Hair growth cycle is arrested in SCD1-deficiency by impaired Wnt3a-palmitoleoylation and retrieved by artificial lipid barrier

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Supplementary Material

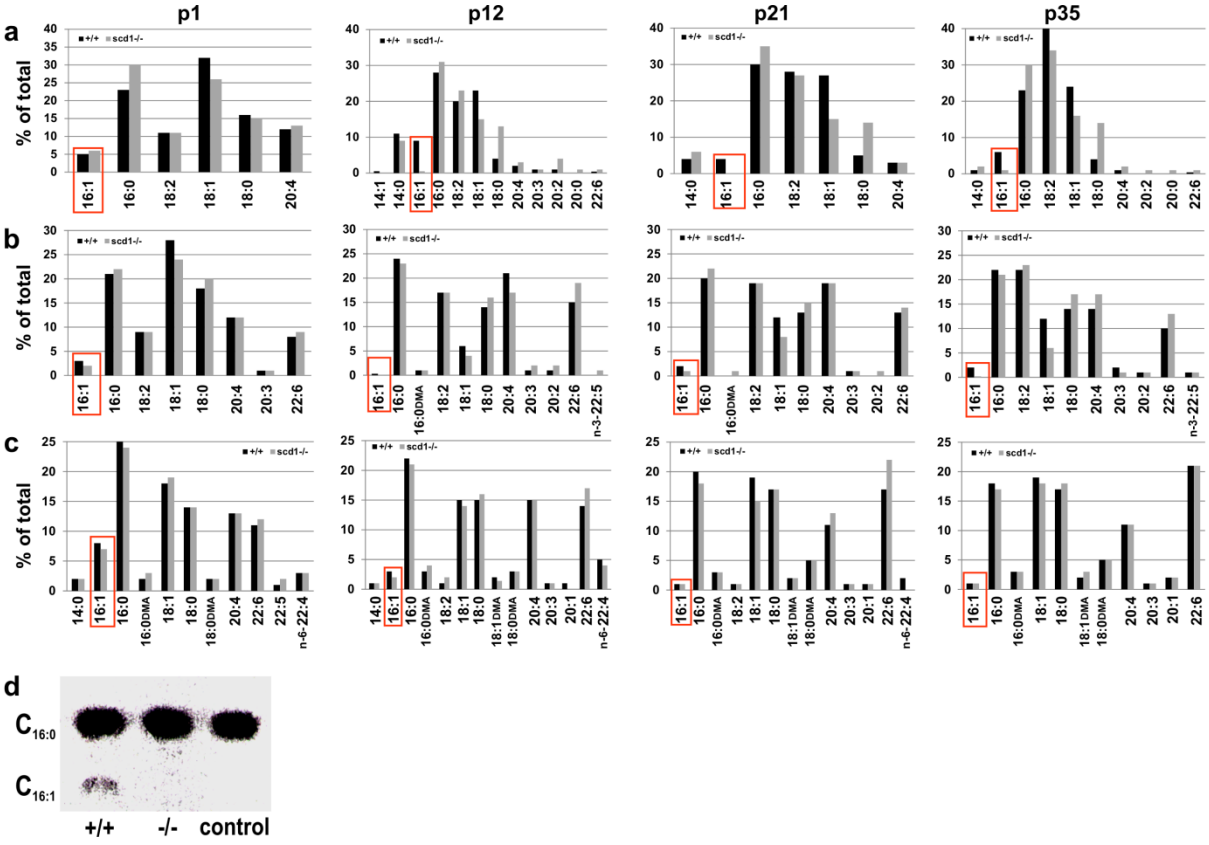

Figure S1

Systemic absence of 16:1 in *scd1-/-* mice. Fatty acid profiles of (**a**) skin, (**b**) liver and (**c**) brain at p1, p12, p21 and p35 of control (black bars) and *scd1-/-* mice (grey bars) are presented paradigmatically. 16:1 encased in red. (**d**) Autoradiography of argentation thin-layer chromatography (Ag-TLC) of fatty acid methylesters from the Δ9-desaturase assay using [1-^{14}C]16:0-CoA as substrate and liver microsomal fraction of control and *scd1-/-* mice. Solvent system: $CHCl_3/CH_3OH$ 99/1(v/v).

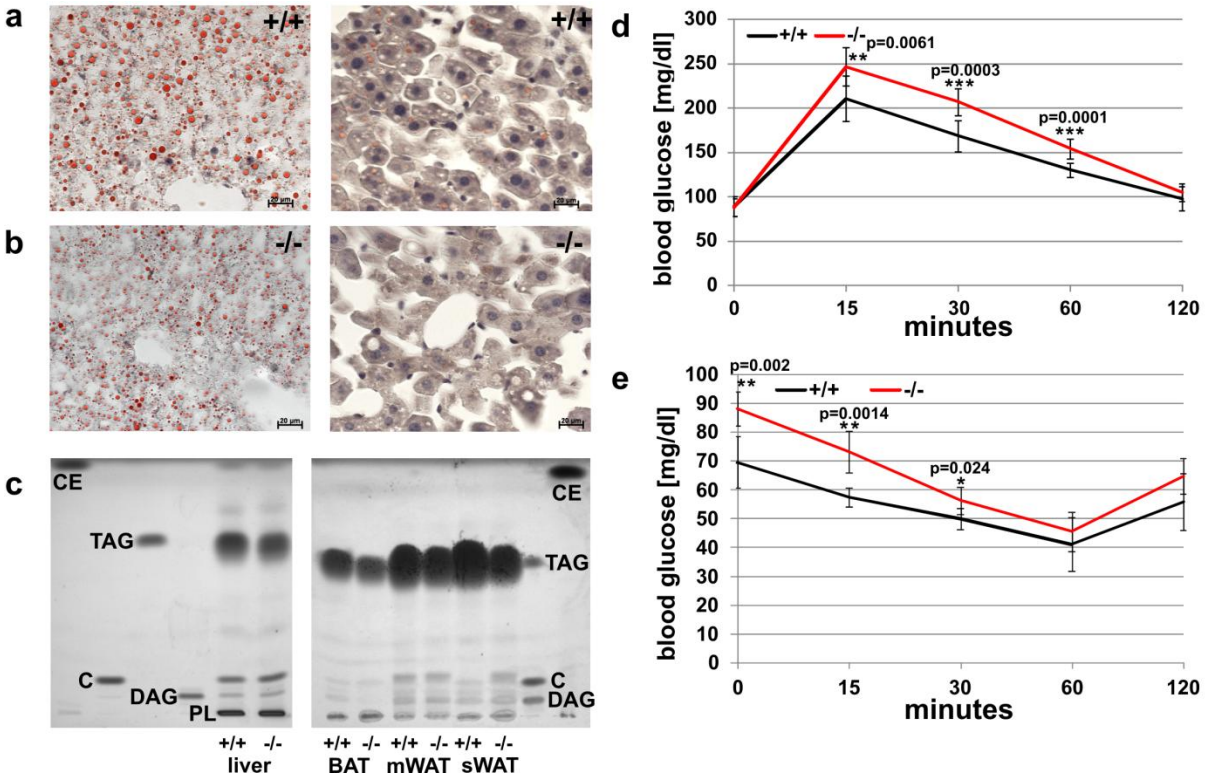

Figure S2

Absence of liver-steatosis and insulin resistance in adult *scd1-/-* mice. (**a,b**) Oil-red staining of liver sections (5µm) of control and *scd1-/-* mice. (**c**) HPTLC separation of neutral lipids in total lipid extracts of control and *scd1-/-* liver, BAT, mWAT and sWAT. Solvent system: hexane/diethylether/AcOH 90/25/1. (**d**) GTT and (**e**) ITT of control and *scd1-/-* mice. Mean ± SD. P-values are given in the figures.

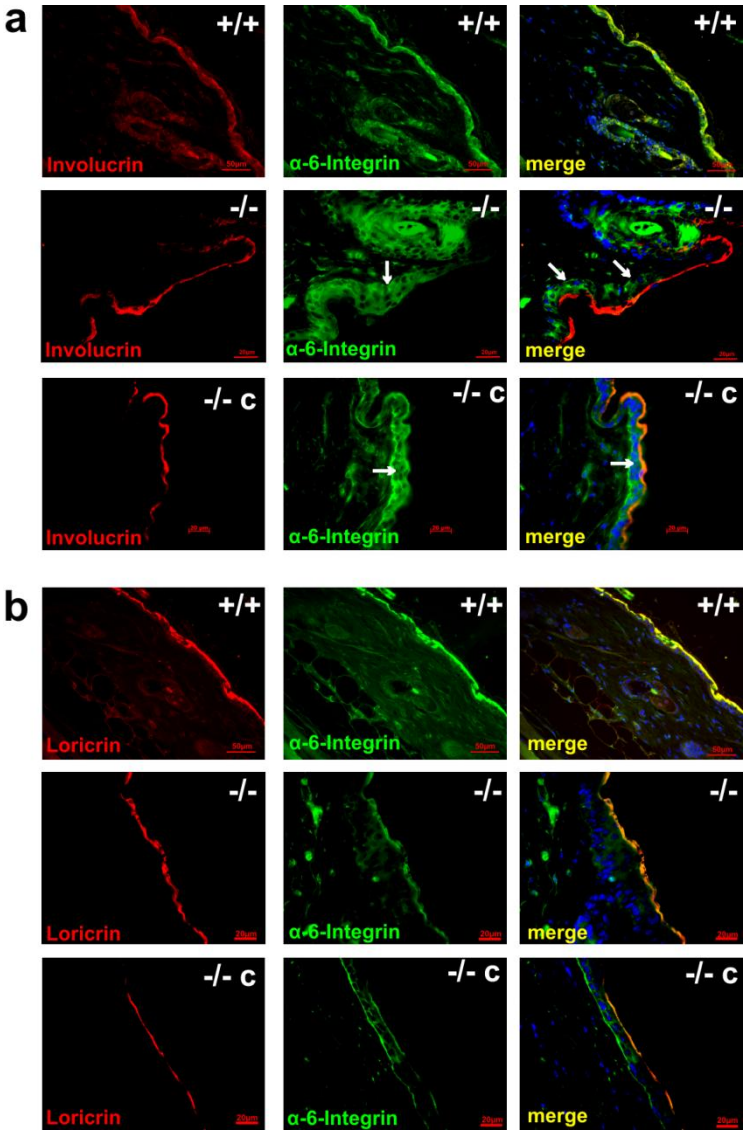

Figure S3

Fluorescent images of skin sections of wt, *scd1-/-* and *scd1-/-c* mice using anti-Involucrin, -α6-Integrin and –Loricrin antibodies. (**a**) control, *scd1-/-* and *scd1-/-c* Involucrin (cy3) and α-6-Integrin (FITC), (**b**) control, *scd1-/-* and *scd1-/-c* Loricrin (cy3) and α-6-Integrin (FITC).

Enzyme assay

Palmitoyl-CoA desaturase activity in the microsomal fraction of control and *scd1-/-* liver was measured by the enzymatic assay using [1-^{14}C] palmitoyl-CoA. Reaction products were separated on 10% silver nitrate impregnated SiO_2 G60 –HPTLC-plates. The 100µl reaction mixture contained: 60µM [1-^{14}C] palmitoyl-CoA (0.1µCi), 2mM NADH, 1mM ATP, 0.1M Tris, pH7.4

100µg microsomal protein was incubated at 37°C for 1h. Aliquots of 0.5µMol radioinactive16:0 and 16:1 were added, the mixture was saponified with 0.5M methanolic KOH, acidified with 2N HCL and fatty acids extracted with hexane /ether (1/1) twice, concentrated and applied to a 10% $AgNO_3$ impregnated HPTLC plate activated at 110°C for 30 min. The plate was developed in hexane /ether 9/1 (v/v) and exposed to a Fuji-film for 16h.

Table S1

scd1 s	5'-tgcacctccctccggaaatgaacgagagaa-3'	k14 s	5'-ctggctcagctgcgctgcgagatggagcag-3'
scd2 s	5'-ttgaaaagagttctcaccactggggagcag-3'	k14 as	5'-tagttcttggtgcgcaggacctgctcgtgg-3'
scd3 s	5'-tattgagggcattggagccggagtccatcg-3'	lor5 s	5'-tcaccagaaaaagcagcccactccctgccc-3'
scdx as	5'-cttgtagtacctcctctggaacatcaccag-3'	lor5 as	5'-cagagtagccaccgccgcagctagagccac-3'
cers1 s	5'-agtgggcacttgtcgtacccgacggttgca-3'	traglu s	5'-cagcctggaccatcgtctacaatggtaccc-3'
cers1 as	5'-caacggcagccacactcatccaccaccatg-3'	traglu as	5'-cagcacgcagttattcaccggctggtccag-3'
cers2 s	5'-acgcgggatggaagaacacctgcaacaacc-3'	trpv4 s	5'-caggtggtgcttcagggtggacgaggtgaa-3'
cers2 as	5'-ttagctaggagccggctctttgctcctgcc-3'	trpv4 as	5'-ctacagtggggcatcgtccgtcctccactt-3'
cers3 s	5'-ccctgttcttcatcttcaccgtcgtcttct-3'	mboat s	5'-gctgtccctggcattcatcacttatgtgga-3'
cers3 as	5'-ctaacggccatgctgaccattggcaatgag-3'	mboat as	5'-cagcctatgagacggtagaagatccagcat-3'
cers5 s	5'-ttggcgcagcttttatagttttcgtctagc-3'	wnt3a s	5'-atggtggtagagaaacaccgagagtctcgt-3'
cers5 as	5'-gcagttggcaccattgctagagctgctgcc-3'	wnt3a as	5'-cttgcaggtgtgcacgtcatagacacgtgt-3'
cers6 s	5'-tttaacctgctgctcttgttactacaaggg-3'	wnt4 s	5'-gccacggaggtggagccacgacgcgtaggc-3'
cers6 as	5'-taatcatccacggaacaaggaccagtgagg-3'	wnt4 as	5'-ggcacgtgtgcatctccaacgagccgctggc-3'
k1 s	5'-gccacaccagcatgagcggaagcagtagcc-3'	wnt10 s	5'-ggaagggtagtggtgagcaa-3'
k1 as	5'-ttaacgccaccgccacctgagctggatcct-3'	wnt10 as	5'-cacttccgcttcaggttttc-3'
k5 s	5'-tacggaggaggcagcagcattggtgttggc-3'	ßcatenin s	5'-ccttgccctttgcccagcaaatcatgcgcc-3'
k5 as	5'-ggaggaggaggtggtggagacaaatttgac-3'	ßcatenin as	5'-gcctccttgtcctgagcaagttcacagagg-3'
k10 s	5'-ctcccagattcaaagccagatctccgccct-3'	lef s	5'-ctggcctgtctagaatggagcgtgcgtgca-3'
k10 as	5'-tagcttccgccaccggagcttccgccgtag-3'	lef as	5'-tcagatgtaggcagctgtcattctgggacc-3'