

Title: Altered B cell activation contributes to the immunopathogenesis of childhood arthritis-associated uveitis.

1st author: Dr Bethany R Jebson (b.jebson@ucl.ac.uk)

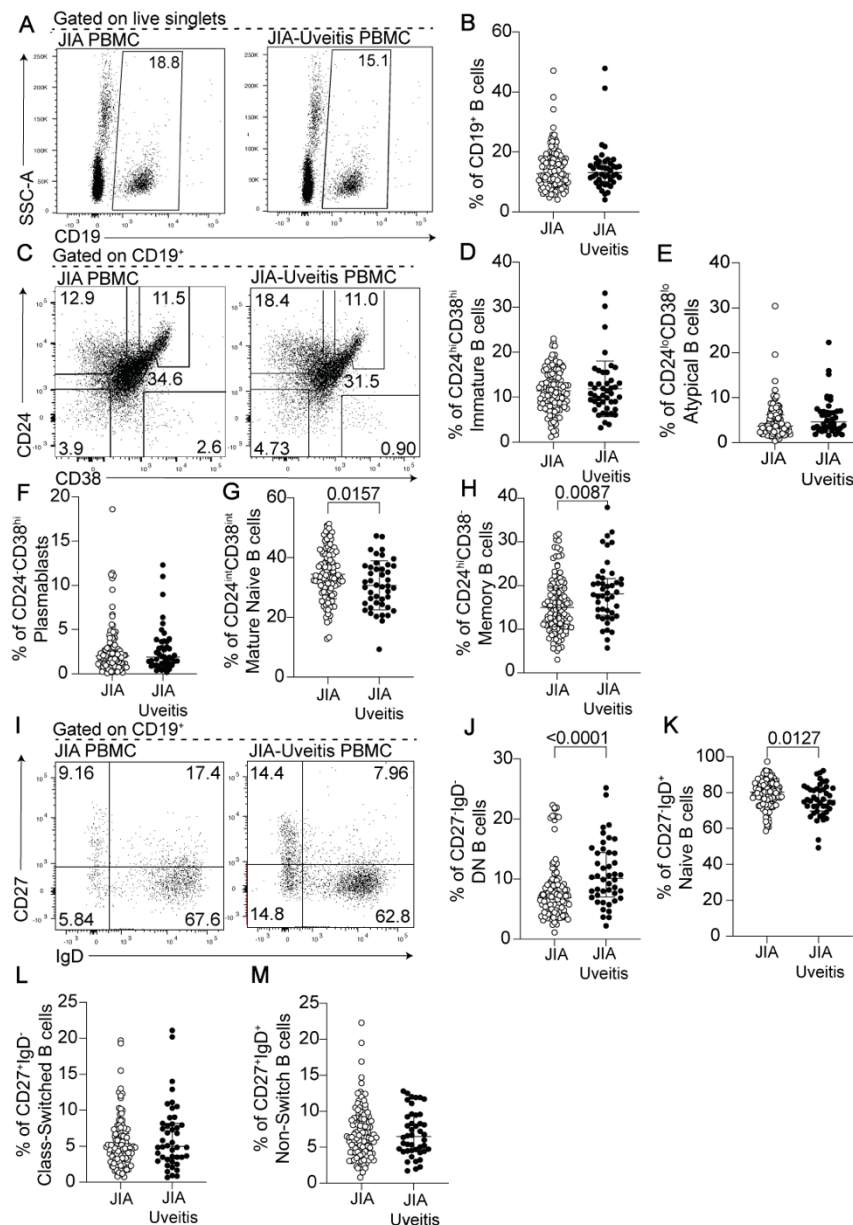
Corresponding author: Dr Elizabeth C. Rosser (e.rosser@ucl.ac.uk)

Supplementary Materials.

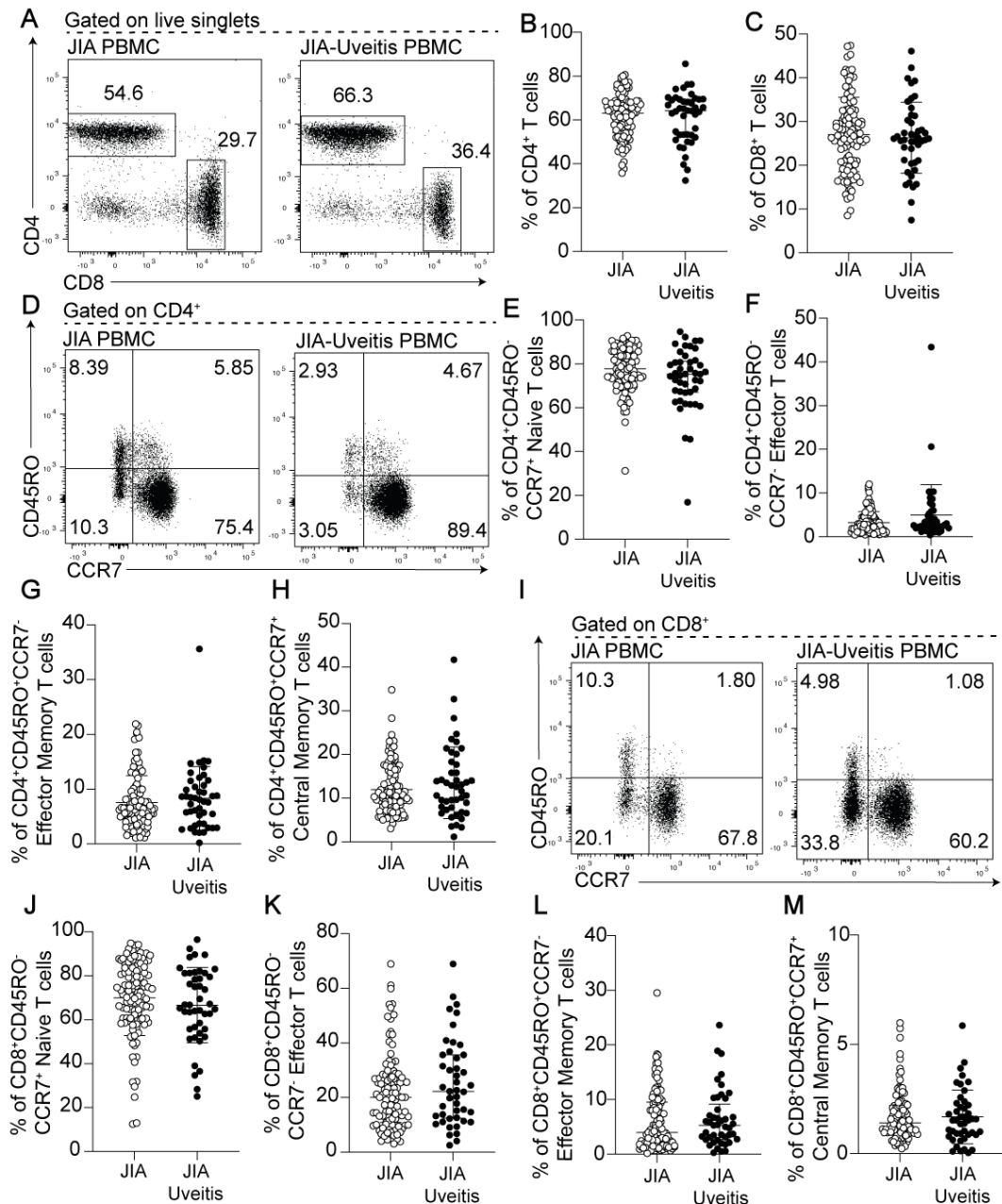
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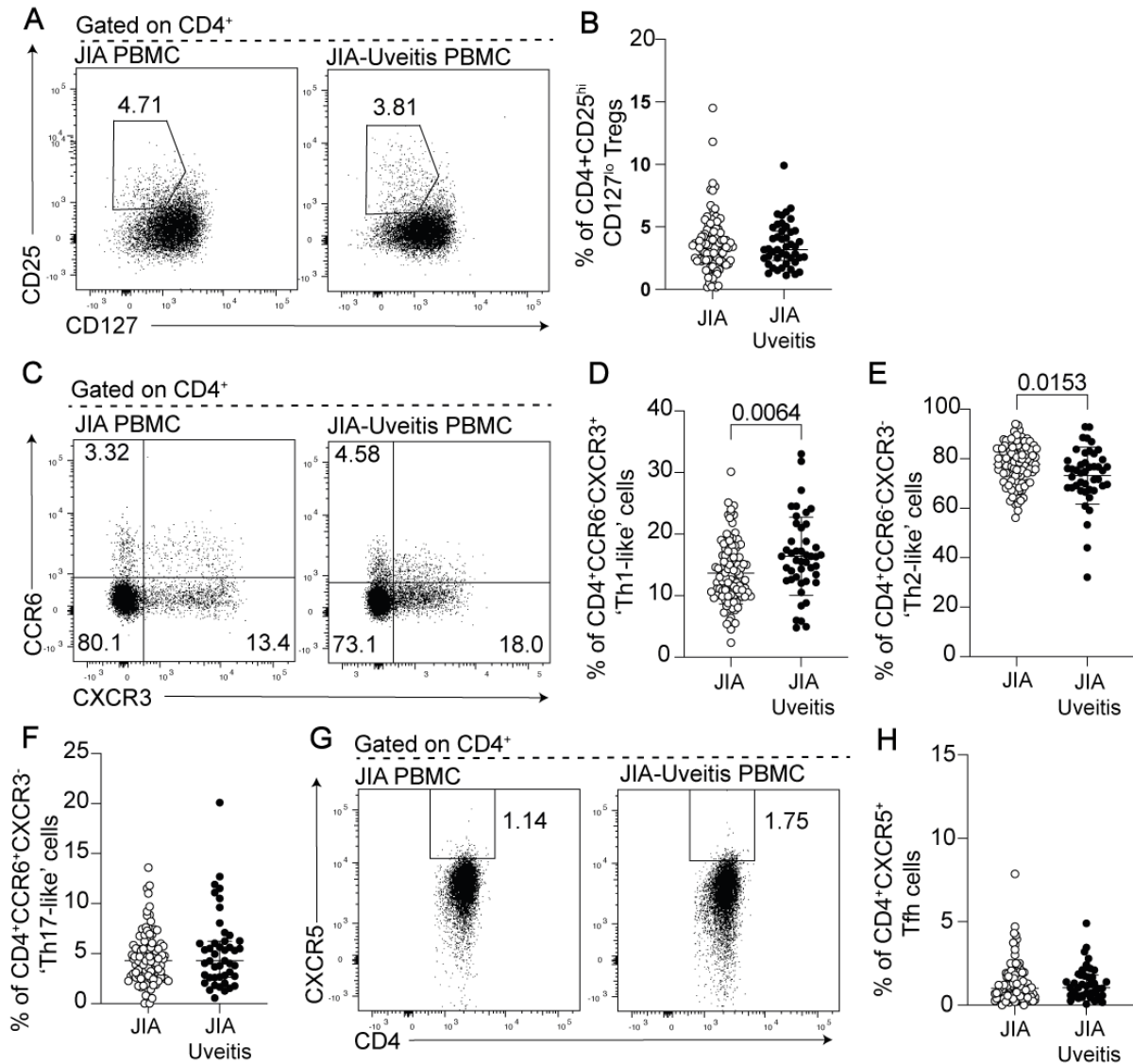
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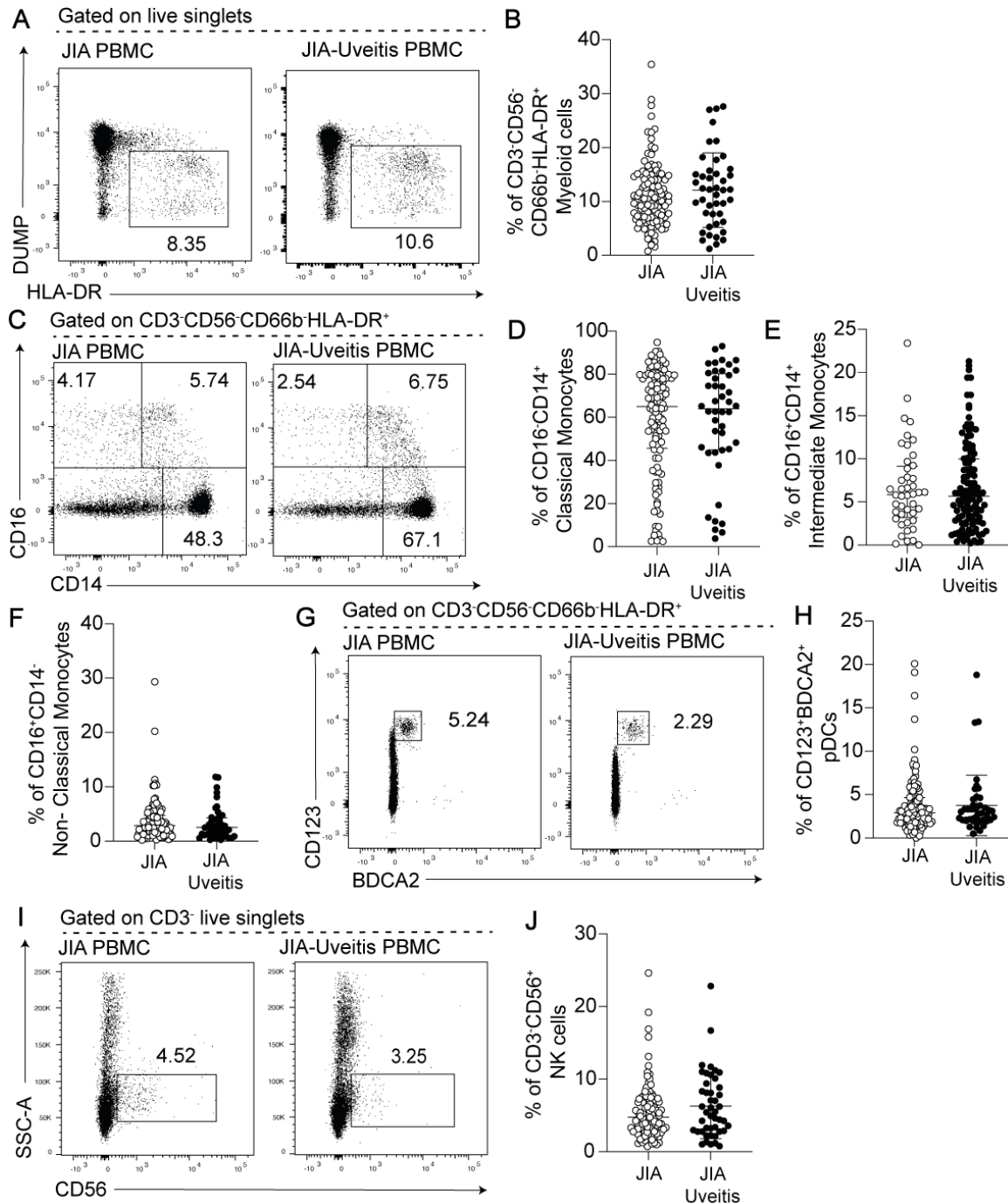
Supplementary Figure 1. B cell subset frequency within peripheral blood mononuclear cells of JIA patients with uveitis is altered compared to JIA patients with no uveitis. All data is generated from peripheral blood mononuclear cells (PBMC) collected from JIA patients with no uveitis (JIA, $n=116$) and JIA patients with uveitis (JIA-Uveitis, $n=44$). **A.** Representative flow cytometry plots and **B.** dot plot showing the frequency of CD19⁺ B cells within live singlets. **C.** Representative flow cytometry plots and dot plots showing the frequency of **D.** CD24^{hi}CD38^{hi} Immature B cells, **E.** CD24^{lo}CD38^{lo} Atypical Memory B cells, **F.** CD24⁻CD38^{hi} Plasmablasts, **G.** CD24^{int}CD38^{int} Mature Naive B cells, **H.** CD24^{hi}CD38⁻ Memory B cells within CD19⁺ live singlets. **I.** Representative flow cytometry plots showing the frequency of **J.** CD27⁻IgD⁻ Double Negative (DN) B cells **K.** CD27⁻IgD⁺ Naive B cells, **L.** CD27⁻IgD⁻ Class-Switched B cells, **M.** CD27⁻IgD⁺ Non-Switch B cells within CD19⁺ live singlets. Significance of difference between groups was determined using the two-tailed Mann-Whitney test. P values below or equal to 0.05 are shown on graphs but the significance threshold was set at ≤ 0.005 to adjust for multiple testing (Bonferroni). Error bars represent median $\pm$ IQR for groups.



Supplementary Figure 2. Similar frequencies of naïve and memory CD4⁺ T cells and CD8⁺ T cells within peripheral blood mononuclear cells are observed between JIA patients with and without uveitis. All data is generated from PBMC collected from JIA patients with no uveitis (JIA, $n=107$) and JIA patients with uveitis (JIA-Uveitis, $n=45$). **A**. Representative flow cytometry and dot plots showing the frequency of **B**. CD4⁺ T cells and **C**. CD8⁺ T cells within CD3⁺ live singlets. **D**. Representative flow cytometry plots and dot plots showing **E**. CD45RO⁻CCR7⁺ Naïve T cells, **F**. CD45RO⁻CCR7⁻ Effector T cells, **G**. CD45RO⁺CCR7⁻ Effector Memory T cells and **H**. CD45RO⁺CCR7⁺ Central Memory T cells within the CD4⁺ live singlets. **I**. Representative flow cytometry plots and dot plots showing **J**. CD45RO⁻CCR7⁺ Naïve T cells, **K**. CD45RO⁻CCR7⁻ Effector T cells, **L**. CD45RO⁺CCR7⁻ Effector Memory T cells and **M**. CD45RO⁺CCR7⁺ Central Memory T cells within the CD8⁺ live singlets. Significance of difference between groups was determined using the two-tailed Mann-Whitney test. P values below or equal to 0.05 are shown on graphs but the significance threshold was set at ≤ 0.005 for CD4 populations and ≤ 0.0125 for CD8 populations to adjust for multiple testing (Bonferroni). Error bars represent median $\pm$ IQR for groups.

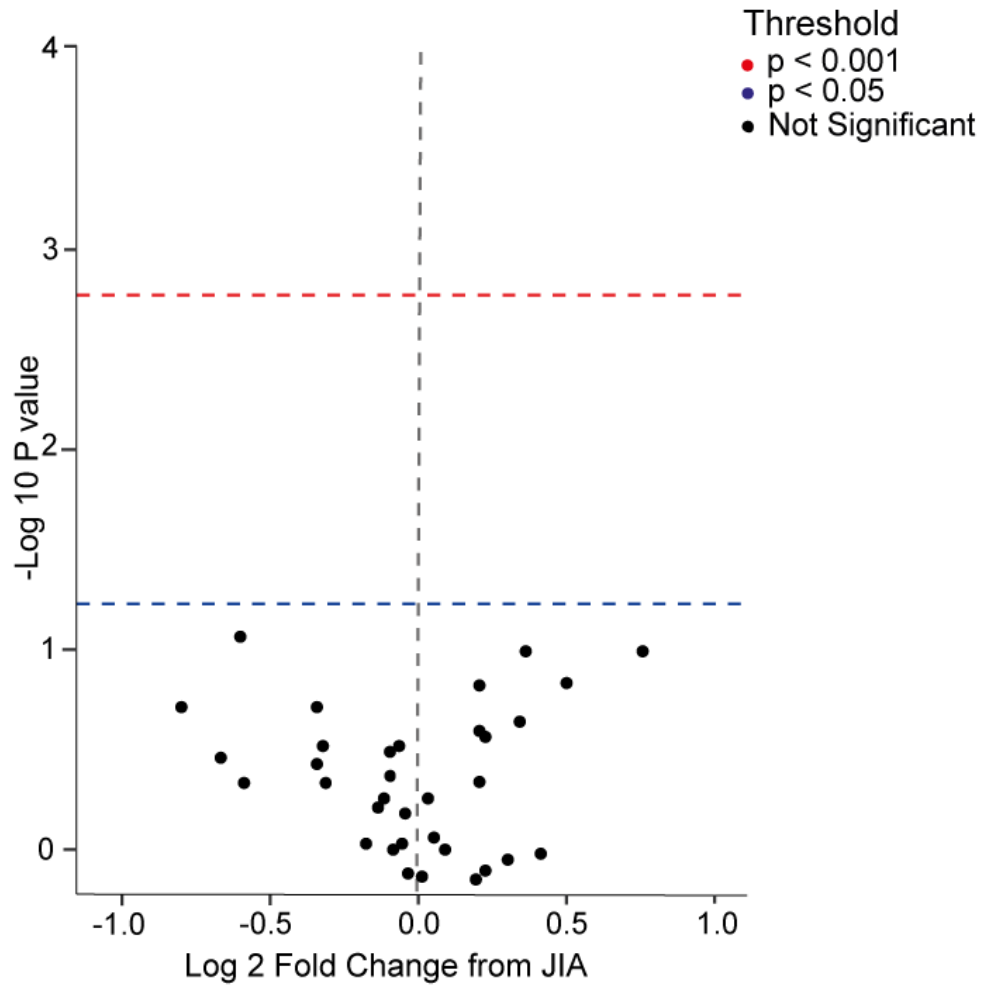


Supplementary Figure 3. T helper cell subsets within peripheral blood mononuclear cells are altered in JIA patients with uveitis compared to JIA patients without uveitis. All data were generated from PBMC collected from JIA patients with no uveitis (JIA, $n=107$) and JIA patients with uveitis (JIA-Uveitis, $n=45$), unless otherwise stated. **A.** Representative flow cytometry plots and **B.** dot plot showing the frequency of CD25^{hi}CD127^{lo} T regulatory (Treg) cells within CD4⁺ live singlets. **C.** Representative flow cytometry plots and dot plots showing the frequency of **D.** CCR6⁺CXCR3⁺ 'Th1 like' T cells, **E.** CCR6⁺CXCR3⁺ 'Th2 like' T cells and **F.** CCR6⁺CXCR3⁺ 'Th17 like' T cells within the CD4⁺ live singlets. **G.** Representative flow cytometry plots showing the frequency of **H.** CXCR5⁺ T follicular helper (Tfh) T cells within CD4⁺ live singlets from JIA patients with no uveitis (JIA, $n=101$) and JIA with uveitis (JIA-Uveitis, $n=42$). Significance of difference between groups was determined using two-tailed unpaired T-test for normally distributed groups (**D**), and two-tailed Mann-Whitney test where groups were non-normally distributed (**B,E,F,H**). P values below or equal to 0.05 are shown on graphs but the significance threshold was set at ≤ 0.005 to adjust for multiple testing (Bonferroni). Error bars represent mean $\pm$ SD for normally distributed groups and median $\pm$ IQR for non-normal groups.

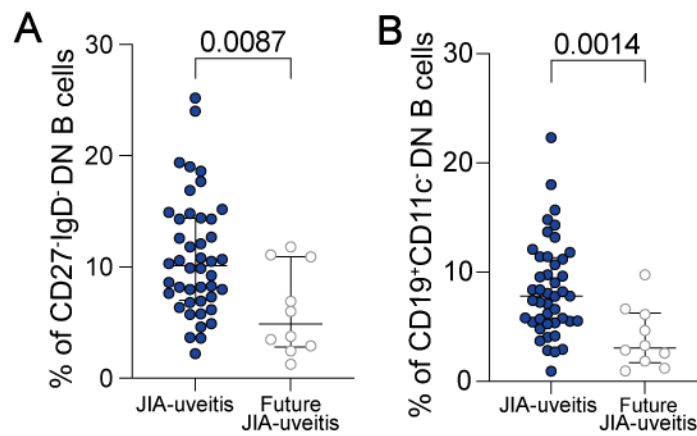


Supplementary Figure 4. Similar frequencies of Innate immune cell populations within peripheral blood mononuclear cells are observed between JIA patients with and without uveitis. All data were generated from PBMC collected from JIA patients with no uveitis (JIA, $n=116$) and JIA patients with uveitis (JIA-Uveitis, $n=44$). **A.** Representative flow cytometry plots and **B.** dot plot showing the frequency of CD3⁺CD56⁺CD66b⁺ (DUMP) HLA-DR⁺ Myeloid cells within live singlets. **C.** Representative flow cytometry and dot plots showing **D.** CD16⁺CD14⁺ Classical Monocytes, **E.** CD16⁺CD14⁺ Intermediate Monocytes and **F.** CD16⁺CD14⁻ Non-Classical Monocytes within HLA-DR⁺ live singlets. **G.** Representative flow cytometry and **H.** dot plot showing the frequency of CD123⁺BDCA2⁺ plasmacytoid dendritic cells (pDCs) within CD3⁺CD56⁺CD66b⁺ (DUMP) HLA-DR⁺ Myeloid cells. **I.** Representative flow cytometry plots and **J.** dot plot showing the frequency of CD56⁺ Natural Killer (NK) cells within live singlets. Significance of difference between all groups was determined using the two-tailed Mann-Whitney test. P values below or equal to 0.05 are shown on graphs but the significance threshold was set at ≤ 0.01 for myeloid populations and ≤ 0.05 for NK cells to adjust for multiple testing (Bonferroni). Error bars represent median $\pm$ IQR.

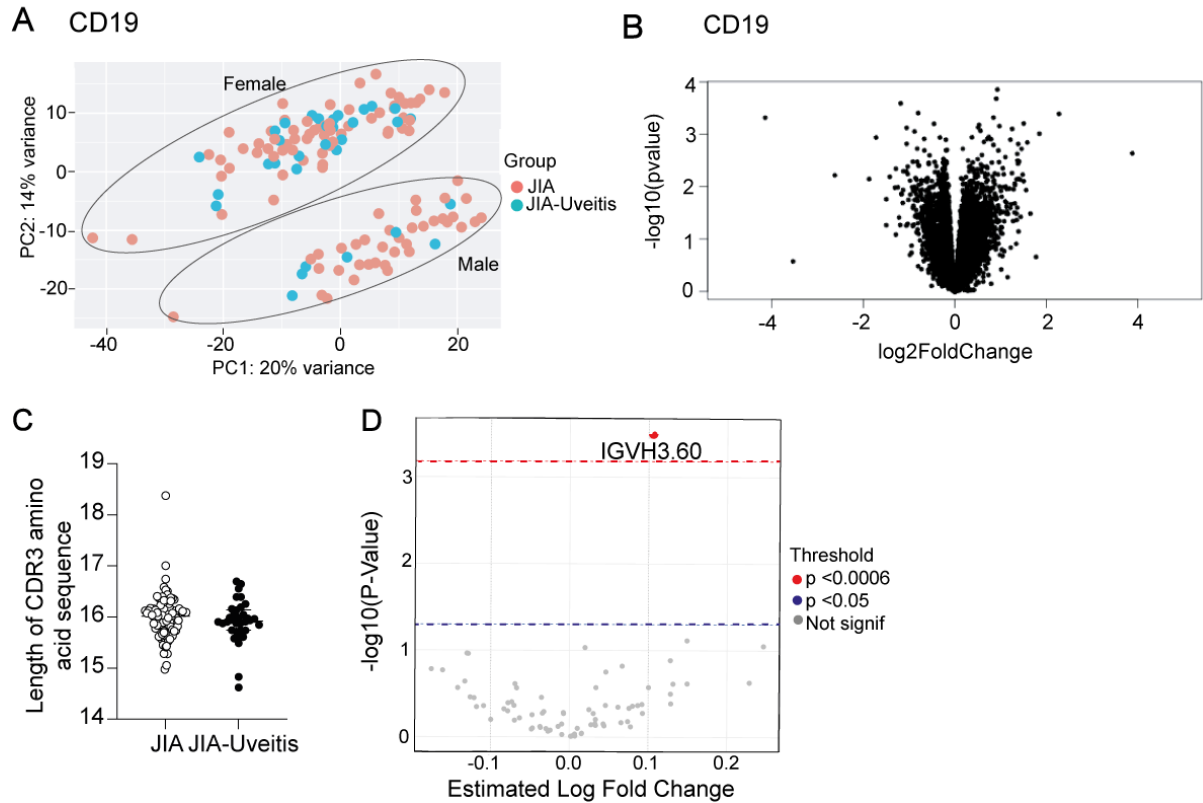
A SFMC cell proportions: JIA-Uveitis vs JIA



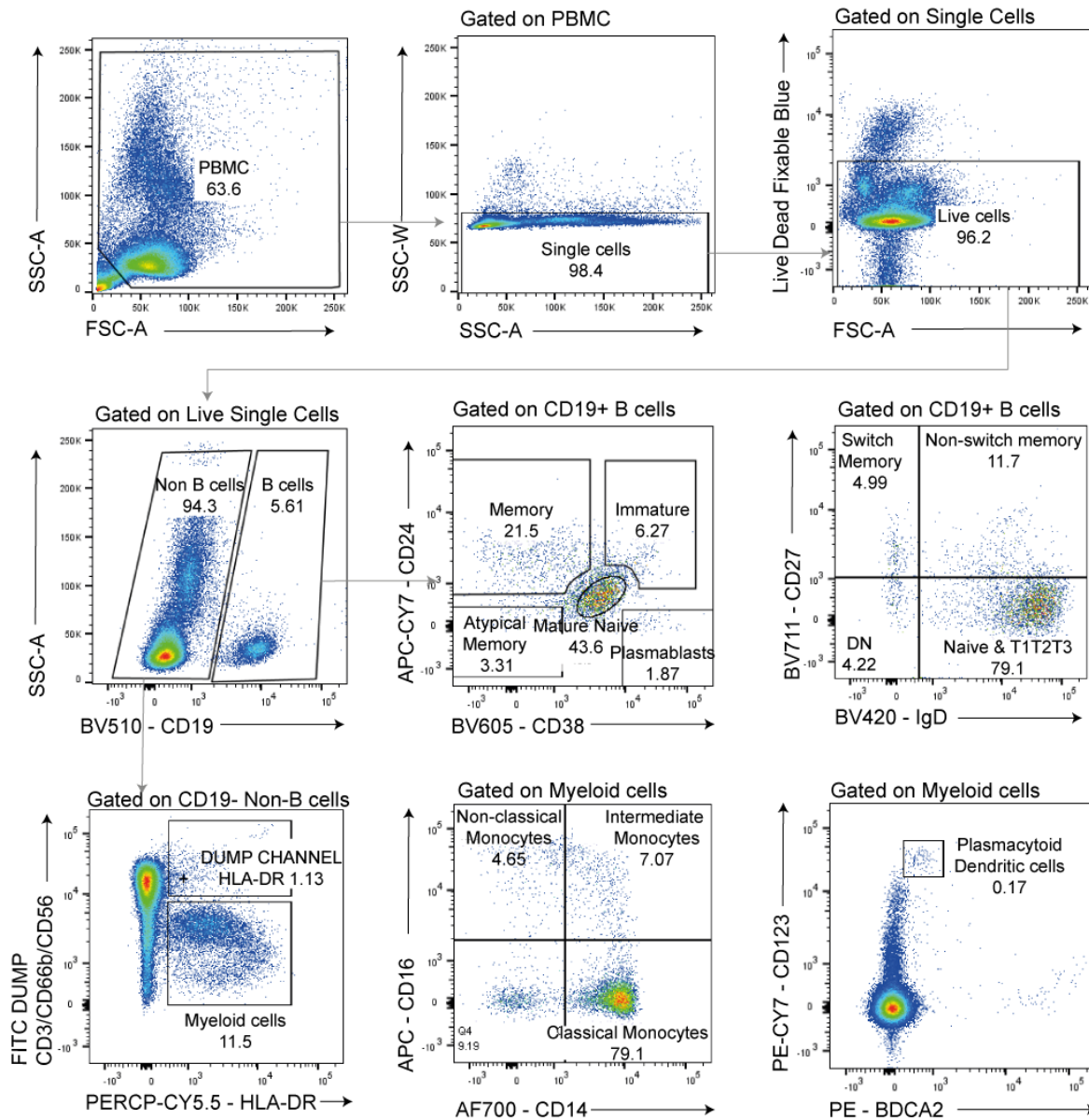
Supplementary Figure 5. There are no significant differences in immune cell populations within the synovial fluid of JIA patients with uveitis (JIA-Uveitis) and JIA patients with arthritis alone (JIA). All data are generated from SFMC collected from JIA patients with no uveitis (JIA, $n=30$) and JIA patients with uveitis (JIA-Uveitis, $n=18$). **A.** Volcano plot showing all 34 measured cell populations within the SFMC of JIA-Uveitis patients. Significance thresholds were set at $p \leq 0.05$ (blue dashed line) and $p \leq 0.0015$ (red dashed line; Bonferroni-corrected threshold, $0.05/34$ populations).



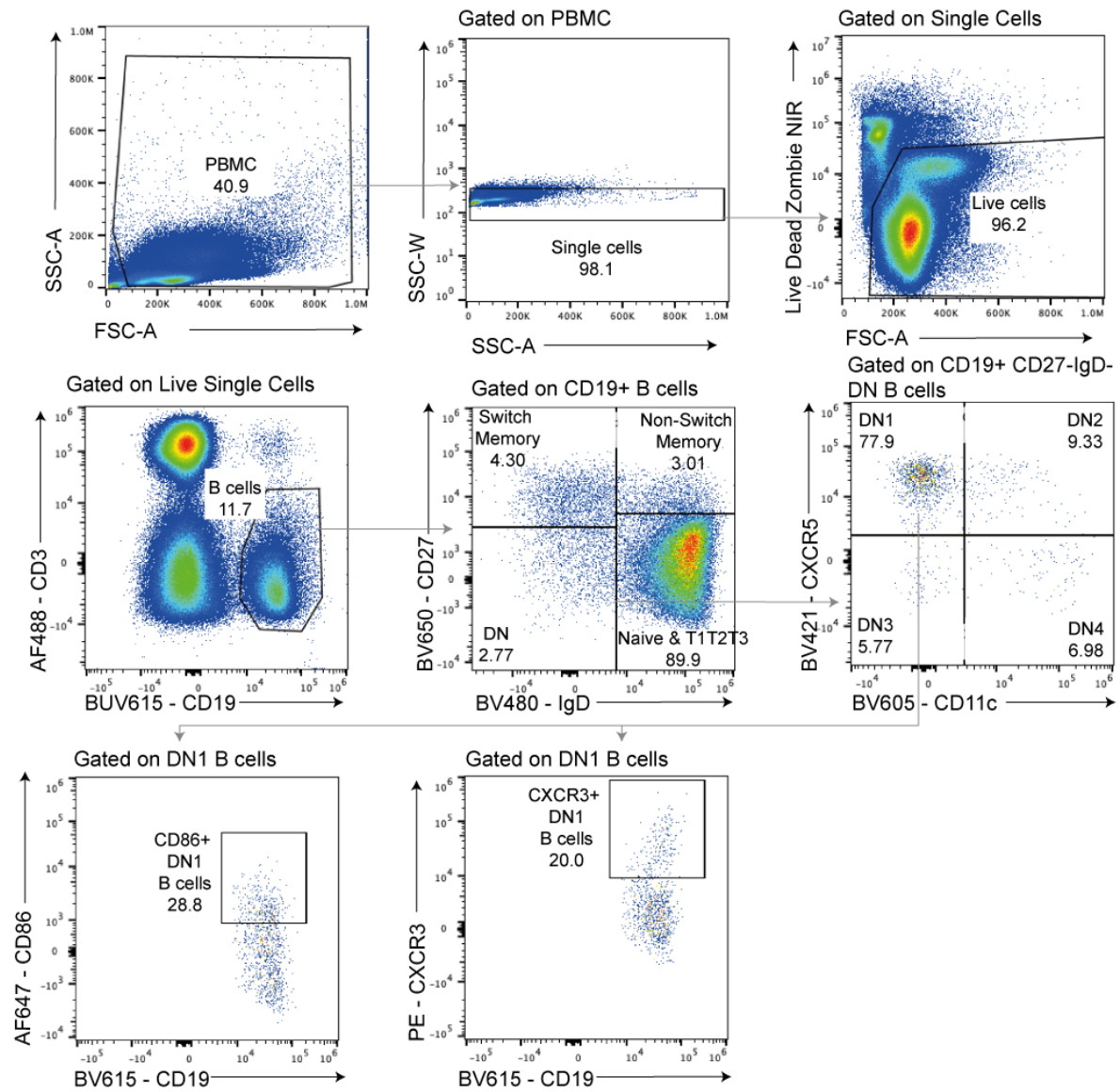
Supplementary Figure 6. Dot plot showing the proportion of DN and CD11c- DN B cells CD19+ B cells in the peripheral blood (PB) of JIA patients with uveitis ($n=44$), and patients who went on to develop uveitis after the time of sample (Future JIA-uveitis, $n=10$). Error bars represent median $\pm$ IQR. Significance of difference between all groups was determined using the two-tailed Mann-Whitney test. P-values ≤ 0.05 are shown on graphs.



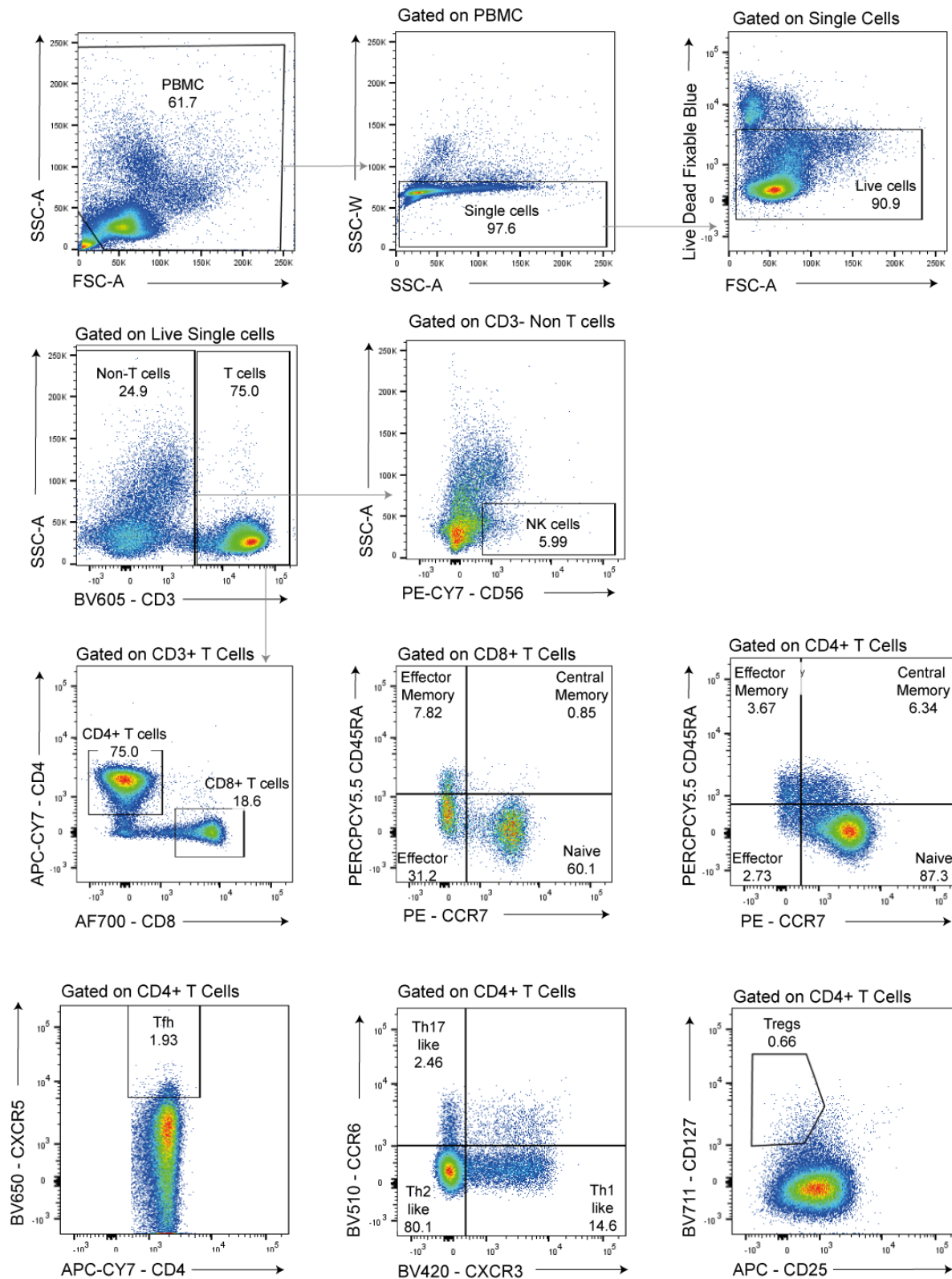
Supplementary Figure 7. Principal component analysis (PCA) and volcano plot of differentially abundant transcripts in CD19+ B cells within the peripheral blood of JIA and JIA-uveitis patients. PCA analysis utilising the top 500 genes expressed in each cell population, **A**. PCA of CD19+ B cells in the PBMC of JIA with no uveitis (JIA, $n=101$) and JIA-Uveitis patients (JIA-Uveitis, $n=33$). **B**. Volcano plot of CD19+ B cells. Differentially expressed genes significance threshold of $\log_2\text{FoldChange}$ greater than 1 and p -adjusted ≤ 0.05 . Following data is based on B Cell Receptor repertoire RNA-seq data from CD19+ B cells (JIA $n=100$, JIA-Uveitis $n=33$). **C**. Average CDR3 amino acid length. The significance of difference between groups was determined using the two-tailed Mann-Whitney test. P values have been adjusted for sex and age. Error bars represent median $\pm$ IQR for groups. **D**. Volcano plot showing all 76 measured IGH genes within the BCR repertoire analysis. Significance thresholds for differential abundance were set at $p \leq 0.05$ (uncorrected) and $p \leq 0.0006$ (Bonferroni corrected). Error bars represent median $\pm$ IQR.



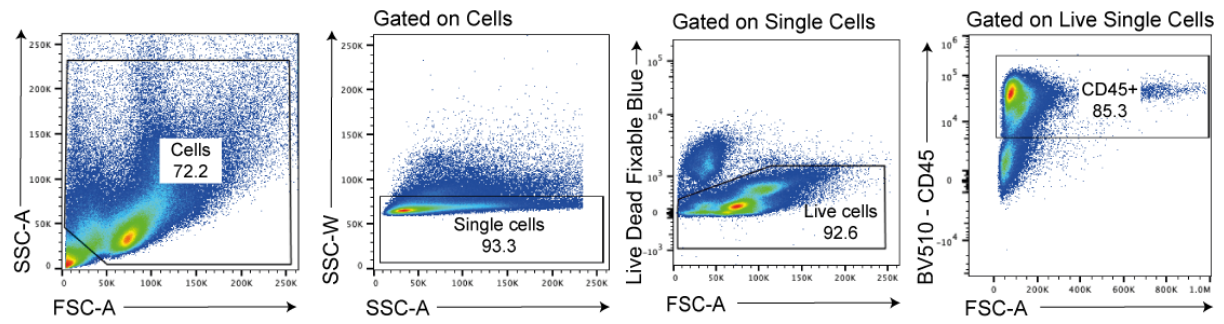
Supplementary figure 8. Flow cytometry gating strategies showing identification of canonical B cell subsets and myeloid subsets within human peripheral blood mononuclear cells.



Supplementary figure 9. Flow cytometry gating strategies showing identification of human double negative (DN) B cell subsets within human peripheral blood mononuclear cells.



Supplementary figure 10. Flow cytometry gating strategies showing identification of T cells and NK cell subsets within human peripheral blood mononuclear cells.



Supplementary figure 11. Flow cytometry gating strategy showing identification of lymphocytes within different mouse organs, prior to further analyses.

Supplementary Table 1. 34 included human immune cell populations with marker definitions.

Population	Definition
T cells	CD3+
CD4+ T cells	CD3+ CD4+
CD8+ T cells	CD3+ CD8+
NK cells	CD3- CD56+
Effector CD8 T cells	CD3+ CD8+ CCR7- CD45RO-
Effector memory CD8 T cells	CD3+ CD8+ CCR7- CD45RO+
Central memory CD8 T cells	CD3+ CD8+ CCR7+ CD45RO+
Naïve CD8 T cells	CD3+ CD8+ CCR7+ CD45RO-
Effector CD4 T cells	CD3+ CD4+ CCR7- CD45RO-
Effector memory CD4 T cells	CD3+ CD4+ CCR7- CD45RO+
Central memory CD4 T cells	CD3+ CD4+ CCR7+ CD45RO+
Naïve CD4 T cells	CD3+ CD4+ CCR7+ CD45RO-
Tregs	CD3+ CD4+ CD127- CD25+
T helper like cells (Th17)	CD3+ CD4+ CCR6+ CXCR3-
T helper like cells (Th2)	CD3+ CD4+ CCR6- CXCR3-
T helper like cells (Th1)	CD3+ CD4+ CCR6- CXCR3+
T follicular helper cells (Tfh)	CD3+ CD4+ CXCR5+
B cells	CD19+
Memory B cells	CD19+ CD24 ^{hi} CD38 ⁻
Immature B cells	CD19+ CD24 ^{hi} CD38 ^{hi}
Atypical Memory B cells	CD19+ CD24 ^{lo} CD38 ^{lo}
Mature Naïve B cells	CD19+ CD24 ^{int} CD38 ^{int}
Plasmablasts	CD19+ CD24 ⁻ CD38 ^{hi}
Switched memory B cells	CD19+ CD27+ IgD-
Non-switched memory B cells	CD19+ CD27+ IgD+
Double negative (DN) B cells	CD19+ CD27- IgD-
DN CD11c-	CD19+ CD27- IgD- CD11c-
DN CD11c+	CD19+ CD27- IgD- CD11c+
DN1	CD19+ CD27- IgD- CD11c- CXCR5+
DN2	CD19+ CD27- IgD- CD11c+ CXCR5-
DN3	CD19+ CD27- IgD- CD11c- CXCR5-
DN4	CD19+ CD27- IgD- CD11c+ CXCR5+ IgE+
Naïve B cells	CD19+ CD27- IgD+
Myeloid cells	CD19- CD3-/CD66b-/CD56- HLA DR+
Non-classical Monocytes	CD19- CD3-/CD66b-/CD56- HLA DR+ CD14- CD16+
Intermediate Monocytes	CD19- CD3-/CD66b-/CD56- HLA DR+ CD14+ CD16+
Classical Monocytes	CD19- CD3-/CD66b-/CD56- HLA DR+ CD14+ CD16-
Plasmacytoid Dendritic cells	CD19- CD3-/CD66b-/CD56- HLA DR+ CD123+ BDCA2+

Table showing the marker combinations used to identify each cell population by flow cytometry. "hi", "lo", and "int" indicate high, low, and intermediate expression levels respectively.

Supplementary Table 2. JIA-uveitis patient demographics. Characteristics of JIA-uveitis patients split by disease activity into active and inactive groups.

Characteristic	Active uveitis	% M.D	Inactive uveitis	% M.D	P value (≤0.05 values shown)
Total samples (n)	29		15		
Total patients (n)	29		14		
Age at sample, years, median, (range)	6.7 (1.7 – 13.7)	0	11.3 (1.8 – 16)	0	
Age at disease onset, years, median (range)	2.7 (0.4 – 11.9)	0	2.8 (0.6 – 6.3)	0	
Sex n (%)					
Female	21 (72)	0	14 (93)	0	
Male	8 (28)	0	1 (7)	0	
Ancestry n (%)					
Non-Caucasian	11 (40)	0	4 (27)	0	
Caucasian	18 (60)	0	11 (73)	0	
JIA subtype n (%)					
Oligoarticular – persistent	12 (41)	0	3 (20)	0	0.029
Oligoarticular – extended	6 (21)	0	10 (67)	0	
Polyarticular RF-ve	9 (31)	0	2 (13)	0	
Polyarticular RF+ve	2 (7)	0	0 (0)	0	
Enthesitis-related	0 (0)	0	0 (0)	0	
Psoriatic JIA	0 (0)	0	0 (0)	0	
Undifferentiated	0 (0)	0	0 (0)	0	
Active joint count, median, (range)	4 (0 – 23)	3	1 (0 – 4)	0	
ANA positive n (%)	25 (86)	0	12 (80)	0	
RF positive n (%)	3 (10)	10	1 (7)	0	
HLA-B27 positive n (%)	1 (3)	62	0 (0)	87	
Treatment n (%)					
MTX	6 (21)	0	10 (67)	0	0.007
Anti-TNF	0 (0)	0	2 (13)	0	
Anti-IL6	0 (0)	0	0 (0)	0	
Topical eye steroids	14 (48)	0	0 (0)	0	0.001
Systemic steroids	5 (17)	0	3 (20)	0	

Note: RF = Rheumatoid Factor, ANA = Anti-nuclear antibody, HLA-B27 = Human Leukocyte Antigen B27, MTX = Methotrexate. The significance of difference between groups was determined using a Chi-squared or Fishers exact test. Only p values ≤0.05 are shown and any variables that are not applicable to both groups are marked with N/A.

Supplementary Table 3. JIA-uveitis and future JIA-uveitis patient demographics.
Characteristics of JIA-uveitis and JIA patients who go on to develop uveitis after sample date included within the study.

Characteristic	Future JIA- uveitis	% Missing data	JIA-uveitis	% Missing data	P value (≤0.05 values shown)
Total samples (n)	10		44		
Total patients (n)	10		43		
Active uveitis n (%)	N/A		29 (65)		
Recruitment years	2007 - 2019		2010 - 2019		
Age at sample, years, median, (range)	3.5 (1.8 – 11.9)	0	8.7 (1.7 – 16)	0	0.054
Age at disease onset, years, median (range)	2.4 (1.4 – 11.2)	0	4.3 (0.4 – 11.9)	0	
Sex n (%)					
Female	6 (60)	0	35 (79)	0	
Male	4 (40)	0	9 (21)	0	
Ancestry n (%)					
Non-Caucasian	1 (10)	0	15 (35)	0	
Caucasian	9 (90)	0	29 (65)	0	
JIA subtype n (%)					
Oligoarticular – persistent	1 (10)	0	15 (34)	0	
Oligoarticular – extended	3 (30)	0	16 (36)	0	
Polyarticular RF-ve	6 (60)	0	11 (25)	0	
Polyarticular RF+ve	0 (0)	0	2 (5)	0	
Enthesitis-related	0 (0)	0	0 (0)	0	
Psoriatic JIA	0 (0)	0	0 (0)	0	
Undifferentiated	0 (0)	0	0 (0)	0	
‘Polygo’	10 (100)	0	42 (96)	0	
Active joint count, median, (range)	6 (1 - 8)	0	4 (0-23)	2	
ANA positive n (%)	10 (100)	0	37 (84)	0	
RF positive n (%)	1 (10)	7	4 (10)	7	
HLA-B27 positive n (%)	0 (0)	80	1 (8)	70	
Treatment at time of sample n (%)					
MTX	2 (20)	0	16 (36)	0	
Anti-TNF	0 (0)	0	2 (5)	1	
Anti-IL6	0 (0)	0	0 (0)	1	
Topical eye steroids	0 (0)	0	14 (32)	0	N/A
Systemic steroids	1 (10)	0	8 (18)	1	

Note: ‘Polygo’ = combined oligoarticular and polyarticular RF- JIA subtypes, RF = Rheumatoid Factor, ANA = Anti-nuclear antibody, HLA-B27 = Human Leukocyte Antigen B27, MTX = Methotrexate. The significance of difference between groups was determined using a Chi-squared or Fishers exact test. Only p values ≤0.05 are shown and any variables that are not applicable to both groups are marked with N/A.

Supplementary Table 4. JIA and JIA-uveitis patients with oligoarticular arthritis demographics. Characteristics of JIA and JIA-uveitis patients with oligoarticular arthritis.

Characteristic	JIA-uveitis	% Missing data	JIA	% Missing data	P value (≤0.05 values shown)
Total samples (n)	31		37		
Total patients (n)	30		37		
Active uveitis n (%)	18 (58)		N/A		N/A
Recruitment years	2010 - 2019		1999-2019		N/A
Age at sample, years, median, (range)	9.3 (1.7 – 16.0)	0	7.5 (2.4 – 16.6)	0	
Age at disease onset, years, median (range)	3.1 (0.6 – 11.7)	0	4.0 (0.2 – 16.0)		
Sex n (%)					
Female	26 (84)	0	27 (73)	0	
Male	5 (16)	0	10 (27)	0	
Ancestry n (%)					
Non-Caucasian	11 (36)	0	9 (24)	0	
Caucasian	20 (64)	0	28 (76)	0	
JIA subtype n (%)					
Oligoarticular – persistent	15 (48)	0	12 (32)	0	
Oligoarticular – extended	16 (52)	0	25 (68)	0	
Active joint count, median, (range)	2 (0 – 6)	1 (3)	3 (1 – 18)	1 (3)	
ANA positive n (%)	26 (84)	0 (0)	25 (71)	2 (5)	
RF positive n (%)	2 (7)	3 (10)	1 (3)	5 (14)	
HLA-B27 positive n (%)	0 (0)	21 (67)	0 (0)	31 (84)	
Treatment at time of sample n (%)					
MTX	11 (36)	0	13 (35)	0	
Anti-TNF	2 (7)	0	0 (0)	0	
Anti-IL6	0 (0)	0	0 (0)	0	
Topical eye steroids	10 (32)	0	N/A	0	N/A
Systemic steroids	6 (19)	0	1 (3)	0	0.04

Note: RF = Rheumatoid Factor, ANA = Anti-nuclear antibody, HLA-B27 = Human Leukocyte Antigen B27, MTX = Methotrexate. The significance of difference between groups was determined using a Chi-squared or Fishers exact test. Only p values ≤0.05 are shown and any variables that are not applicable to both groups are marked with N/A.

Supplementary Table 5. Aqueous humour sample patient demographics.

Characteristics of JIA-uveitis patients included in the aqueous humour analysis.

Characteristic	JIA-Uveitis	% Missing data
Total samples (n)	2	0
Total patients (n)	2	
Active uveitis n (%)	100 (100)	
Recruitment years	2023 - 2024	
Age at disease onset, years, median (range)	6.5 (6.2 – 7.1)	0
Age at sample, years, median (range)	11 (9.1 -13.3)	
Female	0 (0)	0
Male	2 (50)	0
Non-Caucasian	1 (50)	0
Caucasian	1 (50)	0
Oligoarticular – persistent	1 (50)	0
Oligoarticular – extended	1 (50)	0
ANA positive n (%)	2 (100)	0
HLA-B27 positive n (%)	0 (100)	0
Rheumatoid factor n (%)	2 (100)	0
Treatment at time of sample n (%)		
MTX	1 (50)	0
Anti-TNF	1 (50)	0
Anti-IL6	1 (50)	0
Systemic steroids	0 (100)	0
Topical eye steroids	2 (100)	0

Note: ANA = Anti-nuclear antibody, MTX = Methotrexate, anti-TNF = tumour necrosis factor alpha antibody.

Supplementary Table 6. Enucleated eye patient demographics. Characteristics of historically biobanked JIA-uveitis patients included in the whole enucleated eye histological analysis.

Characteristic	JIA-Uveitis
Total samples (n)	3
Total patients (n)	3
Active uveitis n (%)	3 (100)
Age at sample, median (range)	32 (26 – 38)
Female	3 (100)
Male	0 (0)

Supplementary Table 7. List of fluorochrome-conjugated anti-human antibodies used for B cell/myeloid cell and T cell/NK cell immunophenotyping via conventional flow cytometry.

Antigen	Fluorochrome	Clone	Manufacturer	Final Dilution
BDCA2	PE	201A	Biolegend	1:100
CD3	FITC	OKT3	Biolegend	1:50
CD56	FITC	5.1H11	Biolegend	1:50
CD66b	FITC	G10F5	Biolegend	1:50
CD16	APC	3G8	Biolegend	1:50
CD123	PECY7	6H6	Biolegend	1:100
HLA-DR	PERCPCY5.5	L243	Biolegend	1:100
CD24	APC-CY7	ML5	Biolegend	1:50
CD14	AF700	63D3	Biolegend	1:100
IgD	BV421	IA6-2	Biolegend	1:50
CD19	BV510	HIB19	Biolegend	1:50
CD38	BV605	HIT2	Biolegend	1:50
CD11c	BV650	3.9	Biolegend	1:50
CD27	BV711	O323	Biolegend	1:50
CCR7	PE	G043H7	Biolegend	1:50
TCR$\gamma\delta$	FITC	11F2	BD biosciences	1:25
CD25	APC	BC96	Biolegend	1:50
CD56	PECY7	MEM-188	Biolegend	1:100
CD45ro	PERCPCY5.5	UCLH1	Biolegend	1:50
CD4	APC-CY7	OKT4	Biolegend	1:50
CD8a	AF700	SK1	Biolegend	1:100
CXCR3	BV421	G025H7	Biolegend	1:50
CCR6	BV510	G034E3	Biolegend	1:50
CD3	BV605	OKT3	Biolegend	1:50
CXCR5	BV650	RF8B2	BD biosciences	1:50
CD127	BV711	A019D5	Biolegend	1:50
CD45ra	PEDAZZLE	HI100	Biolegend	1:50

Supplementary Table 8. List of fluorochrome-conjugated anti-mouse antibodies used for general mouse immunophenotyping via conventional flow cytometry.

Antigen	Fluorochrome	Clone	Manufacturer	Final Dilution
CD19	BUV737	H1B19	BD Bioscience	1:100
CD138	BV711	281-2	BD Bioscience	1:200
IgL	FITC	RMK-45	Biolegend	1:100
CD95	PECY7	Jo2	Biolegend	1:200
Blimp-1 (IC with eBioscience perm)	APC	5e7	Biolegend	1:50
GL7	421/Pacific Blue	GL7	BD Bioscience	1:100
IgD	Perpcy5.5	11-26c.2a	Biolegend	1:100
CD23	BV711	B3B4	BD Bioscience	1:200
IgM	FITC	II/41	BD Bioscience	1:200
CD21	APC	7G6	Biolegend	1:100
CD24	421/Pacific Blue	M1/69	Biolegend	1:400
CD19	BV785	6D5	Biolegend	1:200
CD4	BV711	RM4-5	BD Bioscience	1:200
CXCR5	FITC	L138D7	Biolegend	1:100
CD279	PE	29F.1A12	Biolegend	1:200
CD38	PECY7	Rat IgG2a	Biolegend	1:200
CD73	APC	TY/11.8	Biolegend	1:100
CD3	FITC	17A2	Biolegend	1:200
CD1d	PerCyp5.5	1B1	BD Bioscience	1:200
CD19	BV421	6D5	Biolegend	1:100
CD11b	BV605	M1/70	Biolegend	1:200
IgD	BV786	11-26c.2a	BD Bioscience	1:200
B220	BUV395	RA3-6B2	BD Bioscience	1:200
CD5	BUV737	L17F12	BD Bioscience	1:200
IgM	APC CY7	RMM-1	Biolegend	1:200
CD11c	PeCy7	N418	Biolegend	1:200
CD45	BV510	30-F11	Biolegend	1:200

Supplementary Table 9. List of fluorochrome-conjugated anti-human antibodies used aqueous humour and whole blood immunophenotyping analysis via spectral flow cytometry.

Antigen	Fluorochrome	Clone	Manufacturer	Final Dilution
CD45	Alexa Fluor® 700	2D1	Biolegend	1:50
CD19	BD™ BUV615	HIB19	BD	1:25
CD20	Alexa Fluor® 488	2H7	Biolegend	1:50
CD21	RealBlue 780	B-ly4	BD	1:50
CD24	PerCP-eFluor710	eBioSN3 (SN3 A5-2H10)	Thermo	1:50
CD27	Brilliant Violet 650™	M-T271	BD	1:50
CD38	APC/Fire™ 810	HIT2	Biolegend	1:25
IgD	Brilliant Violet 480™	IA6-2	BD	1:50
CD45RA	PE-Dazzle 594	HI100	Biolegend	1:50
CD3	Spark Blue™ 550	SK7	Biolegend	1:50
CD4	Brilliant Violet 510™	SK3	BD	1:50
CD8	Brilliant Violet 570™	RPA-T8	Biolegend	1:50
CD56	BD™ BUV563	NCAM16.2	BD	1:50
TCRγd	BD™ BUV395	B1	BD	1:50
CD25	Brilliant™ Blue 700	M-A251	BD	1:50
CD127	PE/Fire™ 700	A019D5	Biolegend	1:50
CXCR3	PE	G025H7	Biolegend	1:50
CCR6	BD™ BUV661	11A9	BD	1:50
CXCR5	Brilliant Violet 421™	J252D4	Biolegend	1:50
CCR7	Brilliant Violet 785™	G043H7	Biolegend	1:50
HLA-DR	APC/Fire™ 750	L243	Biolegend	1:50
CD16	BD™ BUV496	3G8	BD	1:50
CD14	Spark Blue™ 574	HCD14	Biolegend	1:50
CD123	PerCP-Cy5.5	6H6	Biolegend	1:25
iTCR/iNKT	BD™ BUV805	6B11	BD	1:50
Siglec 8	Brilliant Violet 711™	837535	BD	1:50
CD66b	Alexa Fluor® 594	G10F5	Biolegend	1:50
CD11c	Brilliant Violet 605™	3.9	Biolegend	1:50
BDCA2 (CD303)	RealBlue 545	V24-785	BD	1:100
CD279 (PD-1)	PE/Cyanine7	EH12.1	BD	1:50
CD86	Alexa Fluor® 647	IT2.2	Biolegend	1:50
CD69	PE/Fire™ 640	FN50	Biolegend	1:50
CD28	Pacific Blue™	CD28.2	Biolegend	1:50

Supplementary Table 10. List of fluorochrome-conjugated anti-human antibodies used for cell sorting.

Antigen	Fluorochrome	Clone	Manufacturer	Final Dilution
CD19	PECY7	HIB19	Biolegend	1:25