**Supplementary Figure Legends**

**Supplementary Figure 1.** (A) β-catenin demarcates tumor from adjacent uninvolved tissue in FAP. (B) Quantification of fluorescence intensity of crypts from FAP patient samples for *CYP26A1*, *RALDH1A1* and *RALDH1A2* comparing tumor and uninvolved tissue with normal tissue controls. (C) Quantification of immunoblots from Fig. 1C using area under the curve of pixel intensity values normalized to GAPDH. (C) Expression of *CYP26A1,* *RALDH1A1* and *RALDH1A2* normalized to *GAPDH* expression in intestinal lysates of WT mice (n=4), tumors of different sizes (small: <1 mm diameter; medium: 1-2 mm diameter; large: >2 mm diameter) and healthy tissue surrounding the tumors from 12-week-old APCMin/+ mice (n=4) as assayed by qPCR on total RNA. (D) HPLC quantification of retinyl esters and all-trans retinol in 18-week-old APCMin/+ tissues. 5 mice were used per strain. (E) Quantification of RA by LC/MS in liver extracts from WT and APCMin/+ mice (n=5 mice per group). p*<0.05=\*; p<0.01=\*\*; p<0.001=\*\*\*.*

**Supplementary Figure 2. RA via i.p. injection fails to increase intestinal RA in APCMin/+ mice.** (A) RA was quantified by LC/MS, with 5 mice per group. (B) Mean number of tumors at 14 weeks. Data shown are aggregated from 2 independent experiments, with at least 3 mice per experiment. (C) Mean frequencies (with SEM) of DC subsets in the SI-LP of WT and APCMin/+ mice as determined by flow cytometry. (D) Mean frequency (with SEM) of DCs expressing the indicated co-stimulatory molecules, shown as a percentage of the parental DC subset. Data for (C, D) were obtained at intermediate-stage disease from at least 4 mice per strain (WT and APCMin/+) per experiment, from 5 independent experiments. (E) 5 x 104 FACS-purified WT and APCMin/+ SI-LPDCs were stimulated with a panel of 5 different TLR agonists and supernatants were collected after 48 hours. Representative bar graphs show mean production (with SEM) of IL-6, TNFα and IL-2p40 as measured by ELISA. Data was obtained at late stage disease and is representative of 4 independent experiments, with DCs pooled from 8 mice per strain per experiment.

**Supplementary Figure 3. Sorting strategy to obtain DCs and DC subsets from the LP.** PI-EpCAM- CD45+ DX5-CD3e- CD19- CD11chi MHCII+ LPDCs were sorted with this schema, or were further sorted into CD103+ and CD103- subsets.

**Supplementary Figure 4. APCMin/+ LPDCs express lower levels of RALDH1A2 compared to WT LPDCs.** Immunoblots for RALDH1A2 and -actin were performed using lysates from sorted LPDCs from 18-week-old WT and APCMin/+ mice. Lysates were prepared from LPDCs pooled from 6 mice per group.

**Supplementary Figure 5. RA via i.p. injection does not reverse the proinflammatory phenotype of APCMin/+ LPDCs.**Sorted LPDCs were used in T cell induction assays as in Figures 3 and 4. Data are from 2 independent experiments, with at least 4 mice per group. p<0.05=\*; p<0.01=\*\*; p<0.001=\*\*\*.