

Fig. S1. Different dermal components in a Growth phase feather follicle

A, Schematic showing the orderly distal to proximal formation of feather vanes and fluffy branches during the Growth phases. Redline: skin surface. B, H&E staining of a longitudinal section of an Early Growth phase contour feather follicle. C-F, higher magnification of pPP, cPP, DS and DP, respectively. Note the cell shape and density are different among these dermal components. cPP; central pulp; DP, dermal papilla; DS; dermal sheath; fe, feather epidermis; pPP; peripheral pulp

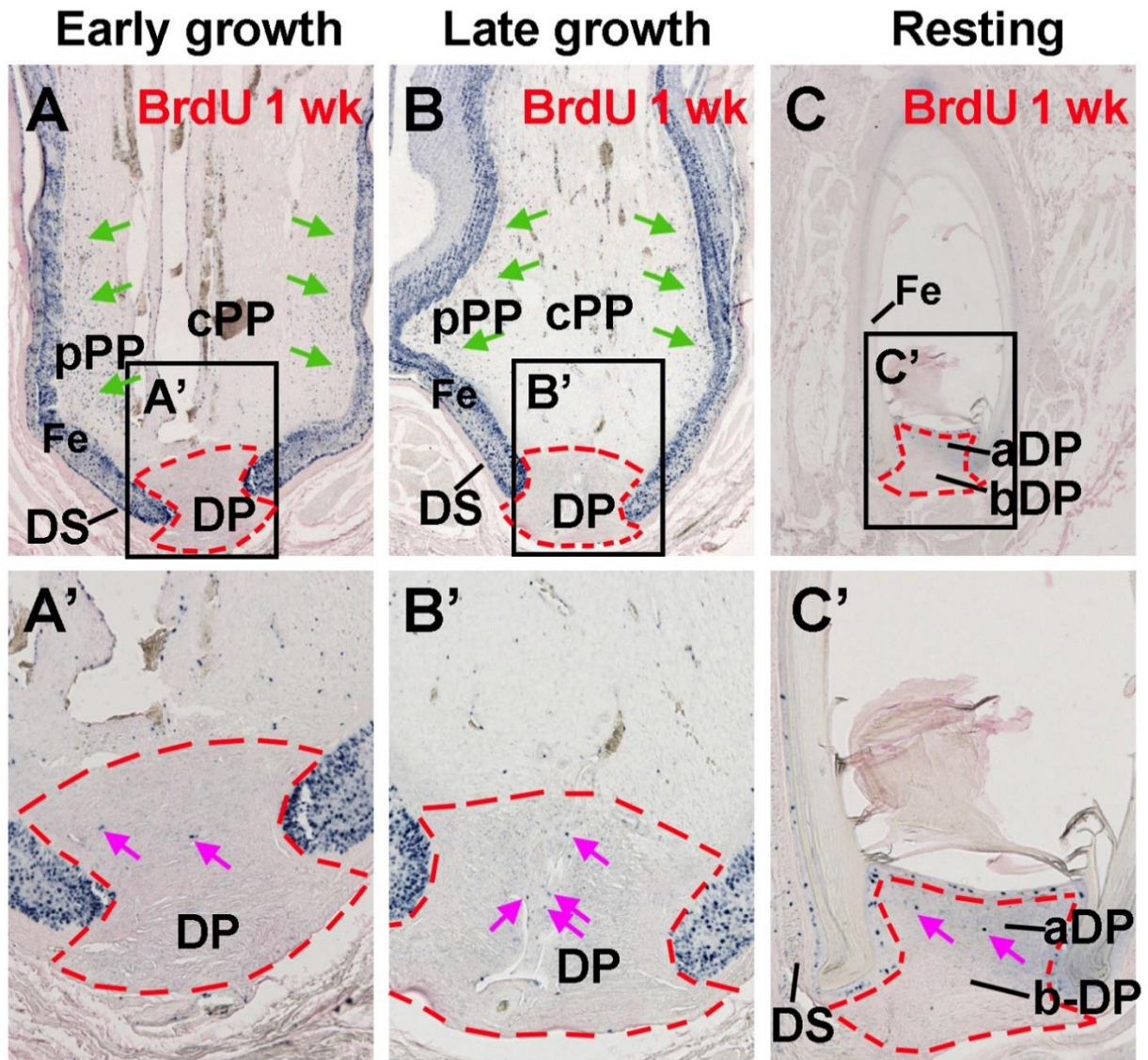


Fig. S2. BrdU positive cells are concentrated in pPP after 1-week BrdU labeling

BrdU staining of longitudinal feather sections labeled with BrdU for 1 week. A, Early Growth phase. B, Late Growth phase; C, Resting phase. A', B', C', Higher magnification of the boxed region to highlight the DP. Red dotted line outlines the DP. Green arrows in A and B indicate the BrdU positive cells in the pPP. Pink arrows in A'-C' indicate the BrdU positive cells in the DP. Note the BrdU positive cells are sparse and randomly distributed in the DP and DS. aDP, apical dermal papilla; bDP, basal dermal papilla; cPP; central pulp; DP, dermal papilla; DS; dermal sheath; fe, feather epidermis; pPP; peripheral pulp

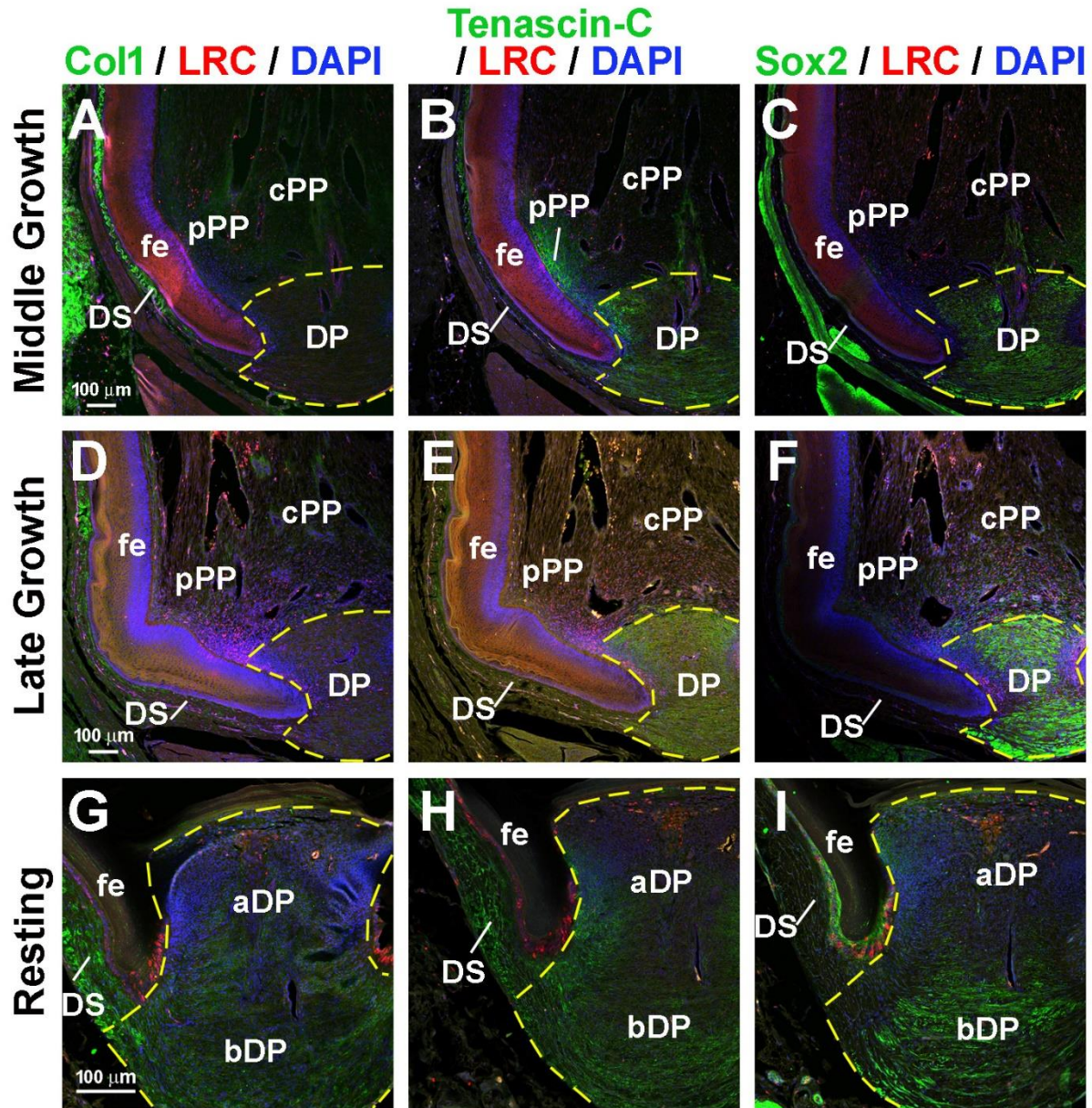


Fig. S3. Co-immunostaining of Col1, Tenascin-C and Sox2 with LRDCs in different stage feather follicles

Row 1-3 represent feather follicles in Middle Growth phase, Late Growth phase and Resting phase, respectively. Left column, Col1 and LRDC co-staining. Middle column, Tenascin-C and LRDC co-staining. Right column, Sox2 and LRDC co-staining. aDP, apical dermal papilla; bDP, basal dermal papilla; cPP; central pulp; DP, dermal papilla; DS; dermal sheath; fe, feather epidermis; pPP; peripheral pulp

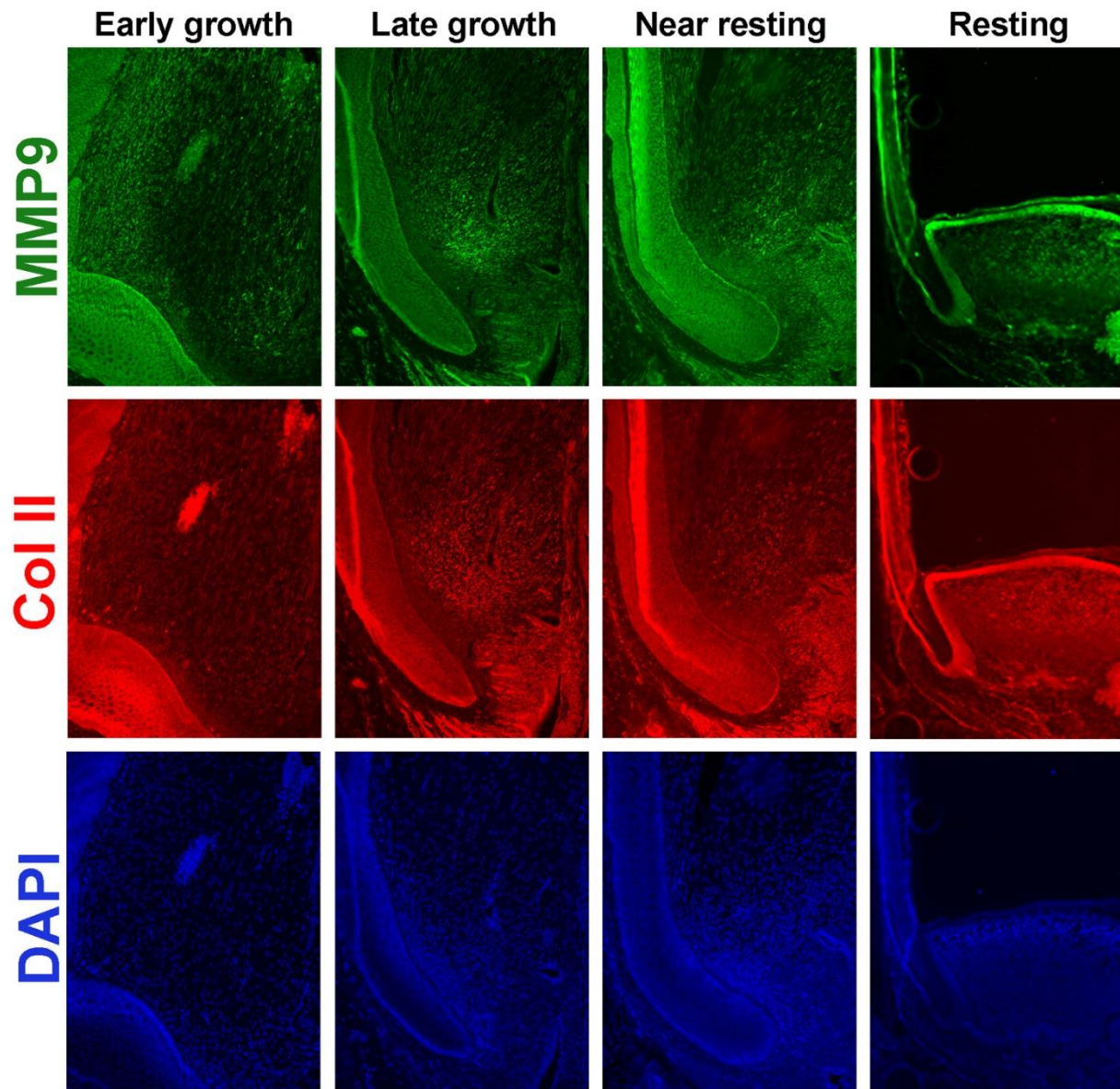


Fig. S4. MMP9 (green) and ColII (red) immunostaining in different stage feather pulp

Columns 1-4 represent feather follicles in Early Growth phase, Late Growth phase, Near Resting phase and Resting phase, respectively. Upper row, MMP9 staining. Middle row, Col II staining. Lower row, DAPI staining.

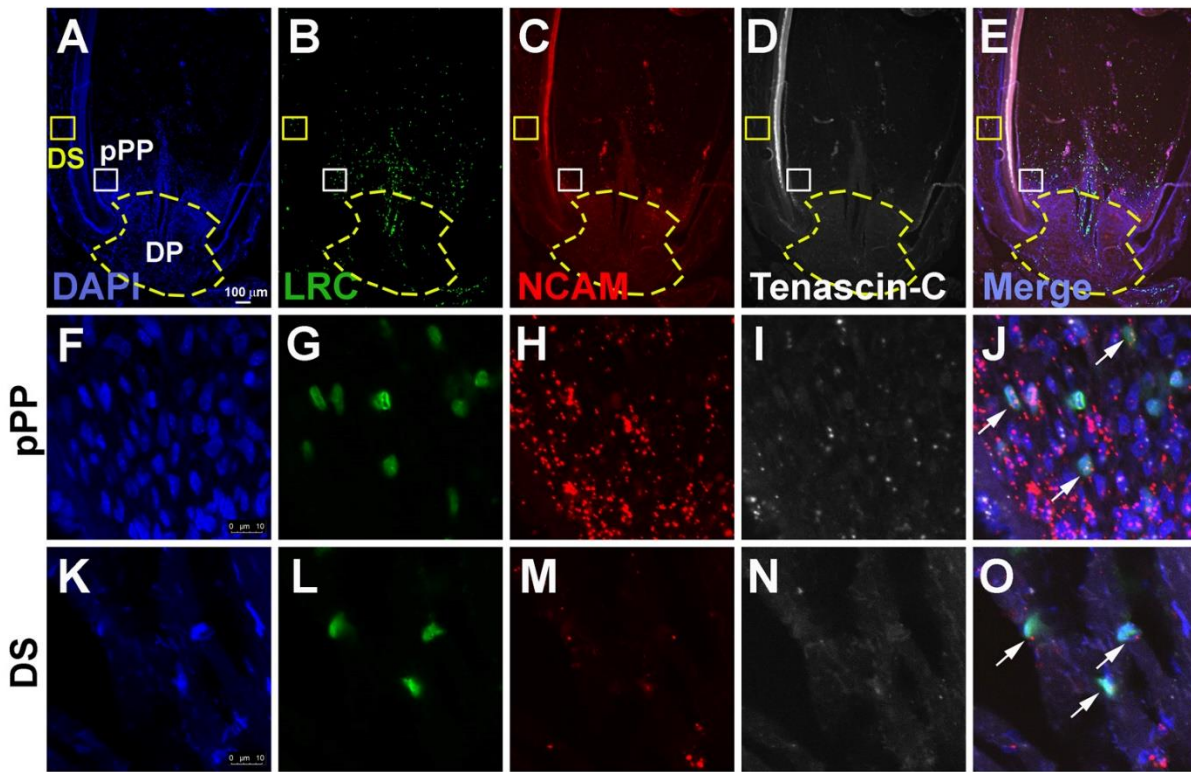


Fig. S5. Co-staining of LRCs and NCAM / Tenascin-C using RNAscope reveals the possible contribution of cell adhesion molecules to LRC accumulation.

Column 1-4 represent the staining of DAPI, LRC, NCAM and Tenascin-C respectively. Column 5 is the merged images. Upper row, whole follicle view. Middle row, pPP region with high magnification from the white box in the upper row. Lower row, DS region with high magnification from the yellow box in the upper row. Dotted lines outline the DP. DS, dermal sheath; pPP, peripheral pulp. White arrows in J and O indicate the LRDC and NCAM double positive cells.

Table S1. DESs between pulp stages

[Click here to download Table S1](#)

Table S2. Clusters and DEGS between pulp stages

[Click here to download Table S2](#)

Table S3. DEGS between dermal components

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Table S4. Clusters and DEGs between dermal components

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Table S5. Expressed genes in pulp

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Table S6. Expressed genes in dermal components

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