01E-03	3	EGA4-2
Organismal Development	Quantity of vessel	1.35E-02	3	EGA4-2
Cell-To-Cell Signaling and Interaction	Detachment of cells	1.71E-02	3	EGA4-2
Cell-To-Cell Signaling and Interaction, Reproductive System Development and Function	Binding of gonadal cell lines	1.00E-02	3	EGA4-2
Cell Morphology	Shape change of epithelial cell lines	8.18E-04	3	EGA4-2
Organ Morphology, Skeletal and Muscular System Development and Function, Tissue Morphology	Quantity of muscle cells	2.17E-02	3	EGA4-2
Cell Cycle	Replication of cells	1.31E-02	3	EGA4-2

Cellular Movement	Cell movement of neuroglia	2.17E-02	3	EGA4-2
Cellular Movement, Hematological System Development and Function, Immune Cell Trafficking	Transmigration of lymphocytes	3.35E-03	3	EGA4-2
Cell Death and Survival	Anoikis of carcinoma cell lines	9.88E-05	3	EGA4-2
Carbohydrate Metabolism	Binding of carbohydrate	1.61E-02	3	EGA4-2
Cellular Assembly and Organization	Quantity of filaments	8.23E-03	3	EGA4-3
Cardiovascular System Development and Function, Tissue Morphology	Morphology of blood vessel	2.96E-03	3	EGA4-3
Connective Tissue Development and Function, Skeletal and Muscular System Development and Function, Tissue Morphology	Quantity of osteoblasts	1.89E-04	3	EGA4-3
Cell Morphology	Area of cells	1.40E-03	3	EGA4-3
Cellular Movement	Cell movement of sarcoma cell lines	3.89E-03	3	EGA4-3
Cardiovascular System Development and Function, Cellular Development, Cellular Growth and Proliferation, Connective Tissue Development and Function, Digestive System Development and Function, Hepatic System Development and Function, Organ Development, Organismal Development, Tissue Development	Proliferation of hepatic stellate cells	3.98E-04	3	EGA4-3
Cell Morphology, Connective Tissue Development and Function, Tissue Morphology	Size of connective tissue cells	2.45E-03	3	EGA4-3
Gene Expression	Expression of mRNA	1.26E-03	3	EGA4-3
Cell Death and Survival, Nervous System Development and Function	Cell viability of neuroglia	4.43E-04	3	EGA4-3
Cellular Development, 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 bone marrow cells	9.75E-03	3	EGA4-3
Cardiovascular System Development and Function, Cellular Movement	Cell movement of endothelial cell lines	5.42E-03	3	EGA4-3
Cellular Development, Cellular Growth and Proliferation	Cell proliferation of bone cancer cell lines	5.76E-03	3	EGA4-3
Cell Cycle, Gene Expression	Binding of AP1 consensus site	5.70E-04	3	EGA4-3
Nervous System Development and Function	Myelination	5.31E-03	3	EGA4-3
Cell-To-Cell Signaling and Interaction	Adhesion of leukemia cell lines	2.96E-03	3	EGA4-3
Cellular Development, Connective Tissue Development and Function, Skeletal and Muscular System Development and Function, Tissue Development	Differentiation of osteoblasts	9.59E-03	3	EGA4-3
Cell Morphology, Organ Morphology, Renal and Urological System Development and Function	Morphology of mesangial cells	1.30E-03	2	EGA4-1
Skeletal and Muscular System Development and Function, Tissue Development	Synthesis of cartilage matrix	5.52E-03	2	EGA4-1
Lipid Metabolism, Molecular Transport, Small Molecule Biochemistry	Accumulation of ganglioside	5.52E-03	2	EGA4-1
Cellular Movement	Dissemination of prostate cancer cell lines	1.30E-03	2	EGA4-1
Lipid Metabolism, Molecular Transport, Small Molecule Biochemistry	Release of cholesterol	6.49E-03	2	EGA4-1
Auditory and Vestibular System Development and Function, Embryonic Development, Organ Development, Organismal Development, Tissue Development	Formation of cochlear duct	6.49E-03	2	EGA4-1
Cellular Development, Cellular Growth and Proliferation, Connective Tissue Development and Function, Skeletal and Muscular System Development and Function, Tissue Development	Development of chondrocytes	7.52E-03	2	EGA4-1

Cell-To-Cell Signaling and Interaction, Hematological System Development and Function	Response of Th17 cells	3.07E-03	2	EGA4-1
Cellular Movement	Migration of multiple myeloma cells	8.74E-04	2	EGA4-1
Gene Expression	Inhibition of mRNA	3.07E-03	2	EGA4-1
Cellular Assembly and Organization, Cellular Function and Maintenance, Cellular Movement	Movement of actin filaments	8.74E-04	2	EGA4-1
Cellular Development, Cellular Growth and Proliferation, Endocrine System Development and Function, Nervous System Development and Function, Organ Development	Proliferation of anterior pituitary cells	3.81E-03	2	EGA4-1
Cell-To-Cell Signaling and Interaction	Adhesion of neuroglia	6.49E-03	2	EGA4-1
Cardiovascular System Development and Function, Cell Morphology, Skeletal and Muscular System Development and Function	Relengthening of cardiomyocytes	8.91E-05	2	EGA4-1
Cellular Development, Cellular Growth and Proliferation, Connective Tissue Development and Function, Skeletal and Muscular System Development and Function, Tissue Development	Chondrogenesis of fibroblast cell lines	8.74E-04	2	EGA4-1
Molecular Transport, Nucleic Acid Metabolism, Small Molecule Biochemistry	Transport of rosuvastatin	2.40E-03	2	EGA4-1
Cellular Movement	Invasion of myeloma cell lines	2.66E-04	2	EGA4-1
Cellular Function and Maintenance	Homeostasis of neurons	8.74E-04	2	EGA4-1
Cellular Growth and Proliferation, Connective Tissue Development and Function	Proliferation of stromal cell lines	2.66E-04	2	EGA4-1
Cellular Development, Cellular Growth and Proliferation, Connective Tissue Development and Function, Embryonic Development, Skeletal and Muscular System Development and Function, Tissue Development	Chondrogenesis of embryonic cell lines	1.30E-03	2	EGA4-1
Cell Morphology, Cellular Compromise	Vacuolation of epithelial cells	8.74E-04	2	EGA4-1
Cell Death and Survival	Pyknosis	1.81E-03	2	EGA4-1
Tissue Morphology	Thickening of basement membrane	3.81E-03	2	EGA4-1
Free Radical Scavenging, Molecular Transport, Small Molecule Biochemistry	Release of hydrogen peroxide	4.63E-03	2	EGA4-1
Lipid Metabolism, Small Molecule Biochemistry	Recruitment of phospholipid	2.66E-04	2	EGA4-1
Behavior	Active avoidance response	2.66E-04	2	EGA4-1
Organ Development, Organ Morphology, Skeletal and Muscular System Development and Function	Mass of extensor muscle	4.63E-03	2	EGA4-1
Cellular Development, Cellular Growth and Proliferation, Embryonic Development, Nervous System Development and Function, Organ Development, Organismal Development, Tissue Development	Neurogenesis of brain cells	6.49E-03	2	EGA4-1
Nervous System Development and Function	Neuroprotection of tumor cell lines	2.40E-03	2	EGA4-1
Cell Death and Survival, Skeletal and Muscular System Development and Function	Cell viability of vascular smooth muscle cells	6.49E-03	2	EGA4-1
Tissue Morphology	Density of microglia	2.66E-04	2	EGA4-1
Cellular Assembly and Organization	Rearrangement of actin stress fibers	1.30E-03	2	EGA4-1
Cellular Movement	Migration of endometrial cancer cell lines	4.63E-03	2	EGA4-1
Connective Tissue Development and Function, Tissue Development, Tissue Morphology	Regeneration of bone	4.63E-03	2	EGA4-1
Cell Cycle	Mitogenesis of central nervous system cells	3.07E-03	2	EGA4-1
Cell Morphology, Organ Morphology, Skeletal and Muscular System Development and Function, Tissue Morphology	Diameter of myofiber	1.81E-03	2	EGA4-1
Lipid Metabolism, Molecular Transport, Small Molecule Biochemistry	Quantity of sulfatides	5.28E-04	2	EGA4-1

Cellular Development, Cellular Growth and Proliferation, Embryonic Development, Nervous System Development and Function, Organismal Development, Tissue Morphology	Quantity of neuroblasts	5.52E-03	2	EGA4-1
Connective Tissue Development and Function, Skeletal and Muscular System Development and Function, Tissue Development, Tissue Morphology	Size of medullary cavity	2.66E-04	2	EGA4-1
Cardiovascular System Development and Function, Cell Morphology, Cellular Movement	Cell spreading of endothelial cell lines	4.63E-03	2	EGA4-1
Lipid Metabolism, Small Molecule Biochemistry	Binding of cholesterol	5.28E-04	2	EGA4-1
Lipid Metabolism, Molecular Transport, Small Molecule Biochemistry	Quantity of ganglioside GD3	1.81E-03	2	EGA4-1
Nervous System Development and Function, Organ Morphology, Organismal Development	Volume of cerebrum	1.81E-03	2	EGA4-1
Cellular Compromise	Damage of tumor cell lines	3.81E-03	2	EGA4-1
Cell-To-Cell Signaling and Interaction, Cellular Growth and Proliferation, Hematological System Development and Function, Hematopoiesis	Stimulation of red blood cells	4.63E-03	2	EGA4-1
Cellular Assembly and Organization	Aggregation of filaments	4.63E-03	2	EGA4-1
Cellular Movement	Movement of endocrine cell lines	6.49E-03	2	EGA4-1
Connective Tissue Development and Function, Skeletal and Muscular System Development and Function, Tissue Development	Surface area of bone	5.52E-03	2	EGA4-1
Cellular Growth and Proliferation, Nervous System Development and Function, Organ Development	Proliferation of hippocampal cells	1.81E-03	2	EGA4-1
Carbohydrate Metabolism, Molecular Transport, Small Molecule Biochemistry	Deposition of proteoglycan	8.74E-04	2	EGA4-1
Embryonic Development	Regression of embryonic tissue	4.63E-03	2	EGA4-1
Carbohydrate Metabolism	Storage of glycogen	6.49E-03	2	EGA4-1
Cellular Movement	Invasion of lymphoma cell lines	4.63E-03	2	EGA4-1
Cell Death and Survival, Cellular Compromise, Nervous System Development and Function	Cytotoxicity of neurons	6.49E-03	2	EGA4-1
Cellular Development, Nervous System Development and Function, Tissue Development	Differentiation of cholinergic neurons	5.52E-03	2	EGA4-1
Lipid Metabolism, Molecular Transport, Small Molecule Biochemistry	Distribution of cholesterol	4.63E-03	2	EGA4-1
Behavior, Nervous System Development and Function	Context memory	3.07E-03	2	EGA4-1
Energy Production, Lipid Metabolism, Small Molecule Biochemistry	Oxidation of cholesterol	1.30E-03	2	EGA4-1
Cell-To-Cell Signaling and Interaction, Cellular Growth and Proliferation, Connective Tissue Development and Function	Stimulation of chondrocytes	5.28E-04	2	EGA4-1
Cell Cycle	Mitogenesis of neuroglia	3.07E-03	2	EGA4-1
Cell Morphology, Cellular Function and Maintenance, Organ Morphology, Skeletal and Muscular System Development and Function, Tissue Morphology	Length of muscle cells	3.81E-03	2	EGA4-1
Cellular Development	Differentiation of stromal cell lines	6.49E-03	2	EGA4-1
Cell Morphology	Morphology of prostate cell lines	2.40E-03	2	EGA4-1
Cardiovascular System Development and Function, Cell Morphology, Organ Development, Skeletal and Muscular System Development and Function	Shortening of cardiomyocytes	5.52E-03	2	EGA4-1
Carbohydrate Metabolism, Lipid Metabolism, Small Molecule Biochemistry	Binding of phosphatidic acid	9.77E-03	2	EGA4-2
Embryonic Development, Tissue Morphology	Structural integrity of Reichert's membrane	3.29E-05	2	EGA4-2

Cardiovascular System Development and Function, Cell Morphology, Embryonic Development, Organ Development, Organ Morphology, Organismal Development, Skeletal and Muscular System Development and Function, Tissue Development, Tissue Morphology	Area of cardiomyocytes	2.86E-03	2	EGA4-2
Cardiovascular System Development and Function, Embryonic Development, Organ Development, Organ Morphology, Organismal Development, Tissue Development	Morphogenesis of heart	3.74E-03	2	EGA4-2
Cell-To-Cell Signaling and Interaction, Cellular Assembly and Organization, Cellular Function and Maintenance, Tissue Development	Formation of fibronectin matrix	2.86E-03	2	EGA4-2
Cardiovascular System Development and Function, Embryonic Development, Organ Development, Organismal Development, Tissue Development	Formation of heart ventricle	1.37E-02	2	EGA4-2
Carbohydrate Metabolism, Lipid Metabolism, Small Molecule Biochemistry	Phosphorylation of phosphatidic acid	4.23E-03	2	EGA4-2
Cellular Movement	Haptotaxis of cells	1.46E-02	2	EGA4-2
Cell-To-Cell Signaling and Interaction	Detachment of tumor cell lines	1.05E-02	2	EGA4-2
Cell Morphology, Cellular Movement, Hair and Skin Development and Function	Cell spreading of epithelial cell lines	4.23E-03	2	EGA4-2
Cellular Movement	Migration of bone cancer cell lines	2.55E-02	2	EGA4-2
Cell Death and Survival	Anoikis of lung cancer cell lines	1.15E-03	2	EGA4-2
Cellular Movement	Chemotaxis of sarcoma cell lines	9.00E-04	2	EGA4-2
Embryonic Development, Organismal Development	Morphogenesis of head	1.13E-02	2	EGA4-2
Cellular Movement	Cell movement of neuroblastoma cell lines	2.02E-02	2	EGA4-2
Cell Death and Survival	Apoptosis of oligodendrocytes	2.12E-02	2	EGA4-2
Cardiovascular System Development and Function	Morphology of vessel component	9.77E-03	2	EGA4-2
Cell Morphology	Shape change of cervical cancer cell lines	1.29E-02	2	EGA4-2
Cardiovascular System Development and Function, Cellular Assembly and Organization, Cellular Development, Cellular Function and Maintenance, Cellular Growth and Proliferation, Embryonic Development, Organ Development, Organismal Development, Skeletal and Muscular System Development and Function, Tissue Development	Organization of sarcomere	1.75E-03	2	EGA4-2
Cell-To-Cell Signaling and Interaction	Deadhesion of cells	9.00E-04	2	EGA4-2
Cell Morphology	Cell rounding of tumor cell lines	1.29E-02	2	EGA4-2
Cell-mediated Immune Response, Cellular Movement, Hematological System Development and Function, Immune Cell Trafficking	Transmigration of T lymphocytes	2.55E-02	2	EGA4-2
Cell Morphology	Shape change of melanoma cell lines	6.43E-03	2	EGA4-2
Carbohydrate Metabolism, Lipid Metabolism, Molecular Transport, Small Molecule Biochemistry	Quantity of phosphatidylinositol-3,4,5-triphosphate	1.73E-02	2	EGA4-2
Connective Tissue Development and Function, Tissue Morphology	Quantity of fibroblasts	1.82E-02	2	EGA4-2
Cellular Function and Maintenance	Ingestion of cells	2.86E-03	2	EGA4-2
Carbohydrate Metabolism, Lipid Metabolism, Molecular Transport, Small Molecule Biochemistry	Quantity of phosphatidylinositol 3,4-diphosphate	2.86E-03	2	EGA4-2
Cell Morphology, Cellular Movement	Cell spreading of bone cancer cell lines	1.15E-03	2	EGA4-2
Carbohydrate Metabolism, Lipid Metabolism, Molecular Transport, Small Molecule Biochemistry	Quantity of phosphatidylinositol phosphate	1.13E-02	2	EGA4-2
Cardiovascular System Development and Function, Embryonic Development, Organismal Development, Tissue Development	Angiogenesis of chorioallantoic membrane	1.46E-02	2	EGA4-2
Cardiovascular System Development and Function, Cellular Development, Cellular Function and Maintenance, Cellular Growth and Proliferation, Organismal Development, Tissue Development	Proliferation of microvascular endothelial cells	1.21E-02	2	EGA4-2

Tissue Morphology	Structural integrity of basement membrane	9.83E-05	2	EGA4-2
Tissue Development	Formation of connective tissue	1.73E-02	2	EGA4-2
Cellular Assembly and Organization, Cellular Function and Maintenance	Formation of actin cytoskeleton	9.77E-03	2	EGA4-2
Cellular Movement	Invasion of fibrosarcoma cell lines	1.05E-02	2	EGA4-2
Cellular Movement, Hematological System Development and Function, Immune Cell Trafficking	Transendothelial migration of leukocytes	6.63E-03	2	EGA4-3
Cell Cycle	Re-entry into S phase	4.11E-03	2	EGA4-3
Protein Synthesis	Metabolism of peptide	4.11E-03	2	EGA4-3
Embryonic Development, Organismal Development, Skeletal and Muscular System Development and Function, Tissue Development	Delay in ossification of embryonic tissue	6.90E-06	2	EGA4-3
Cellular Function and Maintenance, Molecular Transport, Protein Trafficking	Endocytosis of protein	1.54E-03	2	EGA4-3
Cell-To-Cell Signaling and Interaction, Hematological System Development and Function	Response of helper T lymphocytes	9.04E-03	2	EGA4-3
Cellular Movement	Invasion of adenocarcinoma cell lines	8.09E-04	2	EGA4-3
Cellular Development	Transdifferentiation of cells	9.37E-03	2	EGA4-3
Embryonic Development, Hair and Skin Development and Function, Organ Development, Organ Morphology, Organismal Development, Tissue Development	Thickness of epidermis	2.68E-03	2	EGA4-3
Cellular Assembly and Organization	Accumulation of granules	7.09E-04	2	EGA4-3
Carbohydrate Metabolism, Digestive System Development and Function, Hepatic System Development and Function	Gluconeogenesis of liver	8.09E-04	2	EGA4-3
Cellular Assembly and Organization	Accumulation of lysosome	1.15E-03	2	EGA4-3
Cellular Movement	Cell movement of bone cancer cell lines	1.04E-02	2	EGA4-3
Cell Morphology	Surface area of cells	2.86E-03	2	EGA4-3
Gene Expression, RNA Damage and Repair, RNA Post-Transcriptional Modification	Stabilization of mRNA	8.09E-04	2	EGA4-3
Cell Death and Survival	Cell death of exocrine cells	5.05E-03	2	EGA4-3
Cellular Assembly and Organization	Quantity of nucleus	7.20E-03	2	EGA4-3
Connective Tissue Development and Function, Skeletal and Muscular System Development and Function, Tissue Development	Area of bone	1.40E-03	2	EGA4-3
Digestive System Development and Function, Organ Morphology, Organismal Development	Morphology of islets of Langerhans	1.04E-02	2	EGA4-3
Cell Morphology, Connective Tissue Development and Function, Tissue Morphology	Area of connective tissue cells	4.48E-04	2	EGA4-3
Cell Death and Survival, Nervous System Development and Function	Survival of oligodendrocytes	1.54E-03	2	EGA4-3
Carbohydrate Metabolism, Molecular Transport, Nucleic Acid Metabolism, Small Molecule Biochemistry	Quantity of UDP-D-glucose	2.07E-05	2	EGA4-3
Cellular Development, Cellular Growth and Proliferation, Nervous System Development and Function	Proliferation of Schwann cells	3.25E-03	2	EGA4-3
Cell Death and Survival	Apoptosis of chondrocytes	4.57E-03	2	EGA4-3
Cellular Movement	Dissemination of tumor cell lines	2.32E-03	2	EGA4-3
Hair and Skin Development and Function, Organ Development	Growth of skin	7.10E-03	2	EGA4-4

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