

Supplemental Figures

MNQ TASVSHHIKCQPSKTIKELGSNSPPQRNWKGIIAIALLVILVVCSLITMSVILLTPDE
TM
LTNSSETRLSLEELLGKGFGLHNPEARRINDTVVVYKTNNGHVMKLNTEASNASTLLLDNS
TFVTFKASRHSLSPDLYVLLAYDVKQIFHYSFTASYLIYNIHTGEVWELNPPEVEDSVL
β propeller
QYAAWGVQGGQLIYIFENNIYQPDIKSSSLRLTSSGKEGIFNGIADWLYEEELLSHI
S9B
AHWWSPDGERLAFLMINDSLVPMIIPRFTGALYPKAKQYPYPKAGQANPSVKLYVVNLY
GPTHLELMPPDIFKSREYYITMVKWVSNRTRVVRWLNRPQNISILTCESTTGACSRKY
EMTSDTWLSKQNEEPVFSRDGSKFXMTVLVKQGGRGEFHFIAMFLVQSKSEQITVRHLTS
GNWEVIRILAYDETTQKIYFLSTESSPQGRQLYSASTEGLLNRDCISCNFMKEDCTYFDA
SFSPMSQHLLFCEGPKVPVSLHITDNPSRYFLENNNSVMKETIQKKLAKRETRILHI
DDYELPLQLSFPKDFMEKNQYALLIMDEEPGGQMVTDKFHVDWDSVLIDTDNVIVARFD
GRGSGFQGLKVLQEIHRRIGSVEAKDQVA AVKYLKQPYIDSKRLSIFGKGYGGYIASMI
Catalytic triad
LKSDEKFFKCGAVVAPISDMKLYASAFSERYLGMPKSKEESTYQASSVLHNIHGLKEENLL
IIHGTADTKVHFQSAELIKHLIKAGVNYTLQVYPDEGYHISDKSKHHFYSTILRFFSDC
LKEEVSVLPQEPEEDE

TM: trans-membrane domain: IAIALLVILVVCSLIT

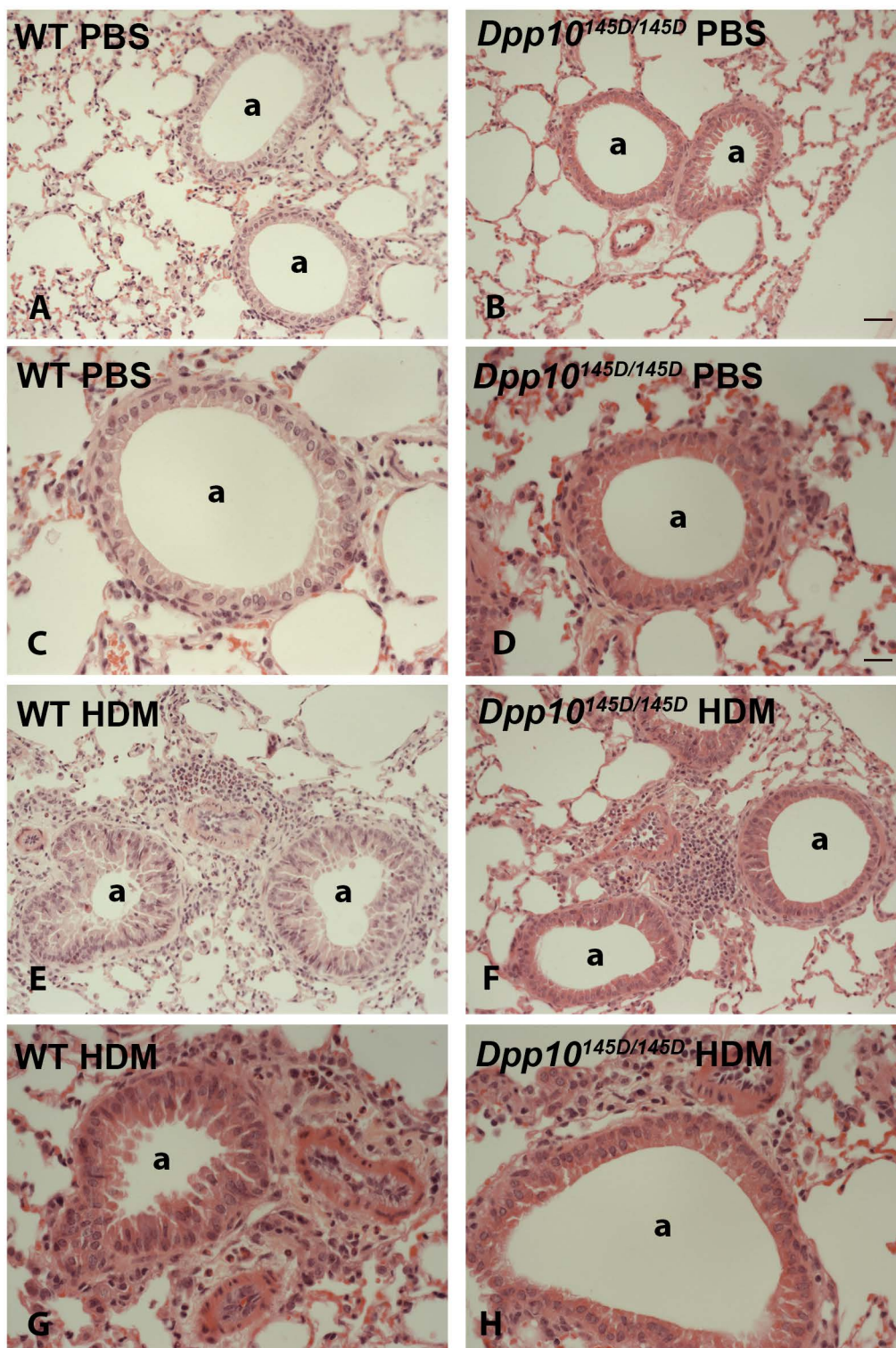
S9B: S9B family sequence

The highlighted area was the DNA sequence screened

The underlined area was the β propeller region

Supplemental Fig.S1

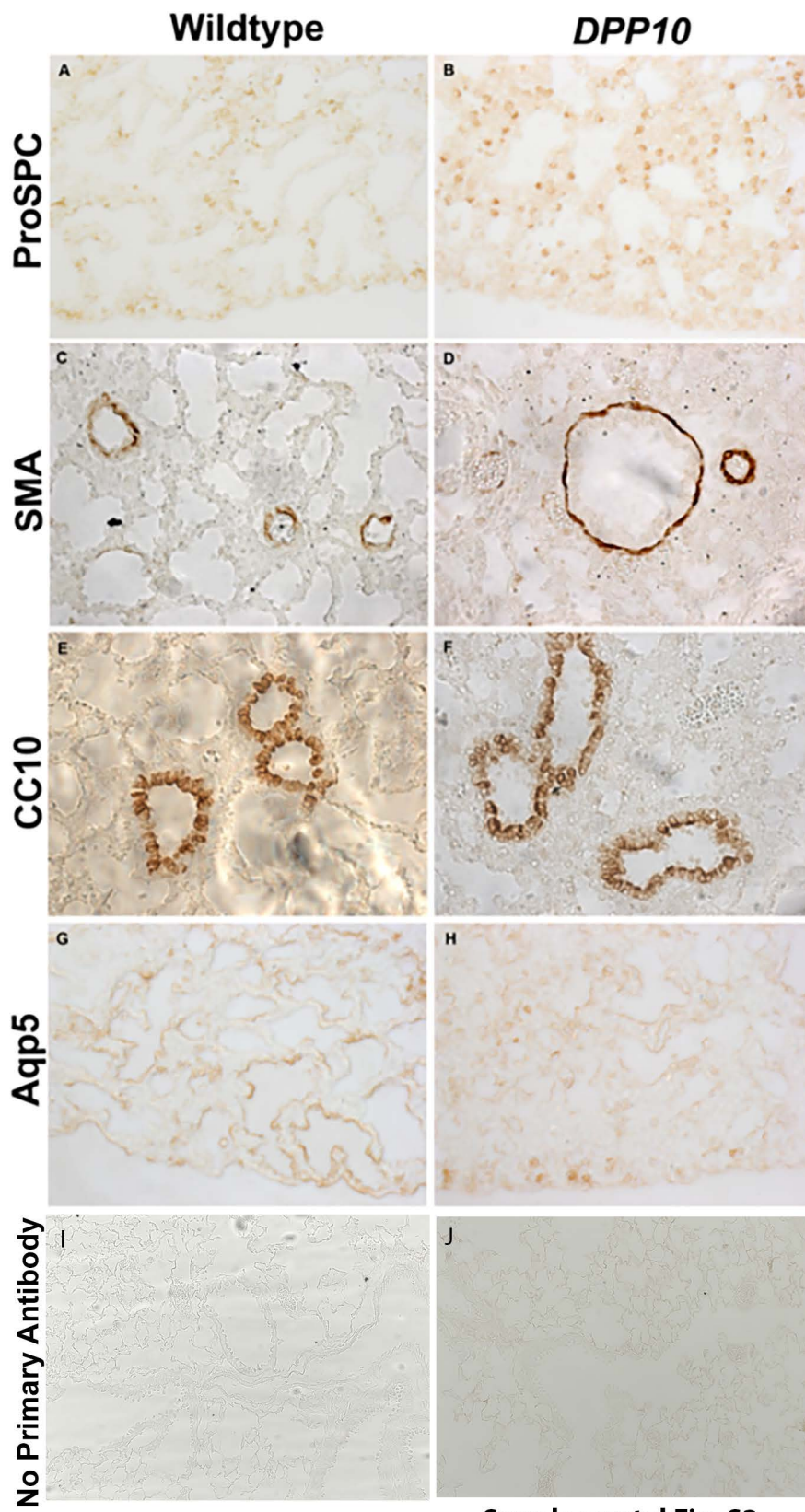
Supplemental figure S1. The amino acid sequence and structural features of mouse DPP10.



Supplemental Figure S2

Supplemental figure S2. Lung histology of wild-type and *DPP10*^{145D/145D} littermates.

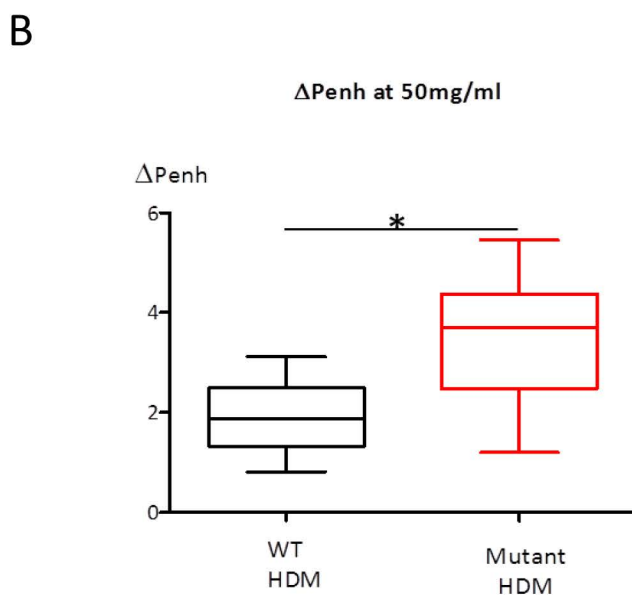
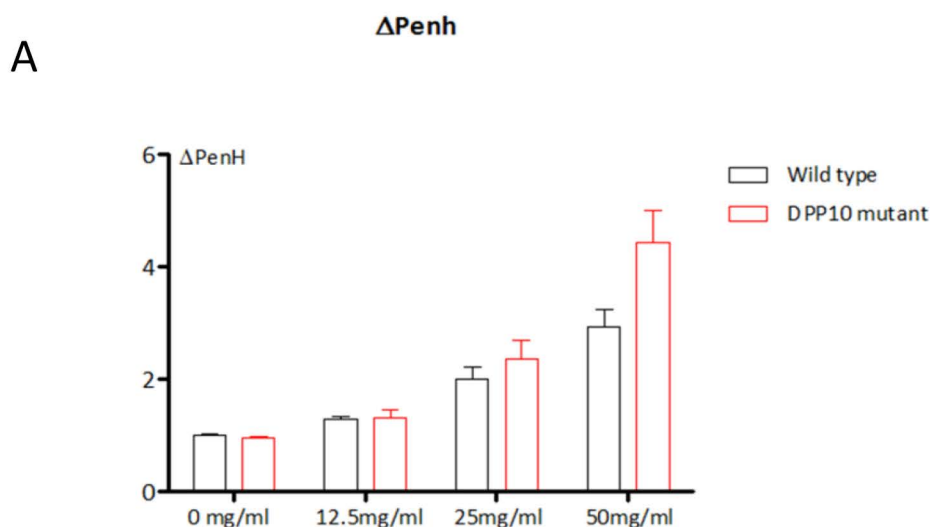
H&E staining of mouse airways (A, C) following WT PBS, (E, G) WT HDM, (B, D) *Dpp10*^{145D} homozygous PBS, (F, H) *Dpp10*^{145D} homozygous HDM treatments. Scale bars: A, B, E, F 25 μ M, C, D, G, H 12.5 μ M. a = airway lumen.



Supplemental Fig. S3

Supplemental figure S3. Comparison of cell-type specific markers in wild-type and *Dpp10*^{145D/145D} and littermates.

Immunohistochemical staining for (A,B) the type II alveolar epithelial cell marker Pro-surfactant C, (C,D) smooth muscle actin, (E,F) Club Cell 10 for Clara cells and (G,H) aquaporin 5 for type I alveolar epithelial cells. No significant differences were visible between wild-type (A,C,E,G) and homozygous (B,D,F,H) mouse lungs. Control sections were processed simultaneously with A-H but with the primary antibodies omitted, representative examples of control sections for anti-rabbit/mouse universal staining kit (I) and anti-goat staining kit (J) are shown. Scale bars A-H = 12.5 μ M.



Supplemental Fig. S4

Supplemental figure S4. Comparison of Penh in wild-type and *Dpp10*^{145D/145D} littermates following house dust mite challenge

Lung function measured in unrestrained conscious mice placed in a plethysmograph chamber. N= 9 for WT and N=10 for *Dpp10*^{145D}. Δ Penh in wild type and *DPP10* mutant mice in response to increasing doses of methacholine (A). Δ Penh at 50mg/ml methacholine (B). * P < 0.05, determined by Mann–Whitney U test.

Table S1. PCR primer sequences for *Dpp10* exons.

	Exon Length	Forward Primer Sequence	Reverse Primer Sequence	PCR Products Sizes
Exon 2	107	GAAACCACAAAGAACGACC	AAGAAAATAGACTGTACTCC	400
Exon 5	75	TTGCTAGTCAACCATCTC	TCCATTTTCAGATTATTTGAC	342
Exon 6, 7	55, 82	GGCAAGTGCTTTCCTAC	AGAGACAGAGCTATGCAC	623