Supplementary Figure 1: (A) The percentage of CD141+ mDC and CD1c+ mDC in healthy control (HC) and inflammatory arthritis (IA) and PBMC as a percentage of Lineage- HLA-DR+ cells (n=6) and (B) the absolute numbers of these cells relative to beads. *P<0.05 significantly different to control.
Supplementary Figure 2: (A) and (B)) Representative images and semi-quantification of immunohistochemical staining for CD141 and Clec9A, in synovial tissue from RA and OA patients (n=7) (Original magnification 20x). Haematoxylin staining was used for counterstaining. (C) Representative immunofluorescence images of CD141 Clec9A dual staining in RA synovial tissue. Nuclei are stained with DAPI (blue), CD141 is stained with Alexa-Fluor-488-conjugated goat anti-mouse superclonal™ secondary antibody (red), Clec9A is stained with Cy3–conjugated goat anti-rabbit secondary antibody (green) and colocalisation of CD141+ Clec9A+ cells is depicted in yellow, original magnification of photomicrographs x 20. (D) Representative images of in vivo images of macroscopic synovitis from an RA and OA patient. (E) Correlation between CD141 expression or Clec9A expression and macroscopic synovitis. *P<0.05, **P<0.01 significantly different to control.
Supplementary Figure 3. Immunofluorescence staining for CD141 (green), cle9A (red), merged image of CD141/Cle9A (yellow) and IgG control. Nuclei were counterstained with DAPI. Original magnification 20X.
Supplementary Figure 4: (A) Gating strategy of sorted CD141+DC. Following removal of debris, doublets and dead cells, myeloid DC cells were gated on CD11c and HLA-DR. CD141, Clec9A and XCR-1 were all subsequently examined (using FMO controls to determine gating boundaries) to identify/confirm CD141+DC. (B) Due to the previously reported difficulty in staining XCR-1, we also performed staining using an appropriate isotype control to confirm positive XCR-1 staining.
Supplementary Figure 5: Unsupervised Hierarchical clustering of all 18345 genes between inflammatory arthritis (IA) PBMC CD141+DC, IA SF CD141+DC and HC PBMC CD141+DC. (B) PCA analysis was performed on the total datasets of HC PBMC CD141+ DC, IA SF CD141+ DC and IA PBMC CD141+DC. Data shown are from 4 HC donors, 5 IA SF donors and 7 IA blood donors.
Supplementary Figure 6: Expression of CD86, CD80 and CD40 on sorted peripheral blood CD141⁺DC from HC or IA patients peripheral blood (n=3) basally or following stimulation with Poly:IC (1μg/ml).
Supplementary Figure 7: Sorted IA synovial fluid (SF) CD141+ DC or HC PBMC CD141+ DC (n=4) were cocultured with allogeneic CD3+ T cells from a single donor for 6 days at a ratio of 1:10 after which proliferation and cytokine production was assessed by flow cytometry. After 6 days coculture CD3+ T cells were restimulated with PMA/ionomycin in the presence of brefeldin A, stained intracellularly with fluorochrome-conjugated antibodies specific for GMCSF, IFNγ, TNFα and IL-17a and analysed by flow cytometry. Representative flow cytometry plots showing cytokine staining in CD8+ T cells and dot plots representing the percentage of indicated cytokine within the proliferating CD8+ population.
Supplementary Figure 8: Inflammatory arthritis (IA) synovial fluid (SF) CD3+ T cells were sorted and cultured alone or with autologous synovial CD141+ DC (n=3) for 4 days at a ratio of 1:10 after which proliferation and cytokine production was assessed by flow cytometry. The frequency of proliferating cells was measured by CTV dilution. After 4 days coculture CD3+ T cells were restimulated with PMA/ionomycin in the presence of brefeldin A, stained intracellularly with fluorochrome-conjugated antibodies specific for IFNγ, TNFα, GMCSF and IL-17a and analysed by flow cytometry. (A) Dot plots representing the percentage of proliferating cells in CD8+ T cell populations and representative histograms showing the dilution of CTV. (B) Representative flow cytometry plots showing cytokine staining in CD8+ T cells and dot plots representing the percentage of indicated cytokine within the proliferating CD8+ population.
**Supplementary Figure 9:** (A) Levels of IL-6, MMP-1 and MMP-3 from control K4IM cells, K4IM cells stimulated with supernatants from T cells cultured on their own or K4IM cells stimulated with supernatants from CD141+DC-T cell cocultures. (B) Bar graphs representing the MFI of ICAM, VCAM and RANKL on control K4IM cells, K4IM cells stimulated with supernatants from T cells cultured on their own or K4IM cells stimulated with supernatants from CD141+DC-T cell cocultures. (C) Levels of IL-6 in CD141+DC-T cell cocultures and K4IM supernatants stimulated with these cocultures.
**Supplementary Figure 10**: MFI and representative histograms displaying expression of CD80, CD86 and CD40 on HC peripheral blood CD141⁺ DC stimulated via plate bound αTREM-1 or IgG1 control for 24 hr (n=5).