Table S15 - IPA biological functions unique to EGA3 super-group

| Categories | Functions Annotation | p-value[a] | Z-score[b] | Activation State | Total DEGs | Sub-Group |
|---|---|---|---|---|---|---|
| Organismal Development | Growth of organism | 1.55E-02 | 0.267 | | 27 | EGA3-1 |
| Cell Morphology, Cellular Function and Maintenance | Autophagy | 8.38E-04 | 1.588 | | 20 | EGA3-1 |
| Cell Morphology, Cellular Function and Maintenance | Autophagy of cells | 4.30E-03 | | Activated | 15 | EGA3-1 |
| Cell Death and Survival | Cell death of hematopoietic cell lines | 3.01E-03 | 0.942 | | 14 | EGA3-1 |
| Cell Death and Survival | Apoptosis of hematopoietic cell lines | 2.36E-03 | 1.202 | | 13 | EGA3-1 |
| Cell Death and Survival | Cell death of myeloid cells | 9.23E-03 | 0.425 | | 12 | EGA3-1 |
| Cellular Movement | Migration of tumor cells | 1.63E-02 | | Activated | 12 | EGA3-1 |
| Lipid Metabolism, Small Molecule Biochemistry | Hydrolysis of lipid | 2.36E-03 | | Activated | 12 | EGA3-1 |
| Cell Death and Survival | Apoptosis of heart | 6.28E-03 | -1.476 | | 11 | EGA3-1 |
| Cell Death and Survival | Apoptosis of leukocyte cell lines | 5.47E-03 | 1.467 | | 11 | EGA3-1 |
| Cell Death and Survival | Apoptosis of central nervous system cells | 3.39E-03 | -1.135 | | 11 | EGA3-1 |
| Free Radical Scavenging | Generation of reactive oxygen species | 2.05E-02 | 0.63 | | 11 | EGA3-1 |
| Cell Death and Survival | Apoptosis of myeloid cells | 6.07E-03 | 0.164 | | 11 | EGA3-1 |
| Cell Morphology | Orientation of cells | 1.29E-02 | | Activated | 11 | EGA3-1 |
| Organismal Development | Growth of organism | 8.80E-03 | | Activated | 11 | EGA3-2 |
| Nucleic Acid Metabolism, Small Molecule Biochemistry | Synthesis of purine nucleotide | 5.30E-03 | 1.768 | | 9 | EGA3-1 |
| Organismal Survival | Lifespan of organism | 4.66E-03 | 1.706 | | 9 | EGA3-1 |
| Cellular Development, Connective Tissue Development and Function, Tissue Development | Differentiation of adipocytes | 8.26E-03 | -0.127 | | 9 | EGA3-1 |
| Cell Morphology, Cellular Assembly and Organization | Morphology of mitochondria | 3.78E-04 | | | 9 | EGA3-1 |
| Cellular Development, Hematological System Development and Function, Lymphoid Tissue Structure and Development | Maturation of dendritic cells | 9.83E-03 | 1.465 | | 8 | EGA3-1 |
| Lipid Metabolism, Molecular Transport, Small Molecule Biochemistry | Transport of steroid | 1.74E-02 | 0.739 | | 8 | EGA3-1 |
| Cellular Development, Cellular Growth and Proliferation | Development of tumor cell lines | 1.07E-02 | 0.57 | | 8 | EGA3-1 |
| Energy Production, Nucleic Acid Metabolism, Small Molecule Biochemistry | Synthesis of ATP | 4.15E-03 | 1.195 | | 7 | EGA3-1 |
| Organ Morphology, Reproductive System Development and Function, Tissue Morphology | Quantity of germ cells | 1.20E-02 | -0.946 | | 7 | EGA3-1 |
| Lipid Metabolism, Small Molecule Biochemistry | Lipolysis | 4.15E-03 | -0.48 | | 7 | EGA3-1 |
| Cellular Development, Cellular Growth and Proliferation, Hematological System Development and Function, Lymphoid Tissue Structure and Development | Proliferation of antigen presenting cells | 7.89E-03 | -0.412 | | 7 | EGA3-1 |
| Skeletal and Muscular System Development and Function | Osteoclastogenesis | 1.68E-02 | -0.369 | | 7 | EGA3-1 |
| Cellular Development, Cellular Growth and Proliferation, Embryonic Development, Organismal Development | Proliferation of multilineage progenitor cells | 1.44E-02 | 1.751 | | 6 | EGA3-1 |
| Cellular Development, Cellular Growth and Proliferation, Hematological System Development and Function, Hematopoiesis, Lymphoid Tissue Structure and Development, Skeletal and Muscular System Development and Function, Tissue Development | Osteoclastogenesis of leukocytes | 7.94E-04 | -1.057 | | 6 | EGA3-1 |
| Endocrine System Development and Function, Lipid Metabolism, Molecular Transport, Small Molecule Biochemistry | Concentration of corticosterone | 1.51E-02 | 0.904 | | 6 | EGA3-1 |
| Cell Death and Survival | Apoptosis of granulocytes | 1.37E-02 | -0.364 | | 6 | EGA3-1 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Drug Metabolism, Molecular Transport, Small Molecule Biochemistry | Concentration of glutathione | 1.44E-02 | -0.277 | | 6 | EGA3-1 |
| Free Radical Scavenging, Molecular Transport | Quantity of reactive oxygen species | 2.35E-03 | 0.277 | | 6 | EGA3-2 |
| Endocrine System Development and Function | Insulin sensitivity | 4.57E-03 | 0.092 | | 6 | EGA3-1 |
| Cell Death and Survival | Necroptosis | 2.08E-02 | | | 6 | EGA3-1 |
| Cell Morphology, Tissue Morphology | Morphology of epithelial cells | 1.66E-02 | | | 6 | EGA3-1 |
| Embryonic Development, Organismal Development, Tissue Development | Closure of embryonic tissue | 5.75E-04 | | | 6 | EGA3-1 |
| Cell Cycle | Arrest in mitosis | 1.82E-02 | | | 6 | EGA3-1 |
| Cell-To-Cell Signaling and Interaction, Connective Tissue Development and Function, Hepatic System Development and Function | Activation of hepatic stellate cells | 6.65E-03 | 1.932 | | 5 | EGA3-1 |
| Lipid Metabolism, Molecular Transport, Small Molecule Biochemistry | Secretion of fatty acid | 2.84E-03 | 1.091 | | 5 | EGA3-1 |
| Energy Production, Lipid Metabolism, Small Molecule Biochemistry | Oxidation of long chain fatty acid | 1.66E-02 | 1.076 | | 5 | EGA3-1 |
| Lipid Metabolism, Small Molecule Biochemistry | Lipolysis of lipid | 3.90E-04 | 0.831 | | 5 | EGA3-1 |
| Tissue Morphology | Quantity of breast cancer cell lines | 2.33E-03 | 0.728 | | 5 | EGA3-1 |
| Molecular Transport | Quantity of anion | 4.09E-03 | 0.391 | | 5 | EGA3-1 |
| Cellular Development, Cellular Growth and Proliferation | Expansion of myeloid cells | 3.12E-03 | -0.246 | | 5 | EGA3-1 |
| Cellular Response to Therapeutics | Sensitivity of cells | 1.09E-02 | -0.218 | | 5 | EGA3-1 |
| Cell Death and Survival | Cell death of motor neurons | 1.57E-02 | -0.152 | | 5 | EGA3-1 |
| Behavior | Behavior | 4.60E-05 | | | 5 | EGA3-4 |
| Cell Cycle | Arrest in mitosis of cervical cancer cell lines | 1.02E-02 | | | 5 | EGA3-1 |
| Embryonic Development, Organismal Development, Tissue Development, Tissue Morphology | Closure of neural tube | 5.32E-04 | | | 5 | EGA3-1 |
| Carbohydrate Metabolism | Release of carbohydrate | 9.51E-03 | | Activated | 5 | EGA3-1 |
| Nervous System Development and Function | Activation of brain | 3.75E-03 | | Activated | 5 | EGA3-1 |
| Embryonic Development, Organismal Development | Growth of blastocyst | 5.06E-03 | 1 | | 4 | EGA3-1 |
| Cell Death and Survival | Cell death of kidney cancer cell lines | 1.75E-02 | -0.856 | | 4 | EGA3-1 |
| Cell Cycle | Entry into mitosis | 9.20E-03 | -0.781 | | 4 | EGA3-1 |
| Lipid Metabolism, Molecular Transport, Nucleic Acid Metabolism, Small Molecule Biochemistry | Concentration of acyl-coenzyme A | 1.09E-03 | 0.767 | | 4 | EGA3-1 |
| Drug Metabolism, Lipid Metabolism, Molecular Transport, Small Molecule Biochemistry | Secretion of prostaglandin E2 | 2.08E-03 | 0.728 | | 4 | EGA3-1 |
| Carbohydrate Metabolism, Molecular Transport | Quantity of lactic acid | 1.10E-02 | 0.577 | | 4 | EGA3-1 |
| Cell Death and Survival | Apoptosis of peritoneal macrophages | 1.09E-03 | 0.422 | | 4 | EGA3-1 |
| Cell-To-Cell Signaling and Interaction, Skeletal and Muscular System Development and Function | Activation of muscle cells | 1.29E-02 | 0.261 | | 4 | EGA3-1 |
| Cellular Growth and Proliferation, Organismal Development | Growth of yeast | 3.25E-03 | 0.152 | | 4 | EGA3-2 |
| Cellular Development, Cellular Growth and Proliferation, Connective Tissue Development and Function, Hematological System Development and Function, Hematopoiesis, Lymphoid Tissue Structure and Development, Skeletal and Muscular System Development and Function, Tissue Development | Osteoclastogenesis of macrophages | 1.10E-02 | -0.129 | | 4 | EGA3-1 |
| Cellular Development, Connective Tissue Development and Function | Adipogenesis of adipocytes | 7.64E-03 | 0 | | 4 | EGA3-1 |
| Energy Production, Lipid Metabolism, Small Molecule Biochemistry | Oxidation of long chain fatty acid | 7.82E-04 | | | 4 | EGA3-2 |
| Cellular Function and Maintenance | Engulfment of cells | 9.71E-04 | | | 4 | EGA3-3 |
| Hematological System Development and Function, Hematopoiesis, Lymphoid Tissue Structure and Development, Tissue Morphology | Quantity of megakaryocytes | 5.06E-03 | | | 4 | EGA3-1 |

| | | | | | |
|---|---|---|---|---|---|
| Organ Development, Reproductive System Development and Function | Function of gonad | 2.08E-03 | | 4 | EGA3-1 |
| Lipid Metabolism, Small Molecule Biochemistry | Hydrolysis of fatty acid | 1.09E-03 | | 4 | EGA3-1 |
| Cell Morphology, Cellular Function and Maintenance, DNA Replication, Recombination, and Repair | Double-stranded DNA break repair of tumor cell lines | 1.29E-02 | | 4 | EGA3-1 |
| Lipid Metabolism, Molecular Transport, Small Molecule Biochemistry | Accumulation of fatty acid | 1.63E-02 | | 4 | EGA3-1 |
| Organ Development, Reproductive System Development and Function | Growth of uterus | 2.75E-03 | Activated | 4 | EGA3-1 |
| Carbohydrate Metabolism, Molecular Transport, Small Molecule Biochemistry | Release of glycerol | 3.14E-03 | Activated | 4 | EGA3-1 |
| Cellular Compromise | Nucleation of cells | 8.88E-03 | | 3 | EGA3-2 |
| Cell Cycle | Interphase of fibroblasts | 8.55E-03 | | 3 | EGA3-2 |
| Cell Morphology, Cellular Movement | Cell spreading of connective tissue cells | 1.14E-03 | | 3 | EGA3-2 |
| Cell Morphology, Cellular Compromise | Shrinkage of cells | 2.84E-04 | | 3 | EGA3-2 |
| Cellular Growth and Proliferation | Colony formation of cervical cancer cell lines | 3.70E-04 | | 3 | EGA3-2 |
| Cellular Movement | Invasion of ovarian cancer cell lines | 3.21E-03 | | 3 | EGA3-2 |
| Energy Production, Lipid Metabolism, Small Molecule Biochemistry | Beta-oxidation of long chain fatty acid | 3.70E-04 | | 3 | EGA3-2 |
| Cell Morphology | Conversion of cells | 9.22E-03 | | 3 | EGA3-2 |
| Cardiovascular System Development and Function, Cellular Development, Cellular Function and Maintenance, Cellular Growth and Proliferation, Organismal Development, Tissue Development | Endothelial cell development | 5.48E-03 | | 3 | EGA3-3 |
| Endocrine System Development and Function, Small Molecule Biochemistry | Synthesis of hormone | 1.08E-04 | | 3 | EGA3-4 |
| Cell Death and Survival | Apoptosis of leukocytes | 3.48E-03 | | 3 | EGA3-4 |
| Connective Tissue Development and Function, Tissue Morphology | Mass of adipose tissue | 1.10E-04 | | 3 | EGA3-4 |
| Connective Tissue Development and Function, Lipid Metabolism, Small Molecule Biochemistry | Adipogenesis of lipid | 1.55E-02 | | 3 | EGA3-1 |
| Cellular Assembly and Organization | Distribution of mitochondria | 8.31E-03 | | 3 | EGA3-1 |
| Tissue Development | Formation of basement membrane | 3.59E-03 | | 3 | EGA3-1 |
| Lipid Metabolism, Small Molecule Biochemistry, Vitamin and Mineral Metabolism | Synthesis of cholesterol ester | 3.59E-03 | | 3 | EGA3-1 |
| Lipid Metabolism, Molecular Transport, Small Molecule Biochemistry | Secretion of sterol | 1.55E-02 | | 3 | EGA3-1 |
| Cell-To-Cell Signaling and Interaction, Reproductive System Development and Function | Binding of breast cell lines | 9.54E-03 | | 3 | EGA3-1 |
| Cellular Development, Cellular Growth and Proliferation, Connective Tissue Development and Function, Hematological System Development and Function, Hematopoiesis, Organismal Development, Tissue Development | Thrombopoiesis | 7.17E-03 | | 3 | EGA3-1 |
| Lipid Metabolism, Molecular Transport, Small Molecule Biochemistry | Concentration of long chain fatty acid | 2.11E-02 | | 3 | EGA3-1 |
| Carbohydrate Metabolism | Glycogenolysis | 2.33E-03 | | 3 | EGA3-1 |
| Lipid Metabolism, Small Molecule Biochemistry | Lipolysis of fatty acid | 1.82E-04 | | 3 | EGA3-1 |
| Cellular Development, Cellular Growth and Proliferation, Hematological System Development and Function, Hematopoiesis, Lymphoid Tissue Structure and Development, Tissue Development | Expansion of myeloid progenitor cells | 4.34E-03 | | 3 | EGA3-1 |
| Cell Cycle | Entry into mitosis of tumor cell lines | 1.09E-02 | | 3 | EGA3-1 |
| Cell Cycle | Senescence of breast cancer cell lines | 1.39E-02 | | 3 | EGA3-1 |
| Carbohydrate Metabolism, Molecular Transport, Small Molecule Biochemistry | Concentration of glycerol | 4.34E-03 | | 3 | EGA3-1 |
| Cellular Function and Maintenance | Regulation of connective tissue cells | 9.54E-03 | | 3 | EGA3-1 |

| | | | | |
|---|---|---|---|---|
| Cell Cycle, Gene Expression | Binding of cAMP response element | 1.39E-02 | 3 | EGA3-1 |
| Molecular Transport, Small Molecule Biochemistry | Quantity of nitrite | 3.59E-03 | 3 | EGA3-1 |
| Cell Death and Survival, Cellular Development, Cellular Function and Maintenance, Cellular Growth and Proliferation, Embryonic Development, Organismal Development | Self-renewal of embryonic stem cells | 1.72E-02 | 3 | EGA3-1 |
| Cell-To-Cell Signaling and Interaction | Transduction of cells | 1.09E-02 | 3 | EGA3-1 |
| Lipid Metabolism, Nucleic Acid Metabolism, Small Molecule Biochemistry | Modification of long-chain acyl-coenzyme A | 1.02E-03 | 3 | EGA3-1 |
| Cell Death and Survival, DNA Replication, Recombination, and Repair | Fragmentation of genomic DNA | 5.19E-03 | 3 | EGA3-1 |
| Amino Acid Metabolism, Post-Translational Modification, Small Molecule Biochemistry | Conversion of L-amino acid | 3.59E-03 | 3 | EGA3-1 |
| Cell Morphology, Cellular Function and Maintenance | Autophagy of mitochondria | 1.72E-02 | 3 | EGA3-1 |
| Cell-To-Cell Signaling and Interaction, Cellular Growth and Proliferation, Connective Tissue Development and Function | Stimulation of fibroblasts | 1.55E-02 | 3 | EGA3-1 |
| Lipid Metabolism, Molecular Transport, Small Molecule Biochemistry | Quantity of monounsaturated fatty acids | 4.34E-03 | 3 | EGA3-1 |
| Lipid Metabolism, Molecular Transport, Nucleic Acid Metabolism, Small Molecule Biochemistry | Concentration of malonyl-coenzyme A | 3.59E-03 | 3 | EGA3-1 |
| Cell Cycle, Nervous System Development and Function | Cell cycle progression of neurons | 3.59E-03 | 3 | EGA3-1 |
| Lipid Metabolism, Small Molecule Biochemistry | Stimulation of prostaglandin | 7.17E-03 | 3 | EGA3-1 |
| Cell Cycle, Gene Expression | Binding of C/EBP binding site | 1.23E-02 | 3 | EGA3-1 |
| Cellular Development, Cellular Growth and Proliferation, Hematological System Development and Function, Lymphoid Tissue Structure and Development, Nervous System Development and Function | Proliferation of microglia | 1.72E-02 | 3 | EGA3-1 |
| Organismal Development | Fat body mass | 1.23E-02 | 3 | EGA3-1 |
| Organ Development, Reproductive System Development and Function | Ovulation of ovary | 7.28E-04 | 3 | EGA3-1 |
| Lipid Metabolism, Molecular Transport, Small Molecule Biochemistry | Release of steroid hormone | 9.54E-03 | 3 | EGA3-1 |
| Cell Cycle, Connective Tissue Development and Function | G2 phase of fibroblasts | 1.55E-02 | 3 | EGA3-1 |
| Cellular Development, Cellular Growth and Proliferation, Connective Tissue Development and Function, Hematological System Development and Function, Hematopoiesis, Lymphoid Tissue Structure and Development, Organismal Development, Tissue Development | Development of peripheral blood leukocytes | 5.19E-03 | 3 | EGA3-1 |
| Carbohydrate Metabolism | Incorporation of carbohydrate | 1.72E-02 | 3 | EGA3-1 |
| Cell-To-Cell Signaling and Interaction, Skeletal and Muscular System Development and Function | Activation of smooth muscle cells | 8.31E-03 | 3 | EGA3-1 |
| Cellular Development, Cellular Growth and Proliferation, Embryonic Development, Organismal Development, Tissue Development | Proliferation of trophoblast cells | 4.34E-03 | 3 | EGA3-1 |
| Cellular Assembly and Organization | Interconnectivity of mitochondria | 9.54E-06 | 3 | EGA3-1 |
| Tissue Development | Formation of extracellular matrix | 1.39E-02 | 3 | EGA3-1 |
| Cellular Function and Maintenance, Molecular Transport | Transcytosis | 4.34E-03 | 3 | EGA3-1 |
| Cell Morphology, Cellular Assembly and Organization, Cellular Compromise, Cellular Function and Maintenance | Accumulation of autophagic vacuoles | 2.91E-03 | 3 | EGA3-1 |

| | | | | |
|---|---|---|---|---|
| Amino Acid Metabolism, Small Molecule Biochemistry | Metabolism of L-amino acid | 6.11E-03 | 2 | EGA3-2 |
| Cellular Assembly and Organization | Quantity of caveolae | 4.43E-03 | 2 | EGA3-2 |
| Cell Cycle, Cellular Development, Hair and Skin Development and Function | Senescence of keratinocytes | 3.00E-03 | 2 | EGA3-2 |
| Energy Production, Lipid Metabolism, Small Molecule Biochemistry | Oxidation of oleic acid | 6.11E-03 | 2 | EGA3-2 |
| Cell-To-Cell Signaling and Interaction, Cellular Assembly and Organization | Fusion of connective tissue cells | 4.43E-03 | 2 | EGA3-2 |
| Cell Cycle, Connective Tissue Development and Function | G2/M phase transition of fibroblasts | 3.00E-03 | 2 | EGA3-2 |
| Cellular Growth and Proliferation, Organismal Development | Growth of Saccharomyces cerevisiae | 4.43E-03 | 2 | EGA3-2 |
| Carbohydrate Metabolism, Lipid Metabolism, Molecular Transport, Small Molecule Biochemistry | Concentration of phosphatidylserine | 6.11E-03 | 2 | EGA3-2 |
| Cellular Assembly and Organization | Rearrangement of actin | 9.43E-04 | 2 | EGA3-2 |
| Cellular Movement, Connective Tissue Development and Function, Skeletal and Muscular System Development and Function | Cell movement of osteoclasts | 5.52E-03 | 2 | EGA3-2 |
| Cellular Development, Cellular Growth and Proliferation, Connective Tissue Development and Function, Hematological System Development and Function, Hematopoiesis, Organismal Development, Tissue Development | Proliferation of erythroblasts | 2.58E-03 | 2 | EGA3-2 |
| Cell Morphology, Nervous System Development and Function, Organ Morphology, Organismal Development | Morphology of hippocampal cells | 2.58E-03 | 2 | EGA3-2 |
| Cell Death and Survival | Apoptosis of uterine cell lines | 9.43E-04 | 2 | EGA3-2 |
| Cell Cycle, Connective Tissue Development and Function | Arrest in S phase of fibroblast cell lines | 2.58E-03 | 2 | EGA3-2 |
| Cell-To-Cell Signaling and Interaction | Interaction of Schwann cells | 1.83E-03 | 2 | EGA3-2 |
| Cell-To-Cell Signaling and Interaction, Hair and Skin Development and Function | Binding of skin cell lines | 4.43E-03 | 2 | EGA3-2 |
| Cellular Development, Cellular Growth and Proliferation, Embryonic Development, Organ Development, Organismal Development, Reproductive System Development and Function, Tissue Development | Generation of sperm | 5.52E-03 | 2 | EGA3-2 |
| Cell Cycle | Aneuploidization of cells | 8.05E-03 | 2 | EGA3-2 |
| Organismal Survival | Delay in organismal death | 8.74E-03 | 2 | EGA3-2 |
| Cellular Assembly and Organization | Aggregation of mitochondria | 6.73E-03 | 2 | EGA3-2 |
| Cellular Assembly and Organization, Nervous System Development and Function | Assembly of axon initial segments | 1.03E-04 | 2 | EGA3-2 |
| Organ Morphology | Enlargement of endocrine gland | 3.92E-03 | 2 | EGA3-2 |
| Cellular Function and Maintenance | Engulfment of tumor cell lines | 1.22E-02 | 2 | EGA3-3 |
| Cellular Movement, Connective Tissue Development and Function | Migration of fibroblasts | 7.56E-03 | 2 | EGA3-3 |
| Lipid Metabolism, Molecular Transport, Small Molecule Biochemistry | Concentration of sterol | 2.77E-02 | 2 | EGA3-3 |
| Lipid Metabolism, Molecular Transport, Small Molecule Biochemistry | Uptake of lipid | 1.43E-02 | 2 | EGA3-3 |
| Cellular Movement | Cell movement of cancer cells | 1.18E-02 | 2 | EGA3-3 |
| Cellular Development, Cellular Growth and Proliferation | Development of tumor cell lines | 3.07E-03 | 2 | EGA3-4 |
| Cellular Development, Connective Tissue Development and Function, Tissue Development | Differentiation of adipocytes | 4.08E-03 | 2 | EGA3-4 |
| Endocrine System Development and Function, Lipid Metabolism, Small Molecule Biochemistry, Vitamin and Mineral Metabolism | Steroidogenesis of hormone | 2.82E-03 | 2 | EGA3-4 |

| | | | | |
|---|---|---|---|---|
| Cellular Development, Cellular Growth and Proliferation, Embryonic Development, Organ Development, Organismal Development, Reproductive System Development and Function, Tissue Development | Spermatogenesis | 1.99E-03 | 2 | EGA3-4 |
| Cell Cycle | Mitogenesis | 5.16E-03 | 2 | EGA3-4 |
| Embryonic Development, Organ Development, Organismal Development, Reproductive System Development and Function, Tissue Development | Formation of testis | 4.09E-04 | 2 | EGA3-4 |
| Lipid Metabolism, Small Molecule Biochemistry | Synthesis of acylglycerol | 1.21E-03 | 2 | EGA3-4 |
| Cell Death and Survival | Apoptosis of lymphocytes | 2.06E-02 | 2 | EGA3-4 |
| Digestive System Development and Function | Ingestion by mice | 1.59E-03 | 2 | EGA3-4 |
| Cellular Movement, Skeletal and Muscular System Development and Function | Cell movement of vascular smooth muscle cells | 2.82E-03 | 2 | EGA3-4 |
| Embryonic Development, Hair and Skin Development and Function, Organ Development, Organismal Development, Tissue Development | Formation of skin | 8.35E-03 | 2 | EGA3-4 |
| Cardiovascular System Development and Function, Cellular Development, Cellular Growth and Proliferation, Organ Development, Skeletal and Muscular System Development and Function, Tissue Development | Proliferation of vascular smooth muscle cells | 5.05E-03 | 2 | EGA3-4 |
| Cell Cycle, Gene Expression | Binding of DNA endogenous promoter | 1.95E-03 | 2 | EGA3-4 |
| Lipid Metabolism, Small Molecule Biochemistry, Vitamin and Mineral Metabolism | Metabolism of terpenoid | 6.79E-03 | 2 | EGA3-4 |
| Cell Death and Survival | Apoptosis of fibroblasts | 8.84E-03 | 2 | EGA3-4 |
| 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 | Development of B lymphocytes | 4.37E-03 | 2 | EGA3-4 |
| Cell Cycle, DNA Replication, Recombination, and Repair | Modification of chromatin | 3.04E-04 | 2 | EGA3-4 |
| Lipid Metabolism, Molecular Transport, Small Molecule Biochemistry | Concentration of cholesterol | 9.26E-03 | 2 | EGA3-4 |
| Lipid Metabolism, Molecular Transport, Small Molecule Biochemistry | Secretion of triacylglycerol | 1.50E-04 | 2 | EGA3-4 |
| Embryonic Development | Tubulogenesis | 4.58E-04 | 2 | EGA3-4 |
| Cell Morphology, Connective Tissue Development and Function | Morphology of fibroblast cell lines | 1.92E-03 | 2 | EGA3-4 |
| Connective Tissue Development and Function | Adipogenesis | 4.53E-03 | 2 | EGA3-4 |
| Cell Cycle | G1/S phase transition | 7.17E-03 | 2 | EGA3-4 |
| Digestive System Development and Function | Development of digestive system | 6.79E-03 | 2 | EGA3-4 |
| Digestive System Development and Function | Function of gastrointestinal tract | 1.16E-02 | 2 | EGA3-1 |
| Lipid Metabolism, Molecular Transport, Nucleic Acid Metabolism, Small Molecule Biochemistry | Quantity of stearoyl-coenzyme A | 4.51E-04 | 2 | EGA3-1 |
| Molecular Transport | Accumulation of anion | 1.81E-02 | 2 | EGA3-1 |
| Energy Production, Nucleic Acid Metabolism, Small Molecule Biochemistry | Recovery of ATP | 2.63E-03 | 2 | EGA3-1 |
| Lipid Metabolism, Small Molecule Biochemistry | Acylation of lipid | 8.82E-03 | 2 | EGA3-1 |
| DNA Replication, Recombination, and Repair | Delay in repair of DNA | 1.81E-02 | 2 | EGA3-1 |
| Cellular Assembly and Organization, Cellular Function and Maintenance, Cellular Movement | Movement of microtubules | 1.33E-03 | 2 | EGA3-1 |
| Carbohydrate Metabolism, Lipid Metabolism, Molecular Transport, Small Molecule Biochemistry | Quantity of 1-palmitoyl-2-linoleoyl-sn-glycero-3-phosphocholine | 1.33E-03 | 2 | EGA3-1 |

| | | | | |
|---|---|---|---|---|
| Embryonic Development, Hematological System Development and Function, Humoral Immune Response, Lymphoid Tissue Structure and Development, Organ Development, Organismal Development, Tissue Development | Development of germinal center | 8.82E-03 | 2 | EGA3-1 |
| Cell-To-Cell Signaling and Interaction | Growth of focal adhesions | 2.63E-03 | 2 | EGA3-1 |
| Cellular Movement | Initiation of cell movement of neurons | 4.32E-03 | 2 | EGA3-1 |
| Cellular Response to Therapeutics | Sensitivity of connective tissue cells | 6.39E-03 | 2 | EGA3-1 |
| Cell Morphology, Cellular Assembly and Organization | Length of mitochondria | 8.82E-03 | 2 | EGA3-1 |
| Cell-To-Cell Signaling and Interaction, Cellular Growth and Proliferation, Connective Tissue Development and Function | Stimulation of synovial cells | 1.81E-02 | 2 | EGA3-1 |
| Lipid Metabolism, Molecular Transport, Small Molecule Biochemistry | Concentration of 18:1(n-9) fatty acids | 4.51E-04 | 2 | EGA3-1 |
| Cell Morphology | Polarity of epithelial cells | 1.81E-02 | 2 | EGA3-1 |
| Amino Acid Metabolism, Molecular Transport, Nucleic Acid Metabolism, Small Molecule Biochemistry | Quantity of S-adenosylmethionine | 1.16E-02 | 2 | EGA3-1 |
| Cell Death and Survival, Hematological System Development and Function | Recovery of hematopoietic cells | 4.51E-04 | 2 | EGA3-1 |
| Lipid Metabolism, Small Molecule Biochemistry | Stimulation of steroid | 1.16E-02 | 2 | EGA3-1 |
| Cell Morphology, Cellular Movement | Cell spreading of fibrosarcoma cell lines | 6.39E-03 | 2 | EGA3-1 |
| Cell-To-Cell Signaling and Interaction | Attachment of tumor cells | 4.32E-03 | 2 | EGA3-1 |
| Lipid Metabolism, Molecular Transport, Small Molecule Biochemistry | Quantity of fat | 1.16E-02 | 2 | EGA3-1 |
| Cell Cycle | Arrest in G1 phase of melanoma cell lines | 1.16E-02 | 2 | EGA3-1 |
| Drug Metabolism, Small Molecule Biochemistry | Activation of tamoxifen | 1.81E-02 | 2 | EGA3-1 |
| Cellular Movement | Invasion of intestinal cell lines | 4.32E-03 | 2 | EGA3-1 |
| Carbohydrate Metabolism, Lipid Metabolism, Small Molecule Biochemistry | Incorporation of phosphatidylinositol | 4.51E-04 | 2 | EGA3-1 |
| Cellular Movement | Initiation of migration of leukemia cell lines | 4.51E-04 | 2 | EGA3-1 |
| Cellular Response to Therapeutics, Connective Tissue Development and Function | Sensitivity of fibroblast cell lines | 6.39E-03 | 2 | EGA3-1 |
| Cellular Assembly and Organization | Quantity of peroxisomes | 1.47E-02 | 2 | EGA3-1 |
| Energy Production, Lipid Metabolism, Nucleic Acid Metabolism, Small Molecule Biochemistry | Oxidation of palmitoyl-coenzyme A | 6.39E-03 | 2 | EGA3-1 |
| Cellular Development, Embryonic Development, Organismal Development | Delay in differentiation of embryonic cells | 1.47E-02 | 2 | EGA3-1 |
| Cell Morphology, Cellular Movement | Cell spreading of skin cancer cell lines | 6.39E-03 | 2 | EGA3-1 |
| Cell-To-Cell Signaling and Interaction, Cellular Growth and Proliferation, Hematological System Development and Function | Induction of CD4+ T-lymphocytes | 1.47E-02 | 2 | EGA3-1 |
| Cellular Assembly and Organization, Cellular Function and Maintenance | Formation of asters | 1.81E-02 | 2 | EGA3-1 |
| Lipid Metabolism, Molecular Transport, Nucleic Acid Metabolism, Small Molecule Biochemistry | Quantity of palmitoyl-coenzyme A | 1.33E-03 | 2 | EGA3-1 |
| Cellular Development, Cellular Growth and Proliferation, Hematological System Development and Function, Lymphoid Tissue Structure and Development | Expansion of granulocytes | 1.47E-02 | 2 | EGA3-1 |
| Cell Signaling, Small Molecule Biochemistry | Regulation of hormone | 4.32E-03 | 2 | EGA3-1 |
| Cellular Development, Hematological System Development and Function, Lymphoid Tissue Structure and Development | Hypermaturation of dendritic cells | 2.63E-03 | 2 | EGA3-1 |

| | | | | |
|---|---|---|---|---|
| Cardiovascular System Development and Function, Embryonic Development, Nervous System Development and Function, Organ Development, Organismal Development, Tissue Development | Angiogenesis of brain | 6.39E-03 | 2 | EGA3-1 |
| Cell-To-Cell Signaling and Interaction, Cellular Growth and Proliferation | Stimulation of hepatoma cell lines | 8.82E-03 | 2 | EGA3-1 |
| Organ Development, Renal and Urological System Development and Function | Glomerular filtration rate of kidney | 1.47E-02 | 2 | EGA3-1 |
| Nervous System Development and Function, Tissue Morphology | Quantity of Cajal-Retzius neurons | 8.82E-03 | 2 | EGA3-1 |
| Cell Death and Survival | Apoptosis of endometrial cells | 1.81E-02 | 2 | EGA3-1 |
| Cell Cycle, Gene Expression | Binding of p53 response element | 1.81E-02 | 2 | EGA3-1 |
| Cellular Development, Cellular Growth and Proliferation, Tissue Development | Development of induced pluripotent stem cells | 1.81E-02 | 2 | EGA3-1 |
| Cell Death and Survival | Onset of cell death | 1.81E-02 | 2 | EGA3-1 |
| Cell Death and Survival | Survival of hepatic stellate cells | 8.82E-03 | 2 | EGA3-1 |
| Cell Death and Survival | Activation-induced cell death of CD8+ T lymphocyte | 2.63E-03 | 2 | EGA3-1 |
| Amino Acid Metabolism, Molecular Transport, Small Molecule Biochemistry | Uptake of glycine | 2.63E-03 | 2 | EGA3-1 |
| Cell Morphology, Cellular Function and Maintenance, DNA Replication, Recombination, and Repair | Single-stranded DNA break repair of tumor cell lines | 1.33E-03 | 2 | EGA3-1 |
| Post-Translational Modification | Sialylation of protein | 6.39E-03 | 2 | EGA3-1 |
| Connective Tissue Development and Function, Skeletal and Muscular System Development and Function, Tissue Development, Tissue Morphology | Morphology of trabecula | 1.81E-02 | 2 | EGA3-1 |
| Drug Metabolism, Lipid Metabolism, Small Molecule Biochemistry | Stimulation of prostaglandin E2 | 1.47E-02 | 2 | EGA3-1 |
| Lipid Metabolism, Small Molecule Biochemistry | Incorporation of arachidonic acid | 6.39E-03 | 2 | EGA3-1 |
| Amino Acid Metabolism, Post-Translational Modification, Small Molecule Biochemistry | Modification of acidic amino acid | 1.16E-02 | 2 | EGA3-1 |
| Small Molecule Biochemistry | Synthesis of sphinganine | 6.39E-03 | 2 | EGA3-1 |
| Cell-To-Cell Signaling and Interaction, Nervous System Development and Function | Activation of hypothalamic neurons | 6.39E-03 | 2 | EGA3-1 |
| Cell Cycle, Reproductive System Development and Function | Cell cycle progression of germ cells | 1.16E-02 | 2 | EGA3-1 |
| Amino Acid Metabolism, Molecular Transport, Small Molecule Biochemistry | Concentration of glycine | 1.16E-02 | 2 | EGA3-1 |
| Cellular Development, Cellular Growth and Proliferation, Hematological System Development and Function, Humoral Immune Response, Lymphoid Tissue Structure and Development | Proliferation of plasma cells | 1.47E-02 | 2 | EGA3-1 |
| Cardiovascular System Development and Function, Cell Morphology, Organ Development, Organ Morphology, Skeletal and Muscular System Development and Function | Contraction of ventricular myocytes | 6.39E-03 | 2 | EGA3-1 |
| Connective Tissue Development and Function, Skeletal and Muscular System Development and Function | Turnover of bone | 1.81E-02 | 2 | EGA3-1 |
| Cellular Assembly and Organization | Translocation of microtubule organizing centers | 4.32E-03 | 2 | EGA3-1 |
| Cellular Movement | Segregation of cells | 8.82E-03 | 2 | EGA3-1 |
| Cell Death and Survival, Cellular Compromise, Connective Tissue Development and Function | Cytotoxicity of fibroblast cell lines | 6.39E-03 | 2 | EGA3-1 |
| Carbohydrate Metabolism, Digestive System Development and Function, Hepatic System Development and Function | Glycogenolysis of liver | 2.63E-03 | 2 | EGA3-1 |
| Cell Morphology | Morphology of stomach cancer cell lines | 8.82E-03 | 2 | EGA3-1 |

| | | | | |
|---|---|---|---|---|
| Cell Death and Survival | Cell death of oligodendrocyte precursor cells | 1.81E-02 | 2 | EGA3-1 |
| Cell Cycle, Nervous System Development and Function | Cell cycle progression of cortical neurons | 1.16E-02 | 2 | EGA3-1 |
| Lipid Metabolism, Molecular Transport, Small Molecule Biochemistry | Accumulation of asialo GM2 ganglioside | 4.32E-03 | 2 | EGA3-1 |
| Organismal Functions | Weakness of hindlimb | 2.63E-03 | 2 | EGA3-1 |
| Cellular Function and Maintenance, Hematological System Development and Function | Regulation of regulatory T lymphocytes | 4.32E-03 | 2 | EGA3-1 |
| Cellular Movement | Migration of colon carcinoma cells | 8.82E-03 | 2 | EGA3-1 |
| Carbohydrate Metabolism, Lipid Metabolism, Small Molecule Biochemistry | Synthesis of phosphatidylethanolamine | 6.39E-03 | 2 | EGA3-1 |
| Cell Morphology | Ruffling of cell periphery | 4.51E-04 | 2 | EGA3-1 |
| Organismal Functions | Daytime core body temperature | 1.47E-02 | 2 | EGA3-1 |
| Free Radical Scavenging | Synthesis of reactive oxygen species | 2.22E-02 | 2 | EGA3-5 |

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