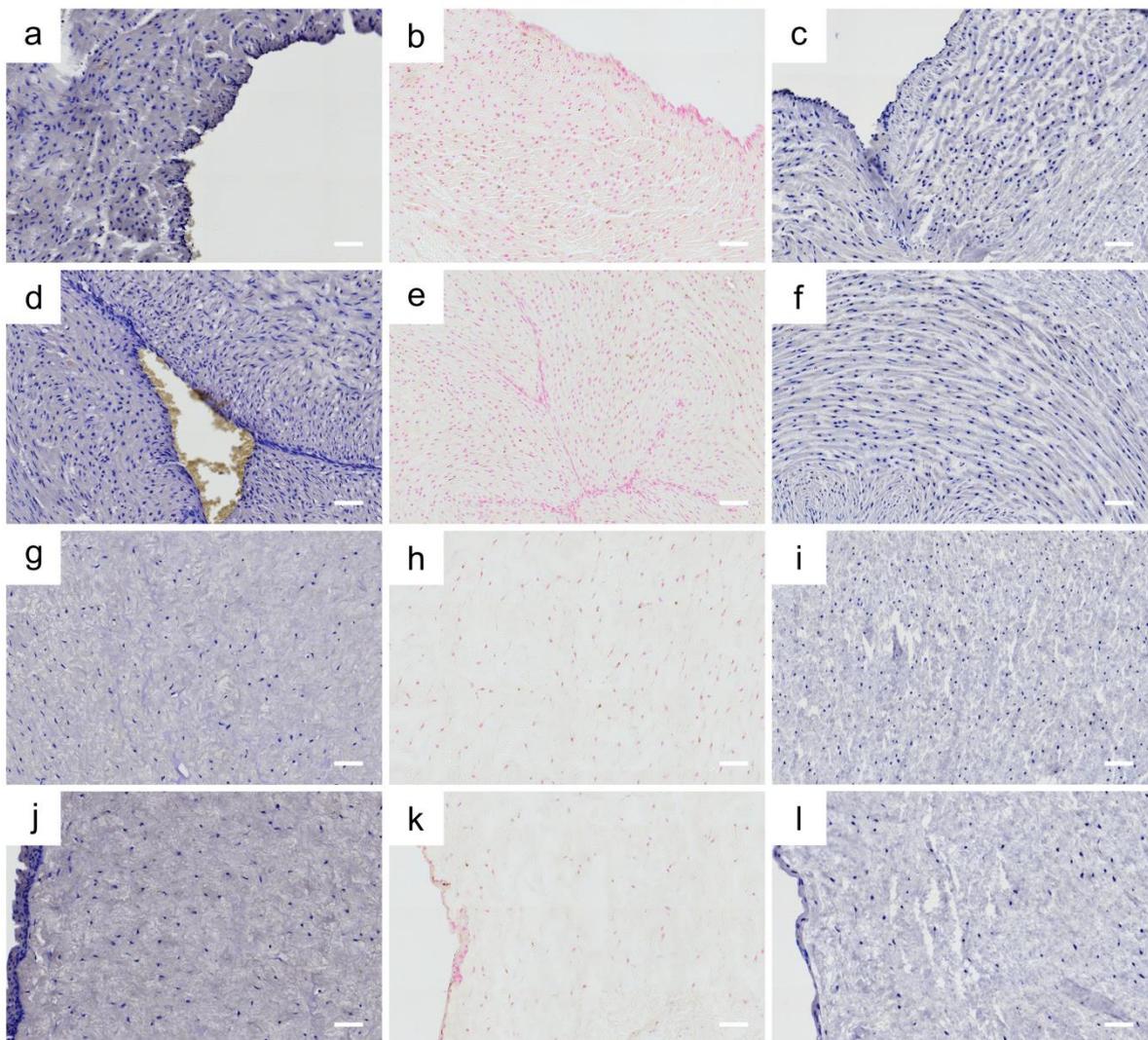


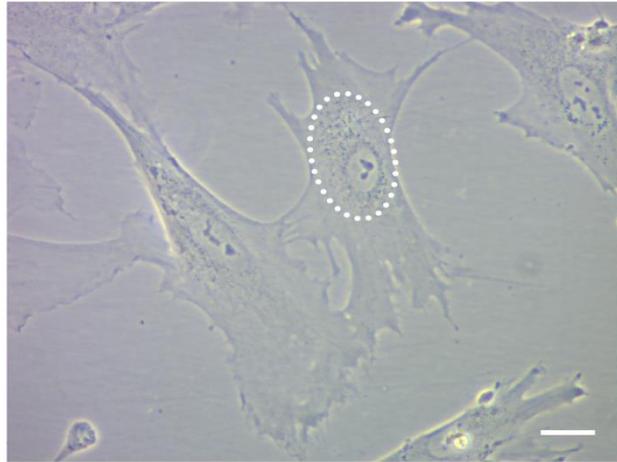
## Label-free imaging of umbilical cord tissue morphology and explant-derived cells

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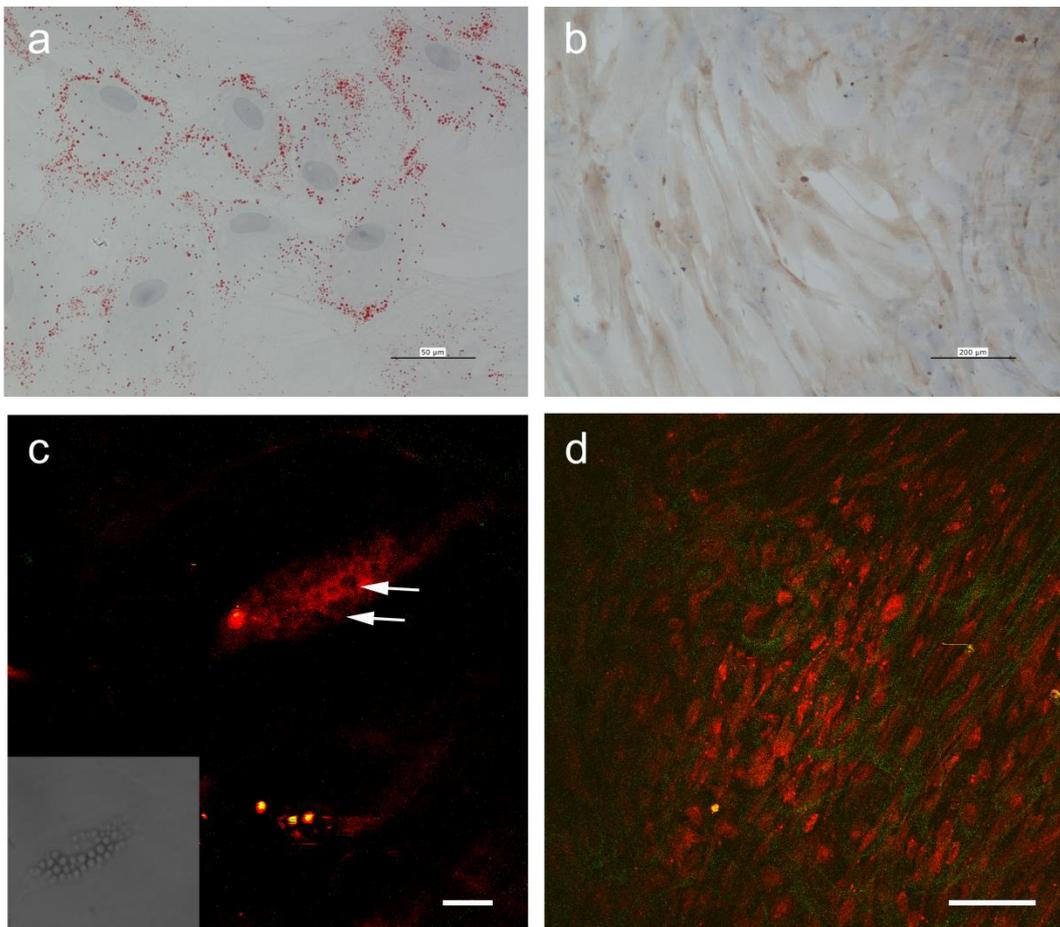
### Supplemental figures



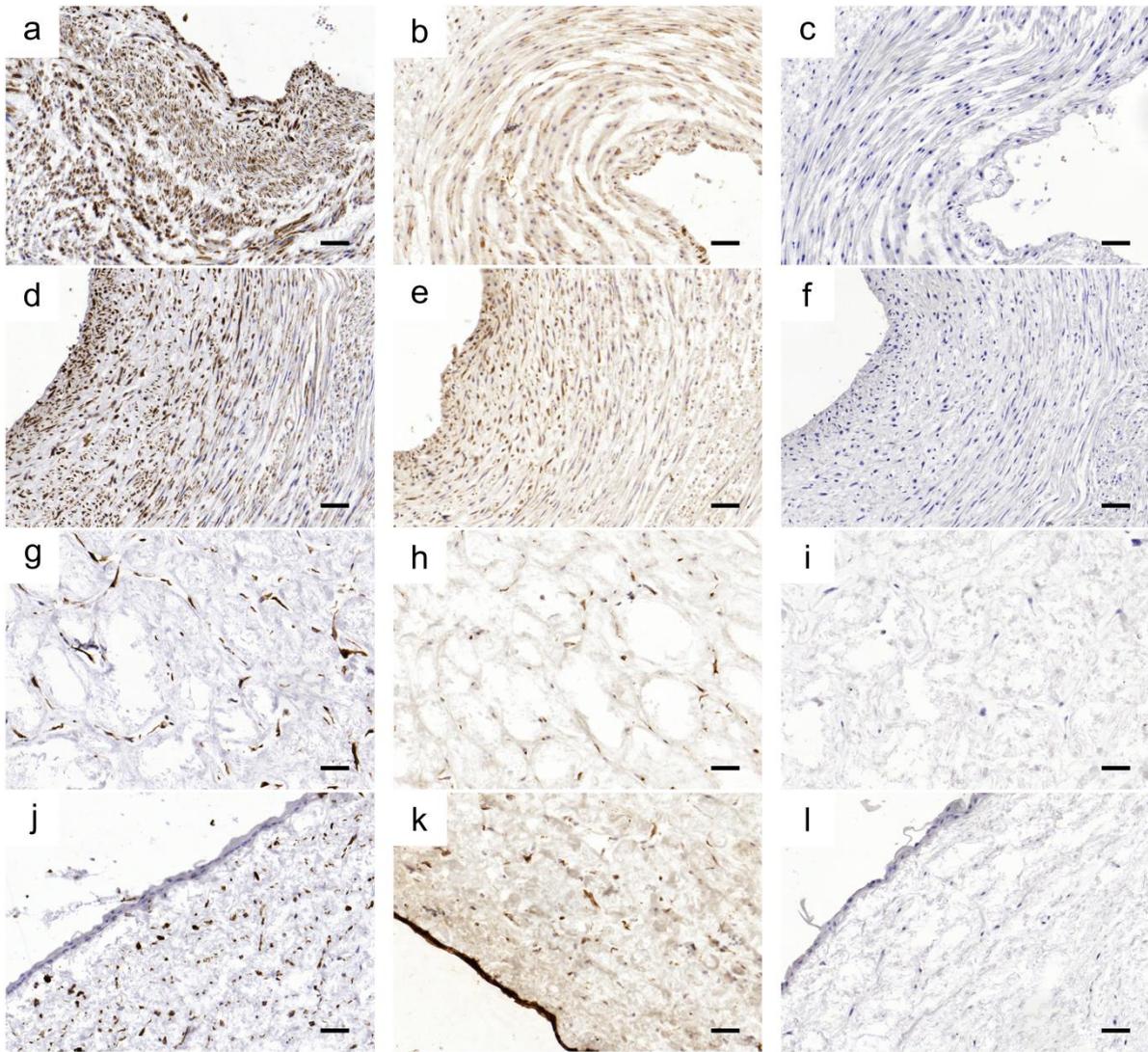
**Figure S1:** Control immunohistochemical staining for  $\alpha$ SMA (a, d, g & j), Oct4 (b, e, h & k) and ALDH1A1 (c, f, i & l) of umbilical cord areas: vein (a, b & c), arteries (d, e & f), Wharton's jelly (g, h & i), and cord edge and amniotic epithelium (j, k & l). In a & d some residual HRP activity (brown) of remaining red blood cells is visible. Scale bars = 50  $\mu$ m.



**Figure S2:** Phase contrast image of WJ explant-derived cells displaying a fibroblast-like morphology in culture. The cells have large nuclei containing multiple nucleoli and a perinuclear area of organelles (white dotted line). Scale bar = 20  $\mu\text{m}$ .



**Figure S3:** TPM and SHG imaging of WJ-MSCs adipogenic and osteogenic differentiation. (a) oil red o staining of lipid accumulation in the cytoplasm, visualizing the droplets (red) and nucleus (blue), scale bar = 50  $\mu\text{m}$ . (b) de novo expression of osteocalcin after osteogenic differentiation. Scale bar = 200 $\mu\text{m}$ . (c&d) AF (red) and SHG (green) imaging of (c) adipogenic and (d) osteogenic differentiation (scale bar = 200 $\mu\text{m}$ ). (c) Arrows: lipid droplets cause voids in the fluorescent signal; Inset = brightfield image of the same cell. Scale bar = 20  $\mu\text{m}$ . Representative images for 2 independent experiments are shown.



**Figure S4:** Immunohistochemical staining for vimentin (a, d, g & j), pan-CK (b, e, h & k) and the respective control staining (blank; c, f, i & l) of umbilical cord areas: vein (a, b & c), arteries (d, e & f), Wharton's jelly (g, h & i), and cord edge and amniotic epithelium (j, k & l). Positive expression is depicted by brown coloring of the cell cytoplasm. Nuclei and cytoplasm were counterstained in blue using Mayer's hematoxylin. Scale bars = 50  $\mu$ m. Representative images for 2 independent experiments are shown.