Supplementary Table S1. Sequences of primers for genotyping *Pcsk9* knockout mice

Primer Type	Sequence 5'-->3'	Product Size	GenBank Accession
Common-F	ATTGTTGGAGGGAGAAGTACAGGGGT		
Wild-type-R	CTCGGGAAGGACATGGACGC	496bp	NM_153565
Mutant-R	GATTGGGAAGACAATAGCAGGCATGC	320bp	

Supplementary Table S2. Sequences of siRNA targeting to *Pcsk9*

si-Pcsk9-A	Sense:	GccuGGAGuuuAuucGGAAdT*dT
	Antisense:	UUCCgAAuAAACUCcAGGCdT*dT
si-Pcsk9-B	Sense:	AGGuGuAucuccuAGAcAcdT*dT
	Antisense:	GUGUCuAGGAGAuAcACCUdT*dT
si-Con	Sense:	cuuAcGcuGAGuAcuucGAdT*dT
	Antisense:	UCGAAGuACUcAGCGuAAGdT*dT

Lower case letters indicate bases with 2'-OMe modifications. All sequences end with a phosphorothioate linkage (dT*dT). Mouse *Pcsk9* GeneBank accession: NM_153565; human *PCSK9* GeneBank accession: NM_174936.

Supplementary Table S3. Sequences of primers for RT-qPCR

Target	Forward Sequence (5'-3')	Reverse Sequence (5'-3')	Size (bp)
mouse Pcsk9	TTGCAGCAGCTGGGAACTT	CCGACTGTGATGACCTCTGGA	76
human PCSK9	AGGGGAGGACATCATTGGTG	CAGGTTGGGGGTCAGTACC	229
IL6	CAAAGCCAGAGTCCTTCAGAGAG	CCTTAGCCACTCCTTCTGTGAC	90
IL17A	TTTTCAGCAAGGAATGTGGA	TTCATTGTGGAGGGCAGAC	60
IL17F	CAAGAAATCCTGGTCCTTCG	GAGCATCTTCTCCAACCTGAA	69
IL22	TTTCCTGACCAAACTCAGCA	CTGGATGTTCTGGTCGTCAC	67
IL23	CACCTCCCTACTAGGACTCAGC	TGGGCATCTGTTGGGTCT	71
NFKB p50	AGGAAGAAAATGGCGGAGTT	GCATAAGCTTCTGGCGTTTC	243
NFKB p65	CTTGGCAACAGCACAGACC	GAGAAGTCCATGTCCGCAAT	266
Reg3r	CCTGTCCTCCATGATCAAAAGCAG	CATCCACCTCTGTTGGGTTCA	99
Fgf2	GGCTGCTGGCTTCTAAGTGT	GTCCCGTTTTGGATCCGAGT	153
Hgf	TGATTCTTTCAGCCCGGCAT	TGTCCTTCTGCATAGGGGATG	154
Igf1	GAAGTCCCCGTCCCTATCGA	CCTTCTCCTTTGCAGCTTCG	52
Tgf-beta1	AGCTGCGCTTGCAGAGATTA	AGCCCTGTATTCCGTCTCCT	189
Vegf	CGGGCCTCGGTTCCAG	CTGGGACCACTTGGCATGG	195

Supplementary Table S4. Demographics and disease parameters of patients with psoriasis

Case	Sex	Age (years)	Nail involved	Family history	Lengh of disease (years)	PASI score
1	F	45			3	46.2
2	M	33		+	5	35.4
3	F	50			10	5.8
4	M	41	+	+	10	16.2
5	F	22			1	8.4
6	M	33			3	36.3
7	M	35	+		11	9.4
8	M	23			8	14.8
9	M	26			1	20.2
10	M	52			2	26.3

Supplementary Table S5. Demographics and disease parameters of healthy control

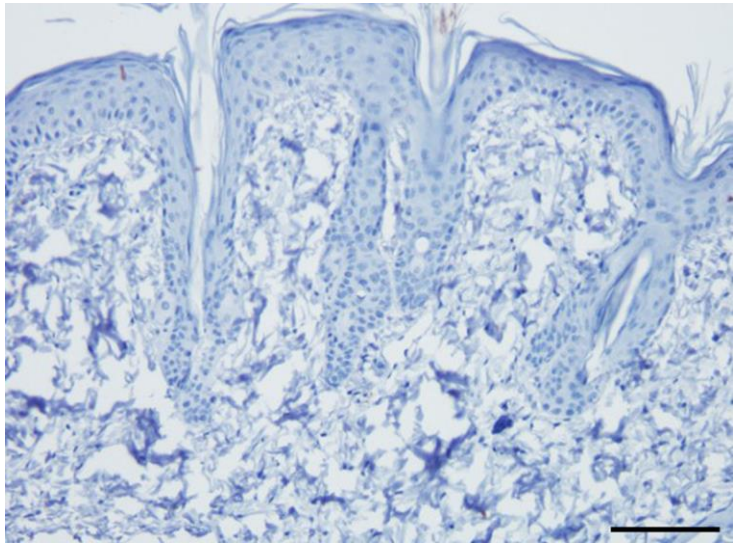
Case	Sex	Age (years)	Biopsy Location
1	M	49	Back
2	F	22	Back
3	M	30	Back
4	M	41	Back
5	M	19	Back
6	F	33	Back

Supplementary Table S6. Data of cell cycle

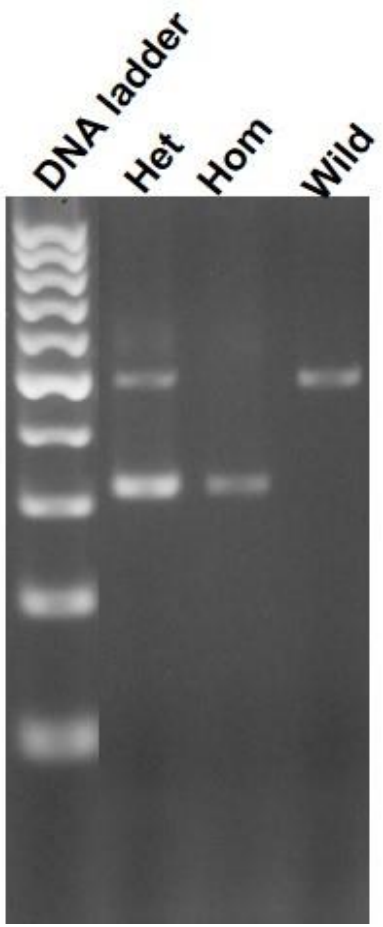
		Sub-G1	G0/G1	S	G2
24h	si-con	0.9%	71.4%	6.4%	21.3%
	si-con	0.6%	73.2%	4.1%	22.2%
	si-con	0.7%	70.9%	4.9%	23.5%
	si-PCSK9	10.2%	57.5%	8.5%	23.8%
	si-PCSK9	10.8%	62.2%	8.7%	18.3%
	si-PCSK9	10.8%	57.6%	9.3%	22.2%
48h	si-con	0.5%	64.8%	8.6%	26.0%
	si-con	1.6%	70.0%	5.2%	23.2%
	si-con	0.6%	74.7%	5.9%	18.8%
	si-PCSK9	13.0%	42.6%	9.9%	34.5%
	si-PCSK9	6.1%	59.6%	7.8%	26.4%
	si-PCSK9	6.5%	57.2%	8.1%	28.2%
72h	si-con	2.1%	65.5%	7.8%	24.6%
	si-con	1.3%	67.6%	6.5%	24.7%
	si-con	1.1%	65.4%	6.5%	27.1%
	si-PCSK9	15.7%	57.9%	9.6%	16.8%
	si-PCSK9	12.1%	51.4%	12.5%	24.1%
	si-PCSK9	12.8%	50.8%	11.8%	24.6%

Supplementary Table S7. Annexin V+ apoptosis portions of si-Con and si-PCSK9 groups

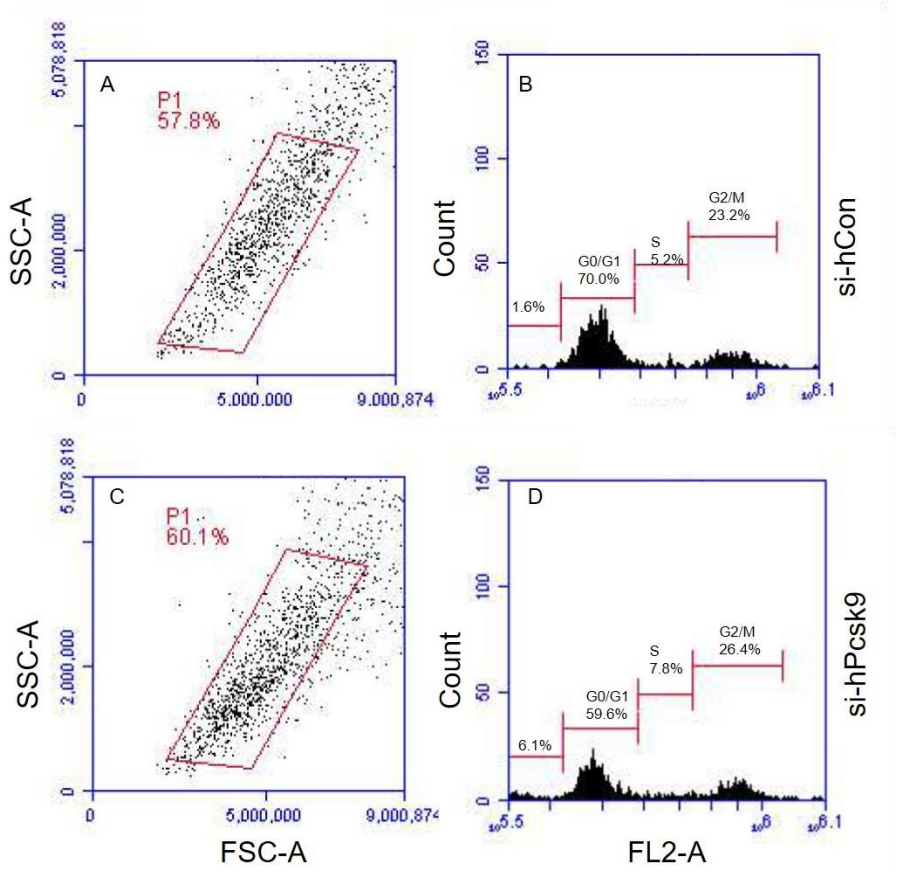
	24h	48h	72h
si-Con	2.6	2.1	1.3
si-Con	1.7	3.3	1.4
si-Con	1.3	5.5	2
si-PCSK9	11.8	14.4	38.4
si-PCSK9	7.7	13.7	40.1
si-PCSK9	12.1	12	26.8



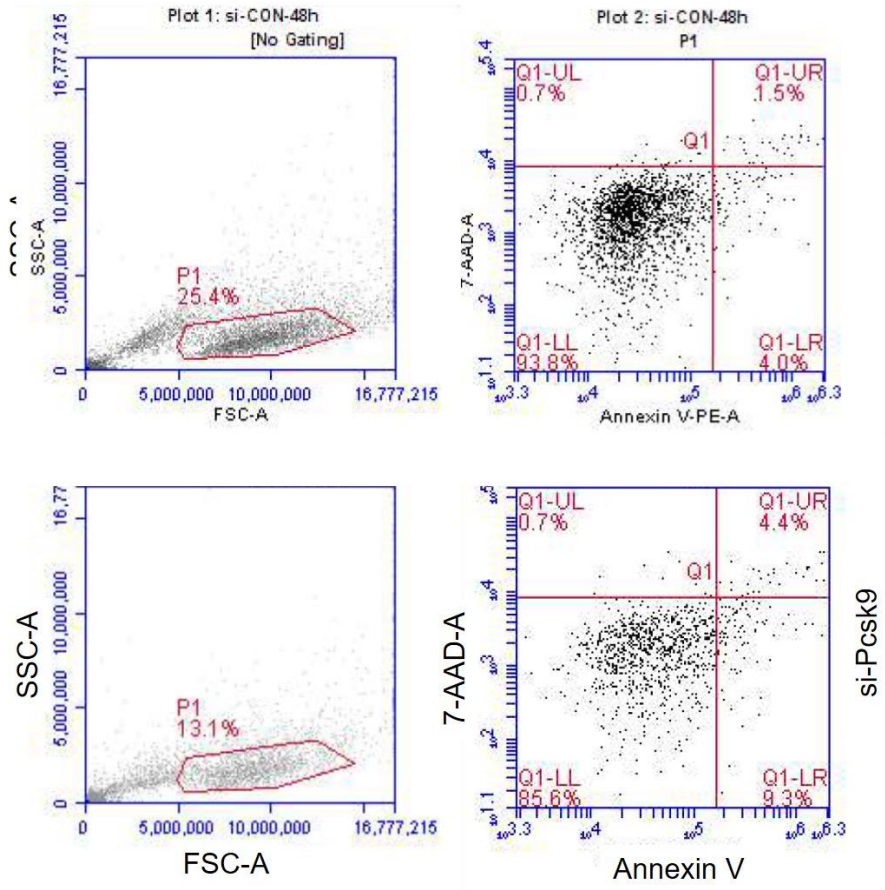
Supplementary Figure S1. Rabbit IgG shows negative control. All the antibodies used for IHC study were raised in rabbit (rabbit anti-mouse). To exclude false negative, rabbit IgG was used as a negative control in all the IHC assay. No false positive staining was observed. Scale bar = 100μm.



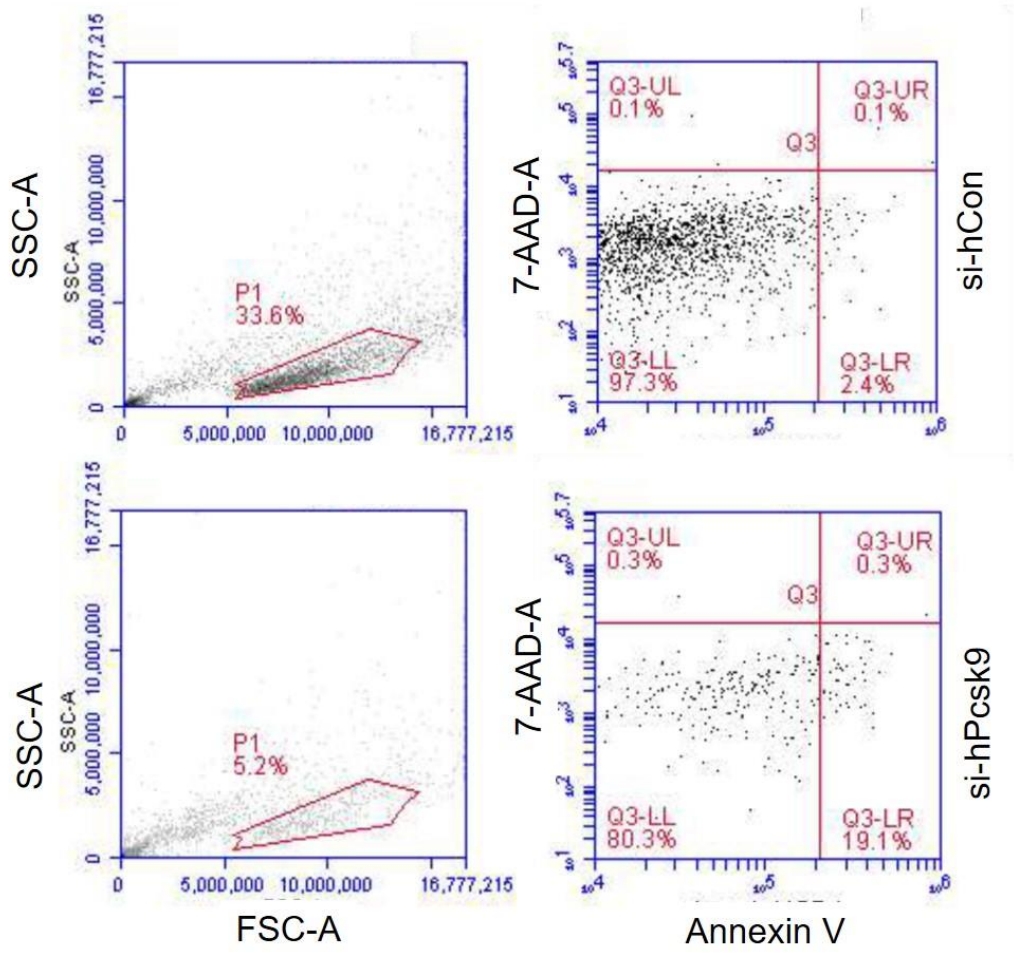
Supplementary Figure S2. Genotyping result of Pcsk9 knockout mice. Typical gel picture shows the genotype results of wild type, homozygous and heterozygous of Pcsk9 knockout mice.



Supplementary Figure S3. Suppressing Pcsk9 alters the cell cycle (48 h). After being treated for 24, 48 and 72 hours, PI staining and flowcytometery assay was performed to detect the effects of suppressing PCSK9 on the cell cycle. Typical photo shows the cell cycle at 48 hours.



Supplementary Figure S4. Suppressing Pcsk9 induces apoptosis (48h). To verify the effects of suppressing PCSK9 on apoptosis, annexin-v and 7-AAD-A assay was conducted. Typical photo shows the apoptosis at 48 hours after the treatment.



Supplementary Figure S5. Suppressing Pcsk9 enhances UVB induced apoptosis (50 mJ/cm^2). Typical photo shows the the combined effect of UVB (100mJ/cm$^{2)}$ and si-Pcsk9 treatment on inducing the apoptosis of human keratinocytes, tested by Annexin-v and 7-AAD-A assay.