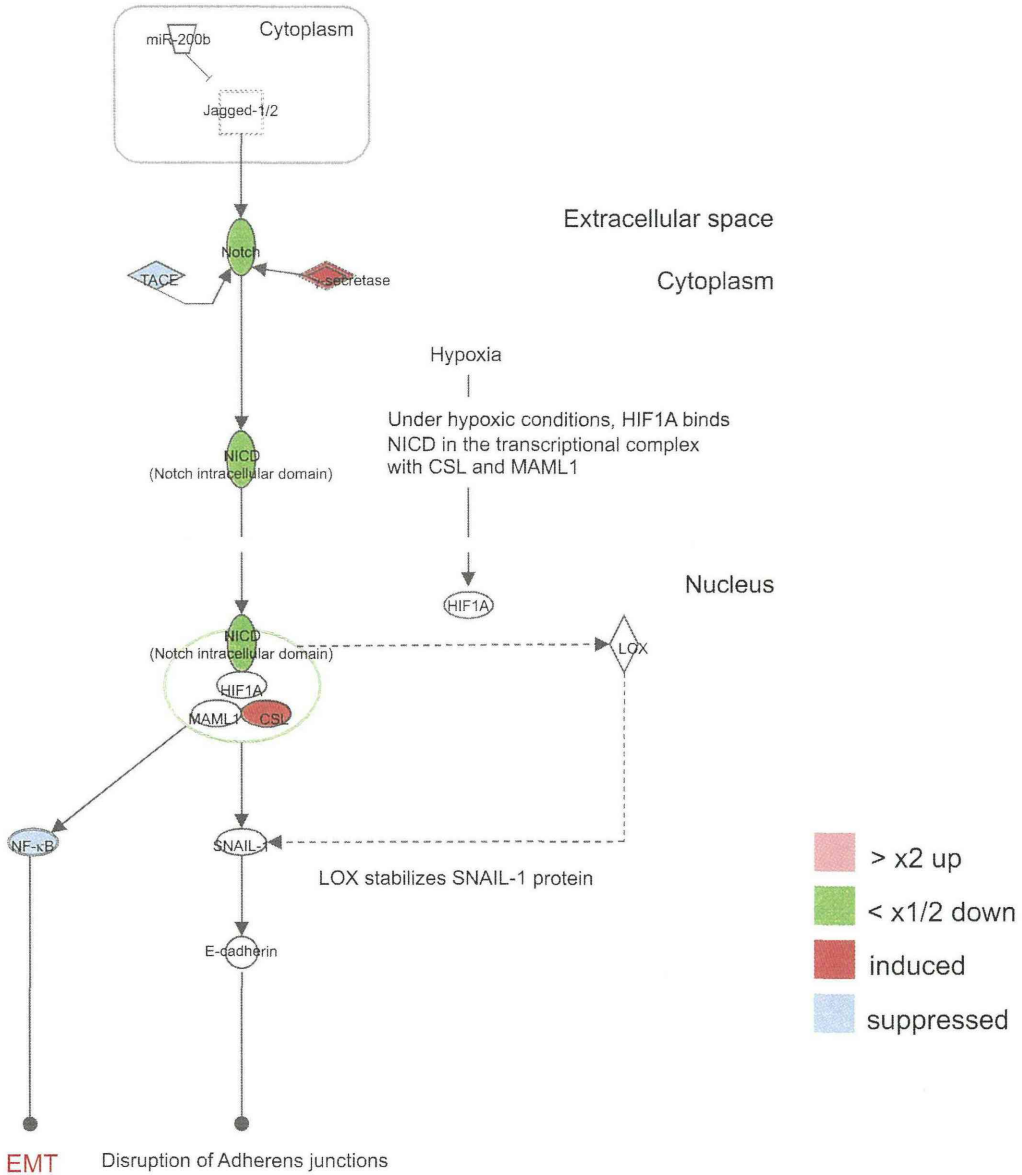


図4-2. Notch から誘導される EMT Pathway に及ぼす M75H25 の影響

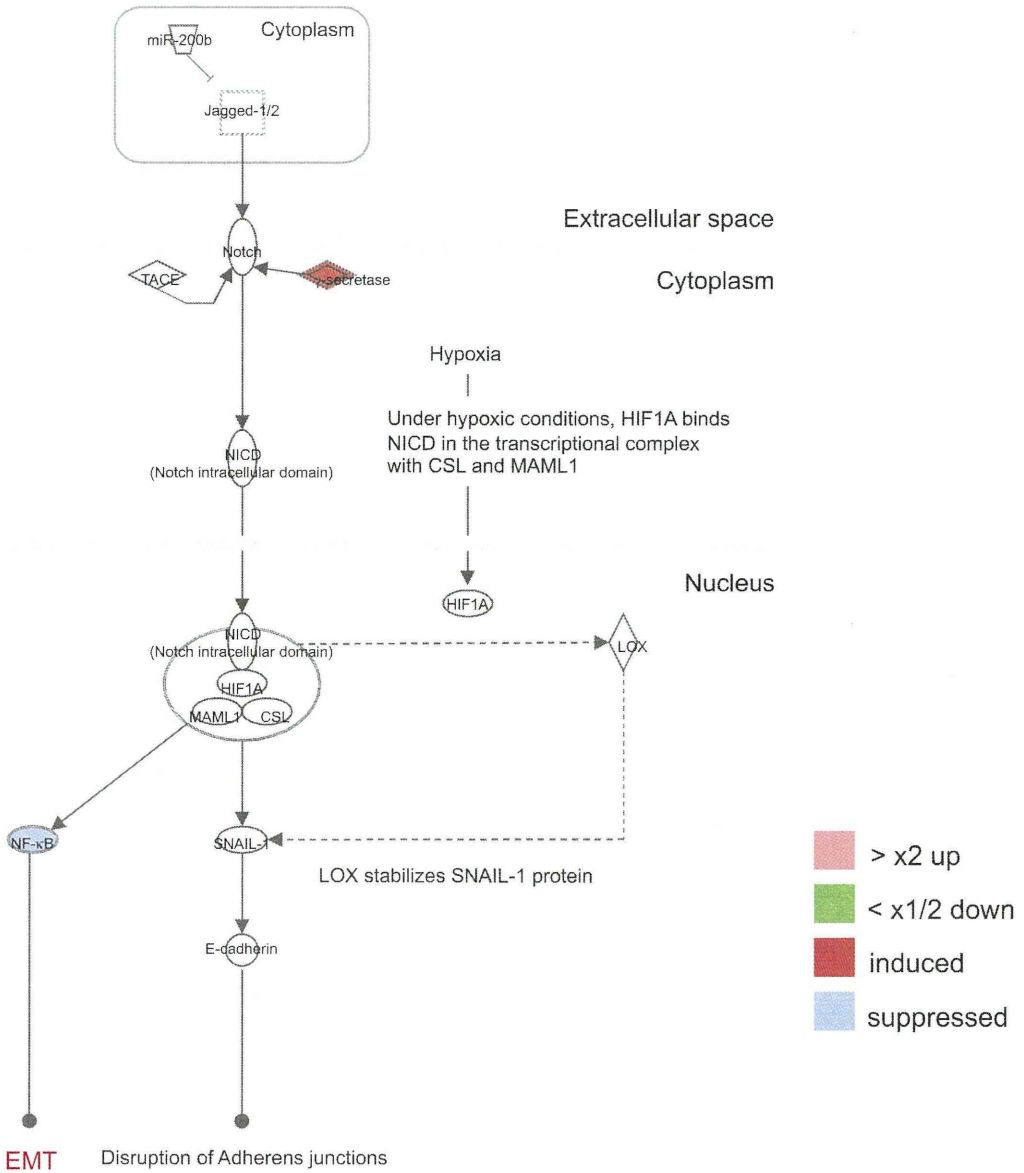


図4-3. Notch から誘導される EMT Pathway に及ぼす M50H50 の影響

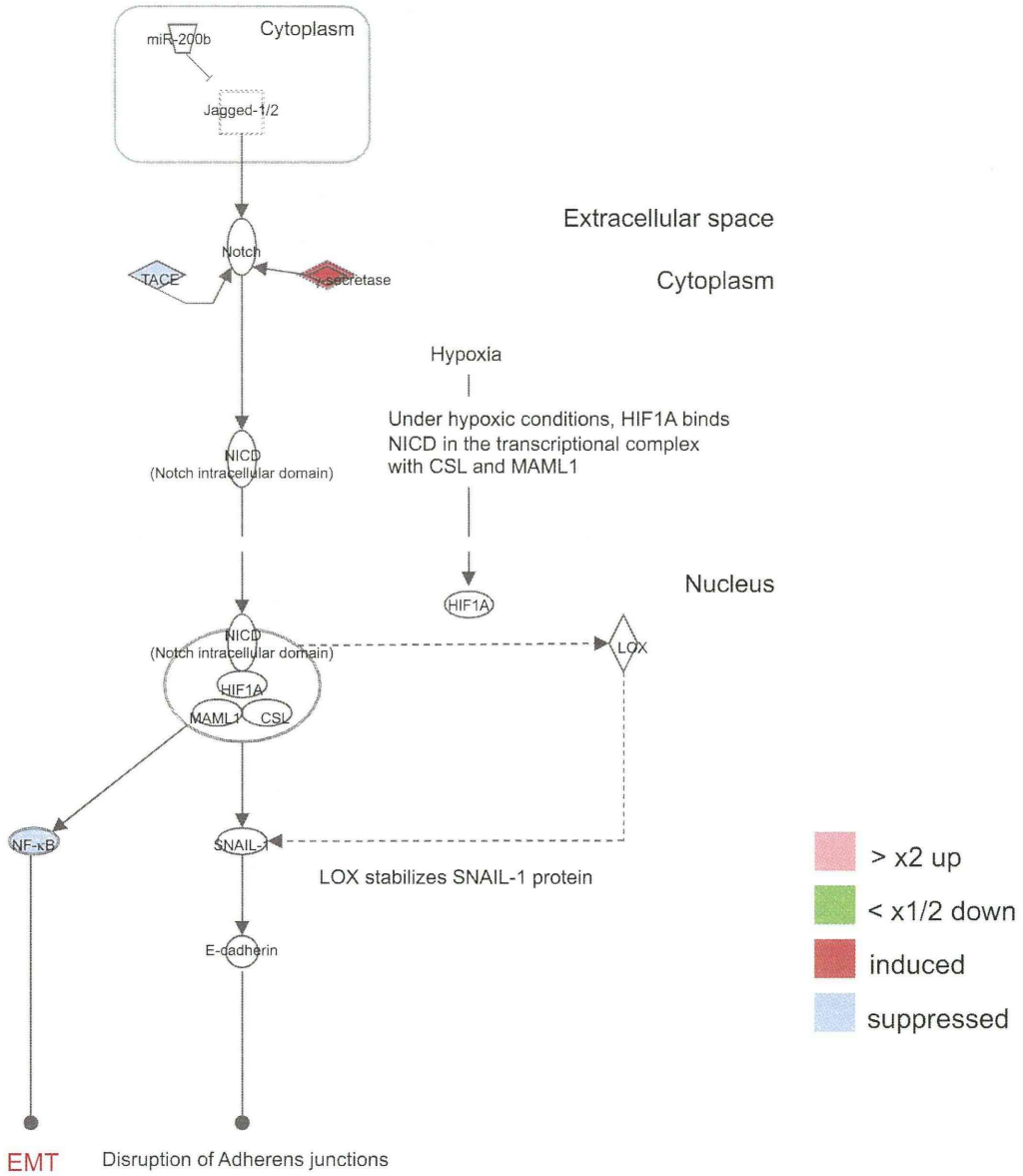


図4-4. Notch から誘導される EMT Pathway に及ぼす M25H75 の影響

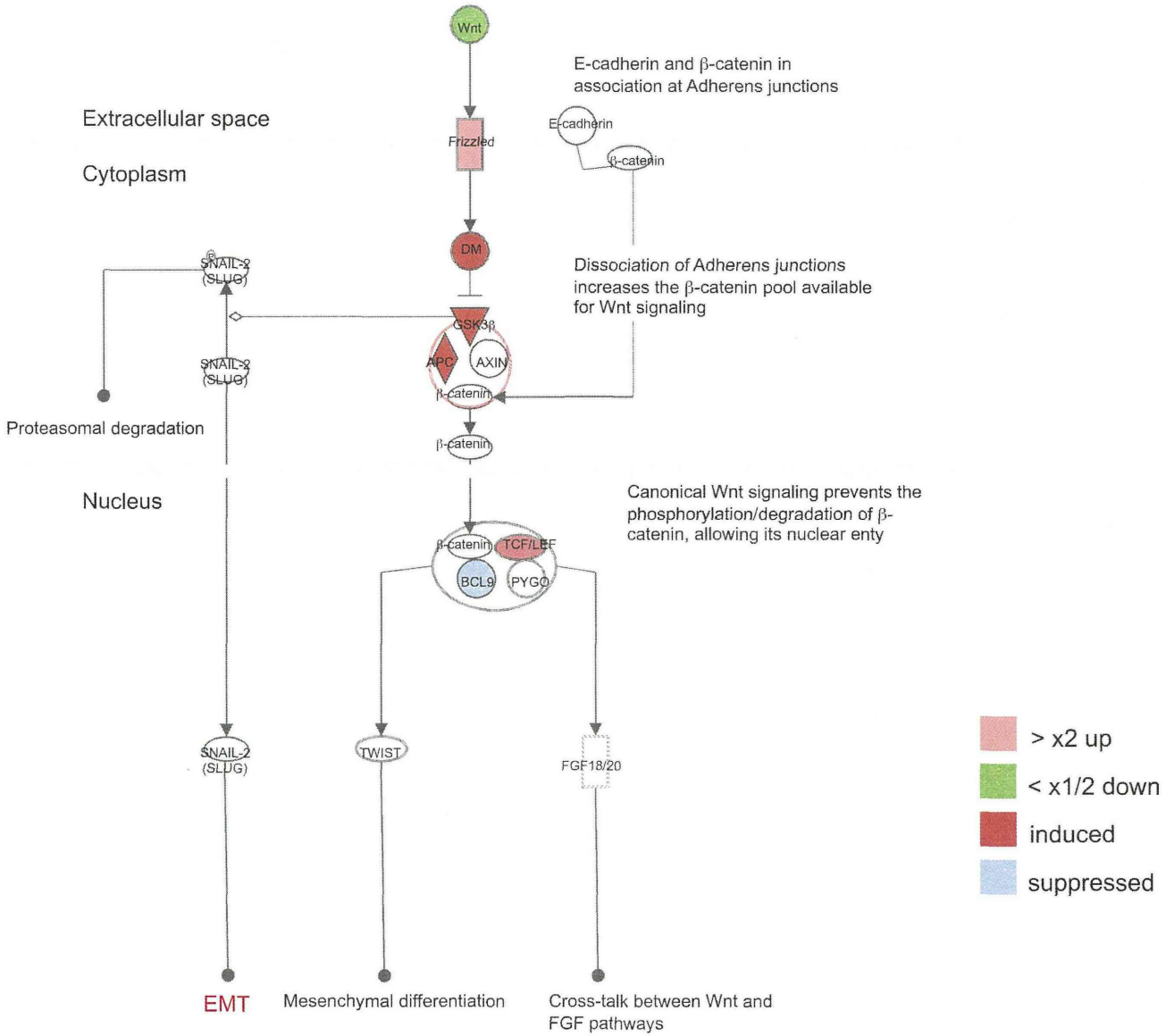


図5-1. Wnt から誘導される EMT Pathway に及ぼす PMEA の影響

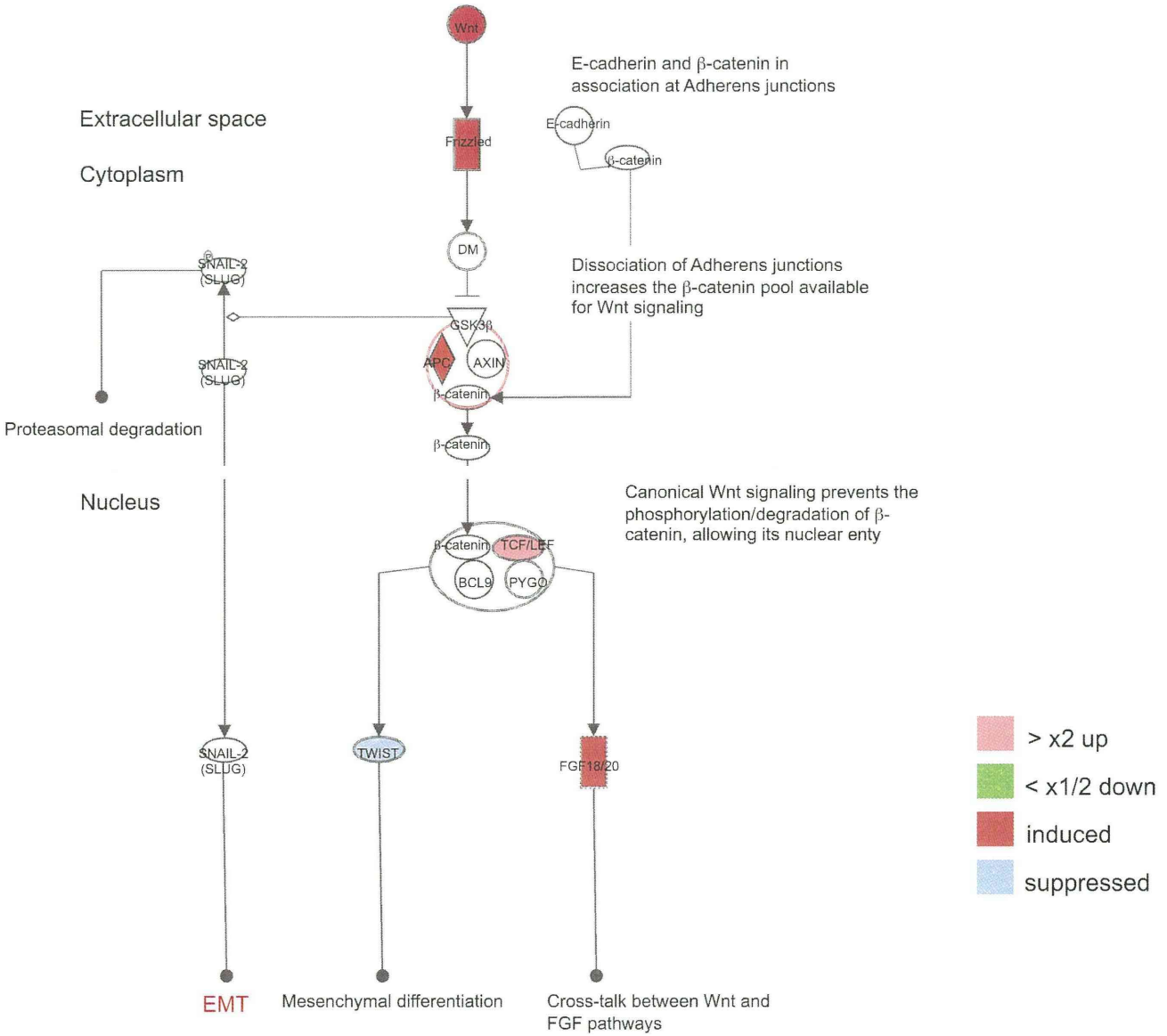


図5-2. Wnt から誘導される EMT Pathway に及ぼす M75H25 の影響

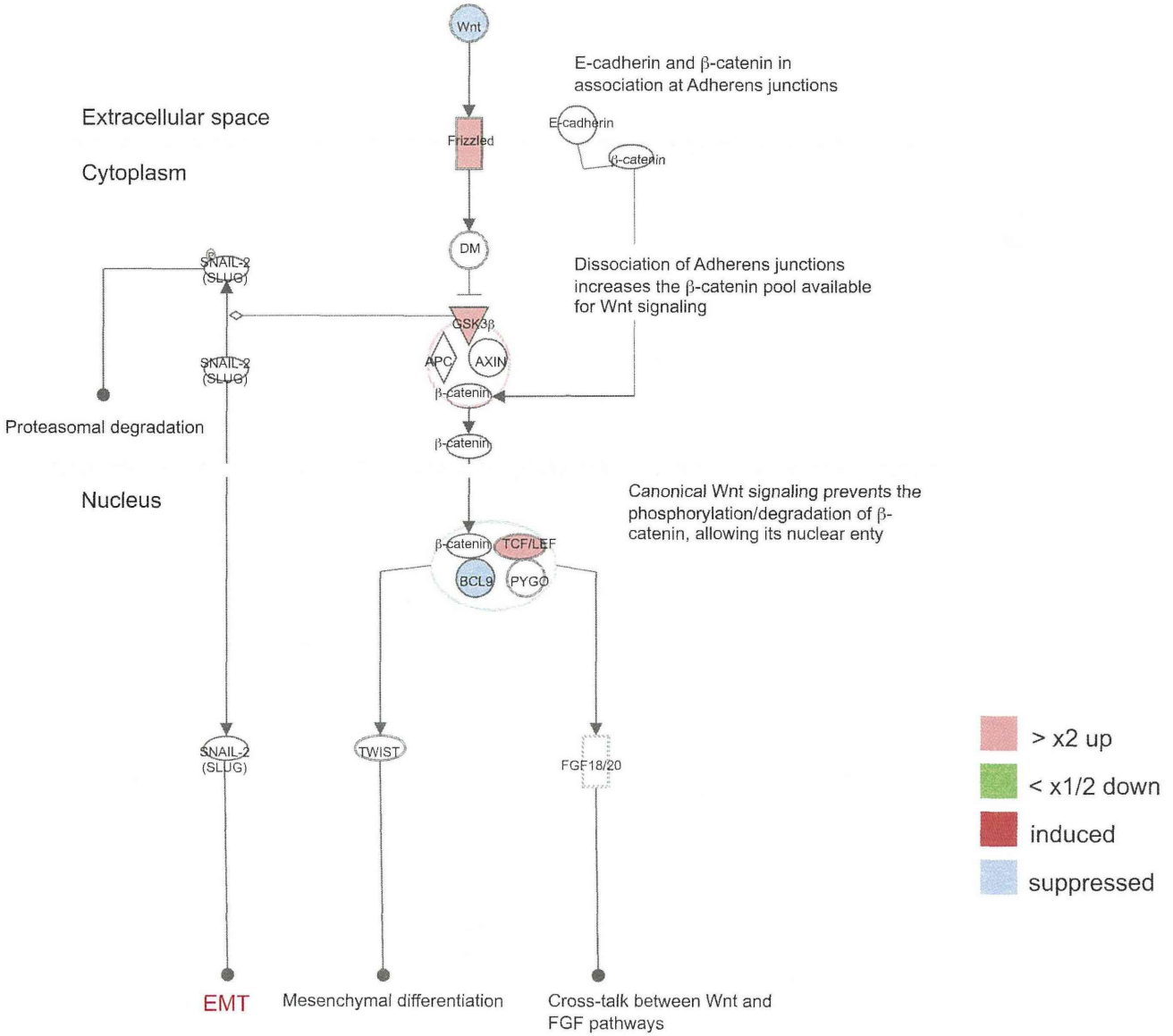


図5-3. Wnt から誘導される EMT Pathway に及ぼす M50H50 の影響

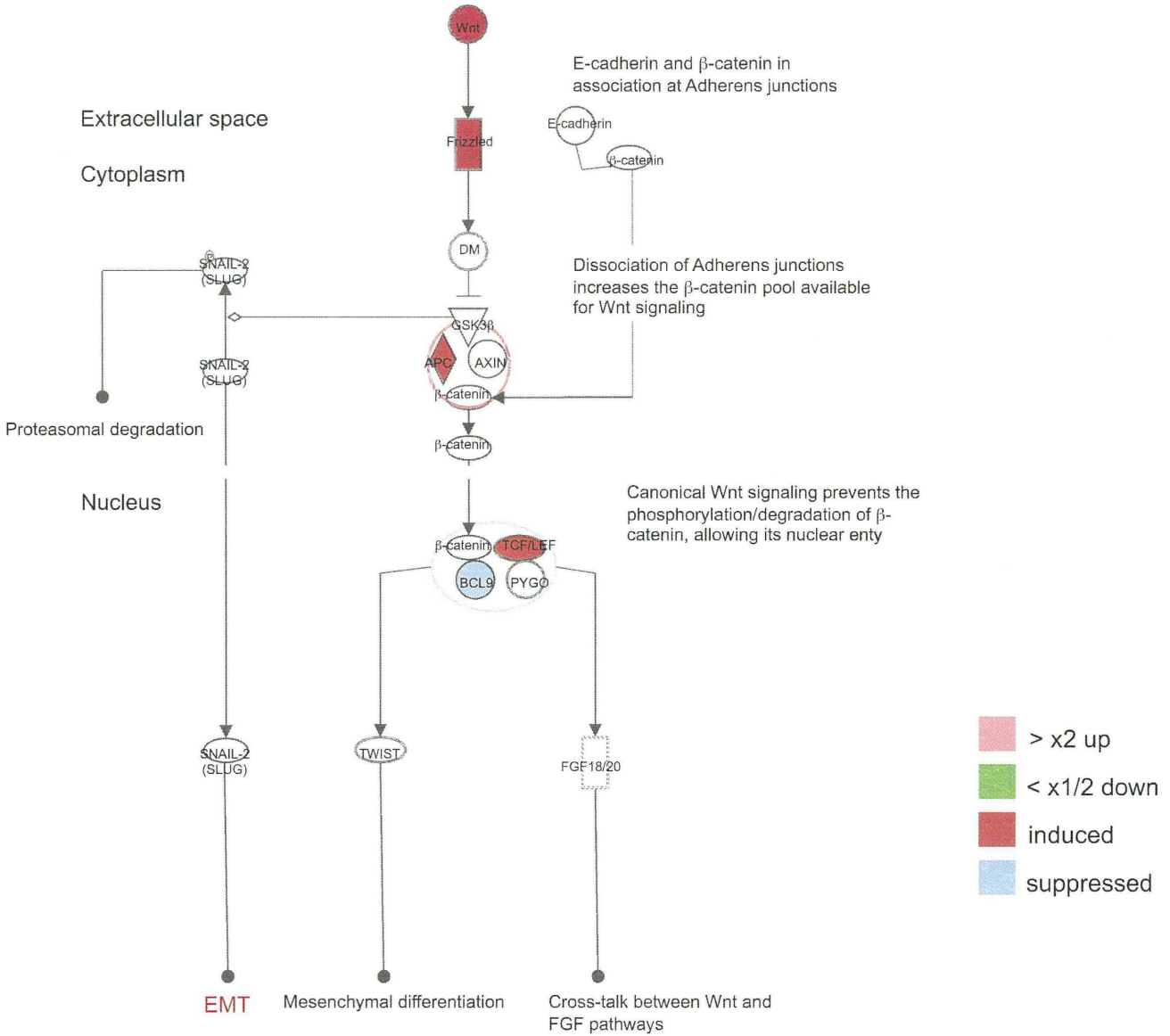


図5-4. Wnt から誘導される EMT Pathway に及ぼす M25H75 の影響

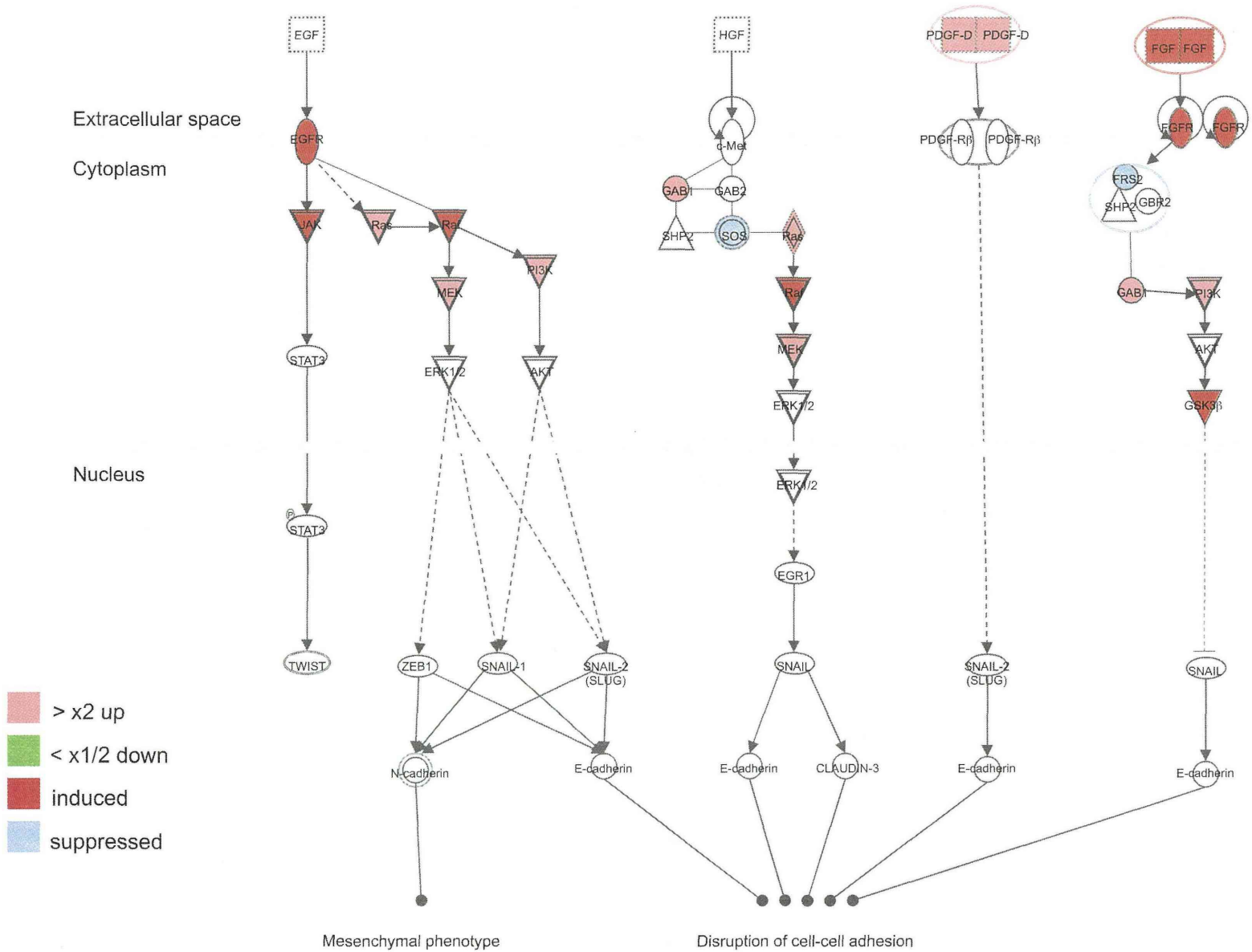


図6-1. Receptor Tyrosine Kinases から誘導される EMT Pathway に及ぼす PMEA の影響

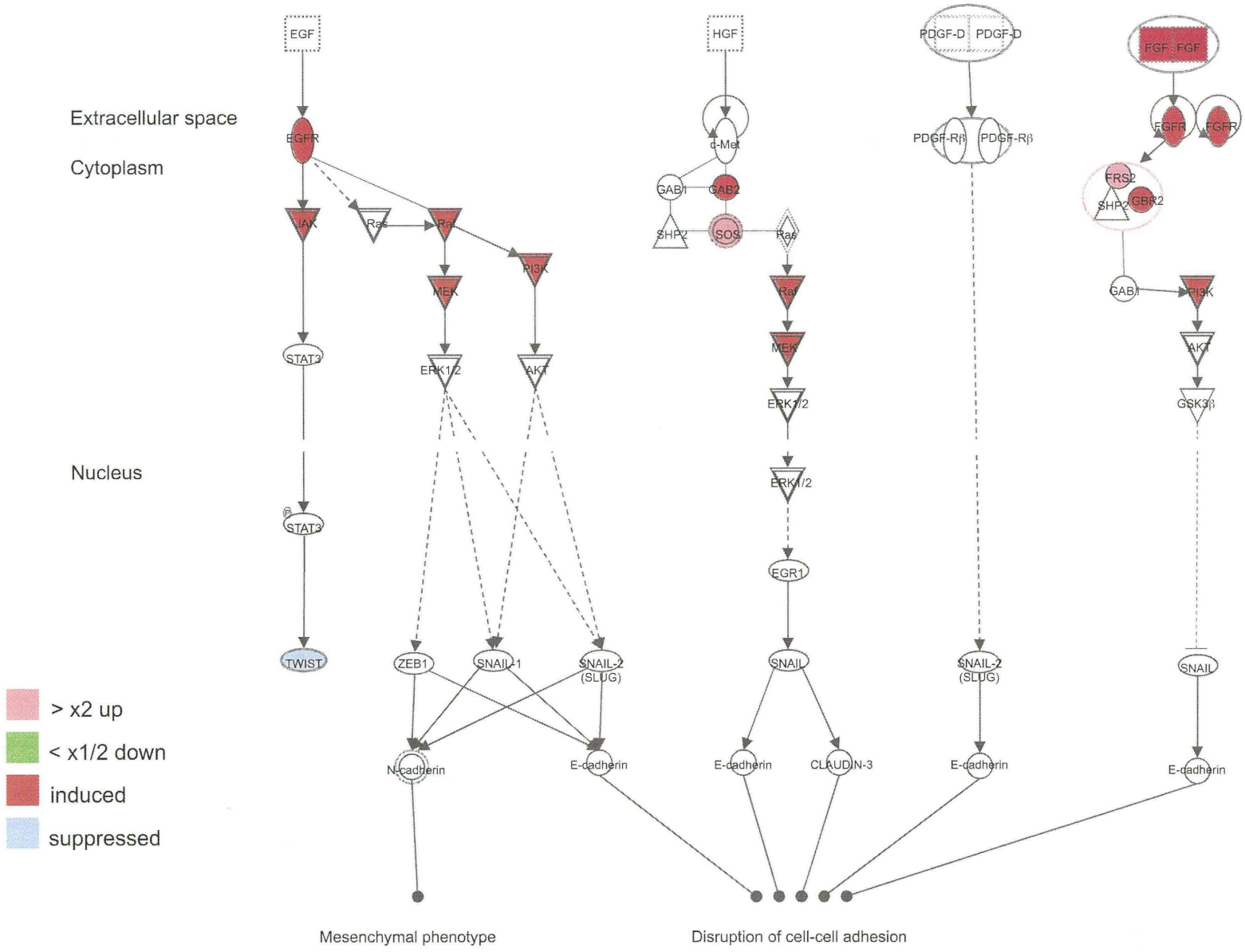


図6-2. Receptor Tyrosine Kinases から誘導される EMT Pathway に及ぼす M75H25 の影響

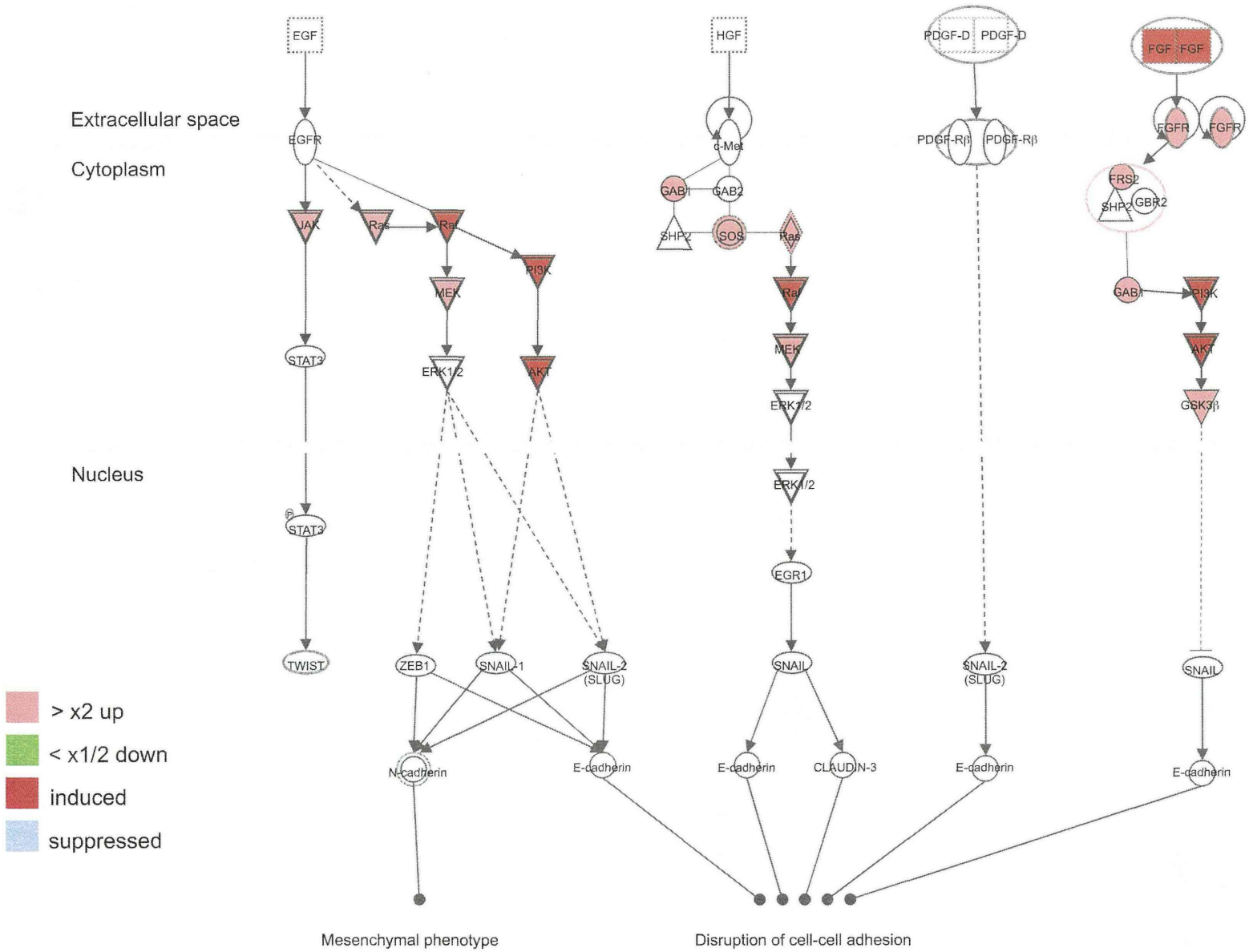


図6-3. Receptor Tyrosine Kinases から誘導される EMT Pathway に及ぼす M50H50 の影響

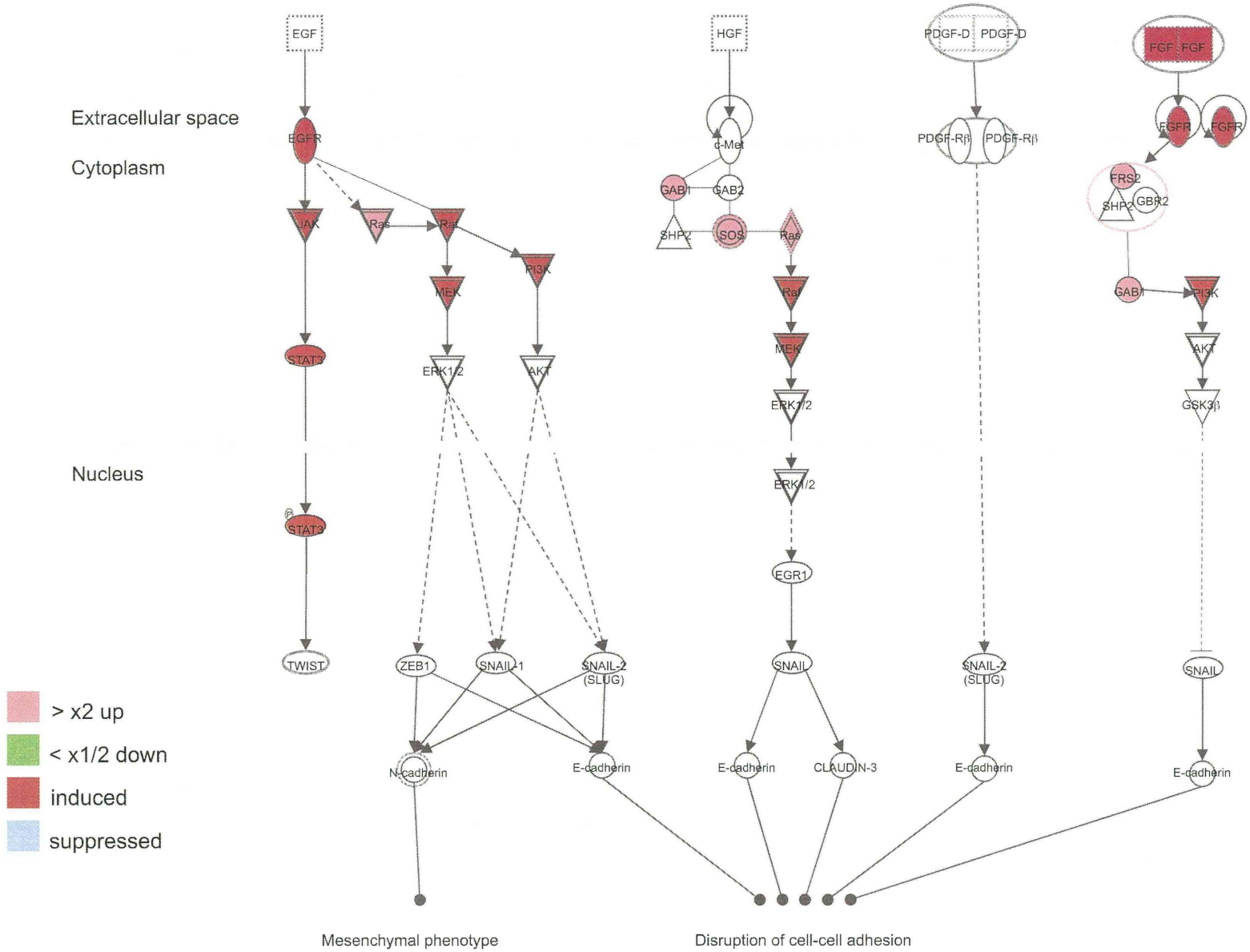


図6-4. Receptor Tyrosine Kinases から誘導される EMT Pathway に及ぼす M25H75 の影響

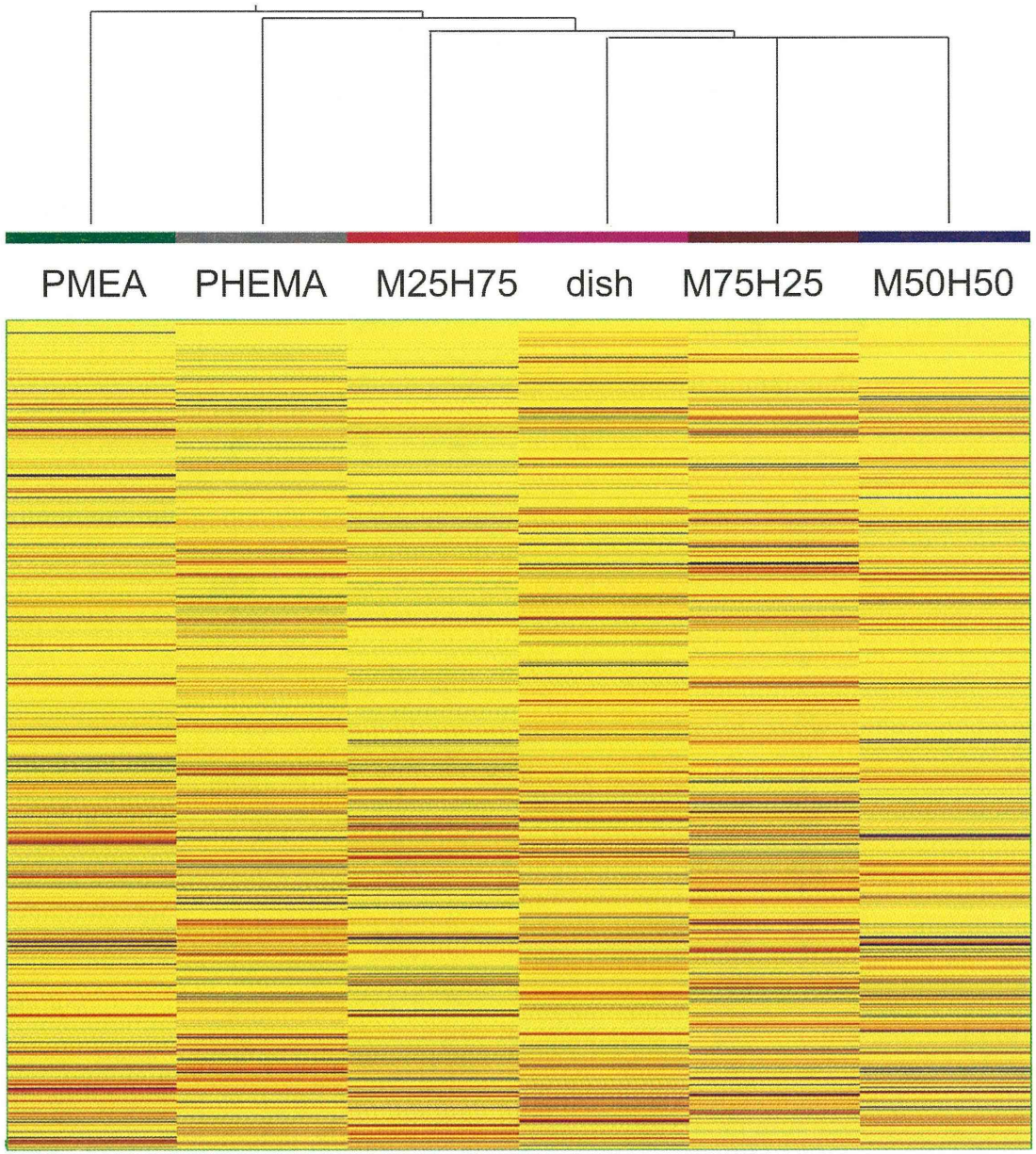
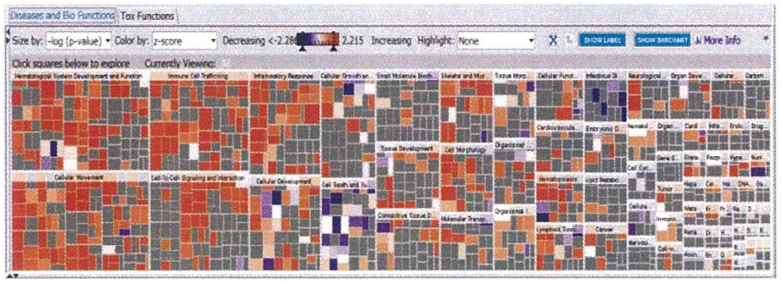
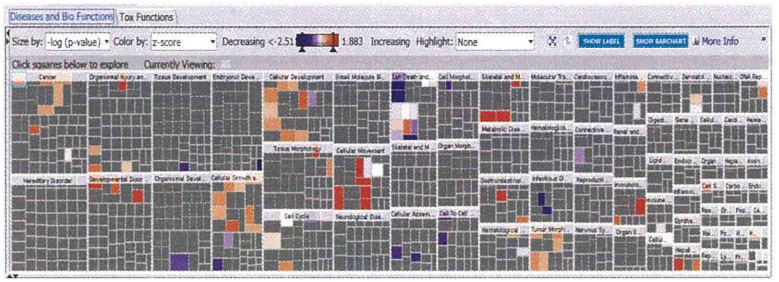


図7. 階層的クラスタリングを用いたTHP-1の遺伝子発現パターンによる各生体親和性高分子材料の分類

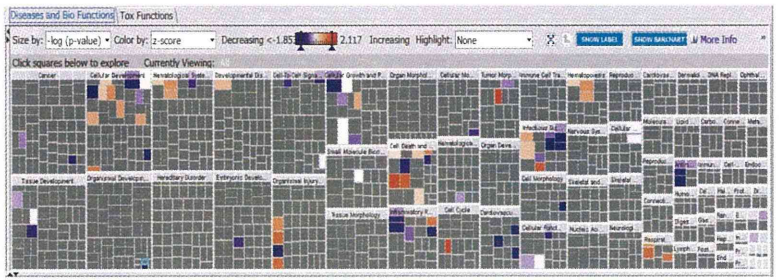
PMEA



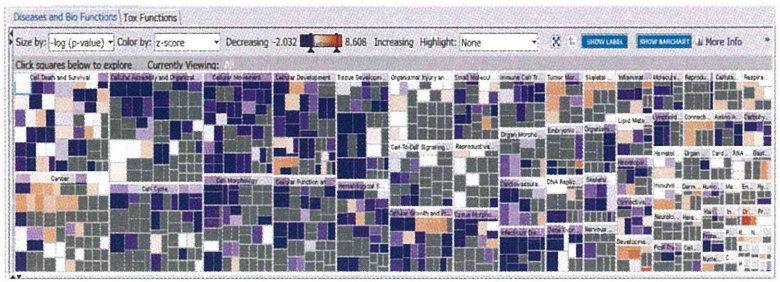
M25H75



M75H25



PHEMA



M50H50

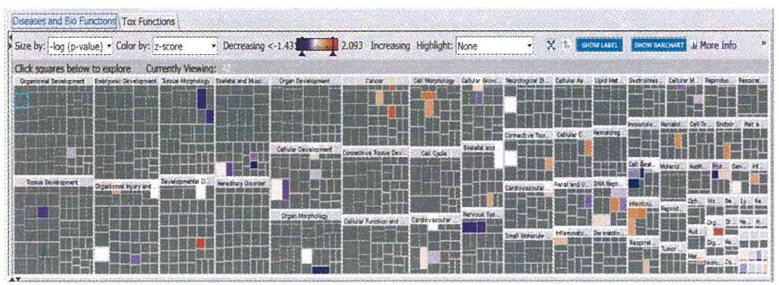


図8. 生体親和性高分子材料によって発現が 2 倍以上上昇または1/2以下に低下した遺伝子群の発現変化が疾病及び生体関連機能に及ぼす影響

表2. PMEA上で培養したTHP-1の遺伝子発現の有意な変化により、有意に上昇した疾病及び生体関連機能

Diseases or Functions Annotation	Category	p-Value	Predicted Activation State	Activation z-score	No. of Molecules
infiltration of myeloid cells	Cellular Movement Hematological System Development and Function Immune Cell Trafficking	1.45E-03	Increased	2.795	12
cell movement of eosinophils	Cellular Movement Hematological System Development and Function Immune Cell Trafficking Hypersensitivity Response	1.51E-03	Increased	2.787	8
infiltration of granulocytes	Cellular Movement Hematological System Development and Function Immune Cell Trafficking	4.11E-03	Increased	2.649	11
cell spreading	Cell Morphology	4.20E-04	Increased	2.603	16
homing of tumor cell lines	Cellular Movement	1.06E-02	Increased	2.585	8
disorder of artery	Cardiovascular Disease	1.18E-02	Increased	2.575	28
differentiation of osteoclasts	Skeletal and Muscular System Development and Function Cellular Development Connective Tissue Development and Function Embryonic Development Organismal Development Tissue Development Organ Development	1.35E-02	Increased	2.534	9
differentiation of mononuclear leukocytes	Hematological System Development and Function Cellular Development Hematopoiesis	8.50E-03	Increased	2.484	21
mobilization of neutrophils	Cellular Movement Hematological System Development and Function Immune Cell Trafficking Inflammatory Response	1.65E-07	Increased	2.431	6
accumulation of granulocytes	Hematological System Development and Function Immune Cell Trafficking Inflammatory Response Tissue Development	4.27E-03	Increased	2.405	7
attraction of mononuclear leukocytes	Cellular Movement Immune Cell Trafficking Cell-To-Cell Signaling and Interaction	5.27E-05	Increased	2.400	6
cell movement of lymphatic system cells	Cellular Movement Immune Cell Trafficking	4.82E-03	Increased	2.395	6
chemoattraction of cells	Cellular Movement Cell-To-Cell Signaling and Interaction	1.27E-03	Increased	2.386	6
accumulation of leukocytes	Hematological System Development and Function Immune Cell Trafficking Inflammatory Response Tissue Development	8.44E-03	Increased	2.374	12
activation of neutrophils	Hematological System Development and Function Immune Cell Trafficking Inflammatory Response Cell-To-Cell Signaling and Interaction	8.16E-03	Increased	2.367	6
dysmyelination of nervous tissue	Neurological Disease	2.33E-05	Increased	2.333	9
infiltration by neutrophils	Cellular Movement Hematological System Development and Function Immune Cell Trafficking Inflammatory Response	3.99E-03	Increased	2.309	9
attraction of myeloid cells	Cellular Movement Immune Cell Trafficking Cell-To-Cell Signaling and Interaction	4.76E-04	Increased	2.216	5
attraction of phagocytes	Cellular Movement Immune Cell Trafficking Cell-To-Cell Signaling and Interaction	1.18E-03	Increased	2.215	5
influx of neutrophils	Cellular Movement Hematological System Development and Function Immune Cell Trafficking Inflammatory Response	2.22E-03	Increased	2.205	5

Diseases or Functions Annotation	Category	p-Value	Predicted Activation State	Activation z-score	No. of Molecules
binding of monocytes	Hematological System Development and Function Inflammatory Response Cell-To-Cell Signaling and Interaction	1.79E-04	Increased	2.201	5
shape change of connective tissue cells	Cell Morphology	4.50E-03	Increased	2.200	5
migration of neutrophils	Cellular Movement Hematological System Development and Function Immune Cell Trafficking Inflammatory Response	8.58E-04	Increased	2.198	8
development of phagocytes	Hematological System Development and Function Cellular Development Hematopoiesis Lymphoid Tissue Structure and Development	3.24E-03	Increased	2.198	6
accumulation of neutrophils	Hematological System Development and Function Immune Cell Trafficking Inflammatory Response Tissue Development	8.09E-03	Increased	2.197	5
attraction of lymphocytes	Cellular Movement Immune Cell Trafficking Cell-To-Cell Signaling and Interaction	2.55E-04	Increased	2.195	5
shape change of granulocytes	Cell Morphology	2.55E-04	Increased	2.195	5
development of macrophages	Hematological System Development and Function Cellular Development Hematopoiesis Lymphoid Tissue Structure and Development	5.49E-04	Increased	2.195	5
development of antigen presenting cells	Hematological System Development and Function Cellular Development Hematopoiesis Lymphoid Tissue Structure and Development	1.16E-03	Increased	2.190	6
chemoattraction of leukocytes	Cellular Movement Hematological System Development and Function Immune Cell Trafficking Inflammatory Response Cell-To-Cell Signaling and Interaction	1.32E-03	Increased	2.167	5
recruitment of macrophages	Cellular Movement Hematological System Development and Function Immune Cell Trafficking Inflammatory Response Cell-To-Cell Signaling and Interaction	9.57E-03	Increased	2.165	6
cell movement of vascular smooth muscle cells	Cellular Movement Skeletal and Muscular System Development and Function	8.66E-05	Increased	2.151	10
osteoclastogenesis	Skeletal and Muscular System Development and Function	1.61E-03	Increased	2.137	7
demyelination of nervous tissue	Neurological Disease	1.41E-04	Increased	2.121	8
differentiation of leukocytes	Hematological System Development and Function Cellular Development Hematopoiesis	6.73E-03	Increased	2.111	25
mobilization of blood cells	Cellular Movement Hematological System Development and Function	2.37E-04	Increased	2.096	7
cell movement of smooth muscle cells	Cellular Movement Skeletal and Muscular System Development and Function	9.58E-05	Increased	2.093	12
migration of granulocytes	Cellular Movement Hematological System Development and Function Immune Cell Trafficking	5.36E-04	Increased	2.081	10
inflammatory response	Inflammatory Response	1.31E-02	Increased	2.003	26
proliferation of myeloma cells	Cellular Development Cellular Growth and Proliferation Cancer Tumor Morphology	2.41E-04	Increased	2.000	4
demyelination of spinal cord	Neurological Disease	1.05E-03	Increased	2.000	4
morphogenesis of endothelial cells	Cardiovascular System Development and Function Cell Morphology Cellular Development Organismal Development Tissue Development	1.07E-02	Increased	2.000	4

表3. PMEA上で培養したTHP-1の遺伝子発現の有意な変化により、有意に低下した疾病及び生体関連機能

Diseases or Functions Annotation	Category	p-Value	Predicted Activation State	Activation z-score	No. of Molecules
infection of cells	Infectious Disease	7.60E-03	Decreased	-3.012	32
HIV infection	Infectious Disease	9.85E-03	Decreased	-2.721	28
infection by HIV-1	Infectious Disease	3.80E-03	Decreased	-2.709	27
proliferation of myeloid progenitor cells	Hematological System Development and Function Cellular Development Cellular Growth and Proliferation Hematopoiesis Lymphoid Tissue Structure and Development	3.70E-03	Decreased	-2.000	4

表4. M75H25上で培養したTHP-1の遺伝子発現の有意な変化により、有意に上昇した疾病及び生体関連機能

Diseases or Functions Annotation	Category	p-Value	Predicted Activation State	Activation z-score	No. of Molecules
interphase	Cell Cycle	2.00E-02	Increased	2.630	19
apoptosis of tumor cells	Cell Death and Survival Tumor Morphology	1.65E-02	Increased	2.015	10

表5. M75H25上で培養したTHP-1の遺伝子発現の有意な変化により、有意に低下した疾病及び生体関連機能

Diseases or Functions Annotation	Category	p-Value	Predicted Activation State	Activation z-score	No. of Molecules
development of cardiovascular system	Cardiovascular System Development and Function	2.60E-02	Decreased	-2.494	27
differentiation of endothelial cells	Cellular Development Cardiovascular System Development and Function	8.80E-03	Decreased	-2.415	6
antiviral response	Antimicrobial Response Inflammatory Response	3.84E-03	Decreased	-2.110	7
antimicrobial response	Antimicrobial Response Inflammatory Response	1.26E-02	Decreased	-2.110	8

表6. M50H50上で培養したTHP-1の遺伝子発現の有意な変化により、有意に上昇した疾病及び生体関連機能

Diseases or Functions Annotation	Category	p-Value	Predicted Activation State	Activation z-score	No. of Molecules
Growth Failure	Developmental Disorder	1.61E-02	Increased	2.548	17
consumption of oxygen	Energy Production	2.85E-02	Increased	2.213	5
organismal death	Organismal Survival	1.80E-02	Increased	2.025	50

表7. M50H50上で培養したTHP-1の遺伝子発現の有意な変化により、有意に低下した疾病及び生体関連機能

Diseases or Functions Annotation	Category	p-Value	Predicted Activation State	Activation z-score	No. of Molecules
vertical rearing	Behavior	2.54E-02	Decreased	-2.000	4

表8. M25H75上で培養したTHP-1の遺伝子発現の有意な変化により、有意に上昇した疾病及び生体関連機能

Diseases or Functions Annotation	Category	p-Value	Predicted Activation State	Activation z-score	No. of Molecules
cell movement of vascular smooth muscle cells	Cellular Movement Skeletal and Muscular System Development and Function	3.19E-02	Increased	2.449	6
cell movement of smooth muscle cells	Cellular Movement Skeletal and Muscular System Development and Function	2.08E-02	Increased	2.135	8
atrophy of thymus gland	Organismal Injury and Abnormalities Immunological Disease	1.73E-02	Increased	2.000	4

表9. M25H75上で培養したTHP-1の遺伝子発現の有意な変化により、有意に低下した疾病及び生体関連機能

Diseases or Functions Annotation	Category	p-Value	Predicted Activation State	Activation z-score	No. of Molecules
apoptosis of fibrosarcoma cell lines	Cell Death and Survival	1.04E-03	Decreased	-2.189	6
size of embryo	Embryonic Development	2.82E-02	Decreased	-3.219	14

表10. PHEMA上で培養したTHP-1の遺伝子発現の有意な変化により、有意に上昇した疾病及び生体関連機能

Diseases or Functions Annotation	Category	p-Value	Predicted Activation State	Activation z-score	No. of Molecules
organismal death	Organismal Survival	1.04E-04	Increased	10.245	192
Growth Failure	Developmental Disorder	1.55E-02	Increased	5.892	52
hypoplasia of organ	Developmental Disorder	1.49E-02	Increased	3.913	29
death of embryo	Organismal Survival Embryonic Development	8.50E-03	Increased	3.561	13
Dermatitis	Inflammatory Response Dermatological Diseases and Conditions Inflammatory Disease	3.61E-03	Increased	2.942	41
hypoplasia of liver	Developmental Disorder Gastrointestinal Disease Hepatic System Disease	6.08E-03	Increased	2.619	7
tumorigenesis of epithelial tumor	Cellular Growth and Proliferation Cellular Development Cancer Tumor Morphology	8.16E-03	Increased	2.374	23
hypoplasia of spleen	Developmental Disorder Immunological Disease	3.82E-04	Increased	2.309	12
tumorigenesis of osteosarcoma	Cellular Growth and Proliferation Cellular Development Cancer Tumor Morphology Connective Tissue Disorders Skeletal and Muscular Disorders	2.31E-03	Increased	2.213	5
tumorigenesis of malignant tumor	Cellular Growth and Proliferation Cellular Development Cancer Tumor Morphology	7.76E-04	Increased	2.029	33
activation of cytarabine	Small Molecule Biochemistry Nucleic Acid Metabolism Drug Metabolism	7.83E-03	Increased	2.000	4

表11. PHEMA上で培養したTHP-1の遺伝子発現の有意な変化により、有意に低下した疾病及び生体関連機能

Diseases or Functions Annotation	Category	p-Value	Predicted Activation State	Activation z-score	No. of Molecules
HIV infection	Infectious Disease	4.28E-03	Decreased	-6.124	63
infection by Retroviridae	Infectious Disease	4.78E-03	Decreased	-6.124	64
infection by HIV-1	Infectious Disease	1.68E-03	Decreased	-5.980	59
infection of cells	Infectious Disease	3.97E-04	Decreased	-5.972	77
proliferation of cells	Cellular Growth and Proliferation	6.64E-06	Decreased	-5.704	279
Viral Infection	Infectious Disease	4.21E-07	Decreased	-5.671	154
cell viability	Cell Death and Survival	3.79E-03	Decreased	-5.255	100
expression of RNA	Gene Expression	1.34E-04	Decreased	-5.225	165
transcription	Gene Expression	1.80E-04	Decreased	-5.105	151
cell survival	Cell Death and Survival	4.66E-03	Decreased	-4.991	107
transcription of RNA	Gene Expression	4.56E-04	Decreased	-4.854	146
proliferation of tumor cell lines	Cellular Growth and Proliferation Cellular Development	1.22E-04	Decreased	-4.791	124
infection of cervical cancer cell lines	Infectious Disease Reproductive System Disease	1.57E-02	Decreased	-4.736	40
infection of tumor cell lines	Infectious Disease	3.06E-03	Decreased	-4.407	49
transactivation of RNA	Gene Expression	1.77E-03	Decreased	-4.280	53
cell viability of tumor cell lines	Cell Death and Survival	1.16E-03	Decreased	-4.072	64
transactivation	Gene Expression	1.73E-03	Decreased	-4.058	56
organization of cytoskeleton	Cellular Assembly and Organization Cellular Function and Maintenance	4.68E-03	Decreased	-3.296	97
organization of cytoplasm	Cellular Assembly and Organization Cellular Function and Maintenance	6.18E-04	Decreased	-3.294	110
ruffling	Cell Morphology	6.31E-03	Decreased	-3.260	12
cell movement of leukemia cell lines	Cellular Movement	2.51E-03	Decreased	-3.249	15
cell transformation	Cancer	4.21E-03	Decreased	-3.179	43
migration of leukemia cell lines	Cellular Movement	1.68E-04	Decreased	-3.094	12
endocytosis	Cellular Function and Maintenance	4.73E-04	Decreased	-2.957	32
G1 phase	Cell Cycle	2.40E-03	Decreased	-2.949	36
cell death of immune cells	Cell Death and Survival	2.47E-03	Decreased	-2.946	57
migration of tumor cell lines	Cellular Movement	2.20E-03	Decreased	-2.938	53
differentiation of cells	Cellular Development	1.59E-03	Decreased	-2.932	148
cell movement of tumor cell lines	Cellular Movement	1.56E-02	Decreased	-2.898	60
proliferation of fibroblast cell lines	Cellular Growth and Proliferation Cellular Development Connective Tissue Development and Function	8.32E-04	Decreased	-2.848	41
replication of Influenza A virus	Infectious Disease	1.21E-02	Decreased	-2.782	27
cell death of embryonic cell lines	Cell Death and Survival Embryonic Development	2.01E-03	Decreased	-2.771	25
cell death of kidney cells	Cell Death and Survival	3.76E-03	Decreased	-2.747	33
development of hematopoietic cells	Cellular Development Hematological System Development and Function Hematopoiesis	5.06E-03	Decreased	-2.745	19
development of hematopoietic progenitor cells	Cellular Development Hematological System Development and Function Hematopoiesis	7.84E-03	Decreased	-2.745	18
colony formation of cells	Cellular Growth and Proliferation	3.70E-03	Decreased	-2.743	43
replication of virus	Infectious Disease	4.68E-03	Decreased	-2.695	49
cell death of epithelial cell lines	Cell Death and Survival	3.04E-04	Decreased	-2.673	31
G1/S phase	Cell Cycle	8.51E-03	Decreased	-2.646	19
necrosis of kidney	Cell Death and Survival	4.51E-03	Decreased	-2.629	34
reorganization of cytoskeleton	Cellular Assembly and Organization Cell Morphology Cellular Function and Maintenance	9.00E-04	Decreased	-2.627	20
quantity of blood cells	Hematological System Development and Function Tissue Morphology	3.59E-03	Decreased	-2.597	84

Diseases or Functions Annotation	Category	p-Value	Predicted Activation State	Activation z-score	No. of Molecules
interphase	Cell Cycle	1.30E-04	Decreased	-2.589	62
cell death of blood cells	Cell Death and Survival	2.45E-03	Decreased	-2.572	59
formation of filaments	Cellular Assembly and Organization Tissue Development	1.54E-03	Decreased	-2.527	37
phosphorylation of protein	Post-Translational Modification	7.38E-04	Decreased	-2.471	64
quantity of trophoblast giant cells	Cellular Growth and Proliferation Cellular Development Tissue Morphology Embryonic Development	6.26E-03	Decreased	-2.449	6
quantity of ovarian follicle	Organ Morphology Reproductive System Development and Function	5.40E-03	Decreased	-2.414	9
development of cytoplasm	Cellular Assembly and Organization	7.95E-06	Decreased	-2.389	48
tubulation of cells	Cell Morphology	1.59E-04	Decreased	-2.386	17
replication of RNA virus	Infectious Disease	3.54E-03	Decreased	-2.355	48
formation of lamellipodia	Cellular Assembly and Organization Cell Morphology Cellular Function and Maintenance	1.22E-02	Decreased	-2.329	15
cell death of kidney cell lines	Cell Death and Survival	1.19E-03	Decreased	-2.326	31
formation of actin filaments	Cellular Assembly and Organization Tissue Development Cellular Function and Maintenance	4.45E-04	Decreased	-2.305	30
apoptosis of embryonic cell lines	Cell Death and Survival Embryonic Development	1.65E-03	Decreased	-2.292	20
conversion of amino acids	Post-Translational Modification Amino Acid Metabolism Small Molecule Biochemistry	1.14E-02	Decreased	-2.236	5
cycling of centrosome	Cell Cycle	8.08E-04	Decreased	-2.219	10
transport of heavy metal	Molecular Transport	1.24E-02	Decreased	-2.216	7
tubulation of endothelial cells	Cardiovascular System Development and Function Cell Morphology Cellular Development Organismal Development Tissue Development	3.05E-05	Decreased	-2.210	16
adhesion of epithelial cell lines	Tissue Development Cell-To-Cell Signaling and Interaction Hair and Skin Development and Function	1.42E-02	Decreased	-2.207	6
formation of cytoskeleton	Cellular Assembly and Organization	1.84E-05	Decreased	-2.205	40
formation of extracellular matrix	Tissue Development	5.20E-04	Decreased	-2.185	6
proliferation of carcinoma cell lines	Cellular Growth and Proliferation Cellular Development	6.16E-03	Decreased	-2.182	26
cell movement of lymphocytes	Cellular Movement Hematological System Development and Function Immune Cell Trafficking	4.46E-03	Decreased	-2.167	35
invasion of tumor cell lines	Cellular Movement	7.51E-03	Decreased	-2.129	46
apoptosis of epithelial cell lines	Cell Death and Survival	1.08E-03	Decreased	-2.124	24
formation of actin stress fibers	Cellular Assembly and Organization Tissue Development Cellular Function and Maintenance	1.84E-04	Decreased	-2.099	26
receptor-mediated endocytosis	Cellular Function and Maintenance	1.56E-03	Decreased	-2.025	15
invasion of cells	Cellular Movement	1.37E-02	Decreased	-2.006	60
quantity of bone marrow cells	Tissue Morphology Lymphoid Tissue Structure and Development	7.26E-04	Decreased	-2.003	20
binding of blood vessel	Cardiovascular System Development and Function	1.75E-03	Decreased	-2.000	4
adipogenesis of fat	Connective Tissue Development and Function Small Molecule Biochemistry Lipid Metabolism	7.83E-03	Decreased	-2.000	4
conversion of L-amino acid	Post-Translational Modification Amino Acid Metabolism Small Molecule Biochemistry	9.83E-03	Decreased	-2.000	4