

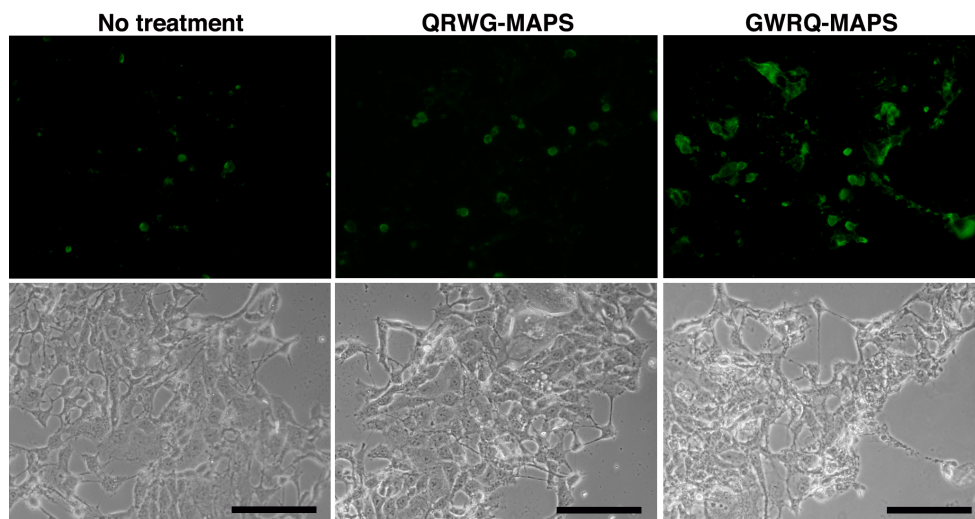
Supplemental Information for:

## **Trophinin-mediated cell adhesion induces apoptosis of human endometrial epithelial cells through PKC- $\delta$**

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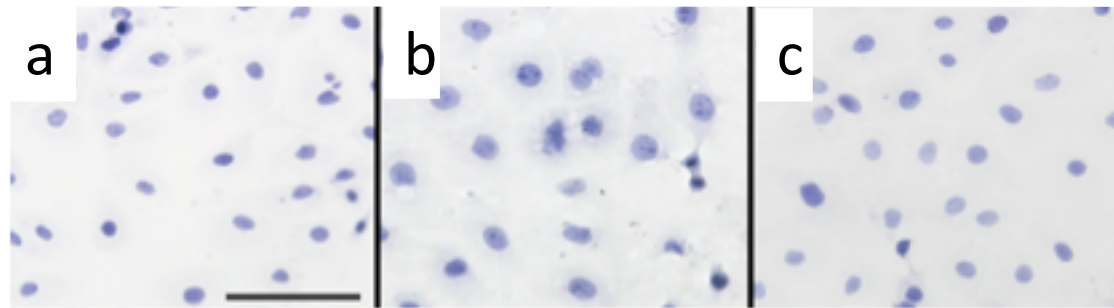
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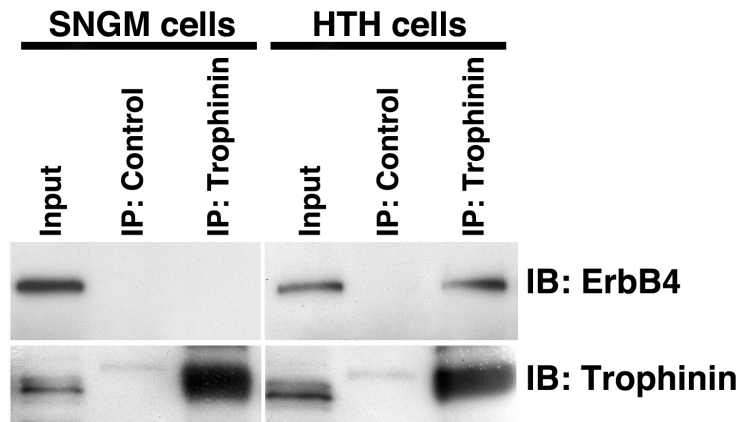
**Fig. S1.** Apoptosis assay using immunofluorescence microscopy for cell surface Annexin V, 6 hours after adding PBS containing 10  $\mu\text{g/ml}$  each of control-MAPS or GWRQ-MAPS peptides. Note that the number of cells showing surface Annexin V staining increased in the presence of GWRQ-MAPS. Lower panels show corresponding phase-contrast images. Scale bars indicate 100  $\mu\text{m}$ .

Table S1. Quantitative analysis of phospho-specific multiple Western blots shown in Fig. S5.

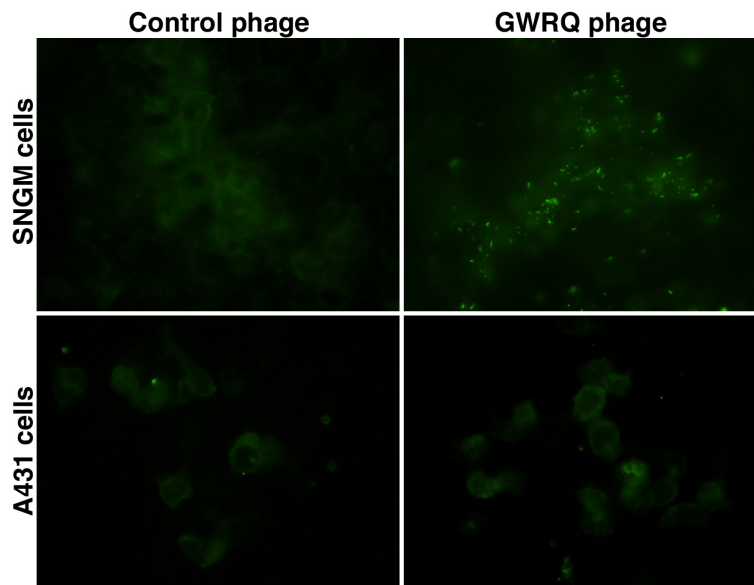
		1.3-CTL Norm CPM	1.3-GWR2 Norm CPM	1.3-CTL %	1.3-GWR2 %
Adenovirus gamma 1 (AD1) [2726]	Adenovirus 1 Lane 2	1632	1076	Control	-41%
Adenovirus gamma 2 (AD2) [2692]	Adenovirus 1 Lane 2	1640	2533	Control	56%
B23 (nucleophosmin, nucleolin, nucleolar protein N23B) [54]	B23 (NP1) Lane 19	182	182	Control	12%
cAMP response element binding protein 1 [2132]	CREB1 Lane 20	883	1118	Control	26%
Cyclin-dependent protein-enzyme kinase 12 [2115] (24)	CDK12 (24) Lane 2				
Cyclin-dependent protein-enzyme kinase 13 [2115] (27)	CDK13 (27) Lane 2	3034	4132	Control	26%
Double-stranded RNA-dependent protein-enzyme kinase [2451] (85)	PKR1 (85) Lane 16	274	194	Control	-30%
Double-stranded RNA-dependent protein-enzyme kinase [2451] (73)	PKR1 (73) Lane 16	712	368	Control	-48%
Endothelial regulated protein-enzyme kinase 1 (p44 MAP kinase) [1220-V204]	ERK1 Lane 8	1245	761	Control	-39%
Endothelial regulated protein-enzyme kinase 2 (p42 MAP kinase) [1220-V187]	ERK2 Lane 8	6884	5929	Control	-12%
Glycogen synthase-enzyme kinase 3 alpha [221]	GSK3a Lane 15	900	624	Control	-31%
Glycogen synthase-enzyme kinase 3 alpha [221] (44)	GSK3a (44) Lane 17	1878	1427	Control	-24%
Glycogen synthase-enzyme kinase 3 alpha [221] (46)	GSK3a (46) Lane 17				
Glycogen synthase-enzyme kinase 3 beta [258]	GSK3b Lane 15	912	785	Control	-13%
Glycogen synthase-enzyme kinase 3 beta [258] (24)	GSK3b (24) Lane 17				
Glycogen synthase-enzyme kinase 3 beta [258] (26)	GSK3b (26) Lane 17	4872	2798	Control	-43%
Jun N-terminus protein-enzyme kinase (stress-activated protein kinase) [1133-V182] (37)	JNK (37) Lane 6	1123	1548	Control	38%
Jun N-terminus protein-enzyme kinase (stress-activated protein kinase) [1133-V182] (36)	JNK (36) Lane 6				
Jun N-terminus protein-enzyme kinase (stress-activated protein kinase) [1133-V182] (44)	JNK (44) Lane 6	408	473	Control	11%
Jun N-terminus protein-enzyme kinase (stress-activated protein kinase) [1133-V182] (46)	JNK (46) Lane 6	905	923	Control	5%
Jun proto-oncogene-encoded AP1 transcription factor [372] (37)	Jun (37) Lane 11				
Jun proto-oncogene-encoded AP1 transcription factor [372] (29)	Jun (29) Lane 11	131	126	Control	-4%
Jun proto-oncogene-encoded AP1 transcription factor [372] (41)	Jun (41) Lane 11	373	356	Control	-5%
Jun proto-oncogene-encoded AP1 transcription factor [372] (43)	Jun (43) Lane 11	182	143	Control	-21%
MAPK/ERK protein-enzyme kinase 1.2 (MAPK12) [2118-S222]	MEK12 (MAP2K12) Lane 19	1352	1027	Control	-26%
MAPK/ERK protein-enzyme kinase 3.8 (MAPK38) [2185-S207]	MEK38 (MAP2K38) Lane 7				
Mitogen & stress-activated protein-enzyme kinase 1 [3372] (86)	MS1 (86) Lane 15	133	111	Control	-17%
Mitogen & stress-activated protein-enzyme kinase 1 [3372] (74)	MS1 (74) Lane 15	292	155	Control	-47%
Mitogen-activated protein-enzyme kinase $\beta$ 2B alpha [1133-V182] (36)	$\beta$ 2B MAPK (36) Lane 18	437	481	Control	5%
Mitogen-activated protein-enzyme kinase $\beta$ 2B alpha [1133-V182] (45)	$\beta$ 2B MAPK (45) Lane 18	382	108	Control	-49%
N-methyl-D-aspartate (NMDA) glutamate receptor 1 subunit alpha [2698]	NR1 Lane 3	324	193	Control	-40%
p70 (ribosomal protein-enzyme S6 kinase alpha) [7336]	S6K1 (p70 S6K1) Lane 8	377	458	Control	21%
p85 (ribosomal protein-enzyme S6 kinase alpha) [7336]	S6K1 (p85 S6K1) Lane 8	344	415	Control	21%
Protein-enzyme kinase B alpha [2472]	PKB1 (Akt1) Lane 14	6035	5903	Control	43%
Protein-enzyme kinase B alpha [2508]	PKB1 (Akt1) Lane 13	3052	3758	Control	4%
Protein-enzyme kinase C alpha [2487]	PKC1a Lane 5	8736	8899	Control	3%
Protein-enzyme kinase C alpha/beta2 [1768-7641]	PKC1a2 Lane 7	1666	1704	Control	2%
Protein-enzyme kinase C delta [2722]	PKC1d Lane 13	189	74	Control	-61%
Protein-enzyme kinase C epsilon [2722]	PKC1e Lane 5				
Raf1 proto-oncogene-encoded protein-enzyme kinase [2326] (83)	Raf1 (83) Lane 12	333	288	Control	-13%
Raf1 proto-oncogene-encoded protein-enzyme kinase [2326] (83)	Raf1 (83) Lane 12	152	158	Control	4%
Retrotransposon associated protein 1 [2176]	RA1 Lane 18	644	383	Control	-41%
Retrotransposon associated protein 1 [2687-S811]	RA1 Lane 20				
Ribosomal S6 protein-enzyme kinase 1.3 [2326-S263] [2326-S263] (79)	RSK13 (79) Lane 6				
Ribosomal S6 protein-enzyme kinase 1.3 [2326-S263] [2326-S263] (87)	RSK13 (87) Lane 6				
Signal transducer and activator of transcription 1 [2710] (78)	STAT1 (78) Lane 12	275	143	Control	-48%
Signal transducer and activator of transcription 1 [2710] (87)	STAT1 (87) Lane 12				
Signal transducer and activator of transcription 3 [2712]	STAT3 Lane 10	2625	2244	Control	-15%
Signal transducer and activator of transcription-5A [2694]	STAT5A Lane 4	77	87	Control	12%
SMA- and myosin segment disintegrating homologue 1.55 [5463-S463] [5463-S463] [5463-S463]	Smad155 Lane 9	376	351	Control	-7%
Src proto-oncogene-encoded protein-enzyme kinase [2426] (44)	Src (44) Lane 5				
Src proto-oncogene-encoded protein-enzyme kinase [2426] (46)	Src (46) Lane 5				
Src proto-oncogene-encoded protein-enzyme kinase [2426] (44)	Src (44) Lane 2	7434	9318	Control	25%
Src proto-oncogene-encoded protein-enzyme kinase [2426] (46)	Src (46) Lane 2				



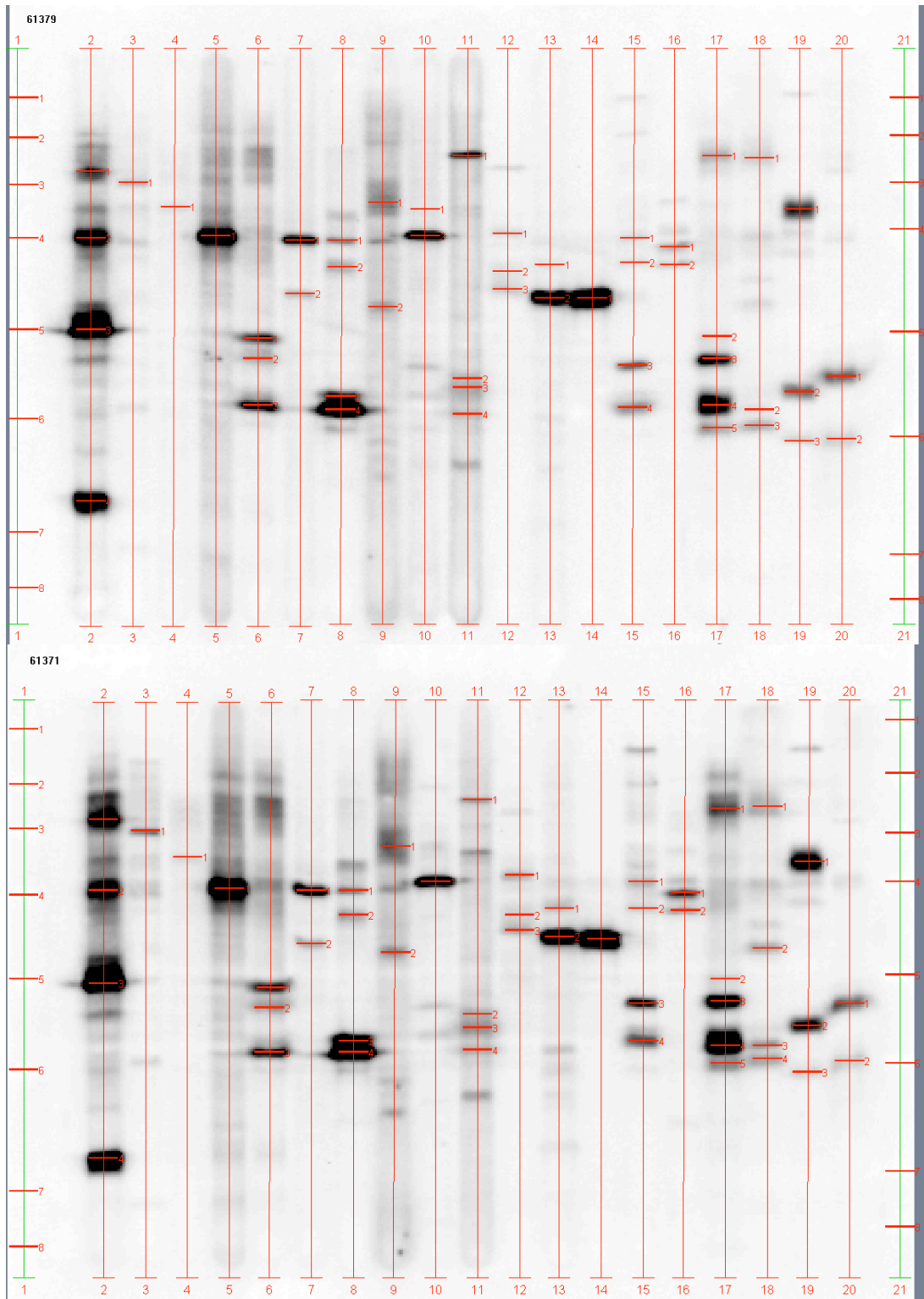
**Fig. S2.** TUNEL assay of A431 cells cultured in medium containing none (a), control-MAPS (b), or GWRQ-MAPS (c) at 37 °C for 20 hours.



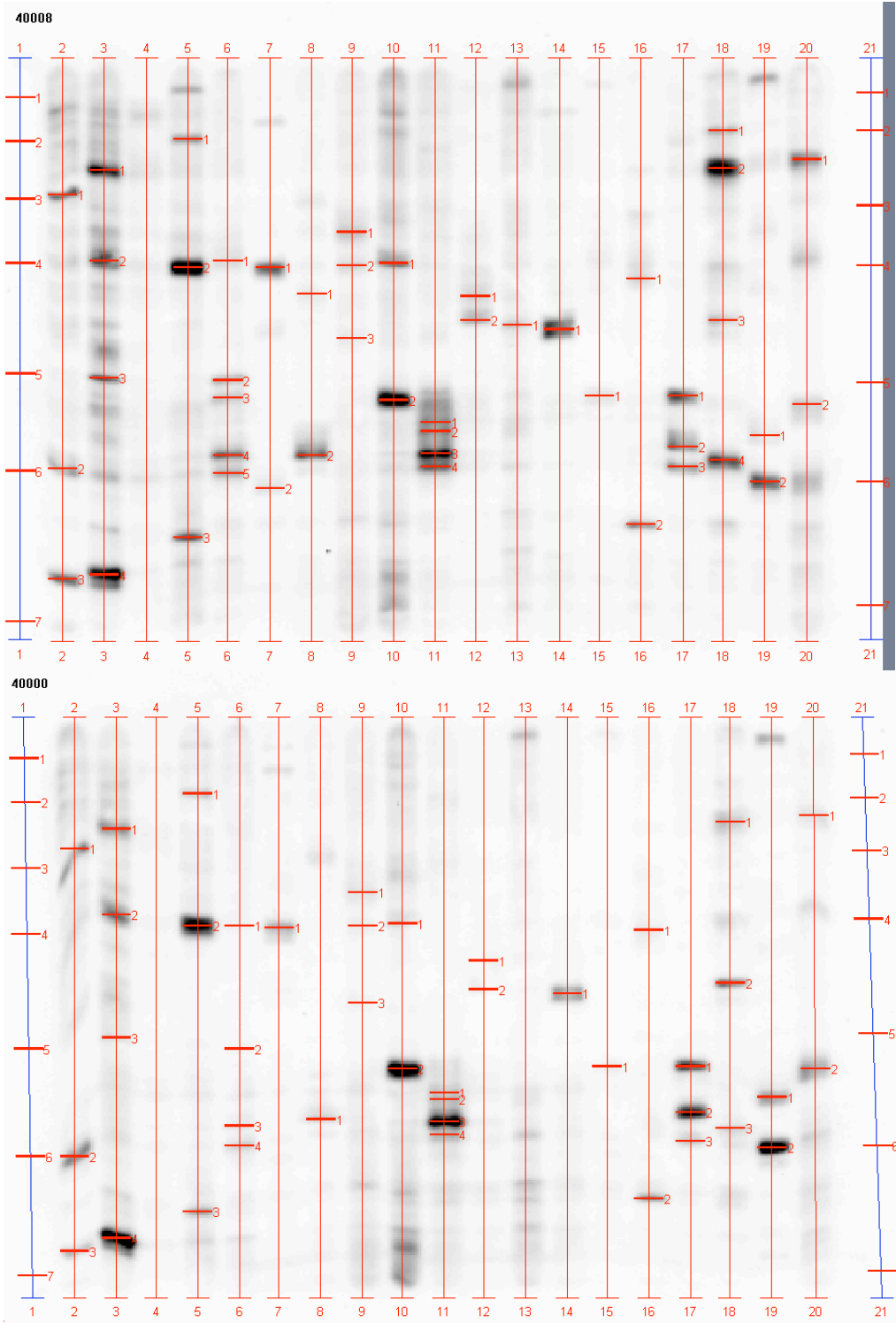
**Fig. S3.** Association of trophinin and ErbB4 in SNG-M and HT-H cells. Western blot analysis of ErbB4 in SNG-M cells or HT-H cells. Cell lysates from each line were subjected to co-immunoprecipitation with control antibody or with anti-trophinin antibody. Immunoprecipitates were analyzed by Western blot using anti-ErbB4 antibody (upper panels). After stripping the blots, the same filters were reacted with an anti-trophinin antibody (lower panels).



**Fig. S4.** Immunofluorescence microscopy analysis of SNG-M cells or control A431 cells with an anti-phage antibody. Cells were bound with control phage without insert or with GWRQ peptide-displaying phage. Cells were then reacted with anti-fd phage antibody followed by Alexa488-conjugated anti-rabbit IgG antibody.

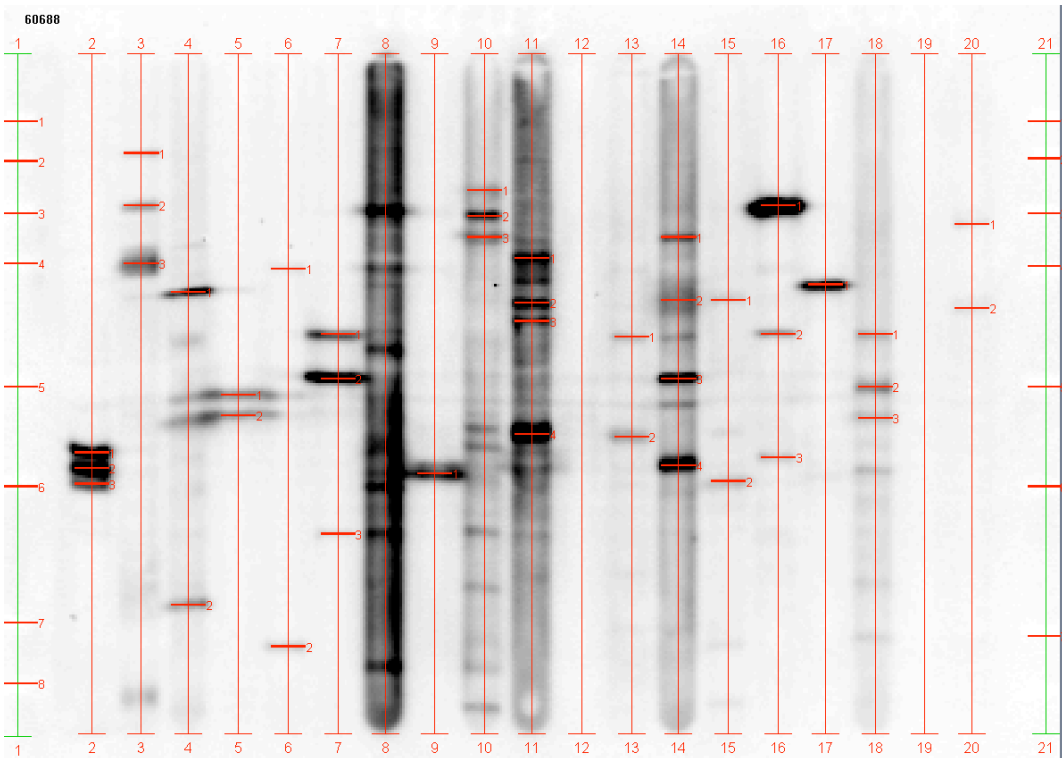
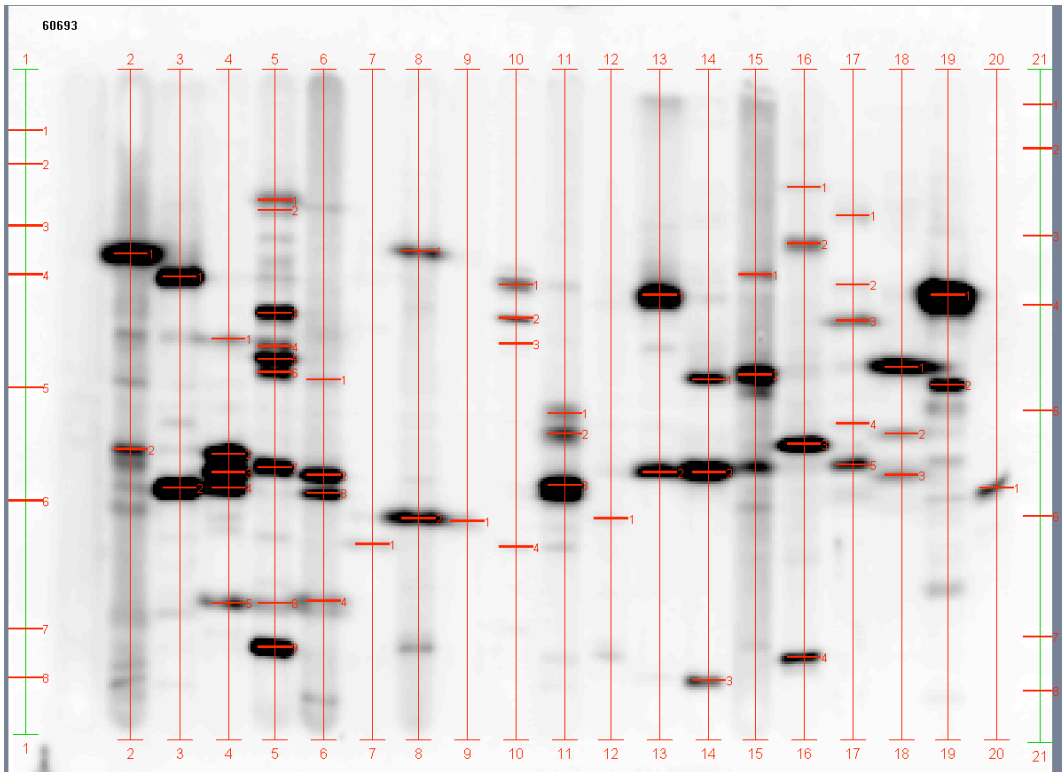


**Fig. S5.** Western blot of SNG-M cells lysates each prepared from SNG-M cells treated with (up) or without (low) GWRQ-MAPS at 37C for 30 min. Each lane was reacted with phosphospecific antibodies for phosphorylated proteins listed in Table S1.

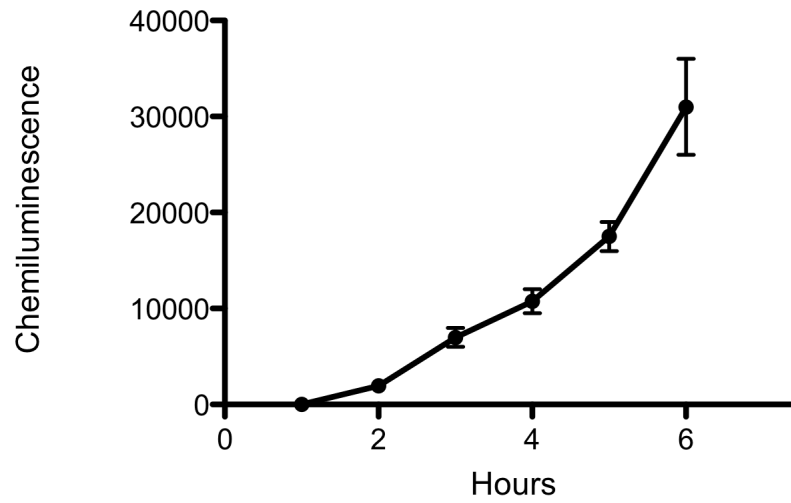


**Fig. S6.** Western blot of cell lysates, each prepared from HT-H cells treated with (up) or without (low) GWRQ-MAPS peptide at 37 C for 30 min. Each lane was reacted with phosphospecific antibodies for the phosphorylated proteins listed in Table S2.

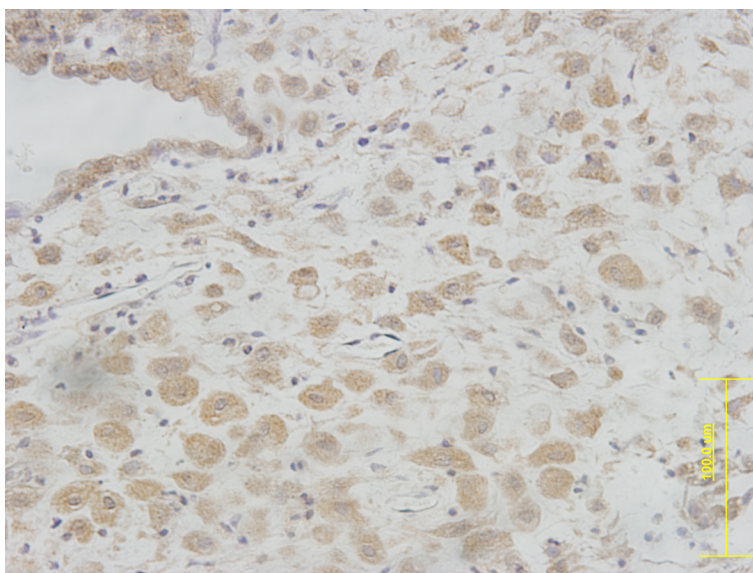




**Fig. S7.** Multiple Western blots for protein kinases expressed in SNG-M cells treated with (up) or without (low) GWRQ-MAPS at 37C for 30 min. Each lane was reacted with specific antibodies listed in Table S3.



**Fig. S8.** Caspase 3/7 activity of SNG-M cells cultured in medium containing 20  $\mu\text{g}/\text{mL}$  GWRQ-MAPS peptide.



**Fig. S9.** Immunohistochemistry of human placental tissue section from the first trimester pregnancy by anti-trophinin antibody (clone 3-11, mouse IgM).

Table S1. Quantitative analysis of phospho-specific multiple Western blots of SNG-M cells shown in Fig. S5.

	1.3-CTL Norm CPM	1.3-GWRQ Norm CPM	1.3-CTL %	1.3-GWRQ %
Adducin alpha (ADD1) [S726]				
Adducin gamma (ADD3) [S693]				
B23 (nucleophosmin, numatrin, nucleolar protein NO38) [S4]				
cAMP response element binding protein 1 [S133]				
Cyclin-dependent protein-serine kinase 1/2 [Y15] (24)				
Cyclin-dependent protein-serine kinase 1/2 [Y15] (27)				
Double-stranded RNA-dependent protein-serine kinase [T451] (65)				
Double-stranded RNA-dependent protein-serine kinase [T451] (73)				
Extracellular regulated protein-serine kinase 1 (p44 MAP kinase) [T202+Y204]				
Extracellular regulated protein-serine kinase 2 (p42 MAP kinase) [T185+Y187]				
Glycogen synthase-serine kinase 3 alpha [S21]				
Glycogen synthase-serine kinase 3 alpha [Y279] (44)				
Glycogen synthase-serine kinase 3 alpha [Y279] (49)				
Glycogen synthase-serine kinase 3 beta [S9]				
Glycogen synthase-serine kinase 3 beta [Y216] (34)				
Glycogen synthase-serine kinase 3 beta [Y216] (39)				
Jun N-terminus protein-serine kinase (stress-activated protein kinase (SAPK)) [T183+Y185] (37)				
Jun N-terminus protein-serine kinase (stress-activated protein kinase (SAPK)) [T183+Y185] (38)				
Jun N-terminus protein-serine kinase (stress-activated protein kinase (SAPK)) [T183+Y185] (44)				
Jun N-terminus protein-serine kinase (stress-activated protein kinase (SAPK)) [T183+Y185] (46)				
Jun proto-oncogene-encoded AP1 transcription factor [S73] (37)				
Jun proto-oncogene-encoded AP1 transcription factor [S73] (39)				
Jun proto-oncogene-encoded AP1 transcription factor [S73] (41)				
Jun proto-oncogene-encoded AP1 transcription factor [S73] (43)				
MAPK/ERK protein-serine kinase 1/2 (MKK1/2) [S218+S222]				
MAPK/ERK protein-serine kinase 3/6 (MKK3/6) [S189/S207]				
Mitogen & stress-activated protein-serine kinase 1 [S376] (66)				
Mitogen & stress-activated protein-serine kinase 1 [S376] (74)				
Mitogen-activated protein-serine kinase p38 alpha [T180+Y182] (36)				
Mitogen-activated protein-serine kinase p38 alpha [T180+Y182] (40)				
N-methyl-D-aspartate (NMDA) glutamate receptor 1 subunit zeta [S896]				
p70 ribosomal protein-serine S6 kinase alpha [T389]				
p85 ribosomal protein-serine S6 kinase alpha [T389]				
Protein-serine kinase B alpha [S473]				
Protein-serine kinase B alpha [T308]				
Protein-serine kinase C alpha [S657]				
Protein-serine kinase C alpha/beta 2 [T638/T641]				
Protein-serine kinase C delta [T507]				
Protein-serine kinase C epsilon [S729]				
Raf1 proto-oncogene-encoded protein-serine kinase [S259] (60)				
Raf1 proto-oncogene-encoded protein-serine kinase [S259] (63)				
Retinoblastoma-associated protein 1 [S780]				
Retinoblastoma-associated protein 1 [S807+S811]				
Ribosomal S6 protein-serine kinase 1/3 [T359+S363/T356+S360] (79)				
Ribosomal S6 protein-serine kinase 1/3 [T359+S363/T356+S360] (87)				
Signal transducer and activator of transcription 1 [Y701] (78)				
Signal transducer and activator of transcription 1 [Y701] (87)				
Signal transducer and activator of transcription 3 [S727]				
Signal transducer and activator of transcription 5A [Y694]				
SMA- and mothers against decapentaplegic homologs 1/5/9 [S463+S465/S463+S465/S465+S467]				
Src proto-oncogene-encoded protein-tyrosine kinase [Y418] (44)				
Src proto-oncogene-encoded protein-tyrosine kinase [Y418] (46)				
Src proto-oncogene-encoded protein-tyrosine kinase [Y529] (44)				
Src proto-oncogene-encoded protein-tyrosine kinase [Y529] (46)				
Adducin a Lane 2	1832	1076	Control	-41%
Adducin g Lane 2	1640	2593	Control	58%
B23 (NPM) Lane 19	162	182	Control	12%
CREB1 Lane 20	883	1116	Control	26%
CDK1/2 (24) Lane 2				
CDK1/2 (27) Lane 2	3634	4592	Control	26%
PKR1 (65) Lane 16	274	184	Control	-33%
PKR1 (73) Lane 16	702	366	Control	-48%
Erk1 Lane 8	1245	761	Control	-39%
Erk2 Lane 8	6684	5909	Control	-12%
GSK3a Lane 15	900	624	Control	-31%
GSK3a (44) Lane 17	1878	1427	Control	-24%
GSK3a (49) Lane 17				
GSK3b Lane 15	992	785	Control	-21%
GSK3b (34) Lane 17				
GSK3b (39) Lane 17	4672	2796	Control	-40%
JNK (37) Lane 6	1123	1546	Control	38%
JNK (38) Lane 6				
JNK (44) Lane 6	426	473	Control	11%
JNK (46) Lane 6	905	953	Control	5%
Jun (37) Lane 11				
Jun (39) Lane 11	131	126	Control	-4%
Jun (41) Lane 11	373	356	Control	-5%
Jun (43) Lane 11	182	143	Control	-21%
MEK1/2 (MAP2K1/2) Lane 19	1352	1007	Control	-26%
MEK3/6 (MAP2K3/6) Lane 7				
Msk1 (66) Lane 15	133	111	Control	-17%
Msk1 (74) Lane 15	292	155	Control	-47%
p38a MAPK (36) Lane 18	437	461	Control	5%
p38a MAPK (40) Lane 18	352	108	Control	-69%
NR1 Lane 3	324	193	Control	-40%
S6Ka (p70 S6Ka) Lane 8	377	458	Control	21%
S6Ka (p85 S6Ka) Lane 8	344	415	Control	21%
PKBa (Akt1) Lane 14	6636	9491	Control	43%
PKBa (Akt1) Lane 13	3652	3798	Control	4%
PKCa Lane 5	6736	6909	Control	3%
PKCa/b2 Lane 7	1666	1704	Control	2%
PKCd Lane 13	189	74	Control	-61%
PKCe Lane 9				
Raf1 (60) Lane 12	333	299	Control	-10%
Raf1 (63) Lane 12	152	158	Control	4%
Rb Lane 18	644	383	Control	-41%
Rb Lane 20				
RSK1/3 (79) Lane 6				
RSK1/3 (87) Lane 6				
STAT1 (78) Lane 12	275	143	Control	-48%
STAT1 (87) Lane 12				
STAT3 Lane 10	2625	2244	Control	-15%
STAT5A Lane 4	77	87	Control	13%
Smad1/5/9 Lane 9	376	351	Control	-7%
Src (44) Lane 5				
Src (46) Lane 5				
Src (44) Lane 2	7434	9316	Control	25%
Src (46) Lane 2				

Table S2. Quantitative analysis of phospho-specific multiple Western blots of HT-H cells shown in Fig. S6

	pep- Norm CPM	pep+ Norm CPM	pep- %	pep+ %
Adducin alpha (ADD1) [S726]				
Adducin gamma (ADD3) [S693]				
B23 (nucleophosmin, numatrin, nucleolar protein NO38) [S4]				
cAMP response element binding protein 1 [S133]				
Cyclin-dependent protein-serine kinase 1/2 [Y15] (24)				
Cyclin-dependent protein-serine kinase 1/2 [Y15] (27)				
Double-stranded RNA-dependent protein-serine kinase [T451] (65)				
Double-stranded RNA-dependent protein-serine kinase [T451] (73)				
Extracellular regulated protein-serine kinase 1 (p44 MAP kinase) [T202+Y204]				
Extracellular regulated protein-serine kinase 2 (p42 MAP kinase) [T185+Y187]				
Glycogen synthase-serine kinase 3 alpha [S21]				
Glycogen synthase-serine kinase 3 alpha [Y279] (44)				
Glycogen synthase-serine kinase 3 alpha [Y279] (49)				
Glycogen synthase-serine kinase 3 beta [S9]				
Glycogen synthase-serine kinase 3 beta [Y216] (34)				
Glycogen synthase-serine kinase 3 beta [Y216] (39)				
Jun N-terminus protein-serine kinase (stress-activated protein kinase (SAPK)) [T183/Y185] (37)				
Jun N-terminus protein-serine kinase (stress-activated protein kinase (SAPK)) [T183/Y185] (38)				
Jun N-terminus protein-serine kinase (stress-activated protein kinase (SAPK)) [T183/Y185] (44)				
Jun N-terminus protein-serine kinase (stress-activated protein kinase (SAPK)) [T183/Y185] (46)				
Jun proto-oncogene-encoded AP1 transcription factor [S73] (37)				
Jun proto-oncogene-encoded AP1 transcription factor [S73] (39)				
Jun proto-oncogene-encoded AP1 transcription factor [S73] (41)				
Jun proto-oncogene-encoded AP1 transcription factor [S73] (43)				
MAP kinase protein-serine kinase 3/6 (MKK3/6) [S189/S207]				
MAP kinase protein-serine kinase 6 (MKK6) [S207]				
MAPK/ERK protein-serine kinase 1/2 (MKK1/2) [S217/S221]				
Mitogen & stress-activated protein-serine kinase 1 [S376] (66)				
Mitogen & stress-activated protein-serine kinase 1 [S376] (74)				
Mitogen-activated protein-serine kinase p38 alpha [T180+Y182] (36)				
Mitogen-activated protein-serine kinase p38 alpha [T180+Y182] (40)				
N-methyl-D-aspartate (NMDA) glutamate receptor 1 subunit zeta [S896]				
p70 ribosomal protein-serine S6 kinase alpha [T389]				
p85 ribosomal protein-serine S6 kinase 2 [T412]				
Protein-serine kinase B alpha (Akt1) [S473]				
Protein-serine kinase B alpha (Akt1) [T308]				
Protein-serine kinase C alpha [S657]				
Protein-serine kinase C alpha/beta 2 [T638/T641]				
Protein-serine kinase C delta [T507]				
Protein-serine kinase C epsilon [S729]				
Raf1 proto-oncogene-encoded protein-serine kinase [S259] (60)				
Raf1 proto-oncogene-encoded protein-serine kinase [S259] (63)				
Retinoblastoma protein [S780]				
Retinoblastoma protein [S807-S811]				
Ribosomal S6 protein-serine kinase 1/3 [T359+S363/T356+S360] (79)				
Ribosomal S6 protein-serine kinase 1/3 [T359+S363/T356+S360] (87)				
Signal transducer and activator of transcription 1 [Y701] (78)				
Signal transducer and activator of transcription 1 [Y701] (87)				
Signal transducer and activator of transcription 3 [S727]				
Signal transducer and activator of transcription 5 [Y694]				
SMA- and mothers against decapentaplegic homologs 1/5/9 [S463+S465/S463+S465/S465+S467]				
Src proto-oncogene-encoded protein-tyrosine kinase [Y418] (44)				
Src proto-oncogene-encoded protein-tyrosine kinase [Y418] (46)				
Src proto-oncogene-encoded protein-tyrosine kinase [Y529] (44)				
Src proto-oncogene-encoded protein-tyrosine kinase [Y529] (46)				
Adducin a Lane 3	1308	1826	Control	40%
Adducin g Lane 3	2225	1664	Control	-25%
B23 (NPM) Lane 19	4047	1885	Control	-53%
CREB1 Lane 20	1752	743	Control	-58%
CDK1/2 (24) Lane 3				
CDK1/2 (27) Lane 3	5216	3462	Control	-34%
PKR (65) Lane 16				
PKR (73) Lane 16	214	342	Control	60%
Erk1 Lane 8				
Erk2 Lane 8	466	1244	Control	167%
GSK3a Lane 15	173	302	Control	75%
GSK3a (44) Lane 17	2160	1493	Control	-31%
GSK3a (49) Lane 17				
GSK3b Lane 15				
GSK3b (34) Lane 17	437	788	Control	80%
GSK3b (39) Lane 17	2814	1078	Control	-62%
JNK (37) Lane 6	182	1035	Control	469%
JNK (38) Lane 6				
JNK (44) Lane 6		441	Control	Incr
JNK (46) Lane 6	63	516	Control	719%
Jun (37) Lane 11	738	1344	Control	82%
Jun (39) Lane 11	3637	2369	Control	-35%
Jun (41) Lane 11	765	1000	Control	31%
Jun (43) Lane 11	560	986	Control	76%
MEK3/6 Lane 7		230	Control	Incr
MEK6 Lane 7				
MEK1/2 Lane 19	1395	254	Control	-82%
Msk1 (66) Lane 15				
Msk1 (74) Lane 15				
p38a MAPK (36) Lane 18	374	1977	Control	429%
p38a MAPK (40) Lane 18				
NR1 Lane 2				
S6Ka p70 Lane 8		171	Control	Incr
S6K2 p85 Lane 8				
PKBa (Akt1) Lane 14	1592	2182	Control	37%
PKBa (Akt1) Lane 13		300	Control	Incr
PKCa Lane 5	4386	3794	Control	-13%
PKCab2 Lane 7	1014	1561	Control	54%
PKCd Lane 13				
PKCe Lane 9	385	606	Control	57%
Raf1 (60) Lane 12				
Raf1 (63) Lane 12				
Rb Lane 18	1194	3078	Control	158%
Rb Lane 20	434	1402	Control	223%
RSK1/3 (79) Lane 6	74	273	Control	269%
RSK1/3 (87) Lane 6				
STAT1 (78) Lane 12				
STAT1 (87) Lane 12				
STAT3 Lane 10	232	756	Control	226%
STAT5 Lane 4				
Smad1/5/8 Lane 9	117	127	Control	9%
Src (44) Lane 5				
Src (46) Lane 5				
Src (44) Lane 3				
Src (46) Lane 3	201	658	Control	227%

Table S3. Quantitative analysis of multiple Western blots for protein kinases expressed in SNG-M cells, shown in Fig. S7.

	KS-CTL Norm CPM	KS-GWRQ Norm CPM	KS-CTL %	KS-GWRQ %
3-phosphoinositide-dependent protein-serine kinase 1				
Aurora Kinase A (serine/threonine protein kinase 6)		PDK1 Lane 6		
Casein protein-serine kinase 2 alpha/ alpha prime (35)		Aurora A (AIK) Lane 17	Control	14%
Casein protein-serine kinase 2 alpha/ alpha prime (37)		CK2a (35) Lane 20		
Casein protein-serine kinase 2 alpha/ alpha prime (39)		CK2a (37) Lane 20		
Cyclin-dependent protein-serine kinase 1		CK2a (39) Lane 20	Control	-15%
Cyclin-dependent protein-serine kinase 2		CDK1 (CDK2) Lane 4	Control	-5%
Cyclin-dependent protein-serine kinase 4		CDK2 Lane 6	Control	-28%
Cyclin-dependent protein-serine kinase 5		CDK4 Lane 5	Control	-41%
Cyclin-dependent protein-serine kinase 6		CDK5 Lane 3		
Cyclin-dependent protein-serine kinase 7		CDK6 Lane 7	Control	-28%
Cyclin-dependent protein-serine kinase 9		CDK7 Lane 8	Control	-29%
DNA-activated protein-serine kinase		CDK9 Lane 9	Control	5%
Double stranded RNA dependent protein-serine kinase		DNAPK Lane 14		
Elongation factor-2 protein-serine kinase		PKR1 Lane 17	Control	43%
Extracellular regulated protein-serine kinase 1 (p44 MAP kinase) (40)		eEF2K Lane 16	Control	15%
Extracellular regulated protein-serine kinase 1 (p44 MAP kinase) (41)		Erk1 (40) Lane 4		
		Erk1 (41) Lane 4	Control	-19%
Extracellular regulated protein-serine kinase 1/2 (p44/p42 MAP kinase) (40/39)		Erk1/2 (40/39) Lane 4	Control	-24%
Extracellular regulated protein-serine kinase 2 (p42 MAP kinase) (37)		Erk2 (37) Lane 4	Control	8%
Extracellular regulated protein-serine kinase 2 (p42 MAP kinase) (37)		Erk2 (37) Lane 6	Control	4%
Extracellular regulated protein-serine kinase 2 (p42 MAP kinase) (39)		Erk2 (39) Lane 6	Control	-19%
Extracellular regulated protein-serine kinase 2 (p42 MAP kinase) (39)		Erk2 (39) Lane 4		
Extracellular regulated protein-serine kinase 3 (52)		Erk3 (52) Lane 2		
Extracellular regulated protein-serine kinase 3 (56)		Erk3 (56) Lane 2		
Glycogen synthase-serine kinase 3 alpha (44)		GSK3a (44) Lane 18	Control	-27%
Glycogen synthase-serine kinase 3 beta (40)		GSK3b (40) Lane 18	Control	-8%
Inhibitor of NF-kappa-B protein-serine kinase beta		IKKb Lane 17	Control	79%
Jun N-terminus protein-serine kinases (stress-activated protein kinase (SAPK)) 1/2/3 (38)		JNK (38) Lane 11	Control	-3%
Jun N-terminus protein-serine kinases (stress-activated protein kinase (SAPK)) 1/2/3 (45)		JNK (45) Lane 11	Control	-24%
MAPK/ERK protein-serine kinase 1 (MKK1)		MEK1 (MAP2K1) Lane 13	Control	-24%
MAPK/ERK protein-serine kinase 2 (MKK2)		MEK2 (MAP2K2) Lane 14	Control	-11%
MAPK/ERK protein-serine kinase 4 (MKK4)		MEK4 (MAP2K4) Lane 15		
MAPK/ERK protein-serine kinase 6 (MKK6)		MEK6 (MAP2K6) Lane 16		
Mitogen-activated protein-serine kinase p38 alpha		p38a MAPK Lane 3	Control	-10%
Moloney sarcoma oncogene-encoded protein-serine kinase		Mos Lane 12	Control	-38%
Osaka thyroid oncogene protein-serine kinase (Tip2)		COT Lane 19	Control	-5%
p21-activated kinase 1 (alpha) (serine/threonine-protein kinase PAK 1)		PAK1 Lane 14	Control	30%
p21-activated kinase 3 (beta) (serine/threonine-protein kinase PAK 3)		PAK3 Lane 15	Control	2%
p70 ribosomal protein-serine S6 kinase alpha/beta (59)		S6Ka/b (p70 S6Ka/b) (59) Lane 18	Control	13%
p70 ribosomal protein-serine S6 kinase alpha/beta (61)		S6Ka/b (p70 S6Ka/b) (61) Lane 18		
p70 ribosomal protein-serine S6 kinase alpha/beta (63)		S6Ka/b (p70 S6Ka/b) (63) Lane 18		
Protein-serine kinase B alpha (57)		PKBa (Akt1) (57) Lane 4	Control	2%
Protein-serine kinase B alpha (60)		PKBa (Akt1) (60) Lane 4		
Protein-serine kinase C alpha		PKCa Lane 5		
Protein-serine kinase C beta 1		PKCb1 Lane 3	Control	28%
Protein-serine kinase C delta		PKCd Lane 10	Control	176%
Protein-serine kinase C epsilon (91)		PKCe (91) Lane 8	Control	29%
Protein-serine kinase C epsilon (96)		PKCe (96) Lane 8		
Protein-serine kinase C gamma		PKCg Lane 7		
Protein-serine kinase C lambda/ iota		PKCil Lane 11		
Protein-serine kinase C mu (Protein kinase D) (110)		PKCm (PKD) (110) Lane 5	Control	18%
Protein-serine kinase C mu (Protein kinase D) (120)		PKCm (PKD) (120) Lane 5	Control	76%
Protein-serine kinase C theta		PKCt Lane 12		
Protein-serine kinase C zeta (78)		PKCz (78) Lane 13	Control	5%
Protein-serine kinase C zeta (83)		PKCz (83) Lane 13		
RafB proto-oncogene-encoded protein-serine kinase		RafB (Braf) Lane 2	Control	70%
Ribosomal S6 protein-serine kinase 1 (78)		RSK1 (78) Lane 19	Control	45%
Ribosomal S6 protein-serine kinase 1 (84)		RSK1 (84) Lane 19		
Ribosomal S6 protein-serine kinase 2 (73)		RSK2 (73) Lane 20		
Ribosomal S6 protein-serine kinase 2 (78)		RSK2 (78) Lane 20		