

**Table SI. OE POU2F2 target sequences.**

ATGGTTCACTCCAGCATGGGGGCTCCAGAAATAAGAATGTCTAAGCCCCTGGAG  
GCCGAGAAGCAAGGTCTGGACTCCCCATCAGAGCACACAGACACCGAAAGAAAT  
GGACCAGACACTAATCATCAGAACCCCCAAAATAAGACCTCCCCATTCTCCGTGT  
CCCCAACTGGCCCCAGTACAAAGATCAAGGCTGAAGACCCCAGTGGCGATTTCAG  
CCCCAGCAGCACCCCTGCCCCCTCAGCCGGCCCAGCCTCATCTGCCCCAGGCCCA  
ACTCATGTTGACGGGCAGCCAGCTAGCTGGGGACATACAGCAGCTCCTCCAGCT  
CCAGCAGCTGGTGCTTGTGCCAGGCCACCACCTCCAGCCACCTGCTCAGTTCCTG  
CTACCGCAGGCCCAGCAGAGCCAGCCAGGCCTGCTACCGACACCAAATCTATTC  
CAGCTACCTCAGCAAACCCAGGGAGCTCTTCTGACCTCCCAGCCCCGGGCCGGG  
CTTCCCACACAGCCCCCAAATGCTTGGAGCCACCATCCCACCCCGAGGAGGCCA  
GTGATCTGGAGGAGCTGGAGCAATTCGCCCGCACCTTCAAGCAACGCCGCATCA  
AGCTGGGCTTCACGCAGGGTGATGTGGGCCTGGCCATGGGCAAGCTCTACGGCA  
ACGACTTCAGCCAGACGACCATTTCCCGCTTCGAGGCCCTCAACCTGAGCTTCAA  
GAACATGTGCAAACCTCAAGCCCCTCCTGGAGAAGTGGCTCAACGATGCAGAGAC  
TATGTCTGTGGACTCAAGCCTGCCAGCCCCAACCAGCTGAGCAGCCCCAGCCTG  
GGTTTCGACGGCCTGCCCGGCCGGAGACGCAAGAAGAGGACCAGCATCGAGACA  
AACGTCCGCTTCGCCTTAGAGAAGAGTTTTCTAGCGAACCAGAAGCCTACCTCAG  
AGGAGATCCTGCTGATCGCCGAGCAGCTGCACATGGAGAAGGAAGTGATCCGCG  
TCTGGTTCTGCAACCGGCGCCAGAAGGAGAAACGCATCAACCCCTGCAGTGCGG  
CCCCATGCTGCCAGCCCAGGGAAGCCGGCCAGCTACAGCCCCCATATGGTCA  
CACCCCAAGGGGGCGCGGGGACCTTACCGTTGTCCCAAGCTTCCAGCAGTCTGA  
GCACAACAGTTACTACCTTATCCTCAGCTGTGGGGACGCTCCACCCAGCCGGAC  
AGCTGGAGGGGGTGGGGGCGGGGGCGGGGCTGCGCCCCCCTCAATTCCATCCC  
CTCTGTCACTCCCCACCCCGGCCACCACCAACAGCACAAACCCAGCCCTCAA  
GGCAGCCACTCGGCTATCGGCTTGTGAGGCCTGAACCCAGCACGGGCCCTGGC  
CTCTGGTGGAACCCTGCCCTTACCAGCCTTGA

POU2F2, POU class 2 homeobox 2.

**Table SII. Primer sequences used in the present study.**

Symbol	Target sequence (5'-3')
RT-qPCR	
<i>ACTB</i> -F	TAGTTGCGTTACACCCTTTCTTG
<i>ACTB</i> -R	TCACCTTCACCGTTCCAGTTT
<i>RACK1</i> -F	TGAGTGTGGCCTTCTCCTCT
<i>RACK1</i> -R	GCTTGCAGTTAGCCAGGTTC
<i>HK2</i> -F	CAACTTCCGTGTGCTTTGGG
<i>HK2</i> -R	CAACGTCTCTGCCTTCCACT
<i>PKM2</i> -F	ATTATTTGAGGAACTCCGCCGCCT
<i>PKM2</i> -R	ATTCCGGGTCACAGCAATGATGG
<i>LDHA</i> -F	TTAAGCTGTCATGGGTGGGT
<i>LDHA</i> -R	AAGACCCTCTCAACCACCTG
<i>GLUT1</i> -F	GTCAACACGGCCTTCACTG
<i>GLUT1</i> -R	GGTCATGAGTATGGCACAACC
<i>POU2F2</i> -F	GGCCCAACTCATGTTGACG
<i>POU2F2</i> -R	TGCTGAGGTAGCTGGAATAGATT
Primers used in ChIP assay	
<i>RACK1</i> -F	TGCATAGATGTTGGTGGCTG
<i>RACK1</i> -R	TTTTAAACAGGGGCACAGATCA

RACK1, receptor for activated C kinase 1; POU2F2, POU class 2 homeobox 2; HK2, hexokinase 2; LDHA, lactate dehydrogenase A; GLUT1, glucose transporter 1; PKM2, pyruvate kinase M2; RT-qPCR, reverse transcription-quantitative PCR; ChIP, chromatin immunoprecipitation; F, forward; R, reverse.

**Table SIII. Information of primary antibodies used in the present study.**

Primary antibodies	Cat. no.	Supplier	Antibody dilution used				
			WB	IHC	ChIP	Co-IP	IF
Anti-mouse POU2F2 rabbit polyclonal antibody	18996-1-AP	ProteinTech Group, Inc.	1:800	1:100	1:200		
Anti-human RACK1 mouse monoclonal antibody	sc-17754	Santa Cruz Biotechnology, Inc.,	1:1,000	1:200	1:100	1:50	1:50
Anti-human IGF1R rabbit monoclonal Antibody	ab182408	Abcam	1:1,000			1:50	1:100
Anti-human $\beta$ -actin rabbit polyclonal antibody	20536-1-AP	ProteinTech Group, Inc.	1:8,000				
Anti-human PDPN rabbit monoclonal antibody	11629-1-AP	ProteinTech Group, Inc.	1:1,000	1:100			
Anti-human HK2 rabbit monoclonal antibody	22029-1-AP	ProteinTech Group, Inc.	1:4,000	1:400			
Anti-human GLUT1 rabbit monoclonal antibody	ab115730	Abcam	1:4,000	1:300			
Anti-human phospho-AKT (s472 + s474 + s473) rabbit monoclonal antibody	ab192623	Abcam	1:1,000				
Anti-human AKT rabbit polyclonal antibody	ab18785	Abcam	1:1,000				
Anti-human phospho-mTOR (s2448) rabbit monoclonal antibody	ab109268	Abcam	1:10,000				

Anti-human mTOR rabbit polyclonal antibody	ab2732	Abcam	1:10,000				
Anti-mouse PKM2 rabbit polyclonal antibody	15822-1-AP	ProteinTech Group, Inc.	1:2,000	1:200			
Anti-human LDHA rabbit polyclonal antibody	19987-1-AP	ProteinTech Group, Inc.	1:3,000	1:100			
Anti-human IgG mouse monoclonal antibody	sc-515946	ProteinTech Group, Inc.	1:3,000	1:100			
Anti-human N-cadherin rabbit polyclonal antibody	22018-1-AP	ProteinTech Group, Inc.	1:2,000	1:1000			
Anti-human E-cadherin rabbit polyclonal antibody	20874-1-AP	ProteinTech Group, Inc.	1:5,000	1:1,000			
Anti-human GFP rabbit monoclonal antibody	bs-0890R	BIOSS		1:200			
<b>Secondary antibodies</b>							
Goat anti-rabbit IgG H&L/HRP antibody	bs-40295G-HRP	BIOSS	1:5,000				
Goat anti-mouse IgG H&L/HRP antibody	bs-40296G-HRP	BIOSS	1:5,000				
Goat anti-rabbit IgG (H+L)	SA00013-4	ProteinTech Group, Inc.	1:100				
Goat polyclonal secondary antibody to mouse IgG- H&L (Alexa Fluor® 488)	ab150113	Abcam	1:500				
RACK1, receptor for activated C kinase 1; IGF1R, insulin-like growth factor 1 receptor; POU2F2, POU class 2 homeobox 2; mTOR, mammalian target of rapamycin; HK2, hexokinase 2; LDHA, lactate dehydrogenase A; GLUT1, glucose transporter 1; PKM2, pyruvate kinase M2; PDPN, podoplanin; GFP, green fluorescent protein; WB, western blot analysis; IHC, immunohistochemistry; Co-IP, co-immunoprecipitation; ChIP, chromatin immunoprecipitation.							

**Table SIV. Differential metabolites of shRACK1/MS751 and shNON/MS751 and their variations.**

Differential metabolite	Chemical shift (10 <sup>-6</sup> )	Variation
3-Hydroxybutyrate	1.20d	↑
β-glucose	5.23d	↓
Cysteine	3.04m	↑
Alanine	1.46d	↓
Acetate	1.91s	↑
Choline	3.21s	↑
Dimethylamine	2.72s	↑
Glycine	3.57s	↑
Glutamate	2.36m	↑
Guanidoacetate	3.80s	↑
Lysine	1.73m	↑
Tyrosine	7.20d	↓
Leucine	0.95d	↑
Taurine	3.25t	↑
Proline	3.45m	↑
Lactate	1.32d	↓
trimethylamine	2.88s	↓
Valine	0.97d	↓
Isoleucine	0.93t	↑

RACK1, receptor for activated C kinase 1; s, singlet; d, doublet; t, triplet; m, multiple. ‘↑’ represents higher levels of metabolites in shRACK1/MS751 cells than shNON/MS751 cells. ‘↓’ represents lower levels of metabolites in shRACK1/MS751 cells than shNON/MS751 cells.

**Table SV. Differential metabolites of shRACK1/SiHa and shNON/SiHa and their variations.**

Differential metabolite	Chemical shift ( $10^{-6}$ )	Variation
Isoleucine	0.93t	↑
Leucine	0.95d	↓
Phenylalanine	7.43t	↑
Proline	2.05m	↑
3-hydroxybutyrate	1.20d	↓
$\alpha$ -glucose	3.53d	↑
$\alpha$ -ketoglutarate	3.01t	↓
$\beta$ -glucose	4.64d	↑
Alanine	1.46d	↓
Acetate	1.91s	↑
Choline	3.21s	↑
Trans-aconitate	2.47s	↑
Glycine	3.57s	↑
Glutamate	2.36m	↑
guanidoacetate	3.80s	↑
methylamine	2.65t	↓
Lysine	1.73m	↑
Tyrosine	7.20d	↑
Ornithine	3.06t	↓
Urocanate	7.31d	↑
Taurine	3.25t	↑
Lactate	1.32d	↓
Trimethylamine	2.83s	↓
Valine	1.02d	↑

RACK1, receptor for activated C kinase 1; s, singlet; d, doublet; t, triplet; m, multiple. ‘↑’ represents higher levels of metabolites in shRACK1/SiHa cells than shNON/SiHa cells. ‘↓’ represents lower levels of metabolites in shRACK1/SiHa cells than shNON/SiHa cells.

**Table SVI. Common differential metabolites of shRACK1/MS751 and shRACK1/SiHa and their variations.**

Differential metabolite	Chemical shift (10 <sup>-6</sup> )	Variation
Isoleucine	0.93t	↑
Leucine	0.95d	↓
Proline	2.05m	↑
α-glucose	3.53d	↑
Alanine	1.46d	↓
Acetate	1.91s	↑
Choline	3.21s	↑
Glycine	3.57s	↑
Glutamate	2.36m	↑
Guanidoacetate	3.80s	↑
Lysine	1.73m	↑
Tyrosine	7.20d	↑
Taurine	3.25t	↑
Lactate	1.32d	↑
Trimethylamine	2.83s	↓
Valine	1.02d	↑
3-Hydroxybutyrate	1.20d	↓

RACK1, receptor for activated C kinase 1; s, singlet; d, doublet; t, triplet; m, multiple. ‘↑’ represents higher levels of common metabolites in shRACK1/MS751 and shRACK1/SiHa cells than shNON/MS751 and shNON/SiHa cells. ‘↓’ represents lower levels of common metabolites in shRACK1/MS751 cells and shRACK1/SiHa cells than shNON/MS751 and shNON/SiHa cells.

**Table SVII. The common differential metabolites on the metabolic pathway in the supernatant of shRACK1/MS751 cells and shRACK1/SiHa cells.**

Pathway name	Match status	P-value	FDR	Impact
Aminoacyl-tRNA biosynthesis	9/48	0.000	0.000	0.000
Valine, leucine and isoleucine biosynthesis	3/8	0.000	0.002	0.000
<b>Glycolysis/gluconeogenesis</b>	<b>3/26</b>	<b>0.002</b>	<b>0.068</b>	<b>0.030</b>
Glyoxylate and dicarboxylate metabolism	3/32	0.004	0.082	0.106
Glycine, serine and threonine metabolism	3/33	0.005	0.082	0.272
Arginine and proline metabolism	3/38	0.007	0.101	0.187
Valine, leucine and isoleucine degradation	3/40	0.008	0.101	0.000
Butanoate metabolism	2/15	0.011	0.115	0.000
Pyruvate metabolism	2/22	0.023	0.215	0.061
Glutathione metabolism	2/28	0.036	0.277	0.108

RACK1, receptor for activated C kinase 1. Bold font indicates a statistically significant difference (P<0.05).