**Materials and Methods - Supplement**

Antibodies and Reagents Hanks' balanced salt solution and keratinocyte serum-free medium were purchased from Invitrogen. Mouse monoclonal antibodies specific for MEP50 (ab57722), p38δ (sc–271292) and β-actin (A5441) were purchased from Abcam (Cambridge, MA), Santa Cruz Biotechnology (Santa Cruz, CA) and Sigma-Aldrich, respectively, while the rabbit polyclonal antibodies against MEP50 (2823) and PRMT5 (2252) were purchased from Cell Signaling Technology (Danvers, MA). Rabbit polyclonal antibodies against symmetrically dimethylated arginine3 of Histone H4 (H4R3me2s) and arginine 8 of Histone H3 (H3R8me2s) were obtained from Abcam (Cambridge, MA) and Thermo Fisher Scientific (Rochford, IL). Rabbit anti- PKCδ (sc-937) was obtained from Santa Cruz Biotechnology. Normal rabbit IgG (2729) was obtained from Cell Signaling. The secondary antibodies used were peroxidase-conjugated donkey anti-goat IgG (sc-2033) from Santa Cruz Biotechnology, and peroxidase-conjugated sheep anti-mouse IgG (NXA931) and peroxidase-conjugated donkey anti-rabbit IgG (NA934V, GE Healthcare). Phorbol ester, 12-O-tetradecanoylphorbol-13-acetate (TPA), was obtained from Calbiochem (Billerica, MA, 524400). Our studies use control (D-001206-13-05), MEP50 (M-006895-01-0005) and PRMT5 (M-015817-02-0005) siRNA reagent from Dharmacon Inc (Lafayette, CO). Important findings were confirmed using additional siRNAs that target MEP50 (D-006895-01-0002 and D-006895-02-0002) and PRMT5 (D-015817-01-0002 and D-015817-04-0002).

Immunoprecipitation and Immunoblot Cell extracts were prepared in cell lysis buffer (Cell Signaling, 9803, Danvers, MA) containing protease inhibitors (Calbiochem, 539134). For immunopreciptation, 300 μg of protein was used per sample. The lysate was first subjected to pre-clearing with 20 μl of Protein A/G agarose beads for 1 hour followed by IP with the control IgG and the MEP50 antibody. The pre-clearing step is essential to reduce non-specific interactions. After an additional 24 h, the bead slurry (20 μl) is added to the lysates followed by gentle rocking for 3 hours at 4 C. This is followed by 4 washes with lysis buffer. After the last wash, the beads were boiled with sample buffer, centrifuged and supernatants were electrophoresed on denaturing polyacrylamide gels. The proteins were then transferred on the nitrocellulose membrane and blocked with 5% skimmed milk in Tris-buffered saline containing 0.1% Tween 20. Next, the membranes were incubated overnight with primary antibody, followed by horseradish peroxidase-conjugated secondary antibody

for 2 h. β-actin served as a gel loading control.

Quantitative RT-PCR Total RNA was isolated using the RNAspin Mini Kit (GE Healthcare) and reverse transcribed using the Superscript III reverse transcriptase (Invitrogen, Carlsbad, CA). RNA (1 μg) was used for cDNA preparation. The Light Cycler 480 SYBR Green I Master mix (Roche Diagnostics) was used to measure mRNA level. The signals were normalized to the level of cyclophillin A mRNA. The following gene specific primers were used for detection of mRNA levels: MEP50 (forward: 5'-TTG CTC AGC AGG TGG TAC TGA GTT, reverse: 5'-AAT CTG TGA TGC TGG CTT GGG ACA), involucrin (forward: 5'-CCT CAG CCT TAC TGT GAG, reverse: 5'-GGG AGG CAG TGG AGT TGG), filaggrin (forward: 5'-ACT CAC AGG TGG GAC AGG AAC AAT, reverse: 5'-ATG GTT TCT GGA AGC AGA CCC AGA) and cyclophilin A (forward: 5'-CAT CTG CAC TGC CAA GAC TGA, reverse: 5'-TTC ATG CCT TCT TTC ACT TTGC).